

WORLD RADIO



C
H
R
I
S
T
M
A
S

1930

• THE B.B.C. •

YEAR BOOK



• 1931

NEW

touching every aspect
of broadcasting
the humour,
the impressiveness,
the technique of
reception and
transmission, the
achievements
and the hopes.

464 pages, strongly bound • beautifully illustrated with
photographs and drawings.

of all booksellers, newsagents, bookstalls, everywhere

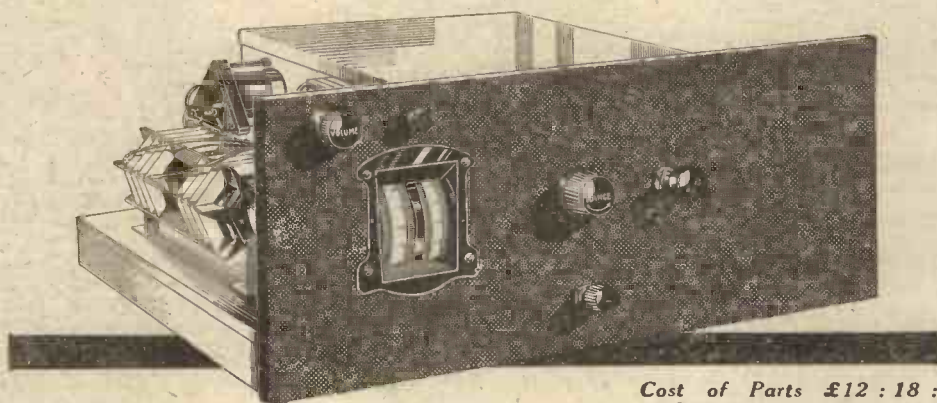
PRICE 2s.

Get this free Chart

and



build a real Set



*Cost of Parts £12 : 18 : 3
excluding cabinet and batteries*

THIS SET is the 1931 edition of the FERRANTI famous Screened Grid Three. The finest Set ever put out in charted form for the home constructor.

The full scale drawings are clear and easy to follow, so that anyone who can drill a hole and drive a screw can build this receiver and secure results not equalled by any other home constructor's 3-valve Set.

This Set is a better Set because it has been designed by Radio technicians to combine the three essentials of good radio: 1st—Tone reproduction; 2nd—Great range and power; 3rd—Adequate selectivity. It is

better because each component employed is the best of its class and has been chosen with one object in view—the ultimate performance of the set.

It is better because every part is properly balanced and the very considerable amplification is adequately catered for in the output stage by a large power valve—P625 or similar—capable of handling the load.

Provision for Gramophone Pick-up.
NO SOLDERING.

Get the Chart now, order your parts before the rush starts, and make sure of having the Set in use for Christmas. Chart also available for the above Set, All-Electric.

FERRANTI

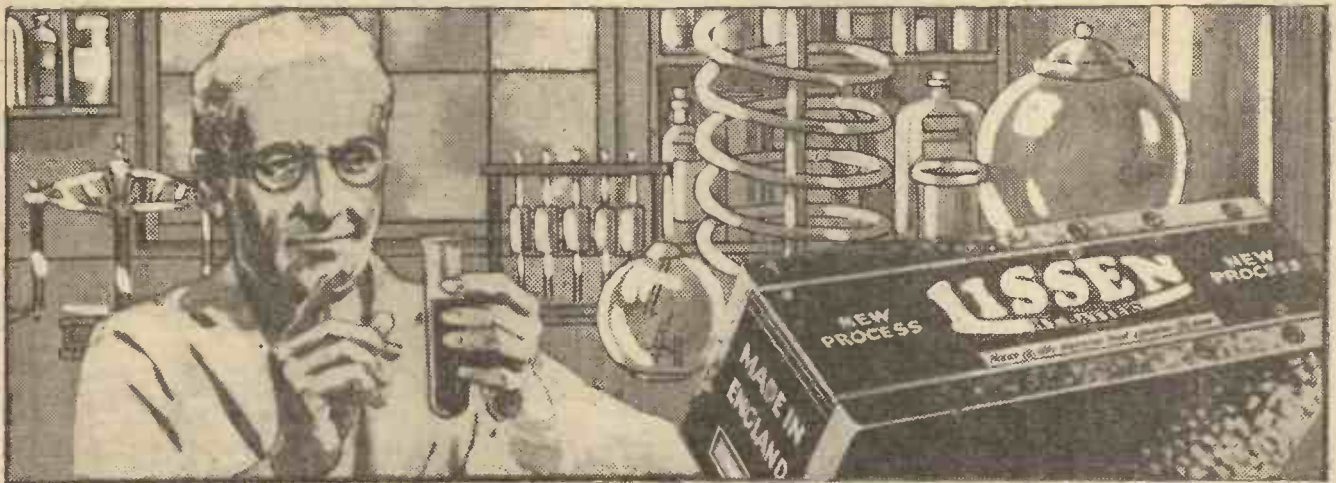
Ask your Dealer for a Chart or write to

FERRANTI LTD, Constructors' Section, HOLLINWOOD, LANCASHIRE.

CHEMICAL MAGIC

AS THE BASIS FOR A SECRET PROCESS

*PRODUCING SUPER-NORMAL CURRENT-PER-CELL
FROM A LISSEN HIGH TENSION BATTERY*



How to save money on your outlay for H.T. current and how to capture anew the thrill you enjoyed when first you heard radio!

THE reason you get more power from a Lissen Battery is because more power is put into it by the exclusive process and chemical combination which you can only get in a Lissen Battery.

No battery delivers so much pure power for so long and for so small an initial outlay. The active chemicals in a Lissen Battery are so perfectly balanced that their chemical activity continues much longer than has ever before been known in the cells of any high tension battery. *So much for economy.*

60 7 1/2
VOLTS

Then for purity of power, for noiselessness of current flow, for smoothness, for the entire absence of any ripple or hum, the Lissen Battery has never been rivalled. Even after months of use the power of a Lissen Battery is so pure that your loud-speaker utterance is still natural and true.

100 12 1/2
VOLTS

**BUT BE FIRM IN THE WAY YOU
SAY YOU WANT A LISSEN BATTERY.**

LISSEN LIMITED, Worples Road, Isleworth, Middlesex

**LISSEN BATTERY POWER
GIVES SPARKLE AND
BRILLIANCE OF TONE
TO EVERY ITEM!**



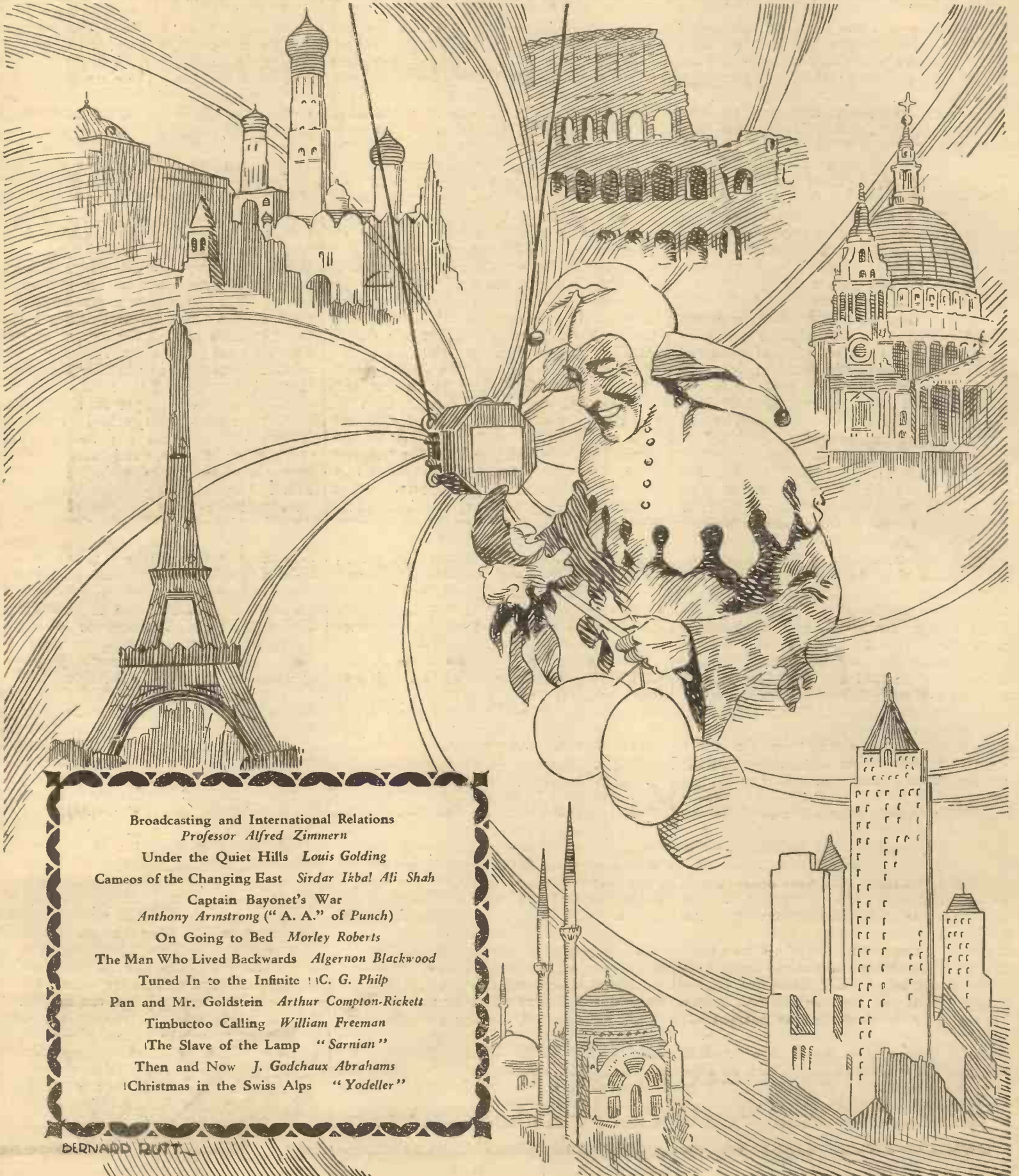
WORLD-RADIO

Vol. XI No. 281

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

FRIDAY, DECEMBER 12, 1930

THREE PENCE



Broadcasting and International Relations
Professor Alfred Zimmern

Under the Quiet Hills *Louis Golding*

Cameos of the Changing East *Sirdar Ikbal Ali Shah*

Captain Bayonet's War
Anthony Armstrong ("A. A." of Punch)

On Going to Bed *Morley Roberts*

The Man Who Lived Backwards *Algernon Blackwood*

Tuned In to the Infinite *C. G. Philp*

Pan and Mr. Goldstein *Arthur Compton-Rickett*

Timbuctoo Calling *William Freeman*

The Slave of the Lamp *"Sarnian"*

Then and Now *J. Godchaux Abrahams*

Christmas in the Swiss Alps *"Yodeller"*

Broadcasting and International Relations

By Professor A. E. ZIMMERN, Holder of the Montague Burton Chair of International Relations at the University of Oxford

EVERY traveller must be familiar with the succession of sensations which have come over him when he has found himself in the society of people whose ideas and outlook are totally different from his own. First he is bewildered; then, becoming more accustomed to his surroundings, he begins to find them interesting, amusing, and even picturesque; then, with increasing familiarity, he begins to "get the hang" of them, to understand how they have come to think and behave; and finally, if he has any wish to promote human understanding, he feels a profound desire that he could transport the whole company on a magic carpet, as it were, and set them down in his own country so as to let others pass through the same gamut of experience.

For nothing less than a magic carpet will suffice. Travellers' tales are generally thin and unconvincing. Either they affect the picturesque, and, in trying to be interesting, turn the foreigner into an unreal object of romance; or they are scrupulously truthful; in which case they are apt to be thoroughly wearisome. Facts from far away, without the atmosphere of far away, are not convincing. The real traveller is he or she who can bring back truth, not romance, but in a setting adapted to its new surroundings. But how few real travellers there are! The multiplication of facilities for travel has taken the edge off the individual traveller's contacts with foreign countries. Too often he travels in a sort of moving caravan, carefully preserved, by the most skilful and up-to-date methods of organisation, from a first-hand acquaintance with the countries or peoples on his visiting list. He is personally conducted, and if he strays from the beaten track there are so many minor causes of inconvenience, from the language to the food and drink, to spoil his pleasure that such independent reminiscences as he stores up are apt to be associated with ill-humour or indigestion.

Broadcasting has brought us the magic carpet. It provides us with just the means we needed for entering into first-hand immediate contact with foreign countries without submitting to the inconveniences and distractions which beset the traveller in the flesh. It sets us in the middle of the country's life, giving us the best that it has to offer to its own people. If we know how to attune our minds to the possibilities of the new means of communication, we can thus permanently enlarge our horizon without stirring from our own fireside. It may seem strange to some people to argue that staying at home and listening is more conducive to real international understanding than going abroad. But that is only because they have not reflected on what happens when people from different nations are thrown too indiscriminately together. The old school of internationalists, whom we may call the Sentimentalists, believed that all men were brothers and sisters and were therefore dying to fly into one another's arms. Ignoring their relations with their neighbours in the next street, and sometimes even what was

going on under their noses in their own households, they directed a fixed gaze upon China or Africa or Greenland or the South Sea Islands, convinced that, if only they could get there, the ties of fraternity would prove stronger than all differences of race, outlook, or institutions. Finding that they could not make the journey themselves, they subscribed liberally to enable others to do so; but were not equally liberal in their reception to the ideas brought back to them from those foreign parts. It took several generations of missionary work to educate the supporters of foreign missions—to make them see that the sentimental idea of fraternity is really an insidious form of Imperialism, because it is based on the assumption that, since all men are alike, they must necessarily all be like the English. One is reminded of the somewhat self-centred generosity of the English boy towards his Belgian refugee comrade during the War, when he took him to watch a cricket match, "because we ought to do for others what we would like them to do for us." Between this particularly insular form of practising the Golden Rule and the tourist who complains of the waiters at Calais because "they persist in speaking a foreign tongue" there is not much to choose. The fact that the one is "meant to be kind" does not redeem it from reproach—as, indeed, the whole history of Imperialism bears witness.

How much better, then, to stay at home and let, if not the African and the Greenlander, at least the "natives of the Continent," speak to us in their own language and sometimes in those forms of art which, though they are intelligible to all educated people, are nevertheless intensely national and individual.

The present-day missionary does not start on his labours until he has taken a course of anthropology in a home University. Some day, perhaps, it will become the regular custom for intending tourists to listen regularly to the country they propose to visit before leaving home.

The fact is that it is no good "throwing people together." Immense harm has been done through the development of the material means of communication before men's minds were prepared for the rapid changes in environment that they involved. No good hostess gives an entertainment without thinking of the way in which her guests will fit in together. Dinner parties are not just collections of human atoms which have to mix as best they can. They are miniature societies brought together for an evening, the tact of the hostess providing the cement. Yet in the infinitely more difficult task of promoting understanding between different nations we imagined for a long time that an infinite number of atoms called commercial travellers, tourists, or even private soldiers would discover for themselves how to mix in a manner satisfactory to themselves and their foreign hosts.

The old Free Traders imagined that the increase of international trade—which means in the concrete the multiplication of personal

contacts between traders in different countries—would create a network of international understanding. We know to-day that trade may bring war as easily as peace, and that the task of steering trade relations into peaceful channels is a skilled job. There are still advocates of education by travel, promoters of "floating universities," and the like, who have not discovered that it is bad for young people to be moved indiscriminately about the world. Such people even sometimes talk as though the War, by causing thousands of young Belgians, Serbians, and others to be educated abroad instead of at home had conferred a lasting benefit upon them. But real educators, and notably those concerned with the administration of scholarships and fellowships for foreign travel, are by no means of that opinion. As for the effect of residence abroad on soldiers, everyone knows that their experiences in Allied countries have not, on the whole, tended to strengthen the bonds of such alliances. How could Thomas Atkins or Brother Jonathan be expected to understand the revolutionary conservatism of the French peasant? But when, through our post-primary school system, every English boy and girl has had a chance of learning French, and can listen to French stations before taking a Workers' Travel Association trip across the Channel, there will be some chance of reversing the old tradition that alliances always lead to backbiting.

Some years ago Londoners were astonished to learn that, in deference to a wish expressed by the Japanese authorities, Gilbert and Sullivan's *Mikado* had been withdrawn from the London stage. Many people objected on the ground that nobody really associated the play in his mind with the real Japan—the Japan which was our ally during most of the last generation and sits with the other Great Powers as a permanent member of the League of Nations Council. Few stopped to reflect how they would have felt if the symbols of the British monarchy had been caricatured on the stage at Tokio. Their comments showed that they had, in fact, two separate mental pigeon-holes for Japan. One was for the real Japan, the other for the fancy-dress imitation; the Japan of geishas, tea-houses, Madame Butterflies, and the whole paraphernalia of theatrical properties. Are not our Japanese friends justified in protesting against the perpetuation of such a state of mind? What we need is to clear away the geishas with the stage Irishman and the heavily bewhiskered John Bull and to aim at establishing normal everyday relations with foreign countries based on the mutual respect which can only spring from mutual knowledge.

Broadcasting can be of incalculable help in promoting such mutual knowledge, because the contacts which it establishes are real and not artificial. It discards the stage telephone and the fancy dress of make-believe and sends us out into the open air, to catch and to try to understand the manifold voices of our infinitely diverse humanity.

Under the Quiet Hills

By LOUIS GOLDING

IT'S an old house under the green hills where I'm spending Christmas this year. We shall be a party of fifteen or twenty, I suppose—modern young men and women. It's an old house, centuries old, where we gather, yet the spirit of the place will not be outraged if we dance our modern dances this Christmastide under the beamed ceilings, and preface the immemorial turkey with a 1930 cocktail, lifting our glasses friendly to the friendly dead whose portraits have hung for centuries on those walls.

There's a Prophet's Chamber, as they call it, under the gables. And I don't doubt there was a darting and a seizing and a blushing there under the mistletoe three centuries ago, as there will be this year, too. (The gown and coiffure of the phantom lady and the living lady will not be so far apart from each other as they were a few years ago.) The generations of men and women have held wassail in these panelled rooms for centuries, and we shall know it's our turn now. We shall not betray the trust.

