

WORLD RADIO,
DECEMBER 14, 1928.

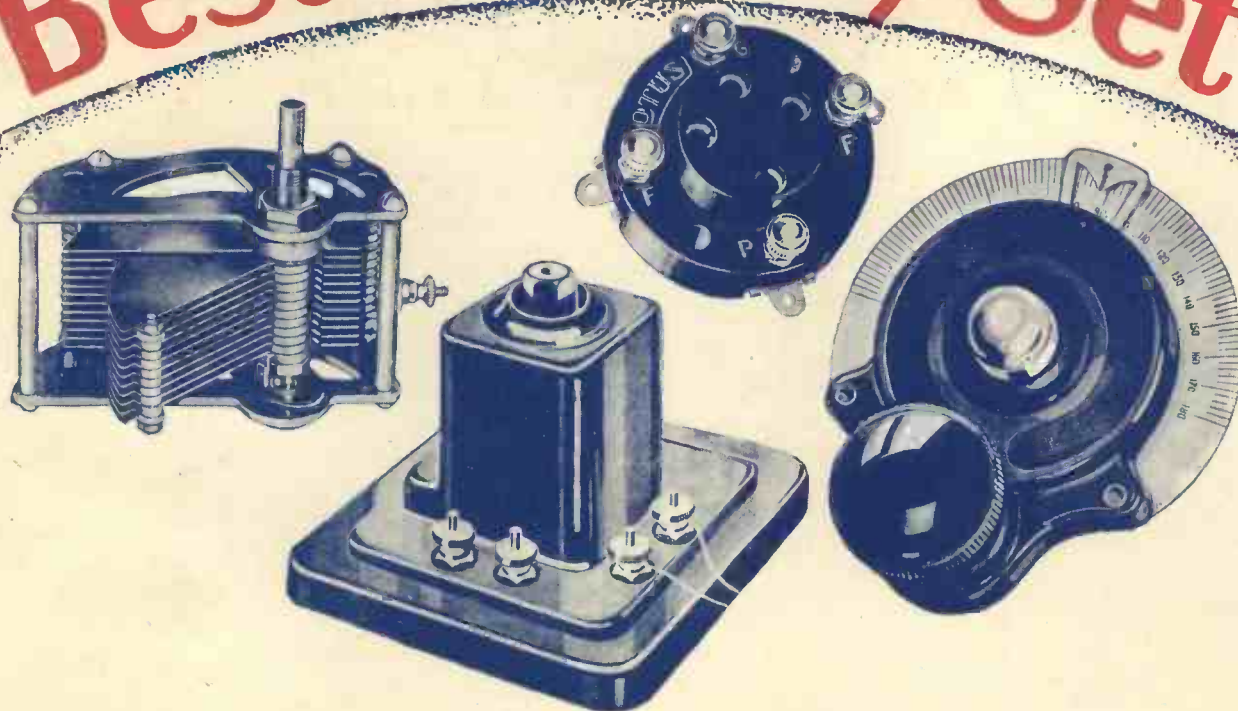
WORLD RADIO

CHRISTMAS NUMBER
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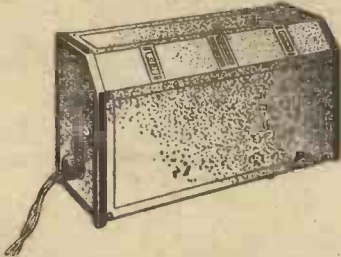
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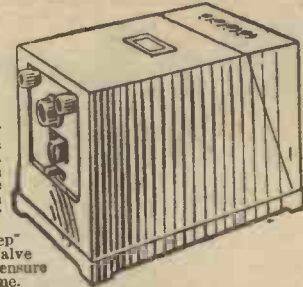
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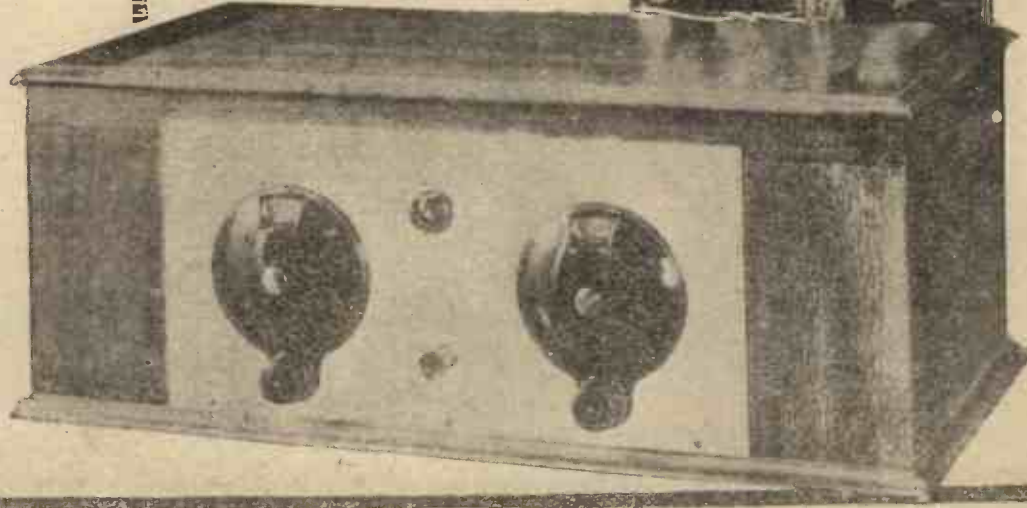
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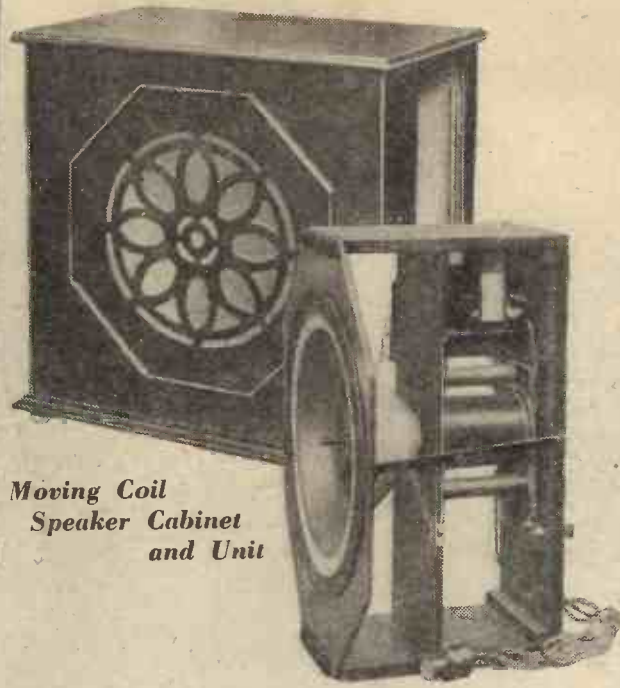
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WORLD-RADIO

Dominion and Foreign Programmes

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VOL. VII. No. 177.

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FRIDAY, DECEMBER 14, 1928

THREEPENCE

The Written and the Spoken Word.

By Major-General Sir FABIAN WARE, K.C.V.O., K.B.E., G.B., C.M.G., Permanent Vice-Chairman, Imperial War Graves Commission.

*"Beneath the rule of men entirely great
The pen is mightier than the sword."*

WHENEVER I pause to think about "wireless," the years lie heavy on my mind. It is borne in upon me with irresistible finality that I am one of the older generation, of those for whom a Bishop boldly spoke, during a recent meeting of the British Association — and raised a hornets' nest of scientists—pleading that all further discoveries might be stopped for a decade, to give us time to adapt ourselves to the changes introduced into our lives during the last quarter of a century. I am conscious that even as these words are being written a new advance



Sir Fabian Ware.

may be made, and therefore have some poor satisfaction in imagining that, if I were able to advance technical knowledge in support of my arguments, I might find when this appeared in print that my premisses were false. I shall therefore seek safety in generalities, or rather in the one profound reality which I have to admit. I grew up in the reign of the written word; another despot is now challenging the old supremacy, to oust it or to share the sovereignty—the broadcast spoken word.

Shortly—as I must—and yet trying to avoid dogmatism, which is a pitfall for every honest striver after brevity—let me attempt to estimate the power of the written word over my own contemporaries. In any discussion of the subject among Englishmen it is necessary to eliminate the Book which for many of them has been a friend in prosperity and a support in adversity. Nor will I succumb to the temptation, which is very strong at this season of the year,

to endeavour to expose the fallacies in two statements which I recently heard formulated: one, that the Englishman's surrender to sentiment at Christmas time is entirely due to

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the influence of the writings of Dickens; the second, that Frazer's exposition, in *The Golden Bough*, of the pagan origin of the Christian festival will convert him to a rationalistic or scientific abandonment of that spiritual attitude. Suffice it to say that there is no evidence that anything that has been written in this connection by any of the masters of literature has ever modified the fundamental and sincere altruism which characterises the Englishman at Christmas time. Throughout the rest of the year he may be self-centred, or "too busy," as some would say, but on this day a power outside himself removes the pressure which has contained him, his spiritual being unfolds, radiating with guileless simplicity good will to all men, overflowing even the national barriers within which at other seasons he is warily entrenched. And yet I can think of one memorable occasion when the written word controlled the natural expression of this feeling.

In July, 1914, we were all ready to subscribe to the statement that "the pen is mightier than the sword." In August the crash came: the sword rang out and the pen was for many a month immobilised. Those of us who were in France will never forget how, in the beginning of that period, after twenty-one weeks of the bitterest fighting in history, the Christian Festival returned. The seasons fulfilled themselves, and there was something in the nip of the air, the brilliance of the stars, and the distant sound of bells which announced Christmas to the British and German soldiers facing one another in their shallow trenches. The Englishman's soul was shaken, in spite of himself, with good will; an unauthorised truce was democratically established, and for fraternised with foe in many sectors of the front before plunging again into the everyday work of the battlefield.

But before long the pen began to challenge the undisputed sway of the sword. On both sides writers became busy at the desks at home, organised propaganda, used gall for ink and turned the normal hatred engendered by warfare into something less human. There were no more such Christmas truces. Is it an exaggeration to say that this was largely due to the power of the pen? At any rate, none will deny that on each of the three succeeding Christmas Days the soul of many an English

soldier stirred uneasily within him as he felt the restraint of all he had read.

This may be said to be an extreme case under altogether exceptional conditions; but it illustrates vividly the power, for good or evil, of the written word; and it is not irrelevant at a time when propaganda is being developed, as some would say, into a fine art in all the countries of the world. Ephemeral its influence may be and is: the Englishman and the Frenchman and the German remain fundamentally the same, their culture, based on long tradition, unaffected; and they react against it. But the good or evil resulting from its passing domination has been done. At the best it adapts itself to the reaction, becoming merely a ripple on the boundless deep—

“ . . . itself

*For ever changing form, but evermore
One with the boundless motion of the deep.”*

What, then, can be predicted in briefest outline as to the power of the broadcast spoken word? So far as Englishmen in general are concerned, there can be little hesitation in concluding that its ephemeral influence will be greater than that of the written word. For, generally to their advantage, less often to their discomfiture, they are given to estimating another's views more by the character than by the intellect behind them, and the human voice is the most potent exponent—or betrayer—of character with which man is endowed. But it is in the international sphere that its influence is paramount, at present outdistancing in time and space all rivalry of literature.

Nothing has impressed me so cogently with the magic of its power as meeting an English gardener in one of the War cemeteries in the depths of France who told me that he had listened the evening before to a talk by a horticulturist in Plymouth. In the same way every Englishman living in the continent of Europe can daily “listen” just as if he were at home, and maintain a contact with his own nation, which changes the whole nature of his exile. So, conversely, can a foreigner residing in England establish daily relations with his own people. But infinitely more important is the fact that every man can, by a mere mechanical adjustment, hear the daily programme of any foreign nation, listen to speeches, delivered by the living voice, which in the past he could only have read in the newspapers the next morning. Never has there been such freedom of international intercourse, impeded only by the “confusion of tongues,” the curse of Babel. That this obstacle will be overcome, unless some further interposition of powers beyond human control intervene, is certain. Is it too daring to suggest that the means by which this will be achieved is through a natural fusing of all languages into one universal speech?

If only this freedom of intercourse between nations is loyally kept open by each there is, indeed, a radiant hope for the common understanding which those who died in the War bequeathed to us as their most ardent aspiration. It is fitting that we as Englishmen should think of this at Christmas time, not, however, allowing ourselves in this moment of guileless good will to overlook the staggering responsibilities which this new power imposes on those who control it, or to ignore our debt of gratitude to all who have hitherto presided, on the whole so admirably, over its development. And so I may close as I began, with the first line of the couplet at the head of this article, far too rarely quoted in its essential association with the second.

“Common, or Garden, Wireless”

We have received the following interesting communication from a Correspondent whose views on the subject which he discusses are entitled to respect.

I BELIEVE that wireless—ordinary, common or garden wireless—is going to be one of the greatest bonds between the common people of the whole world, and it is the common people who in the long run will decide whether there will be war or not.”

So said the Prime Minister at the Lord Mayor's banquet in the Guildhall a few weeks ago. Not that this was the first occasion on which a remark with the same content had been made. By no means so. The sentiment had been formed and expressed long before that, and often; but whereas precisely the same remark may be made by an ordinary man and by a Prime Minister, it is insignificant in the former case, momentous in the latter. He may have come to the conclusion many years before he cared to give definite expression to it. And there are, no doubt, adequate reasons for this. At any rate, when it is made, it comes with all the more significance and emphasis.

The Prime Minister's observation does not convey any new idea, nor imply the need for wider conception of the responsibility on the part of those engaged in the conduct of the broadcasting service in this country, or in any other country. At any rate it should not, and in some countries anyhow the great responsibilities internationally as well as nationally were realised long ago. One wishes it were so everywhere. The Prime Minister's remark does, however, bring on the one hand a clear encouragement to those broadcasting authorities who have a proper conception of their task, and a confirmation of their own judgment, and, on the other hand, it should promote in the broadcasting audience, or such part of it as still insists on regarding broadcasting as a comparatively unimportant entertainment agency, an attitude conducive to a proper orientation on their part to the service.

The Prime Minister believes that broadcasting is to be one of the determining factors leading to satisfactory and pacific relationships between countries. But to achieve this, or any kind of good in its power, broadcasting must have a fair chance, and technically it can hardly be said to have a fair chance to-day.

The persistent and excellent efforts of the Union Internationale de Radiophonie are too little known. Established some three or four years ago, the Union has already secured for itself a position of considerable influence and importance in general broadcasting affairs in Europe. I suggest, Mr. Editor, that it would be both advantageous and interesting to run a series of articles explanatory of the various activities undertaken by the different Commissions of this Union, introduced possibly by a general survey from Vice-Admiral Carpendale of the B.B.C., first President and re-elected in each successive year.

Problems of allocation of wavelengths and protection of wavelengths rest finally with the Governments of the different countries, acting individually or in corporate agreement. It is fairly common knowledge that the European broadcast wave-band is inadequate for the accommodation of stations operating or trying to operate in it. Whether or not all these stations should operate may be doubted, but even with unnecessary or redun-

dant stations removed, even with the elimination of stations existing to serve commercial or private ends, as distinct from those which are conceived and conducted as part of a great public responsibility, etheric conditions would still be parlous, if not chaotic.

A good deal can be done by broadcasting authorities themselves, but they cannot bring the matter to a satisfactory conclusion, or anywhere near it. When all has been done by way of consideration for and concession to other countries, many problems remain for handling elsewhere. Penalties of all kinds may be imposed on broadcasting organisations which interfere with other services, even if the interference is due not to any fault in transmission on the part of those authorities, but to inadequate, faulty, or obsolete reception arrangements on the part of the others. This is not right. The penalty for and the onus of elimination should be on those actually responsible for the trouble. In the other direction, little notice is taken in many quarters of other services which, even inexcusably, cause interference with broadcasting. It is all one-sided. The need for safeguarding essential wireless services by sea and land and in the air is indisputable, and there are occasions when their claims must have precedence. In normal circumstances, however, and when wavelengths have been allotted and regulations made, preferential treatment should not be expected. It is quite feasible for all necessary services to operate without prejudice or interference in their allotted channels, but if obsolete apparatus or methods are employed, the fault is theirs, and it should be cured as expeditiously as may be, rather than that broadcasting should be kept at a permanent disadvantage. At least, it does not seem right to protect every other service at its expense and to withhold from it the protection and general considerations which in these days are undoubtedly its due.

In the International Union lies primarily the salvation of the European situation in the technical sense. It needs the consistent support of broadcasting authorities on the one hand, and recognition and confidence on the part of Governments on the other. The ether has to be cleaned up. The Union is the obvious and only body to prepare for this being done. But it cannot be carried through without the authority and backing of all European Governments.

A technical cleaning up of the ether is the most urgent need at the moment, but there are many other matters which come under the purview of the Council and the Commissions of the Union. It is a miniature League of Nations, and it is concerned with artistic, legal, and international problems as well. Its influence has been felt in all these directions already, but a great deal still remains for it to do.

The day has undoubtedly passed when any listener imagined that the whole service of broadcasting in any country should be conducted for his particular benefit, and when he felt himself entitled to be aggrieved if he did not receive exactly what he wanted, as and when he wanted it. He has at least come to the conclusion that there is more in the business than the responsibility for amusing him and his little circle of fireside acquaintances. He sees that there are considerations far beyond

(Continued on page 897.)

Continental Christmas Music

By E. M. G. REED and W. R. ANDERSON

CHRISTMAS music draws us all together, people of every race and tongue, to join, reverent and joyful, in the great celebration of peace and goodwill. Much of the music that will ring out all over the Continent from many a broadcasting station has its roots in mediæval days, when first St. Francis of Assisi, to show the beauty of Christian ritual, set up the *praesepè*, or cribs, in church, and brought in a live ox and ass for his simple-hearted representations of the birth of Christ. Popular imagination seized on the happy idea (you may remember that Pepys tells of the English style of representation in his time), and a whole literature of cradle songs and carols sprang up. In Naples and the south of Italy you still find beautifully modelled scenes, like the grotto at Lourdes, with little figures of Mary and Joseph, shepherds and angels, and of onlookers in Italian peasant dress; and there you hear the song of the crib, such as *L'angelo del bambino*, with its naïve lilt.

In Sicily, too, the folk-musicians still play in the streets at Christmas, although the famous *pifferari* are no longer heard in Rome. The Sicilian pipers go in pairs—a bag-piper and a player on a smaller, solo pipe. A few days before Christmas they come down from the hills and play strange, melancholy airs that take one back to the first Christmas of all when the Eastern shepherds piped to their flocks—perhaps upon instruments very similar to these.

Italy has given us, too, the masterly music of Palestrina, much of which is sung at Christmas time—his Christmas Motet for example, with its joyous outbursts of “Noë, Noë,” breaking into dance rhythm.

From France we shall be sure to hear of a good deal of Christmas music, including, of course, Gounod's favourite *Bethlehem* (an arrangement of an old air), and some organ music into which carol airs are woven. France claims that her carols have been in use since the ninth century. Very early there were little plays about the Virgin and Child and the troubadours, those aristocratic minstrels of the Middle Ages, sang songs in honour of the Mother. Quite a number of our popular carols come from France—amongst others the tunes of “A virgin most pure” and “The first good joy that Mary had.” Then there were the quaint doings on St. Nicholas' Day, the sixth of December, when the Boy Bishop performed the ceremonies in church; and the earlier Feasts of Fools and of the Ass, in which not all the songs were sacred, by any means!

Some of the best of these old French carols, together with very many others from Germany, the Netherlands, Russia, and other countries, and a fine store of our own native Christmas songs, are in the new *Oxford Book of Carols*, issued from the Oxford University Press. Amongst scores of volumes of carols, this takes a very high place, not only for its wide scope, but for the richness of its choice, the interest of its notes on the music, and the fascination of its introductory story of the carol.

Time and space fail to speak of the charm of carols in all the countries of Europe. Many of them hold in common some particularly appealing song, such as “Christ is born on Christmas Day,” to the dancing tune of which millions of good Europeans have sung their joy these six centuries back. Every country, of course,

has its own rhythms for the songs, many of them (such as the carols in Hungary and Rumania) containing oddities—a bar of two-time followed by one of three-time, or phrases of five or six bars, instead of the usual four. One Rumanian carol, beginning:—

“ See the star arise glorious (with a wondrous secret)

O see it arise all glorious (with a wondrous secret),”

and repeating “with a wondrous secret” at the end of every line, has a tune whose bars contain successively five, three, four, five, six, three, four, and three beats!

Hungary, Poland, and other countries still



[From the painting by Fiorenzo di Lorenzo, in the Municipal Gallery, Perugia

The Adoration of the Shepherds

LONDON CALLING!

Over the dust and tumult,
High as the trees and higher,
Above the roofs of London,
Steel arms that never tire
Hold, for all men who will to hear,
A two-stringed, magic lyre.

And, plucked by wizard fingers,
Quiver the magic strings
In chords of vibrant music,
Till the starred darkness rings
With echoes of the melody,
And all the City sings.

Beyond the flaming highway,
Beyond the shadowed street,
To Thames's furthest shallow,
To fields where patient feet
Move slow behind the lonely plough
Flows on the rhythmic beat.

And music blends with laughter,
Laughter with music blends,
Accent of sage or iester
Follows the voice that sends
Broadcast the tidings gathered in
From Earth's remotest ends.

Above the roofs of London,
Steel arms that never tire
Hold, for all men who will to hear,
A two-stringed, magic lyre.

TOM PILGRIM.

enjoy the Christmas mummers. In Poland the puppet shows (*yaselki*, meaning “the manger”) and the *kolendy*—carols—make pageantry for the lovers of old customs. In some of the carols we recognise the Polonaise rhythm that Chopin has made so familiar. After a bout of carol-singing will come, as the concluding song, the fine tenth-century hymn of St. Adalbert, used in Poland on all ceremonial occasions. Along with the carols go ancient ceremonies—that of “first footing,” or that Hungarian custom of cutting yule-logs for each member of a family, and burning them, sprinkled with corn and wine.

Though the lighted tree is known as the symbol of Christmas in Germany, the crib has also a strong hold on the hearts of homely folk there, and Luther's hymns, many of which have a dancing rhythm, are popular. Heinrich Suss tells how one day angels came to comfort him, and led him to dance, whilst one began a glad song of the child Jesus—that *In dulci jubilo* that we all know so well, to which, in its early days (the fourteenth century) people used to dance. One of the most charming translations is a Scots one, in *Godlie and Spirituale Songs* (1567)—

“ In dulci jubilo ” now let us sing
with myrth and jo.

Our hartis consolatioun lyis in
presipio,

And schynis as the sone, *Matris*
in *gremio*,

Alpha es et O.

O *Jesu parvule* ! I thirst sore after
thé.

[Note the “macaronic” style—the mixture of languages.]

The corrupted version, “Good Christian men rejoice,” is better known in England than the original, as is another carol, divorced from its proper season—“Good King Wenceslas,” the tune of which belongs to a Latin carol celebrating the coming of spring. Wenceslas, by the way, was a Bohemian.

There is a host of lovely German carols connected with the cradle—“Schlaf, mein Kindelein,” and the nineteenth-century “Heilige Nacht” that we love. The carol and the chorale (hymn-tune) grew in beauty, side by side. Bach's *Christmas Oratorio*, one of the sweetest of all the great old man's expressions of his religious fervour, contains many Christmas hymns of Paul Gerhardt's (seventeenth century), who as a hymn-writer stands next to Luther. This oratorio is happily growing in favour here, and should be heard by every lover of fine tunes and richly imaginative music.

Russia's folk-songs, collected with scrupulous care by her composers and made the basis of many of their art works, show us how Christmas was kept in the old days with great jollity and dancing, special food, and community singing on a curious and exciting plan. The *horovodi*, as the dance-songs are called, give the improviser a great chance, for each voice as it comes in varies the tune. We all know how finely the Russian nationalist composers, Borodin, Rimsky-Korsakov, Moussorgsky, and the rest, treated folk songs. The *Oxford Book of Carols* prints a fine song of praise that Rimsky-Korsakov used in a cantata, that Beethoven brought into his quartet, Op. 59, No. 2, and that Moussorgsky made a feature of the coronation scene in his opera *Boris*.

So we could go on, showing how these songs of poor folk about poor folk have endeared themselves to all, high and low, folk-singer and composer. No bond of fellowship between the nations is closer knit than that of Christmas song. Amidst all our doubts and differences, may nothing be more strong and lasting than this happy kinship of the carol!

The Conversion of Ebenezer Mudge

R. W. HALLOWS



IT may be said of Mr. Ebenezer Mudge that he had two chief hobbies. The first was spirits. Not those that are summoned from the vasty deep—far from it, for Ebenezer lived in mortal dread of meeting a ghost. He had been heard to say upon occasion that if he ever did so he was sure he would shiver himself to death. The spirits with which Mr. Mudge was concerned were such as are held to allay rather than produce trembling. Like the Djinn of old, his gin came from a bottle; but no magic word was needed to call it forth, no rubbing of a ring. A firm hand with a corkscrew and a gentle tilting of the bottle sufficed. His second hobby was wireless, and here, as in his other diversions, Mr. Mudge went in for the thing wholeheartedly.

Though there was a Mrs. Mudge, there were no Mudgetts. When family men like you and me fit the superest of super valves to our receiving sets, conscience, unless we have it thoroughly under control, occasionally rises to smite us with the thought that what is bringing in distant stations so well is really the pair of boots that little Tommy ought to have had, or the Sunday trousers of which Johnny and Willie are so badly in need.

I know one poor fellow whose receiving equipment was made up entirely of sausages. You doubt me? I do really. His family, including himself, was six all told, and all of them were so fond of this kind of lucky bag that they had them regularly for breakfast three times a week. A pound, containing six, exactly sufficed to provide the necessary ration all round. He longed to possess a wireless set but had never been able to do so, owing to silly ideas on the part of his bank on the overdraft question. Then one day inspiration came to him suddenly, as inspirations will. He was walking along quite happily when he stepped on a piece of orange peel, upon which he performed what, if we are to believe him, was the world's record skid. He swears that he subsequently measured it from point to point, and found that from take-off to finish he covered eighty-four yards, two feet, nine and three-quarter inches. Anyhow, he brought up in a sitting position with his nose hard up against the front of the shop just opened by a young and go-ahead pork butcher. Within a few inches of his eyes was a vast pile of sausages, neatly made up in pounds.

Having picked himself up and removed as much as possible of the neighbourhood from his clothes, he proceeded homewards in a somewhat dazed condition, wondering why he kept on repeating to himself that sweet little poem about "We are seven." All night long, the mystic number seven haunted him. Next morning it was just the same. He was called at seven o'clock, his train was seven minutes late, there were seven passengers on his side of the carriage, and later, when he travelled to the office by bus, seven different people trod on the toes of his number seven boots.

Returning home that evening, something drew him to the window of the new pork butcher's shop. Standing there he suddenly observed that each pound of sausages contained not six but seven!

In a flash he saw the significance of the thing. Entering, he purchased a pound and ordered regular supplies to be sent to his home. He was thus able to save one sausage per breakfast and one complete breakfast per fortnight, so making of course an appreciable reduction in the housekeeping allowance.

Weeks flew by. Thanks purely to sausages, he was able to acquire now a valve holder, now a gridleak; now a rheostat, now a transformer. At the present time he possesses a highly efficient five-valve set, and he calculates that it represents nearly three-quarters of a mile of economized sausages. This just shows how hardly we poor family men win the right to lie about our D.X. successes.

Mr. Mudge, though, had no need to go in for any such expedients in order to raise the necessary wind. Besides his own there was but one mouth to feed, and Mrs. Mudge was, provisionally, an ardent devotee of the fashionable craze for slimming. If she demanded a new hat he was able, by appealing to her artistic tastes, to prove conclusively that aesthetically it was a far, far better thing to hear Schubert from Vienna than to plank some new kind of felt pudding basin upon one's head. Further, Ebenezer had discovered, as all married men should, the extraordinary efficiency of the properly used long-distance set in bringing any argument to an end.

When Mrs. Mudge started out to expound to him in detail seventeen different reasons why she should have a new set of furs, her worse half had two alternative lines of attack. His first was to say "Go on, my dear, I am listening; but we will just have a little tour round Europe on the wireless set whilst you are talking."

"You see," Mrs. Mudge began, "it is really only fair . . ."

A vast volume of sound issued from the loud speaker, and Mr. Mudge cheerily announced that that was Cologne. After three or four bars, a lightning twiddle of the controls brought in a blare of dance music from Vienna. A couple of seconds later Mr. Mudge had forsaken Vienna for Kattowitz, only to leave it almost instantly for Oslo. From Oslo he flitted to Paris, from Paris to Rome, and from Rome to Hamburg.

If Mrs. Mudge endeavoured to protest he would say "One moment, sweetheart. I have nearly got Copenhagen, and I am sure that he is going to be jolly good. Just listen." It seldom needed more than a quarter of an hour's radio tour to reduce Mrs. Mudge to palpitating silence. But on those occasions when the first method failed the second was brought quickly into play.

Mr. Mudge yoked up his short-wave receiver, placing over his ears telephones fitted with gigantic rubber pads. As he ungallantly put it, Mrs. Mudge could now talk her blessed head off without disturbing him in the least.

Sad to relate, though, wireless could not keep the erring feet of Mr. Mudge upon the desirable narrow path. He was always slipping off it, metaphorically and literally. If he did not essay to communicate with Mars, he could undoubtedly claim to be in the closest touch with Bacchus. Sometimes of an evening he would announce that he must just slip down to the wireless club, where a most important meeting was to be held. He would return in the small hours, not quite sure whether he had been

at a political demonstration or a wireless meeting, and occasionally uncertain whether he was in his own den or the middle of next week. It was his habit, when he remembered, to disrobe at the foot of the stairs, creeping up in his socks and underclothing so that he might slip into bed without awakening Mrs. Mudge. Once, though, after an evening in London, he found himself at the foot of the stairs and put his usual plan into action. On reaching the top of the stairs with the major part of his garments over his arm, he was horrified to find himself in Trafalgar Square.

Mrs. Mudge made strenuous efforts to reform her wayward spouse. But failure after failure resulted, and Mr. Mudge showed no signs of improvement. The good lady was eventually at her wit's end. It is, as you will admit, a trifle annoying to find in the morning that the lord of the house on his return the night before has blown out the hall gas, placed his boots on the piano and put out the loud speaker to be blacked. Matters are even worse when the fellow puts his accumulator to bed and then goes downstairs and curls up amongst the low tension leads.

But Mrs. Mudge was a stickler. If one plan failed she was not long in evolving another. All of them unfortunately had as little effect upon Ebenezer as water upon the proverbial duck's back. There was, however, the difference that whereas water leaves the duck dry Ebenezer remained decidedly the opposite in spite of everything.

And then one day she had her great inspiration.

On Christmas Eve Ebenezer decided that as conditions appeared to be perfect he would really let himself go amongst the foreign stations. He had a wonderful time, pulling in station after station and compiling a bag which, he said to himself with a chuckle, would make those fellows "Northerner" and "The Searcher" green with envy. He found it somewhat thirsty work, though, and whilst skimming the cream of Europe he was also devoting no small amount of attention to that of the Highlands. A little before midnight Ebenezer decided that he required fresh fields to conquer. He would switch off and sit by the fire for an hour or so, after which he would set forth, like Columbus of old, to discover America.

He switched off. He sat down. He drained his glass. The clock on the mantelpiece after a preliminary click began to strike the ghostly hour of midnight.

"Hooray!" murmured Ebenezer, "Feshtive sheason. Mush shelebrate."

His hand reached down for the decanter. He grasped it. He removed the stopper. He was about to pour when . . .

"Ebenezer Mudge!" said the loud speaker.

The decanter descended with a rattle on to the tray, and Ebenezer essayed to pull himself together.

"Shnonsense," he muttered. "Shilly ole thing's shwitched off. Gaymekwyshtart. Mall-ovatremble. Mushtavashpot."

His hand reached once more for the decanter. "Ebenezer Mudge!" said the loud speaker, more loudly this time.

Ebenezer's hand was withdrawn as if it had been stung. He pinched himself to make sure that he was awake; found that he was, and decided once more to restore his shattered nerves in his usual manner. Again his hand stole forth, again the loud speaker lifted up its voice, but now it positively shouted:

"EBENEZER MUDGE!"

He sat up, gazing at the thing that was behaving in this strange way. It came to him that he was dealing now with something far beyond mere wireless. Petrified, tongue-tied, shaking, he waited.

"Ebenezer," said the loud speaker sharply: "Thrice have I called thee by name and thrice hast thou failed to answer. For the fourth and last time, Ebenezer Mudge. . ."

"Y-y-yesh," quavered Mr. Mudge.

(Continued on page 900.)

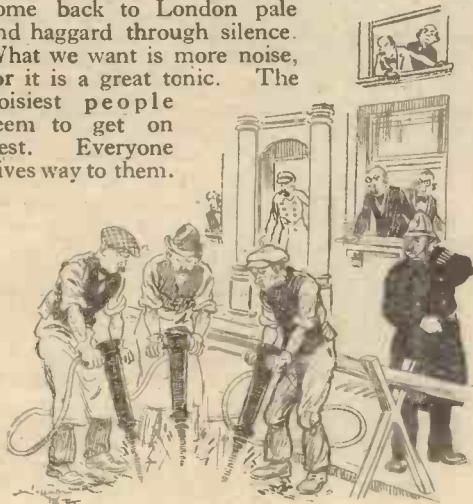
The Value of Noise

By Morley Roberts

Mr. Morley Roberts will be known to many of our readers as the author of "The Colossus" and numerous other novels.

THERE is, so I hear, a commission sitting to consider the effect and the value of noise in modern life. It is to be hoped that reactionaries will not succeed in their efforts to lessen it, although some over-sensitive doctors, who ought to know better, complain that even in Harley Street a stethoscope is now of little use. After prolonged investigation among strong and healthy physicians I have come to the conclusion that noise is one of the best tonics, at least for people worth preservation, that we have. Noise is a natural product of true civilisation. It may destroy a few weaklings, but shall we then interfere with Natural Selection? I think we must answer "No" with decision.

I find that even among the people who say they do not like noise the only kinds they really object to are those made by others. They revel in their own. And in some cases they even enjoy those made by near relations. The uproar made by a baby, for instance, is very soothing to a mother. The noises the child makes not only show that it is alive, but they have a positively hypnotic effect on the parent. And when we reflect upon the other aspect of noise, which I take to be silence, who really likes it? Silence is disagreeable: it renders desolate any place affected with it. I know people who simply cannot sleep in a country house if there are no dogs or cocks and hens about. The silence coming on as household noises die down absolutely wakes them. They have to sit up and make noises to see if they have suddenly become deaf. They even get out of bed and prowl about the passages to listen at doors to discover if anyone is alive. I have known strong, healthy men come back to London pale and haggard through silence. What we want is more noise, for it is a great tonic. The noisiest people seem to get on best. Everyone gives way to them.



"Surely there might be more of them."

Now I am not an expert as far as land and city noises are concerned. It is hard to say how we can get more noise in London. Engineers tell me that street drills, for instance, could not be made louder without a loss of economy. But surely there might at least be more of them. I leave this to Borough Council Experts. But I do know a great deal about maritime matters, and as regards the sea and life in ships much might be done. I have, therefore, drawn up a few suggestions as to the ways in which a sea-going passenger ship could be made more effective. To look upon a ship as a place of rest is absurd. Only those who have never gone a passage can believe it. It is a place of continuous joyous stimulation, and noise is undoubtedly one of the greatest stimulants known to the medical profession. So if it is recognised, as I maintain, that there is a great lack of co-ordination in the

production of noise, musical and otherwise, on board ships, the following notes may be of use.

1. Steamship companies, by hiring very skilful and popular bands, usually do their best in this direction, but as musicians are found to require occasional periods of rest, they often cannot play continuously for twenty-four hours. It has, moreover, been found that music alone very rarely has the tonic effect desired. The companies, therefore, commonly supply a large and powerful gramophone of some 350 h.p. But even the largest single gramophone cannot, it seems, cope adequately with the general demand for continuous tonic uproar. It may therefore be pointed out that the ship's instrument should be supplemented by each passenger bringing his own. The orchestral effect of massed gramophones playing different pieces of music by such classical jazz-makers as Gerholz and Irving Berlin, especially if mingled with many music hall songs, is little understood, but is highly effective medically.

2. Conversation and loud laughter may be employed as a means of noise production. These are most effective at night, especially between 11 p.m. and 1 a.m., when they should be strictly confined to places where passengers are asleep. The style of conversation adopted should be that usually thought suitable for the open air, when those who converse are at a considerable distance from each other—say, about one hundred yards. The result is almost invariably good, since those aroused from midnight sleep in this way are rarely silent.

3. Flirtation in the alleyways may also be recommended as a sound method of stimulating passengers liable to oversleep into keeping awake. In this case the noise made need not be great, as the squeaks of young females when pinched, or otherwise courted, are very effective. When young men are not available the giggles of two girls by themselves have been known to engage the excited attention of a whole alleyway until about three in the morning.

4. Those who are ill, or possibly seasick, obviously require special stimulation. The doctor on application will point out the state-rooms in which his patients can be discovered. The combined effects of a very few persevering conversationalists just outside a sick man's cabin have been found highly efficacious in arousing moribund patients even when coma has supervened.

5. It should be pointed out that the growing habit of wearing light shoes and even slippers late in the evening obviously tends to lessen the desirable amount of noise. This surely only needs to be mentioned for it to be remedied. Heavy boots and a firm, manly tread after midnight can be confidently recommended.

6. It might seem that the art of slamming doors had been brought to its highest point of perfection, especially in Nursing Homes. This, however, is not the case. We find that sufficient advantage is not taken of the fact that steamship builders so arrange the berths that the head of each bunk is close to the door of the next cabin. One slam, however, often fails to waken those who retire early, or those who remain below all day. It is recommended that doors should be slammed several times, and it should not be forgotten that the mere opening of the door may be done with much effect. As a rule those going back to their cabins to fetch something should return as rapidly as possible for something else, thus combining the effect of heavy footsteps, loud

laughter, and repeatedly opened and shut doors.

7. It should be added that those who believe sufficient noise could be made without their co-operation, if the deck-hands dropped heavy weights continuously on the boat and hurricane decks, cannot be aware that the men available at night for such duties are not able to deal with more than a small area of deck at once.

8. It is obvious that as a means of producing loud and continuous sound economically, chill-



"Steamship Companies do their best in this direction . . ."

children are practically unequalled. Clarke Maxwell, the eminent mathematician, has calculated that though the average boy of ten only consumes thrice as much energy-consuming food as a strong man weighing 168 pounds, he can make 12½ times as much noise in one-tenth of the time. Children's voices, too, carry an enormous distance. They have been known to stimulate a sleeping nurse or even an aunt. They should, therefore, be brought on board all ships in the largest available numbers.

9. Any wilful omission on the part of a steward to make as much noise as possible when handling knives, forks, spoons, and crockery should be at once reported to the Chief Steward, the Purser, or the Commander and, in the last resort, to the Head Offices of the Company.

10. Passengers with original ideas on the subject of massed noise production should be heartily invited to communicate them to the Chief Officer when he is on foc'sle head, as the vessel enters port. This will probably secure satisfactory results.

If these suggestions were carried out conscientiously I have little doubt that life on board ships would possess all the tonic qualities with which it has been credited. And if some great expert, say Sir Thomas Beecham, was consulted as regards noises in London, I believe the massed orchestral effect of bigger motor horns, milk cans of varying *timbre*, street cries, and heavy lorries might make London not merely the largest, but actually the loudest, city in the world.

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his earlier ideas, and implications of far deeper significance than he had originally conceived. He is certainly rather impressed by the immensity and diversity of the responsibility; he is possibly also a little humbled. His horizon has been enlarged; he can see beyond his own home, beyond his village or community, to the needs and the aspirations of the country. The Prime Minister's words will perhaps lead him to regard the problem as international. He will still welcome his pet comedian from his local station, but he will welcome also the international statesman from Geneva or elsewhere, and will listen to him in company with his brothers and sisters of every civilised country.

Christmas in India

By Flora Annie Steel,

the well-known writer of Indian stories.

CHRISTMAS is the same all the world over! Even when there are no children in whose innocent happy faces we elders can look to trace the features of the Christ-child Whose birthday we celebrate, memory brings back our own childhood, and for the time we are once more innocent and happy.



Mrs. F. A. Steel.

I do not know what happens now in India; times, I am told, have changed utterly, but in the late days of last century, Christmas, the *Burra-Din*, the Big Day, was, indeed, an institution.

It opened on a bright Punjab morning, when the brazen blue of the sky enarched the world without a cloud, when the fresh air

one breathed was as champagne to one's vitality, and the breeze nipped one's cheek without cooling it. There are no mornings like a Punjab winter's morning; and no morning was ever like a Christmas morning!

We did not decorate our houses. The world's decorations were enough for us. I have picked a clothes-basket full of Maréchal Neil roses before breakfast; these and the flame-fingered scarlet poinsettias will go down to the tiny church after "little breakfast"—a quaint pair!

The ayah comes in with a broad smile, and wishes us and the absent children she has nursed—who are now over the "black water"—"A Mellie Chrissmus." The table servants, all in the stiffest and whitest of muslins—though I notice their uniform coats are unbrushed and distinctly shabby (gentle hint that new ones might be a suitable offering for the season)—are all ready with good wishes, the cook has cooked the most delectable feast, and out in the verandah rugs have been spread and a couple of armchairs placed. For here the great Christmas function has to be enacted. Already among the flowering shrubs, native officials are waiting, each with his offering borne by an attendant.

And here they come each in order of precedence—strict precedence—for no slackening of rule can be allowed, even on Christmas Day. So the first in righteous order approaches. His tongue is ready with high-flown Persian compliments, while the *sahib*, in the chair of state, looks no little shy. But behind the two thrones is a circle of domestics, who are with greedy eyes appraising the "dollie" brought, and calculating how it will divide out amongst them; for this was, in those days, the final goal of Christmas offerings.

This is a good one! On the flat reed basket covered with leaves are no less than two real sugar loaves, covered with blue paper, English fashion, looking quite outcaste amid a cluster—the number according to rank—of sugar candy cup-lets. So much is due to the presenter's rank. Then there is a box or two of Kabuli grapes, luscious enough when discarded of the cotton wool in which each separate fruit is packed, a leaf or two of Kabuli raisins, mayhap, if the offerer be of sufficient rank, a little pile of pistachio nuts and some dried apricots that smell horribly of the *asafetida* beside which they travelled through the opalescent hill country which shields India to the north. Then come the fruits of the soil, oranges, apples, pome-

granates, mayhap a melon or two, though the season is not yet, and they have to be brought from Sind. So to vegetables. Ye gods! what a cauliflower! Parasols are hardly in it! Radishes the size of parsnips, and, never forgotten, the little bunch of *peterali* (parsley) for garnishing.

"*Mansoor*" (accepted) says the *sahib* as graciously as he can. The basket is filched away by servants and the second notable approaches. The same formula is gone through, though mayhap the *memsahib* has a word or two to interpolate between her husband's set phrases, as when some old greybeard from the out-districts, oblivious of the passage of time, points out with glee a child's rattle or a rag doll for the *babalog*—boys and girls that is—that are now in jackets or tails at public schools, or finishing in Paris before rejoining their parents in India!

Yet this contributes to the good cheer. And now through the sun-bright air a real funeral knell is echoing, "Ding! Dong! Ding! Dong!"

Such a pause between each stroke that, surely, it must be old age that is passing?

But no! It is only the call to the little regulation church which has been built by the Depart-



The Author's Bungalow

ment of Public Works, down by the Courts. A pocket sort of church, lancet windows, chancel, font, all complete. And a pulpit! But that is not often occupied, since there is no clergyman; he only comes over once every three months from the nearest cantonment. But it is Christmas Day, and the altar has its vases of white roses, and the *sahib* is there in his best go-to-meeting clothes to read out the story of "Peace on earth, good will towards men."

There is but a small congregation. The Police Officer's wife has gone home with the children. The Doctor is unmarried, and so, of course, is the Assistant Commissioner. But the head clerk prides himself on his European descent, and has brought quite a tribe of black-and-tan children; and near the door, by the font, is a very, very old-woman, deaf and blind, of more

than doubtful colour—who comes to get the alms bestowed on her, as all the representatives of the British Government troop out of church. They feel more than usually charitable, for they have just sung "Hark! the herald," led by the *memsahib* on a wheezy dulciphone.

How does the rest of Christmas Day pass? Much as other days, save that many of us spend some time in writing letters home. There is some old friend whom we have perhaps neglected a bit. Christmas is the time to renew relations. And then there is Cousin So-and-So. How delighted she will be to be able to say at her next interview with the Vicar: "I have had a letter from my relation—he is high up in the Indian service, and he tells me —"!!

So a long screed goes off to give pleasure to some limited life. But Christmas is not always full of good will. I recall once when a favourite servant—he was groom to my pet pony—came to me just as I was putting out firework crackers on the dining table to amuse my husband, the Doctor, the Police Officer, and the young Assistant Commissioner—all children, in their way, this Christmas Day.

But Budlu's face was long; he wanted an immediate advance of fifteen rupees.

"Fifteen rupees!" I echoed. "Great Heavens! That is more than two months' pay. What for?"

Then he told me. It was not a Christmassy story. He was passionately fond of melons. There had been several in the "dollies." He was entitled to half of one. He had eaten it, but on his return from exercising the pony, who, incidentally, had been a veritable *shaitan*, as the *memsahib* knew sometimes to her cost, he had found a half melon neatly disposed among his belongings. (Here he became dramatic.)

"Who can tell in this sublunary world," he said, "for certain what he has or has not eaten? Forgetfulness overcame me; yet, filled with virtue, I called aloud, 'Whose is this melon?' None answered. It was evidently the will of Providence. I began to eat, but hardly had the first mouthful reached my stomach, than, from behind the wall, came my arch-enemy Ramu—I will not sully the *mem's* ears with a recital of our quarrel; suffice it to say that he is a bad man. He steals his horses' grain, and the *sahib* is ill-advised to keep him. He threw up his hands, as if his first-born was dead, and cried aloud—'Come ye, my brothers, come and see Budlu eating the sweeper's melon!' And they came!

"*Memsahib*, what could I say? It was the sweeper's melon. It had been put there on purpose to catch me. But all the same, my caste was destroyed, and without fifteen rupees to give the Brahman and my brothers a dinner I have no chance of Paradise."

As I sat at dinner that night, drinking the health, as in duty bound, of George Emperor, I heard convivial merry-making in the servants' quarters.

It was the caste beano!

And I could not help thinking that His Majesty's dominions were difficult to govern, and that in India, "Good will to all men" was not of universal application.

Glorious time of great Too-Much "Christmas" (Leigh Hunt).

So now is come our joyfull'st feast;
Let every man be jolly;
Each room with ivy leaves is drest,
And every post with holly.

("Christmas," by George Wither.)

England was merry England, when
Old Christmas brought his sports again.
'Twas Christmas broached the mightiest ale,
'Twas Christmas told the merriest tale;
A Christmas gambol oft could cheer
The poor man's heart through half the year.

(Sir Walter Scott.)



Where Celebrations are Conducted in the Grand Manner

CANADA provides an ideal setting for Christmas. Except in the extreme west there is always snow on the ground; trees are white with a fine dusting of dry snow and every branch is ornamented with long, slender icicles which flash in the sun. The landscape in town and country is a picture of virgin whiteness. In the cities the roar of traffic is strangely muffled by the soft carpet of snow underfoot, and the silence of the country is broken only by the happy cries of children and the occasional tinkle of a bell as a horse jogs quietly along the road hitched to a farmer's sleigh.

With such a setting it is but natural that Christmas in Canada should be the most enjoyable holiday of the year. But to capture the real spirit of a Canadian Christmas it is necessary to visit a rural community, preferably on the prairies, for there the family Christmas party develops into a festival in which every man, woman, and child for miles around takes part. In every farmhouse of the west preparations for Christmas begin at least two months before the actual event. Usually in October the farmer makes a special visit to his barnyard and there selects with great care two or more turkey cocks and several promising cockerels for fattening. Ten days before Christmas the birds are killed and carefully plucked, cleaned, and tied up as they are to appear when ready for stuffing and roasting. They are then put outside and allowed to freeze solid. There is little danger of stray cats or other animals carrying off the carcasses, for they are as hard as granite and in their frozen state totally unpalatable. The day before Christmas the carcasses are rescued from the cold and brought into the kitchen to thaw out slowly. Were they to be placed in the oven in their frozen state the meat would be as tough as leather.

A Communal Feast

Meanwhile, the whole village has become absorbed in the Christmas preparations. The farmers' wives are busy making cranberry sauce and cranberry jelly, pumpkin pie (a Canadian favourite), apple-pie, mince-pie, Christmas cakes and pudding, salted almonds and other dainties without which no Christmas dinner would be complete. The children in the village school are being instructed by the schoolmistress in the making of Christmas cards and small presents for relatives and immediate neighbours. For the Canadian household, Christmas is a time for giving. Everyone has a present

for everyone else; even the hired man has his present with the others, and celebrates Christmas with the farmer's family, as one of the family group. Invitations are extended to relatives in all parts of the community, and it is no unusual thing for uncles and aunts and their children to travel several hundred miles to spend Christmas with their relatives in the country. Bachelors of the neighbourhood are in great demand, and usually receive more invitations for Christmas Day than they can possibly accept. Sometimes two or even three families unite to make of Christmas one mammoth celebration. It is the rule for at least ten or a dozen people to sit down to Christmas dinner, and parties of from fifteen to twenty are by no means uncommon.

The Schoolhouse as Social Centre

On Christmas Eve there is a celebration in the schoolhouse. Everybody is invited and everybody comes. In a corner of the room stands an enormous Christmas tree, set up during the afternoon by the men of the neighbourhood. It is gaily decked with streamers and ornaments of all kinds, and its lower branches carry a load of presents. In the corner at the back of the room the great round wood fire blazes merrily, its iron sides a cheery red, for outside the temperature is well below zero and everyone is glad of its warmth. The villagers arrive, from far and near, in merry parties, in the bottom of farm waggons fitted with runners to slide over the snow. The harness of the four-horse teams tinkles brightly with small bells while great clouds of steam rise from the horses' nostrils as they breathe heavily in the crispness of the night. When the company is complete the master of ceremonies announces the first item of a long and interesting programme. Many of the numbers are provided by the school-children, carefully rehearsed by the conscientious school "marm," with other items by sundry local talent interspersed.

Finally, the climax of the evening—the approach of Santa Claus! The chairman, in touch with Santa by wireless, heralds the good Saint's approach from the platform, and all the children are at once on the *qui vive* for the first tinkle of his horses as they approach over the frozen road. At last he arrives, his horses and sleigh decked with bells, and over his back a great bundle filled with hundreds of genuine presents for the "good children" of the neighbourhood. The children give him a great ovation as he clambers, panting, on to the platform, his flowing beard and gay garments sparkling with a light dusting of real snow. He makes a little speech and congratulates the children on having been so good during the year

and distributes to each some little present he has picked up on the way to the party. There are presents for grown-ups as well, from neighbour to neighbour, usually funny presents which cause roars of laughter. Finally, further presents are distributed from the tree itself, and when it has finally been denuded of all its treasure the party is over and everyone is off home to hang up stockings and to make final preparations for the morrow.

Christmas morning finds the farmer and his men in the barn bright and early, finishing up the milking and watering, and feeding the stock. They are given an extra large meal this morning for it is likely it will have to do for the remainder of the day. By six o'clock everything has been done and there remains but to draw lots to see who shall represent the household at morning church service. This is done, not because of a strong religious leaning but rather as a tribute to the local clergyman, who is usually a very popular figure in the farming communities of the west, and none of the farmers would care to see his special Christmas morning service ill attended.

The only ones who work on Christmas morning are the women of the house, and they spend their time in the kitchen, superintending the roasting of the turkeys and chickens, and putting the finishing touches on the Christmas cake and pudding. On this important occasion they look upon their duties in the kitchen not as work but as an opportunity to demonstrate their abilities as cooks. At Christmas time every woman of the village is on her mettle and strives her utmost to outdo her neighbour in the good things provided for the table. There is little wonder, therefore, that a Christmas meal on the Canadian farm is something to be long remembered.

The rooms of the farmhouse are suitably decorated for the occasion with red and green paper bells, evergreens (should the farm be in an evergreen district), paper streamers of all shapes and colours, holly, and ornaments. The table with ribbons and streamers, and a great Christmas cake occupying a place of honour in the middle.

Then the Christmas pudding, blazing in a pool of brandy, and crowned with holly. Perhaps, to the city dweller, the courses—fruit, soup, turkey, and Christmas pudding blazing in a pool of brandy, seem few, but they are courses in earnest. No one leaves the table hungry and there are some who have difficulty in leaving their places at all.

Coming Home to the Milking

Dinner over, there remains a scarcely less pretentious meal in the evening, followed by a village dance in the schoolhouse. About eight o'clock everyone repairs towards the schoolhouse, dressed in their best and wearing many of the presents they have received in the course of the day.

Soon the fiddler, standing at the end of the room or astride a chair, strikes up his favourite tune and all join hands for a square dance. All engage in performing the many steps of the season's popular dance under the direction of the master of ceremonies, who announces the steps at the appropriate bar from his dais at the end of the room. This is the one night of the year on which the Canadian farmer and his family agree to forget the hours, and it is not until the brightening sky in the east heralds the dawn that the last good-byes are said. As the sun peeps over the eastern horizon the horses' heads are turned homeward. But for the farmer the day is just beginning and the men reach home just in time to do the milking while the women folk do their best to clear up the last signs of the Christmas day festivities.

Efforts are made to carry on the work as usual on the day following Christmas but these efforts usually fail and, apart from feeding and tending the livestock and milking, little is done. It takes more than a single day to recover from the effects of a real Western Canadian Christmas celebration.

J. C. N.

Was Radio Known in Shakespeare's Day?

By Ashley Sterne

RIGHT at the very outset I think this question may be answered in the affirmative; for although there are no absolutely *direct* allusions to radio in Shakespeare's plays, there are many very significant sentences scattered through them which clearly suggest to me that the great dramatist was thoroughly familiar with radio in all its branches. I have, in fact, evolved a little theory of my own, showing how Shakespeare became an addict to wireless—a theory whose possibilities were suggested to me after a discussion I had the other day with a friend, a pro-Bacon fanatic, who pointed out to me that that delightful little oral test for sobriety which comes in *Love's Labour's Lost*—I refer to the word "honōrifcabilitudinātibus"—can be anagrammatised into the sentence, "It is I—I, F. Bacon, author—build in it." This, my friend explained, was Bacon's cryptic method of announcing to the world that his identity as rightful author of the play was "built in" (or, as we should say, immured, or concealed) beneath this sesquipedal monstrosity.

It is, however, no part of my present task to plunge into the Bacon-Shakespeare controversy, but it has occurred to me that if the author (whichever of the two he was) of the plays intended cryptically to convey information on one vitally important matter, he might similarly have acted with regard to another. Anyway, that is the assumption I have worked upon, and so, by means of references which may easily be interpreted to refer to radio, I have constructed the following hypothetical little story, the protagonist of which I will call Bacspeare in order to avoid treading on anybody's corns.

Bacspeare, then, like so many of us, began his radio experiences with a small, home-made crystal set. In *Othello* (Act V. sc. 2) he refers to "one entire and perfect chrysolite"—an obvious allusion to a particularly effective crystal he had obtained; while in *The Merchant of Venice* (Act IV. sc. 1) he makes mention of "a harmless necessary cat"—"cat," of course, being the term employed, owing to the exigences of metre and scansion, to express the necessary (and harmless) "cats-whisker." That there were kind-hearted speculative builders in Shakespeare's day is proved by the line in *Henry VIII.* (Act IV., sc. 2), "Give him a little earth for charity!" obviously indicating his intention of providing for the needs of a prospective tenant with a listening set.

Subsequent trouble with his aerial ensued, for in *The Tempest* (Act I. sc. 2) he euphemistically anathematizes it as "my quaint Ariel!" I suggest that Ann Hathaway made it "quaint" by hanging the washing on it, and so interfering (since damp clothes are conductors of electricity) with the insulation. The trouble, however, was only temporary, for later on in the same scene Prospero is made to exclaim, "It works. Come on. Thou hast done well, fine Ariel!"

At a later period it is obvious that Bacspeare introduced a thermionic valve into his set, and at once experienced trouble with it—his "glow-worm," as he prettily and poetically termed it. In *Hamlet* (Act I. sc. 5) we have a thinly-veiled reference to the running-down of his accumulator in the words, "The glow-worm . . . gins to pale his uneffectual fire," whereafter it is evident that he called in the local radio-expert to locate the fault from the line in the same play (Act II. sc. 2), "Find out . . . the cause of this defect," a task which I imagine the electrician carried out à la Harry Tate, for Bacspeare was assuredly alluding to the incident when he wrote (*ibid.*, Act III. sc. 4), "'Tis sport to have the engineer . . ."

Next came upon the scene that familiar "fan" friend, whom we all know so well: the fellow

who always insists on "improving" our set for us, whether we want him to or not. Bacspeare's friend clearly wanted to increase the range of the set, at which the dramatist was at first manifestly delighted, since in *King John* (Act II. sc. 1) he somewhat modestly says, "I am not worth this coil that's made for me." However, he subsequently experienced difficulty with it, becoming exasperated and petulant. At least, that is how I interpret the little outburst of temper in *The Tempest* (Act I. sc. 2),



displayed in the protest, "Who was so firm, so constant, that this coil would not infect his reason?"

That he eventually became the possessor of a thoroughly efficient and powerful set is demonstrated in *A Midsummer Night's Dream* (Act II. sc. 1), where he says, "I'll put a girdle round about the earth in forty minutes!" meaning to imply, of course, that in that time he could successively pick up all the stations east and west of him, until he had completed the earth's circumference. In addition, he had similarly



acquired a very satisfactory loud-speaker, as is shown by the line in *Henry VIII.* (Act IV. sc. 2), "I wish . . . no other speaker."

Such is the story I have constructed to prove Bacspeare's possession of a receiving-set, as fully equipped as anything we have to-day. Let me now go on to show what a zealous listener he was to the daily programmes. Take the Children's Hour. To what else can he have been covertly alluding in *Hamlet* (Act I. sc. 5) when he exclaims, "Oh, my prophetic soul! My uncle!" or in *A Winter's Tale* (Act IV. sc. 2), when he speaks of "songs for me and my aunts"—as clear a reference to the chorus-songs which are sometimes broadcast, and in which the children listening are invited to join, as you could hope to find.

Again, I feel quite sure that Bacspeare had a B.B.C. Symphony Concert in mind when he wrote the line in *The Merry Wives of Windsor* (Act II. sc. 1), "Faith, thou hast some crotchets in thy head now!" while I am equally sure that

(Continued on page 902.)

"Conversion of Ebenezer Mudge"

(Continued from page 896.)

"Knowest thou who it is that speaketh to thee?" came the voice.

"Hang-fino," said Ebenezer with a certain access of boldness, "Spectisha pralljoke."

"Miserable Mudge, listen to me! I have a message of great import for thee."

"B-b-but" stammered Ebenezer, pulling himself together, "How's that blessed ole loud speaker working when the thing's switched off?"

"No earthly power moveth the diphagram."

"The what?"

"Er, I should have said the diaphragm. But hearken."

"I hearkenest," bleated Ebenezer, now thoroughly frightened and feeling that he ought to make an effort to use the language which appeared to be appropriate to the occasion. "Who artest thou?"

"I art . . . confound the man . . . that is to say I am Pangrobolo."

"Who?"

"Pangrobolo, the ghost that hath come to haunt thee if thou takest not care."

"And w-w-what do you want . . . I beg your pardon . . . wantest thou with me?"

"Thou has a flagon upon yonder table by thee."

"Yes—I mean yea."

"What proposeth thou to do with it?"

That brought Mr. Mudge back to earth. The time seemed to him more than ever ripe for what he was in the habit of calling a quick one. "Well," he said, brightening up, "I wast just going to take a spot. Doctor orders it as medicine. I wilt drink thy health, dost thou see?"

"Take yonder flagon, Ebenezer."

Ebenezer obeyed with alacrity. The liquid was just about to splash into his glass when the voice sternly bade him keep the decanter vertical. He remained holding it and gazing towards the loud speaker.

"Seest thou the coalscuttle?"

"Aye, aye, sir."

"Then up-end the flagon and turn its contents therein."

"But . . ."

"Do as I bid thee."

Ebenezer hesitated. There was a Scotch strain in his veins as well as in the decanter which somehow seemed to forbid the proposed libation.

"If thou dost not obey ere I have counted out three thy fate is sealed. ONE!"

Ebenezer looked first at the decanter then at the coalscuttle. He could not bring himself to do it.

"TWO!"

"THR . . ."

Before the EE was out a gurgling noise proclaimed that one spirit was going the way in which the other had ordered. Cunningly he tried to preserve at least a little in the bottom. "Up-end it," cried the voice, "and keep it so until I bid thee replace it upon the table."

At the end of half a minute or so not a drop remained and the required per mission was given. "And that, Ebenezer, is the last flagon that thou shalt ever drain."

"Oh, but I say!"

"The last. If thou obeyest not I will haunt thee with the Seven Hauntings. Thy bank balance shalt shrivel like a leaf in winter; thy feet shall be turned backward so that thy friends wilt not know whether thou art coming or going; thine eyes shall be crossed and thy knees shall knock together with a sound of castanets. I will rack thee with fearsome pains. Thy batteries shalt be filled with atmospherics and thy valves shall go up in blue flames."

"Stop, stop!" cried Ebenezer.

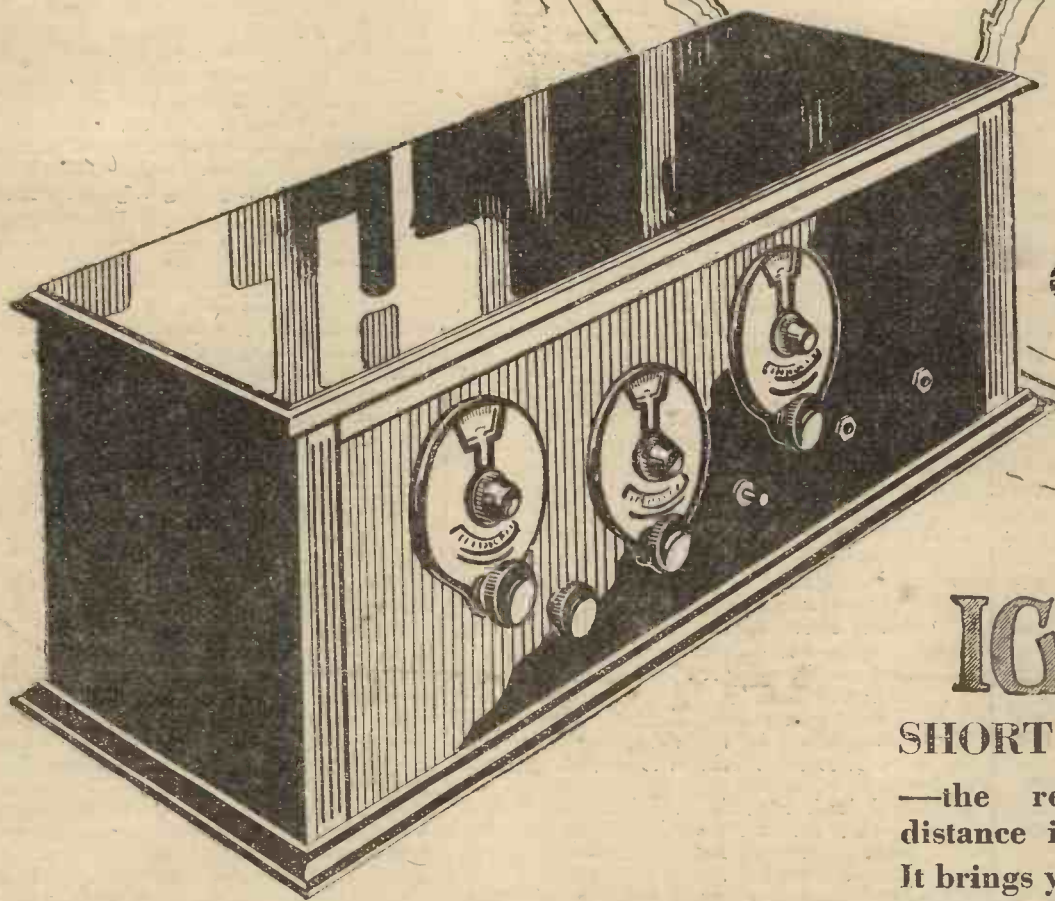
"Thine aerial shall fall down and thine earth develop strange faults. Every station that thou hearest shalt be heterodyned and Pingpango, the Demon of the Sparks, shall ever be with thee."

"Enough," cried Ebenezer, "I surrenderest."

"To-morrow thou wilt sign the pledge and

(Continued on page 906.)

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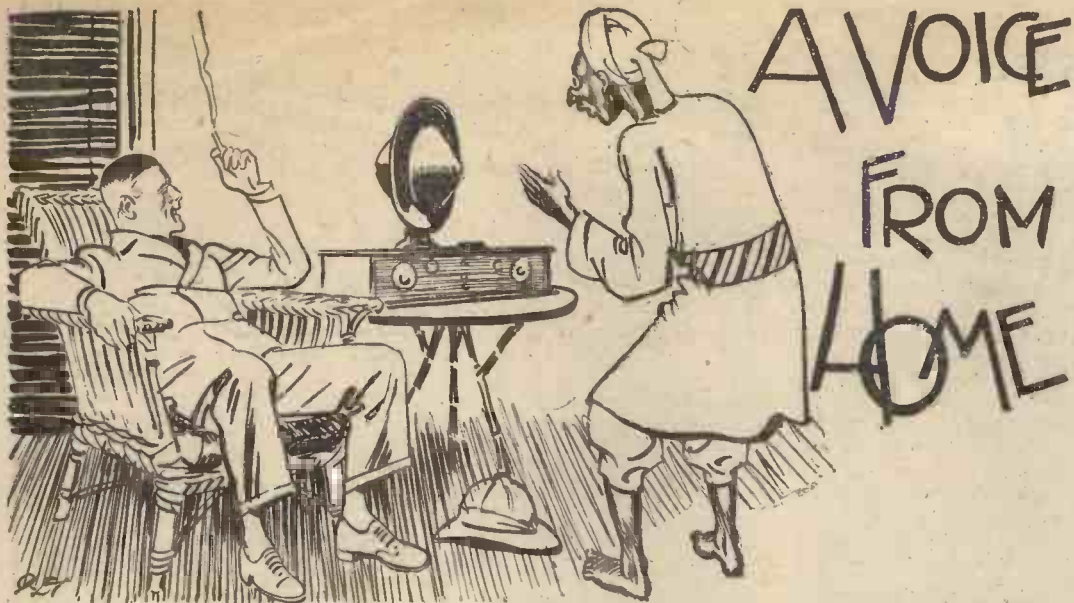


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AWAY in the Central Provinces of India a Public Works Department bungalow perched on the bare summit of one of two hills which formed the pillars of a bund holding back a vast sheet of life-giving water.

With a look bordering on hate Noel Graeham watched the sun rush down behind the purple grey horizon. The day had been particularly hot; the merciless sun had turned the surrounding plains to veritable brick kilns from which issued a mocking mirage of dancing beauty. Dusk was now falling, and with it a welcome respite from the heat of the day.

The range of hills on which Graeham stood appeared to jut out of the plains for no reason. Yet this was not so, for their bleak brown slopes had for generations entrapped the precious rains. After years of contest these waters, swollen with the pride of the Monsoon, had cut their way through the sandstone slopes and wasted their priceless value on an already rain-soaked plain below. Then had come the white sahibs, who shut the gate on this squander, so that now, in the torrid season, this precious gift of nature was being dealt out, down hundreds of tiny waterfalls to the thirsting rice-fields far down in the plains, and thence irrigated off in a thousand little gutters.

From where Graeham stood could be seen the square patches of cultivation, and, framing these, the emerald green herbage growing along the thirst-quenching ditches. He was but a link in the long chain of young Englishmen who, with sun-dried features and frequently homesick hearts, had watched over the stout bund in its fight against the mighty floods of the Monsoon.

And so this evening the sun with its Orient haste rushed to its bed behind the far horizon, and in doing so turned the far flung plains into vast areas of purple grey haze which then rapidly crept up to the distant hills, till alone the summits remained like the tops of skyscrapers in a phantom city of clouds.