But I am sure there will come a moment in our merry-making, even at the height of it, when suddenly our hearts will turn in upon themselves. (Oh, you may be as cynical as you like, and impute the moment's entrancement to excess of cocktail, or burgundy, or turkey. But I am sure it would come just the same if we pusillanimously celebrated the divine occasion in crusts and glasses of water.) These moments of withdrawal are stated to come at twenty minutes past the hour—moments precisely opposite to those exquisitely sung by Siegfried Sassoon:—

"Everyone suddenly started singing."

With us this evening under the quiet hills, at twenty minutes past, or to, or whenever it will be, everyone will suddenly fall on a silence. His spirit will go on a journey.

There will be some who will make a journey in time. They will go back two or three hundred years and hear that gentleman who is now a blur of brown paint on a canvas call his hounds to heel in the crisp, wintry air. They will see the lady in faded blue satin get down from the picture-frame and seat herself over against her harp and hear her fingers pluck faintly at the strings. To them those ancient ones will in that moment be far more real than this living girl from Regent's Park who does wood-cuts, or the young doctor with the curly, gold hair who's managed to get away from the Westminster Hospital.

Christmas Visions

Others will go on a journey beyond the shrubberies and the drive. They will climb the lane over a rimy crackle of frosty leaves. They will thrust through the dark pine-wood, and go out upon the crest of the round hill that commands the house. They will hear trumpets which are no longer blowing, and see illusory banners on which eagles are emblazoned. For this is a Roman camp. It will seem to them a strange thing that the men who built the stout gates, which fell off their hinges so long ago,

and the walls, which so long have been dust on the wind, lived in the same century, perhaps as He Whose birth is being celebrated at this moment in far wider lands than the Roman Empire ever embraced. Perhaps a great-grand-father of one of them was a boy bugler in the bodyguard of the Procurator of Judæa. . . .

Some may travel still farther afield, where the moorland begins, till they come to the memorials of an older folk, who were native to these islands. It was the Druids who performed their strange rites within this haunted ring of stones and lifted their sacrifice upon this slab. What is this gleam of pale berries in this wizard light? Mistletoe?—did you say mistletoe? Has the mistletoe we have hung from the lintels of the house on the valley so wild and remote an ancestry?

They journey in time, those others. But I know, when that moment comes, I will journey in space over lands and seas. And because my mind always works in opposites, the very fact that I am in a lonely house under quiet



hills will send me posting to the great cities in which I have spent Christmas, one year and another year, by this chance and that chance.

The "Little Christian Men"

A few years ago (I shall be remembering as I look down into the tarn of dark wine) it was in Palermo. It seemed likely that it was to be the loneliest of my Christmases. I walked the length of that enormous street which runs like an arrow against the taut bow-string of the bay, and then in my loneliness I turned off into a huddle of narrow streets, to have the sense of a multitude of warm human beings gather round me like a cloak. Suddenly I heard a voice calling in the hoarse Sicilian dialect: "This way to the little Christian men! This way! Here is the true Christmas!"

I found myself at the door of a little marionette theatre. I found the little Christian men were about to enact, with flesh of wood, and blood of sawdust, the greatest of all tales.

Now during the greater part of the year these marionettes—with an art at once severely unsophisticated and yet technically consummate—propound another and a fiercer argument. They perform the bloodthirsty epic of the Franks and the Saracens. You never saw such massacres as take place nightly on those minute

stages. The supreme Christian hero, Orlando, weighs about him like a tornado with his sword, and the lopped heads of the Infidel gather about him in grisly pyramids. But that night which threatened to be so bleak for me, the Palermo puppets put aside their helmets or turbans, their swords or scimitars. Now is the sword converted into the shepherd's crook and the scaly dragon into a mild-eyed cow kneeling beside a manger.

I have seen this incomparable tale performed in several modes—in the medium of the flesh, as in such miracle plays as *Everyman*, which Reinhardt lately staged, or the Passion plays of Oberammergau and Erl. But the mind could not dispel the thought that here were clerks or peasants acting more or less well, and soon they must return to their ledgers or their ploughs. I have seen the tale rendered upon the film, and the last vestige of illusion shattered by the Neapolitan ice-cream pinks and yellows of "natural" photography. But here, among the riff-raff of Palermo, the mind was immediately convinced. And that was not merely because Christ or John or Judas was rendered in a devout and perfect similitude, with an excellence of make-up that any living actor might envy. It was because there was nothing to distract you; no conflict between the real and assumed personalities of the actors. Seen through the eyes of the audience, the actors

were nothing more than the sacred images they had all their lives beheld in every church and at every street corner, exercising the further faculty of gesture and speech.

I do not recall anything as moving in my experience of the ordinary stage as the scene where Christ, after the Last Supper, beseeches Judas to let Him lave his feet. A spirit descends from heaven to join in the supplication. With infinite gentleness Jesus tugs at the fringes of Judas's garments.

The rheumatic harmonium softens into a melody that seems more exquisite, in that fetid air, than the strains of a master violinist.

But Judas pulls his garments away and kicks the basin over. I cannot tell you what a gasp of horror went up from the mouths of those assembled desperadoes.

Or my mind may not go so far afield—no farther than to a Christmas spent in Berlin a year or two ago. How well I recall the bitterness that nipped the air! How frostily glared the café lights on the Kurfürstendamm! There was a sense of dismay and revolt throughout the whole bleak city—all the way from the champagne of big business at the Adlon bar to the beer of the bescarfed workmen and their blonde maidens dancing at the Christmas *Bockbierfest* of the "Neue Welt." The "Neue Welt" is a great proletarian dance-hall on the south-eastern fringes of the city.

A Gargantuan Meal

There, it is true, there was an air of gaiety. From concave vaults, vast as St. Peter's, hung orchards of paper cherry and apple blossom, enough to carpet all Yorkshire. So many sausages were devoured that some German Ariel might have made a threefold belt round the world with them. And the battleships of three navies might have floated on the flood-tides of beer they consumed.

But even there it was all only a superficial excitement that masked an underlying despair.

(Continued on page 921)

Captain Bayonet's War

By ANTHONY ARMSTRONG ("A.A." of *Punch*)

WE in our barracks here in Havershot are pretty interested in wireless. That is to say, we have at last got a loud speaker installed in the Mess, and are liable to switch it on at any moment—to be amused, instructed, or entertained. Sometimes when we switch it on nothing happens. In that case we know enough about wireless to send for an expert. Sometimes when the expert comes we learn that when we switched it on there was nothing on the air anyway. This somehow increases our respect for wireless.

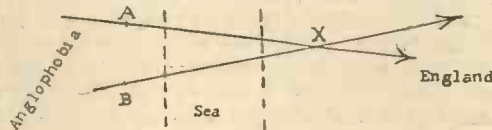
Our interest in the subject has recently led our Captain Bayonet to go quite deeply into the matter with an encyclopædia. He has been browsing about in large volumes for some days, and now has suddenly come out with a scheme for winning the next war. He wishes to get it down in writing at once, so that it may be clearly on record who thought of it first, when the prizes for winning the next war are being given out. Bayonet says he knows what these generals are. They'd pinch a junior officer's war-winner as soon as acknowledge his salute. In fact, sooner.

Bayonet's scheme has to do with Wireless Direction Finding, and as Bayonet himself has nothing whatever to do with Wireless Direction Finding, you will appreciate that it has every chance of being original. Now, first a word about Wireless Direction Finding (or "George" for short). It is principally used in war as a means of locating the position of your enemy's transmitting stations, with a view to being pretty rough with them at an early date, and it all goes something like this:—

War is declared upon England by, say, Anglophobia, and at once a stout Anglophobe, called, I think, "A," digs himself in with his little listening-in and direction-finding set, which, assuming he is not a radio "fan," is in thorough working order. Working in conjunction with him is a friend, called undoubtedly "B," who establishes himself some miles away, and proceeds to get in touch with "A." When they have both tuned in, heard the time signal and the news, listened entranced to a rendering of "*Ich atmet' einen linden Duft*," and seen who can get Madrid first, they settle down to business.

Soon "A" picks up the following message in English: "Twenty cases plum-and-apple

arrived to-day where is the strawberry don't you know we're not all infantry here," and realises, having read all the spy books, that a code message referring to the movements of troops has been sent out from an important but unknown wireless station in England. He is not, however, concerned with the message so much as the position of this important station, and so, his outfit being designed to give him lines of direction, he twiddles his search coil until he gets the line of direction of this English station from his own. Then he calls up "B." Yes, "B," who has just finished hearing that Steel Common have dropped five points on the New York Stock Exchange and doesn't care for dance music, has heard the message, and has also been able to get a line of direction from his station. So they instantly get together and draw out a diagram on the map. The two lines of direction intersect at "X." Thus:—



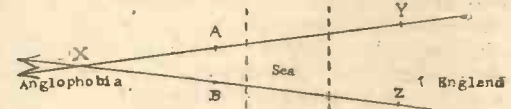
Now "A" and "B" have both been chosen for their knowledge of geometry, as well as of wireless. They know at once that "X" must therefore be the point of origin of the message, and it is heavily bombed on an Anglophobian air squadron's next evening out. All very jolly.

Now Bayonet's scheme, you must understand, does not aim at defeating the enemy's army in the field. This method is quite obsolete—in fact the next War-to-end-War will find the wise "Cuthbert" in the front line. It is the civilians of the future who are scheduled to get it in the neck; on their morale the result will depend; and therefore any plan which will at once strike terror and dismay into those who imagine themselves safe at home is bound to be successful.

Bayonet's idea is to have established here and there along the coast of England several small wireless stations with orders to send out at intervals, not only prearranged, but exactly synchronised messages, such as "The rising is for 6 a.m.," and so on. We will examine (if by any chance you are reading this) what will

then happen, by calling a couple of Bayonet's stations "Y" and "Z."

It is a few days after the outbreak of the next war. The stout Anglophobe "A" has just finished listening to Henry Hall's Band when he picks up a message, "The rising is for 6 a.m." Hurriedly, he asks if "B" is getting it, too. Yes, "B," who is still not interested in dance music, is already highly excited about what is apparently the same message, and they proceed to obtain lines of direction. But whereas "A's" line points towards "Y," the station nearest him, because he gets it strongest from there, "B's" line indicates "Z" for the same reason. So when they plot out their direction lines on the map they arrive at this result instead of the former one:—



There is at once terrific excitement. "X" is in their own country. They have discovered a spy in the Anglophobian midst—a spy undoubtedly initiating a dawn rebellion. So wireless hum; troops are turned out at midnight; and even generals are woken up to sign telegraph forms. A double cordon of soldiers with fixed bayonets is drawn round the suspected area; fierce challenges are flung back and forth; cautious privates in the front rank get inadvertently prodded by over-zealous comrades in the rear rank; subalterns whisper hoarsely and compare watches. There is a wild rush; the battalion idiot looses off five rounds at a cow; innocent patriots who happen to be living near "X" are arrested wholesale—and no spy is found.

The same thing, instigated by other stations of ours, is happening in other parts of Anglophobia, and next night "Y" and "Z" and the rest move their positions slightly, and the game is repeated. Within a week the Anglophobian army is worn out and on the verge of mutiny; the Government is in a frantic state of suspicion of every civilian; while, most important of all, the population, completely demoralised by the perpetual midnight irruptions into their homes of their own warriors armed to the ears, is loudly clamouring for peace in their time—or at any rate after dark.

Yes, the next war will undoubtedly be Bayonet's war—always assuming the idea is taken up. But I fear the Higher Command is jealous of originality in junior officers.

A Wireless Christmas Eve

'Twas Christmas Eve. The moon shone clear,
And Oscillations far and near
All did their best, they said, to sing
Carols, but people Listening
Called it another name. You bet,
Receiving Sets were much upset!
Three young Electrons were in bed;
Grandpa Loud Speaker loudly said:
"Now we Close Down; good night,
good night,"
And took the Neon Lamp, whose light
Had glowed upon the little Sock-
Ets waiting Santa Claus's knock.
These hung upon an Aerial:

One small Electron cried, "I shall
Be glad when Santa Claus Tunes In;
Let's dance, you chaps; I will
begin!
The Cathode Caper we will do
And the Anodic Ambie too!"
Their nurse, an old Detector, came,
Detected them and stopped their
game,
But, though she scolded with a frown,
Aunt Smoothing Circuit smoothed her
down,
Thus the High Tension quickly
passed,
And Santa Claus arrived at last!
LESLIE M. OYLER.

PAN AND MR. GOLDSTEIN

(Continued from page 924)

"I wish—everything was—as it was," he gabbled.

There was a roaring in his ears, a momentary darkness.

"I said it was rather dinky," said Joan. "Aren't you going to let me see it—or have you gone to sleep?"

"No, no," said Mr. Goldstein. "Let's get back to the dancing. This room's stuffy! You shall see it some other time," he added mendaciously, slipping it into his pocket. Then, taking out his handkerchief, he mopped his forehead and cheeks.

"I'll throw the darned thing away," he thought, "as soon as possible." Then a shrewd look came into his eyes. "No, I won't. It'll come in useful when I see my broker tomorrow."

But what happened on the morrow is no part of this story.

The Slave of the Lamp

By "SARNIAN"

THERE is something fascinating about an auction sale—a sort of magnetic attraction, due, in large part, to that very human feeling that we are about to obtain something if not for nothing, at least for a sum not far removed from it. In actual practice, however, we are so carried away by the excitement of the moment that we generally pay about twice the normal market value of our purchase; and afterwards, whether we toil wearily home-wards with the article on our bent backs or send the "Rolls" round to fetch it, the extent of our folly in burdening ourselves with something which is utterly useless is borne home to us, though not for worlds would we admit it, even to our closest friend.

That bit of preamble is for my own satisfaction—to justify myself in my own eyes, and to prove that I was not altogether an absolute idiot to pay £2 for a heap of junk; particularly when I remember that I have often given the dustman a florin to take away stuff which, by the same scale of reckoning, would be worth £20.

Well, without trying to find any further excuses, that is what I did. Mind you, I set out with no fixed intention of committing any such folly, I being merely on a country ramble when I happened to see the auctioneer's flag on the gate of an ivy-grown old house. Just out of idle curiosity, I went inside and looked round, and the first thing my eyes lit on was a box containing several obviously quite obsolete wireless components. There was a huge tapped inductance, with massive studs, and a moving arm such as I have seen in big power stations—you know the things, one of those big cylindrical affairs. Then there was an enormous variable condenser, with semi-circular plates, which, surely, could never have rotated without touching. I will not describe the rest, which was mainly composed of odd pieces of heavily insulated wire and cracked portions of half-inch ebonite panels; but there is no doubt that they did things on a big scale when those articles first saw the light of day.

The box was labelled "Lot 67." It was put up for sale, and an offer—five shillings, I think—was made by a bent old man. He could certainly have been no wireless "fan"—why, his whiskers would have caught in his condenser every time he changed a coil!—and I can only think that he was either a lunatic or the curator of some museum. Yet I wonder if he could have known about—no, surely not, for, if he had, he would not have let the "lot" go so easily! For some unknown reason I, too, started bidding, and eventually, as I have said, found myself with the box in my hands, and £2 gone out of my pocket.

I took dusty old "Lot 67" home in a 'bus, much to the scorn and disgust of the conductor and to the annoyance of the many people who fell over it. Then, having, on my arrival home, told my wife something about my having given a shilling for it to some old beggar-man out of pity, I threw it in the lumber-room.

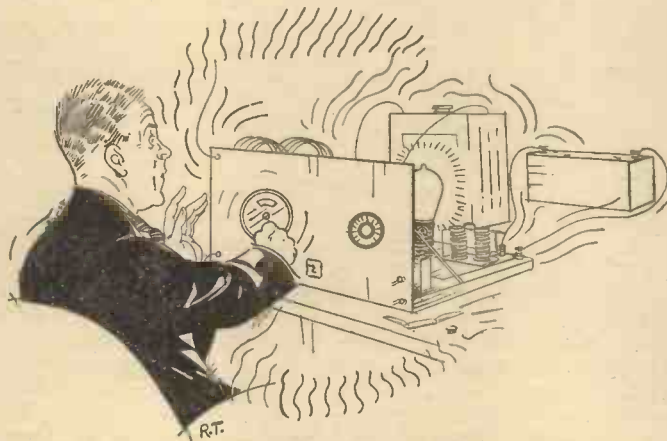
About a week later, I fished it out again, in the hope that it would keep the baby quiet, and then I saw, right at the bottom, an old-time bright emitter valve, with a curious and finely chased brass base. It struck me that this specimen of a bygone era would be useful for testing purposes, because only the day before I had burnt out three fine valves by putting them

in a hastily wired-up receiver; and so, as the filament seemed intact, I put it aside.

A couple of days afterwards I built a new short-waver, joined up H.T. and L.T., and plugged in the old-timer, to see if battery connections were all they should be. Evidently they were, because it glowed dully when I pulled out the filament switch—I use a two-

The ancient Slave of the Lamp comes to the aid of a modern Aladdin with less pleasing results than of old.

volt accumulator, by the way—and, strangely enough, I seemed to hear a faint, almost inaudible, voice coming, not from the loud speaker, but from that solitary valve. Thereupon I connected up my other L.T. battery, and gave it the four volts it evidently wanted, for it lit up like—well, you remember the days when you could dispense with illumination, if you had a two-valver! And now the voice was loud and deep—"Who calls the Slave of the Lamp? . . . Who calls the Slave of the Lamp?"



"Who calls the Slave of the Lamp?"

And so it went on, as if it were carrying out an engineers' test. I did not know what to make of it, but as it seemed that somebody was expected to answer something, and there was no one else there, I said, "Me!" You cannot blame a man for not being strictly grammatically correct in a case like that.

To my amazement, the valve replied: "Lord, I hear and obey!"

"Yes, but who are you?" I asked, while wondering if Johnnie were home from school—because I had been "had" before.

"In all ages I exist, and men call me the Slave of the Lamp," came the answer. "Aforetime I served the great Aladdin and others whom ye may know, as well as others whose names are now forgot. But the Power deemed it unworthy that I, the servant of kings, should dwell for ever in a humble oil-vessel. Behold me now in my new abode! What are my lord's commands?"

"I want to hear Toulouse," said I at random, and wishing to have time to think this out.

Hardly had I spoken when there came from the loud speaker, which, mind you, was not even connected up:—

"*Chers auditeurs, Radio Toulouse vous prie de bien écouter maintenant.—Ballet Coppélia—Selections de Delibes.*"

The clearness was such as I had never heard

it before, and the quality of the music which followed would have put to shame any receiver I had ever listened to. I was held enthralled until the orchestra came to a stop.

Surely there must be something in this Slave of the Lamp business! I determined on a stiffer test.

"Give me WGY," said I.

"Lord, I hear and obey," answered the voice. ". . . of the General Electric Company at Schenectady, New York. Mrs. Georgina A. Drinkwater will now give you a talk on 'The Harmful Effects of Liquor.'"

"Give me an Australian station," said I hastily.

"Good morning, everybody! This is 3LO Melbourne calling. To-day's schedule begins with our early exercises—"

And so it went on. I cannot remember all the stations I asked for—dozens of them, and all coming in as if I had been in the studio—no fading, no atmospherics! In short, it was the sort of reception that a wireless man hopes to get when he reaches heaven.

At long last, when even my appetite was satiated, I switched off the old-timer and crawled to bed.

From then on my wireless corner and I were inseparable companions. I neglected wife, family, business, food, sleep—everything. Even the "Golden Lion" knew me not in those days.

One day a deputation of neighbours came round to protest against being awakened at unearthly hours by voices from Persian markets and Chinese temple gardens, and all the odd corners of the world, though they, in their ignorance, thought it was a gramophone. A gramophone!

There were other episodes of a similar nature, on which I prefer not to dwell. I remember one funny incident, however. A traveller from Radisto Limited, called round, and tried to sell me one of their latest crystal sets! I have never laughed so much before—or since.

Alas for human happiness and contentment! One evening, just after 9 p.m., when I was listening to Spokane, Wash., my friend, William Lloyd, who lives next door, rushed in to tell me that an SOS had just been read, requesting me to go to Wigan at once or sooner, because my Aunt Martha had fallen off the pier and was drowning. When I arrived there I found that my aunt

had not left her home at Winkleton-on-Slush, and that the SOS was a fake. Hastening back home, I saw to my dismay that the old-timer had disappeared. Frantic inquiries elicited the information that immediately after my departure a bent old man, with whiskers, had called round to say that he had been sent up by Smiths', the charging depot, to change the accumulator. I phoned Smiths', and found, as I had feared, that they had sent nobody.

The local police listened with business-like attention to my story, until I told them, unwisely, as I now realise, about the Slave of the Lamp, whereon the sergeant insisted that I should say "British Constitution," made me walk a chalked line, and finally sent me home in the custody of a constable. I fear I can hope for no help from the law.

What can I do? I can only hope that this will be read by some sympathetic wireless man who can put me on the track of my lost treasure; but I fear I shall never hear that magic voice again.

Was the old man who called he who bid against me?

There is just one other thing I would like to tell you. I have just found out that the local police-sergeant listens to London on a crystal set, and cannot separate "Nat." and "Reg." That is the sort of man he is!

Cameos of the Changing East

By Sirdar IKBAL ALI SHAH, the noted Afghan Author and Traveller

IT is difficult for the Western people to imagine a city without a cinema, theatre, concert hall, hotel, or bank; where wine-drinking and smoking are strictly forbidden; and

hills, and does not come in view until you are close upon it. The first glimpse of the city, with its minarets, white domes, and towering buildings, never fails to stir the pilgrim's imagina-

eyes. When about to gaze with awe and rapture upon the city of our faith, we passed two white-washed stone pillars, announcing our approach to the consecrated soil of Mecca. Beyond that lay the sanctified areas where no blood must be shed, nor the pilgrim shave his face, oil his hair, or scratch himself save with the open palm of his hand; nor use bad language or quarrel. You may not even kill a wasp, or cause animals or birds to fly from you—the highest ideals of peace are to be respected.

With prayers on our lips, we entered this Cradle of Islam, the Harem-Sharief. This is the sacred and celebrated mosque of the most holy spot in the eyes of all Moslems. It consists of a vast courtyard, 250 paces long and 200 paces broad, entered by nineteen gates and passages, and surrounded on all sides by graceful colonnades or cloisters. In the centre of the courtyard stands the Kaba, the shrine of the sacred Black Stone, and it is really towards this structure that the Faithful are enjoined to turn their faces when in prayer. It is an almost square erection, standing about thirty-five feet high on a white marble base. We, the Moslems, believe that it was built by Abraham as a place of worship, and it is said to be a reconstruction of the stone house built by Adam himself. It was entirely draped in heavy black silk carpet.

We encircled the Kaba seven times, reciting certain prayers as we did so, this being the first ceremony which every pilgrim has to perform on his arrival in the city. We then kissed the Black Stone, set in silver as it is, and built in a corner of the stone structure of the Kaba. Next one drinks the water of Zam Zam, from the well of that name, rendered holy on account of the belief that God showed the spring to Hagar. Pilgrims drink this water, believing it to possess curative value, others dip their garments in its water, and spread them to dry in the sacred soil of the courtyard, hoping to take them home at the close of the pilgrimage as burial shrouds. The courtyard is capable of holding quite fifty thousand worshippers at one time. The spectacle of thousands of white-robed figures performing



"Salat Houlul Kaba." Moslems at prayer facing the Holy of Holies—the Kaba—in the Great Mosque at Mecca

yet regarded by many millions of people as the most important place in the world. But such, indeed, is Mecca, the sacred city of the Moslems, towards which one-sixth of the human family turn their faces five times a day when in prayer.

It is, of course, a forbidden city to the non-Moslem, and I have no doubt those outside the pale of Islam who have succeeded in penetrating its mysteries could be counted on the fingers of the hand. Being a Moslem, I travelled there once as a pilgrim.

I approached Mecca from Jeddah, on the Red Sea, covering the fifty-odd miles which separate this port from the city by motor-car. This device is not the only Western improvement which is being introduced in the Holy Land of the Moslems, for wireless is now broadcasting the sermons from the Great Mosque at Mecca to the Moslem world.

The car covers the distance in about three hours. During the journey Mecca-ward, I wore the regulation pilgrim costume called the *Ihram*, which consists of only two white sheets. They are to be wrapped round one, fastened together by knots—as no pins, stitches, or other forms of attachment are allowed. The head of the pilgrim is shaved, too, and sandals can be worn. The idea of this simple white dress is that all shall enter God's house in a uniform spirit of humility, with nothing to indicate a worshipper's position, wealth, or rank.

Mecca lies in a hollow surrounded by barren

tion. Five times daily throughout his life he has turned his face towards this city whose mysteries he is to view with his own



The royal tent of Ibn Saud at Riyadh



The Colonnade in the Mosque at Mecca

their prayers, their bending and swaying in unison, is a sight never to be forgotten.

* * * * *

There is the time when an Afghan's heart craves for the cooler air of his native town of Kabul, especially when the Afghan Independence Day is to be celebrated. Already the Afghan capital city was beflagged, thousands of stalwart warriors had trekked from the Kohistan uplands, hundreds arrived every hour to the gates of the town; thirsty and tired they might look, but all were keen to join the gala fair, which is truly of the days when Asia was old.

They came singly, in pairs, in threes, or in hordes; on Turkoman dromedaries, on pack ponies, on small donkeys, or merely on foot, men sitting on bundles, holding their pet fighting-cocks aloft, and yet never forgetting their long, home-made rifles.

Women, in their long, trailing robes of many colours, walked behind their pack animals, shouting every now and then to their menfolk to secure the dried fruit sacks or to fasten the fowls' legs to the luggage cords on the donkeys' backs.

By the evening of the Friday on which the day is celebrated, the old and the new quarters of the city house at least forty thousand souls. These split into little groups, but as the town cannot provide accommodation for all the new arrivals, they might hurriedly throw up an awning with their home-spun blankets, or sit in the veranda of the caravanserai, or just in the open green fields under the summer skies. The spirit of the rejoicing makes them forget all discomfort. They drink cup after cup of green tea, they cook rice, or roast the fat-tailed sheep, sing and tell stories of their warring days of old.

Then, the next morning, the whole conglomeration, of nearly fifty thousand people from all over Afghanistan, engage in sword dancing under the brow of the Kabul hills, where the field is prepared for the day's rejoicings. They yell and shout; national music and song fill their souls, the thud-thudding of drums, the smoke and blaze of bonfires, the booming of guns, the military band—all drive them to a frenzy of excitement, as they leap and jump

and slash the empty air with their Afghan blades.

* * *

Later, I drifted to the Old World scenes of real Turkey in the interior of Anatolia. The glow of Asia was there, and I saw it at Konia, many miles south of the point where Westernisation is entering the Turkish Empire. Konia, being the greatest wheat market of Asia Minor, is still the stronghold of the hoary East. The life of the place centres round the village inn, where caravans from Qaisarie in the East and Adana in the South bring their wheat, and it is here that much of the culture-mixing of the folklorist receives its proof regarding the trade routes.

A night scene in a caravanserai, which is called Khan in Konia, has a colour of its own; the cessation of all work at the call of the evening prayer, the chanting of the religious formulæ behind their huge bags of merchandise, as the trader sits beside his camel, his watchful eye over his goods; the lighting of camp fires and congregating around them, the yard choked full of carts with wooden wheels, the whinnying of pack ponies, the bubbling of camels and the mingled buzz of talk and laughter, are as real a Tartar scene as I ever saw on the road of the Golden Samarkand, in Central Asia.

And again, when presently in that Khan men's appetites were appeased, and many had spread their bedding near their pack animals, and perhaps had their last pull at the *nargileh* of the inn-keeper, a satisfied air seemed to pervade the Serai, till most of them were either dozing over their sacks of wheat, or lay behind them in a heap, already deep in sleep.

Upon this peaceful scene the rising moon cast her soft light. Inch by inch, as it were, the darkness melted away, near objects became clearer, the minarets of the distant mosque emerged from dimness and stood in bold relief. Beyond the occasional bark of a dog, or the distant sounds of the hoof-beats of the night patrol, the town was plunged in deep slumber. A true rest, indeed, for a weary caravan that had



Arab houses and pilgrim rest homes at Jeddah, the Red Sea port for Mecca

wended its way every foot of the rocky defiles of old Asia. And so the colour of the East remains, whilst the waves of modernity beat higher and higher along its fringes. So the heart of the East is asleep in the Western sense, and perhaps for the very good reason that it does not want to be awakened to the super-activity of Europe—



The harbour of the Golden Horn at Constantinople

for the wise and ancient East is struck with wonderment to know whether the speed of this age is taking the hastening West. Indeed, whither?

UNDER THE QUIET HILLS

(Continued from page 917)

And then I recalled two friends I had made tramping the Bavarian roads that summer—a young engineer and his wife. Many songs we sang together and covered many leagues. And I left them at Garmisch with the understanding I should stand under their Christmas-tree if I should be in Berlin that winter. Which I did. And their small daughter sang a carol to the waxen Christ-child on the topmost twig. And there was mulled ale to drink. And I forgot the icy city in the warm and tiny room of those goodly folk. I pray the Lord there be many thousands such behind the blank Berlin walls this cold Christmastide.

And there was a Christmas I shall recall in the echoing squares of Madrid and one in New York, in a skyscraper that thrusts into the heavens like a single blazing rocket.

And once it was a Syrian monastery of the Greek Orthodox Church I heard the Christmas bells. There at midnight we stood, the priests and the novices and I, on a platform slung high above the profound valley. The beards of the priests flowed like torrents of black water. Their eyes were red with study and gleamed like coals in the star-powdered darkness.

Or no. I must not recall Syria, Madrid, and New York. There will be no time. The moment is over now. My friends have come back from wandering among Roman earthworks and Druid stones. I must come back from Palermo, from Berlin. The glasses are filled again. What excellent burgundy it is! I have no room for a third helping of turkey, but if you insist. . . . Who'll pull this cracker with me?

The Man Who Lived Backwards

By ALGERNON BLACKWOOD

IF it is true that most people have one secret they never share, it is also true that many have an experience they never tell, not so much from fear of ridicule or being disbelieved as from utter inability to describe it intelligibly. Language has grown gradually: it describes the experience of the race; anything beyond human experience exposes the poverty of language at once. No words exist.

Professor Zeitt had something of the sort, it seems. He was an ardent physicist, astrophysics his speciality; he knew all about waves, he was one of the few who really understood Relativity; he was a wireless expert, too. If Jeans and Eddington were in his pocket, the mystery of space-time was in his mind. He chatted as easily about other dimensions in time as most people do about shares and commodities. Conceptions of time beyond our one-dimensional kind were always in his thoughts.

He was also an experimenter; he made, it appears, audacious experiments, some of them psychological. That he ever suffered from overwork, from cerebral excitement of a rather dangerous sort, is open to question. To myself, who enjoyed the privilege, or suffered the affliction, of hearing his experience, there seemed no sign of delusion, hallucination, or mental disturbance. I remain convinced that he told me something that had actually happened—to an able, clear-headed, if unusual man.

It happened to him on a winter's night as he sat alone in his flat—a Sunday evening, the servants out, and his wife away in Paris. His married life was unhappy, childless, ill-assorted. He had made a mistake. There was another girl he should have chosen. Now, at forty, he realised this, though without undue bitterness, for he blamed himself. Her money had made his career possible. This particular day had been passed in strenuous exercise. His body, he admits, was over-tired, perhaps, but his mind, at any rate, was resting delightfully—he was reading a story of crime over the fire—delicious relaxation, he called it. The room was dim, only the reading-lamp turned on. Facing him in the wall was a long pier glass.

The book, "It Doesn't Pay," was the life of a burglar told by himself—Black, if memory serves me, the author—and he was near the end. In his mind, as he read the last chapter, stretched a picture of the man's whole life, not actually realised, perhaps, but lying there in perspective. Like a map, it existed serially and all at once, though he now focused attention on its close. As a cinema screen, it could have turned back, of course, and repeated any particular section. The whole of the burglar's life lay between the book-covers; it was present, any portion of it accessible by turning back the pages. Its end was vivid at the moment merely because he, Zeitt, focused attention upon that part, that moment. And so, as was usual with him, he realised that his own life, similarly, existed serially, complete, the whole map there, while he was conscious of himself at the moment called forty, merely because he focused attention on that moment. Only, in his own case, Time made turning back impossible. If time had another dimension, he could have turned back to earlier sections.

He admits his general awareness of this idea in the background of his mind. For it was habitual. Such ideas lay always in his thought. But at the moment, thought and interest were centred on Black's adventures, these other ideas not consciously to the fore—when something in the semi-darkened room

suddenly drew his attention. The room, he felt positive, had altered; and this alteration was in his immediate surroundings. Very close to him this abrupt change had come about. And he looked up from his page, startled a little, "as though an unexpected sound had disturbed me," were his words, "something, anyhow, that drew my attention actively."

The winter's night was still, the Sunday traffic negligible, the flat empty, yet he was positive that someone stood in the room in close proximity to him. As he raised his eyes, he looked automatically at the reflection of himself in the pier glass opposite. He saw himself deep in the easy chair, the open book on his knee, the shaded lamp behind his head, and at the same instant saw also the reflection of a tall, straight figure that passed swiftly behind his chair from right to left. Simultaneously with this, and before thought had time to spread, he felt something that, he declares, he had never felt before, something entirely new. Accustomed mentally to contemplate ultimate zero and the colds of outer space, he was instantly conscious now that all about him, in brain and nerves as well, was a sudden cold of another kind altogether, a kind hitherto unexperienced. This cold brought horror with it. He felt as if hanging in interstellar space, adrift from all known moorings, on the brink of something that horrified because it was utterly unknown. In the first second this came to him.

At the same time, he knew that the figure, now passing behind his chair, would appear in a fractional moment beside or in front of him, and even as he realised this, it happened. The figure moved beside him, then in front, then stopped and looked at him. Expecting his muscles somehow to be paralysed by the shock of unusual fear, and that he would be unable to move, he now found that this was not the case. As he saw the tall, straight figure come to a dead stop in front of him, not two feet away, he rose quickly to his feet and faced it. The book fell to the carpet with a thud. It was a young man he looked at straight in the eyes. He was able, even at this moment, to note his sensations. The habit of years worked truly. The intense, strange, different cold, he thus asserts, persisted. It numbed something in him that must have otherwise reasoned, reflected, criticised. These faculties, at any rate, did not function. All that happened seemed natural, not supernatural. The sensation of unbelievable fear that had turned him dizzy was gone. Having terrorised him, it disappeared. His breath became oddly, immensely accelerated. An idea of death slipped his thought. But all these, passing, left an exhilaration beyond all words.

It was under this intensification of consciousness that he then at once began to speak. The figure spoke, too. They spoke together. He emphasised this simultaneous utterance, though the spoken words were not always quite identical:—

"Of course, I know you. I know who you are," he said. "You are myself."

The figure, a young man in a light, summery suit, smiled eagerly.

"I was twenty-five then," said Zeitt. "I am twenty-five," said the other. And, as they uttered together, came all the emotions of troubled love, of doubt, of being drawn in two different directions by worldly considerations and by personal inclination, with all the fever of a young man's indecision.

"If only I could see ahead," Zeitt heard himself saying, while simultaneously sounded: "If only I could go back."

They looked into each other's eyes while uttering the next words, identical words this time:—

"I exist at that point where my attention is fixed at a given moment. But there's really no need to. I can choose my moment, alter my attention—forward or backwards. Can't I?"

The young figure smiled, a curiously passionate expression in the eyes. In Zeitt rose the tumultuous passion for a girl, as against the affection and respect for another girl whose worldly position would enable him to follow his dream.

"I can go backwards or forwards," both spoke together, "by changing my type of consciousness. It's open. It's here, it's now, both accessible, as between the covers of a book—if only I escape from being fixed on a point so stupidly. If only I knew how."

"I do," grinned the other, while Zeitt laughed audibly, a laugh of audacious triumph, using the same words exactly. "I do."

"I can change my consciousness, make it different," cried Zeitt. "I see the way. My life is serial, all at once, whole. I am not fixed at any point. I am in time of two dimensions."

"I always was," said the other, bending his head down to read a letter, whose wet ink still glistened.

"I will destroy it. I won't send it," exclaimed Zeitt, despising himself for proposing to a girl he did not really love.