Noel Graeham, his hands thrust into the pockets of his shorts, his topi under one arm, stood motionless. The appalling loneliness oppressed him.

At his feet the lake of amethyst blue, reflecting the early stars, kept to its clear outline. Here and there dotted on the smooth surface were vast flocks of duck. Ever and anon these kept rising from the water and in spear-head formation, lazily avoiding the heights, swept over the edge of the bund flitting their way down to feeding grounds among the ditches of the paddy fields.

A bitter expression passed across the young engineer's face and he muttered, "Why come out here and miss everything? Why didn't I get a job at home?"

At the moment the setting sun took its final plunge, and a silence which could be felt settled on the vast reservoir.

A discreet cough roused Graeham from his reverie. He turned to find the perspiring yet smiling faces of two Dak-walas, or postmen. They set down a large wooden box and asked for their receipt book to be signed. "Salaam, Sahib."

"Salaam! What have you got there? Is it for me?"

"Ha, Sahib."

Having signed the book, he dropped the men a half rupee. Pocketing this fortune, they turned off down the hill hoping to reach the village before full darkness arrived.

Graeham looked at the box and then called to his servant. "Koi hai?"

"Sahib." The bearer came running out of the bungalow.

"Open this box quickly."

"Achcha, Sahib," and the good man, feigning enthusiasm, picked up the box and carried it to the verandah, where in a short time a group of curious servants were doing their best to smash both box and contents.

At length, after a free and noisy use of every dialect of Central India, the contents were unpacked, and the bearer, solemnly approaching his master, conveyed the news of accomplishment.

"What is it, bearer?" Graeham asked. "Nai malum, Sahib."

Noel Graeham turned listlessly away from his contemplation of the darkening lake, and walked over to the verandah to inspect the new arrival.

"Good lord, it's wireless!" He bent over a short-wave set and picked out the book of directions. After some minutes of careful study he took out his watch.

"Fetch two of the largest bamboo poles you can find," he said to the waiting servants.

The *mali*, or gardener, rushed off to his godown, to unearth these from his store, and before many minutes had passed, returned bearing the poles in smiling triumph. They were soon fixed up, for their height was not of much moment, as the hill on which the bungalow stood was one of the highest points for many miles.

After an hour of hectic work, the installation of the set was complete, for the Sahibs of the Public Works Department of India are as handy as the proverbial Jack Tar. As the work was nearing completion the deep voice of the cook could be heard audibly whispering to the bearer that dinner had been ready for some time. The latter worthy, after several stage asides, repeated the news to his master.

"Keep it warm, bearer, I'm going to make the Sahibs speak to you from England." An incredulous silence fell on the little band of servants, to whom England was a legendary land away over the sea, which latter few of them had ever seen.

At length in breathless silence the Sahib sat down in front of the polished box. The glimmer from the valves caused a hushed silence among the little knot of servants who discreetly withdrew lest the mysterious spirit from the boxes might imperil the future of their lives. After various checks and alterations suddenly a voice from the loud speaker boomed out.

"This is 5SW (Experimental Station of the B.B.C.) calling—we are now going over to the Carlton Hotel, London for lunch-time music."

Noel Graeham's face lit up with a smile of delighted memory. "Fetch my dinner, bearer." Excitedly he looked over the set. The servants had withdrawn to the black shades of a clump of bamboo, and now squatted in absolute silence, waiting for the "Spirit" to speak again.

No matter what the Sahib would say, in future bunches of flowers would be mysteriously placed at the foot of the loud speaker by the credulous Hindu servants.

A chuckle of delight came from the Sahib. The servants watched his face. Though the young man's face reflected pleasurable excitement, yet there were other emotions, for, now, memories came pouring into his mind. He shut his eyes and before him there rose up the familiar court, the lights, the friendly crowd, while close to him stood a fair-haired girl wishing him luck in his new job in India.

Pleasant dreams almost amount in effect to tangible experience, and so, when at length, yet all too soon, the band ceased the cheerful strains, and that same friendly voice was heard again, some of the young engineer's heart-ache had vanished.

Noel Graeham lay back and smiled.

The Palm Court at the Carlton swam before his eyes. Ghosts seemed to people the darkness in front of him. He looked at his watch. "Funny! They're all having lunch now. Ah, well, now I need never be quite alone—perhaps I may even hear her voice."

He smiled at the set through moistened eyes and lay back in his long verandah chair, lost in thought.

R. B. S. M.

(Continued from page 900, col. 2.)

he was voicing his disappointment over an unsuccessful attempt to broadcast the song of the private nightingale belonging to some Beatrice Harrison of his day, when he sadly repines in *Two Gentlemen of Verona* (Act III. sc. 1), "There is no music in the nightingale!" Also it seems quite apparent that certain prominent actors in his time were enticed from their legitimate sphere in the theatre to perform before the microphone, as witness the line in *A Midsummer Night's Dream* (Act II. sc. 1), which speaks of "certain stars shot madly from their spheres."

Further, it is not too much to infer that at least two well-known present-day personalities in the radio world had their counterparts in Bacspeare's day. His whimsically apt description of *Queen Mab* in *Romeo and Juliet* (Act I. sc. 4) "in shape no bigger than an agate . . ." clearly refers to the Tudor prototype of the B.B.C.'s present dramatic critic, whose meagre and attenuated frame is a constant source of anxiety to his many friends. Similarly, the allusion in *Henry V.* (Act IV chorus) to "a little touch of Harry in the night" is evidently intended to imply the existence of some Elizabethan John Henry.

Finally, Bacspeare was transparently alluding to television experiments when he wrote in *Measure for Measure* (Act II. sc. 2) the words, "his glassy essence—like an angry ape—plays such fantastic tricks," while I think that we may safely conclude that he was summing-up the television position of the day when he observed in *A Midsummer Night's Dream* (Act V. sc. 1), "The best in this kind are but shadows."

And that's that. I end as I began, by affirming that radio undoubtedly was known in Shakespeare's day, an assertion which, by virtue of the hidden lights I have now produced, I trust I have successfully and incontrovertibly Q.E.D'd.

Christmas on the Continent

Germany

CHRISTMAS in Germany is frankly plural. The collective term *Weihnachten* (the old-fashioned form of the plural) is applied to Christmas Eve and the first, second, and third Christmas holidays. It is taken from the original "Holy (or Consecrated) Night," the *Weihnacht*—also known in the more



(Photo. by A. Gross, Berlin.)

A modern Goose-girl

modern expression, in order to distinguish it from the other days, as *Heiligabend*. To dramatic artists and stage performers especially, *Heiligabend* is distinct from all other days of the year, for it is the one day on which they are allowed the luxury of doing "no manner of work." All the theatres and public places in Germany, of course, work seven nights in the week, if not seven days. *Heiligabend* must therefore be indeed welcome to those actors and actresses who have had no other opportunity of "resting" during the year. Not a theatre, not a music-hall, not a restaurant or café is open in Germany on *Heiligabend*. Many German stations will, however, be "on the air" this Christmas Eve long after everything else has closed down. Outside, the streets and countryside will have taken on the stillness which characterises them on the "Holy Night," but, indoors, the festive gatherings around

Christmas trees will appreciate the diffusion of an appropriate Christmas-Eve programme. This Christmas, too, is for all of the German stations except the Funk-Stunde, Berlin (which can boast of six Christmases), the fifth Radio Christmas, and it may be expected that the fact will be duly reflected in the programmes. In detail, the programmes of the individual stations are not yet finally fixed, but in general they will consist of the usual admixture of grave and gay, old and new, and will retain their especial festive character until *Sylvesterabend* (New Year's Eve). Then, for the last time, the candles will be lit on the veteran trees (great care being taken not to set them on fire, for by this time they will have become dry), and the New Year will be acclaimed simultaneously in a dozen studios and a million homes.

The "Weihnachtsmann"

A word about St. Nicholas—for it is St. Nicholas who was primarily responsible for the social side of the Christmas festival. People are often puzzled by the circumstance that St. Nicholas seems to pursue his charitable activities nowadays under a great many pseudonyms. The explanation is that in the case of St. Nicholas, as in that of the *Weihnachtsbaum*, the secular and divine rites or traditions are combined. Knecht Ruprecht—one of the names under which St. Nicholas sometimes appears—is no other than the modern incarnation of the old god of gifts, Wotan or Odin, who, fallen on evil days, has entered the service of his Christian successor, whom he accompanies on his Christmas rounds. When he does so—and even to this day in parts of Lower Austria it is the custom for the two to go together—Wotan supplies the comic relief, at times terrorising the children by his antics, while the almost equally awesome Saint holds a general examination and awards the prizes. The real character of the *Knecht* is revealed by the rhyme beginning:—

*"Wie haben wir den Winter doch gefürchtet,
Als ob er selber ein Knecht Ruprecht wär'!"*

Yet it is quite common for the good old "Santeklas" or "Nikolo" to be greeted as "Knecht Ruprecht" on his appearance on Christmas Eve. Evidently there is a very close collaboration between the two nowadays, since either may combine the offices and characters of both. It is perhaps a wise solution of the problem to call the mystic visitor, when he comes alone, Father Christmas, or the *Weihnachtsmann*.



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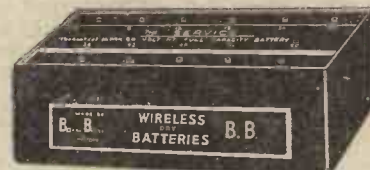
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"O Tannenbaum!"

ONE of the most enjoyable experiences for a visitor to Germany at Christmas time is to hear a good rendering of the famous Christmas ballad, "O Tannenbaum." Listeners to the German broadcasting stations will now be able to share this experience. The words of the song often seem a little incongruous or unexpected, until one remembers that in this respect they resemble the English ballad, "The Mistletoe Bough," which is also calculated to impart a thoughtful shade to an attentive gathering, and does not err on the cheerful side. "Tannenbaum" is, in fact, the song of a disconsolate lover. The first verse begins, "O Tannenbaum, O Tannenbaum, wie treu sind deine Blätter," and is a conventional tribute to the quality of faithfulness exemplified by the Tannenbaum (fir-tree), green alike in summer and in winter. The second verse opens abruptly, "O Mägdelein, O Mägdelein, wie falsch ist dein Gemüthe," and reproaches the fair one with her fickleness. "Du schwurst mir Treu in meinem Glück: nun bin ich arm, du gehst zurück." The third verse, beginning, "Der Bach im Thal, der Bach im Thal ist deiner Falschheit Spiegel," compares her to the mountain stream which only flows when fed by a sufficient rainfall, and dries up with the approach of drought. Altogether, the ballad reads like a genuine cry from a broken heart, and it is impressive to hear its slow and sonorous tones sung by a mixed choir, the female voices joining with equal and chivalrous fervour in condemnation of the unknown fair. One is driven to the reflection that the wounded lover, whoever he may have been (for the name of the author is lost in obscurity), certainly has the last word. It would avail little now for the object of his affection to come forward and say, "Why, I hardly knew the man!"

Hungary.

Folk-Plays.

EVERY country has some peculiar rites and observances not to be found in neighbouring countries, and Hungary is no exception. In the towns the celebrations are not essentially different from those prevailing in Southern Germany. Christmas Day and Christmas Eve, complete with trees and children's presents, are the two main festival days, New Year's Day not being nearly so important. In the country and in far off villages there are still remnants of rites belonging to the old Hungarian Christmas. These, however, are slowly dying out and giving place to foreign ways. For this reason the Hungarian Broadcasting Company looks upon it as a cultural duty to help maintain these rites and to foster them as much as possible.

On Christmas Day and Christmas Eve, the Budapest station will relay services from different churches in the city. In addition to these relays, old Hungarian Christmas plays and customs will be enacted in the studio and broadcast. Christmas Eve will see the performance of two ancient Hungarian folk-plays. One, the title of which is *Kardcsenyi regölés*, dates from the heathen days of Hungary and is of Asiatic origin. In the course of time, however, Christian motives have been introduced. This play, which formerly was performed all over Hungary, is now nearly forgotten. Only in a few far-distant villages can one still witness some half-grown peasant youths taking part in the performance of this last survival of pre-Christian days in Hungary. The actual meaning of some of the symbols contained in the play has become obscure, so that nowadays we are unable to understand them, but the play as a whole seems to be a very valuable historic piece of folklore.

The second play to be enacted on Christmas Eve in Budapest is called *Bethlehem-járás* (Bethlehem Play). It is similar to the Central and West European "Shepherds' Plays" so popular in Germany. The smaller boys in the villages find special delight in performing this play, and it takes, in some ways, the same part in Hungarian

village life at Christmastide as carol singing does in English country places.

Hungary has what is called the typical Continental climate, which means that in summer it is very warm—not to say hot—and in winter it is cold, with frost and snow. Thus, although Budapest possesses a very agreeable climate, especially for those people coming to take the famous waters in spring, early summer, and autumn, at Christmas time a certain amount of snow covers the ground with luck, and most Christmases are "White Christmases," as the Germans say.

Holland.

A Family Festival.

SLOWLY the character of the social observance in Holland of Christmas and its attendant feasts is being changed to fit in with modern conditions of intimate international intercourse, though there still remain sufficient traces of the old-time observances to give to the Season its national character. Undoubtedly the wide use of radio and the popularity here of the British stations have something to do with the change that is taking place. It is still an open question whether this has stayed or hurried the decline of the observance of the Feast of St. Nicholas on December 5 to 6, which here is the somewhat detached beginning of the Winter festivities. Personally I should say that it has delayed it, though there may be some who have adopted the English custom of inviting the heavily-bearded Bishop from Spain at Christmas instead of on his name day. The surprise packets for old and young which it has been the custom for centuries past to make up into all kinds of bizarre forms and leave at the front door without any sign whence they come nowadays often contain a wireless receiving set or some other article or book useful to the radio "fan." The singing of the old topical verses is sometimes done by deputy or to the accompaniment of the broadcast of professional or amateur transmitters, though this still remains chiefly a domestic practice. By the bedside of the children who have put down their shoes by the chimney mother will croon:—

Sint Nikolaas, goed, heilig man,

Trek je beste tabbaard aan;

while the older folks sit eating *banket*, a kind of gingerbread, and chocolate letters which they have received from each other or from outside friends. In some houses it is still the custom for "the holy Bishop from Spain" and his black-servant to pay a visit, when the children repeat their prayers or their Sunday-school lessons, and are put through a mild examination as to their behaviour during the year. If such behaviour has been good there is a small reward with encouraging words, if bad there is, as one may see in Jan Steen's famous picture, a rod with serious admonitions.

Nevertheless, Christmas is a "home festival," as well as a religious one, and the Christmas Tree still plays an important part in most families. As large a tree as the family can afford, or as space will allow, is placed in an alcove or corner, covered with candles and presents, while the rooms of the house are decorated with evergreens and tinsel. On Christmas Eve, when the whole family is gathered together, the candles are lighted and all sit round and sing old carols such as the German "Stille Nacht" or the more distinctively Dutch "De Herdertjes lagen Nachte." Here the radio comes in useful, and we can sing carols at the same time as thousands of others, or listen to other Christmas music from Hilversum, Daventry or Königswusterhausen. Christmas Day is a more strictly religious festival, and all either go to Church or listen to the services of one or other denomination. The K.R.O. programme for this year consists of *Morgenuijding*, or brief daily service, choirs of boys and men, carillon from the Cathedral of Bois le Duc, Church service (presumably a Mass from one of the big churches) followed by "topical" orchestral music, speeches, stories, etc.

This programme is typical not only of the broadcasting in Holland, but of the character of quiet entertainment demanded by the Dutch people. Either on the Eve or on Christmas Day under the light of the candles the presents are distributed from the Christmas Tree by *paterfamilias*. Outside the house, if the weather is suitable, there is skating on every little pond or canal as well as on the great shipping canals along which it is no uncommon thing to go from town to town on skates. For on these long courses old and young alike can soon work up considerable speed. In the cafés, too, which in Holland are open till late hours though with strict rules as to the use of alcoholic liquors, successful attempts are made to get the spirit of Christmas, and many of them are filled with visitors who go from one to another meeting friends at each. The following day is observed in much the same manner, for there is no "Christmas Box-ing" (though tipping on a generous scale is not uncommon) and no "wait-ing," for neither the law nor the temper of the people will permit this.

New Year's Day is also both a religious and a social holiday and more is made of it than in England. The custom of "watching the Old Year out" generally obtains, and there are few homes in Holland that do not echo to greetings as the clock strikes the last hour of midnight. After church the older members of the family stay at home, for there are children and grandchildren to be received when they call to offer good wishes. For this occasion grandfather and grandmother are well supplied with an ample stock of small coins, and it's a poor soul that goes empty away. Very English, one might say some of the family gatherings look at this time. But then, Holland and England are very near neighbours and Christmas means much the same to both of them.

Poland.

Some Old Customs.

CHRISTMAS holidays in Poland differ in their spiritual character from those of other countries. Christmastide here is marked less by general rejoicing and festivity and is regarded more especially as a Holy Day of God's blessing bestowed upon mankind. Therefore the chief characteristic of Christmas in Poland is homage paid to the Divine Child and thanksgiving to the Creator.

Advent is filled with busy preparations, such as putting the house in order, general cleaning, and decorating the homes. It is customary among the people to offer each other Christmas presents and to send wishes accompanied by a piece of white wafer called *oplatek*, blessed by the parish priest, and distributed by him among the parishioners.

Naturally, the children expect their presents to be brought by the legendary Saint Nicolas and put by him surreptitiously under the Christmas tree, which here, as elsewhere, is the essential symbol of Christmas and is illuminated with candles and decorated with silver and golden stars and nuts, with red apples, and all sorts of dolls. The Christmas tree is generally put in the drawing-room or the dining-room, where a sheaf of rye is also placed in one of the corners. Sometimes Saint Nicolas will come in person, covered with snow and loaded with bags full of gifts. Then he calls each child by name, and questions him about his behaviour during the past year, finally handing over a present. Naughty children are warned that unless they mend their ways no gifts will be brought for them, but instead, a birch whip, a sample of which Saint Nicolas carries with him, will be used.

Christmas Eve is notable not only for the pleasant surprises it affords, but also for the great supper, consisting mostly of fish, mushrooms, vegetables, cakes, fruits and drinks. The table is covered with a snow-white table cloth, on which, at each of the four corners of the table, a bit of hay with the *oplatek's* is put. The eldest person of the family—the father,

the grandfather, or the grandmother—takes the *oplatek* and shares it in turn with all the members of the family. Good wishes are exchanged, and all faults and animosities should be forgiven on the night. In the country districts, the estate owner takes the *oplatek* and visits the workers' dwellings to repeat the ceremony and to share, for a moment, their joy. Often the workers and their families are given presents. Even the livestock share the *oplatek*, tiny pieces of which are mixed in their meal. This is to remind the people that on the first Christmas Eve all living creatures gathered on the threshold of the Holy Stable received the blessing of the Divine Child.

The feast finished, the people go to the church, where a special Christmas Eve service, called *Pasterka*, is celebrated. Here the *Kolendys* are sung under the Christmas tree. The word *Kolendy* originates from the Greek *calendar*, which with the ancient Romans and Greeks marked the beginning of the New Year, falling on December 25, the day of "the birth of the invincible Sun-god (*dies natalis Solis invicti*), a reminder of the ancient Persian Mithras. After *Pasterka* the landowners, and now also the wealthier peasants, form a *Kulig*—a gay queue of sledges—driving in mad haste from one village to another, and singing merry *Kolendys*.

The first Christmas day is devoted mostly to attending religious services, and it is generally a day of family gatherings.

The young people in the villages still observe the old custom of wandering with the Christmas Star, which is made of wood or wired fabric covered with red linen or glass enclosing a petrol lamp. The Star is fixed to a long, wooden pole. The boys are generally dressed up to represent notoriety of the village as well as shepherds, angels, and devils. They call

both holidays throughout the country—in towns and villages alike. The first is the day for paying calls and sending wishes, while on the latter people go to church, where on the threshold they buy myrrh, pine-scent, gold, and chalk. This is then carried to the altar, where it receives the blessing and can be taken home. The chalk is used to inscribe on the front door of the house the initial letters of the



The Traditional Sledge Drive through the Polish Villages, after the Christmas Eve Service

three kings that came first to pay homage to Jesus: "K* M* B" (Kaspar, Melchior and Baltazar).

The country folk believe in the great mystery of Christmas Eve, when Divine Might fights the Evil One. It is the night of every possibility, but none should dare to try to discern the mystery. Christmas tales are full of stories of those who dared and perished mysteriously. Ghosts are believed to wander at the crossroads, haunting those whose consciences are not free from sins and have not reconciled themselves with God.

YUGOSLAVIA

Fasting and Feasting

ALTHOUGH knowing and appreciating Yugoslavia, I have never, myself, taken part in a typical Serbian Christmas celebration. A Serbian friend of mine, however, vividly described the scenes for me as they take place in the Kingdom of the Serbs, Croats' and Slovenes.

The Yugoslavian national church is of the Greek Orthodox persuasion, although large parts of the country, Croatia and Slovenia, are completely Roman Catholic. In the south, in Serbia proper, with the capital of the kingdom, Belgrade, in parts of Dalmatia, in Montenegro (now also included in the kingdom), and among those inhabitants of Bosnia that are not of the Mohammedan faith, only one Christmas Day is celebrated—*Rodjenje Hristovo* or *Bozic*, on January 7, according to the civil calendar, but December 25, according to the Julian calendar still in force in the Serbian Orthodox Church. Dwellers in the northern part of the country—Croatia, Slovenia, and part of Dalmatia—have, according to their Roman persuasion and our calendar, much the same Christmas as those in other European countries, followed thirteen days later by the State Christmas. *Rodjenje Hristovo* means "Birth of Christ," but *Bozic* is the more popular name for the festival. Curious to relate, New Year's Day in Serbia is more of a church festival and not nearly so popular a feast as Christmas.

Let me now take you to a small hole in the wall, where we can watch a typical Serbian Christmas without disturbing the participants, and without being seen ourselves.

On Christmas Eve (January 6, according to our reckoning), or *Badnjak* as it is called in the Serbian language, the family fasts, or only takes



A Group of "Kolendy" Singers with the Christmas Star

at every cottage, frighten the inhabitants, and make as much noise as possible. When asked to, they act the *Jaselka*—a mystery play describing the scenes at Bethlehem on the first Christmas night.

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a few light specially-prepared biscuits at midday. In the morning the menfolk, if not otherwise employed, go to church, the womenfolk usually being far too busy at home preparing for the feast to follow later. Perhaps I may remark here that even the poorest peasant puts up a brave show at Christmas, usually spending all his hard-earned savings to have, according to his idea, a worthy Christmas.

Western Europe, or rather Central Europe, is represented by the Christmas Tree, which is now part of every Serbian Christmas, but it is not typical. Still, as in Germany, it is lit in



Winter Sports on Mount Avala, near Belgrade.

the afternoon or evening, the children get their presents, and then the family adjourn to the festive table.

Above the table we find the familiar mistletoe, but without the accompanying holly; also, mistletoe has no effect on the behaviour of the younger generation in the Serbian household, nor does it exhibit that magnetical influence attributed to it over here. Below the table some clean straw has been strewn, perhaps as a reminder of the manger. On the table there is a curious kind of candle, beginning as one stem but ending in three branches. This candle is used for many Christmasses, for, when the first glass of wine is poured out, the master of the house extinguishes the three flames by throwing some of the wine over them. A curious superstition attaches to this: Death will come during the year in the direction of the person towards whom the smoke of the extinguished flames floats! Sometimes (it all depends on local conditions) the smoke rises straight up into the air, which means good luck for all.

Of the long and heavy *menu* which is *de rigueur* on Christmas Eve in Serbia, I only wish to describe the two most typical dishes. Following the soup, *Sarma* is served. This is a kind of roly-poly, consisting of three different kinds of meat with rice and seasoning rolled up into the leaves of a sort of *Sauerkraut*. The more often this dish is warmed up the better it is supposed to become. Sufficient is, therefore, made to feed the family, and the many guests that "drop in" on Christmas Day.

The last course of the dinner proper consists of a kind of *Kugelhupf*, a round, dryish cake with a hole in the centre, round which is placed raw wheat, money (in rich families gold coins), and anything else one wishes to have plenty of during the next year. A single gold piece is baked in the cake and whoever gets it should have special luck all the year round. Then a sweet called *Koljivo* is served. This consists of boiled, crushed wheat, with milk, honey, and grated nuts, cooked in some kind of a mould, and then turned out on to a plate and covered with sugar. It is nearly always taken to church and blessed before it is considered ready for eating. Then, last but not least, wine flows plentifully during the whole evening, black coffee is served, and singing and other amuse-

ments while away the time till the "small hours."

The next morning, Christmas Day, sees the whole family going to church at about ten o'clock. At eleven or so, congratulatory calls are paid and visitors received. Nobody goes away again without having tasted an abundance of delicious sweet things. Sweets seemed to me Serbia's greatest national delicacy, but they are so sweet—imagine young green walnuts preserved in pure syrup of sugar and then eaten sometimes with more sugar! They taste heavenly! But oh, one's teeth!—With the sweets is served *Sljivovic*, the national liqueur, which is a kind of *Zwetschgencasser*. At midday more feeding, mostly *Sarma*. On Christmas Eve no calls are paid and guests are seldom entertained, but on the day itself every house is open.

The midday meal begins late and ends later still. Then comes a rest and in the evening more feasting. I was laughingly told that on the 26th, our Boxing Day, the main preoccupation of the master of the house was to think of the amount he had spent, and that of the lady of the house how to buy sufficient food for the coming days. The 27th is still a kind of holiday and then work begins again. New Year's Eve and Day are celebrated, if at all, much in the manner of other countries.

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Were hung with flags. "So grand!" an Anode
said.

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A Jigger jigger, vowed he could dance all night!

The band Conductor soon Relayed an air,

A pretty young Electron with her hair

In Waves, who had a most Magnetic face,

Then Oscillated with Undamped grace,

Watched by admiring Batteries of eyes,

The while a Diode praised her to the skies.

The Dull Emitter quite cheered up and bounced

About Watt-Hour the supper was announced.

He put a Pancake Coil upon his Plate,

For Beverage (Aerial) he had to wait,

And, as his thirst he wanted to assuage,

He soon began to Choke with utter rage!

A Wander Plug then wandered to his side,

Bringing some Currents, and these Amplified

Their meal. The guests enjoyed the ball, no

doubt;

They danced until the stars all Faded Out!

LESLIE M. OYLER.

(Continued from page 900.)

if thou shouldst ever transgress again . . ."

"Spare me!"

" . . . things too horrible to speak of will befall thee. Ebenezer, dost thou promise?"

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Christmas in the Swiss Alps

By J. D. STRANGE

A WHITE Christmas is never a matter of doubt out here. Usually by the end of November, at the latest, the earth and all thereon is covered with its mantle of virgin snow. Then comes the hot Alpine sunshine, and as it shines down on the fields, lanes, and snow-covered branches of the pine trees, it is easy to imagine that one is in truth in the land of the fairies. For the children it is indeed a Paradise, and even we older folk manage to secure a maximum of enjoyment in this little mountain village, for, although it is no St.

For the festive season, the whole village is in gala attire, and this year the excitement is going to be intense. For some considerable time the natives have been labouring on a huge ski jump. Wood for it has been cut from the surrounding pine forest and the whole thing has been scientifically constructed by local experts. This labour of love is to be officially opened on Christmas Day, I am told, by one hundred of the best ski-jumpers in Switzerland, and with a "Piste" of 140 feet set at a truly terrifying angle, and a sheer drop of a further 130 feet, we should have some exciting fun watching these expert jumpers. Of course, Noël would not be complete without its Christmas procession, and already the natives are preparing their costumes for the masquerade. The native is very like a child in his love of dressing up, and on this occasion all the world is full of a cheery good humour and a strict determination to throw dull care to the winds.

A deeply religious people, their first duty of Christmas Day is to visit the local church for early morning service, and this done, they are free to enjoy themselves as much as they please. I well remember the procession of last year. Walking proudly in front, cloak thrown back displaying his very best uniform and revolver holster, was the local "gendarme." Immediately behind him stepped three gentlemen whose costumes smacked somewhat of those worn by the ancient Britons—fortunately enough the sun was shining brightly, or I fear these stout fellows would have felt the cold somewhat. Next came some decorated "Traîneaux," containing members of the "Ski Klub," village cowmen in their quaint rural attire of tiny embroidered coats with only half sleeves, plentifully be-plastered with brass buttons; and one or two shopkeepers' sledges. There followed a noble cavalcade of Hussars, a brave sight in their glittering uniforms, broad sabres carried across their shoulders, and above all brass-bound helmets sparkling in the sunlight. Immediately behind these, tramped the village

(Continued on page 908.)



A hundred yards from the writer's chalet. The village carpenter's hut with a mound of snow on its roof.

Moritz, or Davos, we have ski-ing on the many fields everywhere, two skating rinks, luge runs galore, and a bobsleigh-run down through the main village street.

This last sport is by far the most exciting, and the English visitors usually give the natives a close race in the Christmas "Grand Course de Bob." Picture to yourself the long street, three miles from top to bottom, as steep as the roof of a house, and with about four bends in it, these same bends banked to a height of several feet. Then on Christmas Eve the whole course is watered, the bends hammered down with shovels and then watered, the whole freezing solid over-night. On the day of the event the different teams are started off at intervals of three minutes, each heavy bob carrying its load of four hefty sportsmen, number one steering, whilst the three men behind him swing backwards and forwards to his cry of "Un, Deux, Trois-BOB!" and as they all come forward to the word "BOB!" the machine is driven ahead in great leaps and bounds. A speed of seventy to eighty miles per hour is easily averaged, and one mistake of the man in front, whose hand controls the leaping runners under him, would send the team over the banked bend, and into a shop window perhaps. Not a very nice thing to contemplate, but I fancy the added spice of danger gives us a tremendous advantage over the safely prepared bob runs of the big winter sports resorts.



A typical snow scene, with the "Pic Chaussey" in the background.



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(Continued from page 907)

band, ruddy-faced young men of the countryside, who, if they lacked anything in musical talent, more than made up for it by sheer force of wind and earnestness of purpose. Incidentally the two trombones lent a healthy suggestion of spirit to the chargers immediately ahead. The rear of this imposing *cortège* consisted of a motley crew of merry-makers, headed by the local "Jodler Klub." Everybody who could cram himself into a costume of some sort or another was present: old dames in false noses, young men with beards ranging from fiery red to dapple grey, and maidens coyly hiding their beauty behind the weirdest of masks—a cheery throng indeed—how could one help loving the Swiss in his native element? After touring the whole village, this joyous procession made its way to the skating rink, where the band regaled us with further selections from its *répertoire*, and the "Jodler Klub" treated us to some of the quaint yodelling ditties so peculiar to the Swiss mountain folk. I have been told that these high altitudes breed a peculiarity in the natives' throats which enables them to sing as they do, in a manner almost impossible of imitation by the lowlander; and this is not difficult to believe.

In the evening the "Patinoire" is illuminated by countless multi-coloured fairy lamps, and dancing on the ice is indulged in to the strains of an orchestra hired from the valley below. Last year a friend of mine, living in an hotel immediately overlooking the rink, frequently carried his eight-valve super-het. to the edge of the ice, and—marvel of marvels—we were able to skate to the stirring music of the B.B.C Dance Orchestra, coming through as if we were actually in the studio at Savoy Hill. After dark, every hotel, pension, and chalet is profusely illuminated with coloured Chinese lanterns or fairy lights, and last of all comes the great event of the day—the Christmas Tree.

The "Arbre de Noël" is a tremendous national institution. Everyone, children and grown-ups, looks forward to this grand *finale* to the Christmastide. Weeks beforehand the decoration of the tree is commenced. Glittering tinsel is wound round each tiny branch, spark-



The Village from which this Article was written.

ling imitations of fishes, apples, oranges, and bananas are hung everywhere, whilst hundreds of small candles are secured wherever possible. Then, at a given signal, the youngest child in each household is given the privilege of lighting the first candle. Soon the whole tree is a blaze of

twinkling little lights, and the family gathered round this sparkling miniature pine, commences to sing all the old Swiss *chansons*—songs taught them in their childhood days, closely resembling our own carols.

And so to bed. But to us Englishmen, scattered abroad in far-off lands there comes always the heartache and longing for home. To our



Difficulties which "Pere Noel" has to contend with in Switzerland; deep snow on the roofs, and most awkward chimneys.

minds come unbidden pictures: of a large fire, a family before it; a glass of good English ale; the kiddies awake in the small hours of the morning, eager to inspect the contents of their stockings, turning the quiet of our sleep into a very bedlam of excited noise. Christmas dinner, goose, chicken, or turkey, and afterwards the Christmas pudding brought in by cook to the sound of vociferous cheering, the flames leaping joyfully over its cheery brownness. Even a Swiss Christmas palls beside this picture. Still, we English do our best to imitate it. Stockings are hung up—my little daughter of five has filed a request to "Père Noël" for a pair of skis—though how the old gentleman is going to get them down the twisting chimney of our little chalet is beyond me; a Christmas pudding is to be manufactured somehow, and last of all we are going to have carols—from England.

Last year our chalet was invaded by patriots intent on listening to the Carol Service so kindly sent us by the B.B.C., and we have had numerous requests for "a repeat" of this free audition again this year. Overnight my five-valver will be carefully overhauled, accumulators recharged, connections tested, etc.: and then, picture us gathered round the loud speaker, listening to the bells of Old England, and joining heartily in the lovely carols which, all being well, will come to us out of the limitless ether. So shall we be back once more in "England's green and pleasant land," one with you all, a happy family of Englishmen enjoying our Christmastide, joined by the magic bond of wireless.

A Wireless Queen

To its many "Queens" republican America has added yet another—a "Wireless Queen," in the person of Miss Lite Korbe. To achieve this distinction she had to write an essay of not more than one hundred words on the subject of "What Wireless Means to Me" (hers was the best of the essays submitted), and also to prove reception on her own apparatus of not less than ten short-wave transmitters.

Whispers and Wings

An Astounding New Discovery by Two Scientific Men.

By E. V. KNOX ("Evoc" of Punch)

HENRY BUTTERWICK and I are not interested, as so many people are, in electrical science alone. We are lovers of Nature as well.

Quite often Henry Butterwick has said to me, "I wonder, old boy, how it is that all these minute electrical vibrations and kilowatt-nots pass through the atmosphere from point to point without making any disturbance there, or having any effect on the things that they butt into on the way?"

And I have replied:

"Henry Butterwick, old boy, I often wonder that too."

But I doubt whether we should ever have made the great discovery which I am about to relate, if besides occupying ourselves with the wonders of wireless telegraphy in our studios, we had not also been constantly up and following the wild life of the woods, and listening to the call of Nature, in the Great Outdoors. Especially do Henry Butterwick and I make a habit of watching birds.

Rising in the dark by the light of a stable lantern, we hastily dress ourselves, with fingers numbed by cold, and then, wrapping straw round our boots, and putting twigs and grass in our hair, so that we may walk softly and approach unseen, we visit those haunts where we know by long experience we shall be most likely to see the comings and goings of our rarer feathered friends. The ways of the twinkle and the fern bunting, the habits of the woodchuck and the gate-warbler, are well known to us. We have photographed the pond pipit on her nest; and when spring comes, we are the first to detect, as we hear the familiar "Go-and-get-your-hair-cut-father," proceeding from a clump of gorse, that the sweetest and prettiest of our migrants, I refer to the bottle-chat, has returned to the land.

On some days, rising early, as I have said, Henry Butterwick and I spend the whole morning and afternoon sitting in a patch of briar, with a telescope in one hand and a packet of sandwiches in the other. Or again, we will go out and sit in a reedy bog. At other times we dig a hole in the ground near a clump of nettles, and hide there so that nothing but our heads protrude above the ground level. For hours and hours we wait thus, motionless, to be rewarded in the end, now by the sight of a sandpecker laying its egg on the bare ground, now by that of a yawfinch feeding its young with the larvæ of snails or of worms.

The utmost silence is necessary. Now and again a puff-spider will spin its gossamer web across Henry Butterwick's face, or the iridescent strand of a vetch-beetle will fall upon my nose. Occasionally, in the winter time, we get frozen in, and have to be dug out by the rude peasantry, and thawed over a rude charcoal fire.

A few weeks ago, Henry Butterwick said to me:—

"It is a long time, old boy, since we investigated the habits of our feathered friend the smike."

"The greater or the lesser smike, old boy?" I said.

"The lesser," he replied. "Surely you remember, when we were lying inside that wurzel heap only last Tuesday, we heard a hen greater smike cracking acorns against a stone."

"The lesser smike be it then," I said, "old boy."

And I had a sudden idea.

"Why not," I said, "take our new portable wireless set—the one with the headphones, I mean—so that we can listen to the afternoon programme from Savoy Hill while we are watching the smike?"

The following afternoon accordingly found us comfortably ensconced in the hollow which we

had dug out for ourselves at the edge of a small horse-pond, our bodies nearly covered with wet autumn leaves and mould. We were in luck. We had scarcely been more than two or three hours in position, the time pleasantly wiled away by a missionary talk, a lecture on health, and several musical interludes from our little radio machine, when we perceived not one, but a whole bevy, or gush as it is called, of lesser smikes, on the bough of a juniper-tree some distance from the pond.

In intense excitement we watched them huddling together as if to avoid the winter cold, now and then ruffling up their feathers, and now and then ruffling them down again. At one moment a little beak would be moved this way or that, and then again it would be still. Or a small head would be cocked on one side, or a tiny "cheep-cheep" would be heard.

It was then that Henry Butterwick originated the theory which is destined, I verily believe, to throw the ornithological world into convulsions.

"Do you suppose," he said to me in a tense, low whisper, "that the lesser smike is possibly sensitive to aerial vibrations?"

"How so?" I answered, in a whisper, if possible, tenser and lower than his. "It cannot possibly hear anything."

"But may not the electrical magnetism in the ether subconsciously affect its subliminal psychopathy, by means of some process whereof we have no cognisance?" he hissed.

"Surely not, old boy!" I gurgled quietly.

He had scarcely spoken when the music of the Savoy Hill Orchestra took the place of the talk on home-cookery which had immediately preceded it. What was our amazement to perceive, earnestly watching the smikes through our telescopes, that even as Henry Butterwick had suggested, the smikes seemed to respond in some curious way to the alteration of the programme. Bird after bird, they began to shuffle slowly on the bough, raising first one claw and then another, and slightly shaking their shoulders from side to side. Still watching them intently, we noticed also that instead of a mere huddled mass, their grouping had broken up into distinct pairs on the bough, each pair swaying rhythmically together. There seemed not the faintest doubt that in some mysterious way the organism of the smike is tuned to the wavelength of 21.0. *The lesser smike is susceptible to jazz.*

The short monograph that Henry Butterwick proposes to write on this wonderful manifestation of the Essential Harmony between Mankind and the Bird Soul indicating the Universal Oneness of Nature in all its Phases, whether psychic or mechanical, is now in course of preparation.

Is it not probable that before many years are out, we shall be able with the co-operation of the B.B.C. to gain such an insight into bird psychology as we have never dreamt of achieving before? May we not be able to influence the migration, the nesting habits, the songs, and the morals of birds, by means of the wireless? To prevent the marlet, for instance, from preying on the tipcat and the buffin, and to bring back the snowlew again to her forsaken eggs?

Traditional Toasts

Here's a health to you and yours,

Likewise to us and ours;

And if ever you and yours

Need help that's in our powers,

We'll do as much for you and yours

As you have done for us and ours.

Here's to you, as good as you are,

And here's to me as bad as I am;

But as good as you are and as bad as I am,

I'm as good as you are, as bad as I am.

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Via Ether

ALTHOUGH, perhaps, I should not, I cannot help referring again to-day to Radio Maroc, Rabat, of which, since I last wrote, I have been receiving the transmissions almost nightly at loud speaker strength. On a recent evening I followed its programme for somewhat more than an hour, and was surprised at the power of its signals, in view of the fact that the station itself has advised me that it is only rated at 2 kilowatts in the aerial! So soon as Göteborg has closed down, move your condensers back very slightly, and I feel sure that you will tune in to its wavelength, which, by the way, was announced from the studio as 414 metres. All announcements are in French, and given out in the usual manner familiar to hearers of the PTT stations. In the intervals, which, contrary to custom, are short, you will notice a peculiar kind of slow ticking metronome, striking roughly two beats per second. It differs from the usual sharp tap, inasmuch as the sound conveyed is that of a piece of metal striking a loose slat, although it is not similar to the "double knock" of the Bavarian transmitters. On Wednesday last for some twenty minutes I listened to the Arab concert, which consisted of curious ululating sounds made by a native to the accompaniment of what I took to be a one-string fiddle. As a little went a long way, I switched off before the end of the recital. On the following evening I visited the Cabaret de la Chaumière, which boasts of a very respectable jazz dance band. The transmission was so clear that I had no difficulty in hearing disjointed French sentences from the audience, as well as the rhythmic shuffle of the dancers' feet. I have now added Radio Maroc to my log as a distant station to be relied upon on most evenings. Its strength can be compared to that of Göteborg or Katowice.

It may interest you to turn to-day (Friday, December 14) to Radio Toulouse at 8.30 p.m. Although, as I have already mentioned in these notes, from this station we get mostly gramophone records, the studio gives us many opportunities of hearing works which are seldom given on the stage. On this evening we are being treated to excerpts from Massenet's opera, *Le Jongleur de Notre Dame*, produced for the first time at Monte Carlo in 1902. The book is based on a tale by Anatole France (*L'Étui de Nacre*), who, in his turn founded his story on a mediæval miracle play, *Le Tombeur de Notre Dame*. The principal parts in the opera are for men, but in New York, in 1908, Mary Garden established a feminine interpretation of the part of Jean the Juggler. If Mozart appeals to you in a greater degree, at this hour Radio Paris offers an alternative in a studio performance of *Il Seraglio*, or a visit to Naples will give you Cimarosa's two-act opera-bouffe, *The Secret Marriage*.

By this date you will find both Magdeburg and Stettin comfortably settled on their common wavelength, and by the addition of the former studio Berlin will greatly enrich its programmes. At 8 p.m. to-night, from either of these, you may receive a relay from the Magdeburg Municipal Concert Hall of the *Matins*

of *Marienburg*, an oratorio by Fritz Volbach. In conjunction with the Amundsen Memorial Festivals to be given by the Swedish and Norwegian stations, bear in mind that from Bergen, or through Oslo and possibly Motala, you may capture an English talk by Lincoln Ellsworth, the American Arctic explorer and aviator. You would do well to tune in towards 10 p.m., as the time, at moment of writing, is still indefinite.

Friday, as a rule, is the day booked by many stations for the relay of foreign programmes, and by their help you may, when connected to one transmitter, travel considerable distances without twirling the dials of your receiver. You are safe in turning to Hamburg on this day for a tour, and if you can reach out to Moscow or Leningrad, these Russian stations will give you for a period of an hour or so one European programme—namely, the most favourable to be relayed on that particular evening.

To-morrow (Saturday, December 15) Radio Paris adds an hitherto "unbroadcast" work to its repertoire, *L'Éducation Manquée*, by Alexis Chabrier, a French composer better known by his operas, *Gwendoline* and *Le Roi malgré lui*; he died when fifty-three years of age in 1894. At 4 p.m. to-morrow (Saturday) do your best to pick up Nürnberg or Kaiserslautern. Two-way communication is to be established at that time between the Bavarian capital and PCJJ, Eindhoven. Greetings will be sent to Munich by the Dutch experimental studio, and the concert transmitted will be taken by Munich and its relays. All announcements will be made in Dutch, German, English, and French. At 7 p.m. the Bavarian stations will turn to Berne for a Swiss programme.

Dresden at 7 p.m., or, failing this studio, Leipzig, promises a two-act "Singspiel" *Der treue Soldat* (The Faithful Soldier), a work which at different times, is advertised under such various titles as *Der Vierjährige Posten*, or *Der Vergessene Wachtposten*, or again, more clumsily, "The Soldier who kept his Post during Four Years!" From Rome at 7.45 p.m. we may expect an outside broadcast of Verdi's *Otello*, based on Shakespeare's Tragedy; the book was supplied to the composer by his colleague Boito; it scored a triumph at Milan in 1887. Radio Toulouse, on this evening, may also be relied upon for gramophone excerpts from *Werther*, which, although of French origin, first saw the light at Vienna on February 16, 1892; it is an opera of a tragic character for which Massenet wrote some of his most beautiful melodies. Finally, at 10.15 p.m. if pep, vim, and go are desired to wind up the Continental tour, switch over to Budapest; you will find the Brit Boys' Jazz Band at the Hotel Britannia.

Sunday (December 16) from 7.55 p.m. onwards I have kept clear for Hilversum, for the studio offers us a complete performance of Verdi's *La Traviata*. Judging by the quality of the other productions presented by this station, the broadcast should range among the best to be picked up on that date.

For light entertainment at 7.10 p.m. try for Königsberg, from which station you should hear the merry strains of Jean Gilbert's three-act operetta *Die Keutsche Susanne* (The Coy Susannah), based on a French vaudeville which took Paris by storm in its day. Jean Gilbert, by the way, in private life one Max Winterfeld, a child of Berlin; the German capital still claims him. He has written about sixty musical comedies.

Talking of Berlin reminds me that Jackie Coogan, on terminating his engagement in England; will cross to the Continent; I am informed that he will appear at a Frankfurt music hall and later at the *Admiralspalast*, Berlin, in the new Revue. In both cities, I am assured that his stage performances will be relayed to the broadcasting stations.

To Radio Paris we may turn on most evenings for interesting studio broadcasts; Monday, December 17, will prove no exception to the rule, for on that date at 8.15 p.m. the station will commemorate the 6th anniversary of the death of the famous poet-dramatist Edmond Rostand. In order to secure a perfect interpretation of excerpts of his *Cyrano de Bergerac*, *L'Aiglon*, and other works, Radio Paris has specially engaged André Brunot, and other artists of the Comédie Française. On the following evening this station gives us a performance of *La Mégère Apprivoisée* (The Taming of the Shrew). It is not the version by Hermann Goetz which has figured so frequently in the German programmes, but an opera of more recent date from the pen of Charles Silver, and produced at Paris as late as 1924.

Copenhagen, also, will warrant two visits, for on Sunday (December 16) at 7 p.m. we are to be taken over to the Casino Theatre in the Danish capital for a performance of *Lilac Time*, and again on Thursday (December 20) at 6.30 p.m. for Mascagni's *Cavalleria Rusticana* as presented by the Royal Opera House, Copenhagen. Finally, if you have thirty minutes or so to spare on Tuesday, December 18, at 9 p.m., swing your condensers round to Brussels, to hear a new dance band, the Minstrels' Club Orchestra, in the latest syncopated melodies.

JAY COOTE.

The influence of Christmastide in the Bavarian programmes already becomes apparent on Tuesday, December 18, when *Christelflein*, by Humperdinck, will be relayed from the State Opera House in Munich. The whole of the literary programme of the week from December 18 to December 25 will be devoted solely to themes closely related to Christmas and the Christmas spirit. Dr. von Habersbrunner is the able compiler of the Munich literary programmes. Among the items we find a Christmas story by Selma Lagerlöf, the Swedish authoress, and a vivid description of Christmas in the Arctic.

Notable items in the evening programmes will be *The Bells of Innisfree* on December 19; which should specially interest Scots listeners, as it is a Scottish melodramatic work for speech and orchestra. Thursday, the 20th, will see a performance of the famous *Weihnachtskantate*, by Bach; Friday, the 21st, a studio adaption of the Flemish author Timmermann's play of the *Heilige Drei Könige*.



*.. and Pam heard
the Children's hour
just the same.....*

TO little Pam the long hours of illness did not seem so long, for every day there were new items of interest to amuse her, and, of course, the daily welcoming of the wireless Aunties and Uncles. It was the doctor prescribed the daily dose of radio. "Get an Ormond 5-Valve Portable," he said; "You'll find it the handiest radio set in the world: its easy to carry, easy to tune and its far in advance of any other portable for tone, volume and choice of stations." So Daddy brought home the Ormond 5, carried it upstairs, placed it on the table, switched on and in came the Children's Hour. As Daddy says, "It's so jolly handy. You can take the Ormond 5 anywhere and always be sure of a wide choice of programmes." The Ormond Five-Valve Portable Receiver forms a most ornamental addition to any room and will receive normal broadcast programmes over a very wide radius.



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Broadcasting and Languages ITALIAN

(Broadcast by Signor Breglia from the London Station, through Daventry, on December 10).

“Buon Natale!”

Anche in Italia il Natale continua ad esser la più bella festa dell'anno: una festa piena di poesia, d'intimità e di una raccolta allegria familiare. Questa festa, da noi, ha anche un altro nome: si chiama Ceppo; perchè una volta c'era l'abitudine di metter un ceppo (Yule log) sul focolare, il dì del Natale. Un'abitudine, ahimè! quasi scomparsa, in quest'età prosaica del gas e dei caloriferi, ma che ha lasciato la sua traccia nella lingua; per cui ancora oggi diciamo: “Che ha ricevuto per Ceppo?” volendo dire: “Che regalo ha avuto per Natale?”

L'albero di Natale non è forse così comune come in Inghilterra. Ma nelle case in cui non c'è un albero c'è almeno un presepio (manger). Quest'ultimo è un'ingenua rappresentazione della nascita di Gesù Cristo, fatta di legno, di sughero (cork) o anche di semplice cartone, con varie figurine di gesso dipinto.

Le vacanze di Natale (parlo, s'intende, delle vacanze scolastiche) son molto brevi, perchè i nostri scolari non hanno che quattro giorni soltanto. Purtuttavia quei quattro giorni sembran sufficienti a non poche mamme italiane, le quali, com'è facile immaginare, son più che mai affaccendate durante queste feste, avendo un mondo di cose a cui pensare: pranzi, regali, scambi di visite e d'auguri.

In quanto agli auguri, se questi si fanno a voce, si dice generalmente: “Buon Natale!” a cui si risponde: “Grazie, altrettanto a lei!” Ma per gli auguri fatti per iscritto, non c'è in Italia la bella varietà di biglietti che si trova qui in Inghilterra; e perciò ben sovente non si usano che delle semplici cartoline illustrate, su cui si scrive, per esempio: “Tanti buoni auguri per le feste” oppure “Auguri cordialissimi per il Natale e pel nuovo anno.” Talvolta si manda soltanto un biglietto di visita, con due paroline brevi brevi: “per augurio.” Volendo poi rispondere, si può scrivere: “Ringraziandò, ricambio gli auguri cordialmente.”

Translation of sentences set on December 10:—

(1) If anyone comes, tell him to leave the message with you.

Se viene qualcuno gli dica di fare a lei l'imbasciata.

(2) If you could do it I should be very grateful to you.

Se potesse farlo gliene sarei molto grato.

GERMAN

Deutsche Weihnachten

Weihnachten ist in der gesamten Christenheit ein grosses Fest der Kirche, der Familie und der Kinder. Die deutschen Weihnachten sind all das und noch viel mehr, denn in der Weihnachtsfeier ist beim deutschen Volke eine Symbolik verkörpert, worin ein tieferinnerlicher Charakterzug der germanischen Rasse an den Tag tritt.

Was bei der deutschen Weihnachtsfeier äusserlich zunächst in die Augen fällt, ist der Weihnachts oder Christbaum in seiner Universalität und das Christkindchen von den Kindern verehrt, weil es ihnen Geschenke bringt. Der Christbaum fehlt nirgends. Gleichviel ob die Familie reich oder arm ist, ob sie in einem grossen Schloss oder in einer kleinen Hütte wohnt, sie muss zu Weihnachten einen Christbaum haben, ja in der Wohnung eines kinderlosen Pärchens oder gar im möblierten Zimmer eines Junggesellen fehlt er selten; denn ohne ihn mangelt diesem Feiertag etwas Wesentliches in der Empfindung des Deutschen. Und so ist es kein Wunder, dass eine englische Abendzeitung meldet, dass für Berlin allein \$30,000

(Continued on page 914.)

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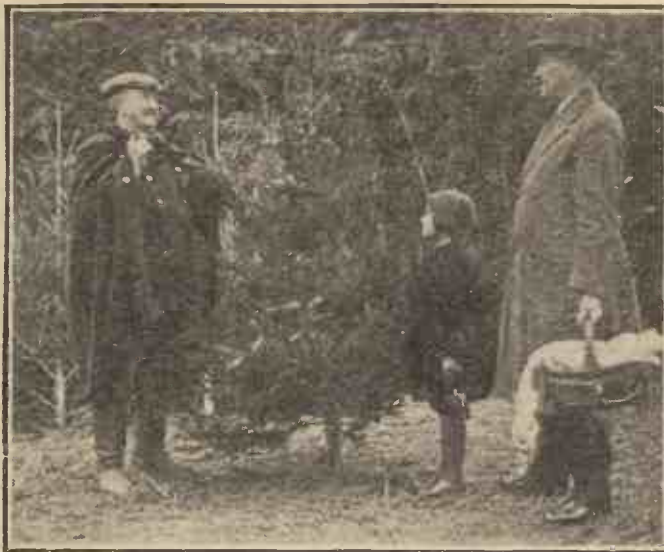
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TERMS MODERATE. STRICT SECRECY.

(Continued from page 913.)

Tannenbäumchen aus den Wäldern von Schleswig-Holstein, Bayern, Thüringen, dem Harz und Schwarzwald bestellt sind, die in 800 Eisenbahnwaggons in diesem Jahr zur Hauptstadt befördert und zum Preise von 0.50 M. ab verkauft werden.

Was für eine Bewandnis hat es denn eigentlich um diese allgemeine Sitte?—Sie ist uralte, allerdings nicht in ihrer jetzigen Form; denn verbürgte Mitteilungen über den Christbaum von heute findet man nicht vor dem Anfang des XVII. Jahrhunderts. Aber wohl schon zu vorchristlichen Zeiten bestand bei den Ger-



manen der Gebrauch, zur Zeit der Wintersonnenwende immergrünes Tannengezweig an die Türe ihrer Hütten oder an den Eingang zu ihren Gehöften zu stecken. Es war ein Zeichen dafür, dass die Natur nun langsam wieder erwachen werde und ein Symbol zur Begrüßung der guten Geister, die zu dieser Zeit nach altem deutschem Volksglauben ihre geheimnisvollen Umzüge durch die Luft hielten.

Im Laufe der Zeit erschien das Tannengezweig als Schmuck der Wohnstube und endlich als Christbaum, der mit rotbackigen Äpfeln und vergoldeten Nüssen behängt wurde als Vorboten einer reichen Ernte. Nüsse waren von jeher ein urdeutsches Fruchtbarkeitssymbol. Erst viel später kamen die brennenden Kerzen hinzu. Sie versinnbildlichen die Wiederkehr

(Continued from page 915.)

I looked at it; it was a species of cupboard or sideboard, or if there existed such a thing as a "baby" wardrobe, this was it.

From the blow I had given it, it still rocked slightly on its short legs. I have no doubt that in a sales room catalogue it would have been qualified by many alluring adjectives followed by two letters—a.f. (all faults). From its war-worn appearance it had suffered greatly in the course of its existence.

"Well, of all the . . ." began my host, but at that moment he saw Aunt Martha appear from the kitchen.

"I thought I heard your laugh," she said, "as you came in." (His laugh, indeed!) "Now, I've got a surprise for you."

"Another one, as I feared," murmured Huggins. "I'm in for it again."

The old lady beamed as she came towards us. "This," she said, patting the cause of our troubles, "is for Tom's new wireless set."

"For my what?" shouted Huggins.

"To put it in," quietly rejoined Aunt Martha. "I was told it would be just the thing. It's an antique. The man assured me it was real Honiton."

"Don't you mean Sheraton?" I interposed. "Not that it looks . . ."

"That's what I said, young man," she replied. "Don't you think it is?"

It seemed a pity to disillusion the poor old soul, but I sympathised with Huggins deeply;

des wachsenden Sonnenlichtes und zaubern den Sonnenglanz des nächsten Jahres vor; gleichzeitig sind sie ein Symbol des geistigen Lichtes, das mit der Geburt Christi in die Welt gekommen ist. Auf diese Weise ist Weihnachten ein Fest des Lichtes, der Hoffnung, der Freude und Liebe geworden.

Die Verlegung der Christmette inmitten der Nacht soll andeuten, dass aus der Finsternis der Tag, das Licht und das Leben erwächst, und da denkt man insbesondere an Christus, das Licht der Welt.

Der schon im alten römischen Reich bekannte Gebrauch, sich zu Neujahr zu beschenken, wie er heute noch bei den romanischen Völkern in Italien und Frankreich besteht, ist in Deutschland und protestantischen Ländern zu einer Weihnachtsbescherung geworden, eine ebenfalls symbolische Sitte. Sie soll den Wunsch, dass dem Beschenkten Glück und Wohlhabenheit zuteil werde durch die Tat unterstützen helfen.

Mit den deutschen Weihnachten ist noch eine andre uralte Sitte verknüpft. Um die Zeit der Wintersonnenwende war es Gebrauch, süßes Gebäck in allerhand Tierformen herzustellen. Ursprünglich waren die Tiere selbst geopfert und gemeinsam bei Mettrank verzehrt worden. Da gab es reiche Gelage, an denen man die durch die Luft schwebenden Geister teilnehmend währte. Man stellte ihnen sogar Speisen an un-

gerstörten Orten bereit. Eine besondere Art des mit Tierformen bedruckten Gebäcks dient heutzutage mit zum Behängen des Christbaumes.

Den Gebrauch, zu Weihnachten den Freuden des Tisches besonders zu fröhnen, mag die Tatsache erklären, dass in erstchristlicher Zeit dem Weihnachtsfeste 40 tägige Fasten vorangingen.

Deutsche Kinder jubeln dem Weihnachtsfeste wochenlang entgegen und beten täglich: Christkindchen komm in unser Haus!

Wenn die Kinder schlafen gegangen, dann öffnet das Christkindlein leis das Fenster und kommt geflogen herein in der Engelein Kreis.

O. S. RUNDFUNK.

he was now on his knees, tugging at the two doors which had jammed in transit.

"Candidly, I don't," I said to Aunt Martha, "and I'm sure it's not Chippendale, Rococo, Buhl or Queen Anne."

The old lady looked annoyed. "Then what is it, pray?" she asked angrily.

"Late Tottenham Court Road," shouted Huggins, as, with a mighty pull he opened the doors. "And—oh, my sainted aunt—it's a dis-bowelled ice safe at that!"

We gathered around the baby wardrobe; there was no doubt about it, for to its walls still clung scattered scraps of the original zinc lining.

"Oh, well," said Aunt Martha, "it's a bargain all the same, and I'm sure we'll find a use for it."

I clasped the hand that Huggins reached out to me behind the old lady's back, and gave it a sympathetic squeeze.

"According to the dictionary," I whispered to him . . .

"Oh, hang the dictionary," he replied. "Help me to push this ghastly thing into the back-yard."

Now, the scandalous part of the whole business is that I found they were my valves he had broken. On his way out, he had called at my house and, contrary to all instructions, had been allowed to walk unaccompanied into my wireless den! The fact that Huggins offered me his Aunt's latest acquisition in compensation only added insult to injury,

Bargains

By J. G. A.

ACCORDING to my dictionary, a bargain is "a gainful transaction," but the reference book does not make it clear whether the deal is to the benefit of the buyer or seller. Now, am I to understand that if I buy an object at a price lower than I consider it to be worth, I have struck a bargain? Not necessarily, because it all depends on whether I require the object or not. It is the marked-down ticket which so often induces us to buy things we do not want, and many of us suffer from this failing.

Believe me, if it were not for his Aunt Martha's weakness in this respect, Huggins, a neighbour of mine, would be many pounds in pocket. The dear old soul—she is very deaf, as you know—possesses many sterling qualities, but should she live to be a hundred she will never understand the true interpretation of the word bargain. She is always yielding to temptation and has the discouraging habit of bringing



"Aunt Martha brought back a taxiful of junk."

home to his house, after almost every trip to town, some implement, some object, some wireless thing which she has snapped up at a sale or in a bargain basement, and which she fervently believes will one day turn out to be just what her nephew is looking for.

Huggins stopped me in the street the other day and, so to speak, wept in my bosom. His house was being cluttered up with a litter of useless paraphernalia, which, whilst capable of gladdening the heart of a marine store dealer, caused him considerable anxiety; it overflowed into his wireless den, and would in the very near future compel him to transfer his affections to some outdoor hobby.

"My dear fellow," I said soothingly, "surely it can't all be useless."

"Of course it is," he retorted, "at least to me. Now take, for instance, Monday. Aunt Martha brought back a taxiful of junk; there

were coils some two feet in diameter, half-a-dozen black slate panels with switches, and measuring instruments such as ammeters, voltmeters, and others, all of which had lost their entrails, or had had their insides removed by an unscrupulous dealer. The driver deposited the full cargo on my doorstep, leaving it to me to clear up whilst Aunt Martha, whose face was wreathed in smiles, unblushingly admitted that she had bid for Lot No. 135 at a sale under the impression that it was a china toilet set. 'But it's all the better, Tom,' she said. 'Look at the bargain I got. With all this you'll be able to build yourself a real wireless set,' and she actually patted those coils affectionately. Do you know, old man," he added reflectively, "I believe there was enough stuff in that cab to allow me to erect a small Daventry of my very own. Absolutely useless, and the old lady bragged that she had only given £4 for the whole lot."

"Sell it again," I suggested.
 "Sell it? I've never been able to sell anything Aunt Martha brought back. I've tried once or twice secretly, but the old lady has such a good memory that she would notice if anything were missing out of the collection. I would not hurt her feelings for the world, and that's just the trouble of it all. She is always so anxious to please me. Why, only a week ago she brought back a big wire cage, one of those out-size affairs capable of housing some twenty parakeets or so, a huge contraption which a carman had dumped down on the pavement in front of the house."

"And don't you keep a bird?" I inquired.
 "No, and she knew it, but she said that she had read somewhere in one of my wireless papers that you could reach out for distant stations with a cage aerial, and couldn't I put it up somewhere on the roof?"

I did not know how to sympathise with him; for the moment this last incident had taken my breath away.

"Look here," Huggins said as if suddenly inspired. "Come back home with me now. You haven't been to our place for quite a long time. I was just going to try out a new set for which I've managed to borrow —"

"You're always borrowing something," I interrupted, with a chuckle.

"Yes, but only for an hour or so . . ." He hesitated a second, then added: "I want to try out this new receiver with two good valves, and a new pentode. I meant to ask you if you would mind . . ."

"All right," I interrupted cheerily, "I'm with you."

On reaching the house he let himself in with his key. I followed him into the dark hall, and as I stepped over the mat I stubbed my toe against some piece of furniture resting against the wall. Quite by accident I stumbled against Huggins, who in his turn collided violently with the hat rack.

"Heavens, those poor valves," he groaned, but he did not use the word "poor."

I heard them as they rolled on the floor. Wireless valves do not bounce, and, as ill-luck would have it, they missed the rug. Huggins spoke in terms uncomplimentary to manufacturers who failed to make their valves bump-proof.

What he said as he switched on the electric light was not so much brief as to the point, but I gathered from his wild and flowery statements that some "fifty shillings had gone west"—and all through—what was the beastly thing?

Propped up against the wall was a piece of somewhat weather-beaten furniture, a cross between —

"What's that?" asked Huggins angrily. "It was not there when I left the house."

(Continued on page 914, col. 3.)

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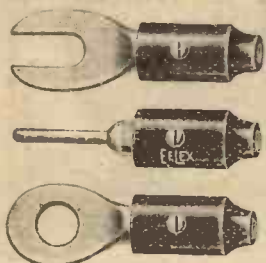


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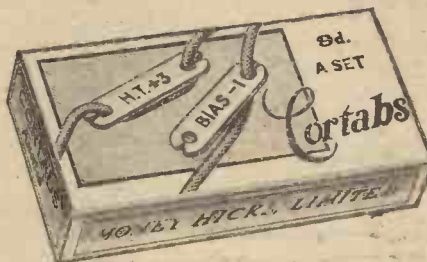
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A Bush Camp Holiday in N.Z.

By J. T. CRAWFORD

THE darkness fades as the sun rises over the bush-clad hills, and slowly and deliberately begins his steady climb across the blue fields of heaven. His first rays pierce the flaky, sleeping clouds of dawn and turn their solemn grey to creamy white. The heavy dew sparkles on the thick grass and drips from the low fronds of the fern; timid bush flowers shyly open their delicate petals and disclose their beauty to the new-born day; the pohutakawa, or Christmas tree, flaunts its gay red flowers among the green leaves like flames of fire; birds flutter in the trees and having washed their tiny throats with glittering dew, carol sweet notes; a tai calls from the flax bush between his sips of honey; a flock of shags fly past towards the lake.

The camp stirs, and soon a fire crackles and sparks and its slender spiral of smoke rises into the fresh morning air. Trousled-headed pyjama-clad figures roll from the warmth of their blankets: one hangs a battered mirror on a ti-tree and begins to shave, the others, rejoicing in their freedom from such toilet, descend to the crystal stream below the camp, where they wash in icy water before donning their old rough clothes; one goes further upstream for unsoapy water to make the breakfast tea with, and he startles a fantail from its nest in the bank and sees a young trout rise and snap at a floating fly.

Breakfast is soon ready. The amateur cook dolés out rashers of fried bacon on to the tin plates of his fellow-campers and apologises for the absence of eggs. The pannikins are filled with strong tea tasting of smoke, the billy is set back on the fire to heat the washing-up water, and the men get to the important business before them.

Breakfast over, the dishes hurriedly washed, the blankets rolled, and the camp generally straightened up, the rods and guns come out. The day is a little too bright for good fishing, but all sportsmen, especially fishermen, have to be optimists, and three of the campers make for the lake with their creels on their backs and their rods in their hands. The other two decide to take their shot-guns into the bush in quest of any thing shootable.

The day is nearly over. The sun sits balanced on the crimson horizon for one last look at the wild bush scenery, and then amid much blood he dies and topples over. The soft, restful light of evening covers the hills, the bush, and the camp. The bright flames of a rata fire leap from the banks of the icy stream. A sun-burnt young man is wiping the last tin plate with a grubby dish towel, another is emptying out the basin of soapy, greasy dish water. Two others are seated on logs pulling an oily rag through their guns, and a fifth is unrolling the blankets in the tent.

The men finish their several chores and gather round the fire, pipes are lit and tongues begin to wag. One landed four rainbows in that little bay in the lake where the waterfall is; one hooked an enormous fish, twelve pounds if he was an ounce, but the beggar got away; one swears there are no fish in the lake because none seem to fancy his flies; one got a rabbit near the lake and saw a cock pheasant rise just out of range, but he wouldn't have fired anyhow, as it was out of season.

"Where's the box of tricks, Sandy?" asks someone. A man rises and goes to the tent. He returns with a portable receiving set.

"What's the time? Nine thirty. Let's see if we can get Sydney."

A plug is inserted, a knob twisted, a dial adjusted, and the men leaning forward are able to hear, rather faintly, perhaps, but nevertheless distinctly, the voice of the Sydney announcer giving the news bulletin.

Another adjustment and in comes 1YA Auckland with plenty of volume. 2YA Wellington with an orchestral concert, 4YA Dunedin is

silent, but 3YA Christchurch is broadcasting jazz.

Someone suggests bed, the pipes are knocked out, the fire is made safe for the night, and the blankets sandwiched with healthily tired bodies.

The moon suffuses a dim light on the silent bush and the Southern Cross gleams brightly above the sleepers. Then a mopoke begins his plaintive, monotonous cry. His call goes unheard, except by a pair of opossums who, in the course of their nocturnal activity, have discovered the camp and are investigating it—unheard, except by these, for the men are happy in their dreams of struggles with twelve pound trout, record bags of rabbits, wonderful running shots, and pursuits after wild pigs as huge as giants.

A Jamaican Christmas.

By M. Lucie-Smith

FOUR thousand miles away from home Christmas is still Christmas, but with a difference. Robins, holly, mistletoe, snow, and Christmas carols are legends to the natives of Jamaica, treasured curiosities depicted in the pages of magazines and on Christmas cards from England.

Some, indeed, have journeyed to northern countries and come back knowing a great deal and ready to impart still more, but few have dared to stay and brave the rigours of an English or American winter.

Nevertheless, Christmas is kept with great enthusiasm, though not perhaps with quite all the traditional accompaniments to which you are accustomed.