The young figure tore the letter he held into tiny pieces and turned to throw them into the fire. But there was no fire, only a gas stove burning, and the room was a shabby lodging-house room. Zeitt gazed about him. The picture of the girl he really loved possessed his mind. "I'll go to her—go back to her. I'll go tomorrow." His speech fumbled slightly.

"I'll go to her now," said the figure decisively, his young face alight, as he moved across the faded carpet to a waste-paper basket beside the draughty window.

"I'll change it—change the past," and Zeitt realised he was shouting now aloud, amazing joy and wonder in him, as he watched the shower of small, torn bits of paper flutter down.

The figure came suddenly very close, so close that there seemed hardly room to stand without touching, as though space could not possibly contain both of them on that one spot, then closer still, all over one another.

"That would be too dislocating—for others—and until all can do it," sounded the voice very faintly. Professor Zeitt declares it sounded inside himself. "I'll make the effort, anyhow. A result of sorts may come." The voice died out. The figure was no longer there.

Zeitt, the physicist, found himself alone. He stooped down and picked up the fallen book. The heat of the blazing coal fire scorched his face, but did not affect the curious internal cold that lay, like a touch from interstellar space, over his entire being. He turned on all the lights, and before sitting down to finish Black's book, he wrote down the dialogue and description as given above. It was bald, but as accurate as he could make it.

Long afterwards, as I listened to his account, watching his face, I saw a light in his eyes I have never seen before in any human eyes.

"The major part of the experience," he added, "the important part," he emphasised, "is beyond any power or words at my command."

The distinguished man, now famous and happily remarried, smiled as he said this. He shivered a little. "They'd say I dreamed it," he remarked, shrugging his shoulders. Yet within a few short weeks of the experience, his wife had run off with another man, and Professor Zeitt, finding the girl he loved a widow, had married her.

"Timbuctoo Calling"

By WILLIAM FREEMAN

CHRISTMAS is a jolly time—provided you are on jolly terms with your fellow-creatures. A few tender regrets—yes. A little humorous envy—perhaps. But no hatred or uncharitableness. And anyhow, a certain amount of hope.

The Pedlars' Market at Islington is said to be the biggest of its kind in the world. There are no turnstiles to record the number of people who visit it, but those who visit it may be divided, roughly, into three classes—people who want to sell something, people who want to buy something, and people who have come merely out of curiosity.

Bill Nesfield belonged partly to Class II and partly to Class III. His net cash assets as he went in through the gates amounted to a one-pound note, a half-crown, and three pennies: total £1 2s. 9d., of which five-and-six was already owing for his cubicle in the big lodging-house that did its semi-philanthropic best to make its inmates forget its distance from the Ritz.

He drifted down the aisles of rusty iron, tattered books, excessively second-hand boots and underclothing, and decrepit furniture. The clock in the central tower boomed twelve. Bill realised that he was hungry. He stopped at a refreshment-stall—there are more in the market than there are beggars in Malta—and ordered coffee and a hot pie. "Same as mother makes," beamed the fat proprietress, as she handed it to him.

Bill sat down on the bench outside, and allowed his thoughts to drift, while the east wind fluttered his shabby coat and the market seethed about him. A year ago, three hundred and sixty-five days, he had been in Paris. The same hotel had housed Paula West and her mother. Paula and he had sat late over the fire in the deserted lounge and talked. He had wanted her to marry him. Paula had shaken her sleek golden head. He had pleaded, but she had been firm. Her art came first. She couldn't sacrifice three years' hard studying for the concert-platform for a poky London flat, six hundred a year, and—well, domesticity.

"I suppose not," said Bill slowly. And would have ended it at that. But perhaps because she had suddenly realised how much she cared for him, perhaps merely because she had had a sudden attack of compunction, Paula had laid her small white hand on his sleeve and said: "Listen, Bill. . . . No, don't think I'm giving way, because I'm not." (He had caught up the hand and kissed it.) "I do like you, awfully. And there isn't anyone else. And if ever I change my mind about the career, I'll let you know."

"D'you mean you'll write?" said Bill. Pamela said "No. A letter would say too much or too little."

"Then how?" "Which, of all the songs you've heard me sing, do you like best?"

"Somewhere Calling," said Bill, without hesitation, but flushing a little nevertheless. Because, low-brow little effort that it was, with cheaply catchy words and a cheaply catchy refrain, he had fallen in love with it the first time he had heard her sing it.

"Very well, then. When you hear me singing that, you'll know that—that I've acquired a new sense of values. And if yours are still the same—"

"I'll come, Paula. But it's the maddest of all your mad ideas. How on earth am I to know when you are singing it?"

"If I've become famous enough, you'll see it announced in the papers. And if I'm not

famous enough, why—" her mood changed again—"I expect it will be too soon. Now say good night, and wish me a Merry Christmas. And to-morrow we'll have roast turkey and plum pudding and be thoroughly English and unsentimental."

But to-morrow hadn't been like that at all. A cable had arrived while Bill was breakfasting. His father had had a seizure, and was dying. There was time, but only just time, to catch the boat to Newhaven. Thereafter Bill's whole world had crumbled, collapsed, and vanished. Within a week he found himself saddled with debts that absorbed every sixpence of his father's estate. The old man had been speculating secretly and ruinously. The business itself, in which Bill had been a junior partner, was bankrupt. He had written to Paula, but the letter had come back from the hotel marked "Gone



"Her voice—he could have sworn to it"

away." He had heard nothing from her since. Well, it simplified matters.

He finished his coffee, and the last crumbs of his meat pie, and stood up to pay.

"Bit keerless, 'avin' yer coat open like that, ain't it?" hinted the stall-keeper. "There's plenty o' light-fingered blokes strollin' abaht the market, specially 'oliday-times."

"I've nothing worth stealing, anyway," said Bill, and then remembered the money in his breast-pocket. He slid his hand there.

"Sutthink gorn?" queried the woman, watching him.

"Yes." "Ow much?"

"A leather wallet with a pound note in it." "Ard luck, that. Friend o' mine 'ad fifteen quid stole last summer. Fourpence, please."

Bill paid her, and moved on, his heart leaden. There had been an elderly man on the same bench with him, a man with a wolfish face and an oily voice, who had brushed clumsily past

when he left. A cheerful young policeman was standing near the entrance talking to a market inspector. For a moment Bill thought of going up to them; then he realised the complete futility of making any complaint, and turned aside. Even if he could have identified the man again, he had no proof whatever that he had stolen the note. He did not even know its number.

There are no seats in the Pedlars' Market, beyond those at the refreshment-stalls. You can, if exhaustion supervenes, perch on the low railings of the empty cattle-pens; otherwise there is nothing for it but to keep on walking until you board your homeward bus or tram. Bill made his way wearily towards the section which sold meat and grocery. Pickpockets or no pickpockets, existence must be supported until the holidays were over and he could start once more on the endless search for a job.

He was held up by a crowd round a man selling patent tin-openers. At the stall adjoining was an unshaven merchant whose stock ranged from knives and forks to remnants of carpet. "Ere," he began seductively. "Jest a minute, guv'nor. Want a bargain—the biggest bargain of a lifetime?"

Bill shook his head. "Ain't heard what it is yet, 'ave yer? 'Ow often do you get a genu-wine bran' noo twenty-guinea article offered for six quid? Answer me that."

Bill said grimly, "Not often." "Very well, then," said the unshaven gentleman. "Kindly cast your eye on this 'ere five-valve portable. Straight from Park Lane."

"It's no use to me," said Bill. "No 'arm in listening, anyway." And still clutching his reluctant prey, the philanthropist stooped over the instrument which lay on the cobbles, and gave a casual twist to the hand of the indicator. A loud gush of sound resulted.

"You're wasting your time," protested Bill impatiently.

"As Amy Johnson said to the 'Ome Secretary, 'wait and see.' . . . 'Ere we are, Guv'nor. Timbuctoo speakin'. Now then—"

Above the babel of sounds rose the beginning of a song. "Somewhere, somewhere, someone's calling." Her voice—he could have sworn to it. Bill's lips tightened. How like the Fates, to choose such a moment!

"Wot jer think o' that?" demanded the man, as the last notes died away.

But Bill was already lost in the crowd. All he wanted now was to escape. His shopping, such as it was, might wait.

In the street he could move more quickly. But even there one couldn't escape the stream of Christmas shoppers. And his jangled nerves wanted solitude. Instinctively he turned towards Hampstead. The Heath would be deserted at this time. It was in a little red house on the fringe of the Heath that Paula and her mother used to live and where he had first met her.

He came within view of the house. Someone was standing near the gate. Against his will and in spite of himself Bill came nearer. It was Paula.

He saw a wave of colour rush over her face as she held out her hand. He heard his own voice plunging into explanations, or rather, into half-sentences which explained nothing. And then Paula speaking:—

"I came over from Paris on a holiday yesterday. I wanted to see the old house. Very foolish and sentimental, wasn't it, but I spent most of my life here."

"Are you going towards the station?" "We're staying at the Embankment Hotel."

"We?" "Mother and I. I've been singing in the States, and came home for a holiday."

Bill put his hand to his forehead. "But I—I heard you on the wireless an hour ago. In Timbuctoo."

(Continued on page 926)

Pan and Mr. Goldstein

By ARTHUR COMPTON-RICKETT

"BUT where did you get this weird thing?" said Sadie. Mr. Goldstein puffed his cheeks out importantly.

"I found the ring on Waterloo Bridge—a few nights ago. I had had rather a shock. Yes—a woman had screamed—from somewhere below. I thought she might have fallen in the river, and I looked over. As I did so my foot scraped something hard. I looked down and there was this—ring."

But Sadie wasn't very interested, though she murmured: "Terribly thrilling!" so Mr. Goldstein, leaving his guests dancing in the winter garden, went into his library and rang for the butler.

"These cabaret dancers are late," he said, when this ascetic-looking functionary appeared.

"I was about to come and tell you, sir, that they've just 'phoned through. They have had a motor accident and they won't be able to get here to-night."

"Reckless driving—of course," growled his master, who always exceeded the speed limit himself. "Well, what's to become of my party, eh?" A grey-eyed girl stood in the doorway. She was undoubtedly pretty, and might have been charming but for a certain petulance about the mouth.

"What's the matter, Nunks, old thing?"

"Oh, nothing much, Joan. No cabaret to-night, that's all. . . . So you'll have to dance more with John."

She made a faint grimace. "Poor John—he'll be bored stiff."

Mr. Goldstein's face assumed a beetroot colour, as it always did when he was upset. Perhaps his disappointment had sharpened his other reactions. "Be that as it may," he let out, "I don't understand you young people. You like one another—there is no barrier to your marriage—yet you hold off and play about. I married when I was twenty."

"Yes, and look at you, old dear—no hair—a terrible-sized tummy—a perfect darling, I know; but—well, you aren't a good advertisement, angel; so don't go off the deep end."

Mr. Goldstein made a noise like a sea-lion coming up to breathe.

Joan began fiddling about with the wireless. "Any foreign station worth hearing?"

"Try Rome," said Mr. Goldstein, blinking. What was the good of arguing? "You'll see the wavelength on the card above. But here's John—"

Joan stamped a small and shapely foot. "In a moment, John—" Whine—whistle—whine. "Atmospherics are bad—"

"Nothing doing," said Mr. Goldstein, consulting the paper. "Try—Paris—"

A strange chuckle came over the wireless, followed by a snatch of song.

"There is something," said Joan. "I can't understand what they're saying—"

"I know Italian a bit," said John, importantly. He listened a moment, then shook his head.

Mr. Goldstein twiddled the ring impatiently; the electric light gleamed on the barbaric red stone, in its queerly embossed setting.

"I say—it's rather dinky—let's have it a moment." She slipped it on her finger. The music swelled out into a wild chant—still interspersed with laughter. "Sounds rather

attractive. Wish you'd got them here in place of the cabaret—"

"Do you? I don't," said her Uncle; "they don't sound—sober to me."

"All the more exciting," said Joan, flippantly. There was a confused din from the winter garden.

"What's that?" said Mr. Goldstein.

The ascetic butler came in, his cloistral calm vanished. "There's a party—just—gone into the winter garden. They say—they've come to dance—as you wished them to."

John gave a shout of laughter. "It's a wishing ring!"

"Wishing fiddlesticks!" said Mr. Goldstein. "They're just gate-crashers—I'll settle them."

The two young people flew from the library through the hall to the winter garden, Mr. Goldstein following.

At the entrance he stood stupefied. His guests were ranged round the floor watching with mingled amusement and surprise a cluster of slim figures who had taken possession of the floor.

"Fauns and satyrs," said a lean, middle-



"Joan stared at the figure, expectant, fascinated, terrified."

aged man with a gleam of interest in his eyes. "Quite an original idea!" and he nodded at the host.

"Ah, original!" snapped a middle-aged lady at his side. "Well—I'm used to young people in scanty clothing. But really—" she finished with a snort.

Mr. Goldstein could say nothing. He opened his mouth—no words came.

Someone had turned off the lights—but a phosphorescent light seemed to emanate from the dancers themselves. One young girl detached herself from the others. She was bare of costume save for a jerkin of leaves. Her hair hung like a lawn of dusky mist round her shoulders. Her eyes were shining, and bright, like the eyes of a hare. Round the floor she danced with the freedom of a young animal; then with a low, soft cry, she flung out her arms and round a cactus plant peered a youth with the peaked ears of a faun. Others joined them. In and out they danced with exquisite grace and abandon, pursuing and pursued. Then, when the dance was at its wildest, they collapsed on the floor, and with chins cupped in their

hands, looked gleefully at the guests. There were murmurs of delight. "Aren't they divine!" "Too thrilling for words."

Abruptly they leapt to their feet and the music changed to something savage and barbaric. The music! Mr. Goldstein suddenly realised it was not his orchestra that was playing. He could see no musicians. They too had joined the guests and were looking on.

Above the glass roof came a zigzag gleam, followed by a crash of thunder. Then, from nowhere, a tall, imposing figure swept the fauns and dryads aside. He also was a faun, but with the face of an Apollo. He dominated the others. Their eyes were fixed on him, their king. Joan stared at the figure, expectant, fascinated, terrified.

Slowly he came up to one of the guests, a young married woman named Sadie. There was a strange, green glitter in his eyes, and when he spoke his voice was rich and melodious. "Poor little moth flying round the flame! So you find life amusing?" (She gave a little frightened nod.) "Think you're wicked, eh? Not a bit; you're just—silly."

Passing from her, a pool of light following him, he halted by a youth who had just reached that stage of alcoholic excitement when a man confounds fatuousness with impressiveness. "Look here—you don't understand. I'm with you all the time. I—believe—in wine—woman—and song." The Master Faun gave a derisive

laugh. "Wine—woman—and song. Sing! you can't sing—you croak. Woman! you'd be scared by a real woman if you met her. Wine! you don't even know how to get drunk properly. Wine is the gift of the gods. It should make you lusty and joyful. Does it? Look at you! You are none of you alive!" said the Figure, scornfully, his eyes travelling round the place.

"Oh, I'm fed up with this!" muttered Tony. "Expect it's meant to be funny."

"A rotten stunt," said Sadie. And they turned angrily towards the petrified Goldstein.

Joan came forward bravely. "It isn't true. We are alive. I'm alive."

He scrutinised her flushed face. "Think so? You could be—alive. But you won't give yourself a chance. You're afraid, my child. Afraid of all the big things. You were made for love and run away from it."

"It isn't true."

"It is, you little fool. . . . Do you think a silly smile here and an empty kiss there is love? Love's terrible. . . .

An agony—an ecstasy. Admit you daren't face it."

With courage born of desperation Joan called out: "I want to face it." Then once again the wild music from nowhere and everywhere started, and the fauns and dryads circled mockingly round the girl.

"Stand away; leave her to me," said the Master Faun. Then to Joan: "You mean what you say? You want love and life? Put your hands in mine. Ah! you're afraid."

"I'm not afraid," said Joan in a choking voice. And she held out her hands.

Through the glass roof streamed the moonlight, reflecting his grim, sardonic face and the pale, set face of the girl. As she gave him her hands he swung her on to his shoulders with a shout of triumph.

The guests stood round like figures in a trance. But, as if liberated from shackles, Mr. Goldstein, with a grotesque run, pounced down on something lying on the floor.

He had seen the ring, which had dropped off.

(Continued on page 918)

“Do you mean to tell me I shall get—

£440 AT END OF 10 YEARS

THEN

£460 AT END OF 15 YEARS

AND A FINAL

£2414 AT END OF 20 YEARS



Yes! It's on a special Plan—a plan evolved for the particular benefit of the salaried man or woman who may have need of Capital in a few years' time and certainly will be glad of it in twenty years' time.

The generous, unprecedented, profits of the Sun Life of Canada make such a Plan available, practical and secure. The extraordinarily liberal bonuses (and maturity dividends) declared by this great Annuity and Life Company are added to your annual deposits to provide the above amazing results, which are based on present bonus rates.

In addition you save on Income Tax each year AND YOUR LIFE IS INSURED FOR £2,000 FROM THE FIRST DEPOSIT.

This, from a Company whose assets (invested under Government supervision) exceed £116,000,000, deserves your immediate investigation. Send for further details. No obligation is incurred. The figures given refer to a man age 35. But the “Three Stage” Policy applies to other ages and other amounts, larger and smaller.

FIND OUT
WHAT THE
“THREE STAGE”
POLICY
MAY MEAN
TO YOU.

To H. O. LEACH (General Manager),
SUN LIFE ASSURANCE CO. OF CANADA.
(Incorporated in Canada in 1865 as a Limited Company).
111, Sun of Canada House, Cockspur Street, Trafalgar Square, London, S.W.1.
Please send me further details of your “Three Stage” Policy.

Name.....
(Mr., Mrs., or Miss)

Address.....
.....

Exact date of birth.....

W.R. 12/12/30.

FILL IN AND
POST THIS
FORM TO-DAY.
THIS PLACES
YOU UNDER NO
OBLIGATION.

Then and Now

Christmas Reminiscences

By J. GODCHAUX ABRAHAMS

COMFORTABLY seated alone in my wireless room, I had enjoyed a short orchestral concert from Budapest, and had switched off preparatory to a search for another foreign programme. From another part of the house I could hear the strains of a gramophone record—one of those jumpy, catchy, syncopated melodies which are still so popular to-day. It was Christmas Eve; in anticipation of the revels the youngsters had cleared the drawing-room of all furniture for an impromptu dance. Suddenly, my eyes happened to rest on a dusty shelf piled up with odd wireless components, half-dismantled receivers, oddments—the junk-box of ages. At one end, almost lost in this untidy heap was that old crystal set. It was then, as in a flash, those memories of past Christmases came back to me. It seemed a long time ago, and yet—I recalled the early broadcasts in London. Why, that primitive hook-up must have cost me at least four "Fishers" and the heavy, clumsy headphones hanging by its side probably thirty shillings!

1922

Christmas, 1922: I could see it all again. A stormy, wet, and windy night. Laboriously, in the driving rain, I had thrown a rubber-covered wire over a tree at the bottom of the garden, and brought this improvised aerial through a first-floor window; the bathroom tap had provided an earth. Imagine the feverish excitement caused by the finical adjustment of an elusive cat's-whisker, the first sounds captured, and the crowding around the table of the family, all intent on listening in turn to marvel at the music picked up out of the ether. Even cookie had been hauled out of the basement to be shown the new wonder. None of us heard a complete item in the programme. How was it possible? "Is it my turn now?" "Does it come through the window?" "Does it work in fine weather?" "May I try?" "Dick's had two turns already." I could see again the blank look on their faces when, in the excitement, somebody—nobody would own up—jogged the table, with the result that the precious crystal immediately struck work. How long ago was that? Only eight years?

Berlin: 1923

The mental picture grew dim, faded out, and, dreamingly, I recalled the following December. That was in Berlin. How quaint and primitive it all appeared to me now! I had climbed up some hundred stairs over the gramophone shop in the Potsdamerstrasse to visit the Voxhaus studio. It was a smallish room with a chequer-board of carpet numbered squares indicating the position, after test, the artists were told to occupy when facing the microphone. And that "mike"! Something like a clumsy telephone receiver slung over the back of the chair or even held in the singer's hand. How scrappy had been the entertainment! It had consisted of a few vocal numbers, a violin recital, and a gymnastic feat carried out by the player of a trombone who had all his work cut out to keep the flare of his instrument from knocking the microphone over. Then there were the duettists who kept their heads together and bobbed sideways, each in turn, to face the instrument. But it all spelt "Radio," the new pastime, and "Rundfunk," with a capital R.

Apparently, it had impressed me greatly, for I came away from the Funkhaus determined to possess some kind of receiver despite all German restrictions, a sixty-mark licence, two house-

holders' references, and an underlined clause forbidding a foreigner to become a happy owner. I wanted to hear English voices again; I had to listen to London at all costs.

Fortunately, I spoke German fluently; it was a distinct help when it came to scouring the better-class dealers' shops for the necessary components. In most instances I had to point to the articles I required, however, as but few assistants knew their uses, and the technical names used for the different gadgets were unknown to me. I had never heard of the word *Hörmuschel*,* for headphones; that only came later. I bought a condenser here, a coil there, valves where I could—there was a run on them, and supplies were very limited—and as luck would have it, in the course of my wanderings through the Berlin streets I met a young and enthusiastic electrician who ran a small workshop.

The Police Join the Conspiracy

"Radio?" He pricked up his ears. "Make a receiver? *Jawohl!*" So we spent two nights over the business and evolved a four-valver.

Back in my flat later, with the youngster as a willing partner, I slung an aerial around the picture rail, set up the receiving station, and, much to our delight, received a news bulletin from zLO. But our news soon leaked out; the secret could not be kept; and before I knew what had happened, the neighbours in the adjoining apartments had flocked to my room. *Rundfunk* for the first time. "Wie kommt denn das?" The same old questions, the same superlative adjectives; a volley of "*Achs!*" "*Kolossal!*" "*Wundervoll!*" and the same squabbles over the headphones.

Good old crystal set! You were the fore-runner of all those interesting nights.

Although, in view of the dire threats put out by the German police, I had sworn my visitors to secrecy, at all hours of the day some casual stranger would be brought to me with a "Would the Herr very much mind? My friend would like to see the radio." On one occasion, at 7 a.m., the maid introduced the postman into my bedroom with the same request, and I received the shock of my life when she brought in, on the same evening, a stalwart *Schupo* (policeman). He was a cousin of hers—so she said. And the representative of the law, far from asking pertinent (or impertinent) questions, was duly awed and gratefully retired after an audition, giving me, as he left the room, a knowing wink with the assurance that if he could bring along a colleague, everything would be all right. No licence, and a foreigner in Berlin at that! In those days there was some excitement in possessing an illicit receiver.

Again, as the playwrights say, some months elapse.

Cologne: 1924

Let me see, now—1924? That was Cologne—the British Occupation on the Rhine. All radio receivers in that part of Germany held by the Allied troops were prohibited by the authorities; the only sets to be seen were in the hands of a few *Auslander*. And all the inhabitants, learning what was taking place in Berlin, Leipzig, Stuttgart, and other cities, were desperately eager to hear broadcast concerts. I had brought my four-valver down from Berlin, and, before the holidays, had installed it at a farm on some hills overlooking Cologne. It was occupied by a member of the British Army. I wonder how many friends drove out in the evening to hear the voices of the B.B.C. stations; how they listened to the football results, the general news, the local bulletin from their own towns. Continual requests were made to me to get on to the British Isles. "Can ye no hear Glasgae?" Or it was Cardiff or Manchester, or any of those places with which, by the magic-box, we could

* Literally "hearing-shells."

establish a temporary link just to find out what the old place was doing at the moment. Some even jokingly shouted a message into the loud speaker in the hope that it would reach their relatives. It was the English voice again which made so direct an appeal at all. Truly, the patriotism of the Briton is only made visible when he has crossed the Channel; it is in direct proportion to the square of the distance which separates him from the homeland.

Later, by the way, when, on another visit, I had taken a portable across with me, the novelty of broadcasting had worn off. On one occasion, as, with the window open, I had tuned in to London for the six o'clock chimes I heard a voice in the country lane outside say: "Dat was Pig Pen," which, although understandable, seemed to cast an unwarranted aspersion on our Houses of Parliament.

To-night

To-night, idly, I twirled the condensers, and at almost every setting some musical programme was available. *Embarras de richesses!* It was impossible to decide which of all these entertainments was the one to be selected. This plethora of good things in the ether made a choice difficult. While listening to one good concert, necessarily you must miss others of equal interest. In the old days—but why speak about them again? As the dials revolved suddenly I heard the opening bars of the overture to Puccini's *Turandot*. There I stayed my hand, and a few seconds later the loud speaker filled the room with music. The wireless room door softly opened and two touzled heads popped in.

"What's on now?" both said in unison.

"Rome," I replied dreamily; "an opera from the Teatro Reale. It's 900 miles away. Just listen. The wonder of it!"

"Oh, well! Call us when you get a dance band from one of the London places." And the door closed with a bang.

Heigho! Times have changed, and perhaps I am still back in the past.

"TIMBUCTOO CALLING"

(Continued from page 923)

"Are you being funny, Mr. Nesfield?"

"Not intentionally. If it wasn't Timbuctoo it was some foreign station. And I recognised the voice."

"And the song?"

"Yes."

She turned her head to watch a sparrow swaying on a twig of privet. "I've sung that a good many times. But I suppose I've never been famous enough for you to hear it before. Or perhaps it wasn't worth while coming?"

"Worth while? If you knew—"

"Tell me," said Paula.

He told her. When he had finished she said simply, "My dear, you must let me help you. Yes, I know you're proud, but so am I, and I'm sacrificing my pride now. Because the values have altered, and I've discovered what matters. There are friends of mine who can find you something worth while. When that's happened—"

He interrupted her to catch her in his arms.

"But the song," he said presently. "How should I have heard it?"

"There are such things as gramophone records," Paula reminded him demurely. "And if you turn to to-day's programme from Burnemouth—not Timbuctoo—you'll find a selection of popular songs from the repertoire of—well, me."

It was past five when Bill entered his cubicle again.

On the bed, where it had fallen unnoticed from his coat, lay a brown oblong object—his wallet.

Tuned In to the Infinite

By C. G. PHILP

"**H**EIGH-HO! But I *am* tired," I said aloud, yawning and stretching, only to settle down deeper in my cosy arm-chair.

Outside, the wind howled and raged, as if it would hurl my tiny cottage into the raging sea beneath, but it left me unperturbed. For many years now I had lived alone in this wild, out-of-the-way spot on the cliffs of North Cornwall, and I loved to hear the tumult outside, for the added sense of comfort it gave inside. A cosy fire, smokes, drink, and my portable wireless set—what more could one wish for? And yet I felt strangely meditative this Christmas-time. I felt that the years were slipping by, and soon, very soon now, my allotted span would be run.

I glanced sorrowfully at my wireless set at my elbow. Wireless had always been a mania with me, and well it might be, considering my secluded life and circumstances, for it had given me a "new joy in life," and alleviated what had hitherto been a life of almost intolerable loneliness.

"What would I not give to be able to see you, my dear old friend, in fifty years' time," I murmured. "How you will have grown and improved by then, judging by the vast strides you have made in the last ten years. Alas! but it may not be, and yet, if only I could see you then, I feel, like Wolfe, 'that I could die content.'"

Sadly and regretfully I gazed into the glowing fire, loth to leave its cheery warmth, although it was now well past midnight. . . .

And then a strange thing happened!

I found myself seated on the opposite side of the fireplace, and in my chair sat a little old man, with a kindly face and twinkling eyes. The room was little changed, except that it was now brilliantly lit by several electric arc globes, suspended from the ceiling at various points all over the room.

Between me and the old man was a large wireless cabinet of dull grey colour, with a mirror arrangement at the top.

Strangely enough, I felt no surprise at this sudden transformation—indeed, I felt quite at home, only I sensed that I sat there more as a guest than as the owner of the house.

"I want you to hear this concert from Honolulu," said the old man; "it is usually very good."

He rose as he spoke, and from a small box at his side selected a piece of glass like a camera quarter-plate. Glancing at a magnetic needle surrounded by a calibrated card, he rotated the set slightly, placed the glass plate in a frame inside the set, inserted a plug into a socket and pulled over a switch.

Instantly the room was filled with the soft sweet music of a ukulele quintet. At the same time the mirror lit up, giving a televised picture of the performers at the transmitting end. This television effect did not surprise me in the least, although the detail and definition were wonderful. But the beauty and purity of the music held me spellbound. Never in my life had I heard such perfect reproduction, and it was enhanced by the marvellous manner in which it was diffused all over the room—so vastly different from the concentrated blare of the ordinary type of speaker.

"Splendid!" I cried. "What a perfect speaker! But where is it? It is not in the set."

He laughed. "No, it is certainly not in the set. We do not use contained speakers now."

I stared at him in surprise, my gaze wandering from him round the room in a vain search for the speaker which seemed to be everywhere.

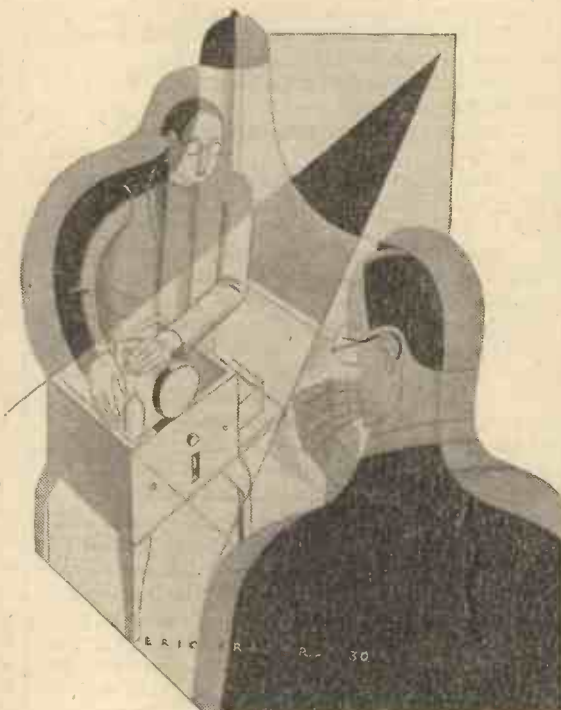
"Practically all speakers now are of the electric-arc pattern," he went on, waving his hand in the direction of the small arc lamps I had previously noticed, "and we use one, or any number of them, at will, according to the volume desired."

Seeing my obvious perplexity, he switched off the set, took one of the lamps from its socket, and handed it to me for inspection.

I examined it with great curiosity, but so far as I could see it consisted merely of a pair of tiny carbon rods, inside a small glass globe with holes at the top and bottom. There was absolutely no trace of a diaphragm of any sort.

"How does it work?" I queried.

"The rectified signals are superimposed on the main lead to the lamps all over the room," he replied. "The carbons are rendered incandescent in the usual way, but the effect of



the superimposed signals is to vary, ever so slightly, the intensity of illumination, and therefore the amount of heat given off. Now, all heat radiation denotes intense molecular activity, and the air molecules in the immediate vicinity of the arcs have their periods of vibration varied accordingly. These in their turn re-percuss on the cooler adjacent molecules, thus creating molecular sound waves just as the old type diaphragm did."

"Molecular sound waves!" I ejaculated. "Why, I always understood it was air waves."

"Air waves, yes, but not waves of air," he answered. "When heat is imparted to a gas, the normal motion of the molecules composing it is increased; their vibrations become more rapid. The carbon-arc speaker, by acting directly on the air molecules, without the aid of any mechanical moving part like a diaphragm, reproduces all frequencies impartially, and without resonant effects. Hence reproduction is perfect."

I nodded affirmatively, and continued my examination of the set. On the right, projecting on to the mirror, was a cathode-ray tube. Close by, bunched together, were three typical pentode valves, whilst at the other end of the set were

two more, together with a vacuum tube of unusual shape.

"What an extraordinary valve!" I said, pointing to the last named.

"That is one of the latest type of vapour valves," he explained. "As perhaps you know, the vapours of certain substances—mercury, for example—will act as rectifiers when subjected to electrical stress. They are not nearly so sensitive as a triode valve, but our 5,000 kilowatt stations—the usual size nowadays—easily render the extreme sensitivity of a triode valve unnecessary for detector purposes, apart from the fact that the inter-electrode capacity of the latter renders it useless for the reception of the wavelengths now in use.

"Ah! I suppose this set works on the ultra-short waves—say 10 metres?"

"Ultra-short waves, yes, but much less than 10 metres. Thousands of secret and directional commercial telephony stations now use the 10—20 metre band. For broadcasting we use the 1—5 metre band, which provides ample room for the broadcasting stations of the whole world.

The power of the transmitting stations is such that any station can be received at crystal strength on a vapour valve, and the enormous amplification of our latest pentode valves does the rest. High-frequency amplification is never used. For the power-distributing stations, which operate on the 5-10 metre band, a different principle is used."

"Power distribution! Yes, I guessed that would come one day. But what an enormous economic loss, it must entail, seeing that not one millionth of the radiated power can ever be utilised."

"No. That is not the case. You see, all power is distributed on the beam system, and owing to the vastly more efficient reflector system possible by the use of such short waves, our beams are a thousand times more efficient than the earlier type of beam stations operating on longer waves."

"But even so. Think of the enormous waste!"

"I don't think you quite understand. We do not project the power beams horizontally, but almost vertically.

"Vertically!"

"Yes. So as to impinge on the Heaviside layer, from which the waves are reflected on to a certain definite area, equal in size, roughly, to the average English county. But such an area must be at least 500 miles from the transmitting source; that is why I get my power from Germany. England, in the same way, supplies all its power to the Continent."

"What a paradoxical arrangement! And how is the power converted?"

"The oscillations in the receiving aerial are first resonated and then converted into pulsating, direct currents by crystal rectifiers. The radiating stations are usually of 10,000 kilowatts, and although crystals of the present type have been enormously increased in sensitivity after years of scientific research, they are, even now, only capable of dealing with very small currents. Nevertheless, they act as very efficient trickle chargers."

"But a large number of stations must be necessary?"

"No. Not very large—about fifty stations supply the requirements of the whole of England. Of course, the great advantage of wireless power distribution lies in the fact that every habitation, no matter how isolated, is able to receive an electrical supply on equal terms with town dwellers. It obviously costs no more to supply a lonely village than a busy town."

"But tell me," I went on, "what was that little glass plate I saw you fit to the set when first you switched it on?"

"That? Oh, that was my coil—see, here is one"—handing me what looked like a mounted microscope specimen. In reality it consisted of a few turns, no larger than a sixpence, of very fine wire, mounted between two thin glass plates.

"Amazing!" I exclaimed. "But surely, tuning must be a very difficult process with tiny coils like these?"

"Tuning! We abandoned that long ago. All we have to do is to direct our frame aerial to the station required by the aid of this magnetic needle here"—indicating a small box-like arrangement which lay beside the set—"insert a coil of a definite fixed wavelength, and we are through."

"But I do not understand. How can you get any particular station without tuning? Must you have a separate coil for each?"

"Precisely so. You see, all sets now in use are energised by frame aerials; therefore they can be calibrated to a definite wavelength at the works, before they are sent out. Any slight variation in construction is compensated and adjusted by this micrometer single-plate variable condenser"—pointing to a tiny condenser with plates the size of a sixpence—"but it is afterwards sealed and cannot be altered by the user of the set."

"What an extraordinary arrangement! Why, you must need hundreds of separate coils?"

"Yes, if you desire hundreds of stations. Still, each coil costs only a few pence, so we get our stations fairly cheaply."

"And can you work the set as an electric gramophone?"

"Yes, but we do not use the original types of 'pick-up.' We employ a film and a photo-cell as a separate unit. Embodied in it is a Neon lamp, so that we may make our own records if desired—just as the sound films of the 'talkies' are made. Each film takes thirty separate tracks, side by side, and we can select any particular track. That is what these three extra valves are for"—pointing to the three valves on the left of the set—"since the photo-cell currents are thousands of times weaker than the ordinary incoming signal impulses."

"But if you require three valves for your gramophone amplifier, and presumably three for your radio, whence do you get your television signals?"

"Oh! These are superimposed on the audio signals."

"What! Without interference?"