Imagine a hot tropical morning, the temperature well over 80°. We might start our Christmas day with a bathe and a laze in the sun afterwards, but we shall still end it with turkey, plum pudding, and mincepies, though these will be eaten on the verandah, the sky powdered with stars and a golden moon peeping between the branches of a palm tree, while an orchestra of crickets and whistling frogs supplies the music for the feast. At the dance which follows, we will take our partners to sit in the garden or on the little jetty of the hotel, with the sea lap-lapping against the piles and the ever-watchful sharks cruising around, watching hopefully for a probable share of Christmas dinner of scraps thrown overboard from some ship in the harbour.

The humbler folk, too, have their diversions. They parade the town all night singing Christmas hymns and carols to the beating of drums, while the little black street-urchins sell fireworks and blow tin whistles. And in the harbour, rowing boats go up and down from the pier beside the market, carrying merrymakers, until the dawn brings the opening of "Christmas fair." It is the event of the year and a joyous meeting-place where everyone goes to exchange greetings and buy Christmas dinner and bunches of oranges and flaming poinsettias with which to decorate their homes.

In some of the country districts a day-long masquerade is held after the style of the old-fashioned English mummers. This is called a "John-Canoe," and every passing motor-car is held up and made to pay toll by a motley crowd wearing hideous masks and waving banners. The wine of the country—namely, rum—in all stages, chiefly the unmaturing, heady spirit known as "cow-neck," flows freely, the revelry frequently being kept up until dawn flushes the skyline.

There are no chimney-places for Santa Claus, and Father Christmas dispenses with a sleigh and comes by motor-car, but though he is hard put to it find a single fir-tree, every child in Jamaica has a paper cap and a pile of toys, for Christmas is Christmas the world over.

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[By "SPARKLET."]

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This is a serious case, and you may not have appreciated its gravity. Wireless receiving-sets are most sympathetic—a fact that cannot be over-emphasised. Therefore when your set howls, other sets in the neighbourhood howl also. It is possible that they so affect their owners that, as a result, they howl in unison with their set, but perhaps not with the same deep feeling of pity and affection. It is open to doubt.

A psycho-analysis of the set is indicated clearly, for the evidence points to a fear-complex. At some time either you or some other person has aroused some fear in the set. Therefore when you approach it there is the self-expression by the only means it possesses—the howl. You, yourself, at some time in your life must have thus expressed your soul-complex. The most seemingly trivial incident may lead to it. For example, to step with the unshod foot upon the tack or the inverted drawing-pin, or to find that the postman has left a letter marked in block letters "O.H.M.S. Inland Revenue." All these small things build up a complex. You must, in future, be very kind to your set. Do not deprive it of L.T. or H.T. Very likely it has a reaction-complex in its aerial circuit. This should at once be removed. If this is impossible, give it a small frame aerial as a Christmas present. Ask advice from your neighbours if it should howl again. They will certainly be willing to help you and will tell you where to go.

[An alternative would be to make a present of the set to a friend who contemplated exploring either the Sahara or the Polar regions. You could then buy a real set.]



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This type of Dual Coil is made with pins for plug-in connections as specified. A change-over switch is embodied which immediately gives you short or long wave reception. No coils to change.

PRICE COMPLETE, 30/- PER SET

Send for Descriptive Leaflet W/R.

STONE MFG. CO.,

108, Great Saffron Hill, London, E.C.1.

Tel.: Hol. 4844.

Components or Cigars?

Suggestions for Gifts that will be appreciated

A COMPLETE receiving set is perhaps the kind of Christmas present that only rich uncles and fairy godmothers give; but those in search of something rather less ambitious might do much worse than give wireless components to any friends or relatives who are keenly interested in reception and transmission. In the present note I am going to suggest a few gifts that would be very warmly appreciated by the long-distance enthusiast.

Valves, to begin with, are always acceptable, for they are not everlasting. Further, few of us can afford to possess all of the new types that we long to have. Before presenting valves it is just as well to make sure, as one can by discreet inquiries, whether the intended recipient uses a two, four or six-volt accumulator. One may also with advantage learn something about his receiving set or sets in order that one may have an idea of the type that is most likely to be welcomed. Most wireless men will be very glad to receive one of the special detector valves that are now on the market. These improve the performances of most sets since they are astonishingly good either as leaky-grid or anode-bend rectifiers. Their very low impedance makes for much better quality in transformer-coupled receiving sets. For short-wave receivers they are excellent owing to their non-microphonic qualities. A screen-grid valve, again, is the kind of present that is sure to be appreciated by the long-distance man; or a pentode, an excellent valve for use in long, medium or short-wave D.X. reception, since with it a single low-frequency stage works wonders.

Heaps of other suggestions occur. The short-wave man will appreciate highly a set of efficient, up-to-date coils; to those who specialise rather upon the medium and long waves, one might give a tuning unit, so designed that the change over from one band to the other is made by means of a switch. Every wireless enthusiast delights in good variable condensers, for they are the making of any receiving set. A suitable maximum capacity for the short waves is .00025 or .00015 mfd., and for the other wavebands .0005 mfd.

Fixed condensers are components that one never seems to have enough of. A very pleasant surprise on Christmas morning would be a set of six with the following capacities: .0001, .0002, .0003, .0005, .001 and .01 microfarad. Or one might give two or three of the larger capacities used for shunting purposes such as 1 or 2 microfarads. These can be obtained at small cost with paper dielectrics or in more expensive and very welcome form with mica dielectrics. Gridleaks and anode resistances, again, in various values are things that one is always wanting. Why not a set of good-quality gridleaks from 1 to 5 megohms, or wire-wound resistances of values such as 10,000, 20,000, 50,000, 100,000, 200,000 and 500,000 ohms?

Every long-distance man who possesses a selective receiving set must use slow-motion dials—or long to have them. Well-made dials of this kind are obtainable at a variety of prices. Other ideas are a set of fixed or semi-fixed filament resistors, a volume-control device, a first-rate low-frequency transformer, an output transformer, or a midget variable condenser of precision type for reaction control purposes.

A good wave-trap makes an excellent present to anyone who lives near a main broadcasting station, whilst a wavemeter will always find a warm welcome. If the person that you have in mind already possesses a wavemeter for the upper and medium bands, why not give him one for use below 100 metres?

Many long-distance enthusiasts are still using (and, incidentally, cursing) old-fashioned, heavy-weight telephones. A pair of up-to-date phones which are neither ear traps nor head crushers would cause the donor to be remembered with gratitude every time that they were worn.

R. W. H.

SHORT WAVE STATIONS

M.	Kc.	Station
85	3529	Zürich (Radio Club) EH9XD.
80	3750	Nogent-sur-Seine (F8AV). 0.4 kw.
70	4285	Springfield (Mass.) WBZ.
70	4285	Vienna (OHKZ). (Transmits on SUN. for 15 minutes after each hour from 5 p.m. till midnight).
67.65	4434	Doberitz (AFK) 5 kw. MON., WED., and FRI., 10-11 a.m. and 6-7 p.m.
68.04	4542	Los Angeles (California) 6XAL. 0.5 kw. from 12 midnight.
66.04	4542	Cleveland (Ohio) 8XF. 0.5 kw. from mdnt.
65.18	4602	Newark (New Jersey) 2XBA (S.W. of WAAM). Transmits between 12 midnight and 5 a.m. TUESDAYS, THURSDAYS and SATURDAYS.
65.19	4602	San Diego (KFBC).
64	4697	Richmond Hill (New York) WABC. 0.5 kw.
62.5	4800	Pittsburgh East (Westinghouse Electric) W8XK 40 kw. Daily from 10 p.m.
62	4838	San Francisco (Cal.) 6XAR. 0.5 kw. from 12 midnight.
61.03	4913	Council Bluffs (Iowa) 9XU. 0.5 kw.
61	4918	Paris (Radio L.L.) CC.
59.93	5003	Bound Brook (N.J.) 3XL. 30 kw.
58.5	5128	New York City (2XE). Relays WABC. Weekdays 11 p.m. to 5 a.m. SUN. 3.50 p.m. to 5.30 p.m.
56.7	5291	Nauen (AG) occasionally after 6 p.m.
54.02	5553	Columbus (Ohio) 8XJ.
64.02	5553	Coney Island (N.Y.) 2XBH. 0.15 kw.
64	5555	Brooklyn (N.Y.) WCGU. from 11 p.m.
53.54	5603	Portland (Oregon) 7XAO. 0.1 kw 1 a.m.
62.02	5767	Cincinnati (Ohio) 8XAL. Relays medium wave transmissions from 11.50 p.m. except Friday and Sunday.
51	5852	Casablanca. ALN. Weather reports, 9.30 a.m. and 8.30 p.m.
51	5882	Bergedorf (Germany) AFL, 3 kw.
50	6000	Karlsborg (Sweden) SAJ.
50	6000	Moscow, R.F.N. TUES., THURS. and SAT., 12 noon-1 p.m.
44.4	6755	Vienna, 0.24 kw.
45	6818	San Lazaro (Mexico) XC51, 8 a.m. and 8 p.m.
43.5	6896	Rome (Italy) IMA. SUN. 4-6.30 p.m.
42.8	7009	Constantine (Tunis) 8KR. SAT., 10 p.m. to midnight.
41.45	7237	Motala (Sweden) ikw.
40.2	7463	Lyons (Rhône) YR. Daily except SUN. from 4.30 to 5.30 p.m.
37.65	7568	Doberitz (AFK). MON., WED. and FRI., 6-7 p.m.
37.5	8000	Ibarakiken (Japan) JHBB.
37.01	8165	New York (WJD).
37	8108	Radio Vitus. WED., FRI. and SUN., 9 p.m. to 10 p.m.
37	8108	Vienna (EATH). MON. and THURS., 9.30-11 p.m.
33.5	8555	Nairobi (Kenya) 7LO. Daily 4-7 p.m. SUN., 7-8 p.m.
32.9	9110	Perth (W.A.) 6AG. 11.30 a.m. and 4 p.m.
32.5	9231	Sydney (2BL).
32.5	9231	Copenhagen 7MK. TUES. and THURS.
32.5	9310	Paris, Eiffel Tower FL. Time Signal 8.56 a.m. and 8.56 p.m.
32	9375	Zürich (Radio Club) EH9XD.
32	9375	Melbourn (GLO) SUNDAYS, 7-8 p.m.
32	9375	Berne (Switzerland) EH90C.
32	9375	Detroit (Mich.) 8XAO. 0.75 kw.
31.5	9523	Helsingfors. 0.2 kw.
31.4	9554	Hilversum, Holland, PCJJ. TUES. 4 p.m. SUN., 11 p.m.-2 a.m. THURS. 4 p.m.-8 p.m. 11 p.m.-3 a.m. 4 a.m.-7 a.m.
31.4	9554	Schenectady (General Electric Co.), N.Y., 2XAF, 10 kw. (Aer.). SUN., WED. and FRI., no transmission. MON., 11 p.m. to 5 a.m. TUES., 11 p.m. to 4.30 a.m. THURS., 11 p.m. to 5.30 a.m. SAT., 11 p.m. to 5 a.m. Relays WGY.
31.25	9600	Bergen L.G.N.
30.91	9706	New York (2XAL). TUES. 12 midnight to 5 a.m. WED. 12 midnight to 2 a.m. FRI. 12 midnight to 4 a.m. SAT., 12 midnight to 3 a.m., 0.5 kw.
30.75	9756	Agon. TUES. and FRI., 10 to 11.15 p.m.
30.7	9772	Madrid (EAM).
30	10,000	Bergen (Norway) L.G.N.
28.5	10,526	Sydney (2FC).
26.92	11,144	New York (2XAG).
25.6	11,750	Chelmsford (SSW) 15 kw. Aer. DAILY (except SAT. and SUN.) from 12.30-1.30 p.m. and from 7 p.m.-12 mdnt.
25.53	11,718	Winnipeg (Canada) CJRX. 2 kw. 10.30 p.m. to 12.30 a.m.
24.5	12,244	St. Assise (France) FW.
24	12,500	New York (2XAB).
22.99	13,049	Houlton (Maine) 2XAA, after 11 p.m.
22.83	13,140	Oakland (California) 6XG.
22.8	13,158	Fort Wayne (Indiana) WOWO, 1 kw. after 11 p.m.
22.2	13,513	Vienna, 0.24 kw.
22.1	13,575	Richmond Hill (N.Y.) 2XE (S.W. of WABC), after 11 p.m.
21.96	13,661	Schenectady (General Electric Co.) 2XAD. SUN., 10.30 p.m. to 3.30 a.m. MON., 7 p.m. to 9 p.m. WED. 11 p.m. to 4.30 a.m. FRI., 11 p.m. to 4 a.m. Relays WGY WED. and FRI.
18	16,666	Kootwijk (Holland) PCLL. WED., 2 to 4 p.m. and occasionally on MON. and FRI.
17.2	17,441	Nauen (AGC).
17	17,647	Bandoeng, Java (Radio-Malabar) ANH, 30 kw. WEDNESDAY 12.40 to 2.40 p.m.
16.02	18,726	Rocky Point (Long Island) 2XG. MON. and FRI., after 7 p.m.
15.74	19,059	Bandoeng, Java (Radio Service) ANE. WEDNESDAY 12.40 to 2.40 p.m.
15.5	19,354	Nancy (France), 9 to 10 p.m.

Last Week's Log

By "THE SEARCHER"

IT is cheering to be able to record good reception during the week under review, with a considerable improvement in many directions. Atmospheric conditions were absent until the Saturday night, when a few were noticeable, owing probably to the big change in temperature experienced at the week-end. The barometer remained high all the time and my experience is that such a state of affairs is more often than not accompanied by good wireless conditions.

During November heterodyning became poisonously bad upon the medium wave-band; there were nights, in fact, when it was a matter of difficulty to find a handful of stations that could be received with any real pleasure. The climax in the matter of mutual interference was reached at the end of the month, and since then there has been a very great improvement. On Saturday, December 8, for example, no fewer than eighteen stations were received at loud speaker strength with good quality and without accompanying heterodynes. On one night during the week (the Wednesday), spark signals were more of a nuisance than they have been for a long time now. On other nights, though, very little trouble was experienced from them. There is, I think, no doubt that spark jamming is becoming considerably less prevalent. When one compares conditions to-day with what they were only a year ago one comes to the conclusion either that less and less use is being made of spark transmitters or that operators are becoming more careful to stick to their own wavelengths and to avoid the use of over-tight coupling which leads to broad tuning.

It is rather difficult to say which has been the best station of the week since so many have been good. Hamburg has probably been as consistent as any as regards both quality and signal strength; his only "off" night was the Thursday, when a slight heterodyne was noticeable during his relay of foreign stations. Dublin, too, has been remarkably fine, whilst Budapest, Milan, and Vienna could generally be relied upon for loud speaker reception. Toulouse is not coming through quite so strongly as he was, and he suffered from serious jamming on both the Monday and the Wednesday. I do not find Frankfurt quite what he was a little while ago, and he was badly jammed on the Friday night.

Munich is a good transmission just now on most nights, but reception of Langenberg varies considerably in both quality and strength. Katowice continues to be strong on some nights but weak on others. Brünn was coming through very well indeed at the end of the week, though little was heard of him in its earlier part. Stuttgart, though his quality remains excellent, was not up to his best strength, except on the Saturday night. Breslau has been good during most of the week and his relay Gleiwitz (the infant that is often mightier than its parent!) is generally worth going for. Hanover was a tremendous signal on the Saturday night and quite good on several others. So strong was this station on the Saturday that no spark interference was noticed during reception, despite the proximity of his wavelength to the lower one used by shipping. Cologne has been strong and steady. Nürnberg was a star performer on several occasions.

From the shorter-wave French stations I have had very good reception during the week. The best of these are Lyons, Limoges, Rennes and the 238 metre Bordeaux. Every now and then one gets passable results from some of the others such as Montpellier, Lille, and Juan-les-Pins.

On the short waves there are signs of improvement, though conditions are still rather poor. This time last year excellent reception was obtainable from practically every short-wave station of note; to-day it seems to be largely a matter of luck whether one is able to hear anything or nothing from many of the stations that one goes for. Fading is certainly very bad and quality on the poor side, except from those stations which make daylight transmissions on wavelengths below 25 metres.

The Properties of Wireless Components

By L. RUTLEDGE

Part V.—The Valve as an Amplifier

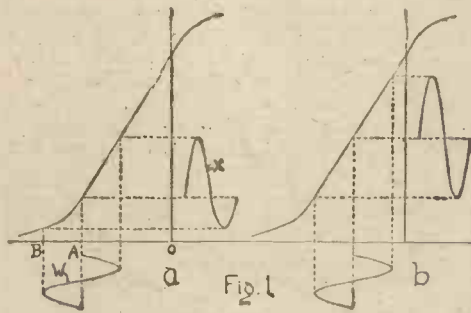
THE valve, besides acting as a rectifier, can also be made to amplify signals applied to its grid circuit, and this is perhaps its most important function. At the outset, however, it may be as well to explain that it is not the valve itself that supplies the energy required to boost signals from one magnitude to a higher one. It is the batteries that do this, and the valve is only used as a relay, or a control device enabling correct use to be made of the battery energy.

We have explained how the grid of the valve, being nearer the filament, is more effective than the anode in controlling the anode current, and how this gives rise to the constant of the valve known as the "voltage amplification factor." The result of this is that if we apply an alternating voltage to the grid circuit of a valve suitably arranged for amplification we shall theoretically have a voltage equal to μ times the input voltage available across the anode circuit, where μ is the voltage amplification factor of the valve. We say theoretically, because in actual practice we must be satisfied with an amplification somewhat less than that calculated, for reasons we cannot explain in detail here. If a transformer is used to couple the first valve to a second one, we can more than make up for this loss by using a transformer with a step-up ratio. If resistance or choke coupling is used this step up is generally not possible, and the overall amplification per stage will be somewhat less than the voltage amplification factor of the valve.

A valve can be used as an amplifier either before or after the incoming signal has been rectified. In the first case it is known as an H.F. or "radio frequency" amplifier, and in the second as an L.F. or "audio frequency" amplifier. Each method has its own peculiar problems, particularly if several stages of amplification are employed, but the principles of the operation of the valve are the same in each case.

Now, what are the conditions under which a valve must work so as to be an efficient amplifier? It is obvious, first of all, that it must be capable of functioning without introducing appreciable distortion into the signals. To

render this possible, the valve must have a fairly long straight portion to its grid volts—anode current characteristic (at least, in the case of an L.F. amplifier), and it must be operated so that it is always working on this straight part. Only in this way can wave form distortion be eliminated. This will be seen by reference to Fig. 1. At *a* we have a pure sine wave, *W*, applied to the grid base of the curve of an H.F. amplifying valve, the steady grid potential of which is represented by *OA*. From the curve it will be seen that the resulting wave form after amplification, shown at *X*, is distorted.



The upper halves of the waves are correctly reproduced, but the lower halves are suppressed to some extent, showing that partial rectification has taken place, and hence distortion has been introduced. The reason for this partial suppression of the lower halves of the waves is that when the effect of the incoming wave is to increase the negative potential of the valve we begin to run off the straight portion of the curve. Thus from *A* to *B* we are working on the lower bend. The effect is obviously due in this case to the use of too much grid bias, and in *b* of Fig. 1 this has been reduced, so that we no longer run on to the lower bend.

The result is that distortion due to this disappears. Incidentally, if the negative grid bias were further reduced, or became positive, there would come a time when we encroached on the

upper bend of the curve, and distortion would then appear again, but this time due to the partial suppression of the upper halves of the waves. It is obvious that the value of the grid bias applied to the valve has a big effect on its working, and unless the correct bias is applied distortion will often occur. In Fig. 1*a*, the effect of applying too much bias has resulted in the mean value of the anode current increasing when the incoming signal arrives. This is shown by the fact that at *X* the portion of the waves above the horizontal mean anode current line are larger than those below. Had there been too little bias, the mean anode current would have fallen. This provides us with a very useful method of determining whether an L.F. amplifying valve is being worked on the straight part of its curve. If we place a direct current milliammeter in the anode circuit of the valve, then when a signal arrives, if the pointer of the instrument moves, from the position it occupied initially, it shows that we are running on to one or other of the bends in the curve. If the pointer kicks upward, too much bias is being used, but if it kicks downwards, the bias must be increased. If no alteration of the bias will cause the needle to remain stationary, the valve is being overloaded, and the only cure is to reduce the signal strength, increase the H.T. voltage or use a valve capable of dealing with larger inputs.

The input applied to an amplifying valve is generally known as the "grid swing," and it is really the total amplitude of the applied signal from its most negative to its most positive value. The maximum input that a valve will handle is known as the maximum permissible grid swing. If we stipulate that for amplification the grid should never become positive (this is generally the case), and if the curve begins "bottom bending" at a grid voltage of, say, $-V$, then the maximum permissible grid swing is V volts, and the input should never exceed this if distortion is to be avoided. It is clear from an examination of the characteristic curve of an amplifying valve, that the correct bias to ensure full use of the available straight portion of the curve is a negative voltage approximately half that of the permissible swing, or $V/2$.

With the information given above, it is fairly easy to fix the correct grid bias for an amplifying valve from its published curves.

Next week we shall have more to say about the choice of amplifying valves from their published constants and curves.

The Mystery of Electricity

By RALPH STRANGER

Author of "Wireless—the Modern Magic Carpet"

III.—The Protonic Tug of War

It is possible to perform a series of very simple but interesting experiments electrifying various substances by means of ordinary friction. Thus if you rub rapidly and energetically a stick of sealing-wax with flannel, or a glass rod with silk, you will discover that the sealing-wax and the glass rod will attract small pieces of paper or cork.

What happens is that when you rub, say, a glass rod with silk you rob the surface atoms of the glass of their electrons and transfer these electrons to the surface atoms of the silk. The glass rod, having thus lost a number of electrons, has an equal preponderance of unbalanced protons, or, in other words, it has acquired a positive charge, while the silk has acquired an equal negative charge. Touch them together again and you will find that the charges have disappeared. As soon as the electrified glass and silk come in contact the exposed protons have captured their missing electrons and the bodies became normal once more.

A charged glass rod will attract small pieces of paper. The exposed protons on the surface of the glass will try to compensate themselves

at the expense of the paper atoms and by attraction will try to lift them near enough for the exchange to take place. If you try to electrify in the same manner a copper rod you will find that the experiment will prove to be a failure. The reason for this is that when you electrify glass or sealing wax the atoms of these substances do not share amongst themselves any surplus or deficit of electrons, while the atoms of copper, and metals generally, do.

Numerous experiments prove that electrical charges take place on the surface of the body—*i.e.*, only the surface atoms are affected by friction. If a metal body is thus charged the charge will spread all over the body, as the atoms of metal will freely exchange any surplus or deficit of electrons. Such bodies as glass, sealing-wax, or ebonite can only be charged point by point, otherwise the charge does not spread. Thus while metals "conduct" electrons, other substances, such as silk, glass, sealing-wax, ebonite, etc., do not.

For this reason we divide all substances into two main classes—

Conductors and Insulators

It appears that while in metals the atomic structure is comparatively simple and the

electrons have little difficulty in passing from atom to atom, although, naturally, they meet with a certain amount of "resistance" from the "native" atoms, in compound substances (silk, glass, sealing-wax, etc.), such as named above, the atomic structure is more complicated and an electron stands practically no chance of getting into a strange atom.

If you try to electrify a metal rod, while holding it in your hand, and impart to it a surplus of electrons, this surplus, travelling from atom to atom, will escape through your hand, your body, and so to earth.

The earth, as a whole, is a conductor, and what is more, it represents a vast reservoir of electrons. It will deliver any number of electrons and it will absorb any number of electrons without, so to speak, even feeling that anything unusual has happened. There is no experiment that we can perform that can make any difference to the earth from the electronic point of view. For this reason we say that the degree of electrification, or the electric potential, of earth is zero. So that if a body has a surplus of electrons it has a potential above that of earth and electrons will flow from a negatively charged body (*i.e.*, one having a surplus of electrons) to earth on contact with it. On the other hand, if a body has a positive charge (*i.e.*, a deficit of electrons) electrons will flow from earth to the positively charged body till it becomes neutral.

(Continued on page 924.)

Recent storms held no terrors for the millions of users of "RC" Patent Spiral Indoor Aerials!

RENDERS OUTSIDE AERIALS OBSOLETE

NO LISTENER SHOULD BE WITHOUT AN "R.C." COLLAPSIBLE SPIRAL.

Ordinary aerials are no good in storms and gales. There was ample illustration of this during the last week or so. Did yours blow down? Follow the example of those millions of listeners who have "R.C." Spiral Aerials. Storm and gale and high winds cannot affect reception when you have an "R.C." Spiral. It is made of special wire of high conductivity. You can put one up indoors or out in a moment. The way it's made allows you to extend it from 5ft. to 30ft. When you take it down it closes up into a very small compass. It makes every set portable and every portable more efficient.

Don't let storms affect your reception in future. Get yourself an "R.C." Spiral Aerial. 2/6—that's all! Call in at your dealer's to-day, or order direct. Other popular types are—

- "R.C." Super Flat, 12" x 4½" - - 5/6
- "R.C." Standard Round, 12" x 2½" - - 2/6

"RC" AERIALS

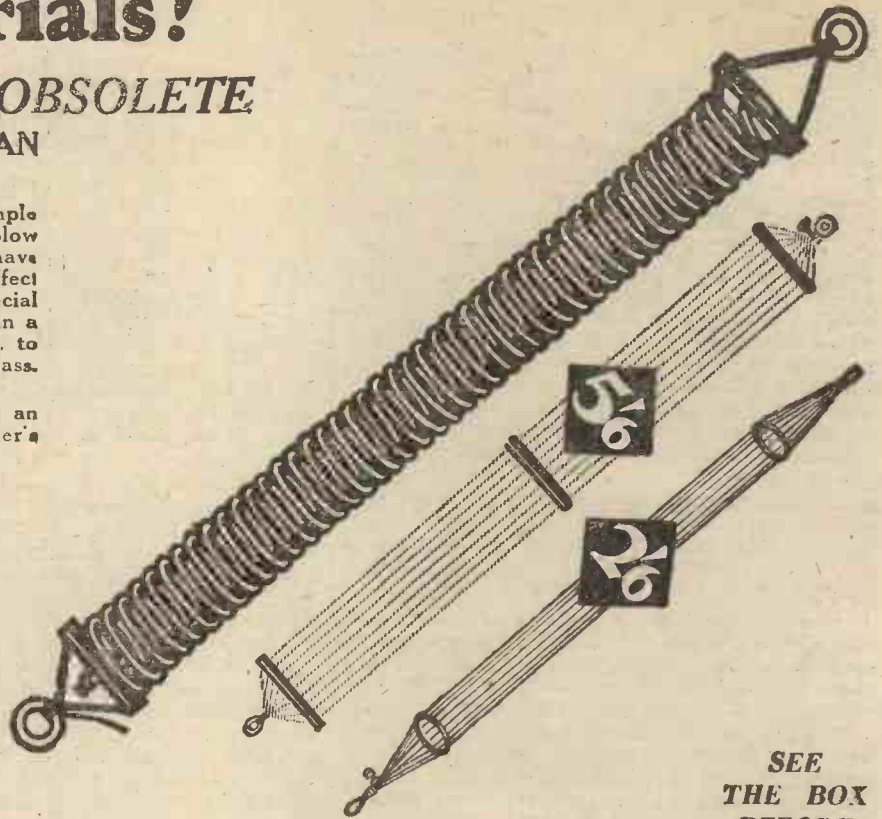
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PATENT COLLAPSIBLE SPIRAL TYPE

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Can be erected, dismantled and re-erected in a few moments.

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MAKE YOUR OWN LOUD-SPEAKER WITH THE "R.C." CONE AND THE "R.C." UNIT

100% Better because it's **RIDGED!**



THE "RC" FABRIC CONE

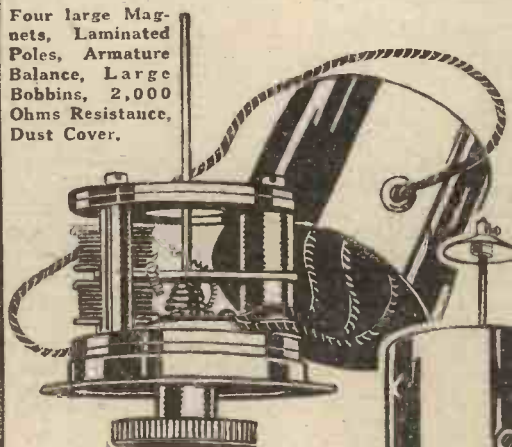
No distortion, no "blasting," no blurred tones—with the "R.C." Cone. The new scientific principle of RIDGING prevents the heavier tonal frequencies from overlapping. That's why you get perfect reproduction and purity of tone from the "R.C." Ridged Cone. No cutting, no sticking—it's ready to fix! Fit one to your own loud speaker and hear the difference it makes.

Handsome metallic finish, Gold, Silver, or Bronze. Height of peak 4 ins., diameter 12½ ins. See the name "R.C." stamped on the inside.

As Recommended by Arthur Yorke in "Amateur Wireless" for AMAZING RECEPTION.

In "A Loud Speaker for 15/-," in the Nov. 17th issue of "Amateur Wireless," Mr. Yorke said this about the "R.C." Cone Unit:—

Four large Magnets, Laminated Poles, Armature Balance, Large Bobbins, 2,000 Ohms Resistance, Dust Cover.



... the results obtainable from it will compare very favourably with instruments costing twice or three times the amount; there are the requisite features in it to enable the instrument to perform efficiently and provide a satisfactory reproduction both of the bass and treble notes. That's what an expert says about it. And that's what the many hundreds of owners of "R.C." Units would say if you were to ask them. Wonderful volume, perfect tone, surprising realism—you get all these from a loud-speaker made with the "R.C." Unit. See for yourself how lifelike loud-speaker reception can really be. Find out more about the "R.C." Unit. Every Unit complete with full instructions. Ask your dealer or order direct.

"RC" CONE UNIT 13/6

Obtainable at all wireless dealers or direct

RIDGED CONE CO. LTD., YORK HOUSE, SOUTHAMPTON ROW, LONDON, W.C. 1. Telephone: Chancery 3313 and 3136.

Measuring Instruments

VI.—M.C. Ammeters and Galvanometers

HAVING given the moving coil voltmeter all the space we can afford, a few words are due to the ammeter of the same type, with special reference to the very useful milliammeter. In construction the details are practically the same. A large permanent magnet, a coil of fine wire wound on a delicate former, and control springs that also convey the current are the essential features. The diagram given in Part I. applies equally to a m.c. (an abbreviation we shall now use for moving coil instruments) voltmeter, ammeter or galvanometer.

In each case, the winding and the strength of the springs are proportioned to the work that they have to perform, and the measurement of the strength of springs is a matter of very real importance. It is obvious that the control spring for a power switchboard instrument reading 500 volts can be more robust than that for a milliammeter with a top reading of 10 milliamps. While on this subject it may be mentioned that the control of precision instruments is a very important matter. The ideal is an instrument that will come up swiftly to the correct reading, and neither overshoot it nor oscillate before coming to rest. In addition it must not be sluggish, a condition that can be produced by over-damping.

For delicate work with a galvanometer, springs are much too strong, so it is usual to use a very delicate suspension for the moving coil. This may take the form of a quartz filament, silver plated to make it a conductor, from which a very light moving coil is suspended. A tiny mirror replaces the pointer, and this reflects a spot of light over a scale about a yard long. We thus have an efficient weightless pointer in the form of a beam of light. Since the suspension must be very delicate, it is interesting to note a method of preparing fine fibres due to Professor C. V. Boys. A particle of quartz attached to a small arrow is fused by an arc, or other source of high temperature. At the right moment the arrow is shot from a crossbow, and flies off, trailing a gossamer thread which cools instantly. Collecting the almost invisible thread and attaching it to the suspension head and the moving coil are tasks that demand patience as well as skill. On one occasion when the late Dr. Augustus Waller was demonstrating a galvanometer with a suspension of this type, one of the audience, who had come up to the demonstration table, said, "Do you mean to say that there is a thread there?" at the same time sweeping his fore-finger across the invisible suspension. Dr. Waller replied sadly, "There was."

We can now return to the ammeter, and the real purport of this article is to show what a very versatile instrument the milliammeter is if it is treated properly. It is possible to obtain a very decent instrument for something in the neighbourhood of 10s. Often the observant individual can pick one up for very much less, for all sorts of good electrical apparatus designed originally for the Services is being sold at prices that could not be described as excessive.

The Versatile Milliammeter.

Let us suppose that we have been sufficiently lucky to purchase in the Hebradonian market a milliammeter for about 1s. 6d. Before buying it, we make sure that it is free in its pivots, and that its control springs are not burnt out. Assuming this happy state of affairs, we can take it home and contemplate with confidence the construction of a portable instrument that will result in:

(a) A milliammeter that will inform us as to what is being taken in the way of current by the anode of each valve.

- (b) A voltmeter that will show the voltage of both low and high tension batteries.
- (c) An ammeter that will show the current going through the L.T. battery, if we are fortunate enough to be able to charge it at home.
- (d) A sensitive galvanometer that will help in tracing faults due to broken connections in set or 'phones, but a word of warning is necessary here which will be made clear later.

Taking a hypothetical case, we have managed to pick up a decent instrument for the modest sum mentioned. It reads—let us say—from 0 to 10 milliamps. If it read 0-25 or 0 to 2.5 it would still be just as useful. Rather more so, in fact. Anyhow, for the sake of simplicity, we will make 10 milliamps the top scale reading. We now sit down and consider Ohm's Law, and, very possibly, begin to respect it for its practical worth in helping to solve an economic problem. To turn one instrument effectively into several is quite a sound idea.

Working it out we can arrive at what is wanted in this way (readers who know all about instruments are advised to skip this). The instrument will give its maximum reading when 10 milliamps are passing through it, so it must not be asked to accept more. Its resistance is probably quite low—of the order of .05 to 7 ohms at the most. It will, of course, vary according to the particular purpose for which the instrument was designed. The one we have acquired has a resistance of 5 ohms, and we want to adapt it so that we can use it as a voltmeter for the H.T. battery. For this purpose 100 volts would be a convenient top reading, because 66—the average H.T. voltage—comes nearly three-quarters up on the scale. Limit scale readings are not taken when it is possible to avoid them.

Now here is our very simple arithmetical problem, and to save trouble to those who will want to waste money on stamps in writing to tell us that we have omitted something, we will admit that we have, for a very definite reason which will be given later, with more laboratory details than the critics could supply.

E

Since $C = \frac{E}{R}$ and we have two known factors ;

R

$E = 100$, and $C = 1/100$ amps (10 mA) it is an easy matter to find what series resistance must be added to make our instrument a voltmeter reading up to 100.

$$1/100 = \frac{100}{R}$$

Therefore $R = 100$ by $100 = 10,000$ ohms.

So if we wind on a bobbin a sufficient amount of fine wire to give us that resistance, and put it in series with the m.c. we shall have attained our objective. This is not a difficult matter. It only means getting the right wire and taking care in running it on to the bobbin so that it does not break. There are plenty of tables in standard hand-books and text-books that give the diameter and length of wire necessary for a given resistance. One point is worth noting in the placing of the resistance coils in the instrument. They should be kept as far away as possible from the movement. Unless the winding is non-inductive—and this is not usual except in the case of laboratory instruments—there may be an electromagnetic effect produced by the very small current passing around the bobbins. If, however, these are placed so that they are near the bend of the permanent magnet instead of at its legs, the effect may be neglected for most practical purposes.

That gives us our voltmeter, but we can make it still more useful by bringing out a number of tappings from the series resistance, each being worked out on the lines indicated above.

Practical Searching Hint

Two Telephone Tips

QUITE a large proportion of the unpleasant body capacity effects of which so many short-wave enthusiasts complain are brought about by the connection of the head telephones directly into the plate circuit of the note-magnifying valve. There is always a certain leakage of high frequencies through the rectifier, and its effects are particularly marked upon the short waves. These stray high frequencies make their way through the note-magnifying valve or valves and so into the telephones. When the head wearing them approaches the tuning controls weird effects are sometimes produced. It may also be found that either the set will howl or an incoming transmission will disappear if the telephone receivers or their cords are touched.

When the telephones are connected between the plate of the output valve and high tension positive they are, so to speak, up in the air. In other words, they are not earthed directly. Now, it is quite easy by means of a filter circuit to alter this state of affairs, and it is a very great advantage to do so, particularly on wavelengths below 20 metres. Here is the way in which it is done. Connect the plate of the output valve to high tension positive through a low-frequency choke. Connect the plate also to one contact of a fixed condenser with a capacity of from 1 to 4 microfarads and take a wire from the second contact of this condenser to one of the telephone terminals. The second telephone terminal is connected to earth. Besides materially reducing capacity effects the system has two other important advantages. In the first place the telephones are relieved of the totally unnecessary strain of carrying the direct current that flows in the plate circuit. And this brings us to the second advantage, that it no longer matters which telephone lead is connected to which terminal.

The second point about telephones concerns sets in which the high tension current is derived from the mains. Generally speaking, it is not advisable in such cases to use head telephones unless a properly designed filter circuit or output transformer is incorporated. Without these there is always a liability to a severe shock if certain parts of the battery eliminating apparatus are touched whilst the telephones are being worn.

Tapped at the right place, the top scale reading can be made 10 volts, a useful figure for testing an L.T. battery. These usually are 2, 4, or 6 volts; so, taking the average as 4, a 10 volt range gives a reasonably open scale.

Now we must consider turning our movement into an ammeter. Here the particular requirements of the owner must be considered. As a plain milliammeter it will give him much useful information about the behaviour of his set. This point is emphasised on another page where distortion is discussed, but there is no reason why it should be made to function also as a life-size ammeter that can measure quantities that are not milli—but full sized amps. This is just a matter of shunts. The same instrument will serve, and the construction of shunts is so simple a matter that it is well worth the trouble. Given proper shunts our little M.C. instrument will measure current from its lowest range up to thousands of ampères. To arrive at the resistance of the shunt, we must, with apologies, return to Ohm's Law, for in this case we shall be asking it to translate the drop in volts across a resistance into the value of the current carried by it. So we re-write it $CR = E$, and so arrange R that E will give us exactly what we want in order to deflect our instrument to the maximum for the full range current. A diagram showing the way in which a shunt is connected to an M.C. instrument was given in an earlier article of this series.

(To be continued.)

Continental Programme Events.

Concerts. Sunday.
 6.45 p.m. Stockholm: Rydberg Festival Concert.
 7 " Langenberg; Munich.
 7 " Basle; Lausanne.
 7 " Ljubljana: Students' Songs. Cracow
 7.30 " Warsaw.
 8 " Eiffel Tower: "Music and Water."
 8.15 " Brussels, Radio-Paris.
 8.30 " Toulouse.
 9.30 " Petit Parisien.
 10.10 " Madrid EAJ7: Military Music.
 10.20 " Barcelona: Orchestral Concert.

Operas and Operettas.
 7 p.m. Copenhagen: "Lilac Time."
 7.10 " Königsberg: "Coy Susannah."
 7.55 " Hilversum: "La Traviata" (Verdi).

Plays.
 8 p.m. Leipzig: "Die Heilige Kutsche" (Merimée).
 8.15 " Frankfurt, Stuttgart: "Fra Diavolo" (Auber).

Topical Events.
 Centenary of death of Victor Rydberg, Swedish poet. Special transmissions will be given in this connection from Stockholm.

Concerts. Monday.
 7 p.m. Leipzig: Finnish programme.
 7 " Ljubljana: Quartet.
 7.10 " Königsberg: Finnish programme.
 7.15 " Hilversum, Stockholm: Finnish programme.
 7.30 " Eiffel Tower: "Music and Flowers."
 7.45 " Munich: Finnish programme.
 8.30 " Brussels.
 10.30 " Barcelona: Chamber music.

Operas.
 7.15 p.m. Frankfurt, Stuttgart: "Zuleima" (Bienstock).
 9 " Toulouse: "Faust" (Gounod).

Play.
 8 p.m. Langenberg: "Gawain," a mystery play.

Talk.
 8.45 p.m. Radio-Paris: "The Work of Edmond Rostand," followed by Selections from his Works.

Topical Events.
 Finland National Evening. Most stations will give special programmes on this evening; others on Tuesday and Wednesday.

Concerts. Tuesday.
 7 p.m. Langenberg: Finnish evening.
 7 " Stockholm: Rydberg Festival Concert.
 7.30 " Eiffel Tower: Orchestral concert.
 8 " Ljubljana: Slovene Songs.
 8.30 " Toulouse.
 9.5 " Brussels: New dance music.
 9.30 " Petit Parisien: Symphony Concert.
 9.30 p.m.—12.30 a.m.—Königsberg: Dance music.

Operas, Oratorios and Operettas.
 6 p.m. Munich "Das Christelflein" (Pfitzner).
 6.20 " Posen, Warsaw: Opera (title not given).
 6.30 " Danzig, Königsberg: "Turandot" (Puccini).
 7 " Leipzig: "The Birth of Christ" (Herzogenburg).
 7.30 " Geneva: "King David" (Honegger).
 8.15 " Radio-Paris: "The Taming of the Shrew" (adapted by Silver).
 9.10 " Barcelona: Opera (title not given).
 10.10 " Madrid (EAJ7): "Rigoletto."

Play.
 8.15 p.m. Hilversum: "The Rosary" (adapted from Florence L. Barclay's book by A. Bisson).

Talk.
 8.30 p.m. Brussels: Excerpts from new novel by M. Léon Chenoy, "Une preuve d'amour."

Concerts. Wednesday.
 6.45 p.m. Munich.
 7.15 " Frankfurt, Stuttgart: Military music.
 7.30 " Eiffel Tower: Quintet.
 7.30 " Warsaw: Finnish programme.
 8 " Langenberg: Posen.
 8.15 " Hilversum: Concert by members of the "Italian Opera" and the Wireless Orchestra.

8.15 " Radio-Paris.
 8.30 " Brussels; Toulouse.
 8.30 " Munich: String quartet.
 9.10 " Barcelona: Orchestral concert.
 9.30—11 p.m. Berlin, Königsberg: Dance music.
 10.10 p.m. Madrid (EAJ7): Finnish programme

Play.
 8.15 p.m. Königsberg: "A Happy Christmas" (Strindberg).

Concerts. Thursday.
 7 p.m. Langenberg: Teachers of Mozart.
 7 " Leipzig: Selections from Viennese operettas.
 7 " Ljubljana: Operetta music.
 7.5 " Königsberg: Orchestral concert.
 7.30 " Cracow: Old Polish songs.
 7.30 " Eiffel Tower: Orchestral and soloist concert.
 7.30 " Warsaw: Verdi.
 7.55 " Hilversum: Symphony.
 8.30 " Radio-Paris, Toulouse: Orchestral concerts.
 8.40 " Stockholm: Chamber Music.
 8.45 " Brussels: Flemish music.
 9.30 " Petit Parisien: Symphony.

Operas.
 6 p.m. Zürich: "Tristan and Isolde."
 7.0 p.m. Königswusterhausen: "Intermezzo."
 9.10 " Barcelona: Opera (title not given).
 10.10 " Madrid (EAJ7): Opera (title not given).

Play.
 7.15 p.m. Frankfurt: "Der Snob" (Sternheim).

Concerts. Friday.
 7 p.m. Ljubljana: Songs.
 7 " Stuttgart, Frankfurt.
 7.5 " Königsberg: "When Two by the Rhine dream of Love."
 7.15 " Frankfurt; Warsaw: Christmas music.
 7.15 " Posen: Symphony.
 7.30 " Eiffel Tower: Quartet.
 7.45 " Hilversum: Chamber music.
 8 " Langenberg: German folk songs.
 8.30 " Toulouse.

Oratorio and Operetta.
 7 p.m. Leipzig: Beethoven's "Solemn Mass."
 8.30 " Radio-Paris: "Les Cloches de Corneville."

Plays.
 7 p.m. Munich: "Die heilige drei Könige."
 10 " Barcelona: "La Consulesa"

Concerts. Saturday.
 7 p.m. Leipzig: Winter Idylls.
 7.30 " Munich
 8.15 " Brussels, Radio-Paris.
 8.30 " Toulouse.
 9.0 p.m. Petit Parisien.
 9.15—11 p.m. Königsberg: Dance music.
 11 p.m.—1.0 a.m. Posen.

Operettas.
 7.15 p.m. Frankfurt, Stuttgart: "The Island of Tulipatan" (Offenbach).
 7.30 " Warsaw: "Gipsy Love."
 10.10 " Madrid (EAJ7): "Los Descamisados" and "Los Cadetes de la Reina."

Play.
 7.15 p.m. Frankfurt: "The Red Robe" (Brioux).

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(from the "Bal Costumé")
-
"Czardas of Monti"
(Violin solo by Hugo de Groot)
- Overture Tull
"Tambour du Garde"
- Geoffrey O'Hara
"I Love My Little Cottage"
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Which Station Was That?

ANSWERS TO CORRESPONDENTS

RAMBLER (New Eltham): Königswusterhausen relaying Berlin. Concert for soprano, male quartet, zither and piano. **VECTIS** (Ventnor): 2XAD on 21.06 m. relaying WGY (Schenectady). A relay of an organ recital from the Union College Memorial Chapel. **CYRANO** (Cardiff): Relays of Vienna; possibly Klagenfurt and Innsbruck. A reading from the works of Conrad Ferdinand Meyer, followed by operetta: *Count Tomi*. **EISEMANN** (Stockport): Prague. Gramophone concert followed by play, and news bulletin and sports notes. **ACACIA GROVE** (Chew Magna): (1) yes, 2LO was giving a concert by the B.B.C. Symphony Orchestra at that time; apparently telephonic line induction, (2) cannot understand the call you give; if German, this was Frankfurt (midday concert), (3) the new high-power station at Brussels testing, (4) no, the first harmonic of Daventry (5XX) would be about 781 m.; regret, but cannot trace as your details are too vague, (5) Königswusterhausen on 1,640 m. (own transmission). English lesson: Some Scottish Tunes (songs and piano). Professor Eriehel and English lecturer, Mr. Mann, (6) GTH, advertised as amateur at Newport (Mon), (7) 6QW, amateur at Bristol, (8) Radio Paris. News bulletin (gramophone records in the intervals). **WINTON** (Barrow-in-Furness): Motala relaying Stockholm. *Hamlet* (tragedy by Shakespeare), followed by talk and concert. **3 VALVER** (Erantree): Yes, Katowice. Mandoline orchestra, followed by variety concert. **PETITION** (Glasgow): No, this is *1800, Nederlandse Vereniging voor Radiotelegrafie*, Parkweg 19, The Hague, Holland. **TWO VALVE** (Yorks): Glasgow relaying Edinburgh. Service from the St. Cuthbert Parish Church. **NEW CHUM** (Hastings): We regret, but it is impossible to trace the station you heard without some estimate of WL. **NOBBY CLARK** (Maidenhead): Frankfurt relaying dance music from Berlin. **HILBRE**: Possibly Lahti (Finland), but cannot confirm, as the item you mention was not advertised in the programme. **NIL DESPERANDUM**: Freiburg, relaying Stuttgart; one-act play: *Paul and Paula*. **SPEIS** (Manchester): Frankfurt. Not advertised in the programme, but a relay from the Sports Stadium. Comic interludes before the microphone. **SEARCHER** (Thuxton): Vienna. Call: *Hallo! Radio Wien*. We cannot trace the station you heard on the high WL as no transmitter was advertised to work so late on that date. **CUCKOO** (Sunderthorpe): Motala relaying Stockholm. Light concert followed by English lesson. **WHADDON MANOR** (Gloucester): Königswusterhausen relaying Berlin. A relay from the Grand Play House (excerpts from Franz Lehár's operettas). **NIGHTINGALE** (Bermondsey): You give no date, but if received on December 3, we believe this to be Prague (Czechoslovakia), gramophone records. **NAN** (Leamington Spa): Frankfurt relaying from the Sports Stadium (not advertised in programmes). Connectors are frequently brought, for interview, to the microphone; this would account for your hearing a French sentence or two. **A. DAVIDSON** (Barrhill): Cork relaying Dublin; see detailed programme in *World Radio*. **LOUGHORIAN**: (1) apparently an amateur transmission of gramophone records, but cannot trace without the call sign; (2) your estimate of WL is surely wrong; this is apparently Flensburg, the new relay of Hamburg on 219 m. Oratorio: *The Day of Judgment*, relayed from St. Mary's Church, Lubbeck. **G. H.** (Wilmstow): (1) pianist: Eduard Bach; (2) we regret we are unable to tell you, as the cast was not advertised in the programme. **WHOOP** (Cambridge): Dresden relaying Leipzig. *Samson and Delilah* (Saint-Saëns) relayed from the New Theatre. **ACEY**: (1) apparently Oslo; (2) the only stations giving opera at that time were the Polish transmitters, *Lakmé* (Delibes), but we cannot say which you heard, as we cannot understand your dial readings. Surely Muehl and Langenberg do not come so close together? **MUSICAL DIRECTOR** (Stourbridge): Cannot confirm, but suggest Barcelona (EAJ13). **ISCA** (Paignton): Kalundborg relaying Copenhagen; advanced English lesson. **H. A. B.** (Iford): Hoerby, the new 10 kw. Swedish relay of Stockholm, which is to replace Malmo on 260 m. **WESTBOURNE** (Brighton): Göteborg relaying Stockholm. See programme in *World-Radio*. **GRID LEAK** (Lancaster): Warsaw relaying dance music from the Hotel Bristol. **HOTSTUFF** (Romford): If WL above Daventry (5XX) the Eiffel Tower, which was giving talks at that time, and quite possibly transmitted gramophone records in the intervals. **A. F. PARRY** (Mold): Not advertised in the programmes, but quite possibly a test by Hamburg. **ARULFO** (Holloway Road): San Sebastian, which is on about 400-405 metres. The answer to your query was in last week's issue. **CHIP OF SLOUGH**: Nürnberg relaying Munich. A relay from the National Theatre of *The Valkyries* (Wagner), followed at 9.20 p.m. by news bulletin and weather report, etc. The interval signal is a metronome and siren (deep G). **LURACIL** (Bury): Yes, Cassel, relaying the Six Days' Cycle Races from the Stadium at Frankfurt. **SANDROCK** (Wallasey): Göteborg relaying concert from the Music Academy at Stockholm. Recital by the French soprano, Ritter Clampi. **LON** (Ghester): Station received on November 21 was Stockholm (a relay of foreign stations), on November 29, Warsaw. The station you refer to is Kalundborg (a relay of Copenhagen). **SCHOOLBOY** (Moffat): Oslo (a relay of foreign stations). It was apparently Daventry (5GB) that you heard. **D. J. D.** (Merthyr): Cork relaying Dublin. **TOR** (Banavie): Huizen (Holland) on 340.9 m. at that time; concert for soprano, contralto and piano. Holland is twenty minutes in advance of G.M.T. **LOST** (Bangor): (2) Barcelona (EAJ1); apparently an outside relay of a banquet, but not advertised in the programme. (1) a relay of PTT Paris; dance music from the Coliseum. Possibly received through; boncoaux-Lafayette. **MA FLEKE** (Alton, Hants): This was Budapest, relaying the opera *Aida* (Verdi) from the Royal Opera House in that city. **LITTLE MINISTER** (S.W.4): Frankfurt. Light music of the beginning of the century, including *The Geisha*. Soprano, Edith Keimann. **LESS MAD**: Leningrad advertised the relay of one foreign station at 7 p.m. The only operative performance at that time was that given by Budapest, from the Royal Hungarian Opera House, and quite possibly this was taken by Leningrad. **TWOER** (Lowestoft): (1) we regret, but cannot trace from these condenser readings; (2) Brussels, the new high-power transmitter testing; (3) Kalundborg relaying Copenhagen; see programme in *World-Radio*; (4) Warsaw, quartet (chamber music). **VEEDEE** (Hammer-smith): G.T.N., given as a call sign of amateur. **6-VALVE SPECIAL** (Windsor): Possibly Leipzig. The gramophone records were given by Daventry (5XX only). **THORDENE** (Bolton): Frankfurt. Music of the beginning of the century including *The Geisha*. **MIXED UP** (Iltra-

combe); WL wrong; this was Cologne, relaying from the Handelshof until 11 p.m. G.M.T. **CHYNE** (Gaywood): (1) if 6UZ, amateur at Stoke-on-Trent, (2) no, this was 2LO, Nairobi (Kenya) on 33.5 m. This station works on Sundays from 7 to 8 p.m. G.M.T. **FIVE VALVE** (Shrawsbury): From London to Nairobi (Kenya) is roughly about 5,000 miles. **H. C. W.** (Ashford): The new high-power station at Brussels testing. **GOVORIT** (Walthamstow): This is the new Post and Telegraph transmitter at Moscow, working on 825 m. **FARLEY CASTLE** (Reading): If French, could only be Radio Paris. The early morning broadcast of physical exercises. **VEEUAR** (Havant): Prague (gramophone records). **BRIGHT SMITTER**: We regret, but we cannot trace any station on or about that WL working at that time. **WARRIOR** (Glasgow): (7) Frankfurt; dance music until 11.30 p.m. G.M.T. from the Artists' Cabaret, (8) The Spanish stations have recently been altering their wavelengths; it is quite possible that San Sebastian was working on about that WL in order to free itself from interference. **BROWN ALE** (W.I.): Apparently an amateur transmission, but regret, cannot trace. **DOGGY** (Maidenhead): Yes, this was Prague, relaying dance music from the Restaurant Sramota, apparently followed by concert of gramophone records. **LINDA** (Shadwell Heath): The new high-power transmitter at Brussels testing. **W. H. J. DAVIS** (Horton): 6WB, amateur at West Holslow (Middlesex), and 5BC, amateur at Barnes (S.W.13). **CHARBON** (Egham): Leningrad. C. J. S./P. T. (Grantham): (1) Yes, PTT Grenoble; orchestral concert (own transmission). Radio Maroc (Rabat) did not transmit on that date, (2) PTT Lyons (news bulletin, etc.), (3) apparently PTT Limoges transmitting gramophone records before the relay of the organ recital from PTT Paris. **MODULATOR** (Belfast): 6WY, given as call sign of amateur at Forest Hill, London, S.E.23. **PORTABLE FIVE** (Liverpool): apparently Kalundborg relaying dance music from Copenhagen. **IVY** (King's Lynn): This was Hilversum (Holland). Concert sponsored by a commercial firm. **VARA** (spelt out by the announcer) are the initials of the Association responsible for the transmission. Announcements are made in English and Dutch. **CURIOUS** (E.C.1): PTT Lille; orchestral and vocal concert, soprano, Marguerite Bernard. **SHORT WAVER** (Brixham): We cannot give details of amateur transmitters. For the information you require we advise you to write to the Radio Society of Great Britain, 53, Victoria Street, S.W.1. **NOTTS**: Possibly Radio Paris, but cannot confirm. **FLAMINGO** (Hale): Leningrad. **TENDERFOOT** (Sanderstead): Regret, but your details are too indefinite to trace; there are no published programmes of the short wave transmissions, by which to confirm. 5SW is now working on 25.53 m. **YANK** (Ormskirk): Ljubljana (possibly a time signal). Conference on Antique and Modern Culture. Announcements are made in Slovene and sometimes in the English, French, and German languages. **SEEKER** (T. Heath): Scheveningen-Haven (Holland). Commercial reports only. **F. F.** (Ipswich): This was the Muehl programme (military band). We cannot say whether you received this direct, or through one of the relays, Augsburg, Nürnberg or Kaiserslautern, as you give no estimate of WL. **BLACKDYKE FOUR** (Near Brandon): Cologne. (Climes are from the studio.) **WOODBINE COTTAGE** (Witney): Flensburg, the new relay of Hamburg testing on 219 m. **FLAMBRO** (Yorks): This was Katowice (Poland). A lady announcer; vocalist: Hélène Reutt, at 7 p.m. talk by Professor Igon, and at 7.30 p.m. piano quartet and songs. **URTICA**: The new high power transmitter at Brussels testing. **BUMMING BAGS** (Streatheam): Warsaw, relaying dance music from the Hotel Bristol. **BARHAM** (Canterbury): (1) Königberg relaying dance music from Danzig, (2) yes, PTT Paris has been working on a lower WL, (3) if your estimate, of WL is correct, this was Riga (Latvia); details of programme were not published. Not Munich. **PAM** (Clerkenwell): Motala relaying Stockholm (a relay of foreign stations, not advertised in the Swedish programmes). **T. E. BOWER** (Fulham): You give no estimate of WL, but if above Daventry 5XX, this was Radio Paris. See programme in *World-Radio*. Yes, most continental stations give their call signs and interval signals between items. **ALFRED** (Keighley): Possibly a U.S.A. station, but your details are too vague to trace. More likely to be an amateur transmission of gramophone records. **JAYAR** (Buxton): Possibly a Russian station, as we cannot trace the item you mention in any published programme at that time on or about that WL. **TEKKI** (North Shields): Warsaw (a lady announcer). **AD ASTRA** (Surrey): 2PB, B.B.C. mobile transmitter testing. **BONZO** (Downfield): Frankfurt. A relay from the Sports Stadium, not advertised in the programme. **NUNC NUNC** (Grimsby): This was a station testing, possibly Lahti (Finland), but cannot confirm. **DEVONIA** 4 (Spencer's Wood): Kaiserslautern relaying Munich and Nürnberg. **TWIDDLER** (Titchhurst): Göteborg relaying Stockholm. Violin solos accompanied by piano, followed by talk and time signal. **2 VALVE** (East Mibleide): (1) Cologne, relaying concert of classical and dance music from the Charlott Cabaret; (2) Langenberg relaying Cologne. **J. A. T.** (Bedford): Posen and Katowice. Quite possibly election results. **CORKY** (Brighton): Radio Maroc (Rabat) on 414 m. **DERBY** E. A. G.: Frankfurt relaying from the Sports Stadium; not advertised in the programme. **ENOS** (Radstock): Huizen, at that time on 340.9 m. Service to hospitals. **KEEN** (Middlesbrough): Madrid (EAJ7) relaying operatic performance from the Lyceum Opera House, Barcelona. **WRECKER** (Caister-on-Sea): Cork relaying news bulletin from Dublin. **N. BALL** (Hove): Possibly an amateur, but cannot trace. **M. C. P.** (Bridlington): (1) regret, cannot trace, (2) Madrid (EAJ7) relays climes from the Home Office Buildings at 10 p.m. and midnight G.M.T. See *World-Radio*, (3) the principal European programmes are given in *World-Radio*. **DOUGAL** (Nottingham): If French, PTT Lyons, relaying dance music from the Coliseum at Paris. **MARSHALL** (Penrith): (1) a test, but cannot trace. We do not think this would be Belgrade. (2) Yes, undoubtedly a fog beacon, but cannot trace the call sign. **W. H. O.** (Peterborough): If you mean after midnight, regret, but cannot trace any station on or about that WL working at that time. **MOULIN ROUGE** (Southport): Cologne. The call, covering all Rhine-Rand stations, is *Achtung! Westdeutscher Rundfunk*. **HIGH TENSION** (Jermy Street): (1) San Sebastian (own programme); 2-3-4: replies are being sent to you by post. **THREE VALVE** (Horsforth): Milan; Mendelssohn (Trio in D minor). **SCOUT** (Navalhill): Surely you mean WL and not frequency as you refer to Hilversum; the programme heard was a relay from the Great Hall of the Oddfellows' Palace at Copenhagen and broadcast by Kalundborg 2569 m. 7 p.m. Eva

Badrowska, of the Warsaw Opera House. **AD ASTRA** (Stough): Very vague; possibly 2PB, the mobile transmitter of the B.B.C. testing. **TWO VALVES** (Glasgow): Apart from Toulouse (PTT), according to programmes, no French station broadcast dance music at that hour. Many German stations transmitted this sort of entertainment, but details are not given in programmes. **HYPATHIA SMID** (Uphill): Probably Hilversum (slightly altered programme); relay of concert from the Groot Schouwburg Theatre, Rotterdam. **CONTACT** (Headcorn): (1) yes, De Bilt, meteorological bulletin, etc.; (2) radio fog beacons, as, for instance, GOTT (Round Island Lighthouse, Scilly Isles); (3) Budapest. **DYSON** (Urmston): 3VHV 54: PTT Toulouse relay of dance music from Coliseum, Paris; (55) Flensburg (testing); (6) Hilversum (sacred-concert); (7) Königswusterhausen (own concert); (8) Frankfurt-on-Main relay of six days' motorcycle races from Sports Stadium in that city. You heard running commentary, noise of motors, cheering of crowd and military band. **RUNDFUNKSENDER** (Headingley): (1) given as call sign of British experimental amateur transmitter at Christon-Ferrars (South Devon); (2) possibly PGG (Kootwijk), on 17 m.; (3) cannot trace, as the call sign is incomplete; (4) Ljubljana (Yugoslavia). **OLD C**—3: Derby's. Please send name and address for postal reply to query.

NOTE.—Those who wish to take advantage of our free service by means of these columns must give a **NOM DE PLUME**, in addition to their own name and address. **PROPRIETARY TRADE NAMES MUST NOT BE USED AS NOMS DE PLUME**.

The Alternative Postal Service

Whilst retaining in *World-Radio* the usual free published service of "Which Station Was That?" we have instituted a paid postal service, which enables a reply to be posted within forty-eight hours of receipt of details and a stamped addressed envelope. Each enquiry must be accompanied by a coupon and 6d. in stamps or P.O. Each query should be numbered in order to facilitate reply and time transmission was received, and whether a.m. or p.m., should be clearly stated. Letters must be addressed to the Editor, "World-Radio," Savoy Hill, London, W.C.2, envelopes to be marked in left-hand top corner "Postal Query Service."

If, owing to paucity of details submitted, or for any other adequate reason, the transmission cannot be identified, a further query will be answered free of charge. In this event, the answer form sent to the reader must be returned with the new application.

Note.—In the event of queries received in which readers have not complied with the conditions published, replies will not be sent by post, but will be found in these columns.

WORLD-RADIO (No. 177)

For replies to questions concerning the identity of stations heard, this coupon should be cut out and forwarded, together with particulars, written on a separate sheet of paper, to Editor, *World-Radio*, Savoy Hill, London, W.C.

Particulars should include: Date and time, approximate frequency (or wavelength), call (if heard), fading or not, signal strength, and details of programme. N.B.—Each inquiry must be accompanied by a separate coupon.

(Continued from page 920.)

Therefore a positively charged body has a potential below that of earth, as electrons will only flow from a body having a higher potential to a body having a lower potential.

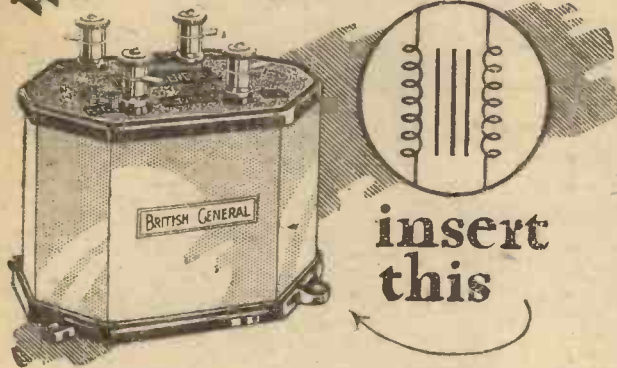
You will find that the text books will disagree with us in the above reasoning. In a text book it is always stated that a negatively charged body has a potential below that of earth. The trouble is that before the electronic theory was properly understood the names positive and negative charges were given arbitrarily, and, as it happens, were given wrongly.

Well, here you have the whole subject of electrostatics (electricity at rest) in a nutshell. As you see, it need not be as bone dry as most text books present it to us. The struggle between the electrons and the protons for mastery gives us a romantic glimpse of the mysteries of nature, and whets our appetite for further study of electrical phenomena. You can spend a number of very enjoyable evenings if you take a text book on electrostatics and try to rewrite it from the point of view of the electronic theory and thus bring all the old reasonings up to date.

Up to the present we have considered the behaviour of electrons and protons when they were at rest and only moved from one body to another and no further. Now we shall have to consider the phenomena that take place when electrons start to travel in real earnest and play musical chairs inside an electrical circuit.

(To be continued.)

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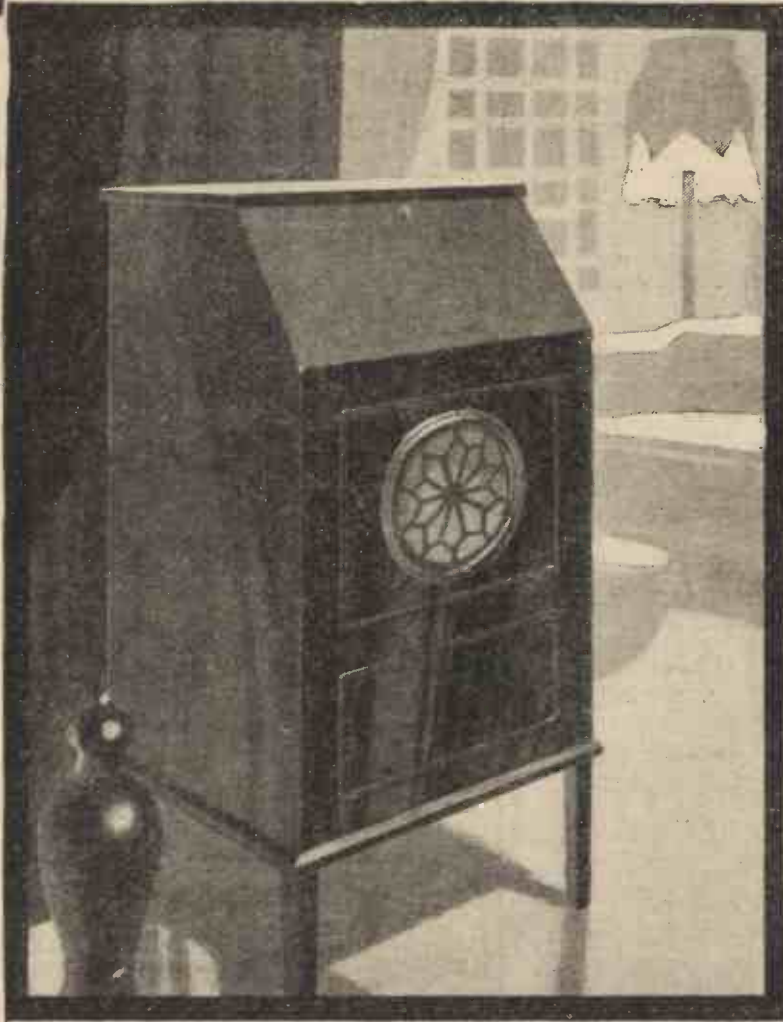
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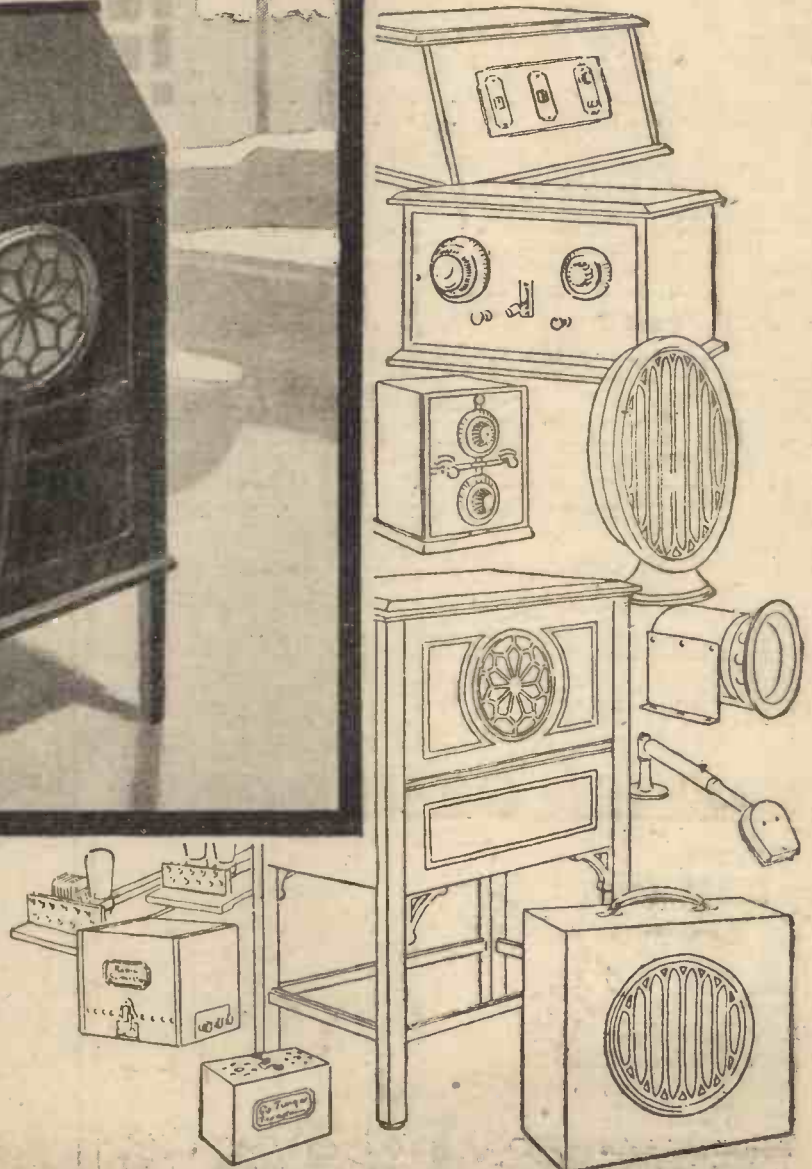
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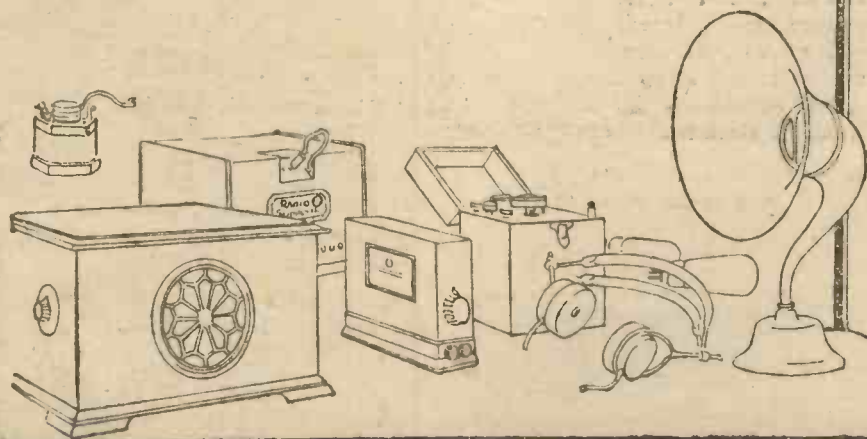
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DAVENTRY PROGRAMME

(December 16-22) (25 kw.)

SUNDAY

10.30 a.m.—Time Signal (Greenwich) Weather Forecast.

3.30 p.m.—A Brass Band Concert. The Besses of the Barn Band, conducted by Fred Royle. Betty Bannerman (Contralto). Clyde Twelvrees (Violoncello).

5.0 p.m.—Children's Service from St. John's, Smith Square, Westminster (conducted by the Rev. Canon C. S. Woodward).

5.30 p.m.—Reading from "The Pilgrim's Progress" (John Bunyan). "The Valley of Humiliation and the Valley of the Shadow of Death."

5.45-6.15 p.m. (approx.)—Church Cantata (No. 186) Bach. "Arg're dich, o Seele, nicht" ("Vex Thyself, my Spirit, Naught").

7.50 p.m.—A Religious Service relayed from Chester Cathedral. Address by the Lord Bishop of Chester, the Rt. Rev. Henry Luke Paget, D.D.

8.45 p.m.—The Week's Good Cause: Appeal on behalf of King Edward's Hospital Fund by the Lord Chancellor (The Rt. Hon. Lord Hailsham).

8.50 p.m.—Weather Forecast, General News Bulletin, Local Announcements, Shipping Forecast.

9.5 p.m.—A Light Symphony Concert. Eda Kersey (Violin). The Wireless Symphony Orchestra, leader, S. Kneale Kelley; conducted by Aylmer Buesst. Overture, "Leonora," No. 3 (Beethoven). Suite, "Paysages" (Hollander) (conducted by the Composer).

9.40 p.m.—Eda Kersey, with Orchestra: Romance in G (Beethoven).

9.50 p.m.—Orchestra: Symphony No. 3 (Brahms).

10.30 p.m.—Epilogue, "The Great Supper."

MONDAY

10.0 a.m.—Commemoration Service, relayed from King's College, London.

10.30 a.m.—Time Signal (Greenwich) Weather Forecast.

11.0 a.m.—Gramophone Records.

12.0 noon.—A Ballad Concert. Winifred Norton (Soprano), James Topping (Tenor).

12.30 p.m.—Gramophone Records.

1.0-2.0 p.m.—Organ Recital by Edgar T. Cook, relayed from Southwark Cathedral. Doreen Bristol (Soprano).

2.30 p.m.—School Breaking-up Party.

3.15 p.m.—A Studio Concert. Cyril Whittle (Baritone), The Chelsea Octet.

4.15 p.m.—Alphonse du Clos and his Orchestra.

5.15 p.m.—The Children's Hour.

6.0 p.m.—A Listener's Talk.

6.15 p.m.—Time Signal (Greenwich) Weather Forecast, First General News Bulletin.

6.30 p.m.—Girl Guide Programme. Violin Solo by Ranger Irene Richards, Holder of the Guide Violin; 1926-8. The Chief Guide, Lady Baden-Powell.

6.45 p.m.—The Foundations of Music Schubert's Pianoforte Sonatas, played by James Ching. Grosse (Great) Sonata in B flat (First Movement).

7.0 p.m.—Mr. Desmond MacCarthy, Literary Criticism.

7.15 p.m.—Musical Interlude.

7.25 p.m.—The Rev. R. R. Hyde, Industrial Welfare.

7.45 p.m.—Vaudeville, with Jack Payne and the B.B.C. Dance Orchestra. Morris Harvey, Gwen Farrar and Billy Mayerl, Clarice Mayne and her pianist, Bobby Anderson, Clare Greet in "Concerning a Call," Julian Rose, the Hebrew Comedian, Charles Stainer in Piccolo Solos.

9.0 p.m.—Weather Forecast, Second General News Bulletin.

9.15 p.m.—Miss Mona Wilson, "Sir Philip Sidney."

9.30 p.m.—Local Announcements, Shipping Forecast.

9.35 p.m.—Chamber Music, including a Pianoforte Recital by Eugen D'Albert, Samuel Kutchner (Violin), George Whitaker (Violin), Raymond Jeremy (Viola), James Lockyer (Viola), Cedric Sharpe (Cello), Edward Robinson (Cello). The Sextet: Sextet in G, Op. 36 (Brahms).

10.0 p.m.—Eugen D'Albert: Sonata in C, Op. 53 (Beethoven) (Dedicated to Count Waldstein). Andante favori, Ecossaises (Beethoven).

10.30 p.m.—Sextet: Verklärte Nacht (Schonberg) (After a Poem by Richard Dehnel).

11.0 p.m.—12.0 midnight.—Dance Music.

TUESDAY

10.15 a.m.—The Daily Service.

10.30 a.m.—Time Signal (Greenwich) Weather Forecast.

11.0 a.m.—Gramophone Records.

12.0 noon.—A Concert in the Studio. Ward Jackson (Baritone), The Vecapino Trio.

1.0-2.0 p.m.—Alphonse du Clos and his Orchestra.

3.0 p.m.—A Concert of School Tunes and Songs, arranged and described by Sir Walford Davies.

4.0 p.m.—Louis Levy's Orchestra, conducted by Arnold Eagle.

5.15 p.m.—The Children's Hour.

6.0 p.m.—Sir William Beach Thomas: "The Best of Autumn"—VI.

6.15 p.m.—Time Signal (Greenwich), Weather Forecast, First General News Bulletin.

6.30 p.m.—Musical Interlude.

6.45 p.m.—The Foundations of Music.

7.0 p.m.—Miss Mary Paget: "On going blind."

7.15 p.m.—Musical Interlude.

7.25 p.m.—Mr. John Drinkwater: "Stamp Collecting."

7.45 p.m.—Nativity Play. In Three Scenes by Bernard Walker, relayed from St. Hilary's Church, Cornwall. "Bethlehem." Scene 1. The Angel and the Shepherds. Scene 2. The Children and the Lamb. Scene 3. The Three Kings and the Crib. Cast in order of appearance: The Angel, Boy, Second Shepherd, Third Shepherd, First Shepherd, Elizabeth, Mother, Benjamin, Asaph, Rachel, First King, Second King, Third King.

9.0 p.m.—Weather Forecast, Second General News Bulletin.

9.15 p.m.—Mrs. Esdaile: "English Sculpture."

9.30 p.m.—Local Announcements, Shipping Forecast.

9.35 p.m.—A Military Band Concert. Andrew Clayton (Tenor), The Wireless Military Band, conducted by B. Walton O'Donnell: Overture, "La Fiancée" (Auber).

9.45 p.m.—Andrew Clayton: Songs.

9.52 p.m.—Band: Spanish Dance Suite for Alto Saxophone Solo with Military Band (Norman Demuth), (Soloist, Walter Lear), Dance of the Hours (Ponchielli).

10.12 p.m.—Andrew Clayton: Songs.

10.20 p.m.—Band: Fantasy Pictures from a Pantomime (Kenneth A. Wright), Morris Dance, "Shepherd's Hey" (Percy Grainger).

10.35 p.m.—12.0 midnight.—Dance Music.

WEDNESDAY

10.15 a.m.—The Daily Service.

10.30 a.m.—Time Signal (Greenwich) Weather Forecast.

11.0 a.m.—Gramophone Records.

12.0 noon.—A Ballad Concert. Jo Tucker (Contralto), Phillip Ritte (Tenor).

12.30 p.m.—Gramophone Records.

1.0-2.0 p.m.—Frascati's Orchestra, directed by George Haack.

2.30 p.m.—35th Annual Banquet to Little Londoners and Distribution of Hampers to Crippled Children, relayed from the Guildhall.

3.0 p.m.—A Ballad Concert. Marguerite Pitcher (Soprano), Stanley Pope (Bass-Baritone), Daisy Scott (Flute).

3.45 p.m.—A Light Classical Concert. Carola Pajonk (Pianoforte), The Petersfield String Quartet.

4.45 p.m.—Organ Recital by Edward O'Hery.

5.15 p.m.—The Children's Hour.

6.0 p.m.—Gramophone Records.

6.15 p.m.—Time Signal (Greenwich), Weather Forecast, First General News Bulletin.

6.30 p.m.—The Week's Work in the Garden.

6.40 p.m.—Musical Interlude.

6.45 p.m.—The Foundations of Music.

7.0 p.m.—Mr. Robert Hobbs: "The Breeding of Dairy Cattle."

7.15 p.m.—Musical Interlude.

7.25 p.m.—Mr. C. C. Knights: "Salesmanship—V, Salesmanship and the Empire."

7.45 p.m.—Jack Payne and The B.B.C. Dance Orchestra.

8.25 p.m.—"The Blue Forest" by Louis Aubert, A Fairy Opera in Three Acts. Libretto by Jacques Chenevier, English Translation by Hermann Klein. Cast: Prince Charming (Andrew Clayton); Ogre and Hop-o'-My-Thumb's Father (Stuart Robertson); Hop-o'-My-Thumb (Kate Winter); Red Riding Hood (Barbara Pett-Fraser); The Princess (Ina Souez); Fairy Queen (Elsie Griffin); The Fairy (Wynne Ajello); The Waitress, Hop-o'-My-Thumb's Mother, and

Woman (Vivienne Chatterton); Baker's Wife, Child and Red Riding Hood's Mother (Rispa Goodacre). The Wireless Chorus, Chorus-Master Stanford Robinson. The Wireless Symphony Orchestra (Leader, S. Kneale Kelley), conducted by Percy Pitt.

9.0 p.m.—Weather Forecast, Second General News Bulletin.

9.15 p.m.—Mr. H. M. Tomlinson: "Good Morning, America."

9.30 p.m.—Local Announcements, Shipping Forecast.

9.35 p.m.—"The Blue Forest," Acts II and III.

10.40 p.m.—Mr. John Drinkwater reading from his new book of poems, "All About Me."

11.0 p.m.—12.0 midnight.—Dance Music.

THURSDAY

10.15 a.m.—The Daily Service.

10.30 a.m.—Time Signal (Greenwich) Weather Forecast.

11.0 a.m.—Gramophone Records.

12.0 noon.—A Concert in the Studio: Daphne Martin (Soprano), The Gladys Noon Trio.

1.0-2.0 p.m.—Gramophone Records.

3.0 p.m.—Evensong from Westminster Abbey.

3.45 p.m.—Miss Mary Elphinstone: "A Church with a Museum"

4.0 p.m.—A Brass Band Concert: Elsie Black (Contralto), Callender's Band conducted by Tom Morgan.

5.15 p.m.—The Children's Hour.

6.0 p.m.—Musical Interlude.

6.15 p.m.—Time Signal (Greenwich), Weather Forecast, First General News Bulletin.

6.30 p.m.—Market Prices.

6.35 p.m.—Musical Interlude.

6.45 p.m.—The Foundations of Music.

7.0 p.m.—Mr. Francis Toye: "Music in the Theatre."

7.15 p.m.—Musical Interlude.

7.25 p.m.—Mr. A. L. Simpson: "The Magic of Our Maps."

7.45 p.m.—Vaudeville: Tommy Handley (Comedian), George E. Morris (Banjoist), Doris and Elsie Waters (Synco-pated Duets), Nora Delany (Synco-pated Numbers at the Piano), Jack Padbury's Cosmo Club Six.

9.0 p.m.—Weather Forecast, Second General News Bulletin.

9.15 p.m.—Mr. Vernon Bartlett: "The Way of the World."

9.30 p.m.—Local Announcements, Shipping Forecast.

9.35 p.m.—National Programme—Finland. Among those taking part will be Scott Goddard (at the piano) and C. Denis Freeman.

10.5 p.m.—A Violin Recital by Arthur Catterall.

10.30 p.m.—12.0 midnight.—Dance Music.

FRIDAY

10.15 a.m.—The Daily Service.

10.30 a.m.—Time Signal (Greenwich) Weather Forecast.

11.0 a.m.—Gramophone Records.

12.0 noon.—A Sonata Recital: Keem McEndoo (Violin), Arnold Perry (Pianoforte).

12.30 p.m.—Organ Recital by Leonard H. Warner, from St. Botolph's, Bishopsgate.

1.0-2.0 p.m.—Lunch Time Music: Moschetto and his Orchestra.

3.0 p.m.—A Light Orchestral Concert: The Birmingham Studio Orchestra conducted by Joseph Lewis, Foster Richardson (Baritone), Willibald Richter (Pianoforte).

4.0 p.m.—Carillon Recital by M. le Chevalier Jef Denyn, relayed from Messrs. J. and E. Atkinson, Ltd., Old Bond Street.

4.30 p.m.—Frank Westfield's Orchestra.

5.15 p.m.—The Children's Hour.

6.0 p.m.—Mrs. Robert Noble: "How to run a Christmas Party."

6.15 p.m.—Time Signal (Greenwich), Weather Forecast, First General News Bulletin.

6.30 p.m.—Musical Interlude.

6.45 p.m.—The Foundations of Music.

7.0 p.m.—Mr. Edwin Evans: Musical Criticism.

7.15 p.m.—Musical Interlude.

7.25 p.m.—Historical Reading: Froissart's Chronicles, Chapter 146—The Surrender of Calais. Chapter 384—Wat Tyler's Death at Smithfield.

7.45 p.m.—A Light Orchestral Concert: A British Composers' Programme. The Wireless Chorus (Chorus Master, Stanford Robinson), The Wireless Orchestra conducted by John Ansell: March, "Henry VIII" (Sullivan), Overture, "Richard III" (German),

8.0 p.m.—Chorus: Songs, "Minnehaha" (Coleridge-Taylor).

8.20 p.m.—Chorus: Songs.

8.27 p.m.—Orchestra: Selections: "Reminiscences of the Savoy" (Sullivan, arr. Moore), English Dances (Quilter).

8.44 p.m.—Chorus: Songs.

8.50 p.m.—Orchestra: Suite, "Summer Days" (Eric Coates).

9.0 p.m.—Weather Forecast, Second General News Bulletin.

9.15 p.m.—Capt. A. H. d'Egville: "All the Fun of the Railway Fare."

9.30 p.m.—Local Announcements, Shipping Forecast.

9.35 p.m.—"Through the Looking-Glass": An Adaptation of Lewis Carroll's Book made for the Microphone by Cecil Lewis. With incidental music by Victor Hely-Hutchinson.

11.0 p.m.—Surprise Item.

11.15 p.m.—12.0 midnight.—Dance Music.

SATURDAY

10.15 a.m.—The Daily Service.

10.30 a.m.—Time Signal (Greenwich), Weather Forecast.

1.0-2.0 p.m.—The Carlton Hotel Octet, directed by Rene Tapponnier.

3.15 p.m.—Christmas Music: To be sung by the Civil Service Choir, conducted by Stanford Robinson. Organist, Arnold Goldsbrough. Relayed from St. Martin-in-the-Fields. Arnold Goldsbrough: Choral, Prelude, "In dulci jubilo" (Bach). Choir: In Dulci jubilo, Hodie Christus natus est, Good King Wenceslas (arr. Geoffrey Shaw), The Holly and the Ivy (arr. Rutland Boughton), The Coventry Carol, The First Noel, Rejoice and Sing, All darkness lies before thy face ("Christmas Oratorio") (Bach). Organ Recital. Choir: Welcome Yule, I sing the Birth (Parry), Before Dawn (Armstrong Gibbs), The Joyful Birth (Leslie Woodgate), Christmas Day (Holst).

4.30 p.m.—The Ernest Leggett London Octet: Fantasia on Operatic Themes (arr. Tobani), Valse Lente (A Minor) (arr. Chopin), Two Movements from Japanese Suite (H. Gibson), Bells of Spring, Autumn Wind; Christmas Suite (Adlington), Prelude, Grace Bridge Hall, Squire's Song, Minuet, To Julia, Country Dance; The Dorset Daisy (Ernest Melvin).

5.15 p.m.—The Children's Hour.

6.0 p.m.—Musical Interlude.

6.15 p.m.—Time Signal (Greenwich), Weather Forecast, First General News Bulletin, Announcements and Sports Bulletin.

6.40 p.m.—Musical Interlude.

6.45 p.m.—The Foundations of Music.

7.0 p.m.—Mr. Ernest Newman: "Next Week's Broadcast Music."

7.15 p.m.—Musical Interlude.

7.25 p.m.—Captain Eric Green: "Forward play to-day."

7.45 p.m.—A Military Band Concert: The Wireless Military Band, conducted by B. Walton O'Donnell. Regimental Marches.

8.30 p.m.—A Recital of Montague Phillips' Songs. Sung by Clara Butterworth (Soprano) and Leonard Gowings (Tenor), with the Composer at the Piano. Clara Butterworth: Starry Woods, Butterfly Wings, Sing, sing, blackbird. Leonard Gowings: Dolorosa, Phyllis, The Quest. Clara Butterworth: Love, the Jester, In April, O ship of my delight. Leonard Gowings: Nightfall at Sea, My Celia, Can I Forget? Clara Butterworth: The Dance on the Lawn, A Young Girl's Song, The Enchanted Forest.

9.0 p.m.—Weather Forecast, Second General News Bulletin.

9.15 p.m.—Mr. Gerald Heard: "Ghosts."

9.30 p.m.—Local Announcements, Shipping Forecast.

9.35 p.m.—Vaudeville, with Jack Payne and the B.B.C. Dance Orchestra.

10.35 p.m.—12.0 midnight.—Dance Music.

(Continued from page 917)

Truceck), Spring Fancies, No. 1 (Hamilton Hart).

9.23 p.m.—Band: Pilgrims' March and Saltarello (the "Italian" Symphony) (Mendelssohn). Overdromen Mason: Legend (Zabel), Impromptu-Caprice (Pierné).

9.40 p.m.—Band: Cornet Solo, "L'Adieu" (Schubert, arr. Godfrey) (Soloist, P.C. Cook), Sele-

tion, "Reminiscences of Scotland" (arr. Godfrey).

10.0 p.m.—Weather Forecast, Second General News Bulletin.

10.15 p.m.—Some Orchestral Music of a New Type. The Birmingham Studio Augmented Orchestra—Leader, Frank Cantell. Conducted by Joseph Lewis: Suite of Incidental Music, "Macbeth" (Bantock).

10.30 p.m.—Michael Mullinar (Pianoforte) and Orchestra: Concerto, "Variations on a Nursery Rhyme" (Dohnanyi).

10.57-11.15 p.m.—Margaret Ablethorpe (Pianoforte), Michael Mullinar and Orchestra: The Carnival of Animals (A Zoological Fantasy) (Saint-Saens).

FRIDAY

3.0 p.m.—Organ Recital. By Ernest F. Mather, L.R.A.M. Organist and Director of the Choir, St. Mary Magdalene, Munster Square. Relayed from St. Mary-le-Bow. Patricia Guest (Soprano).

4.0 p.m.—Jack Payne and The B.B.C. Dance Orchestra. Jean Paul and Leonie Lascelles (Duets).

5.30 p.m.—The Children's Hour.

6.15 p.m.—Time Signal (Greenwich), Weather Forecast, First General News Bulletin.

6.30 p.m.—Light Music. Gwladys Hay-Dillon (Soprano). Stewart Gardner (Baritone). The Henry Sensible Quintet.

8.0 p.m.—Vaudeville. Miriam Ferris (Light Songs). Bobby Blythe and Dorothy Monkman (Comedy Duo). Dorothy McIlain (The Girl who Whistles in her Throat). Oly Oakley (Banjo). Fred Gibson, in Mirth and Misery. Philip Brown's Astorians Dance Band.

9.0 p.m.—Excerpt from Gounod's "Faust." The Birmingham Studio Augmented Orchestra. (Leader, Frank Cantell). Conducted by Joseph Lewis. Frances Morris (Soprano). Constance Willis (Contralto). Norman King (Tenor). Howard Fry (Baritone).

10.0 p.m.—Weather Forecast, Second General News Bulletin.

10.15-11.15 p.m.—Dance Music.

SATURDAY

3.30 p.m.—"Moonshine." A New Radio Show written and arranged by Charles Brewer. Sketches by Edwin Lewis. Music by Various Composers. Presented by Phyllis Jones, Edith James, Brian Victor, Harry Sennott, Alfred Butler, Harry Saxton. Walter Randall, Nigel Dallaway (at the Pianos).

4.30 p.m.—The Dancesant. Billie Francis and his Band. Relayed from the West End Dance Hall, Raymond Green (Entertainer).

5.30 p.m.—The Children's Hour.

6.15 p.m.—Time Signal (Greenwich), Weather Forecast, First General News Bulletin, Announcements and Sports Bulletin.

6.40 p.m.—Sports Bulletin.

6.45 p.m.—Light Music. Pattison's Salon Orchestra. Directed by Norman Stanley. Relayed from the Corporation Street Café Restaurant. Daisy Neal (Contralto), Norris Stanley (Violin).

7.45 p.m.—Christmas Carol Concert. Relayed from the Assembly Room, City Hall, Cardiff. National Orchestra of Wales (Conductor, Gene-daethol Cymru) (Conducted by Warwick Braithwaite), Toppiss Green (Baritone). The Station Repertory Choir and Orchestra.

9.0 p.m.—Popular Carols, by the Birmingham Studio Chorus and Orchestra (Conducted by Joseph Lewis).

9.45 p.m.—Nora Delany: Synco-pated Numbers at the Piano.

10.0 p.m.—Weather Forecast, Second General News Bulletin.

10.15 p.m.—Sports Bulletin.

10.20 p.m.—A Ballad Concert. Nigel Dallaway (Pianoforte). Barra Partridge (Violin). Sonata in G, Op. 13 (Grieg).

10.30 p.m.—"The Daisy Chain." A Song Cycle for Solo Voices. (Liza Lehmann) Emilie Waldron (Soprano), Alice Vaughan (Contralto), Geoffrey Dams (Tenor), James Howell (Bass).

11.5-11.15 p.m.—Barra Partridge's Andantino (Martini arr. Kreisler) Humoresque ("Fyra Aquareller") ("Four Watercolours") (Tor Aulin); Præclaudium and Allegro (Puccini, arr. Kreisler).



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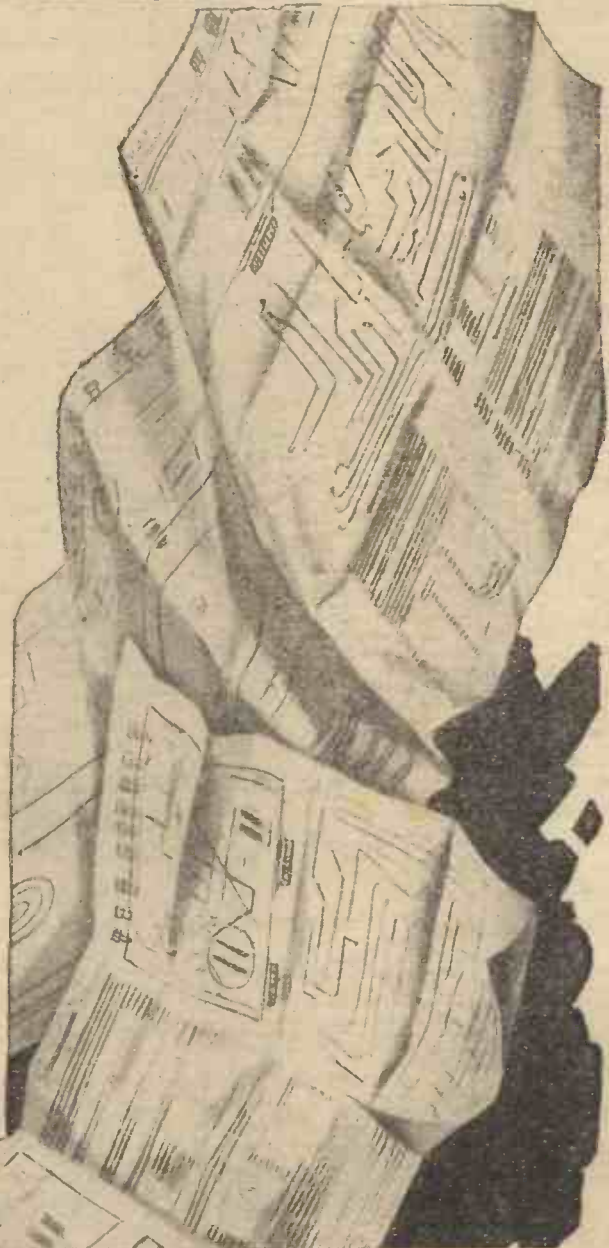
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DAVENTRY (EXPERIMENTAL) PROGRAMME

(5 GB) (491.8 metres: 610 kc.) (24 kw.) (December 16—22)

SUNDAY

- 3.30 p.m.—Chamber Music: Alfred Barker (Violin) and R. J. Forbes (Pianoforte), Josefa Regnard (Soprano), Miguel Llobet (Guitar).
- 6.0-6.30 p.m.—Excerpt from "Christ-mas Oratorio" (Bach). Relayed from the Great Hall, Oundle School. Carrie Tubb (Soprano), Margaret Balfour (Contralto), John Adams (Tenor), Topliss Green (Bass), Charles Woodhouse and S. Champ (Principal 1st Violins), Leon Goossens (Principal Oboe d'Amore), G. W. Brewster (Organ).
- 8.0 p.m.—A Religious Service: Address by the Very Rev. Dr. Bird of Holy Trinity Roman Catholic Church, Sutton Coldfield). Music by the Birmingham Oratory Choir.
- 8.45 p.m.—"The Week's Good Cause: An Appeal on behalf of the Royal Cripples' Hospital, Birmingham, by Lieut.-Col. Graham Deakin, D.S.O. (Honorary Treasurer).
- 8.50 p.m.—Weather Forecast, General News Bulletin.
- 9.0 p.m.—Tom Jones and the Grand Hotel, Eastbourne, Orchestra. Norman Venner (Baritone). Relayed from the Grand Hotel, Eastbourne, Orchestra: Overture, "Maritana" (Wallace), "Poème" (Fibich). Norman Venner: Beloved, it is Mom (Florence Aylward). Orchestra: Selection, "Sylvia" (Debussy). Tom Jones (Violin): Slow Movement from Concerto (Wieniawski), Præludium and Allegro (Pagnani, arr. Kreisler). Norman Venner: "The Monkey's Carol" (Stanford). Orchestra: Fantasia, "Samson and Delilah" (Saint-Saëns).
- 10.30 p.m.—Epilogue.

MONDAY

- 3.0 p.m.—Lozell's Picture House Orchestra, conducted by E. A. Parsons; Edmond Letts (Baritone).
- 4.0 p.m.—Jack Payne and the B.B.C. Dance Orchestra, Renée Rudarni and Billy Carlton (Instrumentalists).
- 5.0 p.m.—A Ballad Concert: Muriel

- Ogden (Contralto), Frederick Steger (Tenor).
- 5.30 p.m.—The Children's Hour.
- 6.15 p.m.—Time Signal (Greenwich). Weather Forecast, First General News Bulletin.
- 6.30 p.m.—Light Music: The Birmingham Studio Orchestra, conducted by Frank Cantell; Leonard Gordon (Baritone).
- 7.45 p.m.—Community Singing and Carol Concert from Canford School, Wimborne. Eileen Leonard (Soprano), Philip Taylor (Baritone), A. E. Thorne (Accompanist); conducted by S. B. Leonard. "Adeste Fideles" (sung in Latin) (The whole School), "God Rest ye Merry, Gentlemen" (Baritone Solo, the School singing the Chorus), "The Agincourt Song" (Fifteenth Century) (Soprano Solo, the School singing the Chorus), "Unto us is Born a Son" (Fourteenth Century) (The whole School), "The Yule Log" (Charles Wood) (Baritone Solo, the School singing the Chorus), Good King Wenceslas (Soprano and Baritone Solos and the whole School), "In dulci Jubilo" (Fourteenth Century) (The whole School), "The National Song Book", "The Wassail Song" (Baritone Solo, the School singing the Chorus), The First Noel (Soprano Solo, Chorus by the whole School) ("Oxford Song Book").
- 8.10 p.m.—"The Blue Forest" (see 5XX, Wed., 8.25 p.m.).
- 8.45 p.m.—Poetry Reading.
- 8.55 p.m.—"The Blue Forest," Acts II. and III.
- 10.0 p.m.—Weather Forecast, Second General News Bulletin.
- 10.15—11.15 p.m.—Dance Music.

TUESDAY

- 3.0 p.m.—Paul Moulder's Rivoli Theatre Orchestra.
- 4.0 p.m.—An Orchestral Programme. The Birmingham Studio Orchestra, conducted by Frank Cantell; Booth Unwin (Bass), Marie Wilson (Violin).

- 5.30 p.m.—The Children's Hour.
- 6.15 p.m.—Time Signal (Greenwich). Weather Forecast, First General News Bulletin.
- 6.30 p.m.—Jack Payne and the B.B.C. Dance Orchestra: Jean Paule and Leonie Lascelles (Duets).
- 7.30 p.m.—Gramophone Recital "The Planets" (Gustav Holst).
- 8.0 p.m.—Further Fireside Singing: Once again listeners are asked to join with The Birmingham Studio Chorus, led by Joseph Lewis, in singing further Popular Songs and Choruses.
- 8.35 p.m.—"Through the Looking Glass," An Adaptation of Lewis Carroll's Book made for the microphone by Cecil Lewis. Incidental Music by Victor Hely-Hutchinson.
- 10.0 p.m.—Weather Forecast, Second General News Bulletin.
- 10.15 p.m.—A Concert for Chamber Orchestra, conducted by Stanford Robinson. Overture in B minor (for Flute and Strings) (Bach). (Solo Flute, Frank Almgill).
- 10.32 p.m.—Symphony No. 37 in G (for Flute, Oboes, Horns, and Strings) (Mozart).
- 10.53 p.m.—Danse Sacrée et Danse Profane (for Harp and Strings) (Debussy) (Solo Harp, Jeanne Chevreau).
- 11.4 p.m.—My Robin is to the Greenwood gone (for Flute, English Horn, and Strings) (Percy Grainger).
- 11.10 p.m.—11.15 p.m.—Overture on Hebraic Themes (for Clarinet, Strings, and Pianoforte) (Prokofief) (Solo Clarinet, Frederick Thurston) (Solo Pianoforte, Victor Hely-Hutchinson).

WEDNESDAY

- 3.0 p.m.—A Military Band Programme. The Birmingham Military Band conducted by W. A. Clarke: Helen Alston (Entertainer at the Piano).
- 4.30 p.m.—Jack Payne and The B.B.C. Dance Orchestra: Renée Rudarni and Billy Carlton (Instrumentalists).
- 5.30 p.m.—The Children's Hour.

- 6.15 p.m.—Time Signal (Greenwich). Weather Forecast, First General News Bulletin.
- 6.30 p.m.—Bermondsey Central School Concert: Bermondsey Central School for Boys, Monnow Road. The Monnow Song, 1st Verse only (Bermondsey Central School Song). Operetta, "The Village Maiden."
- 7.0 p.m.—Light Music. The Birmingham Studio Orchestra, conducted by Joseph Lewis. Muriel Sotham (Contralto).
- 8.0 p.m.—A Military Band Concert. Sybil Maden (Contralto), Stanislas Niedzielski (Pianoforte), The Wireless Military Band, conducted by B. Walton O'Donnell: Overture, "Sunlight and Shade" (Parker).
- 8.10 p.m.—Sybil Maden: The Lake Isle of Innisfree (M. Herbert), Death of Robin Hood (Eva Pain), The Woodland Tailor (Ernest Austin).
- 8.18 p.m.—Band: Four Old English Dances (Cowen), Stately Dance, Rustic Dance, Graceful Dance, Country Dance.
- 8.35 p.m.—Stanislas Niedzielski: Waltzes—Frühlingstimmen (Voice of Spring) (J. Strauss), Soirée de Vienne (arr. A. Grunfeld); A Thousand and One Nights (J. Strauss), Polish Dance (Oberek) (E. Goldstein, arr. Marczowski) (Concert Transcription by Niedzielski).
- 8.50 p.m.—Band: Selection, "Utopia Limited" (Sullivan).
- 9.6 p.m.—Sybil Maden: Bethlehem (Broeck), Song of the Bell (Oliver).
- 9.12 p.m.—Band: Poetic Scenes (Godard).
- 9.30 p.m.—Here we come a-ballading. A Monologue by Fred E. Weatherly, K.C., with Songs by Ethel Dakin (Soprano) and Glyn Eastman (Baritone).
- 10.0 p.m.—Weather Forecast, Second General News Bulletin.
- 10.15—11.15 p.m.—Dance Music.

THURSDAY

- 1.10—1.50 p.m.—Lunch Hour Carol Service.

- 3.0 p.m.—A Symphony Concert. The Bournemouth Municipal Augmented Orchestra, conducted by Sir Dan Godfrey. Samuel Kitcher (Violin).
- 4.30 p.m.—Lozell's Picture House Organ. Frank Newman, Ethel Williams (Contralto).
- 5.30 p.m.—The Children's Hour.
- 6.15 p.m.—Time Signal (Greenwich). Weather Forecast, First General News Bulletin.
- 6.30 p.m.—Jack Payne and the B.B.C. Dance Orchestra.
- 7.15 p.m.—A Light Instrumental Ballad Concert. Belle Davidson (Violin), Margaret Good (Pianoforte), Walter Lear (Saxophone).
- 8.0 p.m.—The Harold Brooke Choir, conducted by Harold Brooke: Motet, "O rend the Heavens" (Op. 74, No. 2 (Brahms) (English Version by Lucia Young). Elsie Suddaby: Elizabethan Songs—The Peaceful Westerne Winde (Campion (1610), arr. Frederick Keel), Sweete was the song (Attey (1662), arr. Frederick Keel). Choir: Four Psalms for Baritone Solo and Chorus, Op. 74 (Grieg) (English Version by Percy Grainger). Elsie Suddaby, with String Accompaniment: Two Arias ("Semle") (Handel). Choir: Six Part Songs for Women's Voices and Strings, Op. 44 (Holst) (Words by Robert Bridges) (Soloist, Elsie Suddaby), Old Song, "The Three Jovial Huntsmen", Op. 11 (set as a Cantata for Small Chorus, Violin, and Pianoforte) (Walford Davies) (Soloist, Elsie Suddaby) (Solo Violin, S. Kneale Kelley) (Pianoforte, Maud Allwright).
- 9.0 p.m.—A Military Band Concert. The City of Birmingham Police Band, conducted by Richard Wassell: Second "Pomp and Circumstance" March (Elgar), Overture, "The Four Ages of Man" (Lachner, arr. Retford). Gwendolen Mason (Harp): Fantasia on Aïrs by Schubert (arr.

(Continued on page 929).

PROGRAMMES FOR SUNDAY (December 16)

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO GREENWICH MEAN TIME

- ### BRUSSELS (Belgium)
- Radio-Belgique. 590.4 kc (508 m.); 1 kw.
 - 5.0 p.m.—Concert from the Armentières Tea Rooms.
 - 5.30 p.m.—Children's Programme.
 - 6.0 p.m.—Relay of Concert.
 - 6.45 p.m.—Trio Concert.
 - 7.30 p.m.—"Radio-Chronique."
 - 8.15 p.m.—Orchestral Concert.
 - 10.15 p.m.—News and Close Down.

- ### COLOGNE (Germany)
- Westdeutscher Rundfunk. 1,060.15 kc (283 m.); 4 kw.
 - See Langenberg Programme.

- ### COPENHAGEN (Denmark)
- Copenhagen Radio. 889.9 kc (337 m.); 1 kw.
 - Relayed by Kalundborg, 261.9 kc (1,153 m.).
 - 9.0 a.m.—Relay of Divine Service with Sermon from the Miribø Domkirke.
 - 12.0 noon.—German Language Lesson
 - 12.30 p.m.—French Language Lesson.
 - 2.0 p.m.—Afternoon Concert: 1. Florentine March (Fucik). 2. Hussars' Waltz (Ganne). 3. Selection from "Butterflies" (Johs. Andersen). 4. Dance of the Water Nymphs from "Loreley" (Catalani). 5. Serenata d'Amalfi (Beccè). 6. Habillage (Gillet). 7. Intermezzo from "L'Amico Fritz" (Mas-cagni). 8. "A Retrospective Glance," by H. P. Hanssen. 9. "Morning, Noon, and Night"—Overture (Suppé). 10. Morgen-blätter—Waltz (J. Strauß). 11. Slavonic Dance in E Minor, No. 2 (Dvorak). 12. Zamore—Tango (S. Dacuris). 13. Melody (Ant. Rubinstein). 14. Sugar—Foxtrot (Crum and Nicholls). 15. Dance of the Dervishes ("H. Bandk).
 - 4.0 p.m.—Relay of Divine Service from the Eliaskirke, with Address by Pastor P. Nedergaard.
 - 5.20 p.m.—Programme for Children:

- Talk, "Through the Mediterranean to the Holy Land and Egypt," by Herr Henrik Madsen.
- 6.0 p.m.—News Bulletin and Time Signal.
- 6.30 p.m.—Talk by Prof. H. M. Hansen, "Radium—its History, Composition and Properties."
- 7.0 p.m.—Town Hall Chimes.
- 7.2 p.m.—Relay from the Casino: 1. "Rosamunde" — Overture (Schubert). 2. "Lilac Time" — Operetta in Three Acts (Schubert-Berté).
- 9.20 p.m. (approx.)—In the interval between the Second and Third Acts, News Bulletin.
- 10.0 p.m. (approx.)—Dance Music by the Palace Orchestra under the direction of Teddy Petersen.
- 11.0 p.m.—Town Hall Chimes.
- 11.30 p.m. (approx.)—Close Down.

- ### CORK (Ireland)
- Cork Broadcasting Station (6CK). 748 kc (401 m.); 1 kw.
 - 8.30 p.m.—Organ Recital, relayed from St. Fin Barre's Cathedral, Organist: J. T. Horne.
 - 9.0 p.m.—Tenor Song Recital by Mr. J. N. Barry.
 - 9.15 p.m.—Pianoforte Recital by Frau Fleischmann.
 - 9.45 p.m.—Song Recital by Mary Maguire (Mezzo-Soprano).
 - 9.55 p.m.—Baritone Song Recital by Philip Bertram.
 - 10.5 p.m.—Musical Selections by the Station Septet.
 - 10.20 p.m.—Mezzo-Soprano Solos, by Mary Maguire.
 - 10.30 p.m.—Baritone Solos by Philip Bertram.
 - 10.40 p.m.—Musical Selections by the Station Septet.
 - 11.0 p.m.—National Anthem.
 - 11.5 p.m. (approx.)—Weather Forecast.
 - 11.10 p.m. (approx.)—Close Down.

- ### CRACOW (Poland)
- Polskie Radio. 529.6 kc (566 m.); 1 kw.
 - 9.15 a.m.—Transmission of Divine Service from the Cathedral at Posen.
 - 10.15 a.m.—Transmission of Chimes

- from the Church of Notre-Dame, Time Signal and Weather Report and Forecast.
- 11.10 a.m.—Programme from Warsaw.
- 1.0 p.m.—Talk for Farmers by M. Z. Wojnarovsky on the Breeding of Pigs in Denmark.
- 1.20 p.m.—Talk for Farmers by Professor St. Sokolovsky on the Principles of a Rational Utilisation of Timber.
- 1.40 p.m.—Agricultural News by Doctor St. Wasnievsky.
- 2.0 p.m.—Weather Report and Forecast.
- 2.15 p.m.—Programme from Warsaw.
- 4.20 p.m.—Talk by Mr. A. Abdank on Historic Personages in the Anecdotes of the Eighteenth Century.
- 4.45 p.m.—News and Sports Notes.
- 5.0 p.m.—Programme from Warsaw.
- 6.0 p.m.—Audition by the Academy of Fine Arts on the occasion of its Fiftieth Anniversary.
- 7.30 p.m.—Concert of Instrumental and Vocal Music. Artistes: Mlle. Jeanne Raczynska (Vocalist), M. Romain Mieczysky (Pianist), Mr. B. Wallek-Walevsky (Accompanist). 1. (a) Pianoforte Solo by Mr. Romain Mieczysky: Arabesque (Schumann), (b) Intermezzo. 2. (a) Soprano Solos by Mlle. S. Raczynska: Liu's Aria from "Turandot" (Puccini), (b) Aria from "Samson and Delilah" (Saint-Saëns). 5. Pianoforte Solo by M. Romain Mieczysky: Nocturne (Glazunoff). 6. Humoresque (Rachmaninoff). 7. Songs by Mlle. Raczynska: (a) Selection from "Antar" (Dupont), (b) Avec une extase attendrie (Pesse), (c) Chanson de Yamina, from the "Croissant de Pourpre" (Pillois). 8. Pianoforte Solo by M. Romain Mieczysky: (a) Nocturne and Waltz from the Suite on the Name of Sacha (Glazunoff). 11. Soprano Solos by Mlle. Raczynska: (a) Soupir (Duparc), (b) Meditation from "Thaïs" (Massenet). 12. Pianoforte Solo by M. Romain Mieczysky: Navarra (Romain Mieczysky). 13. Soprano Solo by Mlle. Raczynska: Ophelia's Aria from "Hamlet" (Thomas).

- 9.0 p.m.—Transmission from Warsaw.
 - 9.30 p.m.—Transmission of a concert from a Restaurant.
- ### DANZIG (Free State)
- 1,105 kc (271 m.); 0.7 kw.
 - 8.0 a.m.—9.30 p.m.—See Königsberg.
 - 9.30 p.m.—Dance Music by the Danzig Station Orchestra, under the direction of Alois Salzberg.
 - 11.0 p.m. (approx.)—Close Down.

- ### DUBLIN (Ireland)
- Dublin Broadcasting Station (2RN). 940 kc (319 m.); 1 kw.
 - 8.30—11.0 p.m.—Programme relayed from Cork.

- ### HAMBURG (Germany)
- Norag (ha, in Morse). 750.8 kc (395 m.); 4 kw. Relayed by Bremen, on 1,099 kc (273 m.); and Kiel, 1,178 kc (255 m.). Transmits at intervals from 7.25 a.m. 11.55 a.m.—Nauen Time Signal.
 - 12.5 p.m.—Advent Concert.
 - 1.0 p.m.—Children's Corner.
 - 3.0 p.m.—Concert of Christmas Church Music from Bremen.
 - 4.30 p.m. (from Kiel). "Baby's Christmas Dream"—Musical Poem (Falke and Humperdinck).
 - 5.30 p.m.—Programme of Operetta Duets from Kiel.
 - 6.0 p.m.—News and Announcements.
 - 6.30 p.m.—Talk on Table-Tennis from Kiel.
 - 6.40 p.m.—Sports Notes and Weather.
 - 7.0 p.m.—"Eva"—Operetta (Lehár).
 - 9.30 p.m.—Weather, News, and Concert. Relayed from Café.
 - 10.30 p.m.—North Sea and Baltic Weather Report.

- ### HILVERSUM (Holland)
- Algemeene Vereeniging Radio Om-roep. 280 kc (1,071 m.); 5 kw.
 - 12.10 p.m.—Orchestral Concert by the Station Orchestra, conducted by Nico Treep, with the Assistance of Mien Bouwmeester-Vérbeydt (Soprano Soloist).
 - 1.40 p.m.—Talk.
 - 2.10 p.m.—Orchestral and Instrumental Concert relayed from the "Concertgebouw" at Amsterdam.

- 1. "The Italian Girl in Algiers"—Rossini. 2. Symphony (Coppola).
- 3. Concerto for Violin and Orchestra (Beethoven).
- 3.40 p.m.—Reading of a Children's Story.
- 4.20 p.m.—Concert of Gramophone Records.
- 7.40 p.m.—Time, News, and Sports Notes.
- 7.55 p.m.—"La Traviata"—Opera (Verdi).
- 10.40 p.m. (approx.)—Close Down.

- ### KALUNDBORG (Denmark)
- Kalundborg Radio. 261.9 kc (1,153 m.); 7.5 kw.
 - See Copenhagen Programme.

- ### KÖNIGSBERG (Germany)
- Ostmarken Rundfunk. 989.75 kc (303 m.); 4 kw.
 - 8.0 a.m.—Divine Service. Preacher: Pfarrer Passauer of the Liebenichtse Church, Königsberg. Sacred Music Recital: 1. Ach Herr, lass deine lieben Engelchen—Cantata by Tunder (1614-1667). 2. Pavane—Sarabande from a Suite by Rosenmüller (1654). Conductor: Ernst Maschke. String Quartet, two Violas, Cembalo and Harmonium. Vocalist: The Concert Singer, Elisabeth Maschke.
 - 10.5 a.m.—Morning Service, with Philipp Jarnach and the Königsberg String Quartet: Messrs. Hewers, Wiek, Wiek-Hulisch and Kirchberger, with the assistance of Gustav Scheck (Solo-Flute).
 - 11.0 a.m.—Morning Concert by the Station Orchestra under the direction of Walter Kelch. 1. Fest-Overture (Lortzing). 2. Ballet Music from the Opera "La Juive" (Halévy). 3. Introduction and Serenade from the Opera, "The Snowman" (Korngold). 4. Suite from the Opera, "Der Rosenkavalier" (R. Strauss). 5. Fantasia on the Opera, "Jonny spielt auf" (Krenek).
 - 11.55 a.m.—The Nauen Time Signal, followed by Weather Forecast.
 - 1.0 p.m.—Afternoon Concert of Light Music and Recitations. under the direction of Volkmar Skalak and

Programmes for Sunday.—(Cont.)

with the assistance of the Lehdri Haime Lute Chorus, Carl Erhardt-Hardt (Vocalist), Kurt Wernick (Recitations in East Prussian Dialect), Volkmar Skakal (Solo Violin), Hermann Driehel (Solo Cello), Otto Lingk (Solo Xylophone), and Fritz Philipp (Accompanist).

Orchestral Selections: (a) Banditenstrieche—Overture (Suppe), (b) Flirtation—Waltz Intermezzo (Steck), 2. Selections for Lutes: by the Lehdri-Haime Lute Chorus: (a) Das bittersüße Lied, (b) Die schönste Jagd and (c) Küsekraut, from "Kleinen Rosengarten," by Löns, arranged by Fritz Jöde. 3. Cello Solo: Romance (August Fränckomme).

Orchestral Selection: In the Garden of the Chinese Temple (Kettelbey).

5. Selections for Lutes: (a) Auf dem Berge, es geht der Wind-Folk Song of Upper Silesia, (b) Auf der Ottenbank—Bohemian Folk Song. 6. Violin Solo: Ballade Polonaise (Vieuxtemps). 7. Orchestral Selection: Frenz each des Lebens—Waltzes (Johann Strauss).

8. Songs: Carl Erhardt-Hardt. 9. Selection for Orchestra and Xylophone: La bella Victoria (Sele). 10. Humorous East Prussian Recitations by Kurt Wernick.

11. Songs: Carl Erhardt-Hardt. 12. Orchestral Selection: "The Star-spangled Banner"—March (Souza).

3.0 p.m.—Afternoon Concert by the Station Orchestra, under the direction of Walter Kelch. Programme of Russian Music:

1. Suljanka—Potpourri (Wilke). 2. Der Kasbek (Goldmann). 3. "Tanja"—Song (Krome). 4. Song of the Russian Steppes (Keller). 5. Violin Solo, Walter Kelch: Two Russian Romances. 6. Two Russian Dances (Bortkiewicz). 7. Volga Song. 8. Violin Solo, Walter Kelch: Serenade melancholique (Tschai-kovsky). 9. Russian Rhapsody (Borodine).

4.45 p.m.—Programme for Children. Talk on Karl Gutzkow (died December 16th, 1878), with Introductory Speech by Dr. Ludwig Goldstein.

5.30 p.m.—"Horridol!"—Humorous Hunting Sketch, with Kurt Hoffmann and the Double Men's Quartet and Bugle Quartet, concluding with Talk by Rittmeister Kobylinski on the Law of Inheritance in Relation to the Ukpeep of Game Preserves.

7.10 p.m.—"Die keusche Susanne"—Opera in three Acts by Georg Okonkowsky, music by S. Gilbert, under the direction of Josef Christen. Conductor, Hugo Layendecker. Caste: Baron des Aubrais (Littérateur), Delphine (his wife), Jacqueline and Hubert (their children), Lieutenant René Boislurette, Pomare (Manufacturer of Perfume), Susanne (his wife), Chaurency (Littérateur), Rose (his wife), Alexis (Head waiter), Emile (chamber maids), Wavari, Coucou, Paillason, Irma, Commissioner of Police. Scene: Paris at the Present Time. Followed by News and Announcements and Sports Notes.

9.30 p.m.—Dance Music from Danzig. Danzig Station Orchestra, conducted by Alois Salzberg.

11.0 p.m. (approx.)—Close Down.

LAHTI (Finland)
199.46 kc (1,504 m.); 20 kw.
8.0 a.m.—Relay of Divine Service in Finnish.
9.50 a.m.—Press News and Announcements.
10.0 a.m.—Market Prices and Exchange Quotations.
10.5 a.m.—Concert Programme.
10.50 a.m.—Meteorological Report.
10.55 a.m. (approx.)—Time Signal.
11.0 p.m.—Relay of Divine Service in Swedish.
3.0 p.m.—Orchestral Concert under the Direction of Erkki Linko. 1. Finnish Songs: (a) Hannikainen, (b) Karjalainen laulu. 2. Suite from "Pelless and Melisande" (Sibelius). 3. Finnish Songs (Salim Palmgren). 4. Songs of Pasi: Pasiin lauluja (arranged by Kauppi). 5.30 p.m.—Talk by Aarne Nissinen.
4.10 p.m.—Concert by Station Orchestra. 1. Scène d'amour (Sibelius). 2. Finnish Melodies (arranged by Hermann).
4.30 p.m.—Talk (Subject to be announced).
5.10 p.m.—Concert by Station Orchestra. 1. Finnish Songs (Pahlmann). 2. Valse du soir d'été (Merikanto). 3. Lampaan Polska (Kuula).
5.30 p.m.—Talk on History by Dr. Vilho Hytönen.
6.0 p.m.—Concert.
7.0 p.m. (approx.)—Close Down.

LANGENBERG (Germany)
Westdeutscher Rundfunk. 639.8 kc (469 m.); 15 kw. Programme also for Aix-la-Chapelle, 749.6 kc (400 m.); Cologne, 1,060.15 kc (283 m.); and Münster, 1,200.1 kc (250 m.).
6.45 a.m.—Lesson in Self-Defence.
7.5 a.m.—Programme Extracts in Esperanto.
7.15 a.m.—Lute and Guitar Lessons.
7.35 a.m.—Lesson in Esperanto.
8.0 a.m.—Chimes from Cologne.
8.5 a.m.—Catholic Morning Recital.
10.0 a.m.—Talk, "The German Language."
10.35 a.m.—Talk on Taxation.
10.55 a.m.—Talk on Franz Schubert and his Songs; "Schubert and Foreign Poets," with Vocal Illustrations.
11.35 a.m.—Max Jungnickel in Selections from his own Works.
12.0 noon.—Orchestral Concert.
1.30 p.m.—Talk on Chess.
1.50 p.m.—Agricultural Talk.
2.10 p.m.—Talk on the Art of Variation in Music—Wanderer Fantasia in C major, Op. 15 (Schubert).
2.50 p.m.—Talk, "Christmas in the Ranger's House on the Lower Rhine."
3.10 p.m.—Reading from "Lettres de mon Moulin" (A. Daudet).
3.30 p.m.—Orchestral Concert.
5.0 p.m.—Talk, "The Universe as a Harmonious System."
5.20 p.m.—Talk, "The Position of German Culture in Eastern Europe."
5.40 p.m.—Talk on Winter Sports.
6.0 p.m.—Talk, Sports Training.
6.25 p.m.—Talk for Workers, "The Insurance of Office Workers."
6.45 p.m.—Sports Announcements.
7.0 p.m.—Orchestral Concert. 1. "Zampa"—Overture (Hérold). 2. Selection from "Carmen" (Bizet). 3. Hofballtänze—Waltz (Lanner). 4. Intermezzo and Barcarolle from "The Tales of Hoffman" (Offenbach). 5. Ballet Suite from "Sylvia" (Delibes). Interlude: "The Cousin on a Visit"—Opérette in One Act (Kremlsetzer). Lyrics by Wilhelm Busch. Concert (continued). 1. March from "Hoheit tanzt Walzer" (Ascher). 2. Modern Viennese Folk Music (Kornzak). 3. Weana G'müath—Waltz (Schrammel). 4. Wien bei Nacht—Potpourri (Kornzak). 5. Wiener Künstler—Marsch (Schrammel).
9.30 p.m. (approx.)—News, Sports Notes, Orchestral and Dance Music.
11.0 p.m. (approx.)—Close Down.

LEIPZIG (Germany)
Mitteldeutscher Rundfunk. 819.6 kc (366 m.); 4 kw. Relayd by Dresden, 1,088.2 kc (276 m.).
Transmits at intervals from 7.30 a.m.
11.0 a.m.—Pianoforte Recital.
12.0 noon.—Time, Agricultural Talks followed by Foreign News.
1.45 p.m.—Wireless Talk, followed by Gramophone Concert.
4.0 p.m.—Lutthold Lessing Recital.
4.0 p.m.—String Quartet Concert.
5.0 p.m.—Programme of Talks.
6.30 p.m.—Concert of Military Music.
8.0 p.m.—Comedy (Prosper Merimée). News and Sports notes.
9.30 p.m.—11.30 p.m.—Dance Music relayed from Voxhaus.

MADRID (Spain)
Union Radio (EAF7). 689.6 kc (435 m.); 1 kw.
11.30 a.m.—Relay of the Concert from the Retiro (Weather permitting) by the Municipal Band, conducted by Señor Villa.
2.0 p.m.—Chimes and Time Signal.
2.5 p.m. (approx.)—Concert by the Station Orchestra. 1. Vivat academia—Overture (Zimmer). 2. Alma and aluzia—Serenade (Mariani). 3. Selection from "Sicilian Vespers" (Verdi). Interlude by Luis Medina. 4. Selection from "The Court of Pharaoh" (Lléo). 5. Violin Solos: (a) Liebesfreud (Kreisler), (b) Viva mi pueblo—Jota popular nojana, Violinist: Celso Diaz. 6. Burlesque fantaisique (Clemus).
3.30 p.m. (approx.)—Temporary Close Down.
7.0 p.m.—Chimes Relay.
7.5 p.m. (approx.)—Concert by the Station Sextet. 1. Selection from "El sueño de Pierrot" (Barrera). 2. Selection from "Martha" (Friedrich von Flotow). 3. Selection from "El Principe Carnaval" (Serrano). Interlude by Luis Medina.
8.0 p.m.—Dance Music Programme by the Palermo Orchestra from the Alkazar.
8.30 p.m. (approx.)—Temporary Close Down.

10.0 p.m.—Chimes and Time Signal.
10.5 p.m. (approx.)—Concert by the Band of the Regimiento de Asturias, conducted by Don Francisco Esbri.
12.0 midnight—Chimes Relay.
12.5 a.m. Mon. (approx.)—Relay of Dance Music by the Palermo Orchestra from the Alkazar.
12.30 a.m. (approx.)—Close Down.

MILAN (Italy)
Unione Radiofonica Italiana. 548.85 kc (547 m.); 7 kw.
9.0 a.m.—Opening Signal, followed by English Language Lesson.
9.30 a.m.—Vocal and Instrumental Concert of Sacred Music.
11.30 a.m.—Time Signal, followed by Selections by the Station Quartet.
3.0 p.m.—Opening Signal.
3.2 p.m.—Concert of Vocal and Quinet Selections. 1. Quinet Selection: "The Sleeping Beauty"—Suite (Tchaikovsky). 2. Maria De Francis: "Soprano Solo, "Siccome un di"—Selection from "The Pearl Fishers" (Bizet). Relay of Part of the Concert of Italian Music from the Aula Magna of the Università Popolare. 3. Selections by the Station Quinet: (a) Largo (Handel), (b) Barcarolle from the Opera "Silvano" (Mascagni). 4. Maria De Francis: Soprano Selections: (a) Selection from "Carmen" (Bizet), (b) "In quelle trine morbide" from "Manon Lescaut" (Puccini). 5. Quinet Selection: "Tales of the Vienna Woods—Waltzes (Strauss).
4.15 p.m.—Relay of Concert by the Tzigane Orchestra of the Fiascherteria Toscana.
6.55 p.m.—Opening Signal, followed by News and Announcement.
7.15 p.m.—History Talk by C. A. Blanche.
7.25 p.m.—Sports Notes.
7.30 p.m.—Time Signal, followed by relay of the Opera "The Pearl Fishers" (G. Bizet). After the First Act: Topical Talk: "Forn and Country" by Ulderico Tegani. After the Second Act: Sports Notes, News and Announcements.
10.30 p.m. (approx.)—Close Down.

MUNICH (Germany)
Deutsche Stunde in Bayern. 558.9 kc (537 m.); 4 kw. Relayd by Augsburg, 529.6 kc (566 m.); Kaiserslautern, 1,079.65 kc (278 m.); and Nürnberg, 1,239.5 kc (242 m.).
10.0 a.m.—Chimes from the Munich Town Hall.
10.10 p.m.—Relay of the Wireless Weather Chart issued by the Bavarian Meteorological Society.
10.15 a.m.—Morning Programme.
12 noon.—Time Signal.
12.2 p.m. (approx.)—Meteorological Report and Forecast.
12.5 p.m. (approx.)—Programme Announcements.
2.0 p.m.—Frankish Round Singing.
3.0 p.m.—Afternoon Concert of Trio Music, followed by Talk.
4.45 p.m.—Talk (subject to be announced).
5.35 p.m.—Concert of Old Music by the Munich Chamber Orchestra.
6.30 p.m.—Programme of Readings.
7.0 p.m.—Evening Concert by the Wireless Orchestra.
9.0 p.m.—Programme of Concert Music.
9.20 p.m.—Evening News and Announcements.
9.30 p.m. (approx.)—Continuation of Concert Programme.
10.30 p.m. (approx.)—Close Down.

NAPLES (Italy)
Unione Radiofonica Italiana (i.N.A.) 896.2 kc (334 m.); 1 kw.
8.30 a.m.—French Language Lesson by Professor Etienne Verdier.
9.0 a.m.—Concert of Sacred Music.
9.45 p.m.—Programme for Children.
4.0 p.m.—Orchestral and Vocal Concert with the assistance of Signorina C. Casagrande. 1. Orchestral Selections: (a) Mignonne—Gayotte (Billi), (b) Il tamburino arabo (Ranzato). 2. Signorina Casagrande (Soprano): "Tormento" (Tosti), with Pianoforte Accompaniment. 3. Orchestral Selection: Introduction and Slow Waltz (Sieveking). 4. Signorina Casagrande (Soprano): "Set tu amassi" (Denza) with Pianoforte Accompaniment. 5. Orchestral Selection: "Frasquita"—Potpourri (Lehár). 6. Signorina Casagrande (Soprano): "Vaticinio" (Trindelli), with Pianoforte Accompaniment. 7. Orchestral Selection: "Un idillio—Intermezzo" (Kromé). 8. Signorina Casagrande (Soprano): "Angelo d'oro" (Rotoli), with Pianoforte Accompaniment. 9. Orchestral Selections: (a) Fra le fronde—Waltz (Berletti), (b) Sorrento—Tarantella (Sena).
4.30 p.m.—Time Signal.
7.30 p.m.—Wireless Journal.

7.40 p.m.—News and Announcements.
7.50 p.m.—Bulletin of the Harbour Authorities of the Port of Naples.
8.0 p.m.—Time Signal.
8.2 p.m.—Concert of Operatic Music. Part 1. Orchestral Selection: "Le pré aux clercs"—Overture (Hérold). 2. Raff. Aulicino (Baritone): "Ambo nati in questa valle," Selection from "Linda di Chamounix" (Donizetti), with Orchestral Accompaniment. 3. E. Blandi (Soprano): "Tacea la notte placida," Selection from "Il Trovatore" (Verdi), with Orchestral Accompaniment. 4. Roberto Rotondo (Tenor): "M'appari tutt'amor," Selection from "Martha" (Flotow), with Orchestral Accompaniment. 5. Orchestral Selection: "Walter's Song from Act 1 of 'The Mastersingers' (Wagner). 6. R. Rotondo and R. Aulicino: "Venti scudi e bez sonanti," Tenor and Baritone Duet from "Elisir d'amore" (Donizetti), with Orchestral Accompaniment. 7. Orchestral Selection from "Tosca" (Puccini): Part II. 8. E. Blandi and R. Aulicino, Soprano and Baritone: "The Letter Scene from 'Madam Butterfly' (Puccini), Duet for Soprano and Baritone, with Orchestral Accompaniment. 9. R. Rotondo (Tenor): "O amore, o bella luce," Selection from "L'amico Fritz" (Mascagni), with Pianoforte Accompaniment. 10. R. Aulicino (Baritone): "Una fatal del mio destino"—Selection from "The Force of Destiny" (Verdi). 11. E. Blandi (Soprano): "Poveri fiori"—Selection from "Adrienne Lecouvreur" (Cilea), with Orchestral Accompaniment. 12. Orchestral Selection: Prelude to Act 1 of "Dejanice" (Catalani). 13. E. Blandi and R. Rotondo: Soprano and Tenor Duet from Act 111 of "Manon" (Massenet), with Pianoforte Accompaniment. 14. Orchestral Selection: Symphony from "Fausta" (Donizetti).
9.0 p.m.—Sports Notes.
9.55 p.m.—Calendar and Programme Announcements.
10.0 p.m. (approx.)—Close Down.

PARIS (France)
Eiffel Tower (FL). 113.2 kc (2,650 m.); 12 kw.
7.50 a.m.—Time Signal on 9,231 kc (32.5 m.).
9.26 a.m.—Time Signal on 113.2 kc 5.0 p.m.—"Pardeloup" Concert.
7.10 p.m.—Weather Forecast.
7.30 p.m.—"Le Journal Parlé." At 7.56 p.m.: Time Signal on 9,231 kc (32.5 m.).
8.0 p.m.—Concert of "Water" Music.
10.26 p.m.—Time Signal on 113.2 kc.

PARIS (France)
Petit Parisien. 882.3 kc (330 m.); 0.5 kw.
8.45 p.m.—Programme of Gramophone Records.
8.50 p.m. (approx.)—Talk.
8.55 p.m. (approx.)—News and Announcements.
9.0 p.m.—Concert with the collaboration of Artists from the Opéra and the Opéra-Comique. 1. Jubel—Overture (Weber). 2. Second Suite for Orchestra from "Coppélia" (Léo Delibes).
9.25 p.m.—Press News and Announcements.
9.30 p.m.—Half-an-Hour of Symphony under the direction of M. Etyle of the Conservatoire: 1. Les Impressions d'Italie—Suite (Gustave Charpentier). 2. Finale from the Spanish Symphony for Violin and Orchestra (Lalo). Soloist M. Bellanger, of the Colonne Concerts and the Conservatoire Concert Society.
10.0 p.m.—News and Miscellaneous Information.
10.2 p.m.—Orchestral Concert: 1. First Suite for Orchestra from "The Tales of Hoffman" (Offenbach). 2. Beau soir (Debussy). 3. Marche athénienne from "Phèdre" (Massenet).
11.0 p.m. (approx.)—Close Down.

PARIS (France)
Radio-Paris (CFR). 169.9 kc (1,765 m.); 12 kw.
8.0 a.m.—News Bulletin, Miscellaneous Announcements and Press Review.
8.30 a.m.—Daily Physical Culture Instruction, given under the direction of Doctor Diffre.
12.0 noon.—Religious Address—"The Execution of the Plan Divine—the Virgin Mary" by the Reverend Father de Tonqueduc. Followed by Concert of Light Music organised by "La Vie Catholique." News Bulletin, Press Review and Announcements given after the Concert.

12.45 p.m.—Concert rendered by the Albert Locatelli Orchestra: 1. Selection from "Le Voyage en Chine" (R. Bazin). 2. La Passion de Salomé (A. Joyée). 3. Humoresque (H. Tagell). 4. La Coleta (H. Tagell). 5. Bilboquet in Selections from his Repertoire—"Bilboquet as a Baker." 6. Selection from the Opera "Madame Turlupin" (Guiraud). 7. Bohemian Romance (Bódi). 8. Moresca (Silesu). 9. Gold and Silver—Waltz (Lehár). 10. Gigolette (Lehár).
4.30 p.m.—Five O'Clock Concert organised by "L'Industrie Musicale," Paris. Programme of Odeon Gramophone Records, in the intervals of the Concert, News Bulletin, Press Review and Announcements.
6.30 p.m.—Agricultural Report, Press Review and Miscellaneous Announcements.
6.45 p.m.—Musical Programme. Gramophone Selections.
7.30 p.m.—General News Bulletin, Announcements and Press Review.
7.45 p.m.—A Half-hour's Entertainment by the Radio Paris Circus.
8.15 p.m.—Evening Concert by the Symphony Orchestra, conducted by M. Eugène Picot. During the Intervals, News Bulletin, Press Review and Announcements.

PITTSBURGH (U.S.A.)
Westinghouse Electric (KDKA). 980 kc (306 m.); 25 kw. Relayd at intervals on 4,800 kc (62.5 m.).
Transmits at intervals from 3.45 p.m.
11.30 p.m.—Variety Programme of Music, Talks, Concerts, Time and Weather Reports, etc.
4.15 a.m.—Mon. (approx.)—Close Down.

ROME (Italy)
Unione Radiofonica Italiana (IRO). 669.55 kc (448 m.); 3 kw.
8.20 a.m.—Opening Signal, followed by German Language Lesson.
9.0 a.m.—Sacred Concert of Vocal and Instrumental Music.
12.0 noon.—Opening Signal.
12.2 p.m.—Selections by the Wireless Trio.
4.0 p.m.—Opening Signal.
4.2 p.m.—Variety Concert.
6.40 p.m.—Opening Signal, followed by News and Announcements.
7.10 p.m.—Wireless Country News.
7.15 p.m.—Sports Notes and News and Announcements.
7.29 p.m.—Time Signal.
7.31 p.m.—Topical Talk.
7.45 p.m.—Concert, by the Grand Symphony Orchestra: 1. "Iphigenia in Aulis"—Overture (Gluck), with Finale by Richard Wagner. 2. Don Lorenzo Perosi: Theme with Variations: (a) Theme, adagio, (b) First Variation, adagio, (c) Second Variation, piuttosto mosso e adagio molto, (d) Third Variation, largo, (e) Fourth Variation, presto e largo. 3. Reading of an Unpublished Short Story by Guido Milanese. 4. Lidia Trombetti (Pianist): (a) Moments in a garden (Mazzucchi), (b) Rondó (Weber), transcribed by C. Schumann. 5. Maria d'Albà (Violin) with Orchestral Accompaniment: Concerto in D Major (Paganini). 6. Lidia Trombetti (Pianist): Sixth Hungarian Rhapsody (Liszt). 7. Orchestral Selection: Siegfried Idyll (Wagner). 8. Orchestral Selection: Spanish Caprice, Op. 34 (Rimsky-Korsakoff). (a) Alborada, (b) Variations, (c) Ripresa dell'alborada, (d) Scena e canto gitano, (e) Fandango asturleon e Finalc. Topical Talk in the Interval.
9.50 p.m.—News and Announcements.
10.0 p.m. (approx.)—Close Down.