"That is easily accomplished. At the transmitting end the television signals are added to a locally-produced frequency just above audio frequency, say 40,000 per second, and although at the receiving end they pass to the arc speaker along with the audio signals, they produce no sound, their frequency being beyond the limits of human hearing. They are present, of course, but we cannot hear them. By suitable filters in parallel with the speaker output or last valve, the television frequencies are separated from the audio frequencies and passed to the cathode ray tube, the rays from which, controlled by the incoming signals, produce on the fluorescent screen the image transmitted. We have no need of rotating discs, or of mechanical synchronising devices."

"It is all very wonderful." I said meditatively. "If anything would make me believe in the existence of an intelligent Creator, and not merely some blind force, I think it would be the marvels of science. As it is, I fear I shall live and die an atheist."

He gave me a look of surprise and pain.

"Atheist!" he exclaimed. "How can one be an atheist to-day, when mankind is actually, and not figuratively, in tune with the infinite!"

"Oh, indeed!" I replied, with a tinge of sarcasm in my voice.

"Yes. And it is mainly due to the wonderful progress in radio science that this has

come about. Imagine, for instance, that a person who died a hundred years ago came to life now, and I told him that this room was pulsating with non-material waves of speech and music from every capital in the civilised world. Would he not dismiss my statement as beyond the limits of all belief?"

"He certainly would," I agreed.

"And yet, as you and I know, beyond any shadow of doubt, all that would be required to convince him would be an ordinary radio set and speaker. You see how easy and practical it is to explore the non-material universe with the few material parts, of which such a set is composed.

"I agree," I said stubbornly, "but it proves nothing in the eternal sense. The origin of these non-material manifestations is, after all, due to human causes."

"We are not concerned with the origin of the causes. The point I want to emphasise is that it is possible and practicable to explore the non-material universe with material aids. And if we would find the Creator we must obviously explore the non-material universe for Him. We could never hope to find Him in the physical world, which all common experience shows is subject to change and decay."

"And has science been able to do this?" I cried in amazement.

"It has, and by the same means," he answered briefly.

"But tell me," I pleaded. "How has this wonderful achievement been attained? To me it is incredible!"

"For long years it has been assumed that the origin of human thought was *internal* to man—some vague sort of biological process in the human body, bringing about chemical changes in the blood vessels surrounding the brain. Such a theory was unsatisfactory and illogical, for in its ultimate analysis, thought suddenly sprang into existence, or rather owed its origin, to nothing and nowhere. Or else, which was equally puerile, it originated from the food we ate, which in turn originated in infinity.

"Later on, cases of telepathy and clairvoyance, proven to the hilt, showed that all the effects the human brain could produce—sight, sound, and sensation—could both be transmitted and received with the speed of light, and by inference, through the medium of ether waves.

"Corroboration of the fact that thought could, and actually did, exist as ether waves, was supplied by the scientists Di Fruzzo and Charpentie, who demonstrated that concentrated thought would produce slight external fluorescence on a suitable X-ray screen.

"This demonstration gave rise to the theory that original thought was *external* to man, and was brought about by the action of ether waves, which, by varying the motion of the free electrons forming the tissues of the brain, brought about the perception of an idea, just as similar ether vibrations brought about the perception of vision. Such a theory, correlating as it did with the universal electron theory, was far more logical and convincing than the old psychological theory referred to, and scientists of all nations then strained every nerve in an endeavour to isolate and identify these 'vital radiations,' as they were then erroneously termed.

"Can you imagine a more terrifying task? Hitherto, all forces investigated by science were non-intelligent—the sun, for instance, projects its rays eternally, without personality of choice. Now, for the first time, science was called upon to investigate an entirely new force, *capable of intelligent action*—a force which, if proved to exist, might perchance dominate and govern mankind in the same way as mankind dominated and governed its domestic animals!

"For nearly twenty years science wrestled with this enthralling task. The first progress made arose from research made into the causes

of leakage from electrified conductors suspended in air. This led to the detection of an entirely new radiation, with a wavelength thirty times shorter than the hardest gamma rays. These rays were so intensely penetrative that they would pass through a wall of lead eighteen feet thick. They were named 'Cosmic Rays,' because it was believed that their origin was among the most distant stars. For ever passing through our bodies, as easily as light passes through glass, their effects—whether prolonging or shortening life—were unknown for many years. Then, in 1935, they were found to be the lowest form of 'vital radiations,' giving life to all the lowest orders of living creation. This applied, of course, to the planets as well as to this earth.

"Step by step these 'vital radiations' were explored and, on the analogy that the brain can both originate and receive thought waves, it was discovered that all cells and tissues of living organisms gave off similar radiations to those to which they owed their existence. And so, still smaller and smaller radiations were discovered, giving life in turn to higher and higher orders of living creation, until, in 1945, the origin of human life itself was located in rays with a wavelength of .000,000,000,01 metre!"

"Amazing!" I murmured, as he paused for a moment. "Then that means that at this very moment this room is pulsating with ether waves of life!"

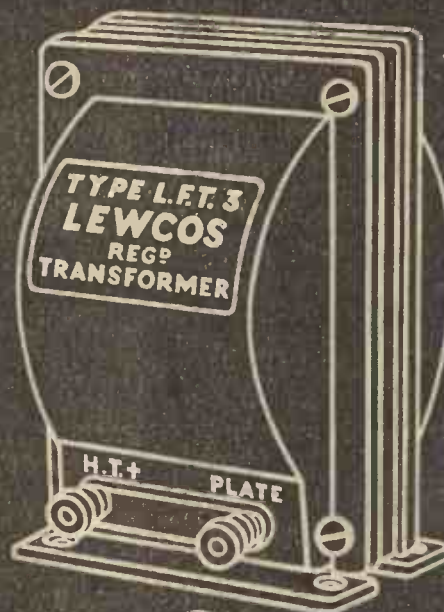
"Yes. And as you will soon know, of mind, or intelligence, as well. For mind, or intelligence, is obviously of a higher order in the plan of creation than life itself. Myriads of orders of living creatures and organic life exist, but only to the very highest orders of creation is the supreme gift of intelligence given, merging in turn to the still higher order of reason. The ether waves of reason have not yet been located, but only last year science made the supreme discovery that thought existed in the form of ether waves of .000,000,000,0005 metre. And although it has not yet got beyond the laboratory stage at present, the whole of the civilised world now knows, and accepts as an undisputed fact, that somewhere out in the abysmal depths of space, beyond the known limits of interstellar space, there is a vast, super-human *intelligent* Agency, or Force, for ever at work, radiating the highest thoughts and ideals that ever lead mankind upward and onward in the evolutionary scheme of creation. Counter-forces may be at work, sending out thoughts which only tend to lower and degrade mankind—I do not know—but this spiritual broadcasting station, as it were, demonstrates, by its very existence, that man is *immortal*. Now at last, mankind is 'in tune with his Maker.' Now at last . . ."

Crash! Only a falling log from the fire, but in a flash I was back again in my own arm-chair, gazing stupidly round me. Was it all a dream? Or had I, for once in my lifetime, been privileged to be "in tune with the infinite." I cannot say, but the echo of the words; "this spiritual broadcasting station, as it were, demonstrates by its very existence that man is *immortal*," comes as a balm to my troubled soul, and I feel now that I can face the end without fear.

DOMINION AND FOREIGN INTELLIGENCE

(Continued from page 938)

£10,800. It was found that as much as 70 per cent. of the programme service over these twenty stations is free, the remaining time being taken by commercial sponsors who pay for time. The average advertising rate per hour for a 5 kW. station is £62 during evening hours, and the monthly income from advertising sources averages about £4,300 per station. The average total monthly operating costs of each station are £4,400. Salaries account for nearly £3,800 of all expenses, artists' fees accounting for two-thirds of this sum.



The
LEWCOS
 CONSTANT INDUCTANCE
 TRANSFORMER
 Price 20/- - Ratio 3 - 1

**CONSTANT INDUCTANCE
 MEANS CONSTANT PERFORMANCE**

..... irrespective of signal strength
 Distortion is Completely Eliminated
 With the Lewcos Transformer
 (Illustrated above) for First or Second
 L.F. Stage

WRITE FOR FULLY DESCRIPTIVE
 LEAFLET SHEWING INDUCTANCE
 CURVE, REFERENCE R.61T



LARGE
 STOCKS
 OF
 LEWCOS
 RADIO
 PRODUCTS
 HELD AT
 ALL
 BRANCHES

LEWCOS RADIO PRODUCTS FOR BETTER RECEPTION

THE LONDON ELECTRIC WIRE COMPANY AND SMITHS LIMITED, CHURCH ROAD, LEYTON, LONDON, E.10

EVERYTHING

The
G.E.C.
your guarantee

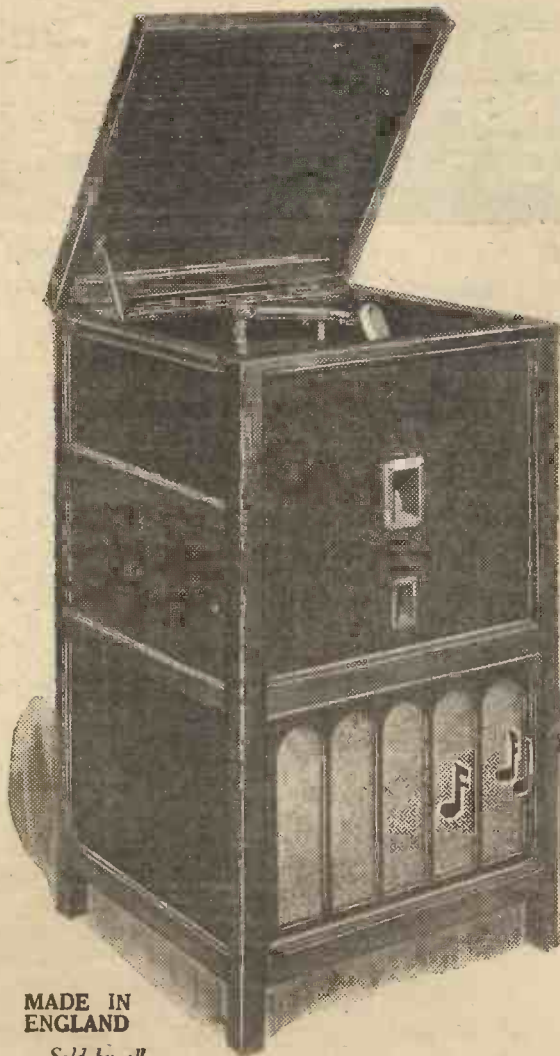
ELECTRICAL

Make this Xmas Happier with a

GECOPHONE

RADIO RECEIVER

Have a really worth-while Xmas! A small family gathering—a little crowd of friends—a "full-size" Xmas party—it's all the same! You simply must have plenty of good radio—a receiver that will give you everything you want—beautifully clear, certain and natural—a GECOPHONE, of course!



MADE IN
ENGLAND

Sold by all
Wireless Dealers.



GECOPHONE

offers a wide choice:

RADIO GRAMOPHONE for A.C. Mains £70

2-VALVE ALL-ELECTRIC RECEIVER for A.C. Mains £15

3-VALVE ALL-ELECTRIC RECEIVER for A.C. Mains £18

4-VALVE ALL-ELECTRIC RECEIVER for A.C. Mains £30

SCREEN - GRID THREE-VALVE RECEIVER £12

PORTABLE RECEIVER (All Electric, or Battery) 20 Gns

You can buy your GECOPHONE for cash or HIRE PURCHASE.

Ask your dealer for particulars.

WRITE for folder BC5603/4/5 for full particulars of GECOPHONE All-electric Receivers, Portable and Battery Receivers, and Loud Speakers. Sent Post Free on request.

MAKE UP YOUR MIND TO HAVE THE BEST FOR XMAS!

Advt. of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

On Going to Bed

By MORLEY ROBERTS

PROBABLY the first great step towards what it pleases us, savages as we still are, to call civilisation, was the institution of a stationary bed, that is of a bedstead or bedplace. The earliest matron who, in the Bronze Age perhaps, rose to this great notion and, after years of pressure, induced her husband to put up one, certainly called in all the other women of the tribe to admire and envy it. The husband, if politically inclined, possibly remarked, when squatting about the campfire, that this bed was a proof and a symbol of stability. The tribe were no longer wanderers. There is something to be said for stability, and I should not complain if civilisation had stayed there. But civilisation never does. It continues preposterously, and the result of this "improvement," perhaps inevitably, seems to have been to induce some people to take off their clothes when they retired. This reform (for I have no doubt that it was esteemed one) was gradually forced on others.

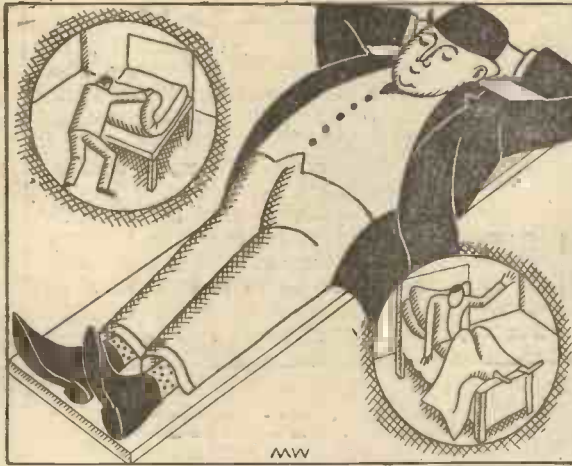
Now, I do not object to taking off my clothes occasionally, for they would fall off if not removed at proper intervals and renewed. What is objectionable is the modern habit of removing them every night and actually putting on other objectionable garments known as pyjamas. For if we consider the time wasted in all these processes they seem lamentable and endless in their consequences. Why should I take my warm clothes off in the cold, when I am faced with the obvious fact that I must put them, or others, on in the morning when it is probably colder and they have been cooled to freezing point? There is no sense in it. I know that some apparently sensible people do not see any objection to this unnecessary labour. They even say they are more comfortable and urge that doing so facilitates washing. They declare that they cannot have a bath when clad. True, but why have a bath at all, except at reasonable intervals? Why outrage the natural instinctive repugnance that all properly constructed children have to taking a bath and even to washing at all? A bath is an elaborate apparatus for getting wet all over, but in a wet climate such as ours we too often get wet without any possibility of avoiding it.

At one time I lived in the Australian bush. What did I do there? Was I compelled to take my clothes off by private and public opinion? Far from it. There was no private opinion in a house to compel me, for I never lived in a house, and the public opinion among my fellows was that to go to bed at all in the proper sense was not only absurd but impossible. For we had no beds, at least, nothing that a furniture shop would call beds. We had blankets and, unrolling them in the softest place we could find, we lay down in our clothes and slept far, far better than any rich man can ever hope to sleep. If we were travelling on horseback, we turned the saddle upside down when we camped and put our one coat, probably soft and in rags, in the saddle for a pillow. This left us ready for action. When we got up we were up at once. There was no absurd delay about it. In one swift movement we were ready to kick the fire together and make breakfast, after we had lighted our pipes, of course. We did not call for shaving water; we asked no one if the bath was ready and the water hot; we did not choose the particular razor with which we were to shave; we scorned hair-brushes, though some carried a small

comb in their waistcoat pockets, and we never had to see if the shirt we proposed to wear was clean. Probably we had only one. What a relief this seems to me now, when after all the superfluous and preposterous rites of the bathroom I return to my bed-room and begin the endless process of putting on clothes which I should never have taken off.

It is true that in the end, after years of careful domestic training, we get subdued to the bath, the toothbrush, the comb, the hair-brush, the hair-wash, and the products of rows of bottles and pots which the combined efforts of doctors and chemists have fixed on us. Thus we are led on to consider the condition of our hair; we estimate hopefully or sadly the amount of baldness, visible or concealed; we inspect our teeth, if we have any; we take stock of our skin, and curse razors of every kind. For once utterly subdued to such a thing as a clean collar daily there is no end to the concomitant disadvantages of modern life. How can a man have time to do anything; how can any be free from perpetually thinking of themselves when our lives are thus arranged? In the dear old Australian bush life was very different, and not in the least complicated.

I do not wish to anger Australians by seeming



to imply that they are the only people who do not go to bed, who do not take their clothes off, who do not every morning have to face the complicated and horrible ritual of the bath. I found the same happy customs in many parts of North America. There, also, undebauched by civilisation, we went to bed in our clothes and boots, or very frequently did so, and even in a hat. How often have I slept soundly, when fully clad, on the bare earth or on a rough couch of hemlock boughs, hewn in the primeval forest. It must be owned that after years of beds bought in Tottenham Court Road, hemlock boughs seem rather like a grid. When I slept upon them last, in 1926, they seemed at first far less comfortable than I had found them in 1885. I had been spoiled by civilisation. But how much it made up for this temporary discomfort to be able, after years of obligatory disrobing, to sleep in my clothes and to get up ready for breakfast, without the long, complicated, and painful preliminaries thought to be so necessary in London. It is true that there have been occasions during my life when it seemed better to undress. Aboard ship, for instance, when the weather, the foc'sle, and our bunks and bedding were all as wet at the same time

as every stitch we wore, there were difficulties. For going to bed in soaked clothing made the bed wetter than before, while if we took things off, then we had to get into a cold, wet bed. So, as a rule, we stripped, and two of us took a hand in wringing out our clothes as quickly as possible. These we either put on again or took them to bed with us, so as to warm up the bunk and have warm clothes to put on if the bo'sun's pipe called "hands shorten sail!" which often happened just as we began to get warm and to fall asleep. On the whole, on looking back, I think it would have been better never to take anything off. My experience is that it merely requires ten days to accustom a man to any condition, however distressing it might seem to a soft, civilised person. After that he will be quite comfortable, wet or dry, on the hardest rock or steel plate. I have slept very comfortably in a bridge cylinder, now part of the Echuca-Deniliquin bridge in Australia, if the bridge has not been rebuilt since 1877. Of course I had my clothes on.

There are other related labours which we owe to the ruthless desire of the feminine sex to interfere with male habits and customs. The bed, they tell us, must be made. Why? They can give no reasonable answer, but, all the same, they insist on making it. In Oregon I slept in perfect comfort in a bed that was not made to my certain knowledge for months. I am positive that my employer did not make it when I left. This was in 1886. I doubt if it has been made yet. And, the mattress itself must be turned! How absurd this is must be obvious to every man who has so moulded the bed he sleeps in as to make it fit him perfectly. Women will not have it. They try to turn the mattress daily and, in some cases, actually succeed if the man is weak; for no woman ever really gives up when it is a question of turning a mattress. Women always go to the worst extremes. They upset the whole pattern of the comfortable bed by turning it over end for end! Could anything be more absurd? Do they expect a man to turn end for end and thus sleep with his head to a different point of the compass every night? They simply do not care. They are utterly callous. There is no understanding women.

The most comfortable bed I ever slept in was merely sawdust in a sawmill. Sawdust is warm, sawdust is dry, sawdust is so beautifully yielding that it takes a perfect cast of the sleeper. I could very often recognise who had slept in a particular place by his cast. And sawdust needs no making: it is always ready; it makes itself. No one but an idiot would think of turning over end for end, or even sideways. I recommend sawdust wholeheartedly.

Once granted that it is best to keep clothes on, it will be found that we very easily become accustomed to any kind of bed. I learn that some prisoners object to sleeping on a plank bed, and foolish philanthropists actually back them up. But, anyone with perseverance can learn in less than ten days to sleep well on a plank. If he cannot he deserves to keep awake. I have slept on plank beds, a bare floor, for instance, scores and hundreds of times, and slept far better than I do now. In those days I never considered it necessary to consult a doctor, or to wonder when I should take morphia or bromide of potassium, or even whisky and water. I just camped down and fell asleep. In Australia I slept for months on a sheet of stringy bark. This was just as hard as any oak plank. Being young and without experience, I believed when I went down to the nearest town that I should enjoy sleeping in a bed inside a room with the door shut. What

(Continued on page 936)

Christmas in Danish Modern Poetry

By Hans Werner, Ph.D.

AMONG modern Danish poets few can compare with Jeppe Aakjaer in the description of Yuletide in the country. To him Christmas means a time of memories, when he listens, from his peaceful chamber, to the chiming of homely bells. "Memories come and memories go, Tip-toeing softly over the snow." He watches the children "flushed with expectant eagerness," sees the "flowers" of the frozen window-panes, hears the twittering of the sparrows nestling in the porch, and listens to cherished harmonies of memory. But he describes also the busy time preceding Christmas. In the pleasing poem, "Sheaves of Christmas" (*Juleneg*), he describes the peasant giving an extra watering to the horses, strewing the doorsteps with firs, and putting up sheaves for the birds of field and forest—they are "green and blue as a summer day, Brightly yellow and poorly grey," and, with the birds, a beggar-woman comes to the farm, shaking her fists at the baying dogs, but she also receives her share of gifts. The farmer's wife is busy brewing and baking, and she has hardly finished when the guests arrive!

Jeppe Aakjaer has also written about the Christmas traveller, the returning wanderer from abroad. On Christmas Eve he is drawing near home, and, plodding his weary way, he sees in fancy his childhood's home. Presently he stands at the door, and, reassuring himself that the good dollar-notes are safe in his pocket, he peeps in through the blind. He sees his old mother sitting behind the begonias, the cat on a chair beside the stove, the hen strutting about the floor, and the old spinning-wheel, now at rest. He enters, and with him the real Christmas. Jest and question and answer are uttered breathlessly, and mother and son sit together gazing at the little joyous flames of the candles.

The Christmas of the Church has its own poets, the most important being Mads Nielsen. To him the chimes are psalm-tunes filling the air, chanting to the peasant who is busy in stable and byre, singing to the church-goers, ringing

out over the fields and woods and tiny cottages; but, even in this poem, Christmas is a feast of gentleness, and even darkness caresses the earth.

Thoeger Larsens' "Christmas-song" gives us a more severe picture of Christmas. He writes of frost-bitten slopes, of downs cowering before the cold breath of the north wind. But in the midst of the cold the Christmas message sounds new strength. Christmas awakens new hopes. The old pagan Norsemen felt this when they greeted the sun and life which again went towards longer and brighter days.

Snow and frost, sheaves and Christmas guests, warm rooms and old hymns, childhood memories and jubilant children are merged together in this poetry. Man and Nature making ready for the feast are at one in a sensitive and warm feeling of something promising, fortifying, and purifying. Christmas takes Man out of the rut of everyday life, and gives him a feeling of unity with all creation.

Christmas in the Cities

The Christmas of the country and its atmosphere has its contrast in the urban Christmas. The Catholic poet, Johanne Joergensen, describes it. It is freezing, and still rain descends; in the streets are tawny puddles, the houses are drab and gloomy with dismal backyards. There are flowers in the windows, the children, undernourished and benumbed with cold, are driven out to beg and pilfer. Here is neither gladness nor homeliness. It is a Christmas of rags, stockingless and shoeless. Joergensen does not give it a halo of romanticism as does Hans Andersen. The little match-girl is more than an impressive fairy-tale; the poor infant of the city is, in reality, pitiable and miserable, without dreams and devoid of other thoughts than the need of food and warmth.

Nevertheless, the Christmas of the towns has its less depressing versifiers. The lights of shop windows, the busy crowds in the streets, the fragrant firs, the joy of expectancy which abounds everywhere—all these are depicted. But it is the poetry of hearth and home which

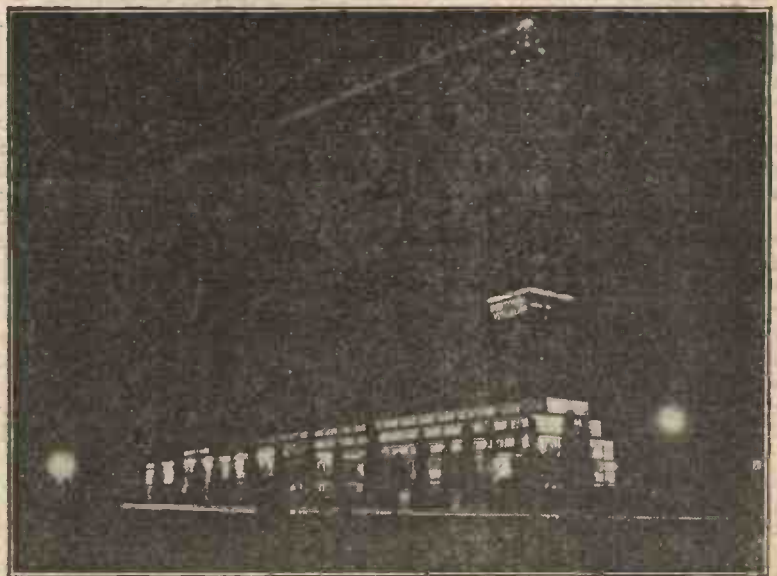
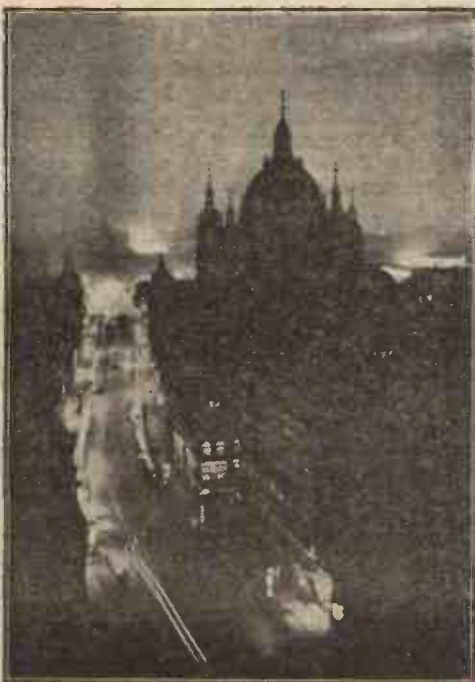
inspires the most beautiful songs. Within their four walls each family celebrate their own Christmas, forgetful of the outside world; even the snow plays a minor part here. The young clergyman and poet, Svend Rehling, has given one of the most beautiful descriptions of this sentiment in one of his Christmas poems. Christmas is ushered in by a child playing Christmas hymns, and the grown-ups are filled with sadness and longing; it is the voice of memory whispering of the days of long ago. Pictures of himself as a small boy riding his mother's knee arise out of the past, and, full of sweet memories, he lights the candles of the Christmas-tree for his own child. Kaj Hoffmann, too, describes in several poems the scenes of Christmas Eve. The delight of children is to him the embodiment of the spirit of Christmas. Christmas consists of the old folks dancing round the Christmas-tree, the children hand-in-hand; they dance happily, in a room filled with song and aglow with candle-light, and they lead him, the poet, onwards towards the Spirit of Light. And at last, when the candles have burnt down and the new toys are scattered and thrown aside, and everything is quiet and serene, the dark tree fills the air with fragrance, awakening old memories and carrying his thoughts to the open country and the stars, the chiming of bells across the fields. Then he is brought back to his surroundings—the drawing-room, the children, the Christmas-table, and to his wife, who, he sees, is weaving dreams of her own.

The Christmas of towns is one of home and family, of old hymns and songs, the Christmas-tree—the children the centre of all. Perhaps they dream of the white Christmas of the country, of sleigh-bells and skating! Christmas here is essentially Christmas Eve. The next day is one of bustle; the peace of home must give way to parties, which may inspire novelists, but leave the lyricists unmoved.

Olfert Ricard, the leader of the Danish Y.M.C.A. movement, tells, in a Christmas poem, of the festival and Divine service inside the Church, but outside it is wet and cold.

Christmas cannot be given full significance in poetry written by a town-poet who is not in touch with Nature. So it is first of all to the rural poets that we must look for a typical picture of the Danish Christmas.

BERLIN BY NIGHT



Albert Vennemann

The picture on the left shows the Cathedral. On the right is the well-known Radio Tower, with the Funkhalla below!



Everybody can have better radio this Christmas



Good company . . . bright lights . . . a cheery fire . . . happy laughter . . . and music clear and pure from a good radio that has been made better by Pertrix. What more *could* one wish for?

It is because NO sal-ammoniac is used in a Pertrix Battery that it gives the purity of current that is so essential in obtaining perfect reception.

So don't forget, make it a Pertrix Christmas this year and *enjoy* your radio.

Pertrix Accumulators more than do their bit in giving you better L.T. current too.

Give Pertrix Dry Batteries and Accumulators as presents this year.

DRY BATTERIES.

| | | | |
|------------------|---------|---------------|--------|
| 60 volt Standard | 8/-; | 60 volt Super | 13/- |
| 90 " | " 11/9; | 100 " | " 21/- |
| 100 " | " 13/-; | 120 " | " 25/6 |
| 120 " | " 15/6; | 150 " | " 31/- |

The improved Pertrix Accumulator is sold in all capacities at prices ranging from 4/6. Ask your dealer.

PERTRIX SUPER LIFE DRY BATTERIES AND ACCUMULATORS

PERTRIX LIMITED,

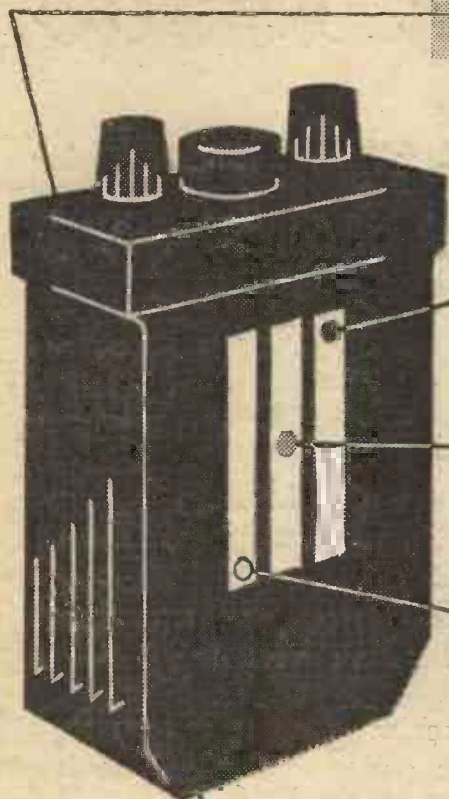
Britannia House, 233, Shaftesbury Avenue,
London, W.C.2.

Works : REDDITCH

The batteries you can trust

N.R.2.A.10 1/2 X 9

THIS ACCUMULATOR WARNS IN TIME



RED down
Save sorrow
Recharge
tomorrow

The charge
is lean
When falls the
GREEN

To charge
me right
Bring up the
WHITE

Think of it! No more exhausted accumulators. Here is a wonderful invention that removes all guesswork at once. Three little balls — red, white, green — floating in the acid, show its internal state at a glance. Warn you in plenty of time when recharging is due. Cut out distortion. Keep the programme running smoothly! This simple, marvellous device is owned solely by National. A new winter of wireless is at hand. Get an all-British 'Dagenite' — made by National.

An example of Dagenite prices. P.G.F. Type, L.T. Accumulator (with 'Tell Tale' device) 2-Volt 20-Ampere hour capacity, 10/6. P.G. Type, as above but without 'Tell Tale' device, 1/6 less. H.T. 10-Volt units from 5/-. Send for free catalogue, No. R.151, showing all types, to National Accumulator Company Limited, 93 Great Portland Street, London, W. 1. Also branches at Glasgow, Manchester and Northampton

USE **NATIONAL**
ACCUMULATORS
THE DAGENITE SERIES FOR CARS AND RADIO

Christmas in the Swiss Alps

By "YODELLER" (J. D. Strange, Author of "The Price of Victory")

WHEN one is living abroad, an exile in a foreign country, Christmas is apt to be rather a difficult affair. One's thoughts turn instinctively to one's homeland, to friends and relations, to other Christmas Days spent amidst all the traditional jollity and festivity. Thoughts run to peals of bells stealing across the mist-hung English countryside, into one's nostrils creep imaginary odours: the glorious scent of the roasting turkey, the boiling of the plum puddings, and the hilarious chatter of the younger generation around the Yule log fire. Everywhere the air is festive. There is no room for sadness at this season.

Living abroad, one has to try and achieve this same atmosphere—but it is not easy. In Switzerland we can always rely on snow, which helps a little, for in one's thoughts Christmas and snow are always connected. Children's parties are arranged, especially amongst the English colonies, for few Swiss villages in these days are without a small—sometimes large—group of resident Britishers, and for some time beforehand preparations are made; so that in the end, a very fair reproduction of an English Christmastide is achieved.

The natives, too, have their celebrations, but hardly on the same scale as that to which we are accustomed. The German-speaking part of the community invariably have Christmas-trees in every house, no matter how poor the householder may be. Presents are not tied to these trees, but are given separately on Christmas morning. For those who are too poor to purchase the customary "Arbre de Noël," the mountain forests abound with little pinetrees, and many a peasant creeps up into the heights at dead of night—an amazingly heavy penalty is exacted if one is caught taking trees, as this is the mountain dwellers' sole protection against avalanches—pulls a pine from its shallow bed of earth, and steals back with his treasure as secretly as he has come.

The French-speaking folk usually reserve the most of their energies for the New Year, and it is at this time that one is expected to give the customary Christmas-box to the baker boy, the *laitier*, the *facteur*, and all the other daily callers at one's door. In return, one is always treated to a mighty handshake, and a hearty "Bonne Année..." Incidentally, these people thoroughly earn their little gift, for it is a most exhausting business trudging through thick snow, up roads which are almost as steep as the roof of a house, with some fifty kilo loaves of bread strapped to one's back.

The *facteur* is always a source of great joy to the English residents. Daily we watch for his form as he plods hardly through the soft snow—when possible he uses ski—hoping that he has something for us. That is one advantage

we have over the home folk. Everybody thinks of an exile, and everybody sends us something. I remember last year, on the morning of Christmas Eve, the postman brought us a round-shaped package. "Christmas pudding!" we exclaimed.

"Mais oui!" grinned the *facteur*. "Pouding de Noël!" And, fumbling in the snow before our door, he dropped the package on the doorstep. "Crash!" After having travelled in perfect safety from England to Switzerland, the china basin was broken on our very doorstep. Did we throw it away? We did not. We spent an hour digging out pieces of china from the surface of the pudding—and ate it the next day, after having poured brandy over its much-scarred surface, and set light to it in the good old English way. The old Italian couple, owners of our chalet, were vastly intrigued at this queer custom.

The Swiss are a great people for processions. Any excuse is seized upon for a *cortège*, and what a better excuse could one ask than Noël? Thus, every Christmas a procession is organised. Down through the steep

village streets come cowboys, chimney sweeps (incongruous in the whiteness of the winter snows), Jeanne d'Arc, Swiss ploughmen, a man disguised as a wireless set, and a host of other queer characters. A ski-jumping competition takes place amongst the local inhabitants, bob-sleigh races are run off—also down the main village street, where a speed of over 60 m.p.h. is often attained; and the evening ends in a carnival on the skating rink. One cannot say that Christmas Day is dull.

In our little chalet we endeavour to make it as much as an English Christmas as possible. Stockings have to be hung up on the previous night, if only to give one's daughter the highly amusing occupation of filling them with pieces of coal, wrapped in vast quantities of paper, potatoes, and *pieves* from the neighbouring pinetrees. And it is not difficult to persuade the children that the *laitier's* sleigh marks are those made by Père Noël the previous night

on his long and wonderful journey from Lapland to Switzerland with the good things which have been found that morning in the stocking and piled at the foot of the bed.

It is not so easy to explain the way in which this portly old gentleman has managed to squeeze through our funny little Swiss chimneys. The difficulty, however, is overcome by mention of the fact that Father Christmas has a "tummy" which expands and contracts at will—that and sheer magic. After all, why not? I fear I am not one of those who would dispel childish illusions at the earliest possible moment. Do not destroy the young folks' romanticism.

Finally, the wireless! Radio helps us tremendously. The village church has only one bell, which, though tolled at varying speeds with the very best intentions in the world, cannot but be a rather doleful sound. We miss the jolly peals of English bells. Wireless, however, supplies our needs. One turns on the loud speaker, and through our Alpine chalet comes the wonderful, full-throated pealing of English bells. Not one solemn, solitary booming note, but cascade after cascade of cheery, heart-lifting sound.

Then the carol service from England. If one has a wireless set, one invites all one's English friends in to hear the good old carols from home. "Good King Wenceslas," "The First Noël," "God Rest you, Merry Gentlemen," and all the fine familiar airs. Did you ever set out, when very young, on a carol-singing expedition? I did, on more than one occasion. And managed to get through one line—perhaps two—in all due seriousness, then collapsed with helpless laughter which, of course, brought a speedy termination to the singing. All these things are recalled when listening to the carol service.