SCHENECTADY (U.S.A.)
General Electric Company (WGY). 701.5 kc (379 m.); 50 kw.
Relayed by 2XAD on 13,661 kc; (21.96 m.).
3.30 p.m.—Divine Service Relay (First Lutheran Church).
8.30 p.m.—Organ Recital by Elmer A. Tidmarsh, Organ College Memorial Chapel, Schenectady, New York.
9.0 p.m.—Programme by Dr. S. Parkes Cadman. Relayd from New York.
10.30 p.m.—Violin Recital by Arcadie Birkenholz. Relayd from New York.
11.0 p.m.—"Stetson Parade"—American Legion Band, from Boston, Massachusetts.
11.30 p.m.—Acousticon Programme. Relayd from New York.
12.0 Midnight.—Old Company's Programme. Relayd from New York.
12.30 a.m.—Mordant.—Capitol Theatre Programme, Relayd from New York.

Programmes for Sunday.—(Cont.)

8.0 a.m.—Talk, "Our Government," by David Lawrence, Editor of the United States Daily, Washington, D.C.
 2.15 a.m.—"Atwater Kent" Programme. Relayed from New York.
 3.15 a.m.—Time Signal.
 3.36 a.m. (approx.)—Grand Opera. Relayed from New York.
 4.15 a.m.—Television Transmission.
 4.36 a.m. (approx.)—Close Down.

STOCKHOLM (Sweden)

Radiojäst (SASA). 660.15 kc (454 m.); 1.5 kw. Relayed by Eskilstuna on 1,208 kc (248 m.); Gäddö. 1,470 kc (204 m.); Göteborg. 720.3 kc (416 m.); Kalmar. 1,184.5 kc (253 m.); Karlstad. 1,361 kc (220 m.); Linköping. 600 kc (500 m.); Malmö. 1,149.87 kc (261 m.); Motala. 219.9 kc (1,364 m.); Sjöfalle. 1,190.35 kc (252 m.); Sundsvall. 540.45 kc (545 m.); and Uppsala. 600 kc (500 m.).
 Transmits at intervals from 10.0 a.m. to 4.0 p.m.—Programme for Children.
 4.55 p.m.—Chimes from the Town Hall.
 5.0 p.m.—Evening Service from St. Peter's Church.
 6.15 p.m.—Talk by Dr. Göran Lindblad: "Viktor Rydberg."
 6.45 p.m.—Concert: 1. Festival Overture (Alfven). 2. Dexitpos—A Poem by Viktor Rydberg for Choir and Orchestra (Sibelius-Schilkeknicht). 3. The Dryad—a Free by Viktor Rydberg for Baritone Solo and Orchestra (Peterson-Berger). 4. Sinfonica piccola (Atterberg): (a) Con forza; (b) Andante; (c) Scherzo; (d) Finale: Rondo.
 7.15 p.m.—News Bulletin and Weather Report.
 8.40 p.m.—Programme of Old Dance relayed from Göteborg.
 9.30 p.m. (approx.)—Close Down.

TOULOUSE (France)

Radiophonie du Midi. 772.25 kc (388 m.); 8 kw.
 12.30 p.m.—Report and Weather Forecast.
 12.45 p.m.—Concert. First Part.
 1.0 p.m.—Time Signal.
 1.5 p.m.—Concert. Second Part.
 2.45 p.m.—Latest News Bulletin communicated by the "Télé-

gramme" the "Express" and "The Midi Socialiste."
 2.0 p.m. (approx.)—8.0 p.m.—Temporary Close Down.
 8.0 p.m.—Communications of News and Announcements.
 8.30 p.m.—Evening Concert.
 9.0 p.m.—During the Interval: Time Signal.
 9.15 p.m.—Concert (contd.). Programme of Airs from Operettas by Messager and Planquette.
 10.5 p.m.—Concert. Fourth Part. Programme of Dance Music.
 10.15 p.m.—Daily News Bulletin from North Africa.
 10.30 p.m. (approx.)—Close Down.

VIENNA (Austria)

Radio-Wien. 520.1 and 580 kc (577 and 517 m.); 0.5 and 20 kw. Relayed by Graz. 841.1 kc (357 m.); Innsbruck. 1019.5 kc (294 m.); Klagenfurt. 1101 kc (272 m.); and Linz. 1181 kc (254 m.).
 9.20 a.m.—Organ Recital by Walter Pach.
 10.0 a.m.—Choral and Orchestral Concert: 1. Women's Choir with Orchestral accompaniment: Ave Maria, Op. 12 (Johannes Brahms). 2. Contralto Solo, Choir, Orchestra and Organ: Gruss an die heilige Nacht—Christmas Hymn, Op. 62 (Max Bruch, words by Robert Prutz). 3. Emilie Rutschka (Contralto), Chamber Choir and the Viennese Orchestra under the direction of Max W. Ast. 2. Prelude to "Parsifal" (Richard Wagner). 3. Pianoforte Solo; Concerto in G Major (Ludwig van Beethoven). 4. Les Préludes (Franz von Liszt). 5. Orchestra under the direction of Dr. Ludwig Kaiser.
 1.0 p.m.—Relay of the Ice-Hockey Match between Cambridge University and the Vienna Eislaufverein from the Platz des Wiener Eislaufvereines. The usual Photography Transmission will not be given owing to the above Relay.
 3.0 p.m.—Afternoon Concert by the Ganglberger Orchestra, Vienna: 1. Kreuz und quer—March (Latzelberger). 2. Overture to the Operetta "A Night in Venice" (Johann Strauss). 3. Backfischerl—Waltz (C. M. Ziehrer). 4. Cradle Song

(Franz Schubert). 5. Violin Solo: Rigaudon (F. Kreisler). Soloist: A. Kamper, Josef Garnhaft at the Pianoforte. 6. Selection from the Opera "Lohengrin" (Richard Wagner). 7. Grossmütterchen hört Radio (Dr. Karl Engelhardt). 8. "The Duchess of Chicago"—Potpourri (Kálmán). 9. Badner Mad'ln—Waltz (Komzák). 10. Bassoon Solo: Mister Brumm, der Nebenbuhler—Gavotte (Ganglberger). Soloist: E. Jaburek. 11. Wien bei Nacht—Potpourri (Komzák). 12. O Theodor, O Theodor!—Song and Fox-trot (Dr. A. Schale). 13. Nibelungen-Marsch (A. Sonntag).
 5.35 p.m.—Travel Talk by Alice Schalek, "The Happy Vale of Kashmir."
 6.20 p.m.—Time Signal.
 6.22 p.m. (approx.)—Meteorological Report.
 6.25 p.m. (approx.)—News, Announcements and Miscellaneous Items.
 6.30 p.m.—Free for a Relay from the Vienna State Opera-House. Followed by Evening Concert by the First Viennese Modern Concert Orchestra, under the direction of Adolf Pauscher. 1. Selection from "Naila"—(Léo Delibes). 2. A Moment for Me—Waltz (Arthur Addison). 3. The Mikado—Concert Piece (W. C. Polla). 4. Selection from "Aida" (Verdi). 5. The Taj-Mahal—Indian Suite in Four Movements: (a) Elegy, (b) Oriental Dances, (c) Garden Romance, (d) Indian Festival Procession (Bruno Lülling). 6. Paquita—Tango (N. Milano). 7. Cuckoo—Fox-trot (Carl Robrecht). 8. Kannst du mir verzeihen, dass ich dich liebe?—Boston (Egon Neumann). 9. Um meinen Schatz wein' ich Tränen—Song Fox-trot (Anton Profes). 10. Redaktionsgeheimnisse—Waltz (Oscar Petras). 11. Freu' dich Fritzchen, der Lenz ist da!—Potpourri (Carl Robrecht). Photography Transmission after the Concert.

WARSAW (Poland)

Polskie Radio. 270 kc (1,111 m.); 8 kw.
 9.15 a.m.—Divine Service relayed from the Cathedral at Posen.
 10.56 a.m.—Time Signal.
 11.0 a.m. (approx.)—Relay of Chimes

from the Tower of the Church of Notre Dame at Cracow.
 11.2 a.m. (approx.)—Aviation Bulletin.
 11.5 a.m. (approx.)—Meteorological Report and Forecast.
 11.10 a.m.—Morning Symphony Concert, relayed from the Philharmonic at Warsaw, organised by the Department for Education and Culture of the Government of Warsaw and by the Directors of the Symphony Concerts. Programme of French and Italian Music by the Philharmonic Orchestra, under the direction of J. Oziminsky, with the assistance of Madame St. Miller (Soprano) and Monsieur Etienne Terç (Violin). 1. Orchestral Selections: (a) "Mignon"—Overture (Saint-Saëns). (b) Intermezzo from the Ballet "Naila" (Léo Delibes). 2. Monsieur Etienne Terç: Concerto for Violin (Vieuxtemps). 3. Orchestral Selection: "William Tell"—Overture (Rossini). 4. Selection of Soprano Songs by Madame St. Miller: (a) L'invitation au voyage (H. Duparc), (b) L'âne blanc (G. Hüe), (c) Torna amore (Buzzi-Peccia), (d) Motive d'amore (Tirindelli). 5. Selections for Orchestra: (a) Intermezzo from the Opera "Cavalleria Rusticana" (Mascagni), (b) Minuet (Bolzoni), (c) Ballet Music from the Opera "La Gioconda" (Ponchielli).
 1.0 p.m.—Talk on Agriculture.
 1.20 p.m.—Agricultural Notes.
 1.40 p.m.—Agricultural Report.
 2.0 p.m.—Meteorological Report and Forecast.
 2.15 p.m.—Symphony Concert of Popular Music by the Philharmonic Orchestra, under the direction of C. Witkowski, with the collaboration of Madame T. Mankiewicz (Soprano) and Madame E. Umńska-Javorska (Violin), with Professor L. Urstein at the Piano: 1. Orchestral Selections: (a) Overture from the Opera "Leszek Biay" (Elsner), (b) Elegy (Moniuszko). 2. Madame Umńska-Javorska: (a) Romance from the Concerto for Violin (Karowicz), (b) Tarantella (H. Wieniawsky). 3. Orchestral Selections: (a) Chaccol Sketch—Overture (Z. Noskowski), (b) Fantasia on Themes from the Opera "Verbum Nobile" (Moniuszko). 4. Madame Nankiewicz: Soprano Arias: (a) Oh, mon grand-père, from the Opera "Hra-

bina" (Moniuszko). (b) Ah! quel délice, from the Opera "Beata" (Moniuszko). 5. Orchestral Selections: (a) Waltz from the Suite for String Instruments (Karowicz), (b) Cracovienne from the Ballet "Pan Twardowski" (Rozycki), (c) Mazurka in F Major (Chopin), (d) Chasse-neige (Levandovsky).
 4.20 p.m.—Talk by Professor H. Moscicky on the Life and History of the Nation.
 4.45 p.m.—Talk on Aviation.
 5.0 p.m.—Popular Concert.
 6.0 p.m.—Miscellaneous Items.
 6.20 p.m.—Talk by Captain M. Lepcky, "Under the Polish Flag in Peru," from the Series on Voyages and Adventures.
 6.45 p.m.—News, Announcements, and Miscellaneous Items.
 6.56 p.m.—Time Signal.
 7.0 p.m.—A Talk by Lieut. C. Jabonovsky.
 7.30 p.m.—Evening Concert of Vocal and Instrumental Music, under the direction of J. Oziminsky, with the assistance of Professor C. Heintze (Piano Solos), Monsieur M. Janovsky (Tenor Solos) and Professor Urstein, at the Piano. 1. Orchestral Selections: (a) Overture to the Opera, "Russian and Lioudmilla" (Glilka), (b) Prelude, Op. 3, No. 1 (Rachmaninoff). 2. Pianoforte Solos by Professor Heintze: (a) La Fontaine au Bacthesarail, and (b) Etude in F Sharp major (Arensky-Silotti), (c) Barcarolle and (d) Polichinelle (Rachmaninoff). 3. Tenor Solos by Monsieur Janovsky: (a) Je t'attends and (b) Dans le silence de la nuit (Rachmaninoff). 4. Pianoforte Solos by Professor Heintze: (a) Nocturne in C minor, (b) Mazurka in A minor, No. 3, and (c) Waltz in E flat major, Op. 18, No. 1 (Chopin). 5. Tenor Solos by Monsieur Janovsky: (a) Les deux aurores (Moniuszko), (b) The Deception (Zelensky), (c) Combien de nuits? (Wieniawsky). 6. Orchestral Selections: (a) Serenade (Toselli), (b) Rhapsody No. 2 (Liszt).
 9.0 p.m.—Aviation Bulletin.
 9.3 p.m. (approx.)—Meteorological Report and Forecast.
 9.5 p.m.—News, Announcements, and Miscellaneous Items.
 9.20 p.m.—Police Report.
 9.25 p.m. (approx.)—Sports Notes.
 9.30 p.m.—Dance Music Programme.
 10.30 p.m. (approx.)—Close Down.

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PROGRAMMES FOR MONDAY (December 17)

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO GREENWICH MEAN TIME

AGEN (France) Radio Agen, 1,001 kc (299 m.); 0.48 kw. 12.40 p.m.—General News Bulletin, Quotations from Local Markets, Meteorological Report and Forecast and Market Prices. 7.40 p.m.—Latest News Reports, Weather Forecast and Municipal News. 8.0 p.m. (approx.).—Close Down.

BERNE (Switzerland) Radio-Berne, 730.75 kc (410 m.); 1.3 kw. 11.43 a.m.—Relay of Time Signal. 11.44 a.m.—Weather Report and Forecast. 11.45 a.m.—Exchange Quotation and Bulletin of the Swiss Peasants' Union. 11.50 a.m.—Gramophone Records of Classical Music. 2.56 p.m.—International Time Signal relayed from the Neuenburg Observatory. 3.0 p.m.—Relay of Concert by the Aversano Orchestra from the Loeb Brothers' Tea Room. 3.30 p.m.—Review of Books by Herr Hans Cornioley of Berne. 5.15 p.m.—Selections of Gramophone Music. 6.0 p.m.—Lesson in Esperanto by Herr Schmid. 6.40 p.m.—Relay of Time Signal. 6.42 p.m.—Weather Report and Forecast. 6.45 p.m.—Programme from Stuttgart. "Zuleima"—Opera in One Act by Heinrich Bienstock, with Introductory Address by Herr Wilhelm Kipp. 6.20 p.m.—Programme from Basle. Recital of Tenor Songs with Pianoforte Accompaniment from the Works of Heinrich Bienstock. 8.50 p.m.—News and Announcements. 8.55 p.m.—Weather Report and Forecast. 9.5 p.m. (approx.).—Close Down.

BEZIERS (France) Radio-Beziers, 1,899 kc (158 m.); 0.6 kw. 4.0 p.m.—Market Exchange Rates for Wine. 6.45 p.m.—Wine Prices given by the Chamber of Commerce at Nîmes, followed by Musical Selections. 8.30 p.m.—News Bulletin and Press Notes from the Fournier Agency, Market Exchange Rates, and Wine Prices from Sète, Narbonne, Carcassonne, Montpellier, Nîmes and Lezignan. 8.45 p.m.—Orchestral Concert: 1. Jean qui pleure (T. Gillet). 2. Le Pierrot joyeux (Lévadé). 3. Envolée (Volpatti). 4. Selection from "Les Noces de Jeannette" (Massé-Tavan). 5. Romance (d'Ambrosio). 6. Carnival March (Tollani), followed by Market Exchange Rates from Nîmes.

BORDEAUX (France) Radio Bordeaux Sud-Ouest, 1,260 kc (238 m.); 1.5 kw. 7.0 p.m.—Scientific Talk. 7.15 p.m.—Symphony Concert. 1. Selection from "William Tell" (Rossini). 2. Air d'Azaël (Debussy). 3. La maison abandonnée (M. Pesse). 4. Symphonie Enjouée (Mozart). 5. Dances (Brahms). 6. Selection from "The Czardas Princess" (Kálmán). 8.30 p.m. (approx.).—Close Down.

BRUSSELS (Belgium) Radio - Belgique, 590.4 kc (508 m.); 1 kw. Transmits at intervals from 5.0 p.m. 7.30 p.m.—"Radio-Chronique." 8.15 p.m.—Gramophone Records. 8.25 p.m.—Topical Talk. 8.30 p.m.—Concert from Antwerp, followed by News. 10.30 p.m. (approx.).—Close Down.

COLOGNE (Germany) Westdeutscher Rundfunk, 1,060.15 kc (283 m.); 4 kw. See Langenberg Programme.

COPENHAGEN (Denmark) Copenhagen Radio, 889.9 kc (337 m.); 1 kw. Relayed by Kalundborg, 261.9 kc (1,153 m.). 6.30 a.m.—Wireless Morning Exercises arranged by the "Berlingske Tidende." 2.15 p.m.—Educational Programme. 8.0 p.m.—Afternoon Concert of

Instrumental Music under the direction of Otto Fessel: 1. Honeymoon March (G. Rosey). 2. "Don Pasquale"—Overture (G. Donizetti). 3. Marie Waltz (J. Lanner). 4. Selection from "A Masked Ball" (G. Verdi). 5. Sirenetta (A. Mercuri). 6. Selections from "Peer Gynt Suite" No. II: (a) Morning, (b) Anitra's Dance (Edv. Grieg). In the interval: "I know a town," from "The Wanderer" (Knud Poulsen)—Carl Fr. Schöningg (Elocutionist). 7. "Vert-Vert"—Overture (Jacques Offenbach). 8. Krølls Balkange-Waltz (H. C. Lumbye). 9. Selection from "The Little Mermaid" (Fini Henriques). 10. Spanish Patrol (E. Deshayes). 11. Les Noctambules—Tango (A. Travis). 12. The Children of the Regiment—March (F. Fucik).

5.20 p.m.—English Language Lesson. Arranged by "Verden og Vi." 6.0 p.m.—News Bulletin, Exchange Quotations and Time Signal. 6.30 p.m.—Talk by Cecilie Lutken: "The Danish Red Cross Series. No. II. Sick Nursing at Home." 7.0 p.m.—Town Hall Chimes. 7.2 p.m.—International Concert: Finnish Programme rendered by the Station Orchestra conducted by Emil Reeson. 1. Orchestral Selections: (a) Finlandia—Tone Poem (Jean Sibelius), (b) Pastorale, Op. 50 (Selim Palmgren); (c) The First Kiss, (d) Flickan kom ifran sin älsklíns möte (Jean Sibelius). 2. Selection from "Kalevala," by Eva Moltesen. 3. Orchestral Selections: (a) Prelude, (b) Berceuse (Armas Järnefelt). 5. Songs by Johanne Karstens: (a) Det gäller (Ilmari Hannikainen), (b) Morgensang (Toivo Kuula), (c) Senhöst (Toivo Kuula). 6. Selection from "Fänrik Ståls sägnar" (J. L. Runeberg); Vald. Rordam (Elocutionist). 7. Orchestral Selections: (a) Pan and Echo—Dance Intermezzo (Jean Sibelius), (b) Waltz from "Thukimo" (Selim Palmgren), (c) Pirum Polska (Toivo Kuula). At the Piano: Folmer Jensen.

8.0 p.m.—News and Announcements. 8.45 p.m.—Concert of Modern Operetta Music by the Radio Orchestra: 1. March from "The Bird of Paradise" (Ph. Silber). 2. Selection from "Das süsse Mädel" (H. Reinhardt). 3. St. Hansens idye from "Lysistrata" (P. Luncke). 4. Waltz from "Die romantische Frau" (C. Weinberger). 5. Selections from "Polenblut" (Nedbal): (a) Dumka, (b) Krakowiak. 6. Polka from "Der Frauenfresser" (Edm. Eysler). 7. Apache Dance from "Paula macht alles" (R. Raimann). 8. Waltz from "Bondeprinsessen" (Rob. Stolz). 9. Flyver March from "Den flyvende Rittmeister" (H. Dostal). 9.45 p.m. (approx.).—Close Down.

CORK (Ireland) Cork Broadcasting Station (6CK). 748 kc (401 m.); 1 kw. 1.30 p.m.—Weather Forecast and Gramophone Record Music. 6.0 p.m.—Exchange Quotations, News and Gramophone Selections. 6.15 p.m.—Programme from Dublin.

CRACOW (Poland) Polskie Radio, 529.6 kc (566 m.); 1 kw. 10.56 a.m.—Transmission of Chimes from the Church of Notre-Dame, Time Signal and Weather Report and Forecast. 11.10 a.m.—Gramophone Concert. 2.0 p.m.—Weather Report and Forecast. 2.10 p.m.—Economic Reports. 2.20—3.55 p.m.—No Transmission. 3.25 p.m.—Programme from Warsaw. 3.55 p.m.—Scouting Notes. 4.10 p.m.—Talk by Mr. St. Muczovsky on the Exchange. 4.35 p.m.—Talk by Mme. M. Krzotuska: "The Role of Ugly Women in Politics: Marguerite Maupasche." 5.0 p.m.—Programme from Warsaw. 6.0 p.m.—News and Announcements. 6.25 p.m.—French Lesson by M. Henri Bernard. 6.55 p.m.—Time Signal from the Astronomical Observatory. 7.0 p.m.—Agricultural News. 7.5 p.m.—News and Announcements. 7.30 p.m.—Transmission of Concert from Warsaw. 9.0 p.m.—Transmission of News from Warsaw. 9.30 p.m.—Transmission of a Concert from a Restaurant.

DUBLIN (Ireland) Dublin Broadcasting Station (2RN). 940 kc (319 m.); 1 kw. 1.30 p.m.—Meteorological Report. 1.33 p.m. (approx.).—Stock Exchange List. 1.50 p.m. (approx.).—Selections of Gramophone Music. 3.0 p.m. (approx.).—6.0 p.m.—No Transmission. 6.0 p.m.—Concert of Gramophone Records. 6.15 p.m.—Programme for Children. 7.0 p.m.—Italian Language Lesson by Italia de Starkie. 7.15 p.m.—Selections of Gramophone Music. 7.20 p.m.—News, Announcements and Miscellaneous Items. 7.30 p.m.—Irish Language Lesson by Síle Ní Dhubhainn. 7.45 p.m.—Talk (Subject to be announced) by Patricia Hoey. 8.0 p.m.—Half-an-Hour of Selections of Classical Music by Mrs. E. O'C Miley's Quintet. 8.25 p.m.—Programme arranged by the Rathmines Robins Concert Party. 8.55 p.m.—Contralto Song Recital by Eilis Denn. 9.10 p.m.—Selection by the Station Orchestra—The Shoe Ballet (John Ansell). 9.15 p.m.—Baritone Song Recital by Philip Bertram. 9.30 p.m.—Programme relayed from the Capitol. 10.0 p.m.—Programme of Musical Selections by the Ceilidhe Trio. 10.30 p.m.—News, Announcements and Miscellaneous Items. 10.40 p.m. (approx.).—Meteorological Report. 10.45 p.m. (approx.).—Close Down.

GRAZ (Austria) Oest.-Radio-Verkehr, 841.1 kc (357 m.); 0.5 kw. Programme from Vienna until 3.0 p.m. 3.5 p.m.—Musical Selections by the Hüttl Orchestra. 3.50 p.m.—Programme for Children—An Hour of Christmas Enchantment—"Christchild"—a Christmas Play (Ernst Fabiani). Music by the Hüttl Orchestra (Director, Willibald Frankl). The Christmas Carols are taken from Victor Zack's Collection, Op. 13 and 14. 4.50 p.m.—Talk, "Introduction for Beginners to the Game of Chess," by Doctor Karl Mayer-Gutenau. 5.15 p.m.—Popular Talk arranged by Graz University. Speaker, Dr. Eberhard Hempel, "Literary and Artistic Tasks for the City of Graz." 6.45 p.m.—Lesson in Shorthand, by Doctor Franz Pichler. 6.10 p.m.—Series of Talks dealing with Styria, arranged by Doctor Viktor Thiel: Bases of the Styrian Economic Life. Third Talk of the Series, "Pasture Land on the Mountain Side." 6.30 p.m.—Lesson in Guitar Playing by Prof. Franz Riedinger. 6.50 p.m.—Two Wireless Plays, under the direction of Anton Ilamik. 1. "The Lion with the Marble Head"—Drama in One Act (Felix Falzari). Dramatis Personae: Simon Beltran, an old Gondolier (Lohde); Madalena, his Wife (Schweickhardt); Nina, their Stepdaughter (Imle); Beppo, her little Son (Föns); Vernier, a Venetian Nobleman (Bach); Orsola, a Venetian Woman (Sorel); Garbin, a young Gondolier (Krummschmidt); Bartolo, an Invalid (Herbst); an Old Man (Mittersteiner); a Woman (Terlep); a Bailiff (Korb). Time, the Sixteenth Century. Place, Venice, a poorly furnished room in the basement dwelling of a gondolier. 2. "The Admiral"—a Play of the Sea and of Men, by Oscar Wessel. Music by Gustav Kneip. Dramatis Personae: Helmsman (Herbst); Sailer (Krummschmidt); Dreaming Sailor (Bach); Matteo, a Sailor (Lohde); Felicia (Imle); Various Sailors. Place, dark cabin on board the "Santa Maria," Columbus' ship. Time, night, a little before the discovery of the American Continent. Music rendered by the Hüttl Orchestra. 8.25 p.m.—Cabaret Concert, with items by members of the Municipal Theatre, the Orchestra of the Alpenjägerregiment, No. 9. Talk, by Rolf Grandtner, the Director. News, Announcements and Weather Forecast after the Concert.

KALUNDBORG (Denmark) Kalundborg Radio, 261.9 kc (1,153 m.); 7.5 kw. See Copenhagen Programme.

LANGENBERG (Germany) Westdeutscher Rundfunk, 639.8 kc (466 m.); 15 kw. Programme also for Aix-la-Chapelle, 749.6 kc (400 m.); Cologne, 1,060.15 kc (283 m.); and Münster, 1,200.1 kc (250 m.). 10.15 a.m.—Talk on Christmas. 11.10 a.m.—Gramophone Selections. 12.5 p.m.—Orchestral Concert: 1. Kleiner Wiener Marsch (Kreisler). 2. Selection from "Oberon" (Weber). 3. Hymn to the Sun (Rimsky-Korsakoff). 4. Old English Song (Scott). 5. "Alt-Wien"—Waltz (Kremsler). 6. "La Bayadère" (Kremsler). 7. (a) Was weiss denn du, wie ich verliebt bin—Boston (Jurmann). (b) A Song from Hawaii—Low Fox-trot (Bal-doni). 1.30 p.m.—Hints for the Housewife. 3.5 p.m.—Talk for Women, by Thea Bicker: "Before Marriage—My Daughter is going to be married." 3.30 p.m.—Review of Books by Franz P. Brückner: 1. The Life of Eleonora Duse (E. A. Reinhardt). 2. London, Liebe zu einer Stadt (Wolf Zucken). 3. Die Verschönerung der Gleichen (Ija Ehrenburg). "Flamingo" (Mary Borden). 4. Something of Cologne, Düsseldorf and Bonn which you do not find in Baedeker (Cologne). 6. English Calendar, 1929. 4.0 p.m.—Tales of Doctor Dolittle and his Animals, told by Hermann Probst. 4.20 p.m.—Talk for the Little Ones, by Liesel Eckhardt: "Christmas Presents for Father and Mother." 4.45 p.m.—Instrumental Concert. Artists: Doctor Alfred Lasserstein (Violin), Emil Schlenkrich (Flute), Willy Bräuer (Pianoforte). 1. Suite in the Old Style, for Violin and Pianoforte (Gretchaninoff). 2. Concerto in D Minor, for Flute and Pianoforte (Th. Verhey). 3. Improvisation for Violin and Pianoforte (Richard Strauss). 5.30 p.m.—Reading by Josef Kandler: "Sebastopol" (Leo N. Tolstoy).

HAMBURG (Germany) Norag (ha, in Norse), 759.8 kc (395 m.); 4 kw. Relayed by Bremen, on 1,099 kc (273 m.); Hannover, 1,007.65 kc

(298 m.); and Kiel, 1,178 kc (255 m.). Transmits at intervals from 5.50 a.m. 6.25 p.m. (from Bremen).—Talk: "The Importance of the Imperial Constitution to the People and Country." 6.50 p.m.—Frankfurt Exchange and Agricultural Prices, Weather. 7.0 p.m.—Phonny Concert: 1. Symphony in E Minor (Sibelius). 2. From the Finnish Suite (Palmgren). 3. Finnish Tale, 4. Finnish Rhapsody (Kajanus). 5. Songs (Sibelius). 6. Reading. 7. Berceuse (Järnefelt). 8. Finlandia (Sibelius). 8.30 p.m.—Reading by E. Gläser from his Novel "Jahrgang 1902." 9.15 p.m.—Talk on the Instruction of Youth. 9.40 p.m.—Weather, News, Sports Notes, North Sea and Baltic Weather Report.

HILVERSUM (Holland) Algemeene Vereeniging Radio Omroep, 280 kc (1,071 m.); 5 kw. Transmits at intervals from 9.40 p.m. 5.40 p.m.—Orchestral Concert. 6.55 p.m.—English Language Lesson by Mr. Fry. 7.25 p.m.—Police Report. 7.40 p.m.—Time Signal. 7.45 p.m.—Talk on a Commercial Subject. 8.15 p.m.—Concert by the Station Orchestra under the direction of Nico Treep, with the assistance of Fritz Hinze (Violin). Programme of Finnish Music. 1. Nordische Lyrik—Suite (Palmgren). 2. (a) Berceuse, and (b) Präludium (Järnefelt). 3. Concerto for Violin and Pianoforte (J. Sibelius): Violin, Fritz Hinze; Pianoforte, Elsa Nolthenius. 4. Valse Chevaleresque (J. Sibelius). 9.15 p.m.—Concert (continued). 1. "Don Juan"—Overture (Mozart). 2. Minuet from "Dardanus" (Rameau). 3. (a) Sarabande and Tambourin (Leclair), (b) Andantino (Martini-Kreisler), (c) Tempo di Minuetto (Pugnani-Kreisler). 4. Hofballtänze—Waltz (J. Strauss). 5. Amoretten—Ständchen (Kockert). 6. Quint-Essenzen (Morena). 7. Dona Vatra—Tango (Köpping). 8. Frisches Blut—March (Heinecke). 10.40 p.m. (approx.).—Close Down.

KALUNDBORG (Denmark) Kalundborg Radio, 261.9 kc (1,153 m.); 7.5 kw. See Copenhagen Programme.

LANGENBERG (Germany) Westdeutscher Rundfunk, 639.8 kc (466 m.); 15 kw. Programme also for Aix-la-Chapelle, 749.6 kc (400 m.); Cologne, 1,060.15 kc (283 m.); and Münster, 1,200.1 kc (250 m.). 10.15 a.m.—Talk on Christmas. 11.10 a.m.—Gramophone Selections. 12.5 p.m.—Orchestral Concert: 1. Kleiner Wiener Marsch (Kreisler). 2. Selection from "Oberon" (Weber). 3. Hymn to the Sun (Rimsky-Korsakoff). 4. Old English Song (Scott). 5. "Alt-Wien"—Waltz (Kremsler). 6. "La Bayadère" (Kremsler). 7. (a) Was weiss denn du, wie ich verliebt bin—Boston (Jurmann). (b) A Song from Hawaii—Low Fox-trot (Bal-doni). 1.30 p.m.—Hints for the Housewife. 3.5 p.m.—Talk for Women, by Thea Bicker: "Before Marriage—My Daughter is going to be married." 3.30 p.m.—Review of Books by Franz P. Brückner: 1. The Life of Eleonora Duse (E. A. Reinhardt). 2. London, Liebe zu einer Stadt (Wolf Zucken). 3. Die Verschönerung der Gleichen (Ija Ehrenburg). "Flamingo" (Mary Borden). 4. Something of Cologne, Düsseldorf and Bonn which you do not find in Baedeker (Cologne). 6. English Calendar, 1929. 4.0 p.m.—Tales of Doctor Dolittle and his Animals, told by Hermann Probst. 4.20 p.m.—Talk for the Little Ones, by Liesel Eckhardt: "Christmas Presents for Father and Mother." 4.45 p.m.—Instrumental Concert. Artists: Doctor Alfred Lasserstein (Violin), Emil Schlenkrich (Flute), Willy Bräuer (Pianoforte). 1. Suite in the Old Style, for Violin and Pianoforte (Gretchaninoff). 2. Concerto in D Minor, for Flute and Pianoforte (Th. Verhey). 3. Improvisation for Violin and Pianoforte (Richard Strauss). 5.30 p.m.—Reading by Josef Kandler: "Sebastopol" (Leo N. Tolstoy).

6.15 p.m.—Spanish Conversation (E. M. Toca): Dr. Beinhauer. 6.40 p.m.—Talk for Parents, by W. Rüsing: "Education for Home-making." 7.0 p.m.—Concert by the Station Orchestra under the Direction of Herr Eysoldt: 1. "The Nuremberg Doll"—Overture (Adam). 2. Selection from "A Masked Ball" (Verdi). 3. Gopak—Little Russian Cossack Dance (Tchaikovsky). 4. "The Blue Mazurka"—Potpourri (Lehár). 8.0 p.m.—"Gawain"—A Mystery Play by Eduard Stuckert. Music by Gustav Kneip. Producer: Rieth, Musical Director: Eysoldt. Dramatis Personae: King Arthur (Rudolf Wittgen, of the Cologne Playhouse), Queen Guinevere (Itta Bel), the Green Knight (Josef Kandler), Bishop Baldwin (Josef Közel), Agravaïn of the Heavy Hand auf Gawain, Nephews of King Arthur (Albert Oettershagen and Rudold Rieth), Kay Seneschal (Paul Würthenberger); Bernlak de Hautdesert (Ehmi Bessel, of the Playhouse, Düsseldorf), Warden (Heinrich Heber), Arthur's Knights, Gentlewomen, Pages, Knaves, Servants and Followers of Bernlak de Hautdesert; Wenches. The First Act takes place in the large Hall of King Arthur's Castle at Camelot, the Second and Fourth Acts take place in the Little Hall in the Castle of Bernlak de Hautdesert, the Third Act in a Sleeping Apartment in the Castle of Bernak de Hautdesert, the Fifth Act in a Mountain Fastness. 9.30 p.m. (approx.).—News, Announcements, Sports Notes, Commercial Announcements, Orchestral and Dance Music. 11.0 p.m. (approx.).—Close Down.

LEIPZIG (Germany) Mitteldeutscher Rundfunk, 819.6 kc (366 m.); 4 kw. Relayed by Dresden, 1,088.2 kc (276 m.). Transmits at intervals from 9.5 a.m. 6.30 p.m.—Talk on "Lässig." 7.0 p.m.—Finnish Concert. 1. Sinfonietta in B flat major, Op. 16 (Kajanus). 2. The Third Symphony, Op. 52 in C major (Sibelius). 8.15 p.m.—Finnish Literature. 9.0 p.m.—News and Sports Notes. 9.15 p.m.—Dance Music Programme.

MADRID (Spain) Union Radio (EAJ7), 689.6 kc (435 m.); 1 kw. Transmits at intervals from 11.45 a.m. 7.0 p.m.—Chimes and Exchange, followed by Sextet Concert. 8.0 p.m.—Dance Music, News. 8.30 p.m. (approx.).—Close Down.

MOTALA (Sweden) 219.9 kc (1,364 m.); 20 kw. See Stockholm Programme.

MUNICH (Germany) Deutsche Stunde in Bayern, 558.9 kc (537 m.); 4 kw. Relayed by Augsburg, 529.6 kc (566 m.); Kaiserslautern, 1,079.65 kc (278 m.); and Nürnberg, 1,239.5 kc (242 m.). Transmits at intervals from 5.45 a.m. 6.0 p.m.—English Language Lesson. 6.30 p.m.—Concert by the Station Orchestra. Programme of Marches and Waltzes. 7.30 p.m.—German Folk Stories. 7.45 p.m.—Finnish Programme: 1. Finlandia—Symphonic Poem for Orchestra (Sibelius). 2. Folk Songs, rendered by Maria Kiesli. 3. "We make a Journey to Finland"—Rudolf von Scholtz, Ebba Johansson, Joachim von Delbrück. 4. Folk Songs, rendered by Maria Kiesli. 5. Concerto in D minor for Violin and Orchestra (Sibelius). 8.55 p.m.—Talk: "Battles on the Onjai Mountains." 9.20 p.m.—News and Announcements. 9.45 p.m.—Talk on Chess by Doctor Eduard Duchhoff.

PARIS (France) Eiffel Tower (FL), 113.2 kc (2650 m.); 12 kw. 7.56 a.m.—Time Signal on 9,231 kc (32.5 m.). 9.26 a.m.—Time Signal on 113.2 kc 5.45 p.m.—"Le Journal Parlé." 7.10 p.m.—Weather Forecast. 7.30 p.m.—Concert of "Flower" Music. At 7.56 p.m. Time Signal on 9,231 kc (32.5 m.). 10.26 p.m.—Time Signal on 113.2 kc. PARIS (France) Radio Paris (CFR), 169.9 kc (1,765 m.); 12 kw.

Programmes for Monday.—(Cont.)

Transmits at intervals from 6.45 a.m. 6.45 p.m.—Musical Selections. 7.30 p.m.—Book-keeping Lesson. 7.45 p.m.—Market Prices, Talk. 8.15 p.m.—Literary Talk: "The Odyssey." 8.45 p.m.—Variety Concert, News in the Intervals.

PITTSBURGH (U.S.A.)

Westinghouse Electric (KDKA). 480 kc (306 m.); 25 kw. Relayed at intervals on 4,800 kc (62.5 m.). Transmits at intervals from 2.45 p.m. 11.30 p.m.—Variety Programme of Music, Talks, Concerts, Time and Weather Reports, etc. 4.15 a.m. Tu. (approx.)—Close Down.

POSEN (Poland)

Polskie-Radio. 873.6 kc (343 m.); 1.5 kw. 12.0 noon.—Time Signal. 12.2 p.m. (approx.)—Concert of Gramophone Music. 1.0 p.m.—Exchange Quotations. 1.5 p.m.—Market Prices. 2.10 p.m. (approx.)—Agricultural Report. 2.15 p.m.—News Bulletin. 4.35 p.m.—Talk arranged by the Association of Public Libraries. 5.0 p.m.—Afternoon Concert from the Café—Esplanade Orchestra. 6.0 p.m.—Elementary French Lesson by M. Orner Neveux. 6.25 p.m.—"Silva rerum" by M. Busiakiewicz. 6.45 p.m.—Talk by M. Rubach, "Cinema Stars." 7.10 p.m.—Miscellaneous Items. 7.30 p.m.—Evening Concert. 9.0 p.m.—Time Signal. 9.2 p.m. (approx.)—News, Announcements and Miscellaneous Items. 9.30 p.m. (approx.)—Close Down.

SCHENECTADY (U.S.A.)

General Electric Company (WGY). 791.5 kc (379 m.); 50 kw. Relayed by 2XAF on 9,554 kc (31.4 m.) from 11.0 p.m. 11.45 a.m.—Physical Training—Setting-up Exercises. 1.30 p.m.—"Cheerio!"—Talk and Musical Selections. 1.50 p.m.—"Shopping Service," arranged by WGY.

4.15 p.m.—Radio Household Institute, relayed from New York. 4.55 p.m.—Time Signals. 5.0 p.m.—Weather Forecast. 5.2 p.m.—Produce Market Report. 5.10 p.m.—Farm Flashes. 5.30 p.m.—New York Stock Reports. 5.45 p.m.—Weather Forecast. 7.0 p.m.—French Language Lesson, by Madame Marie Chantemerle. 7.30 p.m.—Household Chats, arranged by WGY. 11.0 p.m.—Stock Reports. 11.5 p.m. (approx.)—Produce Market Report. 11.10 p.m. (approx.)—Farm Forum. 11.20 p.m. (approx.)—News and Announcements. 11.29 p.m.—Weather Forecast. 11.30 p.m.—Programme for Boys—A. C. Gilbert's Sports Talk, relayed from New York. 12.0 midnight.—Mutual Savings Bank Programme, relayed from New York. 12.30 a.m. (Tuesday)—The Madrigal Mixed Quartet, playing in the Studio. 1.0 a.m.—The Firestone Tyre Programme, relayed from New York. 1.30 a.m.—"The A. and P. Gipsies," relayed from New York. 2.30 a.m.—"The General Motors" Family Party" Programme, relayed from New York. 3.30 a.m.—Time Signal. 3.31 a.m. (approx.)—Sax Smith, assisted by his Cavaliers. Programme relayed from New York. 4.0 a.m. (approx.)—Close Down.

STOCKHOLM (Sweden)

Radiotjänst (SASA). 660.15 kc (454 m.); 1.5 kw. Relayed by Eskilstuna on 1,208 kc (248 m.); Gävle, 1,470 kc (204 m.); Göteborg 720.3 kc (416 m.); Kalmar, 1,184.5 kc (253 m.); Karlstad, 1,361 kc (220 m.); Linköping, 600 kc (500 m.); Malmö, 1,149.87 kc (261 m.); Motala, 219.9 kc (1,364 m.); Sjöfö, 1,190.35 kc (252 m.); Sundsvall, 540.45 kc (545 m.); and Uppsala, 600 kc (500 m.). Transmits at intervals from 11.30 a.m. 7.15 p.m.—Finnish Concert under the auspices of the International Radio Union in Geneva. 1. A Tale (Sibelius). 2. Nocturne and

Musette from the "King Christian Suite" (Sibelius). 3. Recital of Poetry. 4. Pastoral in Three Scenes (Palmgren). 5. Devotion and Humoresque (Sibelius). 6. Finlandia (Sibelius). 8.15 p.m.—News Bulletin and Weather Report. 8.40 p.m.—Theatre Review by Doctor Sven Södermann. 9.10 p.m. (approx.)—Close Down.

TOULOUSE (France)

Radiophonie du Midi. 772.25 kc (388 m.); 8 kw. 12.30 p.m.—Meteorological Report, Market Prices List from the Municipality of Toulouse and Regional Exchange Rates. 12.45 p.m.—Concert of Orchestral Music on Pathé Gramophone Records. First Part. 1. Prelude to "The Mastersingers" (Wagner). 2. Prelude to "Lohengrin" (Wagner). 3. From the Rhine to the Danube (Max Rhode). 4. "The Thieving Magpie"—Overture (Rossini). 5. Intermezzo and Minuet from "L'Arlésienne"—Suite (Bizet). 1.0 p.m. (during the Interval).—Time Signal. 1.20 p.m.—Concert. Part 2. Selections from the Opera, "The Barber of Seville" (Rossini). 1. Overture. 2. From the Rays of the Dawn. 3. Silence at Her window. 4. Figaro's Aria. 5. Of such precious metal. 6. Rosina's Aria. 7. Slander is a whispering zephyr. 1.45 p.m.—Latest News Bulletin from the "Telegram," the "Express" and the "Midi Socialiste." 2.0 p.m. (approx.)—8.0 p.m.—No Transmission. 8.0 p.m.—Paris Market Quotations, Prices of Corn, Wheat, Flour, Paris Exchange Rates, News communicated by the "Fournier Agency," and the Day's News by the "Dispatch" and the "Petit Parisien." 8.30 p.m.—Concert. First Part. Instrumental Programme. 1. Organ Solo—Gipsy's Dream (Nell Allen). 2. Organ Solo—Indian Love Call (Rudolph Friml). 3. Mandoline Solo—Pizzicati from the Ballet "Sylvia" (Léo Delibes). 4. Mandoline Solo—Flatteries de petit chat (Elleberg). 5. Selection for Viola da gamba and Cembalo—Sonata (Handel). 6. Cembalo Solo—

Doina (Hirienlied). 7. Cembalo Solo—Roman Dance (Nitzka Codolban). 9.0 p.m.—Time Signal. 9.2 p.m.—Concert. Second Part. Programme arranged by the Compagnie Radiotechnique de Suresnes. Selections from the Opera "Faust" (Gounod). 1. From Act I: (a) Salut ô mon dernier matin, (b) Me voici, d'où vient ta surprise, (c) Mais quoi, ta main tremble. 2. From Act II: (a) La Kermesse, (b) O sainte médaille, (c) The Golden Calf, (d) Waltz with Choral Accompaniment. 3. From Act III: (a) Selection, (b) Salut, demeure chaste et pure, (c) Song of the King of Thule, (d) The Jewel Song, (e) Il m'aime. 4. From Act IV: (a) The Church Scene, (b) Glory Immortal—The Soldiers' Chorus, (c) Serenade—Vous qui faites l'endormie, (d) The Duel Trio. 5. Ballet Music: (a) The Nubians, (b) Danse antique, (c) Andante, (d) Cleopatra, (e) Les Troyennes, (f) Variation du miroir, (g) Danse de Phrynée. 5. From Act V: (a) Anges purs—Trio Finale. 10.0 p.m.—Concert. Third Part. Programme of Waltzes. 1. Mille roses rouges (Benatzky). 2. Pour la dernière fois, embrasse-moi (Stolz). 3. The Blue Danube (Strauss). 4. Springtime Waltz (Strauss). 10.15 p.m.—The Day's News Bulletin from North Africa. 10.30 p.m. (approx.)—Close Down.

WARSAW (Poland)

Polskie Radio. 270 kc (1,111 m.); 8 kw. 10.55 a.m.—Time Signal. 11.0 p.m. (approx.)—Chimes from the Church of Notre Dame at Cracow. 11.2 a.m. (approx.)—Aviation Bulletin. 11.5 a.m. (approx.)—Meteorological Report and Forecast. 11.10 a.m.—2.0 p.m.—No Transmission. 2.0 p.m.—Weather Report and Forecast. 2.10 p.m. (approx.)—Finance Report and Economic Bulletin. 2.20 p.m.—2.45 p.m.—No Transmission. 2.45 p.m.—Weekly Press Report from the Minister of Communications, M. Th. Strzetelsky.

3.0 p.m.—Concert of Gramophone Records. 3.25 p.m.—Programme for Children. 3.55 p.m.—4.10 p.m.—No Transmission. 4.10 p.m.—Talk (To be Announced). 4.35 p.m.—Talk by Dr. Minkovska from the Series organised by the Ministry of Education for Teachers of History: "The Teaching of History on the Dalton Plan in Elementary and Secondary Schools. 5.0 p.m.—Relay of Concert of Light Music from the Café "Gastronomia." 6.0 p.m.—Miscellaneous Items. 6.20 p.m.—6.30 p.m.—No Transmission. 6.30 p.m.—Course of French Literature by M. L. Roquigny. 6.56 p.m.—Time Signal. 7.0 p.m.—Agricultural Report. 7.5 p.m.—General News Bulletin. 7.30 p.m.—Evening Concert. In the Interval, Theatrical News. 9.0 p.m.—Aviation Report. 9.3 p.m. (approx.)—Meteorological Report and Forecast. 9.5 p.m.—General News Bulletin. 9.15 p.m. (approx.)—Police Report. 9.20 p.m. (approx.)—Sports Notes. 9.30 p.m.—Relay of Dance Music from the Hotel Bristol—Orchestra under the direction of Gold and Peterburky. 10.30 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)

Radio-Genossenschaft. 510.85 kc (587 m.); 0.63 kw. Transmits at intervals from 11.30 a.m. 3.0 p.m.—Concert relayed from the Carlton-Elite Hotel. 4.45 p.m.—Meteorological Report and Forecast. 6.30 p.m.—Relay of Time Signal and Weather Report. 6.32 p.m.—Talk by Conductor Edwin Geist on the Future of Opera (2). 7.0 p.m.—The Future of Opera (2). Musical Illustrations by the Station Orchestra (cont.). 7.40 p.m.—Relay from Lausanne on 441.1 kc (680 m.); 0.6 kw. Piano Recital by Mme. Lisy Fischer. 8.20 p.m. (approx.)—Waltz and Marches played by the Zürich Station Orchestra. 9.0 p.m.—Weather Report and Forecast, Late News and Press Notes from the Neue Züricher Zeitung. 9.15 p.m. (approx.)—Close Down.

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PROGRAMMES FOR TUESDAY (December 18)

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO GREENWICH MEAN TIME

AGEN (France)

Radio-Agen. 1,001 kc. (299 m.); 0.48 kw.

12.40 p.m.—General News Bulletin, Regional Market-Report, Meteorological Report and Forecast and Market Prices.

7.30 p.m.—Orchestral Concert, arranged by the "Antenne" of Paris, and rendered by the Agen Station Orchestra.

7.40 p.m.—(During the Interval) late News Bulletin, Press Review, Stock Exchange Quotations and Meteorological Report and Forecast.

BERLIN (Germany)

Voxhaus. 620.3 kc (484 m.); 4 kw.

8.0 p.m.—Talk: "Modern Poetry."

BERNE (Switzerland)

Radio Berne. 730.75 kc. (410 m.); 1.3 kw.

6.32 p.m.—Academic Address by Professor Hoffmann of Berne on "Augustine, the Most Celebrated of the Fathers of the Church in Western Europe."

7.0 p.m.—Pianoforte Recital by Herr Fritz Indermühle of Modern Pianoforte Compositions.

7.30 p.m.—Programme from Geneva 304.7 kc (760 m.). "King David"—Oratorio in Three Parts by Arthur Honegger, rendered by the Orchestra of La Suisse Romande, conducted by M. Ernest Ansermet (Paris), the Cheur Roma and Herr Bauer (Tenor), Frau Maria Lüscher (Zürich), and Frau Caro Falser. Producer, M. Roland Manuel (Paris).

9.0 p.m.—(approx.)—News and Announcements.

9.10 p.m.—Weather Report and Forecast.

9.15 p.m.—Orchestral Concert.

BEZIERS (France)

Radio Beziars. 1,899 kc. (158 m.); 0.6 kw.

4.0 p.m.—Wine Market Quotations, and Wine Prices from the Chamber of Commerce of Montpellier, followed by a Short Musical Programme.

8.30 p.m.—General News Bulletin and Press Report from the Fournier Agency, Market Quotations and Wine Prices from Sète, Narbonne, Carcassonne, Montpellier, Nîmes and Lézignan.

8.45 p.m.—Concert. 1. Hindoussaia (P. Sego). 2. Bourgogne (R. Weiller). 3. Fantasia (R. Benoit). 4. Violin Solo (Bonnel). 5. Selection from "Faust" (Gounod). 6. Scènes descriptives (Andrieu). 7. March (Bosc). After the Programme, Announcement of Narbonne Market Quotations.

BORDEAUX (France)

Radio Bordeaux Sud-Ouest. 1,260 kc (238 m.); 1.5 kw.

7.0 p.m.—Concert: First Part. Orchestral Suites: 1. Impressions d'Italie (Gustave Charpentier); (a) Selection; (b) A la fontaine; (c) Sur les cimes; (d) Sérénade. 2. Petite Suite (Debussy); (a) En bateau; (b) Ballet; (c) Cortège; (d) Minuet.

7.35 p.m.—Concert. Second Part: Selections from "Werther"—Opera (Massenet); (a) Prelude; (b) Invocation à la nature; (c) Albert's Song; (d) J'aurais sur ma poitrine; (e) Lorsque l'enfant revient; (f) Air des larmes; (g) Prayer from the Third Act; (h) Prelude to the Fourth Act.

8.5 p.m.—Concert. Third Part: Instrumental Selections: 1. Trio in D minor (Mendelssohn). 2. Violin Solo, Chant de joie (Kreisler). 3. Violin Solo, Chant d'amour (Kreisler).

8.15 p.m.—Lesson in the Spanish Language by M. Rafels.

8.30—10.30 p.m.—No Transmission. 10.30 p.m.—Programme of Dance Music.

12.0 midnight (approx.)—Close Down.

COLOGNE (Germany)

Westdeutscher Rundfunk. 1,060.15 kc (283 m.); 4 kw.

See Langenberg Programme.

COPENHAGEN (Denmark)

Copenhagen Radio. 880.9 kc (337 m.); 1 kw. Relayed by Kalundborg, 261.9 kc (1,153 m.).

6.30 a.m.—Wireless Morning Exercises arranged by the "Berlingske Tidende."

12.15 p.m.—Educational Programme. 2.0 p.m.—Afternoon Concert by the Radio Orchestra under the direction of Launy Grøndahl. 1. Children's Songs—March (Ziehrer). 2. "Semiramide"—Overture (Rossini). 3. Selection from "Si j'étais Roi" (Adam). 4. Orientale (César Cui). 5. Royal plaisir—Minuet (Gabriel Marie). 6. Norwegian Artists' Carnival in Rome (Joh. S. Svendsen). In the Interval, "Jaevnhed" from "Dansk Folkekarakter" (Gudmund Schütte) read by Aage Hertel. 7. Devils' March (Fr. von Suppé). 8. Selection from "Røverborgen" (Kuhlau). 9. Andacht (Edv. Borregaard). 10. Evening Landscape from the "Gurre" Suite (Joh. Halvorsen). 11. Danish Humoresque No. 2 (S. Palmgren). 12. Melersta Finlands Regimentets March (E. Genetz).

4.0 p.m.—Programme for Children: "When Bent Aage played at Father Christmas"—Musical Play for Children in Four Acts, by Auntie One and Uncle Two. The action takes place on a small island in the South Seas. The Llamatic Personae consist of the Klc Family including Bent Aage (age 15), various savage tribes, Taori, a Native Chief and other Characters; Cast: Anne Marie Wiehe, Inga Schultz, Alex Suhr and Einar Juhl.

5.0 p.m.—Town Hall Chimes. 6.20 p.m.—Ugens Radio's Short-hand Lesson.

6.0 p.m.—News Bulletin, Exchange Quotations and Time Signal.

6.16 p.m.—Talk by Director Wald Jacobsen: "How can the Danish Industrial Export Trade be increased?"

6.45 p.m.—Talk by Kai Aage Bruun: "Musical Definitions: Tempo, Opus, etc."

7.15 p.m.—Orchestral Concert. 1. "A Midsummer Night's Dream"—Overture (Mendelssohn). 2. Minuet from the Symphony in E flat major No. 39 (Mozart). 3. Humoresque. No. 7, Opus 101 (Antonin Dvorak). 4. The Blue Danube—Waltz, Opus 314 (Joh. Strauss). 5. A Wedding Day on Troldhaugen. No. 2 Opus 19 (Edvard Grieg). 6. Hungarian Dance in G minor. No. 5 (Johannes Brahms). 7. The Rustle of Spring. No. 3 Opus 32 (Christian Sinding). 8. Champagne Gallop, Opus 14 (H. C. Lumbye). 9. Strobe, for Strings, Pianoforte and Organ. Opus 30 (Johan Bartholdy). 10. Festival Polonaise, Opus 12 (Johan S. Svendsen).

8.15 p.m.—News and Announcements. 8.30 p.m.—Reading by Director Thomas P. Hejle: "Af den kultur-historiske Selvbibliografi—Fra min Birte-Tid" (Jeppé Askjaer).

9.0 p.m.—Chamber Music Concert: Artists: Thorvald Nielsen (1st Violin) Erling Bloch (2nd Violin) Hans Kassow (Viola) and Louis Jensen (Cello). 1. String Quartet in E flat major (Mozart). 2. String Quartet in F minor. Opus 5 (Carl Nielsen).

10.0 p.m. (approx.)—Close Down.

CORK (Ireland)

Cork Broadcasting Station (6CK). 748 kc (401 m.); 1 kw.

1.30 p.m.—Weather Forecast and Gramophone Record Music.

6.0 p.m.—Exchange Quotations, News and Gramophone Selections.

6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio. 529.6 kc (566 m.); 1 kw.

10.56 a.m.—Transmission of Chimes from the Church of Notre-Dame. 11.0 p.m.—Transmission of Time Signal.

11.2 p.m.—Weather Report and Forecast. 11.10 a.m.—Gramophone Concert. 2.0 p.m.—Meteorological Report. 2.10 p.m.—Financial Report.

4.10 p.m.—Talk for Parents and Teachers, by Prof. E. Wyrobok on the Causes of the Unsatisfactory Educational Results even in the Creative and Cheerful School of To-day.

4.35 p.m.—Talk by Mr. J. Pietrzycky on Polish Memories of Italy. 5.0 p.m.—News and Announcements. 6.10 p.m.—Agricultural Bulletin.

6.20 p.m.—Transmission of the Opera from Posen. 9.0 p.m.—Transmission from Warsaw.

DUBLIN (Ireland)

Dublin Broadcasting Station (2RN). 940 kc (319 m.); 1 kw.

1.30 p.m.—Meteorological Report and Forecast. 1.33 p.m. (approx.)—Stock Exchange Quotations.

1.50 p.m. (approx.)—Selections of Gramophone Music. 3.0 (approx.)-6.0 p.m.—No Transmission.

6.0 p.m.—Concert of Gramophone Records. 6.15 p.m.—Programme for Children. 7.0 p.m.—Selections of Gramophone Music.

7.20 p.m.—News, Announcements, and Miscellaneous Items. 7.30 p.m.—Leighacht Ghacdhilge—Seamus O Duibhlearga. 7.45 p.m.—Spanish Language Lesson, by Walter Starkie, LL.D.

8.0 p.m.—Dr. Annie Patterson in a Programme of her own Compositions. 8.20 p.m.—Amhrain Ghacdhilge—Maighread Ni Annagáin.

8.30 p.m.—A Short Sketch by the Community Players. 9.0 p.m.—Programme by the Kodak Concert Party. 9.20 p.m.—A Talk on Music by Mr. H. R. White.

9.35 p.m.—Recitation to Music by the Rev. A. H. Macpherson: The Lady of Shalott; (Tennyson). Miss Violet Mackinnon at the Pianoforte.

9.50 p.m.—Romantic Moments from the Operas: 1. H. O'Dempsey and K. McCully in the Dream Scene from "The Bohemian Girl" (Balfe). 2. T. J. Bevan and F. Howley in "Confidence" from "Martha" (Friedrich von Flotow) and H. O'Dempsey, Kathleen McCully, W. J. Lemass and Florence Howley in Selection from the Opera, "Dream Lovers" (Coleridge-Taylor).

10.30 p.m.—News, Announcements, and Miscellaneous Items. 10.40 p.m. (approx.)—Meteorological Report. 10.45 p.m. (approx.)—Close Down.

GRAZ (Austria)

Oest-Radio-Verkehr. 841.1 kc (357 m.); 0.5 kw.

Programme from Vienna until 7.5 p.m. 7.5 p.m.—"Sei gegrüsst, Du himmlischer Knabe"—A Christmas Thought (Peter Rosegger). Recitations: Women's Choir and String Quartet (arr. Rosegger). Artists: Eberhard Krumshmid (Elocutionist), from the Playhouse, Graz, Women's Choir—Giede, Giese, Toniskaya and Baumann from the Graz Opera House, and the String Quartet from the Municipal Opera House. Conductor: Karl Tutin.

7.35 p.m.—Variety Programme, with Items by the Alpenländische Volksbühne, and the Hüttl Orchestra in Selections of Peasant Music on Wind Instruments, The Wolka Mandoline Quintet, and the "Südbahn" Male Voice Quintet. Conductor: Herr Willibald Frankl. 1. Peasant Music. 2. "The Three Ice Saints"—Peasant Comedy, with Song by Alois Hönle, Music by Gustav Krebs. Producer: Herr Willibald Frankl. Dramatis Personae: The Peasant on the Sunnhof (Hans Ortner), His Wife (Erna Donner), their Sons—Pankratius (Franz Brandl) and Skervatius and Bonifaz (Josef Schwarz and Willibald Frankl), the Burgo-master of Apldorf (Sepp Rottner), Franziska, Regina and

Cazilia, his daughters (Adele Frankl, Lisl Förster, and Grete Lehner). A Postman. The action takes place on the Sunnhof. 3. Recital by the Quintet of the Male Voice Choral Society "Südbahn." 4. Peasant Music by the Hüttl Orchestra. 5. "Das Haupttrefferdorf"—Play (Eugen Wriany Raaben). The action takes place amongst the peasantry of a Styrian Mountain Village. Dramatis Personae: Berghuber—a Wealthy Peasant (Sepp Rottner), Vroni, his Daughter (Lisl Förster), Pichler Franz, a Poor Peasant (Hans Ortner), Loos, his Grandchild (Franz Brandl), Pichler Franz 2 (Sepp Schwarz), Pichler Franz 3 (Willibald Frankl), Christl, a Village Maiden (Adele Frankl), Maxinger-Agent (Franz Thelen), Proxl, Public Official. 6. Selection by the Mandoline Quintet, News, Announcements, and Weather Report.

6.40 p.m.—Talk on Mankind—Hardt, Honigsheim, Stein, Worm. 7.0 p.m.—Orchestral Concert of Finnish Music. Conductor: Buschkötter Soloist at the Pianoforte, Egbert Grape. Recitations by Rieth. 1. Dramatic Overture (Mielcke). 2. Der Fluss—Pianoforte. "The River Concerto (Palmgren). 3. Recitation. Selection from the Finnish National Epic "Kalevala." 4. First Symphony in E minor (Sibelius). Andante ma non troppo, Allegro energico, Andante, Scherzo allegro, Finale, Andante, Allegro molto.

9.30 p.m. (approx.)—News, Announcements, Sports Notes, Business Announcements and Silent Night.

HAMBURG (Germany)

Norag (ha, in Morse). 759.8 kc (395 m.); 4 kw. Relayed by Bremen, on 1,090 kc (273 m.); Hanover, 1,007.65 kc (298 m.); and Kiel, 1,178 kc (255 m.).

Transmits at intervals from 5.50 a.m. 6.0 p.m.—Talks, "What Fruit shall I Preserve," and "Is there too much Coal?" 6.55 p.m.—Frankfurt Exchange and Weather Report.

7.0 p.m.—Concert from the Works of Leo Fall. 8.0 p.m.—Talk on "Panama." 9.30 p.m.—Weather, News and Sports Announcements. 10.50 p.m.—North Sea and Baltic Weather Report.

10.55 p.m.—Concert of Gramophone Records. 11.0 p.m.—Programme for Children. 11.15 p.m.—Selections of Gramophone Music.

11.20 p.m.—News, Announcements, and Miscellaneous Items. 11.30 p.m.—Leighacht Ghacdhilge—Seamus O Duibhlearga. 11.45 p.m.—Spanish Language Lesson, by Walter Starkie, LL.D.

8.0 p.m.—Dr. Annie Patterson in a Programme of her own Compositions. 8.20 p.m.—Amhrain Ghacdhilge—Maighread Ni Annagáin. 8.30 p.m.—A Short Sketch by the Community Players. 9.0 p.m.—Programme by the Kodak Concert Party. 9.20 p.m.—A Talk on Music by Mr. H. R. White.

9.35 p.m.—Recitation to Music by the Rev. A. H. Macpherson: The Lady of Shalott; (Tennyson). Miss Violet Mackinnon at the Pianoforte. 9.50 p.m.—Romantic Moments from the Operas: 1. H. O'Dempsey and K. McCully in the Dream Scene from "The Bohemian Girl" (Balfe). 2. T. J. Bevan and F. Howley in "Confidence" from "Martha" (Friedrich von Flotow) and H. O'Dempsey, Kathleen McCully, W. J. Lemass and Florence Howley in Selection from the Opera, "Dream Lovers" (Coleridge-Taylor).

10.30 p.m.—News, Announcements, and Miscellaneous Items. 10.40 p.m. (approx.)—Meteorological Report. 10.45 p.m. (approx.)—Close Down.

10.55 p.m.—Concert of Gramophone Records. 11.0 p.m.—Programme for Children. 11.15 p.m.—Selections of Gramophone Music. 11.20 p.m.—News, Announcements, and Miscellaneous Items. 11.30 p.m.—Leighacht Ghacdhilge—Seamus O Duibhlearga. 11.45 p.m.—Spanish Language Lesson, by Walter Starkie, LL.D.

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10.30 p.m.—News, Announcements, and Miscellaneous Items. 10.40 p.m. (approx.)—Meteorological Report. 10.45 p.m. (approx.)—Close Down.

10.55 p.m.—Concert of Gramophone Records. 11.0 p.m.—Programme for Elementary Schools "Christmas"—Reading with Music and Song. 11.10 a.m.—Mechanical Music. Wurliitz Organ Music. 11.30 a.m.—Gramophone Selections. 12.5 p.m.—Orchestral Concert, under the Direction of Herr Eysoldt. 1. "Manfred"—Overture (Schumann). 2. An dich—Waltz (Waldfleutel). 3. Erotica—Romantic Fantasia (Schlossmacher). 4. Selection from the Opera "The Prophet" (Meyerbeer). 5. Heimeh—Nocturne (Zeh). 6. Spanish Dances (Moszkovskiy). 7. From Gluck to Wagner—Potpourri (Schreiner).

1.30 p.m.—Advertising Talk, Hints for the Housewife. 3.0 p.m.—Programme for Children. Talk by Els Vordberg: Christmas Stories—Christmas Stories. 3.30 p.m.—A German Christmas Play, in the Old Style (Conrad Dürer and Hans Oeser). Producer: Kandner.

4.0 p.m.—Educational Talk for Secondary Schools. Programme Arrangements. 4.45 p.m.—Concert by the Town Orchestra, Disseldorf. 1. Two Dramatic Dances (Bantock). 2. Two Pieces from "A Thousand and One Nights" (Bleyle). 3. Püppchen verbeugt sich (Bueseni). 4. Two Tzigane Dances (Heidingsfeld). 5. Festival March (R. Strauss).

5.30 p.m.—Reading by Joseph Kandner from "Sebastopel" (Leo Tolstoy). 6.15 p.m.—French Conversation.

6.40 p.m.—Talk on Mankind—Hardt, Honigsheim, Stein, Worm. 7.0 p.m.—Orchestral Concert of Finnish Music. Conductor: Buschkötter Soloist at the Pianoforte, Egbert Grape. Recitations by Rieth. 1. Dramatic Overture (Mielcke). 2. Der Fluss—Pianoforte. "The River Concerto (Palmgren). 3. Recitation. Selection from the Finnish National Epic "Kalevala." 4. First Symphony in E minor (Sibelius). Andante ma non troppo, Allegro energico, Andante, Scherzo allegro, Finale, Andante, Allegro molto.

9.30 p.m. (approx.)—News, Announcements, Sports Notes, Business Announcements and Silent Night.

LEIPZIG (Germany)

Mitteldeutscher Rundfunk. 819.6 kc (366 m.); 4 kw. Relayed by Dresden 1,088.2 kc (276 m.).

Transmits at intervals from 9.5 a.m. 7.0 p.m.—"The Birth of Christ" Oratorio (Herzogenburg) from the Leipzig University Church. 8.30 p.m.—J. G. Herder Recital. 9.15 p.m.—News and Sports Notes followed by Dance Lesson and Dance Music Programme.

6.40 p.m.—Talk on Mankind—Hardt, Honigsheim, Stein, Worm. 7.0 p.m.—Orchestral Concert of Finnish Music. Conductor: Buschkötter Soloist at the Pianoforte, Egbert Grape. Recitations by Rieth. 1. Dramatic Overture (Mielcke). 2. Der Fluss—Pianoforte. "The River Concerto (Palmgren). 3. Recitation. Selection from the Finnish National Epic "Kalevala." 4. First Symphony in E minor (Sibelius). Andante ma non troppo, Allegro energico, Andante, Scherzo allegro, Finale, Andante, Allegro molto.

9.30 p.m. (approx.)—News, Announcements, Sports Notes, Business Announcements and Silent Night.

10.55 p.m.—Concert of Gramophone Records. 11.0 p.m.—Programme for Children. 11.15 p.m.—Selections of Gramophone Music. 11.20 p.m.—News, Announcements, and Miscellaneous Items. 11.30 p.m.—Leighacht Ghacdhilge—Seamus O Duibhlearga. 11.45 p.m.—Spanish Language Lesson, by Walter Starkie, LL.D.

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10.30 p.m.—News, Announcements, and Miscellaneous Items. 10.40 p.m. (approx.)—Meteorological Report. 10.45 p.m. (approx.)—Close Down.

10.55 p.m.—Concert of Gramophone Records. 11.0 p.m.—Programme for Elementary Schools "Christmas"—Reading with Music and Song. 11.10 a.m.—Mechanical Music. Wurliitz Organ Music. 11.30 a.m.—Gramophone Selections. 12.5 p.m.—Orchestral Concert, under the Direction of Herr Eysoldt. 1. "Manfred"—Overture (Schumann). 2. An dich—Waltz (Waldfleutel). 3. Erotica—Romantic Fantasia (Schlossmacher). 4. Selection from the Opera "The Prophet" (Meyerbeer). 5. Heimeh—Nocturne (Zeh). 6. Spanish Dances (Moszkovskiy). 7. From Gluck to Wagner—Potpourri (Schreiner).

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9.30 p.m. (approx.)—News, Announcements, Sports Notes, Business Announcements and Silent Night.

MADRID (Spain)

Union Radio (EAJ7). 689.6 kc (435 m.); 1 kw.

Transmits at intervals from 11.45 a.m. 7.0 p.m.—Chimes and Exchange, followed by Sextet Concert. 8.0 p.m.—Dance Music. News. 9.45 p.m.—Talk on Astronomy. 10.0 p.m.—Chimes and Exchange, followed by Selection from "Rigoletto"—Opera (Verdi). 12.0 midnight—Chimes and News. 12.30 a.m.—Wed. (approx.)—Close Down.

MOTALA (Sweden)

219.9 kc (1,364 m.); 20 kw. See Stockholm Programme.

MUNICH (Germany)

Deutsche Stunde in Bayern. 558.9 kc (537 m.); 4 kw. Relayed by Augsburg, 529.6 kc (566 m.); Karserslautern, 1,079.65 kc (278 m.); and Nürnberg, 1,239.5 kc (242 m.).

Transmits at intervals from 5.45 a.m. 6.0 p.m.—"Das Christfestlein" (Pflücker): A Christmas Play in Two Acts, after Stack's "Christmas Fairy-Tales" Relayed from the National Theatre, Munich. Followed by News and Announcements. 9.45 p.m.—Lesson in Dancing, by Max Wellenberg.

10.55 p.m.—Concert of Gramophone Records. 11.0 p.m.—Programme for Elementary Schools "Christmas"—Reading with Music and Song. 11.10 a.m.—Mechanical Music. Wurliitz Organ Music. 11.30 a.m.—Gramophone Selections. 12.5 p.m.—Orchestral Concert, under the Direction of Herr Eysoldt. 1. "Manfred"—Overture (Schumann). 2. An dich—Waltz (Waldfleutel). 3. Erotica—Romantic Fantasia (Schlossmacher). 4. Selection from the Opera "The Prophet" (Meyerbeer). 5. Heimeh—Nocturne (Zeh). 6. Spanish Dances (Moszkovskiy). 7. From Gluck to Wagner—Potpourri (Schreiner).

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9.30 p.m. (approx.)—News, Announcements, Sports Notes, Business Announcements and Silent Night.

Programmes for Tuesday.—(Cont.)

7.45 p.m.—Market Prices. Talk.
8.15 p.m.—Concert arranged by "Radio Selection." News in the intervals.

PITTSBURGH (U.S.A.)

Westinghouse Electric (KDKA). 990 kc (306 m.); 25 kw. Relayed at intervals on 4,800 kc (62.5 m.). Transmits at intervals from 2.45 p.m. 11.30 p.m.—Variety Programme of Music, Talks, Concerts, Time and Weather Reports, etc.
4.15 a.m. Wednesday (approx.).—Close Down.

POSEN (Poland)

Polskie-Radio. 873.6 kc. (343 m.); 1.5 kw.
12.0 noon.—Time Signal.
12.2 p.m. (approx.).—Concert of Gramophone Music.
1.0 p.m.—Exchange Quotations.
1.15 p.m.—News and Announcements.
4.35 p.m.—Talk (to be announced).
5.0 p.m.—Afternoon Concert. Relayed from Warsaw.
6.0 p.m.—Miscellaneous Items.
6.20 p.m.—Relay of an Opera.
9.30 p.m.—Time Signal.
9.32 p.m. (approx.).—News, Announcements and Miscellaneous Items.
10.0 p.m.—Dance Music Programme from the Café Esplanade.
11.0 p.m. (approx.).—Close Down.

SCHENECTADY (U.S.A.)

General Electric Company (WGY). 791.5 kc (379 m.); 50 kw. Relayed by 2XAF on 9,554 kc (31.4 m.) from 11.0 p.m.
11.45 a.m.—Physical Training—Setting-up Exercises.
1.30 p.m.—"Cheerio 1"—Talk and Musical Selections.
4.15 p.m.—Radio Household Institute. Programme relayed from New York.
4.55 p.m.—Time Signals.
5.0 p.m.—Weather Forecast.
5.2 p.m.—Produce Market Report.
5.10 p.m.—Farm Flashes.
5.30 p.m.—New York Stock Reports.
5.45 p.m.—Weather Forecast.
6.30 p.m.—Television Transmission.
7.0 p.m.—Organ Recital, relayed from

Proctor's Theatre, Schenectady, N.Y.
7.30 p.m.—Household Chats, arranged by WGY.
9.30 p.m.—Auction Bridge Game, relayed from New York.
11.0 p.m.—Stock Market Reports.
11.5 p.m. (approx.).—Produce Market Report.
11.10 p.m. (approx.).—Farm Forum.
11.20 p.m. (approx.).—News Items and Miscellaneous Announcements.
11.29 p.m.—Weather Forecast.
11.30 p.m.—Programme of Musical Selections, rendered by the Orchestra of the Hotel Ten Eyck, Albany, N.Y.
12.30 a.m. (Wednesday).—Soconyland Sketch, relayed from New York.

1.0 a.m.—Orchestral Selections from the Studio.
2.0 a.m.—"The Eveready Hour," relayed from New York.
3.0 a.m.—Programme by the Clicquot Club Eskimos, relayed from New York.
3.30 a.m.—Time Signal.
3.32 a.m. (approx.).—Dance Music Programme, relayed from the Hotel Kenmore, Albany, N.Y.
4.30 a.m.—Television Transmission.
5.0 a.m. (approx.).—Close Down.

STOCKHOLM (Sweden)

Radiotjänst (SASA). 660.15 kc (454 m.); 1.5 kw. Relayed by Eskilstuna on 1,208 kc (248 m.); Gävle, 1,470 kc (204 m.); Göteborg, 720.3 kc (416 m.); Kalmar, 1,184.5 kc (253 m.); Karlstad, 1,361 kc (220 m.); Linköping, 600 kc (500 m.); Malmö, 1,149.87 kc (261 m.); Motala, 219.9 kc (1,364 m.); Sjöfjär, 1,100.35 kc (252 m.); Sundsvall, 540.45 kc (545 m.); and Uppsala, 600 kc (500 m.).
Transmits at intervals from 11.30 a.m.
7.0 p.m.—Centenary Programme Viktor Rydberg, relayed from the Stockholm Concert House, on the 100th Anniversary of his Birth: 1. The Maid of Orleans—Overture (Söderman). 2. Memorial Talk by Dr. Natanael Beskow. 3. The Fairy and the Maiden—Poem by Viktor Rydberg, for Soprano and Orchestra (Peterson-Berger). 4. The Flying Dutchman, by Viktor Rydberg, read by Anders de Wahl. 5.

Snöfrid—Poem by Viktor Rydberg, for Soprano, Choir and Orchestra (Sibelius).
8.30 p.m.—News and Weather.
9.0 p.m. (approx.).—Close Down.

TOULOUSE (France)

Radiophonie du Midi. 772.25 kc. (388 m.); 8 kw.
12.30 p.m.—Meteorological Report, Market Prices List from the Municipality of Toulouse and Regional Exchange Rates.
12.45 p.m.—Concert arranged by the Radio-Club of Tarn-et-Garonne. First Part: Recital of Songs in German: 1. Air of Caravadosi from "La Tosca" (Puccini). 2. Ay, ay, ay (Perez Freire). 3. Sérénade (Toselli). 4. Selection from "Turandot" (Puccini). 5. Song—Das Petersbrunnchen. 6. Song—Wo die Alpenrosen blüh'n.
1.0 p.m.—Time Signal.
1.6 p.m.—Concert: Second Part. Five Waltzes: 1. Accelerationen (Strauss). 2. Blues, Jache (Kassel). 3. Up and at 'em (Goering). 4. It was only a sun shower (Snyder). 5. Give me (Friend).
1.26 p.m.—Concert. Third Part. Programme of Instrumental Trios and Quartets: 1. Quartet for Strings in G minor (Haydn). 2. Quartet for Strings in C major No. 4 (Schubert). 3. Trio, Berceuse. 4. Serenade.
1.45 p.m.—Latest News Bulletin from the "Telegram," the "Express" and the "Midi Socialiste."
2.0—8.0 p.m.—No Transmission.
8.0 p.m.—Paris Market Quotations and Exchange Rates, Prices of Corn, News communicated by the Fournier Agency and the Day's News Bulletin by the "Dispatch" and the "Petit Parisien."
8.30 p.m.—Concert. First Part. Programme of Dance Selections: 1. The Song is Ended (Irving Berlin). 2. Somebody Kissed Me (Irving Berlin). 3. Waltz, Wiener Mäd'ln (Ziehrer). 4. Waltz from "Faust" (Gounod). 5. Waltz, Deta (Bransen). 6. The Blue Waltz (Vivian Ellis). 7. Rose mousse (Berger). 8. Missouri (Veriag).
9.0 p.m.—Time Signal.
9.2 p.m.—Orchestral Concert arranged by the Philips Radio, Paris. First Part: 1. "Les Saltimbanques"—Overture (Ganne). 2. Triana

(Balay). 3. Selection from "The Caliph of Baghdad" (Boieldieu). 4. Sextet Selection, "The Fifth Hungarian Dance (Brahms). 5. "Anacreonte"—Overture (Chérubini). 6. La Polonaise (Chopin). 7. Waltz, España (Chabrier).
9.30 p.m.—Concert. Second Part. "The Damnation of Faust"—Selections from the Opera by Berlioz: 1. From Act I. Hungarian March. 2. From Act II. (a) Brander's Song—Certain rain, (b) Choral Selection—Fugue, Amen, Amen, (c) Song of the Flea—Une puce gentille. 3. From Act III. (a) Voici des roses, (b) Dance of the Sylphs. 4. From Act IV. (a) Merci, doux crépuscule, (b) Esprit des flammes inconstantes, (c) Menuet des follets, (d) Sérénade devant la maison. 5. From Act V. Invocation to Nature.
10.15 p.m.—The Day's News Bulletin from North Africa.
10.30 p.m. (approx.).—Close Down.

WARSAW (Poland)

Polskie Radio. 270 kc (1,111 m.); 8 kw.
10.56 a.m.—Time Signal.
10.58 a.m. (approx.).—Chimes from the Tower of the Church of Notre Dame at Cracow.
11.2 a.m. (approx.).—Aviation Bulletin.
11.5 a.m. (approx.).—Meteorological Report and Forecast.
11.10 a.m.—2.0 p.m.—No Transmission.
2.0 p.m.—Meteorological Report and Forecast.
2.10 p.m. (approx.).—Commercial and Economic Bulletin.
2.20 p.m.—A Talk from the Series of Lectures organised by the Minister of Foreign Affairs: "Foreign Politics during the Month of November," by Doctor Grzymala Grabowiecki.
2.45 p.m.—News and Announcements and Miscellaneous Items.
3.0 p.m.—Concert of Gramophone Records.
3.55—4.10 p.m.—No Transmission.
4.10 p.m.—Talk from the Series on Sport and Physical Culture.
4.35 p.m.—Talk relayed from Posen.
5.0 p.m.—Afternoon Concert of Orchestral and Vocal Music, by the Station Orchestra, with the collaboration of Madame St. Miller (Vocalist) and Professor

Urstein at the Piano. 1. Orchestral Selections (a) Fantasia on Theme from the Opera "Salome," and (b) Waltz from the Opera "Der Rosenkavalier" (R. Strauss). 2. Songs by Madame St. Miller: (a) Ich trage meine Minne, and (b) Traum durch die Dämmerung (R. Strauss).
3. Orchestral Selections: (a) Andante from the Fourth Symphony, and (b) Adagietto from the Fifth Symphony (G. Mahler). 4. Vocal Selections by Madame St. Miller: (a) The Legend of the Rhine, and (b) Blicke mir nicht in die Lieder (G. Mahler).
5.55 p.m.—Miscellaneous Items.
6.10 p.m.—Agricultural Report, relayed from Cracow.
6.15 p.m. (approx.).—Corn Market Quotations relayed from Cracow.
6.20 p.m.—Relay of an Opera. During the Interval: Theatrical News. After the Programme: Aviation Bulletin, Meteorological Report and Forecast, Sports Notes and General News Bulletin.

ZÜRICH (Switzerland)

Radio-Genossenschaft. 510.85 kc. (587 m.); 0.63 kw.
11.30 a.m.—Relay of Time Signal.
11.31 a.m.—Weather Report and Forecast.
11.32 a.m.—Concert of Gramophone Records.
11.50 a.m.—Weather Report and Forecast.
11.52 a.m.—Late News and Announcements.
12.0 noon.—Concert of Gramophone Records (contd.).
12.35 p.m.—Meteorological Report.
12.37 p.m. (approx.).—Exchange and Stock Market Quotations.
2.0 p.m.—Concert by the Station Orchestra.
3.0 p.m.—Concert relayed from the Carlton-Elite Hotel by the Castellano Orchestra.
4.15 p.m.—Concert of Gramophone Records.
4.45 p.m.—Weather Report.
6.30 p.m.—Relay of Time Signal.
6.31 p.m.—Weather Report and Forecast.
6.32 p.m.—Talk by Rudolf Hermann Doring, Author, on Strindberg's Artistic Intonation.
7.0—8.0 p.m.—Programme arranged by the Society of Swiss Authors.

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PROGRAMMES FOR WEDNESDAY (December 19)

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO GREENWICH MEAN TIME

AGEN (France)

Radio Agen, 1,001 kc (299 m.); 0.48 kw. 12.40 p.m.—General News Bulletin, Quotations from Local Markets, Meteorological Report and Forecast and Market Prices. 7.40 p.m.—Latest News Reports, Weather Forecast and Municipal News. 8.0 p.m. (approx.)—Close Down.

BERNE (Switzerland)

Radio-Berne, 730.75 kc (410 m.); 1.3 kw. Transmits at intervals from 11.43 a.m.—Concert of Orchestral Music from the Kursaal. 6.20 p.m.—Relay of Time Signal. 6.30 p.m.—Weather Report and Forecast. 6.32 p.m.—Talk by Herr Robert Gilgion: "Christmas Wishes of a Radio-Amateur." 7.0 p.m.—"Abu Hassan"—Musical Play by Karl Maria von Weber. 8.0 p.m. (approx.)—Concert by the Berne Kursaal Orchestra. 8.45 p.m.—News and Announcements. 8.55 p.m.—Weather Report and Forecast. 9.0 p.m.—Orchestral Selections by the Kursaal Orchestra. 9.35 p.m. (approx.)—Close Down.

BEZIERS (France)

Radio Béziers, 1,899 kc (158 m.); 0.6 kw. 4.0 p.m.—Wine Market Quotations and Market Prices from the Chamber of Commerce of Sète, followed by a Short Musical Programme. 8.30 p.m.—General News Bulletin and Press Report from the Fournier Agency. Market Quotations and Wine Prices from Sète, Narbonne, Carcassonne, Montpellier, Nîmes and Lézignan. 8.45 p.m.—Concert. 1. Song without Words (Mendelssohn). 2. Canzona (Tchaikovsky). 3. Aria in D (J. S. Bach). 4. Madrigal (P. Gauthier). 5. Selection from "Le Roi d'Ys" (Lalo). 6. Sérénade (Widor). 6. Breton March (Jardin). After the Programme, Announcement of Sète Market Quotations.

BORDEAUX (France)

Radio Bordeaux Sud-Ouest, 1,260 kc (238 m.); 1.5 kw. 7.0 p.m.—Symphony Concert. 1. Selection from "Rosamunde" (Schubert). 2. Arabesque (Debussy). 3. Selection for Cello, by Monsieur Rouquet, First Prize Winner of the Toulouse Conservatoire. 4. Selection from "La Vivandière" (Godard). 5. L'amour veille (Monti). 6. Sérénade (M. Urhy). 7. Selection from "Les Saltimbanques" (Ganne). 8.15 p.m.—Talk. 8.30 p.m. (approx.)—Close Down.

BRUSSELS (Belgium)

Radio-Belgique, 590.4 kc (503 m.); 1 kw. Transmits at intervals from 5.0 p.m.—"Radio-Chronique." 8.15 p.m.—Gramophone Records. 8.30 p.m.—Concert from Antwerp followed by News. 10.15 p.m. (approx.)—Close Down.

COLOGNE (Germany)

Westdeutscher Rundfunk, 1,060.15 kc (283 m.); 4 kw. See Langenberg Programme.

COPENHAGEN (Denmark)

Copenhagen Radio, 889.9 kc (337 m.); 1 kw. Relay by Kalundborg, 261.0 kc (1,153 m.). 6.30 a.m.—Wireless Morning Exercises arranged by the "Berlingske Tidende." 11.15 a.m.—Educational Programme. 2.0 p.m.—Afternoon Concert of Instrumental Music under the direction of Louis Prell: 1. "Il Seraglio"—Overture (Mozart). 2. Wienerblut—Waltz (Joh. Strauss). 3. Selection from "Cavalleria Rusticana" (P. Mascagni). 4. Venetian Serenade (Joh. S. Svendsen). 5. Minuet (I. Paderewsky). 6. Evening Song (E. Elgar). 7. Indian War Dance from the Ballet, "Far from Denmark" (H. C. Lumbye). In the Interval: Selection from "The Daughters of the Commandant" (Karna Birk Grönbech), read by Hjalmar

Bendtsen. 8. Selection from "The Merry Widow" (Fr. Lehár). 9. Valse des blondes (Ganne). 10. Musica proibita (S. Gastaldon). 11. Serenade (M. Moszkowsky). 12. Loin du bal (Gillet). 13. Narcissus (E. Nevin). 14. Florentine March (J. Fucik). 5.15 p.m.—Five Minutes for the Housewife. 5.20 p.m.—Announcements for Wireless Listeners. 6.0 p.m.—News Bulletin, Exchange Quotations. 6.15 p.m.—Relay of Time Signal. 6.30 p.m.—Talk by Prof. Rich. Ege, "Vitamine D or Light and Nourishment." 7.0 p.m.—Town Hall Chimes. 7.2 p.m.—Eleventh Concert from the Axelborg Studio. Programme of German and French Music: 1. "A Midsummer Night's Dream"—Overture (Mendelssohn). 2. Concerto in G minor for Violin: Introduction: Andante-Finale (Max Bruch), rendered by Peder Møller. 3. Orchestral Selection: Mazeppa (Franz Liszt). Ten Minutes Interval. 4. "Phèdre"—Overture (Jules Massenet). 5. Ballet Music from "Faust" (Charles Gounod). 6. Violin Solos: (a) Havanais, (b) Rondo capriccioso (C. Saint-Saëns). 7. España—Spanish Rhapsody (L. Chabrier). 9.0 p.m.—News Bulletin. 9.15 p.m.—Dance Music by the Nimb Restaurant Orchestra under the direction of Jens Wamby. 11.0 p.m.—Town Hall Chimes. 11.30 p.m. (approx.)—Close Down.

CORK (Ireland)

Cork Broadcasting Station (6CK), 748 kc (401 m.); 1 kw. 1.30 p.m.—Weather Forecast and Gramophone Record Music. 6.0 p.m.—Exchange Quotations, News and Gramophone Selections. 6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio, 529.6 kc (566 m.); 1 kw. 10.56 a.m.—Transmission of Chimes from the Church of Notre-Dame. 1.0 a.m.—Transmission of Time Signal. 11.2 a.m.—Weather Report and Forecast. 11.10 a.m.—Gramophone Concert. 2.0 p.m.—Weather Report and Forecast. 2.10 p.m.—Financial Report. 3.30 p.m.—Concert for Children. "The Caliph Kассido," adapted for Wireless Performance by J. Romowicz, executed by the Artistes of the Municipal Theatre. 4.10 p.m.—Talk by Mme. E. Luskinia on the Legends of Lithuania. 4.35 p.m.—Talk by Mr. J. Marchlewsky, "Sur le pied blanc." 5.0 p.m.—Transmission from Warsaw. 6.0 p.m.—Miscellaneous Items. 6.30 p.m.—Mr. St. Broniowski, "The Letter Box." 6.55 p.m.—Time Signal from the Astronomical Observatory. 7.0 p.m.—Agricultural News. 7.20 p.m.—News and Announcements. 7.30 p.m.—Transmission from Katowice. 9.0 p.m.—Transmission from Warsaw. 9.30 p.m.—Transmission of Restaurant Concert.

DUBLIN (Ireland)

Dublin Broadcasting Station (2RN), 940 kc (319 m.); 1 kw. 1.30 p.m.—Meteorological Report and Forecast. 1.33 p.m. (approx.)—Stock Exchange Quotations. 1.50 p.m. (approx.)—Selections of Gramophone Records. 6.0 p.m.—Concert of Gramophone Records. 6.15 p.m.—Programme for Children. 7.0 p.m.—Programme for Women. 7.20 p.m.—News, Announcements, and Miscellaneous Items. 7.30 p.m.—Lesson in the Irish Language by M. O'Maolainn as Arainn. 7.45 p.m.—German Language Lesson by Olga von Wenckstern. 8.0 p.m.—Concert of Vocal and Instrumental Music. 1. Artane Band—Overture. 2. Jean Bertin (Baritone Solos). 3. Selection by the Artane Band. 4. Kathleen Andrews Pollaky ("Cello Solos"). 5. Selection by the Artane Band. 6. Jean Bertin (Baritone Solos). 7. Selection by the Artane Band. 9.30 p.m.—Gerard Crofts (Tenor) in Selections of Old Ballads. 9.45 p.m.—Selection of Arthur Sullivan Ballads by the Station Orchestra.

HAMBURG (Germany)

Norag (ha, in Morse), 759.8 kc (395 m.); 4 kw. Relay by Bremen on 1,099 kc (273 m.); Hanover, 1,007.65 kc (298 m.); and Kiel, 1,178 kc (255 m.). Transmits at intervals from 5.50 a.m.—Talk: "Art Exhibitions" by Helmut Jaro Jaretsky of Berlin. 5 p.m.—Concert of Light Music by the Station Orchestra: 6.0 p.m.—Talk, "Sketches of Frisian Poets." 6.25 p.m.—Talk, "From a Stage Manager's Office." 6.50 p.m.—Exchange, Market Prices and Weather Report. 7.0 p.m.—"Winter Solstice" Concert for Workers, followed by Variety Programme. 9.30 p.m.—Weather, Sports, News. 9.45 p.m.—Concert, relayed from the Ostermann Restaurant. 10.50 p.m.—North Sea and Baltic Weather Report.

HILVERSUM (Holland)

Algemeene Vereeniging Radio Omroep, 280 kc (1,071 m.); 5 kw. Transmits at intervals from 9.40 a.m.—Concert of Selections from Italian Opera. 1. "William Tell"—Overture (Rossini). 2. Baritone Aria from "Rigoletto" (Verdi). 3. Soprano Selections: (a) Su la mia gancia, and (b) A sera (Rio). 4. Aria from "La Bohème" (Puccini). 5. Soprano Aria from "Lucia di Lammermoor" (Donizetti). 6. Intermezzo from "La'amicò" (Fritz). 7. Soprano and Tenor Duet from "La Bohème" (Puccini). 8. Orchestral Selection: Intermezzo from "La Traviata" (Verdi). 9. Aria from "La Traviata" (Verdi). 10. Soprano Aria from "Madam Butterfly" (Puccini). 11. Tenor Aria from "Manon Lescaut" (Massenet). 12. Soprano Aria from "Rigoletto" (Verdi). 13. Orchestral Selection: Intermezzo (Puccini). 14. Soprano and Tenor Duet from "Manon Lescaut" (Puccini). 9.55 p.m.—Weather and News. 10.10 p.m.—Dance Music. 11.10 p.m. (approx.)—Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio, 261.0 kc (1,153 m.); 7.5 kw. See Copenhagen Programme.

LANGENBERG (Germany)

Westdeutscher Rundfunk, 639.8 kc (469 m.); 15 kw. Programme also for Aix-la-Chapelle, 749.6 kc (400 m.); Cologne, 1,200.15 kc (283 m.); and Münster, 1,200.1 kc (250 m.). 9.15 a.m.—Experimental and Industrial Transmissions. 9.30 a.m.—First General News Bulletin, and Tidal Report. 10.15 a.m.—Musical Programme for the Middle Classes of Secondary Schools, under the direction of Doctor Mies. Christmas Music from the Baroque Period: 1. Vivace and Pastorale from the Christmas Concerto for Two Violins, Cello, and String Orchestra (Corelli). 2. Two Selections from the Oratorio "The Messiah" (Handel), (a) Blick auf, (b) Das Volk das im Dunkeln wandelt. 3. Symphony from the Second Part of the Christmas Oratorio for Flutes, Oboe and String Orchestra (J. S. Bach). 11.10 a.m.—Programme of Gramophone Music. 11.55 a.m.—Time Signal relayed from Nauen, followed by Second General News Bulletin. 12.5 p.m.—Concert by the Orchestra conducted by Herr Eysoldt: 1. Spanish March, Andalusische Spiele (Esslinger). 2. Waltz, Die Werber (Lanner). 3. Overture to "Phèdre" (Massenet). 4. (a) Song, Santa Lucia, The Fairy City (Mario), (b) Romance sans paroles (Michelli). 5. (a) Andante (Stichtenth), (b) Spanish Dance (Granados), (c) Fourth Etude (Kreutzer-Eysoldt)—Solo for Violin, rendered by Heinrich Pensis. 6. Melodies from the Opera "Lucia di Lammermoor" (Donizetti). 7. Die alte Spieluhr—Intermezzo

(Humphries). 8. Selection from the Operetta "Der liebe Augustin" (Fall). 1.30 p.m.—Hints for the Housewife 2.30 p.m.—Economic Bulletin. 2.50 p.m.—Talk for Women by Aenne Pirig—"Legal Questions connected with Marriage." 3.25 p.m.—Relay of Concert for Young People from the Planetarium, Düsseldorf. Selections from the Christmas Oratorio by John Sebastian Bach. Artistes: Egbert Tobi (Tenor), Frau. F. Rempe (Contralto), Eduard Scherz (Bass) and the Orchestra of the Rheinhalle. Conductor: Ernst Suter. 1. Recitative for Tenor—Es begab sich aber. 2. Contralto Recitative—Nun wird mein liebster Bräutigam. Aria for Contralto—Bereite dich Zion. 4. Choral Selection, Wie soll ich dich empfangen. 5. Recitative for Tenor—Und sie gebar. 6. Choral and Recitative for Bass and Soprano Choir—Er ist auf Erden kommen. 7. Bass Aria, Grosser Herr und starker König. 8. Choral Selection, Ach mein herzlichstes Jesulein. 9. Symphony.

4.0 p.m.—Educational Talk for Elementary Schools arranged by Dr. Hammer. Talk by Herr Kloth—"How Eleven-year-olds can learn the Three Keys in Music." 4.45 p.m.—Concert by the Augmented Orchestra of the Westdeutscher Rundfunk, conducted by Herr Kühn. Soloists: Hansen (Soprano) and Holwe (Baritone). Programme of Modern Opera Music. 1. Dance Scene from "Holofernes" (Reznicek). 2. Wiegenlied der Elfs from the Opera "Der Schatzgräber" (Schreker)—Kläre Hansen (Soprano). 3. Baritone Solo by Heinz Holwe—Interlude from the Opera "Der Schatzgräber" (Schreker). 4. Pierrots' Dance Song from the Opera "Die tote Stadt" (Korngold). 5. Interlude from the Opera—"Das Wunder der Heliane" (Korngold). 5.15 p.m.—Programme Announcements. 5.30 p.m.—Talk on Welfare Work by Herr Wolker—"The Intellectual Welfare of Young People." 5.50 p.m.—Finance Bulletin and Second Meteorological Report and Sports Notes. 6.15 p.m.—Talk for Workers by Ernst Hardt—"From a Worker's Biography." 6.40 p.m.—Talk from the Series: "The Theory and Practice of Economics," by Dr. Hans Stein—"Work as an Economic Factor." 7.0 p.m.—Concert by the Little Orchestra under the direction of Eysoldt: 1. Waltz, Lotosblumen (Ohlsen). 2. Overture to "Il Guarany" (Gomes). 3. Melodies from the Opera "The Postillion of Longjumeau" (Adam). 4. Three Oriental Miniatures (Fischer). 5. (a) Red Roses (Gemünd), (b) All mein Glück auf Erden—Boston (Stolz). 6. Potpourri from the Operetta "Der Betelstudent" (Milläcker).

8.0 p.m.—Concert by the Concert Choir and Orchestra of the Westdeutscher Rundfunk, under the direction of Herr Zimmermann. Artistes: Käthe Brinkhaus (Soprano), Leni Gillard (Soprano), Lieselotte Mann (Contralto), Franz Legrand (Tenor), Franz Küsters (Bass) and Hans Hilgers (Organist). 1. Die Weissagung des Jesais—Christmas Chamber Cantata for Four Voices, Soprano, String Instruments, two Horns and Organ (Fr. E. Koch). 2. Mass—"Puer natus est nobis" for Soloists, Choir, Orchestra, Organ and Harp (Anton Alexander Knüppel). 9.30 p.m. (approx.)—Last General News Bulletin, Sports Notes and Results, Commercial Announcements followed by Programme of Orchestral Music and Dance Music Programme, under the direction of Herr Eysoldt. 11.0 p.m. (approx.)—Close Down.

LEIPZIG (Germany)

Mitteldeutscher Rundfunk, 819.6 kc (366 m.); 4 kw. Relay by Dresden, 1,088.2 kc (276 m.). Transmits at intervals from 9.5 a.m.—Talk, "The Marriage Settlement." 7.0 p.m.—Recital of North German Songs. 8.0 p.m.—Poems and Songs from the Works of Lessing. 9.0 p.m.—News and Sports Notes. 9.15 p.m.—Gramophone Concert. 11.0 p.m. (approx.)—Close Down.

MADRID (Spain)

Union Radio (EAJ7), 689.6 kc (435 m.); 1 kw. Transmits at intervals from 11.45 a.m.—Dance Music and News. 9.45 p.m.—Agricultural Talk. 10.0 p.m.—Chimes and Exchange, followed by Finnish Concert. 11.0 p.m.—Topical Talk. 11.15 p.m.—Vocal and Orchestral Concert. 12.0 midnight—Chimes, News and Dance Music. 12.30 a.m.—Thurs. (approx.)—Close Down.

MOTALA (Sweden)

219.9 kc (1,364 m.); 20 kw. See Stockholm Programme.

MUNICH (Germany)

Deutsche Stunde in Bayern, 558.9 kc (537 m.); 4 kw. Relay by Augsburg, 520.6 kc (566 m.); Kaiserslautern, 1,079.65 kc (278 m.); and Nürnberg, 1,239.5 kc (242 m.). Transmits at intervals from 11.55 a.m.—Reading for Children. 8.30 p.m.—Concert by the Munich String Quartet. 1. Rispetti e stambotti (Malipiero). 2. Op. 51, No. 2, in a minor (Brahms). 9.20 p.m.—News and Announcements. 9.45 p.m.—Orchestral Concert. 11.0 p.m. (approx.)—Close Down.

PARIS (France)

Eiffel Tower (FL), 113.2 kc (2,650 m.); 12 kw. 7.56 a.m.—Time Signal on 9,231 kc (32.5 m.). 9.26 a.m.—Time Signal on 113.2 kc. 5.45 p.m.—"Le Journal Parlé." 7.10 p.m.—Weather Forecast. 7.30 p.m.—Instrumental and Vocal Concert. At 7.56 p.m. Time Signal on 9,231 kc (32.5 m.). 10.26 p.m.—Time Signal on 113.2 kc.

PARIS (France)

Radio Paris (CFR), 169.9 kc (1,765 m.); 12 kw. Transmits at intervals from 6.45 a.m.—English Language Lesson. 8.0 p.m.—Literary Talk, "French Humour." 8.30 p.m.—Concert, including Poems and Chamber Music Selections. News in the intervals.

PITTSBURGH (U.S.A.)

Westinghouse Electric (KDKA), 980 kc (306 m.); 25 kw. Relay at intervals on 4,800 kc (62.5 m.). Transmits at intervals from 2.45 p.m.—Variety Programme of Music, Talks, Concerts, Time, and Weather Reports, etc. 4.15 a.m.—Thurs. (approx.)—Close Down.

POSEN (Poland)

Polskie-Radio, 873.6 kc (343 m.); 1.5 kw. 12.0 noon—Time Signal. 12.2 p.m. (approx.)—Concert of Gramophone Music. 1.0 p.m.—Exchange Quotations. 1.5 p.m. (approx.)—Market Prices. 1.10 p.m. (approx.)—Agricultural Report. 1.15 p.m.—News and Announcements. 4.30 p.m.—Programme for Children by "Uncle Czesio." 5.9 p.m.—Weekly Report of "Tydzień Radjowy" by the Editor, M. Kosidovsky. 6.30 p.m.—Talk on Journalism. 6.55 p.m.—Talk in French by M. Omer Neveux "Things about France." 7.10 p.m.—Miscellaneous Items. 7.30 p.m.—Organ Recital from the Works of Jean Sibelius by Prof. Felix Novoviesky. Relay from the Jesuit Church. 9.0 p.m.—Evening Concert of Vocal and Instrumental Selections. Hanna Dzięvinska (Soprano), Claire Kaulfussova (Violinist), Stigismoud Zavrcocki (Bass), Jadwiga Komorowska (Accompanist). 1. (a) from the Opera "Hérodiade"; (b) Aria from the Opera "Adrienne Lecouvreur" (Massenet). 2. Aria from the Opera "Faust" (Gounod). 3. Si tu le voulais (Tosti). 4. Mon monde c'est toi (Campana). 5. Violin Concerto (Beriot). 6. Songs of Bialkiewiczova and Nievidomsky. 9.0 p.m.—Time Signal. 9.2 p.m. (approx.)—News and Announcements and Miscellaneous Items. 9.30 p.m.—Dance Music Programme from the Carlton Restaurant. 11.0 p.m. (approx.)—Close Down.

Programmes for Wednesday.—(Cont.)

SCHENECTADY (U.S.A.)

General Electric Company (WGY). 791.5 kc (379 m.); 50 kw. Relayed by 2XAD on 13,661 kc (21.96 m.); from 11.0 p.m.
 11.45 p.m.—Physical Training—Setting-up Exercises.
 1.30 p.m.—"Cheerio!"—Talk and Musical Selections.
 1.50 p.m.—"Shopping Service," arranged by WGY.
 3.0 p.m.—National Home Hour, Programme. Relayed from New York.
 4.0 p.m.—Musical Selections. Relayed from New York.
 4.15 p.m.—Radio Household Institute. Programme relayed from New York.
 4.55 p.m.—Time Signals.
 5.0 p.m.—Weather Forecast.
 5.2 p.m.—Produce Market Report.
 5.10 p.m.—Farm Flashes.
 5.30 p.m.—New York Stock Market Reports.
 5.45 p.m.—Weather Forecast.
 7.0 p.m.—Organ Recital. Relayed from Proctor's Theatre, Schenectady.
 7.30 p.m.—Household Chats. Arranged by WGY.
 11.0 p.m.—Stock Market Reports.
 11.15 p.m. (approx.).—Produce Market Report.
 11.10 p.m. (approx.).—Farm Forum.
 11.20 p.m. (approx.).—News and Miscellaneous Announcements.
 11.29 p.m.—Weather Forecast.
 11.30 p.m.—Musical Programme by the Orchestra of the Hotel van Curler, Schenectady.
 12.0 midnight.—Mr. and Mrs. Radio Skits Programme.
 12.30 a.m. (Thursday).—"La Touraine Tableau," Relayed from New York.
 1.0 a.m.—Home Companion Hour. Programme relayed from New York.
 2.0 a.m.—The "Ipana Troubadours"—Programme relayed from New York.
 2.30 a.m.—"Palmolive" Programme. Relayed from New York.
 3.30 a.m.—Time Signal.
 3.31 a.m. (approx.).—Phil Spitalny's Music. Relayed from New York.
 4.0 a.m. (approx.).—Close Down.

STOCKHOLM (Sweden)

Radiotjänst (SASA). 660.15 kc (454 m.); 1.5 kw. Relayed by

Eskilstuna on 1,208 kc (248 m.); Gävle, 1,470 kc (204 m.); Göteborg, 720.3 kc (416 m.); Kalmar, 1,184.5 kc (253 m.); Karlstad, 1,361 kc (220 m.); Linköping, 600 kc (500 m.); Malmö, 1,149.87 kc (261 m.); Motala, 219.9 kc (1364 m.); Saffle, 1,190.35 kc (252 m.); Sundsvall, 540.45 kc (545 m.); and Uppsala, 600 kc (500 m.).
 Transmits at intervals from 11.30 a.m.
 7.15 p.m.—"The Letter"—Comedy (Helge Krog), from Göteborg.
 8.0 p.m.—Songs to the Lute by Pelle Nordström.
 8.15 p.m.—News and Weather.
 8.40 p.m.—Dance Music Programme from the Sphinx.
 11.0 p.m. (approx.).—Close Down.

TOULOUSE (France)

Radiophonie du Midi. 772.25 kc (388 m.); 8 kw.
 12.30 p.m.—Meteorological Report, Market Prices List from the Municipality of Toulouse and Regional Exchange Rates.
 12.45 p.m.—Concert. First Part. Quartet Music. 1. Death and the Maiden—in full (Schubert). 2. Andante from the String Quartet (Debussy).
 1.0 p.m.—Time Signal.
 1.5 p.m.—Concert. Second Part. Recital of Arias from Grand Opera in German. 1. Aria from "The Masked Ball" (Verdi). 2. Aria from "Cavalleria Rusticana" (Mascagni). 3. Leonora's Aria from "Fidelio" (Beethoven). 4. Aria from "The Marriage of Figaro" (Mozart).
 1.21 p.m.—Concert. Third Part. Dance Music Selections. 1. Chinita Linda (Zaragoza). 2. Es-cuche Señor Juez (Ramuncho). 3. Bandonéon Arrabalero (Conturel). 4. La Rayuela (Caro). 5. Jealousy (Gade). 6. Hungarian Tango (Korosilany).
 1.45 p.m.—Latest News, Bulletin from the "Telegram," the "Express" and the "Midi Socialiste."
 2.0—8.0 p.m.—No Transmission.
 8.0 p.m.—Paris Market Quotations and Exchange Rates, Prices of Corn, News communicated by the

Fourmier Agency and the Day's News Bulletin by the "Dispatch" and the "Petit Parisien."
 8.30 p.m.—Concert. First Part. 1. Humoresque (Dvorak). 2. The Canary (Poliakina). 3. Berceuse from "Jocelyn" (Goddard). 4. La Serenata (Braga). 5. Extase (Louis Ganne). 6. Idéale (Tosti).
 9.0 p.m.—In the Interval: Time Signal.
 9.10 p.m.—Concert. Second Part. Selections from "La Fille de Madame Angot"—Opéra (Lecoq). 1. Je vous dois tout. 2. Certinement, j'aime Clairette. 3. Chanson politique. 4. Les soldats d'Augercau. 5. Elle est tellement innocente. 6. De la mère Angot, je suis la fille.
 9.30 p.m.—Concert. Third Part. Programme of Pianoforte Waltzes. 1. Waltz from "Die Fledermaus" (Strauss). 2. Künstlerleben (Strauss). 3. Mephisto (Liszt).
 9.42 p.m.—Concert. Fourth Part. Saxophone Solos. 1. Aubade d'amour (Monti). 2. Apres un rêve (Fauré). 3. Plaisir d'amour (Popper). 4. Rustic Song (Martini).
 9.58 p.m.—Concert. Fourth Part. Programme of Dance Music. 1. Caroline (Ahlér). 2. Blue (Saine). 3. Sweet Baby (Egen). 4. Rio Rita (Thierney). 5. The Kinkajou (Thierney). 6. Réve bleu (Meyer).
 10.15 p.m.—News Bulletin of the Day from North Africa.
 10.30 p.m. (approx.).—Close Down.

WARSAW (Poland)

Polskie Radio. 270 kc (1,111 m.); 8 kw.
 10.56 a.m.—Time Signal.
 10.58 a.m. (approx.).—Chimes from the Tower of the Church of Notre Dame at Cracow.
 11.2 a.m. (approx.).—Aviation Bulletin.
 11.5 a.m. (approx.).—Meteorological Report and Forecast.
 11.10 a.m.—2.0 p.m.—No Transmission.
 2.0 p.m.—Meteorological Report and Forecast.
 2.10 p.m. (approx.).—Commercial and Economic Bulletin.
 2.20—2.45 p.m.—No Transmission.
 2.45 p.m.—Report for Bny Scouts.
 3.0 p.m.—Concert of Gramophone Records

3.30 p.m.—Programme for Children relayed from Cracow.
 3.55—4.10 p.m.—No Transmission.
 4.10 p.m.—Talk by M. St. Gorzuchowsky, from the Series organised by the Minister of Education for Teachers of Geography, "Economic Report on Lithuania."
 4.35 p.m.—"The Letter Box" and Talk with Wireless Listeners, by Doctor N. Stepowsky.
 5.0 p.m.—Afternoon Concert by the Station Orchestra, under the direction of J. Oziminsky. 1. Overture to the Opera, "Ali Baba" (Cherubini). 2. Arab Dance from the Nutcracker Suite (Tchaikovsky). 3. Barcarolle from the Ballet "Sylvia" (Delibes). 4. Wo die Citronen blüh'n—Waltz (J. Strauss). 5. Hungarian Dance in D. major (Brahms). 6. Serenade from the Opera "I Pagliacci" (Leoncavallo). 7. Washington Post—March (Souza).
 6.0 p.m.—Miscellaneous Items.
 6.20—6.30 p.m.—No Transmission.
 6.30 p.m.—Talk by Professor Al. Janovsky: Topographical Section, "In Kujavia."
 6.56 p.m.—Time Signal.
 7.0 p.m.—Agricultural Talk by M. Tarkovsky.
 7.20 p.m.—General News Bulletin.
 7.30 p.m.—Orchestral Concert of Finnish Music. 1. Orchestra under the direction of M. J. Oziminsky—Selections from "Pelleas and Melisande" (Sibelius): (a) Melisande at the Spinning-wheel, (b) Entr'acte, (c) Prelude, (d) The Death of Melisande. 2. Pianoforte Solos: Selections from the Works of Malartin: (a) Suomen Salossa, Op. 27, No. 3, (b) Prelude, Op. 25, No. 1, (c) Ballad, Op. 27, No. 4. Selections from the Works of Sibelius: (a) "Le Roi Christian," Suite 2, (b) Caprice, Op. 24, No. 3. Pianist—Prof. Sophie Rabcevicz. 3. Orchestra: (a) Le Cygne, (b) Valse mignonne (Palmgren). 4. Reading from the Finnish Novel, "Seven Brothers" (Alexis Kivi). 5. Piano Solos: (a) Dromvisa, (b) Piccolo menuetto, (c) Finnish Waltz (Palmgren). 6. Orchestra: (a) Berceuse and Prelude (Järnevelde), (b) Finlandia (Sibelius).

9.0 p.m.—Aviation Notes.
 9.2 p.m. (approx.).—Meteorological Report and Forecast.
 9.5 p.m.—General News Bulletin.
 9.20 p.m.—Police Report.
 9.25 p.m. (approx.).—Sports Notes.
 9.30 p.m.—Relay of Concert Light Music from the Oaza Restaurant, Orchestra under the direction of I. Karboviak.
 10.30 p.m. (approx.).—Close Down.

ZÜRICH (Switzerland)

Radio-Genossenschaft. 510.85 kc (587 m.); 0.63 kw.
 11.30 a.m.—Relay of Time Signal.
 11.31 a.m.—Weather Report and Forecast.
 11.32 a.m.—Concert by the Station Orchestra (Pt. 1).
 11.50 a.m.—Weather Report.
 11.52 a.m. (approx.).—Latest News.
 12.0 p.m.—Concert by the Station Orchestra (Pt. 2).
 12.35 p.m.—Meteorological Report.
 12.37 p.m. (approx.).—Stock Markets and Exchange Quotations.
 2.0 p.m.—Concert of Gramophone Records.
 3.0 p.m.—Concert. Relayed from the Carlton-Elite Hotel by the Castellano Orchestra.
 4.15 p.m.—Children's Hour: "A Story of the Aal," by Nelly Schmid.
 4.45 p.m.—Weather Report.
 4.47 p.m. (approx.).—Market Prices in Switzerland.
 6.30 p.m.—Relay of Time Signal.
 6.31 p.m.—Weather Report and Forecast.
 6.32 p.m.—Talk by Herr Robert Spieser on Accidents caused by Electricity.
 7.0 p.m.—Concert by the Bündner Men's Choir, Zürich under the direction of Herr Ernst C. Faesi, and supported by the Station Orchestra.
 7.45 p.m.—Relay from Basle on 290 kc (1,034 m.); 0.25 kw. Song Recital: Compositions by H. Bienstock sung by Peter Baust.
 8.30 p.m.—Light Music by the Zürich Station Orchestra.
 9.0 p.m.—Weather Report and Forecast, Latest News and Press Notes from the Neue Züricher Zeitung.
 9.15 p.m. (approx.).—Close Down.

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PROGRAMMES FOR THURSDAY (December 20)

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO GREENWICH MEAN TIME

AGEN (France)

Radio Agen. 1,001 kc (299 m.); 0.48 kw.
 12.40 p.m.—General News Bulletin, Quotations from Local Markets, Meteorological Report and Forecast and Market Prices.
 7.40 p.m.—Latest News Reports, Weather Forecast and Municipal News.
 8.0 p.m. (approx.)—Close Down.

BASLE (Switzerland)

Basler Radio-Genossenschaft. 290.1 kc (1,024 m.); 0.25 kw.
 6.30 p.m.—Relay from the Stadttheater, Zurich, of the Opera "Tristan und Isolde," by Richard Wagner. News and Announcements in the long interval between Acts 2 and 3.

BERLIN (Germany)

Voxhaus. 620.3 kc (484 m.); 4 kw.
 7.30 p.m.—Dame Ethel Smyth talks and conducts the Station Orchestra.
 8.0 p.m.—Christmas Singing.

BERNE (Switzerland)

Radio-Berpe. 730.75 kc (410 m.); 1.3 kw.
 11.43 a.m.—Relay of Time Signal.
 11.44 a.m.—Weather Report and Forecast.
 11.45 a.m.—Exchange Quotations and Bulletin of the Swiss Peasants' Union.
 11.50 a.m.—Gramophone Records of Classical Music.
 2.56 p.m.—International Time Signal relayed from the Neuenburg Observatory.
 3.0 p.m.—Relay of Concert by the Kursaal Orchestra of Berne.
 3.30 p.m.—Talk to Children by Madame Pierre Grellet of Berne.
 4.0 p.m.—Concert by the Kursaal Orchestra of Berne.
 5.15 p.m.—Selections of Gramophone Music.
 6.0 p.m.—Sports News.
 6.20 p.m.—Relay of Time Signal, Weather Report and Forecast.
 6.30 p.m.—Series of Talks by Georg Schaeffner: "Henri de Renier," with accompanying Recitations; Violin Selections from Old French Masters by Emmy Born.
 7.30 p.m.—Relay of Concert from Lausanne on 411.1 kc (680 m.); 0.6 kw. by the Odéon Orchestra.
 8.15 p.m.—Violin Selections by Emmy Born.
 8.30 p.m.—Relay of Concert from Lausanne by the Odéon Orchestra.
 8.45 p.m.—News and Announcements.
 8.50 p.m.—Weather Report and Forecast.
 9.0 p.m. (approx.)—Close Down.

BEZIERS (France)

Radio Béziers. 1,899 kc (158 m.); 0.6 kw.
 4.0 p.m.—Wine Market Prices.
 5.30 p.m.—Market Prices from the Chamber of Commerce of Narbonne, followed by a Short Musical Programme.
 8.30 p.m.—General News Bulletin and Press Report from the Fournier Agency, followed by Market Prices and Wine Prices from Sète, Narbonne, Carcassonne, Montpellier, Nîmes and Lézignan.
 8.45 p.m.—Concert, with the collaboration of Mademoiselle Idou, and Messieurs Bor, Barabbes and Guichou. In the Interval: Selections for Solo Accordion by Monsieur R. Fournier. After the Programme, Announcement of Narbonne Market Prices.

BORDEAUX (France)

Radio Bordeaux Sud-Ouest. 1,260 kc (238 m.); 1.5 kw.
 7.15 p.m.—Orchestral and Vocal Concert. Part One: Selection of Spanish Songs with Orchestral accompaniment. 1. Capercacia. 2. Como la flor. 3. El relicario. 4. Besos frios. 5. La farandula pasa. 6. El peligro de las rusas.
 7.40 p.m.—Concert. Second Part. Selections from Saint-Saëns: 1. La danse macabre. 2. Marche héroïque.
 8.0 p.m.—Concert. Third Part. Selections from "Cavalleria Rusticana" (Mascagni): 1. Siciliana: O Lola, c'hai di latti. 2. Chorale. 3. Sei Tu, Santuzza. 4. O mi Turridu. 5. Viva il vino.
 8.20 p.m.—Concert. Fourth Part. Selections of Dance Music for

the Accordion: 1. Reine de Musette (Jacovacci). 2. Les Triollets. 3. Martelette. 4. L'entrainante.

BRUSSELS (Belgium)

Radio-Belgique. 590.4 kc (508 m.); 1 kw.
 Transmits at intervals from 5.0 p.m.
 7.30 p.m.—Radio-Chronique.
 8.15 p.m.—"Marche Bohémienne" (Filippucci).
 8.20 p.m.—Talk, "The Scandinavian Theatre."
 8.35 p.m.—"Les Aulnes" (Nissa).
 8.40 p.m.—Topical Talk.
 8.45 p.m.—Concert of Flemish Music, followed by News.
 10.15 p.m. (approx.)—Close Down.

COLOGNE (Germany)

Westdeutscher Rundfunk. 1,060.15 kc (283 m.); 4 kw.
 See Langenberg Programme.

COPENHAGEN (Denmark)

Copenhagen Radio. 889.9 kc (337 m.); 1 kw. Relayed by Kalundborg, 261.9 kc (1,153 m.).
 6.30 a.m.—Wireless Morning Exercises, arranged by the "Berlingske Tidende."
 11.0 a.m.—Town Hall Chimes.
 11.2 a.m.—Orchestral Concert, under the direction of K. Ingsman Palmhof, relayed from Nimb's Restaurant.
 2.0 p.m.—Afternoon Concert of Instrumental Music, under the direction of Mogens Hansen: 1. The American Girls—March (Mahlon Duganne). 2. Romantic Overture (Kéler Béla). 3. Waltz from "Der Rosenkavalier" (R. Strauss). 4. Selection from "The Circus Princess" (Kálmán). 5. At Home in an Old Town by the Sound (W. Harrison). 6. Sæterjentens Song (Ole Bull). 7. Hungarian Dances Nos. 5 and 6 (Johs. Brahms). 8. Selection from "Cavalleria Rusticana" (Mascagni). 9. Salut d'amour (E. Elgar). 10. Waltz from "The Merry Widow" (Fr. Lehár). 11. Niagara—Foxtrot (Helge Lindberg). 12. Très jolie—Waltz (Waldteufel). 13. Old Comrades—March (Teike).
 4.14 p.m.—Programme for Boys.
 5.20 p.m.—Talk by Herr Jacob E. Lange, Odense: "The History of Social Thought—Henry George."
 6.0 p.m.—News Bulletin, Exchange Quotations.
 6.15 p.m.—Time Signal.
 6.20 p.m.—Introductory Talk to the following transmission:
 6.30 p.m.—"Cavalleria rusticana," Opera in One Act (Mascagni) Translated into Danish by Erik Bigh. Orchestral Conductor, Johan Hye-Knudsen. Cast: Lucia—Ely Hjalmar. Turridu—Marius Jacobsen. Santuzza—Ingeborg Steffensen. Alfio—Holger Byrding. Lola—Lilly Lamprrecht. The Action takes place on Easter Sunday in a provincial town in Sicily.
 7.45 p.m.—Reading from "Jew Süss" (Leon Feuchtwanger), translated into Danish and read by Maria Garland.
 8.15 p.m.—News Bulletin.
 8.30 p.m.—Symphony Concert by the Radio-Symphony Orchestra: 1. Michael Angelo—Concert Overture, Opus 39 (Niels W. Gade). 2. "Holger Danske Sang," sung by Per Knudsen. 3. Symphony in E major, No. 2, Opus 10 (Niels W. Gade).
 9.45 p.m. (approx.)—Close Down.

CORK (Ireland)

Cork Broadcasting Station (6 CK). 748 kc (401 m.); 1 kw.
 1.30 p.m.—Weather Forecast and Gramophone Record Music.
 6.0 p.m.—Exchange Quotations, News and Gramophone Selections.
 6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio. 529.6 kc (566 m.); 1 kw.
 10.56 a.m.—Transmission of Chimes from the Church of Notre-Dame.
 11.0 a.m.—Relay of Time Signal.
 11.2 a.m.—Meteorological Report.
 11.5 a.m.—Weather Forecast from Warsaw.
 2.0 p.m.—Weather Report and Forecast.
 4.10 p.m.—Talk for Women, by Mme. M. Batko: "Game Pasties."
 4.35 p.m.—Talk, by Doctor M. Brahmer, on Edmond Rostand on the occasion of the Tenth Anniversary of his Death.
 5.0 p.m.—Transmission from Warsaw.

6.0 p.m.—Miscellaneous Items.
 6.25 p.m.—English Lesson, by Mr. J. Stanislawsky.
 6.35 p.m.—Time Signal from the Astronomical Observatory.
 7.0 p.m.—Agricultural News.
 7.5 p.m.—News and Announcements.
 7.30 p.m.—Concert devoted to Old Polish, Modern Italian and Spanish Songs, transcriptions of Modern Dances (for piano) and American Grotesques. Artists: Mme. Jeanne Novakovska and M. Marie Domar-Nikuszevsky (Vocalists), MM. Bobby Eisinger and S. Marmor (Pianists).
 9.0 p.m.—Transmission from Warsaw.
 9.30 p.m.—Transmission of Restaurant Concert.
 10.15 p.m. (approx.)—Close Down.

DUBLIN (Ireland)

Dublin Broadcasting Station (2RN). 940 kc (319 m.); 1 kw.
 1.30 p.m.—Meteorological Report and Forecast.
 1.33 p.m. (approx.)—Stock Exchange Quotations.
 1.50 p.m. (approx.)—Selections of Gramophone Records.
 6.0 p.m.—Concert of Gramophone Records.
 6.16 p.m.—Programme of Miscellaneous Items for Children.
 7.0 p.m.—Concert of Gramophone Records.
 7.10 p.m.—News, Announcements, and Miscellaneous Items.
 7.30 p.m.—French Language Lesson, by Mlle. M. T. Giudicelli.
 7.45 p.m.—Talk on History, by Seamus McCall.
 8.0 p.m.—Professor O'Dwyer and the Station Orchestra in a Programme of his own Compositions.
 8.30 p.m.—A. J. O'Farrell in a Selection of Baritone Solos.
 8.40 p.m.—F. C. J. Swanton in a Selection of Pianoforte Solos.
 8.50 p.m.—Florrie Ryan in Selections of Contralto Songs.
 9.0 p.m.—A Talk on Irish Wolf-hounds, by H. K. Purcell.
 9.15 p.m.—Selections of Dance Music, by Peter Keogh's Band.
 10.30 p.m.—News, Announcements, and Miscellaneous Items.
 10.40 p.m. (approx.)—Meteorological Report and Forecast.
 10.45 p.m. (approx.)—Close Down.

HAMBURG (Germany)

Norag (ha, in Morse) 759.8 kc (395 m.); 4 kw. Relayed by Bremen on 1,099 kc (273 m.); Hanover, 1,007.65 kc (298 m.); and Kiel, 1,178 kc (255 m.).
 Transmits at intervals from 5.50 a.m.
 5.55 p.m.—Talk, "The Right of the Child to Brothers and Sisters."
 6.55 p.m.—Weather and Exchange.
 7.25 p.m. (approx.)—"The Prophet"—Opera in Five Acts (Meyerbeer).
 10.0 p.m.—Weather, News, Sports Notes and Dancing Lesson.
 10.50 p.m.—North Sea and Baltic Weather Report.

HILVERSUM (Holland)

Algemeene Vereeniging Radio Omroep. 280 kc (1,071 m.); 5 kw.
 Transmits at intervals from 9.40 a.m.
 5.10 p.m.—Orchestral Concert. 1. "Euryandante"—Overture (Weber). 2. Andante from the Jupiter Symphony (Mozart). 3. Aria from "The Creation" (Haydn). 4. Selection from "La Juive" (Halévy). 5. Soprano Solo: Ave Maria (Cherubini), Soloist: E. de Haas. 6. Canzonetta (Boccherini). 7. Ballet Music from "Le roi s'amuse" (Delibes). 8. Aria from "Louise" (Charpentier). 9. Neu Wien—Waltz (Joh. Strauss). 10. Russian Folk Music.
 6.55 p.m.—English Conversation.
 7.25 p.m.—Police Announcements.
 7.40 p.m.—Time Signal.
 7.55 p.m.—Symphony Concert from the Concertgebouw, Amsterdam. Talk in the interval.
 10.0 p.m.—Weather and News.
 10.10 p.m.—Gramophone Selections.
 10.40 p.m. (approx.)—Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 261.9 kc (1,153 m.); 7.5 kw.
 See Copenhagen Programme.

LANGENBERG (Germany)

Westdeutscher Rundfunk. 639.8 kc (466 m.); 15 kw. Programme also for Aix-la-Chapelle, 749.6 kc

(400 m.); Cologne, 1,060.15 kc (283 m.); and Münster, 1,200.1 kc (250 m.).

9.15 a.m.—Experimental and Industrial Transmissions.
 9.30 a.m.—First General News Bulletin, and Tidal Report.
 10.10 a.m.—Programme for Schools.—Talk by Dr. Cremer: "What shall I become—a Legal Career."
 10.35 a.m.—Programme for Schools. Talk in English for Secondary Schools. "Christmas in England."
 11.10 a.m.—Programme of Gramophone Music.
 11.55 a.m.—Time Signal relayed from Nauen, followed by Second General News Bulletin.
 12.5 p.m.—Concert by the Station Orchestra under the Direction of Herr Kühn. Soloist: Fritz Neumann (Tenor). Programme of Operetta Music. 1. "Cagliostro in Wien"—Overture (Joh. Strauss). 2. Tenor Solo by Fritz Neumann, Mädele, must mir blind vertrau'n from "Cagliostro in Wien" (Joh. Strauss). 3. Melodies from the Operetta, "The Gipsy Baron" (Joh. Strauss). 4. Waltz, On the Elbe (Joh. Strauss). 5. Melodies from the Operetta, "Die Fledermaus" (Joh. Strauss). 6. Old Viennese Love Waltz (Lehár). 7. Selections from the Operetta, "Friederike" (Lehár): (a) Sah' ein Knab' ein Röslein steh'n, (b) O Mädchen, mein Mädchen. 8. Melodies from the Operetta "Der Rastelbinder" (Lehár).
 1.30 p.m.—Film Notes.
 2.30 p.m.—Finance Bulletin.
 3.0 p.m.—Talk by Wilhelm Schäfer—"The Greeks and Ourselves."
 3.20 p.m.—Talk by Dr. F. Wallisch: "Albania, the Youngest Kingdom."
 3.40 p.m.—Talk by Hermann Kasack from the Series "Questions of Culture in Literature"—Talk 3: "Right and Justice."
 3.45 p.m.—(During the Talk), Programme Announcements.
 4.0 p.m.—Programme of Fairy Stories and Games—"Christmas is Here!" by Rektor Seidenfaden.
 4.20 p.m.—Talk by H. Raasch—"Work for Youth—Christmas Tasks."
 4.45 p.m.—Concert with the assistance of Dr. Rich, Johannes Müller (Vocalist) and Hubert Fluhr (Pianist). 1. Two Bagatelles (Beethoven). 2. Two Baritone Solos: (a) An die Hoffnung (Brahms), (b) Von waldekränzter Höhe (Brahms). 3. Two Pianoforte Solos: (a) Caprice, (Brahms) (b) Rhapsody in E flat major (Brahms). 4. Four Songs (Brahms): (a) Wie Melodien zieht es, (b) Dein Auge, (c) Waldeinsamkeit, (d) Nicht mehr zu dir zu gehen. 5. Polonaise in E flat major (Chopin).
 5.30 p.m.—Talk, "Good German," by the University Professor Dr. Sperber.
 5.50 p.m.—Finance Report, Second Meteorological Forecast and Sports Notes.
 6.15 p.m.—Lesson in the Spanish Language, by Dr. Heinemann.
 6.35 p.m.—Talk on Questions of International Trade, arranged by the Rhenish Westphalian Economic Society, under the direction of Professor Kuske. Talk by Dr. Loose, "International Problems of the Artificial Silk Trade."
 7.0 p.m.—Programme relayed from the Municipal Tonhalle at Düsseldorf. "Mozart as an Educationalist" under the direction of Dr. Alfred Fröhlich. "The First and Last Tutors of Mozart." Programme from the works of Leopold Mozart and Michael and Joseph Haydn. Soloists: Anna Marie Lenzberg (Soprano), Brunhilde Schneider (Cembalo). 1. (a) Symphony in C major (Leopold Mozart); (i) Allegro, (ii) Andante, (iii) Menuetto (iv) Trio, (v) Allegro, (b) Aria for Soprano and Orchestra, composed in 1755 (Leopold Mozart), (c) Divertissement in D major, composed in 1760 (Leopold Mozart). 2. (a) Divertissement in D major, composed in 1782 (Michael Haydn), (b) Two Songs (Michael Haydn): (i) Die Seligkeit der Liebe, (ii) Der frühe Bund. 3. (a) Concerto for Cembalo in F major (Joseph Haydn), (b) The Hunting Symphony in D major (Joseph Haydn): (i) Adagio, (ii) Allegro, (iii) Andante (iv) Menuetto, (v) Trio, (vi) Presto.
 9.30 p.m. (approx.)—Last General News Bulletin, Sports Notes and Results, and Commercial Announcements, followed by Concert by the Mario Iseglio Orchestra, relayed from the Café Corso, Dortmund.
 11.0 p.m. (approx.)—Close Down.

LEIPZIG (Germany)

Mitteldeutscher Rundfunk. 819.6 kc (366 m.); 4 kw. Relayed by Dresden, 1,088.2 kc (276 m.).
 Transmits at intervals from 9.5 a.m.
 6.30 p.m.—Talk, "The British Empire."
 7.0 p.m.—Concert of Viennese Operetta Music.
 8.30 p.m.—Talk and Reading—the Works of M. v. Magdeburg.
 9.20 p.m.—News and Sports Notes.
 9.45 p.m. (approx.)—Silent Night.

MADRID (Spain)

Union Radio (E.A.) 7. 689.6 kc (435 m.); 1 kw.
 Transmits at intervals from 11.45 a.m.
 7.0 p.m.—Chimes and Exchange, followed by Sextet Concert.
 8.0 p.m.—Dance Music and News.
 9.45 p.m.—Reading from the Castilian Classical Works.
 10.0 p.m.—Chimes and Exchange, followed by Opera from Barcelona.
 12.0 midnight.—Chimes, News and Dance Music Programme.
 12.30 a.m. Fri. (approx.)—Close Down.

MOTALA (Sweden)

219.9 kc (1,364 m.); 20 kw. See Stockholm Programme.

MUNICH (Germany)

Deutsche Stunde in Bayern. 558.9 kc (537 m.); 4 kw. Relayed by Augsburg, 520.6 kc (566 m.); Kaiserslautern, 1,079.64 kc (278 m.); and Nürnberg, 1,239.5 kc (242 m.).
 Transmits at intervals from 5.45 a.m.
 6.0 p.m.—Espéranto Lesson from Nürnberg.
 6.30 p.m.—Talk, "Wireless in America."
 7.0 p.m.—Trio Concert. 1. Grillenbanner Marsch (Lindemann). 2. Malombra Waltz (Blank). 3. Potpourri. 4. Variety Items. 5. Cradle Song (Laszlo). 6. (a) Herzenslieb, (b) Blauc Adria, (c) Mädli von Prag. 7. Jodel Selections.
 7.49 p.m.—Talk, "Herder and his Time."
 8.10 p.m.—Orchestral Concert. 1. Concerto grosso No. 5 in D minor (Handel). 2. Schläge doch, gewünschte Stunde—Cantata for Contralto and Orchestra (Bach). 3. Concerto for Pianoforte, Violin, Cello and Orchestra in C major, Op. 56 (Beethoven).
 9.20 p.m.—News and Programme.
 9.45 p.m.—Talk on Economics.

PARIS (France)

Eiffel Tower (P.L.). 113.2 kc (2,650 m.); 12 kw.
 7.56 a.m.—Time Signal on 9.231 kc (32.5 m.).
 9.26 a.m.—Time Signal on 113.2 kc.
 5.45 p.m.—"Le Journal Parlé."
 7.10 p.m.—Weather Forecast.
 7.30 p.m.—Concert arranged by Editor Susanne Quentin, Basil Dan (Violinist) and his Orchestra and other Soloists. At 7.50 p.m.—Time Signal on 9.231 kc (32.5 m.).
 10.26 p.m.—Time Signal on 113.2 kc.

PARIS (France)

Paris Parisien. 882.3 kc (340 m.); 0.5 kw.
 8.45 p.m.—Programme of Gramophone Selections.
 8.50 p.m. (approx.)—Talk.
 8.55 p.m. (approx.)—Press News and announcement.
 9.0 p.m.—Concert, with the collaboration of Artists from the Opéra and the Opéra-Comique: 1. "Fingal's Cave"—Overture (Mendelssohn). 2. Selection from "The Magic Flute" (Mozart).
 9.25 p.m.—Press News and Announcements.
 9.30 p.m.—Half-an-Hour of Symphony, under the direction of M. Estyle of the Conservatoire: 1. "Polyeucte"—Overture (Dukas). 2. Le Paradou dans la vie, from "La Faute de l'abbé Mouret" (Brunéau).
 10.0 p.m.—News and Miscellaneous Information.
 10.2 p.m.—Orchestral Concert. 1. Selection from "Proserpine" (Saint-Saëns). 2. Gopak—Song (Moussorgsky). 3. Military March (Liszt).
 11.0 p.m. (approx.)—Close Down.

Programmes for Thursday.—(Cont.)

PARIS (France)

Radio Paris (CFR). 169.9 kc (1,765 m.); 12 kw. Transmits at intervals from 6.45 a.m. 6.45 p.m.—Musical Selections. 7.30 p.m.—Lesson in Book-keeping. 7.45 p.m.—Market Prices. Talk. 8.30 p.m.—Concert arranged by "L'Antenne." Symphony Music and Selection from "Aida" (Verdi). News in the Intervals.

PITTSBURGH (U.S.A.)

Westinghouse Electric (KDKA). 980 kc (306 m.); 25 kw. Relayed at intervals on 4,800 kc (62.5 m.). Transmits at intervals from 2.45 p.m. 11.30 p.m.—Variety Programme of Music, Talks, Concerts, Time and Weather Reports, etc. 4.15 a.m. Friday (approx.)—Close Down.

SCHENECTADY (U.S.A.)

General Electric Company (WGY). 701.5 kc (379 m.); 50 kw. Relayed by 2XAF on 9,554 kc (31.4 m.) from 11.0 p.m. 11.45 a.m.—Physical Training: Setting-up Exercises. 1.30 p.m.—"Cheerio!"—Talk and Musical Selections. 4.15 p.m.—Radio Household Institute Programme relayed from New York. 4.55 p.m.—Time Signals. 5.0 p.m.—Weather Forecast. 5.2 p.m.—Produce Market Report. 5.10 p.m.—Farm Flashes. 5.30 p.m.—New York Stock-market Reports. 5.45 p.m.—Weather Forecast. 6.30 p.m.—Television Transmission. 7.0 p.m.—Musical Programme by the Orchestra of the Hotel Van Curler. 7.30 p.m.—Household Chats, arranged by WGY. 7.45 p.m.—A One-Act Play, performed by the WGY Matinée Players. 11.0 p.m.—Stock Reports. 11.5 p.m. (approx.)—Produce Market Report. 11.10 p.m. (approx.)—Farm Forum. 11.20 p.m. (approx.)—News Items and Miscellaneous Announcements. 11.29 p.m.—Weather Forecast. 11.30 p.m.—Charles William Stores "Trapper's Hour."

12.0 midnight—"Footnotes," by T. Arthur Cohen. 12.2 a.m. (Friday)—Musical Programme by the Orchestra of the Hotel De Witt Clinton, Albany, New York. 12.30 a.m.—Agricultural Programme, arranged by WGY. 1.0 a.m.—"The Song Shop"—Programme relayed from New York. 1.30 a.m.—"The Hoover Sentinels"—Programme relayed from New York. 2.0 a.m.—"The Seiberling Singers"—Programme relayed from New York. 2.30 a.m.—Studio Programme: "With the Joneses." 3.0 a.m.—Halsey Stuart Presentation. Programme relayed from New York. 3.30 a.m.—Exact Time Signal. 3.32 a.m. (approx.)—Carborundum Programme, relayed from the Niagara Falls, N.Y. 4.30 a.m.—Organ Recital by Floyd Walter, from the Strand Theatre, Albany, New York. 5.30 a.m. (approx.)—Close Down.

STOCKHOLM (Sweden)

Radiotjänst (SASA). 660.15 kc (454 m.); 1.5 kw. Relayed by Eskilstuna on 1,208 kc (248 m.); Gävle on 1,470 kc (204 m.); Göteborg, 720.3 kc (416 m.); Kalmar on 1,184.5 kc (253 m.); Karlstad on 1,361 kc (220 m.); Linköping on 600 kc (500 m.); Malmö on 1,149.87 kc (261 m.); Motala on 219.9 kc (1,364 m.); Saffle on 1,190.35 kc (252 m.); Sundsvall on 540.45 kc (545 m.); and Uppsala on 600 kc (500 m.) Transmits at intervals from 11.30 a.m. 6.45 p.m.—Concert. 1. "Le Cheval de bronze"—Overture (Auber). 2. Selection from "Romeo and Juliet" (Gounod). 3. Hungarian Rhapsody for Cello and Orchestra (Popper). 4. (a) Melody (Stofovsky), (b) Shepherd's Hey (Grainger), (c) Molly on the shore (Grainger). 5. Tarentula from "Venezia e Napoli" (Liszt). 7.45 p.m.—Geography Talk. 8.15 p.m.—News and Weather. 8.40 p.m.—Chamber Music. 1. Fantasia for Violin and Harp (Saint-

Saëns). 2. Duet for Violin and Flute in A (Telemann). 3. Prelude for Flute and Harp (Carl Nielsen). 4. Sonata in G minor for Flute, Viola and Harp (Debussy). 9.40 p.m.—Relays from Foreign Stations. 11.0 p.m. (approx.)—Close Down.

TOULOUSE (France)

Radiophonie du Midi. 772.25 kc (388 m.); 8 kw. 12.30 p.m.—Meteorological Report, Market Prices List from the Municipality of Toulouse and Regional Exchange Rates. 12.45 p.m.—Concert arranged by the Agen Radio Club. First Part. Orchestral Music. 1. Prelude to "Cavalleria Rusticana" (Mascagni). 2. Potpourri—Paroles qui reviennent (Weninger). 3. Selection from "Cavalleria Rusticana" (Mascagni). 4. Selection from "1 Pagliacci" (Leoncavallo). 1.0 p.m.—Time Signal. 1.15 p.m.—Concert. Second Part. Favourite Melodies. 1. Chanson triste (Duparc). 2. Griserie (Varenne). 3. Rosette (Varenne). 4. L'Enfant et l'Océan (Buxeuil). 5. O my Rose Marie, from "Rose Marie" (Friml). 6. Buddha's Dream (Landsberg). 1.35 p.m.—Concert. Third Part. Accordion Music. 1. Waltz—Rose mousse (Bosc). 2. Tyrolian Waltz (Jacovacci). 3. Julie, c'est Julie (Padilla). 1.45 p.m.—Latest News Bulletin from the "Telegram," the "Express," and the "Midi Socialiste." 2.0—8.0 p.m.—No Transmission. 8.0 p.m.—Paris Market Quotations and Exchange Rates. Price of Corn, News communicated by the Fournier Agency, and the Day's News Bulletin by the "Dispatch" and the "Petit Parisien." 8.30 p.m.—Concert. First Part. Airs from the Operettas of Audran, Messager and Lecocq. 1. Que ne puis-je la rencontrer, from "Miss Decima" (Audran). 2. Couplet de la rose et du chou, from "Le Grand Mogol" (Audran). 3. Le secret de Potichinelle, from "La Mascotte" (Audran). 4. The Letter Aria, from "Véronique" (Messager). 5. Si vous croyez que je vais dire, from "Fortunio" (Mes-

sager). 6. Quand tu connaîtras Colette, from "La Basoche" (Messager). 7. Song of the Little Hunchback, from "The Little Duke" (Lecocq). 8. Elle est tellement innocente, from "La fille de Madame Angot" (Lecocq). 9.0 p.m.—Time Signal. 9.2 p.m.—Concert arranged by the "Hebdo." T.S.F., Paris, and organised by the "Harmonie de la Patte d'Oie." In the Interval: Accordion Music. 1. Waltz—"Les Millions d'Arlequin" (Drigo). 2. Waltz Boston—Venetian Skies (Young). 3. Waltz—The Sphinx (Translatour). 11.0 p.m.—The Day's News Bulletin from North Africa. 11.15 p.m. (approx.)—Close Down.

WARSAW (Poland)

Polskie Radio. 270 kc (1,111 m.); 8 kw. 10.56 a.m.—Time Signal. 10.58 a.m.—Relay of the Chimes from the Church of Notre Dame, Cracov. 11.2 a.m. (approx.)—Aviation Bulletin. 11.5 a.m. (approx.)—Meteorological Report. 11.10 a.m.—2.0 p.m.—Temporary Close Down. 2.0 p.m.—Meteorological Report and Finance Notes. 2.20—2.45 p.m.—No Transmission. 2.45 p.m.—Report of the Aerial Defence and Anti-Gas League. 3.0 p.m.—Concert of Gramophone Record Music. 3.55—4.10 p.m.—No Transmission. 4.10 p.m.—Talk, "Review of the Latest Books," by Professor H. Mosicky. 4.25 p.m. (approx.)—Talk. (Subject to be announced). 5.0 p.m.—Literary Programme. 6.0 p.m.—Miscellaneous Selections. 6.20—6.30 p.m.—No Transmission. 6.30 p.m.—Talk on an Agricultural Subject. 6.56 p.m.—Time Signal. 7.0 p.m.—Agricultural Bulletin. 7.5 p.m.—Talk from the Series, "The History of Music," by Professor St. Nieniadomsky. 7.30 p.m.—Concert, arranged by the Orchestra of the National Police Force, under the direction of Al-

Sielsky. Programme of Selections from the Works of Verdi. 1. "Nabucco"—Overture. 2. Potpourri from "La Traviata." 3. Selection from "Rigoletto." 4. Selection from "Il Trovatore." 5. Finale from the Second Act of "Aida." Interval between the Third and Fourth Items. 9.0 p.m.—Aviation Bulletin and Meteorological Report. 9.5 p.m.—General News Bulletin, Press Review of the Day's News and Announcements. 9.20 p.m.—Police Announcements, Sports Results and Notes. 9.30 p.m.—Dance Music Programme, relayed from the Hotel Bristol, Warsaw. The Orchestra, under the direction of Gold and Petersburgsky. 10.30 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)

Radio-Genossenschaft. 510.85 kc (587 m.); 0.63 kw. 11.30 a.m.—Relay of Time Signal. 11.31 a.m.—Weather Report and Forecast. 11.32 a.m.—Concert of Gramophone Records. 11.50 a.m.—Weather Report. 11.52 a.m.—Latest News. 12.0 p.m.—Concert of Gramophone Records by Request (Pt. 2). 12.35 p.m.—Meteorological Report. 12.37 p.m. (approx.)—Money Market and Exchange Quotations. 2.0 p.m.—Concert by the Station Orchestra. 3.0 p.m.—Concert by the Castellano Orchestra, relayed from the Carlton Elite Hotel. 4.15 p.m.—Children's Hour. A Christmas Play by Emil Hess: "Since the Christ Child has come." 4.45 p.m.—Weather Report and Forecast. 4.50 p.m. (approx.)—Evening Programme arranged by Philips Lamps. 6.0 p.m.—Relay of the Opera "Tristan and Iseult" (Richard Wagner), from the Stadttheater. 9.0 p.m. (approx.)—During the Second Interval: Weather Report and Forecast, Latest News and Press Notes from the Neue Züricher Zeitung. 10.15 p.m. (approx.)—Close Down.



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PROGRAMMES FOR FRIDAY

(December 21)

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO GREENWICH MEAN TIME

AGEN (France)

Radio Agen. 1,901 kc (299 m.); 0.48 kw. 12.40 p.m.—General News Bulletin, Regional Market Report, Meteorological Report, and Market Prices. 7.30 p.m.—Orchestral and Instrumental Concert by the Station Orchestra. 1. Fantasia on "La Petite Mariée" (Lecocq-Tavan). 2. Sérénade à Bébé (Milano-Salabert). 3. Canzone (G. Marie and Hans Ourdine). 4. Enchantement (Massenet). 5. Violin Solo: Berceuse (G. Faure). 6. Second Part of Seventh Solo for Clarinet (Klose). 7. Violoncello Solo: Gavotte (Goltermann). 8. Te souviens-tu? (G. Chaminate-Salabert). 9. Fantasia on "Carmen" (G. Bizet-Tavan). 7.40 p.m. (During the Interval).—Late News Bulletin, Press Review, Stock Exchange Quotations and Meteorological Report and Forecast.

BERLIN (Germany)

Voxhaus. 620.3 kc (484 m.); 4 kw. 2.30 p.m.—Programme for Women. 3.0 p.m.—Review of Books. 3.30 p.m.—"Wanderer zum Ewigen," with Recitations. 4.0 p.m.—Orchestral Music, Dance Music, News and Announcements. 6.0 p.m.—Literary Talk. 6.30 p.m.—Talk, "Presence of Mind." 7.0 p.m.—Orchestral Concert; 1. Concerto for Violin and Orchestra in E major (Bach). 2. Symphony No. III, op. 90 (Brahms). 8.0 p.m.—Sociological Talk. 8.30 p.m.—Light Music. Weather, News, Time and Sports Notes.

BERNE (Switzerland)

Radio-Berne. 730.75 kc (410 m.); 1.3 kw. 11.43 a.m.—Relay of Time Signal. 11.44 a.m.—Weather Report and Forecast. 11.45 a.m.—Exchange Quotations. 11.50 a.m.—Gramophone Records of Dance Music. 2.56 p.m.—International Time Signal relayed from the Neuburg Observatory. 3.0 p.m.—Concert by the Berne Kursaal Orchestra. 5.15 p.m.—Selections of Gramophone Music. 6.0 p.m.—Review of the Music of the Week, by Conductor Kurt Joss, of Berne. 6.20 p.m.—Relay of Time Signal, Weather Report and Forecast, followed by Notes for Tourists by the Swiss Automobile Club, and Winter Sports Bulletin. 6.30 p.m.—Teddy Bear's English Half-hour. 7.0 p.m.—Popular Programme. Otto Siegrist: Selections on Accordion. 7.10 p.m.—Yodel Songs sung by the Yodellers' Double Quartet of the Pontonier-Fahrverein Worb-laufen. 7.25 p.m.—Selections on the Hand-organ. 7.30 p.m.—"Pagliano": a Questionable Comedy in 2 Acts, by G. Notz, performed by the Zytlogge Society, Berne. 8.20 p.m.—Otto Siegrist: Selections on the Accordion. 8.30 p.m.—Yodel Selections by the Yodellers' Double Quartet. 8.45 p.m.—News and Announcements. 8.50 p.m.—Weather Report and Forecast. 9.0 p.m.—Close Down.

BEZIERS (France)

Radio-Béziers. 1,899 kc (158 m.); 0.6 kw. 4.0 p.m.—Wine Market Quotations, and Market Quotations from the Béziers Chamber of Commerce, followed by a Short Musical Programme. 8.30 p.m.—News Bulletin from the Agence Fournier, followed by Market and Wine Prices from Sète, Narbonne, Carcassonne, Montpellier, Nîmes and Lézignan. 8.45 p.m.—Programme of Columbia Gramophone Records, arranged by the Maison Jandelli, 5, Rue su Quatre-Septembre, Béziers. Relay of the entire Third Act of "Carmen" (Bizet). Orchestra under the Direction of Monsieur Elie Cohen. Vocalists: Mademoiselle R. Visconti, of the Opéra-Comique, Mademoiselle Nespoulos of the Opéra, and Monsieur G. Thill of the Opéra, and Monsieur Guénot of

the Opéra-Comique. After the Programme, Announcement of Béziers Market Prices.

BORDEAUX (France)

Radio Bordeaux. Sud-Ouest. 1,260 kc (238 m.); 1.5 kw. 7.15 p.m.—Symphony Concert, under the direction of Monsieur Berton, with the assistance of the Montgolfer Orchestra, of the Société des Pères de famille de Chartrons. 8.15 p.m.—Spanish Language Lesson, by Monsieur Rafels. 10.30 p.m.—Programme of Dance Music Selections. 12.0 midnight (approx.)—Close Down

BRUSSELS (Belgium)

Radio-Belgique. 590.4 kc (508 m.); 1 kw. 5.0 p.m.—Concert from the Bon Marché Tea Rooms. 6.0 p.m.—Flemish Literature. 6.15 p.m.—Book-keeping Lesson. 6.30 p.m.—Colonial Bulletin. 6.35 p.m.—Trio Concert. 7.0 p.m.—Gramophone Records. 8.15 p.m.—Concert of Light Music. 9.0 p.m.—Topical Talk. 9.5 p.m.—Concert (contd.). 10.15 p.m.—News and Close Down.

COLOGNE (Germany)

Westdeutscher Rundfunk. 1,060.15 kc (283 m.); 4 kw. See Langenberg Programme.

COPENHAGEN (Denmark)

Copenhagen Radio. 889.9 kc (337 m.); 1 kw. Relayed by Kalundborg, 261.9 kc (1,153 m.). 6.30 a.m.—Morning Exercises arranged by the "Berlingske Tidende." 2.0 p.m.—Orchestral Concert, relayed from Wivel's Restaurant. 4.0 p.m.—Programme for Children: Results of the 59th Children's Guessing Competition with Names of Prizewinners. both Children's Guessing Competition: 1. Reading of Fairy Tales: (a) Cousin Yule (Krohn), (b) The Wish (Ingvar Bondesen), (c) Father Christmas (Louis Moe)—Ellen Kornbeck (Elocutionist). 2. Pianoforte Solos: (a) Christmas Bells, (b) Christmas Psalms, (c) The Christmas Tree, (d) The Boys' Round Dance, (e) The Little Girls' Dance, (f) Good Night (Niels. Gade). Rendered by Viktor Fischer (Pianist). 5.0 p.m.—Town Hall Chimes. 5.20 p.m.—Talk by A. S. Petersen: "Christmas Flowers." 6.0 p.m.—News, Bulletin, Exchange Quotations and Time Signal. 6.30 p.m.—Talk by Herr Hakon Müller, Helsingør: "St. Thomas' Day in the old Danish Schools." 7.0 p.m.—Town Hall Chimes. 7.2 p.m.—"The May Queen"—Musical Play in One Act (Max Kalbeck), translated into Danish by Peder Gradman. Music by Chr. W. von Gluck. 8.0 p.m.—News Bulletin. 8.15 p.m.—Talk by Herr Aage Vater: "Unemployment and Emigration." 8.45 p.m.—Balalaika Concert of Russian Music: 1. Rural Wedding—Fantasia on Russian Folk Song (Nassonov). 2. All is peaceful—Waltz (Sadovsky). 3. Indian Song from "Sadko" (N. Rimsky-Korsakoff). 4. Les adieux à la patrie—Polonaise (M. Oginsky). 5. Capriccio (P. Ostroouff). 3. Songs by Olga Nogaëtz: (a) Sweetly Sang the Lovely Nightingale (Gliere), (b) Mushrooming (M. Moussorgsky). 4. Solos: (a) Vesper Bells (A. Gretchaninoff), (b) The Life we shall Live (R. Gliere). 5. "The Perfume of the Lilac and the Strains of the Nightingale" (J. Prigojij). At the Piano: Viktor Fischer. 9.45 p.m. (approx.)—Close Down.

CORK (Ireland)

Cork Broadcasting Station (6CK). 748 kc (401 m.); 1 kw. 1.30 p.m.—Weather Forecast and Gramophone Record Music. 6.0 p.m.—Exchange Quotations, News and Gramophone Selections. 6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie-Radio. 529.6 kc (566 m.); 1 kw. 10.56 a.m.—Transmission of Chimes from the Church of Notre-Dame, Time Signal and Weather Report. 11.10 a.m.—Gramophone Concert. 2.0 p.m.—Weather Forecast and Report. 2.10 p.m.—Financial Report.

4.30 p.m.—News from the Polish Ski Society. 4.5 p.m.—Talk by Doctor A. Bar on Recent Publications. 4.35 p.m.—Talk relayed from Wilno. 5.0 p.m.—Transmission from Warsaw. 6.0 p.m.—Miscellaneous Items. 6.20 p.m.—News and Announcements. 6.30 p.m.—Mr. J. Kruk on Memories of the Polish Legions. 6.55 p.m.—Time Signal from the Astronomical Observatory. 7.0 p.m.—Agricultural News. 7.15 p.m.—Transmission of Concert from Warsaw. 9.0 p.m.—Programme from Warsaw, followed by News.

DUBLIN (Ireland)

Dublin Broadcasting Station (2RN). 940 kc (319 m.); 1 kw. 1.30 p.m.—Meteorological Report and Forecast. 1.33 p.m. (approx.)—Stock Exchange Quotations. 1.50 p.m. (approx.)—Selections of Gramophone Records. 6.0 p.m.—Concert of Gramophone Records. 6.15 p.m.—Programme of Miscellaneous Items for Children. 7.0 p.m.—Concert of Gramophone Records. 7.20 p.m.—News, Announcements, and Miscellaneous Items. 7.30 p.m.—A Talk on Gardening by G. O. Sherrard. 7.45 p.m.—Lesson in the Welsh Language by Professor Lloyd Jones, U.C.D. 8.0 p.m.—Selection by the Station Orchestra. 8.15 p.m.—Kathleen Roddy in Selections of Soprano Songs. 8.30 p.m.—A Variety Half-hour by Jack O'Sheehan and Company. 9.0 p.m.—Selection by Robert Potterton's Instrumental Trio. 9.30 p.m.—Selection by the Station Orchestra: Christmas Overture (C. Taylor). 9.45 p.m.—"The Old Timers" in a Selection from their Repertoire: "Santa Claus." 10.30 p.m.—News, Announcements, and Miscellaneous Items. 10.40 p.m. (approx.)—Meteorological Report and Forecast. 10.45 p.m. (approx.)—Close Down.

GRAZ (Austria)

Oest.-Radio-Verkehr. 841.1 kc (357 m.); 0.5 kw. Programme from Vienna until 5.10 p.m. 5.10 p.m.—Lesson in Guitar-Playing, by Prof. Granz Riedinger. 5.30 p.m. (approx.)—Programme from Vienna.

HAMBURG (Germany)

Norag (ha, in Morse). 759.8 kc (395 m.); 4 kw. Relayed by Bremen on 1,099 kc (273 m.); Hannover, 1,007.65 kc (298 m.); and Kiel, 1,178 kc (255 m.). Transmits at intervals from 5.50 a.m. 6.55 p.m.—Weather Report. 7.0 p.m.—Low German Programme. 8.0 p.m.—Christmas Concert: 1. Prelude to "Hansel and Gretel" (Humperdinck). 2. Christmas Concerto No. 8 (Corelli). 3. Prelude to "Das Christelflein" (Pfitzner). 4. Nutcracker Suite (Tchaikovsky). 5. Old Bohemian Christmas Choral Melody (Mielck). 9.30 p.m.—Topical Talk, Weather, News, Sports Notes, and Relay of Foreign Stations. 10.50 p.m.—North Sea and Baltic Weather Report.

HILVERSUM (Holland)

Algemeene Vereeniging Radio Omroep. 280 kc (1,071 m.); 5 kw. 9.40 a.m.—Time and Daily Service. 11.40 a.m.—Police Announcements. 11.55 a.m.—Concert of Trio Music. 1.45 p.m.—Transmission for Schools. 3.40 p.m.—Talk for Women. 5.10 p.m.—Talk (to be announced). 5.40 p.m.—Orchestral Concert. 6.55 p.m.—Talk and Police News. 7.40 p.m.—Time and Concert of Chamber Music by the Dutch Instrumental Quintet. Fernando Zepprano (Violin), Huib van den Burg (Viola), Frieda Belinfante (Cello), Rosa Spier (Harp), Johan Feltkamp (Flute). 1. Concert à trois No. 4 in B flat major (Rameau). 2. Sonata in D major (Couperin). 3. Quartet in D major (Mozart). 8.30 p.m.—Talk, "The United States of America." 9.15 p.m.—Chamber Music (continued). 4. Trio (Smit). 5. Concert à cinq in D flat major (Jonen). 9.40 p.m.—Weather and News. 9.55 p.m.—Concert from Breda. 11.0 p.m. (approx.)—Close Down.

KALUNDBORG (Denmark) Kalundborg Radio. 261.9 kc (1,153 m.); 7.5 kw. See Copenhagen Programme.

LANGENBERG (Germany)

Westdeutscher Rundfunk. 639.8 kc (469 m.); 15 kw. Programme also for Aix-la-Chapelle, 749.6 kc (400 m.); Cologne, 1,060.15 kc (283 m.); and Münster, 1,200.1 kc (250 m.). 9.15 a.m.—Experimental and Industrial Transmission. 9.30 a.m.—First General News Bulletin, and Tidal Report. 10.10 a.m.—Educational Programme. 1. "What shall I become?" A Talk by Frau Kellinghaus, Adviser on Careers, on Housewifery and Nursing as Professions. 10.35 a.m.—Educational Programme. 2. Lecture for the Higher Classes in Secondary Schools: Talk in French on Characteristic French Provinces. 11.10 a.m.—Phonola Concert. 11.50 a.m.—First Weather Report and Forecast. 11.55 a.m.—Time Signal. Relayed from Nauen, followed by Second General News Bulletin. 12.5 p.m.—Mid-day Concert, under the direction of Herr Eysoldt. 1. Night in Madrid—Overture (Gliere). 2. Autumn Dream Waltz (Joyce). 3. Selections from the Opera "Halka" (Moniuszko). 4. (a) Flattery—Romance (Giordone), (b) Ganz in Geheim—Intermezzo (Offermann). 5. Oriental Ballet Suite from "A Thousand and One Nights" (Bortkiewicz): (a) The Enchanted Castle, (b) Zobeide, (c) Dance of the Maidens, (d) Oriental Dance. 6. Sérénade to Spring (Lacombe). 7. Potpourri from the Opera "Polenblut" (Nedbal). 8. Columbia—March (Rust): In the Interval at 12.30 a.m.: Programme Announcements. 1.30 p.m.—Hints for the Housewife. 2.30 p.m.—Economic Report. 3.0 p.m.—Literary Programme Readings by Heinrich Haslinde-Castro, from Westphalian Ballads. 3.30 p.m.—Talk on Books by Fritz Worm: 1. "Nachgelassene Schriften" (Walter Rathenau). 2. "Lebensdienst" (Jakob Wassermann). 3. "Kultur und Erziehung" (Ed. Spänger). 4.0 p.m.—Programme for Children, by Herr Simon, with the assistance of Else Fuchs, Wickert (Soprano), accompanied by Herr Beuer. 1. The Animals' Christmas Eve, Tale by Frau M. Dernen. 2. Two Christmas Carols by Max Reger: (a) The Virgin Mary Cradle Song, (b) The Virgin Mary under the Rose Bush. 3. A Fairy Tale, by H. Herbert: "The Most Beautiful of all the Little Green Twigs." 4. Two Christmas Carols, by Peter Cornelius: (a) The Shepherds, (b) The Kings. 4.45 p.m.—Concert of Chamber Music, by the String Quartet of the Westdeutscher Rundfunk (Herr Rhein, Herber, Ringnald, Grote). 1. Four Movements from the String Quartet in E major, Op. 125, 2. (Schubert): (a) Allegro con fuoco, (b) Andante, (c) Minuet, (d) Rondo. 2. Four Movements from the String Quartet in B flat major, Op. 168 (Schubert): (a) Allegro ma non troppo, (b) Andante sostenuto, (c) Minuet, (d) Presto. In the Interval at 5:15 p.m.: Programme Announcements. 5.30 p.m.—Programme of the Westphalian Culture Circle: Talk by Dr. Wefelscheid on Safety in Industry. 5.50 p.m.—Economic Report, Second Weather Report, and Sports Announcements. 6.15 p.m.—English Conversation, by Dr. C. Bennett of the University of Cambridge, and A. Rüschkamp-Whitehead. 6.40 p.m.—Legal Talk by Dr. Peipers: "The Position of Women in Legal Questions arising in Daily Life." 7.0 p.m.—Evening Concert by the Small Orchestra of the Westdeutscher Rundfunk, under the Direction of Herr Eysoldt. 1. Die Hochzeit des Camacho—Overture (Mendelssohn). 2. Liebesengel—Waltz (Waldteufel). 3. The Minaret—Suite of Oriental Melodies (Leopold). 4. A Northern Night (Vecsey). 5. Selections from the Opera "L'Africaine" (Meyerbeer). 8.0 p.m.—German Folk Songs. Continuation of Evening Concert. 1. Juristen - Ballklänge - Waltz (Strauss). 2. "Hamlet"—Overture

(Tchaikovsky). 3. Pierrrot-Serenade—Trio (Meyer-Helmund). 4. The March of the Dwarfs-Nocturne (Grieg). 9.30 p.m. (approx.)—Latest News and Announcements, Sports Notes and Commercial Announcements, followed by relay of the Concert from the "Handelshof" at Essen, by the Farkas Miska Orchestra.

LEIPZIG (Germany)

Mitteldeutscher Rundfunk. 819.6 kc (366 m.); 4 kw. Relayed by Dresden, 1,083.2 kc (276 m.). Transmits at intervals from 9.5 a.m. 7.0 p.m.—"Missa solennis" (Beethoven), relayed from the Dresden Opera House. Followed by News. 9.15 p.m. (approx.)—Dancing Lesson and Dance and Variety Music.

MADRID (Spain)

Union Radio (EAT). 689.6 kc (435 m.); 1 kw. Transmits at intervals from 11.45 a.m. 7.0 p.m.—Chimes, Exchange and Chamber Music, followed by News. 9.45 p.m.—History Lesson. 10.15 p.m.—Chimes and Exchange, followed by Popular Concert. 12.0 midnight.—Chimes, News and Dance Music Programme. 12.30 a.m. Sat. (approx.)—Close Down.

MOTALA (Sweden)

219.9 kc (1,364 m.); 20 kw. See Stockholm Programme.

MUNICH (Germany)

Deutsche Stunde in Bayern. 558.9 kc (537 m.); 4 kw. Relayed by Augsburg, 529.6 kc (566 m.); Kaiserlautern, 1,079.65 kc (278 m.); and Nürnberg, 1,239.5 kc (242 m.). Transmits at intervals from 5.45 a.m. 5.10 p.m.—Agricultural Programme Talk, "The Influence of the Shortage of Capital on the Use of Machines in Agriculture" by Professor Dr. P. Kulisch. 6.0 p.m.—Concert of Chamber Music by the Fassbaender-Rohr Trio: Hedwig Fassbaender (Violinist), Ludwig Fassbaender (Cello), and Dr. Hanns Rohr (Pianist). 1. Concerto in C minor (J. Ph. Rameau), (a) Rondelet, (b) Andantino, (c) Gaïment, sans Vitesse. 2. Trio for Pianoforte in G major (Joseph Haydn), (a) Andante, (b) Poco Adagio, (c) Finale—Rondo all'Ongarese. 3. Trio for Pianoforte No. 2 in B flat major (Wolfgang Amadeus Mozart), (a) Allegro, (b) Larghetto, (c) Allegretto. 6.50 p.m.—Talk from the Series, "The Origin of the Earth," by Dr. Erich Kaiser (University Professor). 7.5 p.m.—"The Story of the Three Wise Men." From the Christmas Legend by Felix Timmermanns. Arranged for the Stage by Eduard Vetter and Felix Timmermanns. Translated from the Flemish by Anton Kippenberg. Adapted for Wireless Production by Hellmuth Habersbrunner. Director: Rudolf Hoch. 9.5 p.m.—Talk by Hans Prehäuser, "Review of the Week's Sports." 9.20 p.m.—Important Wireless Information. 9.35 p.m.—General News Bulletin and Announcements. 9.55 p.m.—Snow Report. 10.0 p.m.—Gramophone Record Concert, arranged by the Koch Music House, Munich.

PARIS (France)

Eiffel Tower (FL). 113.2 kc (2,650 m.); 12 kw. 7.56 a.m.—Time Signal on 9,231 kc (32.5 m.). 9.26 a.m.—Time Signal on 113.2 kc. 5.45 p.m.—"Le Journal Parlé." 7.10 p.m.—Weather Forecast. 7.30 p.m.—Concert of Instrumental and Vocal Music. At 7.56 p.m.: Time Signal on 9,231 kc (32.5 m.). 10.26 p.m.—Time Signal on 113.2 kc.

PARIS (France)

Petit Parisien. 882.3 kc (340 m.); 0.5 kw. 8.0 p.m.—Concert of Jazz Music by the "Cracker Jack's Jazz," from the Palermo, with the assistance of Francis Day's Publishing House: 1. Miss Annabelle Lee (Sydney Clark). 2. Get Out and Get Under the Moon (Larry Shay). 3. Rain (Eugene Ford). 4. Was it a Dream? (Sam Coslow). 5. A Room with a View (Noel Coward). 6. That's My Weakness Now (Green Step). 7.

Programmes for Friday.—(Cont.)

I Can't Do Without You (Irving Berlin). 8. Gonna Get a Girl (Paul Ash). 9. There Must be a Silver Lining (Donaldson). 10. Ramona (Wayne). 11. Just like a Melody out of the Sky (Donaldson). 12. After my Laughter came Tears (Tobias). 13. Hi-diddle-diddle (Carlton Coon).
9.10 p.m. (approx.)—Close Down.

PARIS (France)

Radio Paris (CFR). 169.9 kc (1,765 m.); 12 kw.
Transmits at intervals from 6.45 a.m. to 6.45 p.m.—Musical Selections.
7.30 p.m.—Elementary English Lesson.
7.45 p.m.—Market Prices. Talk.
8.30 p.m.—Concert Selection from "Les Cloches de Corneville" (Planquette). News in the intervals.

PITTSBURGH (U.S.A.)

Westinghouse Electric (KDKA). 980 kc (306 m.); 25 kw. Relayed at intervals on 4,800 kc (62.5 m.).
Transmits at intervals from 2.45 p.m. to 11.30 p.m.—Variety Programme of Music, Talks, Concerts, Time and Weather Reports, etc.
4.15 a.m. Sat. (approx.)—Close Down.

SCHENECTADY (U.S.A.)

General Electric Company (WGY). 791.5 kc (379 m.); 50 kw. Relayed by 2XAD on 13,661 kc (21.96 m.).
11.45 a.m.—Physical Training—Setting-up Exercises.
1.30 p.m.—"Cherrio"—Talk and Musical Selections.
1.50 p.m.—"Shopping Service," arranged by WGY.
3.0 p.m.—National Home Hour. Programme relayed from New York.
4.0 p.m.—Musical Programme. Relayed from New York.
4.15 p.m.—Radio Household Institute. Relayed from New York.
4.55 p.m.—Time Signals.
5.0 p.m.—Talk, "Teeth, Health and Happiness," from New York.
5.15 p.m.—Weather Forecast.
5.17 p.m.—Produce Market Report.
5.25 p.m.—Farm Plashes.
5.45 p.m.—New York Stock Market Reports.
6.0 p.m.—Weather Forecast.

6.30 p.m.—Television Transmission.
7.0 p.m.—Phil Romano and his Orchestra from the Hotel De Witt Clinton, Albany, New York.
7.30 p.m.—Household Chats. Programme arranged by WGY.
11.0 p.m.—Stock Reports.
11.5 p.m. (approx.)—Produce Market Report.
11.10 p.m. (approx.)—Farm Forum.
11.20 p.m. (approx.)—News Items and Miscellaneous Announcements.
11.29 p.m.—Weather Forecast.
11.30 p.m.—Musical Selections by the Orchestra of the Hotel Kenmore, Albany, New York.
12.0 (midnight)—Union College. Speaker.
12.15 a.m. (Sat.)—Musical Programme from the Hotel Kenmore (continued).
12.25 a.m.—Talk on Health.
12.30 a.m.—General Electric Victor X-Ray Programme.
1.30 a.m.—Musical Programme.
2.0 a.m.—"An Evening in Paris." Programme relayed from New York.
2.30 a.m.—Exact Time Signal.
2.31 a.m. (approx.)—Programme by the WGY Players.
3.30 a.m.—Programme arranged by the National Broadcasting and Concert Bureau. Relayed from New York.
4.0 a.m. (approx.)—Close Down.

STOCKHOLM (Sweden)

Radiojansst (SASA). 660.15 kc (454 m.); 1.5 kw. Relayed by Eskilstuna on 1,208 kc (248 m.); Gädd, on 1,470 kc (204 m.); Göteborg, 720.3 kc (416 m.); Kalmar, on 1,184.5 kc (253 m.); Karlstad, on 1,301 kc (220 m.); Linköping, on 600 kc (500 m.); Malmö, on 1,149.87 kc (261 m.); Motala, on 210.9 kc (1,364 m.); Saffle, on 1,190.35 kc (252 m.); Sundsvall, on 540.45 kc (545 m.); and Uppsala, on 600 kc (500 m.).
Transmits at intervals from 11.30 a.m. to 8.10 p.m.—Baritone Recital from Works of Franz Schubert, sung by Josef Papier. 1. Nebensonnen. 2. Der Neugierige. 3. Frühlingsbraut. 4. Am Meer. 5. Liebesbotschaft. 6. Die Bild. 7. Frühlingslaube. 8. Wanderers Nachtlied. 9. Lied eines Schiffers an die Dioskuren.

9.10 p.m. (approx.)—Close Down.
9.15 p.m.—News and Weather.

TOULOUSE (France)

Radiophonie du Midi. 772.25 kc (388 m.); 8 kw.
12.30 p.m.—Meteorological Report, Market Prices List from the Municipality of Toulouse and Regional Exchange Rates.
12.45 p.m.—Concert: First Part: Dance Music Selections: 1. Recuerdo (Agliese). 2. Tanita de la Proa y Mexico. 3. Entrepreneur (Roccardo). 4. Recordando (Melfi). 5. Amaya (Gurydi). 6. Bolero from "The Crown Diamonds" (Bargieri). 7. Florida (Pujol). 8. El Cavalier Enamorat (Manen).
1.0 p.m.—Time Signal.
1.2 p.m.—Concert. Second Part: Recital of Songs: 1. Melody, "Tes yeux (Rabey). 2. Mon ami Pierrot (Zimmermann). 3. Melody, "Trianton (Hamy). 4. Alleluia (Mozart). 5. Au pays des mimosas (Léo Daniderff). 6. Quand l'oiseau chante (Tagliacico).
1.20 p.m.—Concert. Third Part: Variations on a theme for two Pianos (Beethoven).
1.28 p.m.—Concert. Fourth Part: Orchestral Selection: Scènes Pastorales (Massenet): 1. Dimanche matin. 2. Dimanche Soir. 3. Sous les tilleuls. 4. Au Cabaret. 5. Finale.
1.45 p.m.—Latest News Bulletin from the "Telegram," the "Express," and the "Midi Socialiste."
2.0-9.0 p.m.—No Transmission.
8.0 p.m.—Paris Market Quotations, and Exchange Rates, Prices of Corn, News communicated by the Fournier Agency, and the Day's News Bulletin by the "Dispatch" and the "Petit Parisien."
8.30 p.m.—Concert. Selection from the Lyrical Comedy in Five Acts, "Don Quixote" (Massenet). Words by Henry Cain, after the Comédie héroïque by Le Lorrain. 1. Quand apparaissent les étoiles. 2. C'est vers ton amour. 3. Alza, ne pensons qu'au plaisir. 4. Interlude. 5. Ecoute, mon ami. 6. Sancho, je t'ai promis n'importe. 7. The Death of Don Quixote.
9.0 p.m.—Time Signal.
9.2 p.m.—Gala Concert, arranged by the Twenty-six Wireless Construction Firms. Programme by Thirty Musicians under the direction of

M. Pujol. First Violins, M. Carles (Soloist), Mmes. Olieu and Chaincholle-Vié, MM. Delestan, Larrouy, Rondeau, Piriou, and Vié; Second Violins, MM. Cabrol, Berdier, Laporte and Lafage; Violas, Mme. Eprinchard and M. Pujol; Cellos, MM. Ringelsen and Balaresque; Double-Basses, MM. Guillon and Cros; Piano, Mlle. Ducourau; Flute, M. Dubois; Oboe, M. Berges; Clarinet, M. Pages; Bassoon, M. Olieu; Horn, M. Bacque; Trumpet, M. Albus; Trombone, M. Troupel, etc.
During the Interval: Theatre Musical Interlude, for Xylophone and Cymbal: 1. Serenade (Drigo). 2. The Seventh Waltz (Chopin). 3. The First Waltz (Durand). 4. Selection from "Carmen" (Bizet).
11.0 p.m.—The Day's News Bulletin from North Africa.
11.15 p.m. (approx.)—Close Down.

WARSAW (Poland)

Polskie Radio. 270 kc (1,111 m.). 8 kw.
10.56 a.m.—Time Signal.
10.58 a.m.—Relay of the Chimes from the Eglise Notre Dame, Cracow.
11.2 a.m. (approx.)—Aviation Bulletin
11.5 a.m. (approx.)—Meteorological Report.
11.10 a.m.—2.0 p.m.—Temporary Close Down.
2.0 p.m.—General News Bulletin.
2.10 p.m.—Financial Report.
2.20 p.m.—Review of Periodical Publications by Professor H. Mosicky.
2.45 p.m.—News and Announcements.
3.0 p.m.—Concert of Gramophone Record Music.
3.55-4.10 p.m.—No Transmission.
4.10 p.m.—Wireless Talk.
4.35 p.m.—A Talk, relayed from Witno.
5.0 p.m.—Afternoon Concert, given by the Siberian Male Voice Choir, under the direction of Mr. Eugène Tomaszewsky.
6.0 p.m.—Miscellaneous Selections.
6.20 p.m.—Talk from the Series, "Medicine and Hygiene."
6.56 p.m.—Time Signal.
7.0 p.m.—Agricultural Report, and Exchange Prices of Cereals, relayed from Cracow.
7.15 p.m.—Symphony Concert, under the direction of H. Abendroth, relayed from the Warsaw Philharmonic. Soloist: Aline van Barent-

son (Violinist): 1. "Don Juan"—Symphony in D major (Schubert). 2. Selections by Aline van Barentson (Violinist). 3. "Don Juan"—Symphonic Poem (R. Strauss). 4. Scherzo (K. R. Mengelberg). 5. Ilary Janos—Suite (Z. Kodaly).
During the Interval: Theatre News. After the Programme: General News Bulletin, Press Review, Aviation Bulletin, Meteorological Report, Police Announcements, Sports Notes and Results, and News from the P. A. T.

ZÜRICH (Switzerland)

Radio-Genossenschaft. 510.85 kc (587 m.); 0.63 kw.
11.30 a.m.—Relay of Time Signal.
11.31 a.m.—Weather Report and Forecast.
11.32 a.m.—Concert by the Station Orchestra (Pt. 1).
11.50 a.m.—Weather Report and Forecast followed by Latest News.
12.0 p.m.—Concert by the Station Orchestra (Pt. 2).
12.30 p.m.—Tourist Report from the Swiss Automobile Club.
12.35 p.m.—Weather Report and Forecast.
12.37 p.m. (approx.)—Money Market and Exchange Quotations.
2.0 p.m.—Concert of Gramophone Records.
3.0 p.m.—Concert by the Castellano Orchestra relayed from the Carlton-Elite Hotel.
4.45 p.m.—Meteorological Report.
4.47 p.m. (approx.)—Prices from the Zürich Weekly Market.
6.30 p.m.—Relay of Time Signal.
6.31 p.m.—Weather Report and Forecast.
6.32 p.m.—English Talk by Dr. F. Schwind, followed by a ten minutes' talk in Esperanto by Rudolf Unger on the Organisation of the Swiss Hotel Industry.
7.0 p.m.—Concert. Lute Selections by Maria Waldner; Viol di Gamba (Arnold Köhler, from the Württemberg Landestheater), supported by the Station Orchestra. At the Piano: Otto Strauss.
8.0 p.m.—Readings by Ilse Kamnitzer from the Dying Rocco Period, accompanied by the Station Orchestra.
9.0 p.m.—Weather Report and Forecast, Latest News and Press Notes from the Neue Züricher Zeitung.
9.15 p.m. (approx.)—Close Down.



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PROGRAMMES FOR SATURDAY (December 22)

NOTE: THE HOURS OF TRANSMISSION ARE REDUCED TO GREENWICH MEAN TIME

AGEN (France)

Radio Agen. 1,001 kc (299 m.); 0.48 kw. 12.40 p.m.—General News Bulletin, Quotations from Local Markets, Meteorological Report and Forecast and Market Prices. 7.40 p.m.—Latest News Reports, Weather Forecast and Municipal News. 8.0 p.m. (approx.)—Close Down.

BERNE (Switzerland)

Radio-Berne. 730.75 kc (410 m.). 1.3 kw. Transmits at intervals from 11.43 a.m. 6.30 p.m.—Talk by Hans Burren, König, on Advent and Christmas Customs. 7.0 p.m.—Relay from Basle on 290.1 kc (1,034 m.); 0.25 kw. of the Christmas Oratorio by Johann Sebastian Bach. 8.50 p.m.—News and Announcements. 8.55 p.m.—Weather Report and Forecast. 9.5 p.m.—Concert by the Berne Kursor Orchestra. 9.35 p.m.—Radio Dancing.

BEZIERS (France)

Radio-Beziers. 1,899 kc (153 m.); 0.6 kw. 3.0 p.m.—Market Prices from the Chamber of Commerce of Perpignan. 4.0 p.m.—Wine Market Quotations. 8.30 p.m.—News Bulletin, and Market Prices, followed by Wine Prices from Sète, Narbonne, Carcassonne, Montpellier, Nîmes and Lézignan. 8.45 p.m.—Concert arranged by the Maison Cabanel, Rue de la République, Beziers. After the Programme, Announcement of Market Prices from Perpignan.

BORDEAUX (France)

Radio Bordeaux. Sud-Ouest. 1,260 kc (238 m.); 1.5 kw. 7.15 p.m.—Orchestral Concert. Part One. 1. Allegro and Andante from a Symphony (Bach). 2. "Fra Diavolo"—Overture (Auber). 3. Carnival refrain (Berlioz). 4. Allegro scherzando from the Eighth Symphony (Beethoven). 7.50 p.m.—Orchestral Concert. Part Two. 1. Programme of Selections from "Faust" (Gounod): (a) The Golden Calf, (b) Song of the King of Thule, (c) The Jewel Song, (d) The Soldiers' Chorus, (e) Serenade: Vous qui faites l'endormie, (f) The Duel Trio, (g) Ballet Music, (h) Final Trio: Anges purs, anges radieux. 8.15 p.m.—German Language Lesson, by M. Hector. 8.30 p.m. (approx.)—Close Down.

BRUSSELS (Belgium)

Radio-Belgique. 500.4 kc (598 m.); 1 kw. Transmits at intervals from 5.0 p.m. 7.30 p.m.—Radio-Chronique. 8.15 p.m.—Concert from the Salle du Conservatoire, followed by Espiranto Talk and News. 10.30 p.m.—Orchestral Concert from the Palace Hotel Tea-Room. 11.15 p.m. (approx.)—Close Down.

COLOGNE (Germany)

Westdeutscher Rundfunk. 1,060.15 kc (285 m.). 4.8 kw. See Langenberg Programme.

COPENHAGEN (Denmark)

Copenhagen Radio. 880.9 kc (337 m.); 1 kw. Relayed by Kalundborg. 267.9 kc (1,153 m.). 6.30 a.m.—Wireless Morning Exercises arranged by the "Berlingsky Tidende." 11.0 a.m.—Town Hall Chimes. 11.2 a.m.—Orchestral Concert relayed from Wivel's Restaurant, under the direction of K. Ingemann Palmhøj. 2.0 p.m.—Programme for Children (for Children from 4—9 years): "What Old Lukkie showed Else and Jørgen"—Christmas Play with Songs (Johanne v. Kohl). The action takes place in the nursery. Dramatis Personæ: Adelheid Nielsen, Marie Brandstrup, Inga Schultz and Ingrid Gehrs. 2.30 p.m.—Afternoon Concert of Instrumental Music under the direction of Otto Fessel: 1. National Emblem—March (E. E. Bagley).

2. "Tancred"—Overture (Rossini). 3. Hofballtänze—Waltz (Joh. Strauss). 4. Selection from "Lucia di Lammermoor" (G. Donizetti). 5. Babillage (E. Gillet). 6. Valse des blondes (Ganne). 7. Columbine Mazurka (H. C. Lumbye). 8. Songs by Albrecht Delfs: (a) Sarastro's Aria from "The Magic Flute" (W. A. Mozart), (b) "A Lovely Flower" from "Eilsa" (Fr. Kuhlau), (c) Plunkett's Song from "Martha" (Fr. v. Flotow), (d) Falstaff's Aria from "The Merry Wives of Windsor" (C. Nicolai). 9. (a) Cadet March (Souza), (b) Die Schönbauer—Waltz (Lanner), (c) Selection from "The Gipsy Baron" (Joh. Strauss), (d) Nocturne (Moetucci), (e) Bella-Mazurka, and (f) Express Gallop (Waldeufel). At the Pianoforte, Folmer Jensen. 5.20 p.m.—Talk by Peter Christiansen: "Modern Foreign Authors—Gustaf Hellstrom." 5.50 p.m.—Meteorological Report. 6.0 p.m.—News and Announcements. 6.5 p.m. (approx.)—Exchange Quotations. 6.15 p.m.—Time Signal. 6.30 p.m.—Talk by Director V. E. Gamborg: "The Enemies and Friends of Mankind." 7.0 p.m.—Town Hall Chimes. 7.2 p.m. (approx.)—Concert of Old Dance Music by the Strauss Family. 1. (a) Radezky March, (b) Annon Polka (Johann Strauss, Sen.), 2. (a) Wo die Citronen blüh'n—Waltz, (b) Die Wahrsagerin—Mazurka, (c) Quadrille on Melodies, from "The Gipsy Baron" (Johann Strauss). 3. (a) Dorfschwalben aus Österreich—Waltz, (b) Frauenherz—Mazurka (Joseph Strauss). 4. Diplomat Polka (Johann Strauss). 5. (a) The Doctrine—Waltz, (b) Mit Dampf—Galop (Eduard Strauss). Followed by News and Announcements. 8.15 p.m.—"Hans Peter's Letter"—a Yule-tide Comedy in One Act, by Otto Conradsen. The action takes place in Rasmus Vejmand's House in North Jutland. 8.45 p.m.—Concert of Light Music. 9.45 p.m.—Transmission of Dance Music from the Industri Restaurant. The Orchestra, under the direction of Aage Juhl-Thomsen. 11.0 p.m.—Town Hall Chimes. 11.2 p.m. (approx.)—Close Down.

GRAZ (Austria)

Oest.-Radio-Verkehr. 841.1 kc (357 m.); 0.5 kw. Programme from Vienna until 3.0 p.m. 3.0 p.m.—"Once upon a Time"—an Evening of Fairy Tales for Grow-ups, in which will take part: The Ensemble of the Graz Playhouse: The Hüttl Orchestra, and the Opera Singer, Felix Dellfuss. Programme arrangement and production by the Conductor, Anton Hamik. 1. Orchestra: Selection from "Hansel and Gretel" (Humperdinck). 2. Prologue, Recitative by Anton Hamik, "I Believe in Fairy Tales" (A. Berger). 3. Song, "Once upon a Time" (Paul Linke). Soloist: Felix Dollfuss. 4. Hüttl Orchestra: Fairy Tales (Komzák). 5. Recitations by Lori Weiser: (a) In the Snow (Puttkammer), (b) The Fairy Tale of Fortune (Achenstein). 6. Hüttl Orchestra: Turkish Fairy Tale (Linke). 7. Song: The Rat-catcher (Wolf). Soloist: Felix Dellfuss. 8. Recitations by Walter Bach: I tell Fairy-tales (Jakobowsky). 9. Hüttl Orchestra: "The Elves' Ball (Schachenhofer). 10. "Death and the Little Maiden"—A Fairy Play in Two Scenes (Manfred Kyber). Dramatis Personæ: Death (Lohde), The Little Maiden (Mittersteiner), A Grave-digger (Mittersteiner). First Scene takes place in the Village Churchyard, Second Scene takes place in the Sick Bedroom of the Little Maiden. 11. "From the Silesian Mountains"—Play (F. von Freiligrath). Dramatis Personæ: The Narrator (Bach), The Boy (Neuber). 12. Hüttl Orchestra: Dance of the Gnomes (Lorm). 12. A Ball in the Hall of Apollo"—Fairy Tale (F. M. Ginzkey). Dramatis Personæ: The Fairy-tale-Teller (Schweickhardt), The Vision (Hamik). 14. "Snow-white"—a modern Fairy Tale read by Walter Bach. 15. The Hüttl Orchestra: "Im Zauber der Nixen" (Siede). 16. "Aus Schlaraffenland"—a Fairy-tale Comedy (Ludwig Fulda). Dramatis Personæ: Peter Wagenseil—Master Baker (Lohde), Kunigunde, his Wife, (Schweickhardt), Ursula, his daughter (Neubert), Lienhart, the Foreman (Bach), Veit Renner, the Apprentice (Weiser), Ambrosius Grundlinger, a Tallow-chandler, The Best Man (Korb), Bridesmaids, Musicians, The Wedding-guests. The action takes place in Nürnberg in the Sixteenth Century in Wagenseil's Bake-house. 4.0 p.m.—Epilogue, spoken by Anton Hamik, "Once upon a Time" (Kalbeck). 5.0 p.m.—Popular Lecture arranged by the University of Graz: "The Artificial Mazes of the Baroque Period." Lecturer: Doctor Eberhard Hempel. 5.30 p.m.—Lesson in Stenography by Doctor Franz Pichler. 5.55 p.m.—Series of Talks on Styria, arranged by Doctor Viktor Thiel: "Christmas-time in Styrian Folk Customs and Beliefs," by Doctor Viktor Theiss. 6.25 p.m. (approx.)—Programme from Vienna.

CORK (Ireland)

Cork Broadcasting Station (6CK). 748 kc (401 m.); 1 kw. 1.30 p.m.—Weather Forecast, and Gramophone Music. 7.20 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie-Radio. 529.6 kc (566 m.); 1 kw. 10.56 a.m.—Transmission of the Chimes from the Church of Notre Dame. 11.10 a.m.—Gramophone Concert. 2.0 p.m.—Weather Report and Forecast. 2.10 p.m.—Financial Report. 4.10 p.m.—Talk by Jotot on Flemish, French and Italian Stories. 4.35 p.m.—Transmission of Talk from Warsaw. 5.0 p.m.—Transmission from Warsaw. 6.0 p.m.—Miscellaneous Items, followed by News and Announcements. 6.25 p.m.—English Reading by Mr. J. Stanislavsky. 6.55 p.m.—Time Signal from the Astronomical Observatory. 7.0 p.m.—Agricultural Notes. 7.5 p.m.—Talk by Doctor J. Rogula: "A Glance at Foreign Politics during the previous Week." 7.30 p.m.—Transmission from Warsaw. 9.0 p.m.—Transmission from Warsaw followed by News. 9.30 p.m.—Transmission of Concert from a Restaurant. 11.0 p.m.—Time Signal. 11.2 p.m.—Weather Report and Forecast.

DUBLIN (Ireland)

Dublin Broadcasting Station (2RN). 940 kc (319 m.); 1 kw. 1.30 p.m.—Meteorological Report and Forecast. 1.33 p.m. (approx.)—Selections of Gramophone Records. 7.20 p.m.—News, Announcements, and Miscellaneous Items. 7.30 p.m.—A Talk by Dorothy Day. 7.45 p.m.—Lesson in the Irish Language by Seamus O'Duinn. 8.0 p.m.—Pib Uleann—by Seamus MacAonghusa.

8.15 p.m.—Lecture Recital by Seamus MacCall on Spanish Popular Songs with Vocal Illustrations by Eily Murnaghan (Soprano). 8.45 p.m.—A Variety Programme by Lettice Newman and Eric Richmond. 9.5 p.m.—Selection by the Station Orchestra. 9.20 p.m.—Variety Selection by Lettice Newman and Eric Richmond. 9.45 p.m.—Selection from "Katja the Dancer"—Light Opera (Gilbert), with Gertrude Mortimer, Joseph O'Neill and the Station Orchestra. 10.30 p.m.—News, Announcements, and Miscellaneous Items. 10.40 p.m. (approx.)—Meteorological Report and Forecast. 10.45 p.m. (approx.)—Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 261.9 kc (1,153 m.); 7.5 kw. See Copenhagen Programme.

LANGENBERG (Germany)

Westdeutscher Rundfunk. 639.8 kc (469 m.); 15 kw. Programme also for Aix-la-Chapelle 749.6 kc (400 m.); Cologne, 1,060.15 kc (283 m.); and Münster 1,200.1 kc (250 m.). 9.15 a.m.—Experimental and Industrial Transmissions. 9.30 a.m.—General News Bulletin and Tide Reports. 9.35 a.m.—Labour Market Report. 10.15 a.m.—Programme for Schools. 11.10 a.m.—Programme of Gramophone Records. 11.50 a.m.—First Weather Report. 11.55 a.m.—Time Signal relayed from Nauen, followed by Second General News Bulletin. 12.5 p.m.—Orchestral Concert under the direction of Eysoldt: 1. Erato Overture (Zeh). 2. Waltz, Aus schöner Zeit (Waldeufel). 3. Dance Scene from "Barbarina" (Clemus). 4. Melodies from "Hérodiane" (Massenet). 5. The Second Petite Suite (Micheli). 6. Hymn to the Night (Scassola). 7. Selection from the Operetta "Der unsterbliche Lump" (Eysler). 1.30 p.m.—Programme arranged for the Housewife. 1.45 p.m. (approx.)—2.30 p.m.—No Transmission. 2.30 p.m.—Finance Report. 2.40 p.m.—Talk by Arthur Wurbs (Inspector of Telegraphy) from the Series, "The Foundations of Wireless Technique." "The Electrical Oscillation Circuit." 3.0 p.m.—Talk for Women by Marie Theres van den Wyenberg, "Practical Hints for the Housewife." 3.25 p.m.—Talk by Fegeler-Felken-dorf: "Time—Modes—Men." 3.45 p.m.—"On a Sleigh through the Fairy Woods." A Christmas Play with Music and Songs, for Young and Old. Producer: Probst. 4.45 p.m.—Evening Concert by the Langenberg Choir and Orchestra under the direction of Buschkötter. Soloist, Kläre Hansen (Soprano). Introductory Talk by Friedrich Wilhelm Herzog. 1. Hans im Glück—Variations and Theme (Hans Philipp). 2. Marienlieder (Hans Philipp). 3. Geschichte vom Franz Xaver Dampfkessel und der Dame Musica (Weismann). 5.15 p.m.—During the Interval, Programme Announcements. 5.30 p.m.—Talk by Prof. Dr. Boerchmann from the Series, "China Culture and Agriculture." "The Chinese Landscape in Culture and Art." 5.50 p.m.—Finance Report, Second Meteorological Report and Sports Notes. 6.15 p.m.—Talk for Workers, by Schriftführer Carl Wörner, on "The Insurance of Office Workers." 6.40 p.m.—Talk by Dr. von der Leyen: "Fairy Tales in the Literature of the World." 7.0 p.m.—Variety Programme. 9.30 p.m. (approx.)—Last General News Bulletin, Sports Notes and Results, and Commercial Announcements, followed by Concert of Orchestral Music and Programme of Dance Music, directed by Herr Eysoldt. 12.0 midnight (approx.)—Close Down.

HAMBURG (Germany)

Norag (ha, in Morse), 759.8 kc (395 m.); 4 kw. Relayed by Bremen on 1,099 kc (273 m.); Hanover, 1,007.65 kc (298 m.); and Kiel, 1,178 kc (255 m.). Transmits at intervals from 5.50 a.m. 6.0 p.m.—"Der goldene Sonntag." 9.45 p.m.—Weather, News, Sports Notes, and Dance Music. 10.50 p.m.—North Sea and Baltic Weather Report.

HILVERSUM (Holland)

Algemeene Vereeniging Radio Omroep. 280 kc (1,071 m.); 5 kw. Transmits at intervals from 9.40 a.m. 5.40 p.m.—Time and Concert. 1. Ojos negros (Camponi). 2. Seleccion (Alongi). 3. En sourdine (Tellam). 4. Roses of the South (Johann Strauss). 5. Pitchounette (Massenet). 6. The Angel (Rubinstein). 7. Spanish Serenade (Boris Lensky). 8. A Night in June (Friend). 6.25 p.m.—German Language Lesson. 7.25 p.m.—Police Announcements. 7.45 p.m.—Concert and Talk arranged by the Workers' Radio Society. 11.15 p.m. (approx.)—Close Down.

MADRID (Spain)

Union Radio (EAJ7). 689.6 kc (435 m.); 1 kw. Transmits at intervals from 11.45 a.m. 7.0 p.m.—Chimes, Sextet Concert. 8.0 p.m.—Dance Music, News. 9.45 p.m.—Market Prices Review. 10.0 p.m.—Chimes, followed by "Los Descamisados" (Cueca) and "Los Cadeetes de la Reina" (Luna)—Musical Plays, News. 12.30 a.m. Sun. (approx.)—Close Down.

MOTALA (Sweden)

219.9 kc (1,364 m.); 20 kw. See Stockholm Programme.

MUNICH (Germany)

Deutsche Stunde in Bayern. 558.9 kc (537 m.); 4 kw. Relayed by Augsburg, 529.6 kc (566 m.); Kaiserslautern, 1,079.65 kc (278 m.); and Nürnberg, 1,239.5 kc (242 m.). 5.45 a.m.—Morning Gymnastics. 6.0 a.m. (approx.)—10.45 a.m.—No Transmission. 10.45 a.m.—Snow Report (if occasion arises). 11.0 a.m.—1.30 p.m.—No Transmission. 1.30 p.m.—Concert of Gramophone Record Selections, arranged by the Wilhelm Krass Music Shop, Munich. 3.0 p.m.—Concert by the Station Instrumental Trio. 4.30 p.m.—Reading, "The Temptation of St. Francis," A Legend by Isolde Kurz. Reading in celebration of the Seventy-Fifth Birthday of Isolde Kurz. Read by Hermann Nesselträger. 5.0 p.m.—Concert by the Munich Zither Society, under the direction of H. Rewitzer. 5.30 p.m.—Labour Market Report. 6.0 p.m.—"The Letter Box." 6.30 p.m.—Programme from Nürnberg. "The Nuremberg Games Outfit." Programme directed by Dr. Alfred Graf. 7.30 p.m.—Concert by the Station Orchestra, conducted by Kurt Pastor. Soloists: Wilhelm Bauer (Baritone); Carl Weickhardt (Violinist); and Richard Staab (Pianist). 1. Introduction and Chorus of the "Messengers of Peace from 'Rienzi'" (Richard Wagner). 2. Overture to "Das Märchen von der schönen Melusine" (F. Mendelssohn). 3. An jenem Tag—Aria from "Hans Heiling" (H. Marschner). 4. Ballet Music from "La Juive" (F. Halévy). Interlude—"The Wireless Mirror." 5. Cracovienne in F major for Pianoforte and Orchestra (Fr. Chopin). 6. Intermezzo from "Cavalleria Rusticana" (Mascagni). 7. Ballade and Polonaise for Violin and Orchestra (H. Vieuxtemps). 8. Selection from "La Tosca" (G. Puccini). 9. Poet and Peasant—Overture (Fr. v. Suppé). 9.20 p.m.—General News Bulletin and Announcements. 9.45 p.m.—Concert by the Max Fähler Orchestra, relayed from the Café Arcadia, Munich. 11.0 p.m. (approx.)—Close Down.

PARIS (France)

Eiffel Tower (FL). 113.2 kc (2,650 m.); 12 kw. 7.56 a.m.—Time Signal on 9,231 kc (32.5 m.). 9.26 a.m.—Time Signal on 113.2 kc 5.0 p.m.—"Pasdoulap" Concert. 7.10 p.m.—Weather Forecast. 7.30 p.m.—"Le Journal Parlé." At 7.56 p.m.: Time Signal on 9,231 kc (32.5 m.). 10.26 p.m.—Time Signal on 113.2 kc.

PARIS (France)

Petit Parisien. 882.3 kc (340 m.) 0.5 kw. 8.45 p.m.—Programme of Gramophone Selections. 8.50 p.m. (approx.)—Talk. 8.55 p.m. (approx.)—News and Announcements. 9.0 p.m.—Concert, with the collaboration of Artists from the Opéra and Opéra-Comique, 1. "La Fille de Figaro"—Overture (Leroux). 2. Fantasia on "Miss Decima" (Audran). 9.25 p.m.—Press News and Announcements. 9.30 p.m.—Half-an-Hour of Symphony, under the direction of M. Estyle of the Conservatoire: 1. Suite funambulesque (H. Büsser). 2. Bourrée fantasque (Chabrier).

LEIPZIG (Germany)

Mitteldeutscher Rundfunk. 810.6 kc (366 m.); 4 kw. Relayed by Dresden, 1,088.2 kc (276 m.). Transmits at intervals from 9.5 a.m. 6.0 p.m.—Talk, "Psycho-Analysis." 6.30 p.m.—Talk, "A Musical Career." 7.0 p.m.—"A Winter Day." 9.0 p.m.—News, Sports Notes, Announcements, and Dance Music, from Voxhaus.

Programmes for Saturday.—(Cont.)

10.0 p.m.—News and Miscellaneous Information.
 10.2 p.m.—Orchestral Concert. Selection from "The Fair Maid of Perth" (Bizet). 2. Song of the Mill (Sylvio Lazzari). 3. Gaiety (Florent Schmitt).
 11.0 p.m. (approx.)—Close Down.

PARIS (France)
 Radio Paris (CFR). 169.9 kc (1,765 m.); 12 kw.
 Transmits at intervals from 6.45 a.m. to 6.45 p.m.—Musical Selections.
 7.30 p.m.—Piano Lesson.
 8.0 p.m.—Talk, "The Mentality of Naughty Children." Market Prices.
 8.15 p.m.—Concert, including Chamber Music and Dance Selections. News in the Intervals.

PITTSBURGH (U.S.A.)
 Westinghouse Electric (KDKA). 980 kc (306 m.); 25 kw. Relayed at intervals on 4,800 kc (62.5 m.).
 Transmits at intervals from 2.45 p.m. to 11.30 p.m.—Variety Programme of Music, Talks, Concerts, Time, and Weather Report, etc.
 4.15 a.m. Sun. (approx.)—Close Down.

SCHENECTADY (U.S.A.)
 General Electric Company (WGY). 791.5 kc (379 m.); 50 kw. Relayed by 2XAF, 9,554 kc (31.4 m.) from 11.0 p.m.
 11.45 a.m.—Physical Training—Setting-up Exercises.
 1.30 p.m.—"Cheerio!"—Talk and Musical Selections.
 4.15 p.m.—Radio Household Institute. Programme relayed from New York.
 4.55 p.m.—Time Signals.
 5.0 p.m.—Weather Forecast.
 5.30 p.m.—New York Stock Market Reports.
 3.45 p.m.—Weather Forecast.
 11.58 p.m.—Weather Forecast.
 12.0 (midnight)—Phil Spitalny's Musical Programme. Relayed from New York.
 12.30 a.m. (Sun.)—Musical Programme by the Orchestra of the Hotel Onondaga, Syracuse, N.Y.
 1.30 a.m.—Musical Programme. Relayed from New York.
 2.0 a.m.—Selections by the Male Octet. Programme relayed from New York.

2.30 a.m.—Selections by Mildred Hunt and the Marimba Orchestra.
 3.0 a.m.—"Lucky Strike" Programme. Relayed from New York.
 4.0 a.m.—Exact Time Signal.
 4.2 a.m.—Dance Music Programme by the Orchestra of the Hotel De Witt Clinton, Albany, N.Y.
 5.0 a.m. (approx.)—Close Down.

STOCKHOLM (Sweden)
 Radiotjänst (SASA). 660.15 kc (454 m.); 1.5 kw. Relayed by Eskilstuna on 1,208 kc (248 m.); Gäddede on 1,470 kc (204 m.); Göteborg, 720.3 kc (416 m.); Kalmar on 1,184.5 kc (253 m.); Karlstad on 1,361 kc (220 m.); Linköping on 600 kc (500 m.); Malmö on 1,149.87 kc (261 m.); Alotala on 219.9 kc (1,364 m.); Saffle on 1,190.35 kc (252 m.); Sundsvall on 540.45 kc (545 m.); and Uppsala on 600 kc (500 m.).
 Transmits at intervals from 11.30 a.m. to 6.45 p.m.—A Recital of Music written for Pianoforte, and rendered by Algot Haquinus. 1. Scherzo in F sharp major (Mendelssohn). 2. Etude in B minor (Mendelssohn). 3. Spring Song (Mendelssohn). 4. Nocturne in E major (Robert Schumann).
 7.0 p.m. (approx.)—A Programme of Cabaret Selections relayed from Malmö.
 8.0 p.m. (approx.)—Topical Talk.
 8.45 p.m.—Programme of Dance Music.
 11.0 p.m. (approx.)—Close Down.

TOULOUSE (France)
 Radiophonie du Midi. 772.25 kc (383 m.); 8 kw.
 12.30 p.m.—Meteorological Report, Market Prices List from the Municipality of Toulouse, and Regional Exchange Rates.
 12.45 p.m.—Concert. First Part. International Programme. Choral Selections. 1. Finale from the Second Act of "Aida" (Verdi). 2. Solveig's Song (Grieg). 3. Selection (Schubert). 4. La fête dans la maison du Coucou (Zimmer). 5. Flower of Heaven (Beethoven). 6. The Work of God (Beethoven).
 1.0 p.m.—Time Signal.
 1.5 p.m.—Concert. Second Part. Dance Melodies. 1. The Procession

of St. Barthélemy (Catala). 2. In the Woods (Perez Moya). 3. L'heure bleue (Poliansky). 4. La dernière amitié (Poliansky). 5. Side by Side (Woods). 6. The Yale Blues (Ellis).
 1.20 p.m.—Concert. Third Part. Selections from "Les Noces de Jeannette"—Opératta (Masse). 1. Jean's Aria. 2. Margot, lève ton sabot. 3. Song of the Nightingale.
 1.45 p.m.—Latest News Bulletin from the "Telegram," the "Express," and the "Midi Socialiste."
 2.0—8.0 p.m.—No Transmission.
 8.0 p.m.—Paris Market Quotations and Exchange Rates, Price of Corn, News communicated by the Fournier Agency and the Day's News Bulletin by the "Dispatch" and the "Petit Parisien."
 8.30 p.m.—Concert. First Part. Orchestral Programme of Marches. 1. Florida (Pujol). 2. El Cavalier Enamorat (Manen). 3. March from "Carmen" (Bizet). 4. Le chemin, libre (Latann). 5. The Gladiator's Farewell (Blankenburg). 6. The Entry of the Gladiator (Pueck). 7. Les petits grenadiers (Magnier). 8. Le Voltigeur (Parés). 9. Spirito marche (Forn). 10. March of Frederick the Great (Radecke).
 9.0 p.m.—Time Signal.
 9.5 p.m.—Concert. Second Part. Forty-Five Minutes of the Works of Ganne and Leoncavallo. 1. Orchestral Programme: (a) Extase (Ganne), (b) Selection from "I Pagliacci" (Leoncavallo), (c) Selection from "Hans the Flute Player" (Ganne), (d) Marche arabe (Ganne), (e) "Les Saltimbanques"—Overture (Ganne). 2. Selections from "I Pagliacci" (Leoncavallo): (a) Overture, (b) Prologue, (c) Choral Selections, in Italian, (d) Aria, (e) On with the Motley, (f) Povero Pagliaccio, (g) Intermezzo from the Second Act, (h) O Colombina. 3. Two Marches, with Vocal Accompaniment (Ganne): (a) La Marche Lorraine, (b) Le pere La Victoire.
 9.50 p.m.—Concert. Third Part. Programme of Tangos. 1. Marion (Holländer). 2. Moments équivoques (Holländer). 3. Al quines Noies (Pujol). 4. Tendre colloque (Vinale). 5. Plégaria (Bianco). 6. Cancionero (Buzon).

10.15 p.m.—The Day's Bulletin from North Africa.
 10.30 p.m. (approx.)—Close Down.
WARSAW (Poland)
 Polskie Radio. 270 kc (1,111 m.); 8 kw.
 10.56 a.m.—Time Signal.
 10.58 a.m. (approx.)—Relay of Chimes from the Church of Notre Dame, at Cracow.
 11.2 a.m. (approx.)—Aviation Bulletin.
 11.5 a.m. (approx.)—Meteorological Report.
 11.10 a.m.—2.0 p.m.—Temporary Close Down.
 2.0 p.m.—Meteorological Report and Forecast, and Finance Notes.
 2.20—2.45 p.m.—Silent Interval.
 2.45 p.m.—Government Announcements.
 3.0 p.m.—Concert of Gramophone Record Music.
 3.55—4.10 p.m.—Silent Interval.
 4.10 p.m.—Talk from the Series organised by the Ministry of Education, by Dr. St. Arnold: "The Present Position of Research into the Question of the Boundaries of Poland."
 4.35 p.m.—Talk, "The Life and History of the Polish Nation—Historical Reminiscences," by Prof. H. Moscicki.
 5.0 p.m.—Programme for the Children. Reading of Christmas Stories.
 6.0 p.m.—Miscellaneous Selections.
 6.20—6.30 p.m.—Silent Interval.
 6.30 p.m.—"Radio Chronique," by Dr. M. Stepovsky.
 6.56 p.m.—Time Signal.
 7.0 p.m.—Agricultural Report.
 7.5 p.m.—General News Bulletin and Announcements.
 7.30 p.m.—"Gipsy Love"—Opératta in Three Acts (Lehár), rendered by the Polskie Radio Station Orchestra, under the direction of W. Alszky; with the collaboration of S. Dobrowolska-Pavlovska, M. Makowiecka, Al. Wiesiel, and other Artistes. During the interval—Theatre Notes of the Week.
 9.0 p.m.—Aviation Bulletin and Meteorological Report.
 9.5 p.m.—General News Bulletin, Press Review, and Announcements.
 9.20 p.m.—Police Report and Sports Notes and Results.

9.30 p.m.—Relay of Dance Music Programme, by the Oaza, Band, under the direction of W. Roczniński, from the Oaza Restaurant, Warsaw.
 10.30 p.m. (approx.)—Close Down.
ZÜRICH (Switzerland)
 Radio-Genossenschaft. 510.85 kc (587 m.); 0.63 kw.
 11.30 a.m.—Relay of Time Signal.
 11.31 a.m.—Weather Report and Forecast.
 11.32 p.m.—Concert of Gramophone Records (Pt. 1).
 11.50 a.m.—Weather Report and Forecast, followed by the Latest News.
 12.0 p.m.—Concert of Gramophone Records (Pt. 2).
 12.35 p.m.—Weather Report and Forecast.
 12.37 p.m. (approx.)—Money Market and Exchange Quotations.
 2.0 p.m.—Book Reviews by Bera Herzog.
 3.0 p.m.—Concert by the Castellana Orchestra, relayed from the Carlton-Elite Hotel.
 4.15 p.m.—Concert by the Edelweiss Accordion Club of Zürich, under the direction of A. Sigg.
 4.45 p.m.—Meteorological Report.
 4.47 p.m. (approx.)—Swiss Agricultural Prices.
 5.0 p.m.—Selections from New Gramophone Records.
 6.0 p.m.—Chimes from the Zürich Churches.
 6.15 p.m.—Relay of Time Signal.
 6.16 p.m.—Weather Report and Forecast.
 6.17 p.m.—Concert by the Schein Orchestra. Humorous Recital by Rudolf Bernhard.
 7.15 p.m.—Concert of Items by Request by the Zürich Yodellers' Double Quartette, with the collaboration of the "Chromatic" Accordion Club of Zürich and the Provincial Orchestra "Echo von Bürgenstock."
 9.0 p.m.—Weather Report and Forecast, followed by the latest News and Press Notes from the Neue Züricher Zeitung.
 9.10 p.m.—Concert of Gramophone Dance Records.

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Stations in Order of Frequencies and Wavelengths

A List of Short Wave Stations will be found on another page. The Frequencies given in this List are based on the Latest Measurements available at the time of going to press, and Wavelengths are calculated to the nearest Metre taking a Velocity Factor of 300,000,000 Metres per Second.

EUROPE

Kc.	M.	Kc.	M.	Kc.	M.	Kc.	M.
75	4000-	735	408-Tallinn (Reval) (Estonia), 1.5 kw.	1105	271-Danzig, 0.7 kw. DAILY—10.0 a.m., Weather. 10.30 a.m., Concert. 1.15 p.m., Exchange Quotations. 3.0 p.m., Relays Königsberg.	1099	273 Kearny, N.J. (WLWL), 5 kw.
103.4	2900-13 kw.	739.75	405-Glasgow (S.S.C.), 1 kw.	1123	267-Lille (P.T.T.), 0.5 kw.	1099	275-Atlantic City, N.J. (WPG), 5 kw.
113.2	2650-Paris (Eiffel Tower) FL, 12 kw.	740	405-Salamanca (Spain), EAJ22, 0.3 kw. DAILY—10.30 p.m., Concert; 11.30 p.m., Dance Music.	1140	263-Kosice (Czechoslovakia), 2 kw.	1132	266-Milford, Kansas (KFKB), 5 kw.
118.8	2525-Berlin (Wolff's Bureau), Intermittent News during the day.	748	401-Cork (Irish Free State), 6CK, 1 kw.	1149.67	261Malmö (Sweden), 0.6 kw.	1140	263-Auburn, Ala. (WAPD), 5 kw.
150	2000 Kovno (Lithuania), 7kw.	749.6	400-Aix-la-Chapelle (Germany), 0.7 kw.	1149.87	261Hörby (Sweden), 10 kw. testing.	1162.7	258-Rochester, N.Y. (WHAM), 5 kw.
153.3	1950 Scheveningen Haven (Holland), 2.5 kw.	749.5	400-Madrid (Radio Espana) (EAJ2), 1 kw.	1178	255-Kiel (Germany), 0.7 kw. Relays Hamburg.	1162.7	258-Fort Wayne, Ind. (WOWO), 5 kw.
160.1	1870-Kosice (Czechoslovakia), 5 kw. DAILY—6.30—9.0 p.m.	749.75	400-Tammerfors (Finland). Relays Helsingfors, 0.5 kw.	1181	254-Rennes (France), 1.5 kw.	1171.8	256-Muscatein, Ia. (KTNT), 5 kw.
161.9	1852-Huizen (from 3.40 p.m. till closing down), 6.5 kw.	749.75	400-Plymouth (SPY), 0.13 kw.	1181	254-Linz (Austria), 0.5 kw. Relays Vienna from 2.45 p.m.	1171.8	256-Philadelphia, Pa. (WCAU), 5 kw.
164.2	1829-Norddeich (Germany). WEEKDAYS 12.0 mont., Weather Report.	750	400-Genoa (Italy), 1.2 kw. 12.15—1.30 p.m. and 8.15—11.0 p.m.	1184.5	253 Kalmar (Sweden), 0.2 kw. Relays Stockholm.	1181	254-Portland, Ore. (KEX), 2.5 kw.
165	1818-Angora (Turkey), 20 kw.	750	400-Bolzano (Italy), 0.2 kw.	1188.6	252-Cassel (Germany), 0.7 kw. Relays Frankfurt.	1181	254-State College, New Mex. (KOB), 10 kw.
169.9	1765-Paris (Radio-Paris) CFR, 12 kw.	750	400-San Sebastian (Spain) (EAJ8), 1 kw.	1190.35	252Bradford (ZLS), 0.13 kw. Transmits Leeds programmes.	1190	252-San Antonio, Tex. (WOAI), 5 kw.
178.9	1676 Kharkov Narkomopshtel (Russia), 15 kw.	750	400-Alesund (Norway), 0.35 kw.	1200	250 Oporto (Portugal).	1239.6	242-Miami Beach, Fla. (WIOD), 1 kw.
181.19	1649-Königswusterhausen (Zeesen), 20 kw.	751.8	399-Mont de Marsan (France), 1.5 kw.	1200.1	250 Münster (Germany), m.s. in Morse, 0.7 kw.	1250	240-Minneapolis, Minn. (WRHM), 1 kw.
192	1562-Dauntrey (5XX), 25 kw.	759.8	398-Hamburg (Germany), 4 kw.	1202	248-Eskilstuna (Sweden), 0.2 kw. Relays Stockholm.	1250	240-Boise, Idaho (KFAU), 1 kw.
199.46	1504Lahti (Finland), 20 kw.	772.25	388-Toulouse (France) (Rad. du Midi) 8 kw.	1220	246-Toulouse (France), PTT, 5 kw.	1260	238-Council Bluffs, Ia. (KOIL), 1 kw.
206.89	1450Moscow (Old Komintern) RAI, 40 kw. DAILY—2.0 p.m.	779.9	385-Manchester (ZYZ), 1 kw.	1224	245-Nice-Juan les Pins (France), 0.5 kw.	1294.1	232 San Antonio, Tex. (KTSB), 1 kw.
213.9	1364-Motala (Sweden), 20 kw. Relays Stockholm.	789.2	380-Stuttgart (Germany), 4 kw.	1228.75	244Trondheim (Norway).	1463.4	206-Mt. Vn. Hills, Wv. (WTFP), 10 kw.
240	1250-Königswusterhausen, 20 kw.	791.5	379-Leningrad (Russia), 4 kw.	1239.5	242-Nürnberg (Germany), 4 kw. Relays Munich.	1470	204-Chicago, Ill. (WHTT), 5 kw.
250	1200-Stamboul (Turkey), 20 kw.	800.5	375-Seville (Spain) (Union Radio), EAJ5, 1.5 kw.	1252	240 Viborg (Finland), 1.5 kw.	1470	204-Oklahoma City, Okla. (KFJF), 5 kw.
252	1190-Boden (Sweden), 2 kw.	800.5	374-Helsingfors (Finland), 0.8 kw., 9.0 a.m., Exchange Quotations. DAILY 5.0—8.0 p.m., Concert.	1255	239-Nîmes (France), 1 kw. DAILY from 8.45 p.m.	1470	204-Spokane, Wash. (KGA), 5 kw.
261.9	1153-Kalundborg (Denmark), 7.5 kw.	809.6	370-Bergen (Norway), 1 kw.	1256	239-Kiruna (Sweden), 0.25 kw. Relays Boden.	1477.8	203-Batavia, Ill. (WVOD), 5 kw.
261	1150-Ryvang (Denmark), 1 kw.	811	370-Paris (Radio LL), 0.5 kw. MONDAY, WEDNESDAY and FRIDAY—10.0 p.m., Concert.	1260	238-Bordeaux (France), 1.5 kw.	1477.8	203-Gainesville, Fla. (WRUF), 5 kw.
268.57	1117Novosibirsk (Russia) RA, 4 kw. 5.0 p.m.	819.6	366-Leipzig (Germany), 4 kw.	1269	236-Stettin (Germany). Relays Berlin, 0.7 kw.	1477.8	203-Chicago, Ill. (WJAZ), 5 kw.
270	1111-Warsaw (Poland), 8 kw.	830	361-London (ZLO), 2 kw.	1271	236-Orebro, 0.25 kw. Relays Stockholm.	1492.5	201-Nashville, Tenn. (WBWA), 5 kw.
273	1100-De Bilt (Holland). WEEKDAYS—8.15 p.m., Weather.	831.1	357-Graz (Austria), 0.5 kw. Usually relays Vienna.	1294.1	232 Radio Schaarbeck (Belgium), from 8.30 p.m.		
279.6	1073-Rostov-Don (Russia), 4kw. 3.10 p.m.	849.8	353-Cardiff (5WA), 1 kw.	1300	230-Boras (Sweden), 0.25 kw. Relays Göteborg.		
280	1071-Hilversum (Holland), 5 kw.	860	349-Prague (Czechoslovakia), 5 kw. DAILY—7.0 p.m., Concert.	1307	230-Helsingborg (Sweden), 0.2 kw. Relays Malmö.		
290.1	1034-Basle (Switzerland), 0.25 kw. DAILY from 7.30 p.m.	869.7	348-Barcelona (Spain) Radio Barcelona, EAJ1, 2 kw.	1310	229-Umea, 0.25 kw. Relays Stockholm.		
300	1000-Leningrad (Russia), 10 kw.	873.6	343-Posen (Poland), 1.5 kw.	1313	228-Biarritz (Cote d'Argent, France), 1.5 kw.		
344.8	870-Tiflis (Russia), 4 kw.	882.3	340-Paris (Petit Parisien), 0.5 kw.	1350	222-Strasbourg (France), 0.3 kw. TUESDAY and THURSDAY—9-11 p.m., Concert, Talk and News.		
357	841-Nijni Novgorod (Russia), 1.8 kw.	882.3	340-Huizen (Holland), 6.5 kw. (till 3.40 p.m.)	1361	220-Karlstad (Sweden), 0.25 kw. Relays Stockholm.		
387	775-Kiev (Russia), 1.2 kw.	889.9	337-Copenhagen, 1 kw.	1369.8	219-Flensburg (Germany), 1 kw.		
394.7	760-Geneva (Radio-Genève), 0.25 kw. WEEKDAYS—7.40 p.m., Concert and News.	895	335-Cadiz (Spain), 0.5 kw.	1380	217-Luxembourg, 0.25 kw.		
416.6	720-Ostersund (Sweden), 1 kw. Relays Sundsvall.	896.2	334-Naples (1NA), 1 kw.	1387	216-Halmstad (Sweden), 0.25 kw. Relays Malmö.		
441.1	680-Lausanne (Switzerland) HBZ, 0.6 kw. DAILY—8.0 p.m., Concert, Talk.	910.1	333-Reykjavik (Iceland), 0.5 kw.	1393	215-Uleaborg (Finland), 0.4 kw. Relays Helsingfors.		
510.85	587-Zurich (Switzerland), 0.6 kw.	910.1	330-Gleitwitz (Germany), 6 kw. Relays Breslau.	1470	204-Gävle (Sweden), 0.25 kw. Relays Stockholm.		
518.9	578-Ljubljana (Yugoslavia), 2.5 kw.	920.05	326-Bournemouth (6BM), 1 kw.	1481	202-Kristinehamn (Sweden), 0.25 kw. Relays Stockholm.		
520.1	577-Vienna (Stubenring) (Austria), 0.5 kw.	926	324-Almeria (Spain) EAJ18, 1 kw.	1492.5	201-Jönköping (Sweden), 0.25 kw. Relays Stockholm.		
522.2	574-Freiburg (Germany), 0.7 kw. Relays Stuttgart.	930.8	322-Breslau (Germany), 4 kw.	1500	200-Écamp (Radio). THURS., 10.30 p.m. to midnight.		
529.9	568-Cracow (Poland), 1 kw.	940	319-Dublin (2RN), 1 kw.	1530	196-Karlskrona (Sweden), 0.25 kw. Relays Stockholm.		
529.9	568-Augsburg (Germany), 0.7 kw. Relays Munich.	951.4	318-Falun (Sweden), 2 kw.	1600	187-Ornskoldsvik, 0.25 kw. Relays Sundsvall.		
530	566-Bloemendaal (Holland), 0.05 kw. SUNDAYS—9.40 a.m. and 4.40 p.m., Church Service.	951.5	315-Marseilles (P.T.T.), 0.5 kw. WEEKDAYS—9.0 p.m., Concert.	1899	158-Beziers (France), 0.6 kw.		
530	566-St. Michel (Finland), 0.1 kw.	960.6	312-Newcastle (5NO), 1 kw.	2885	104 Milan, Italy, 20 kw.		
530	566-Hamar (Norway), 1 kw. Relays Oslo.	968	310-Oviedo (Spain), 0.07 kw.				
539.95	556-Budapest (Hungary), 20 kw.	969.58	309-Zagreb (Yugoslavia), 0.35 kw. DAILY—7.0 p.m.				
544.85	547-Milan, 7 kw.	979.95	308-Belfast (2BF), 1 kw.				
540.45	545-Sundsvall (Sweden), 0.6 kw.	984	305-Björneborg (Finland), 0.7 kw. Relays Helsingfors.				
558.9	537-Munich (Germany), 4 kw.	989.75	303-Königsberg (Germany), 4 kw. DAILY—7.10 p.m. Concert.				
570	526-Riga (Latvia), 2 kw. DAILY—10.35 a.m. 11.0 a.m. and 5.0—8.30 p.m., Concert, News, Weather.	1001.2	300-Bratislava (Czechoslovakia), 0.5 kw.				
570	526-Riga (Latvia), 2 kw. DAILY—10.35 a.m. 11.0 a.m. and 5.0—8.30 p.m., Concert, News, Weather.	1001	299-Agen (France), 0.48 kw. TUES. and FRI.—10.30 p.m., Concert.				
570	526-Riga (Latvia), 2 kw. DAILY—10.35 a.m. 11.0 a.m. and 5.0—8.30 p.m., Concert, News, Weather.	1002	299-Paris (Radio Vitus), 2 kw. WED., FRI. and SUN. From 9.0 p.m.—10.45 p.m., Concert.				
570	526-Riga (Latvia), 2 kw. DAILY—10.35 a.m. 11.0 a.m. and 5.0—8.30 p.m., Concert, News, Weather.	1007.65	298-Hanover (Germany), 0.7 kw. Relays Hamburg.				
590.4	508-Brussels, 1 kw.	1009.65	297-Liverpool (6LV), 0.13 kw.				
599.5	506-Porsgrund (Norway), 0.7 kw. Relays Oslo.	1010	297-Varberg, 0.2 kw. Relays Göteborg.				
600	500-Tromsø (Norway), 0.1 kw.	1010	297-Jyväskylä (Finland), 0.1 kw. Relays Helsingfors.				
600	500-Aberdeen (2BD), 1 kw.	1019.5	294-Innsbruck (Austria), 0.5 kw. Relays Vienna.				
600	500-Uppsala (Sweden), 0.25 kw. Relays Stockholm.	1020	294-Hull (6KH), 0.13 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1020	294-Dundee (2DE), 0.13 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1020	294-Stoke (6ST), 0.13 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1020	294-Swansea (5SX), 0.13 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1020	294-Liège (Belgium), 0.2 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1020	294-Uddevalla (Sweden), 0.05 kw. Relays Göteborg.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1020	294-Uddevalla (Sweden), 0.05 kw. Relays Göteborg.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1033	290-Lyons (Radio-Lyon), 0.5 kw. WEEKDAYS—7.15 p.m., News. WEEKDAYS (except MON.), 7.45 p.m., Concert.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1040	288-Edinburgh (2EH), 0.35 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1044.1	287-Bordeaux (Lafayette), PTT, 1.5 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1048.9	286-Leeds (ZLS), 0.13 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1060.15	283Cologne (Germany), 4 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1068	281-Trollhättan (Sweden), 0.4 kw. Relays Göteborg.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1079.65	278Kaiserslautern (Germany), 0.25 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1080	278-Cardena EAJ16 (Spain), 1 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1083	277-Barcelona (Spain) (Radio Catalana), EAJ13, 1.5 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1088.2	276-Dresden (Germany), 0.7 kw. Relays Leipzig.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1090	275-Jakobstad (Finland).				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1090	275-Norrköping (Sweden), 0.2 kw. Relays Stockholm.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1090	275-Ghent (Belgium). SUN.—11.30 a.m. 12.30 p.m. THURS.—8.30 p.m. SAT.—6.30 p.m.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1099	273-Bremen (Germany), 0.7 kw. Relays Hamburg.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1099	273-Limoges (France), 1 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1100	273-Iludisvall, 0.15 kw. Relays Sundsvall.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1100	273-Sheffield (6FL), 0.13 kw.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.	1101	272-Klagenfurt (Austria), 0.5 kw. Relays Vienna.				
610	500-Linköping (Sweden), 0.25 kw. Relays Stockholm.						

CANADA

Kc.	M.	Kc.	M.
580	517-Toronto (CKCL), 0.5 kw.	580	517-Edmonton (CNRE), 0.5 kw.
580	517-Edmonton (CNRE), 0.5 kw.	690	435-Edmonton (CNRO), 0.5 kw.
690	435-Edmonton (CNRO), 0.5 kw.	690	435-Calgary (CFCN), 1.8 kw.
729.9	411-Montreal (CKAC), 1.2 kw.	729.9	411-Montreal (CNRM), 1.6 kw.
729.9	411-Montreal (CNRM), 1.6 kw.	729.9	411-Montreal (CFCE), 1.6 kw.
729.9	411-Montreal (CFCE), 1.6 kw.	729.9	411-Vancouver (CKCD), 1 kw.
841	357-Red Deer (CKLC), 1 kw.	841	357-Red Deer (CKLC), 1 kw.
841	357-Red Deer (CKLC), 1 kw.	841	357-Toronto (CNRT), 0.5 kw.
841	357-Toronto (CNRT), 0.5 kw.	842.1	357-Toronto (CFCF), 0.5 kw.
842.1	357-Toronto (CFCF), 0.5 kw.	911.8	329-Saskatoon (CNRS), 0.5 kw.
911.8	329-Saskatoon (CNRS), 0.5 kw.	960.6	312-Regina (CNRR), 0.5 kw.
960.6	312-Regina (CNRR), 0.5 kw.	960.6	312-Toronto (CKGW), 5 kw.
960.6	312-Toronto (CKGW), 5 kw.	960.6	312-Toronto (CFRL), 1 kw.

NORTH AFRICA

Kc.	M.	Kc.	M.
162	1850-Radio Carthage (Tunis) TNV, 2 kw.	720.6	416-Rabat (Morocco), 10 kw.
720.6	416-Rabat (Morocco), 10 kw.	846.7	354-Algiers (PIT), 2 kw. Concert, 6.10 p.m.
846.7	354-Algiers (PIT), 2 kw. Concert, 6.10 p.m.	984	305-Radio Casa-Blanca (Morocco), 2.5 kw.

EAST AFRICA

Kc.	M.	Kc.	M.
750	400-Nairobi (Kenya) (ZLO).		

SOUTH AFRICA

Kc.	M.	Kc.	M.
677.2	443-Johannesburg (JB), 10 kw.	738.9	406-Durban, 1.5 kw.
738.9	406-Durban, 1.5 kw.	815	368-Cape Town, 1.5 kw.

SOUTH AMERICA

Kc.	M.	Kc.	M.
750	400-Rio de Janeiro (SQAA), 1 kw.	789.2	380-Lima, Peru (OAZ), 6 kw.
789.2	380-Lima, Peru (OAZ), 6 kw.	821.9	365-San Paulo (SQAB), 1 kw.
821.9	365-San Paulo (SQAB), 1 kw.	1331.3	225-San Paulo (SQBO), 1 kw.

AUSTRALIA

Kc.	M.	Kc.</
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Cut out H.T. & L.T. Battery worries this way !

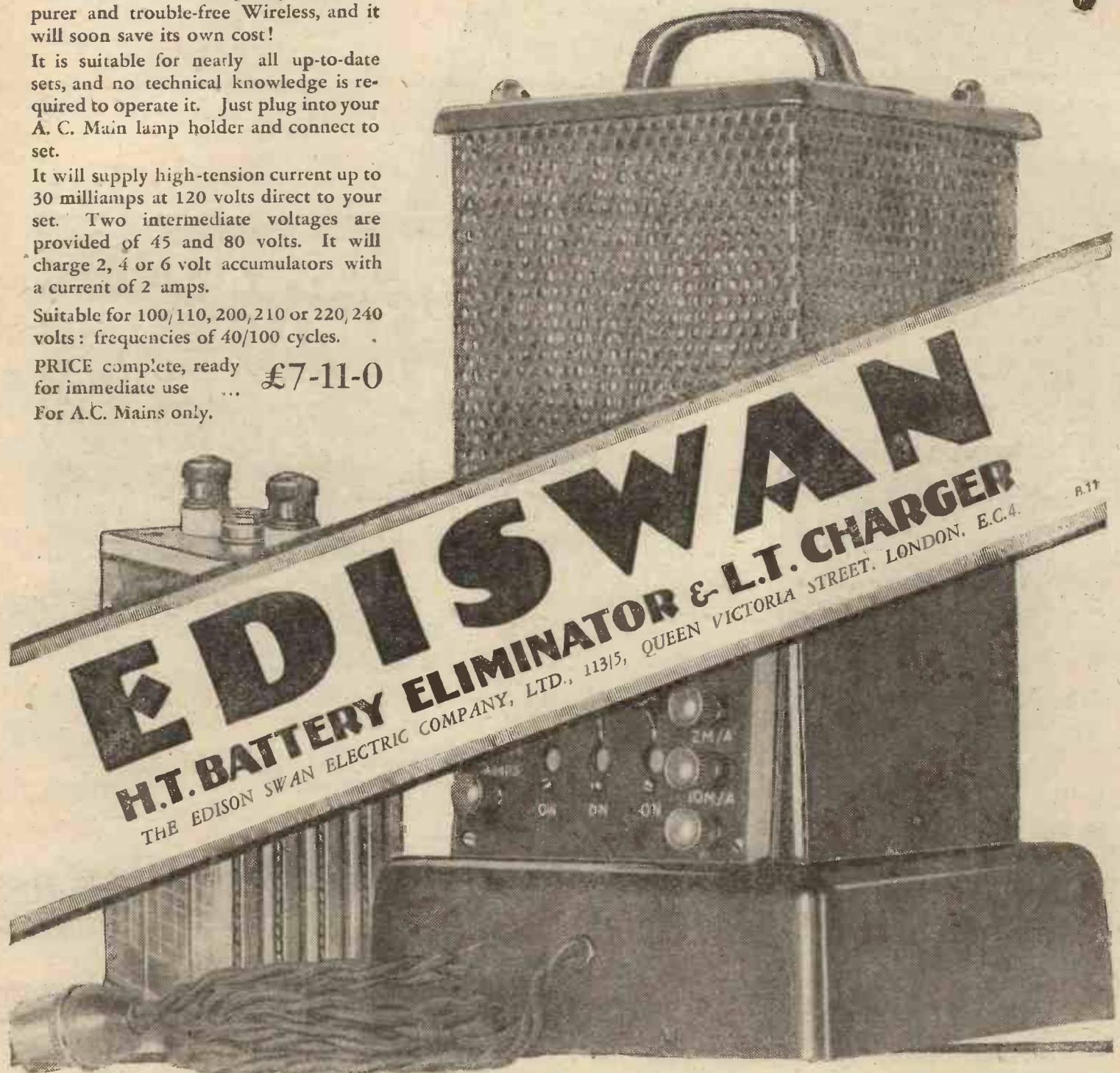
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Yours faithfully,

(Signed) A. G. Beger,
Secretary.



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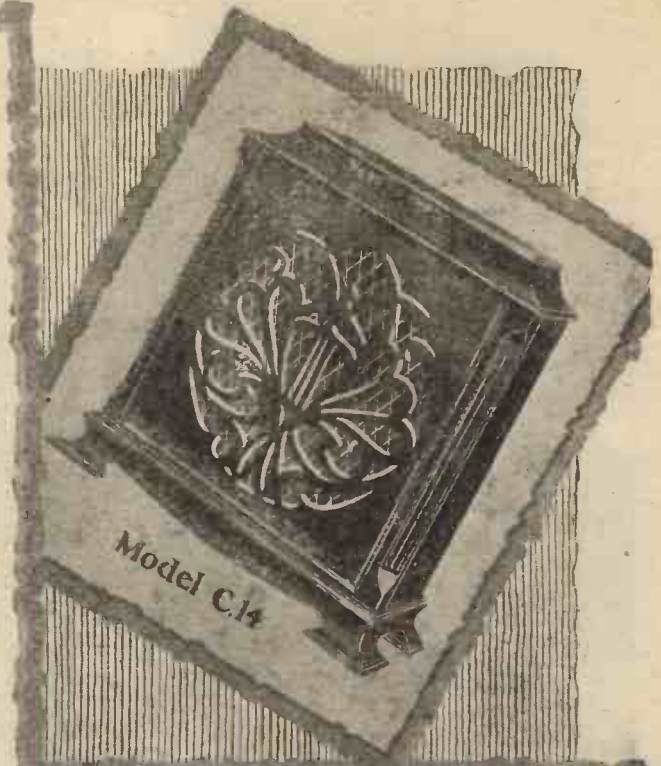
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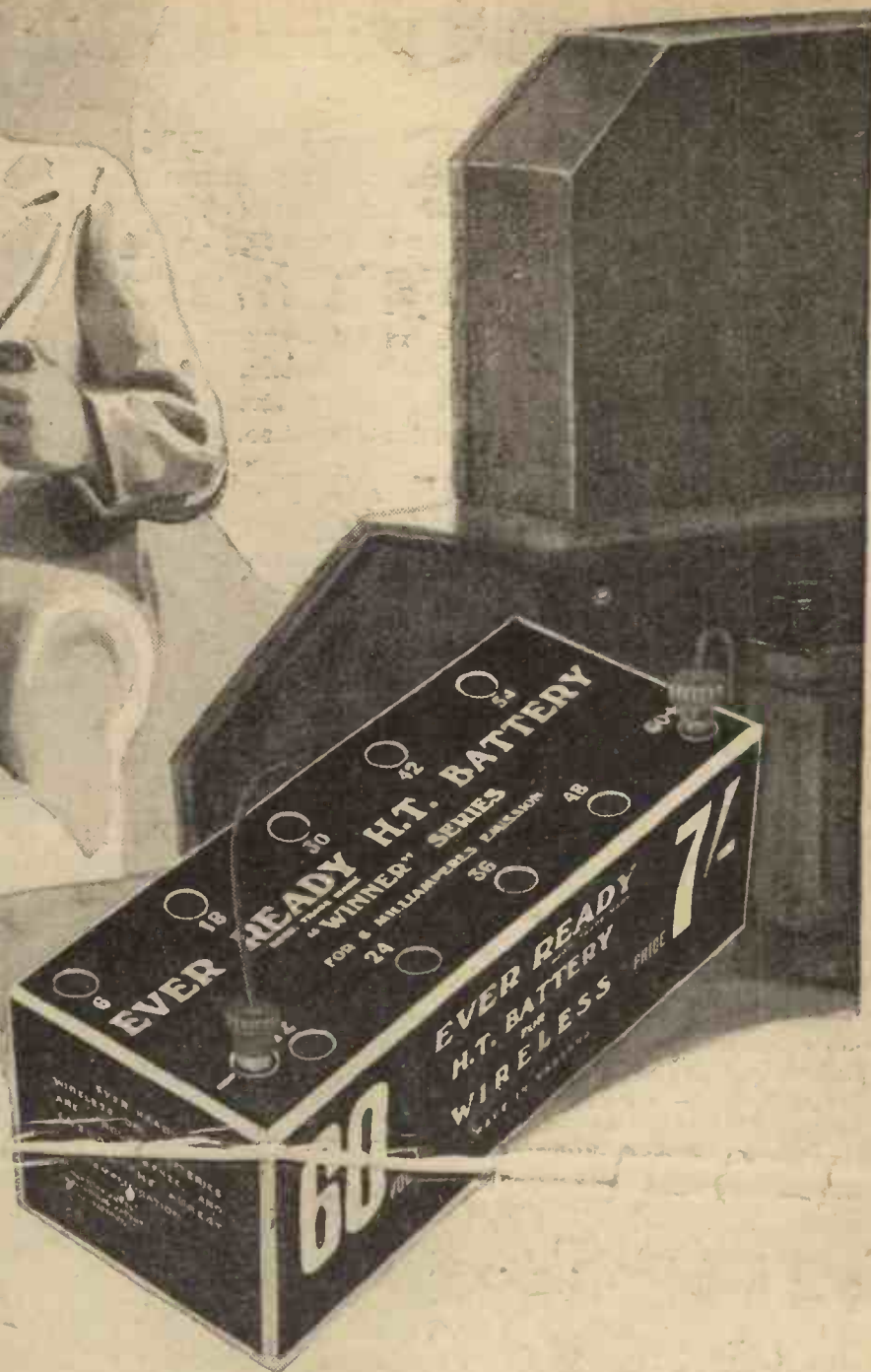


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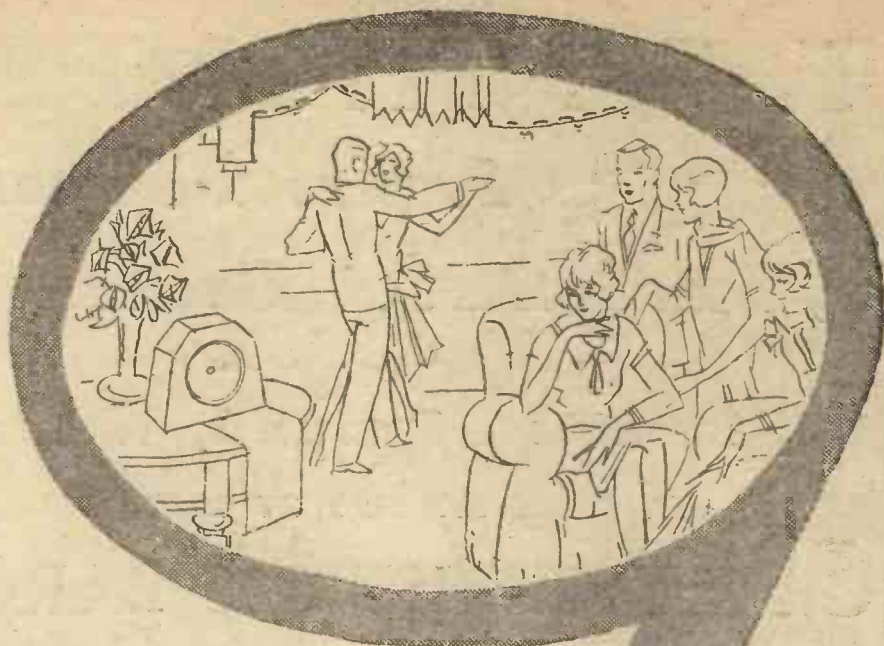
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Transmitting Valves. All various sizes, by same makers, 5/- each; post 4d.

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M.K.111 3-Valve Amplifiers, containing 4 high grade transformers, etc., to take standard valves. Cost £8; to clear, 30/- each, post 1/-.

"Blue Spot" Cone Loud Speaker Units. Latest model, type 66 K. adjustable. Bargain price 19.3; post 9d.

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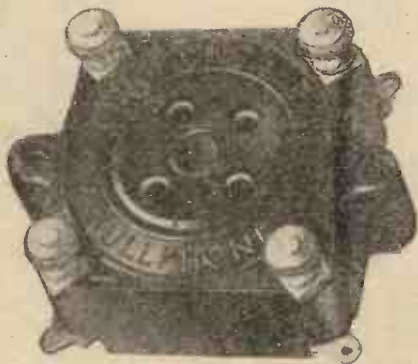
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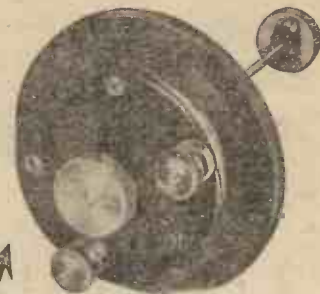
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 Sold by all Wireless Dealers.

Extra Quality - without extra cost

Good Idea A set of **OSRAM VALVES** as a gift

Leadership!

ONE often sees this much-abused word used in connection with products which are, after all, very ordinary and usual.

The Tudor Accumulator Co., Ltd., however, claims definite leadership in the wireless battery field.

Tudor was

- FIRST with Monobloc H.T. units incorporating intercell glass ribs and exposed connectors to eliminate leakage.
- FIRST with a 6 volt low tension battery of Monobloc glass construction.
- FIRST with 5 m/m (more than 3/16") positive plates, standardised four years ago in TUDOR cells, and
- FIRST with non-corrosive grease chamber terminals, standardised four years ago on Tudor cells.

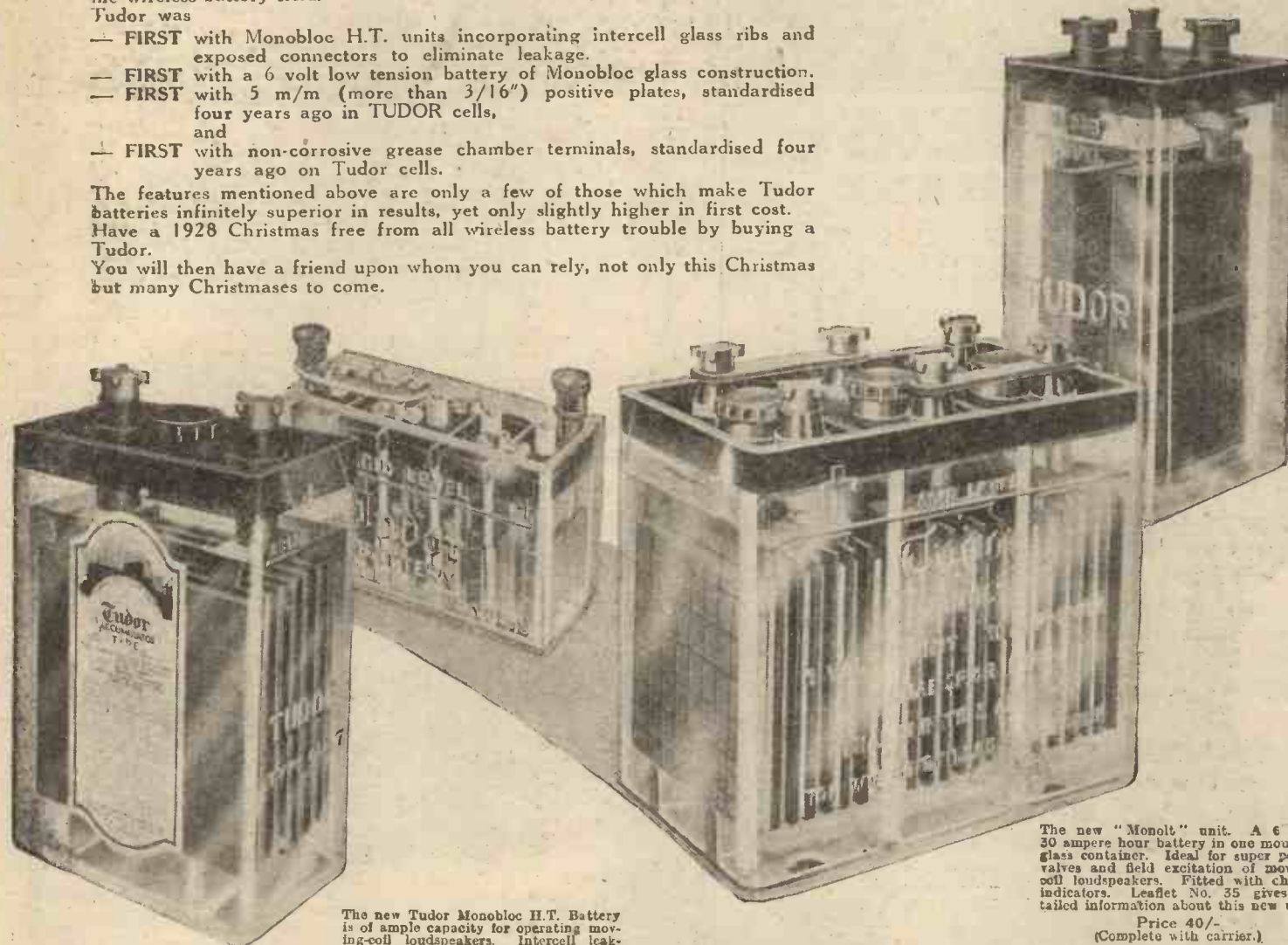
The features mentioned above are only a few of those which make Tudor batteries infinitely superior in results, yet only slightly higher in first cost.

Have a 1928 Christmas free from all wireless battery trouble by buying a Tudor.

You will then have a friend upon whom you can rely, not only this Christmas but many Christmases to come.

A Tudor slow discharge cell specially constructed for use with low consumption valves. 2 volt 20 ampere hours. Leaflet No. 33 describes it fully.

Price (Dry Charged) 4/6.
(45 ampere hour capacity) 8/6.



The new Tudor Monobloc H.T. Battery is of ample capacity for operating moving-coil loudspeakers. Intercell leakage has definitely been overcome, and, in consequence, the battery holds its charge and will maintain full voltage and capacity over a very long period. Leaflet No. 30 explains why the 5 H.T.1 unit with a comparatively small nominal capacity gives such remarkably long service.

Price 7/6 (Dry Charged).
Double capacity, 10/-.

The new "Monolt" unit. A 6 volt 30 ampere hour battery in one moulded glass container. Ideal for super power valves and field excitation of moving-coil loudspeakers. Fitted with charge indicators. Leaflet No. 35 gives detailed information about this new unit.

Price 40/-
(Complete with carrier.)

One of the new series of Tudor low-tension cells in glass containers, fitted with charge indicators. The CLH7 cell, 9 volt 30 ampere hours actual. Write for Leaflet No. 24, which gives a full description of all Tudor low-tension accumulators.

Price (Dry Charged) 13/6.
Other capacities from 10 to 60 ampere hours.

ESTABLISHED IN PUBLIC SERVICE

Tudor

ACCUMULATORS

Announcement by the Tudor Accumulator Co., Ltd., 2, Norfolk Street, Strand, W.C.2.



DOMINATING THE RADIO WORLD

THE ONLY METER THAT DOES THE WORK OF THREE!

THIS wonderful meter has provided conclusive proof of its amazing efficiency and range of usefulness. It is now selling as never before, and is the one essential possession of every radio user. It gives the three essential readings direct from one clearly engraved dial. Without it perfect set control is impossible. The Wates Meter does all you want. It has caused a complete revision of all existing standards of meter value. Ask your dealer to supply, or you can obtain direct. Write for interesting descriptive leaflet from Dept. W.R.

Stocked by Halford's Stores, Curry's Stores, and all Radio dealers.

THE STANDARD WET BATTERY CO.

(The Wet H.T. Battery Co.),

DEPT. W.R.

184-188 Shaftesbury Avenue (near New Oxford Street end), London, W.C. 2.

READINGS:

- 0-150 volts.
- 0-6 volts.
- 0-30 milliamps.
- 5,000 ohms Res.

PRICE

8'6

Dead-beat movement, crystallised black finish.

WATES "three in one" VOLT-AMP RADIO TEST METER



PERFECT CONTACT is essential to PERFECT RECEPTION GET IT THROUGH CLIX



CLIX PIN TERMINALS

For 'phone or loud-speaker connections, the Clix Pin Terminal is the most simple and effective method to use. The Clix patented method of wiring is most convenient, ensures safety, and gives a perfect, permanent contact.

PRICE 2d. EACH.



CLIX PARALLEL PLUGS

These well designed Parallel Plugs embody the Clix patent resilient principle which ensures quick yet sure contact with all valve sockets and the Clix Parallel Sockets.

PRICE 2d. EACH.



CLIX SPADE TERMINALS

bury all contact troubles and are the safest and surest method of terminating battery leads. There is NO exposed wire to cause shorts. Obtainable in two sizes for all types of screw terminals. Made of best brass and highly plated. A special lead-plated type is also obtainable and is recommended for use with accumulators.

PRICE 2d. EACH.



CLIX POWER PLUG & SOCKET

A strong reliable fitment giving full protection from shorts and shocks when using the Mains for Battery Eliminators, Chargers, etc.

PRICE 6d. COMPLETE UNIT. (Including Socket Insulating Bush.)

[Patented.]

CLIX-LOX

There is no risk of burn-outs or shorts if you use the Clix-Lox Wander-Plug. It is adjustable and will fit the socket of any H.T. Battery. One turn of the insulator gives perfect contact and another locks it securely in position.

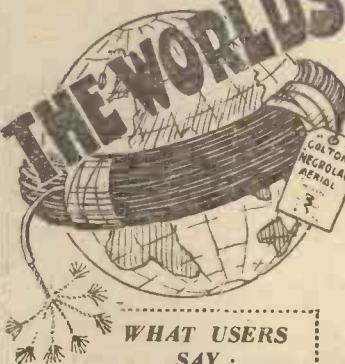
PRICE 2½d. EACH.



LECTRO LINX LTD.,

254, Vauxhall Bridge Road, London, S.W. 1.

"GOLTONE" NEGROLAC REGISTERED THE WORLDS BEST AERIAL



Do you wish to increase the efficiency of your receiving set 25%? Bring in long distance stations hitherto unobtainable without the aid of extra valves?

Add volume, clarity and selectivity to your set?

This is the experience of users of "NEGROLAC" Aerial.

Your set is capable of far better results.

Let us send you pamphlet giving extracts from technical reports, testimonials, and full particulars, with sample.

A dealer writes: "My customer states that he received 20 extra foreign stations with your famous 'NEGROLAC' Aerial Wire."

PRICES: Coils of 50ft., 9/-; 80ft., 15/-; 100ft., 18/-.

From all first-class Radio Stores.

Refuse substitutes.

If any difficulty, write direct.

Sample and full particulars on request.



London Depot: 5 & 6, Eden Street, Hampstead Road, N.W. 1.

Phone: Museum 2492/3.

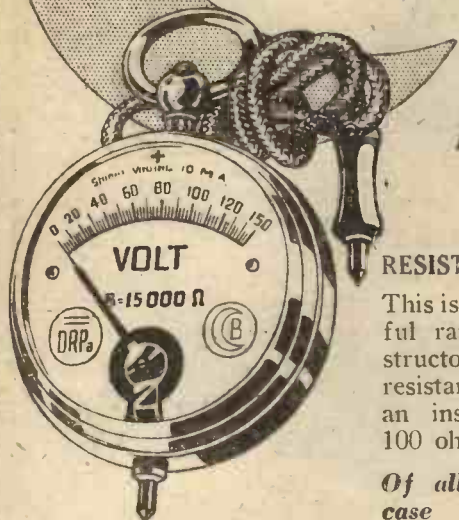
WHAT USERS SAY:

Mr. J. E. M., Pentre, WREXHAM, DENBS, writes: "I think it is just wonderful—the results are simply amazing. It has improved my 3-valve set 100 per cent. All stations come in now so much purer, and certainly they are nearer to one."

Mr. R. O. E., Bontddu, DOLGELLY: "Some five months back I purchased one of your 'Negrolac' aerials, which has given some remarkable results. 'Negrolac' has improved my set at least 75 per cent. over other aerials."

Mr. S. H. H., TROWBRIDGE, writes: "Really the result is simply marvellous, and all that have heard my set since putting the aerial up think it splendid. I shall do all I can to introduce your 'Negrolac' Aerial to my friends."

The **CRESCENT**
trade mark
on a
Popular Priced
VOLT-METER



1 to
150
VOLTS
at
7'3

RESISTANCE 15000 OHMS.

This is a voltmeter with a useful range for amateur constructors—and the highest resistance so far recorded for an instrument of its kind, 100 ohms per volt!

Of all radio dealers. In case of difficulty, write

LOUIS HOLZMAN,

34, Kingsway, London, W.C. 2.

Price 17/6

THE LATEST SCIENTIFIC
DISCOVERY IN CONE
UNITS

BRITISH MADE.

Moving Coil
Reproduction for
any set.



The Lassophone Triangle Double Reed Fork Cone Unit is a triumph of British inventive genius and workmanship. Reproduces all frequencies equal to a Moving Coil Speaker. Guaranteed not to overload on the most powerful set, and sensitive enough to work on a two valve set. If your dealer cannot supply send P.O. for 17/6 direct and we will forward by return.

THE
LASSOPHON
TRIANGLE DOUBLE REED CONE UNIT

Manufactured by:

H. H. LASSMAN, F.R.A., A.M.I.R.E.,
429, Barking Road, East Ham, E. 6.

M.B.

BLUE-SPOT USERS!

Get the Floating Cone that makes a perfect Loud Speaker in 5 minutes — TO-DAY!

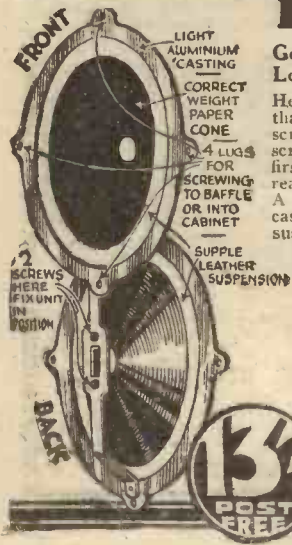
Here's the efficient, completely assembled Floating Cone that Blue-Spot users have always wanted. Simply two screws and the unit is in place—and the whole ready to screw on to a baffle board or into a cabinet, making a first-class loud speaker that will reproduce with fascinating realism at infinitesimal cost.

A sound job, too, perfectly assembled—light aluminium casting, correct weight paper cone, supple leather suspension, post paid and ready for fixing at once.

. GILMAN'S .
FLOATING CONE

Send P.O. for 13/- to-day to Manufacturers:
J. S. GILMAN, Portland House,
73, Basinghall Street, E.C. 2.

Orders in strict rotation. "Blue-Spot" unit (adjustable type 66K) supplied at 25/- extra if desired.



OR FROM YOUR DEALER

RADIO'S NEWEST
SENSATION



The pick of Europe's Stations — as surely as though you held the control strings —

At last Sifam has entered the field of set manufacturers and has thrown down a challenge that is not to be denied. The appearance of the Sifam Trisodyne Four signals a new and amazing star performer amongst the sets of the day. Distance has been given an entirely new meaning. The Sifam Trisodyne gives all European broadcast—and beyond on a frame aerial—ease and sheer simplicity of handling, and results that outperform a Super-Heterodyne. A special patented circuit incorporating the Isodyne Frequency change gives special selectivity and an exceptional quality of reception that must be heard to be believed. Continental stations come in just as surely as though you yourself held the control strings. It gives purity—yet more than purity, and a performance more than you have ever been led to expect from Radio Receivers of its class. Fill in the coupon at foot and post for complete details and description of this amazing new set—NOW.

At the price of 22 guineas the Sifam Trisodyne Four does more than any other receiver to convince you that super-performance and simplicity of control is at last within the reach of the everyday listener.



TRISODYNE FOUR
EUROPE & BEYOND
ON A FRAME
AERIAL

Cut out and post to
The Sifam Electrical Instrument Co., Ltd.,
Dept. W.R., Bush House, Aldwych, W.C. 2.
Please send me entirely without obligation full details of the new Sifam Trisodyne Four.

Name _____
Address _____

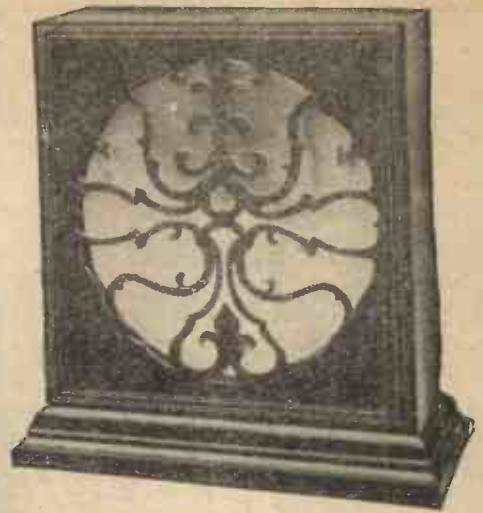
Here is the key that opens the door to Radio's Newest Sensation — the Sifam Trisodyne.

M.B.



**NO OTHER SPEAKER
IN THE WORLD
GIVES BETTER RESULTS
OFF A 2-VALVE SET
THAN THE NEW
M.P.A
DUAL INDUCTANCE**

and it is the finest "speaker" value you can possibly buy. A speaker built on the moving coil principle which requires neither accumulators, mains connections, special valves, nor transformers! A self-energising model exclusive to M.P.A. ! More sensitive than a magnetic movement, yet uses no more H.T. voltage than an ordinary loudspeaker! Low notes without a boom! High notes without shrillness! Every part balanced and in perfect unison! Speech excellent! "It gets the best from your set." Ask for the M.P.A. DUAL INDUCTANCE SPEAKER. Price 7 guineas.



Other M.P.A. Models include the Popular Plaque, 29'6; De Luxe Plaque, 47'6; Table Grand Speaker, 5 guineas; Table Cabinet Speaker, £4,17,6; Moving Coil Speakers, from 10 guineas; and the "Octroda" 8-Electrode Self-Contained Stationary Set, 12 and 17 guineas. For Irish Free State prices write Brown Bros. (Ireland), Lower Abbey St., Dublin, C.8. All Wireless Dealers stock M.P.A. Products.



THE M.P.A. WAY
Products to the value of £5 or over can be obtained on Hire Purchase Terms for £1 down.

DEPT. 6, M.P.A WIRELESS LTD., 62, CONDUIT ST., LONDON, W.1. TEL. GERRARD 6844-8

PERFORMANCE and DURABILITY



Model D.C.10, for direct Current 200/250 volts. A thoroughly efficient and further refined Model, giving one variable tapping of 0-100 and a fixed tapping of 120 volts. Max. Output 20 m/A. Price £3.15.0.



Model A.C.18, for Alternating Current 200/250 volts, 30/120 cycles, specially suitable for the Cossor "Melody Maker" and Mullard Master 3 Sets. Price, including one half-wave rectifying valve and royalty, £4.17.6. 7/6 extra for full-wave rectifying valve.

Performance and durability in working is the keynote to the success of Clarke's "ATLAS" Battery Eliminators. Each model is beautifully finished and British to the last screw. They comply with the I.E.E. Regulations and are backed by the "ATLAS" Guarantee.

There is a model to meet every need and purse, the upkeep cost is nil and the current consumed even in the largest model is negligible.

Clarke's "ATLAS" Eliminators incorporate the Series Anode Feed System, first used by us years ago. All Hum and Motor Boating is obviated.

**CLARKE'S
ATLAS
BATTERY ELIMINATORS.**

Send now for beautifully illustrated Brochure No. 32, which gives full particulars and range of "ATLAS" Battery Eliminators, post free from the sole makers.

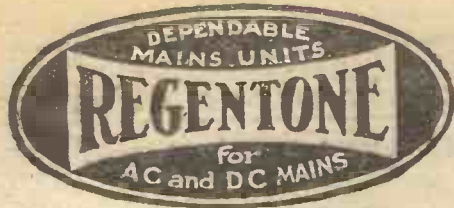


Model D.C.18, for Direct Current 200/250 volts. A popular model guaranteed to work any three-valve and most four-valve sets. Max. Output 15 m/A. Price £1.17.6.



Model D.C.26, for Direct Current 200/250 volts. This model is recommended for sets using Super-Power Valves. Max. Output 50 m/A. Price £5.15.0.

H. CLARKE & CO. (M/CR) LTD., "ATLAS" Works, Old Trafford, Manchester.



for you and your friends
this Christmas

The following is from
a trader:—

“It is a splendid in-
“strument, absolutely
“silent in operation
“and of the highest
“efficiency. I have no
“hesitation in recom-
“mending the ‘Regen-
“tone’ Unit to anyone
“who wants ‘The
“Best.’”



Model W.1a for A.C. Mains
160 v. at 30 m/a.

£7 2 6

Other models available up
to 350 v. at 100 m/a.

All A.C. Models incor-
porate Westinghouse Metal
Rectifier.

Permanent Charger with
Automatic Coupler.

½ amp. - - 54/-
1 amp. - - 70/-

Incorporating Westinghouse
Metal Rectifier.

**SATISFIED USERS ARE
OUR ONLY SALESMEN**

Advt. of Regent Radio Supply Coy., 21, Bartlett's Buildings, E.C. 4.

YOU CAN BANISH BATTERY TROUBLES—FOREVER.



HIGH TENSION AT EVEN TENSION

HOW ‘CONSTANT POWER PRESSURE’
MAKES AMAZING IMPROVEMENT IN
RECEPTION.

Ask any Standard Wet H.T. Battery user. He will tell you the purity of tone and complete absence of background noise is astonishing. Yet the explanation is simple. The flow of current from this highly efficient battery is absolutely steady, smooth and uniform. Hours of daily service for months on end does not show any violent variation in voltage. The secret is—it recharges itself overnight.

GET YOUR COPY OF THIS FREE BOOK.
Take the first step by sending for free booklet describing everything about these super-efficient and money-saving batteries. Can be used in series with your present battery or accumulator until they run down.

STANDARD



The Vital Power in Radio!

THE STANDARD WET BATTERY CO.
(Dept. W.R.). Head Offices, Showrooms and Ware-
house, 184-188, Shaftesbury Avenue (near New
Oxford Street end), London, W.C.2.

96 VOLT

“UNIBLOC” CABINET H.T. BATTERY



complete with 64
No. 2 cells ready
for use. 8/1 down
and five monthly
payments of 8/1, or
cash price £2.6.6.
NO DEPOSIT. NO
REFERENCES.
HALFORD'S
CYCLE STORES,
CURRY'S STORES
and all Radio Dealers can supply on the same
deferred terms as above. WOOLWORTH'S
STOCK 6d. units. IMPORTANT: See the
name STANDARD on every jar.

**8/1
DOWN**

M.B.

TAYLEX—H.T. for DISTANCE

**LONG LIFE
SILENT
DEPENDABLE**

Ideal for Multi-Valve receivers.
No. 3 Sac for PENTODE.



**NO RE-CHARGING
NO ATTENTION**

BOOKLET FREE
with illus.



Per dozen.	No. 1	No. 2
Jars (waxed)	1 3 1 0	s. d. s. d.
Sacs, No. 1	1 2 2 2	
Zincs	0 11 1 0	
Terminals (slip on)	0 8 0 10	
Size of Jars.		
No. 1	2 3/4 x 1 1/2 Sq.	
No. 2	2 3/4 x 1 5/8 Sq.	

Solve all H.T. Troubles. No charging. Long Life, absolutely silent, give ample output for sets of all sizes. Power Valves can be used without any disturbing thought of Battery expense, require no attention. If changeable terminals used no soldering needed. Complete cells can be supplied ready assembled. Carriage free, orders value 10/-.

Popular Sizes: Complete for use, suit any set.
60 cell, 90 volts, No. 1 Sac £1 1 6 No. 2 Sac £1 8 2
84 cell, 126 volts, No. 1 Sac £1 9 9 No. 2 Sac £1 19 1
Tray 7/-, or Hinged Lid Cabinet 12/-.

If terminals required, add 8d. per dozen cells extra.
WRITE FOR WIRELESS BARGAIN LIST.
Amplifiers, 30/-, 3 valve all-station set, £5.
SAMPLE dozen cells (18 volts) complete with insulation bands, electrolyte and full instructions, No. 1 4/3, No. 2 5/9, post 9d. (or C.O.D.). Sample unit, 6d.

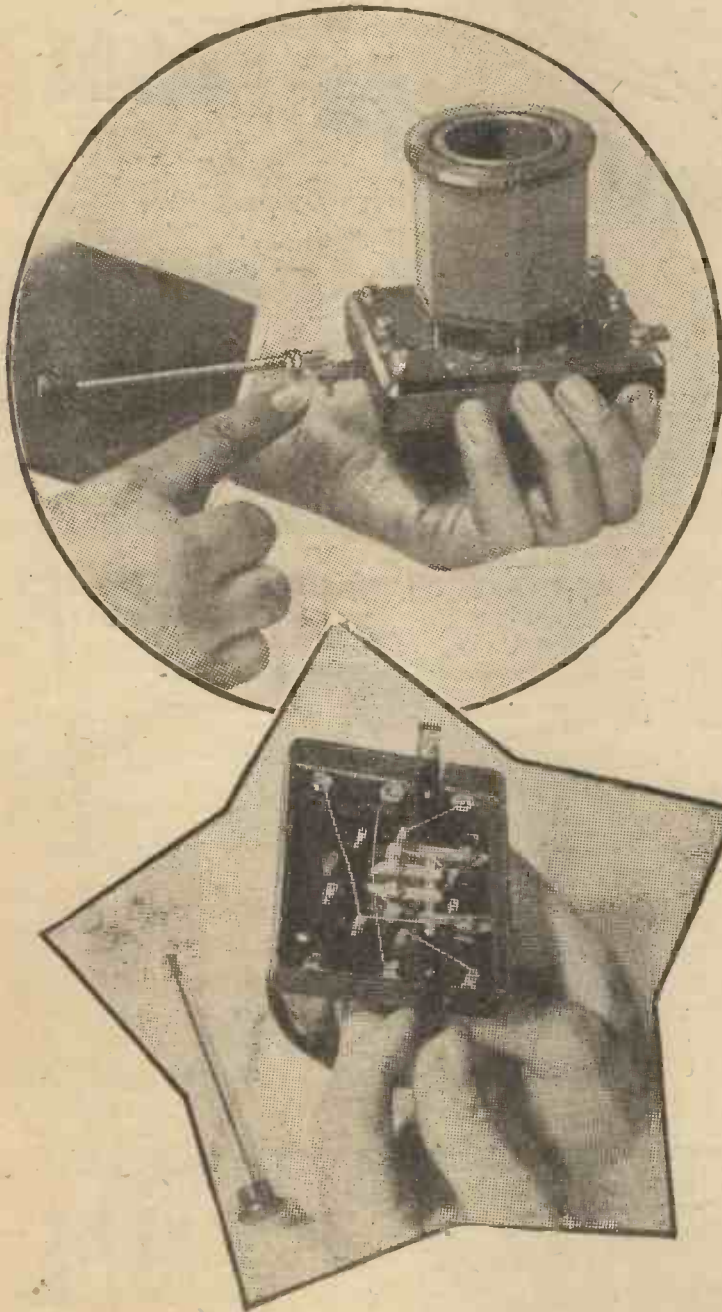
S. TAYLOR, 57, Studley Road, Stockwell, London.

*The Magazine which is a Programme
The Programme which is a Magazine*

THE RADIO TIMES

2D.
Every
Friday

Full Programmes from all Stations
—Music Notes—Sports Features
—All about the people who
broadcast — Articles — Stories —
Verse. On sale at all newsagents.



Specified for the new Master 3*

The Colvern Combined Wave Coil gives selectivity and volume

THE fact that coil-changing is dispensed with in The New Mullard Master Three is the outcome of the specially designed Colvern Combined Wave Coil specified. Its high efficiency is entirely due to skilful manufacture on the one hand and efficient design on the other.

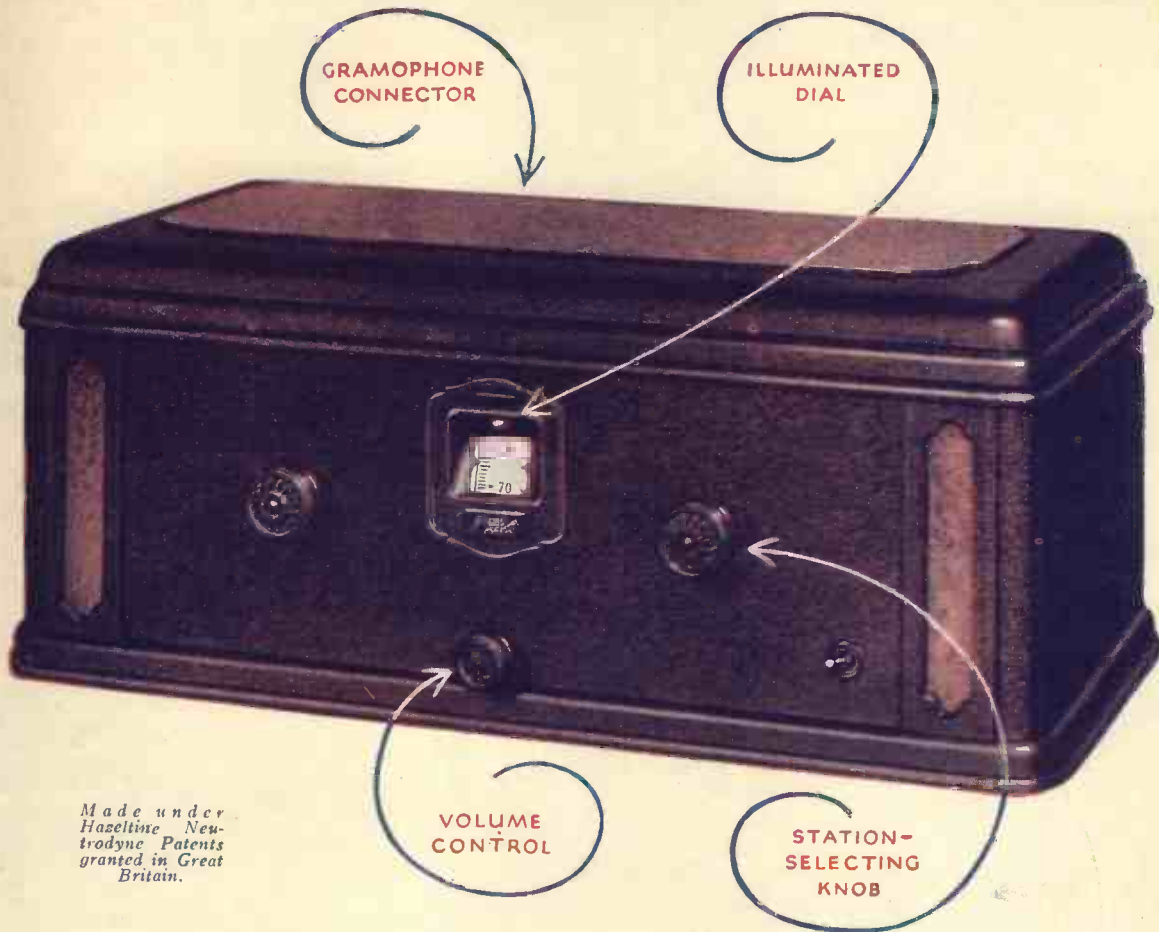
Each coil is tested before despatch in a duplicate New Master Three Receiver in order to ensure that it functions exactly in conformity with that used in the original receiver. This is your safeguard, and you are advised to adhere to the author's **17/6** specification.

COLVERN

ACCURATE SPACE WOUND COILS

Advertisement of Colvern Ltd., Romford, Essex.

A Real Christmas Present!



Made under
Hasetime Neu-
trodyne Patents
granted in Great
Britain.

The All-Electric 6-Valve SELF-CONTAINED

FADA "10"!

NO Batteries! Just plug in to your light or power supply*—and listen! Select the station you want by simply turning one knob. One more knob controls the volume from a whisper to concert strength. Wonderful tonal quality—microscopic selectivity — all - Europe range (200-600 metres) — ABSOLUTE RELIABILITY **£25**

VALVES EXTRA.

* Alternating Current only.

FADA

Radio Ltd.

31, KINGSWAY, LONDON, W.C.2.

FADA TWO-UNIT ALL-ELECTRICS



The 2-unit All-Electric Six, in Mahogany Cabinet. Ready to plug in.

(VALVES EXTRA) **£20**



The 2-unit All - Electric Seven, with Frame Aerial (needs no earth).

(VALVES EXTRA) **£40**



The All-Electric Seven in Console Cabinet, with Frame Aerial.

(VALVES EXTRA) **£70**

"THE STANDARD OF RECEPTION"



The Experts



The Valve with
the wonderful
Mullard P.M. filament.

Mullard

THE · MASTER · VALVE

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Arks.