Last year, I remember, we heard the Wireless Choir singing carols, *via* the long-wave Daventry station—and how marvellously they sang! I have not seen this year's Christmas programme, but I am hoping that we shall again have the pleasure of listening to this mellow combination of voices. On Christmas Day we heard the *Cinderella* pantomime, bells from Vienna, old Magyar Carols from Budapest, and a host of other Christmasy things.

This year in Switzerland we do not anticipate as "snowy" a Christmas as usual. In the early part of November we had two heavy falls of snow, but now we are walking about in slush, and the weather is mild and spring-like.

Without wireless a Christmas would be dull indeed. One would feel completely cut off from one's homeland. The day before Christmas Eve, I shall give my set a thorough look-over, charge the accumulators, scrape the aerial and earth connections, and have everything in readiness for what the B.B.C. will be pleased to send me. And here, in Switzerland's mighty Alps, will be a little company of people listening with you all, joining in with your carol-singing, and echoing the thoughts and wishes which will come to us over the distant spaces from England—our England!



The author's small daughter and a young man friend clearing a path for Père Noël's forthcoming visit



Strange figures in the Christmas procession

Christmas in New Zealand

By J. T. CRAWFORD

THE ideal Christmas in New Zealand is, one might say, the direct opposite of the ideal English Christmas. The latter, a New Zealander imagines, consists of a heavy fall of snow, robin redbreasts on the window sill, roaring fires inside, mistletoe, plum puddings, and festivities in the snug warmth of one's home.

Although we have such scenes on our Christmas cards, a Christmas like that would be impossible in New Zealand. There, an ideal Christmas means a glorious sunny day, with the thermometer somewhere about seventy-five or eighty in the shade, a picnic lunch out of doors, yachts and launches on the harbours and bays, fishing, riding, bathing, expeditions into the bush, and motoring trips. Surely a different picture from Christmas Day in old England!

Of course, the different climates cause the difference in Christmas celebrations. It would be as uncomfortable to eat one's Christmas dinner before a roaring fire in a New Zealand house as it would be to go swimming in England



(By courtesy of N.Z. Government.)
A comparatively small specimen of swordfish (264 lbs.)

on the same day. But, in spite of all differences in celebration, Christmas is just the same happy time to us all, and even in New Zealand we hang up our stockings!

Another difference between Christmas in England and in New Zealand lies in the part taken by wireless. In England, of course, dancing to radio music and listening to special Christmas programmes indoors is now a regular part of Christmas. In New Zealand, because of so much of the time being spent outside, portable sets are used a great deal during the holiday period. The New Zealand stations also put on special Christmas programmes, and the service is usually extended for Christmas week.

One typical New Zealand Christmas holiday is spent in big-game fishing in the waters off the north-east coast of the North Island. The big deep-sea fish to be caught here provide most thrilling sport, and English visitors often come thousands of miles to take part in it.

The fish weigh up to over a thousand pounds, and one can easily imagine the excitement of holding a rod at the end of whose line a half-ton fish is struggling for its life. The big fish which are caught in these waters are of several kinds—the swordfish, black marlin, striped marlin, broadbill, mako shark, thresher shark and hammerhead shark. The swordfish is the greatest fighter and, his sword or spear being strong and sharp enough to pierce the side of a launch, he can provide plenty of thrills for deep-sea anglers.

When hooked, the fish put up a strenuous struggle, often lasting several hours, and it is quite an ordinary thing for them to tow the angler's launch after them. They leap out of the water in their struggles, and on one occasion one leapt clean over a launch, much to the consternation of the occupants.

The headquarters for the big-game fishing are at Russell, a picturesque and historical little town in the Bay of Islands, north of Auckland. This is one of the oldest settlements in New Zealand and was the Dominion's first capital. In Russell there is now a society called the Bay of Islands Mako Shark and Swordfish Club, which weighs all the big fish caught in the vicinity and issues an official certificate to the captor, so that "fish yarns" are useless without this official written proof! The Bay of Islands, with its many deep coves and bays, is one of the most picturesque sea-coasts imaginable, especially at Christmas-time when the red blooms of the pohutakawa, or "Christmas-tree," are out all along the water's edge. The many sheltered coves provide ideal spots for fishing camps and other holiday-makers, and also for yachtsmen who sail up from Auckland.

This is just one way of spending Christmas in New Zealand, but, like all the other typical ways, it is spent out of doors. Friends and readers in England, as they enjoy all their merry Christmas festivities in the warmth of their homes, can think of us all out here in New Zealand also enjoying Christmas in the warmth, not of our homes, but of the summer sun.

Christmas on a Radio Outpost

A SPECK! on the map at the edge of the Coral Sea, 300 miles from the coast of North Queensland, marks Willis Island, a sandbank of thirty acres, protected from being washed away by a coral reef.

The construction of the island is coral, top-dressed with sand and guano. The population varies with the season—November to May (the monsoon season), three men; June to October, two only. The quota of seabirds remains fairly constant—as many gannets, terns, frigate, and mutton birds as can find foothold among innumerable turtles on the disputed acreage of the little island.

Two buildings perch dizzily on the island crest, a wireless and meteorological station and a house for the staff. For the place is of importance solely from a meteorological point of view. During the monsoon season, Queensland is periodically visited by disastrous cyclones which originate in the Coral Sea. In passing, these cyclones give Willis Island a friendly wave, the meteorologist reads his instruments and the wireless men warn the people of North Queensland to put up their shutters, keep their luggers in port, and batten down the hatches of shipping. Twenty-four hours' notice is given.

This service calls for the marooning of three men—two radio operators and one weather observer—for periods of six months. Never a ship is seen during that term, no letter breaks the silence. For years not a tree existed to temper the pitiless glare of the tropical sun or to relieve the dazzling vista of sand. Lately, a couple of palms have been coaxed into growth.

Christmas arrives. The day is much the same as any other. We have meteorological obser-

vations to make, our messages to send to the mainland, but we have not forgotten the occasion. A sprig of synthetic holly, with sealing-wax berries, adorns the living-room (alas! we have no use for mistletoe), but we add to the festive atmosphere by a snow-storm in cotton-wool, four of the weather man's balloons, and a few appropriate mottoes: From the store of tinned goods upon which we live, we have prepared an elaborate menu. We are determined to over-eat ourselves on this tropical island to mark our faith in the best Christmas tradition. The Red Ensign flaps dejectedly from the mast-head, having been relieved for to-day of its customary duties of dark-room lamp. Last night we took the risk of scaring Father Christmas, and sang carols.

We have dressed ourselves up regardless of comfort, except for shoes. We haven't seen our shoes for months, and even on Christmas Day we declined to cramp our feet into them. We donned soft tennis shirts and specially laundered shorts. For months we have been wearing only the butt-end of bathing costumes. Our attire came as a revelation to wee Binkie, our fox-terrier. He had never seen us look like this before, and after one horrified look, he bolted incontinently into such scrub as he could find. Not all our wooing with strange meats could entirely sooth his shattered nerves. Our fox-terrier's world is rather restricted. On meeting his first bone, he eyed it askance and did not attempt to gnaw it until he had at first searched unsuccessfully for a tin-opener.

Our Christmas menu was a triumph. Roast goat was the star turn, our first meal of solid flesh for two months, other than turtle, which somehow we never fancied, owing to the disconcerting habit of turtle flesh of heaving and palpitating hours after death in the frying pan. To our palates, starved of fresh meat, Billie Minor was a poem in cuisine. The catching and slaughtering of young Bill was no light task; in fact, the picture of us chasing our dinner hot-foot over the island on Christmas Eve is well worth reviewing. We tried a bow and arrow first, but none of us could claim, apparently, to be a descendant of Robin Hood; then improvised spears, with no better success. Finally, the hunt continued on foot, weaponless—over sand, honeycombed and made treacherous by mutton bird burrows. At first, all the honours were with the quarry, for wind, chiefly; but since there were three of us and the chase was conducted in relays, the result was inevitable. Killing, skinning, and dressing made an unlovely task (goats seem over-generously endowed with horrid internal gadgets), and was not finished until an hour after sunset, after which we decorated the dining-room, designed the ornamental covers for the menus, made a Christmas pudding and apricot pie, sang carols, hung up our stockings, and called it a day.

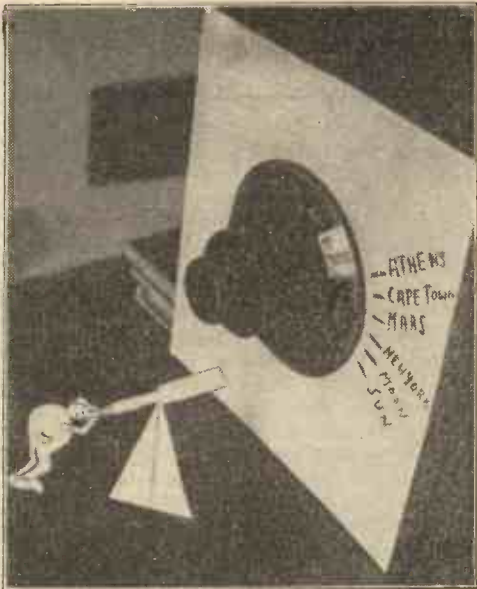
We had earned our Christmas dinner.

F. C. E.
C. C. F.

ON GOING TO BED

(Continued from page 931)

was the result? My initial mistake was to take my clothes off. I went to bed and tossed miserably for two hours. Then I saw what was the matter. Before that I had been sleeping in a sort of shelter open to all the airs of heaven, and had done so in at least part of my clothes and on a hard bed with a single blanket under me, and what could I expect? I rose up, put on a few clothes, threw a blanket on the floor, set the window and door wide open and went to sleep till the morning, when I was awakened by a chambermaid who, very naturally, considering her experience, thought I had been too drunk to get into bed. After a few days I got more or less used to the bed, and I asked this girl not to turn the mattress. But she would.



**“WORLD-RADIO” and its
Contributors**

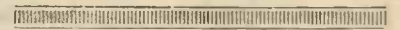
(as imagined by a Correspondent)

Left. — “Searcher” (or “The Northerner”) anxiously scanning one of the dials, with a view to calibrating his new seven-valver.

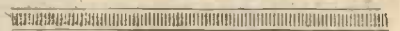
Right. — “Etherviator” is seen striding across Europe from concert to concert.



*Past Christmas Numbers
of
“WORLD-RADIO”*



*photographed
by a
Contributor*



Left. — “Yodeller,” composed of nuts, prunes, figs, and raisins, apparently inspired, by a specially “fruity” concert, to join in.

Right. — “Central European,” overcome by heterodynes and—but never mind!—collapses on his ear-phones.



Dominion and Foreign Broadcasting Intelligence

Government Control of New Zealand Broadcasting

(From our New Zealand Correspondent)

Announcements to the effect that the Government is to undertake full control of broadcasting in New Zealand were made by the Postmaster-General, the Hon. J. B. Donald, the other day.

The Minister's announcements were very meagre as regards details of the scheme, which he admitted had not yet been completely worked out. The existing contract with the Radio Broadcasting Company of New Zealand expires in January, 1932, and from that date it is proposed that the Post and Telegraph Department will assume control of the technical side of New Zealand's broadcasting service, but that the programme side will be left largely in other hands. It is proposed that the YA stations in Auckland, Christchurch, and Dunedin have their power increased to 2,000 watts and that eight subsidiary 500-watt stations be erected in other towns, so that there will be a chain of Government stations throughout the Dominion. These smaller stations will be mainly for relay purposes, but will also be used to broadcast any events of outstanding importance or merit in their respective localities. It is not proposed to do away with the "B" class, or privately-owned stations, but they will be required to reach a high standard. Their interests will be protected, and legislation will be brought in next year to prevent any association making extortionate demands for copyright fees.

These proposals have not yet been ratified by Parliament, and many details have still to be worked out, but Government control of broadcasting in New Zealand seems certain to take place in 1932. If, and when, all the improvements and extensions mentioned actually come to pass, New Zealand will certainly have a broadcasting service to be proud of. The licence figures should be more than doubled, and wireless dealers, especially those in the country districts, can look forward to a prosperous period. If a further fifty thousand or more receiving sets are to be used, business should be brisk.

The Postmaster-General's proposals came as a decided surprise to the majority of New Zealand wireless listeners and dealers, and even to the Radio Broadcasting Company itself. In many quarters it is considered that the Government is making a mistake, but others greatly favour the new scheme.

Sets for Mental Hospital

A campaign is at present under way in New Zealand to raise four thousand pounds to instal radio receiving sets throughout the Porirua Mental Hospital near Wellington. This sum, it is estimated, will enable a thousand sets to be installed for the patients, and it is hoped to have the money and the installation completed by Christmas.

Ten Years of U.S.A. Broadcasting

(From our Washington Correspondent)

The tenth anniversary of broadcasting in America is being celebrated (I am writing at the beginning of November) by special programmes, luncheons, and complimentary speeches in several of the larger cities. The chief centre of interest is naturally station KDKA (Pittsburgh), the pioneer wireless station of the country. From this station there went out, on November 2, 1920, the first regularly scheduled broadcast—the returns of the balloting that elected Mr. Warren G. Harding as President of the United States. And official records show

that KDKA has never been silent a day since then.

President Hoover took notice of the anniversary by sending a letter from the White House to Mr. H. P. Davis, vice-president of the Westinghouse Electric and Manufacturing Company, Pittsburgh, owners of the station. This is Mr. Hoover's first utterance by wireless since his message to Congress on March 4, 1929. In his letter the President emphasises the fact that "never before in all history has a new system of communication made such mighty progress in so short a time. . . . It has already begun to modify the character of American life, and fortunately its tremendous influence is all on the side of progress."

Mr. Hoover goes on to point out with obvious pleasure the part he played in the early development of the industry. "It seems but a short time since, at the request of the then few broadcasting stations, I called the first national conference on radio in 1922. Then we were groping dimly for methods of regulation that by prevention of interference we could enable adequate development of the art. . . . In the views expressed as to the promise of radio in that first conference some perhaps thought that imagination had run riot. We then discussed with pride the 100,000 receiving sets already in use. But much as we imagined at that time, none of us were so hardy as to prophesy that within eight years there would be receiving sets in half the homes in the United States."

"To-day the high level of service and the wholesome character of programmes should be a proper source of pride to all engaged in it, and is a development in our national life of immeasurable importance."

Radio-Belgrade's Developments

(From a Correspondent)

Radio-Belgrade's Managing Director, Dr. Braun, recently gave me particulars as to the latest developments, so far as broadcasting is concerned, in Yugoslavia's capital.

The number of listeners has increased by a further 4,000, bringing the total up to 30,000. Perhaps the most interesting, and important, development is the consent on the part of the Post Office to give us a higher percentage of the licence fees. Hitherto only 60 per cent. of the licence money was received by the broadcasting authorities, this having to cover all technical and programme expenses and the amortisation of the transmitter. The Post Office retained the remaining 40 per cent. as a tax. In future Radio-Belgrade will receive 65 per cent. of the fees; Zagreb, owing to the smaller number of listeners, 70 per cent., and Ljubljana, being the smallest region, 80 per cent.

During the coming year it is hoped to erect one relay station at Subotica, near the Hungarian borders, where the majority of Yugoslav listeners live, and a further relay station at Skoplje in Southern Serbia, where reception is very poor now. Belgrade's power will also be increased considerably.

On the programme side some very good work has been done, and close co-operation with the two other Yugoslavian companies, Zagreb and Ljubljana, greatly helps all three, and saves time and money.

A new contract has been entered into with the Vienna opera for five relays every two months; the Belgrade opera will be broadcast twice a month, and once a month there will be a relay from the Zagreb Opera House.

In addition, the station has its own orchestra of twelve men.

Radio-Belgrade has become a permanent member of the Central European programme exchange group.

DUTCH EAST INDIES

Experiments in Picture Transmission

(From a Correspondent)

A recent development in Java is the installation at the Government radio laboratory at Bandoeng of a picture transmission apparatus. Experimental transmissions have already taken place between Bandoeng and Holland and have proved quite satisfactory. The Government wireless telephone services are extending rapidly, and conversations are now possible with almost every country in Europe. A few weeks ago Sir Cecil Clementi, the Governor of the Straits Settlements, spoke to the Colonial Secretary in London from Bandoeng; the Australian airman, Kingsford Smith, on his arrival at Sourabaya, the principal sugar port of Java, with his "Southern Cross Junior," after his non-stop flight from Singapore, was quickly connected up by radiophone to Sydney. The conversation referred to was carried on through P.L.E. of Bandoeng, Java, and 2 M.E. of Amalgamated Wireless in Sydney.

FRANCE

Radio Vitus to Suspend Transmissions?

(From our Paris Correspondent)

Radio Vitus, which has recently been broadcasting experimentally from its new station at Romainville, has received orders from the Minister of Posts, Telegraphs, and Telephones to cease transmitting. It is not yet clear why this order has been given, but the station in question had not received authority to remove to Romainville, and it is presumably a reminder to this and other stations that they will no longer be allowed to carry on without official authority. There will certainly be considerable grumbling and opposition as this restraining influence is brought into force, but if used wisely it will be to the good of wireless in France. Radio-Paris and Poste Parisien have already received the Minister's permission to remove to Essarts-le-Roi (S. & O.) and Mollieres (S. & O.) respectively, but the transfer has not yet-taken place.

SWEDEN

(From our Stockholm Correspondent)

During a recent broadcasting conference in Copenhagen the heads of the radio programmes in the Northern countries, together with representatives of the Society Norden, discussed the best way to continue the successful co-operation between the broadcasting organisations in these countries. Among other things agreed upon was the re-transmission of such public events in any one country which might interest the others—such as, for instance, the recent Andrée ceremonies.

U.S.A.

Stations' Profits

(From our Washington Correspondent)

The Federal Radio Commission took occasion, at its recent meetings with broadcasters, to look into the profit-and-loss accounts of stations applying for permission to use high power. It was found that one-half of the larger stations are making money. Identical questions were put to twenty broadcasters seeking to use 50 kW. power. Of these, ten showed an annual average profit of about £5,800. The other ten showed an annual average deficit of about

(Continued at foot of column 3, page 928)

Constant, clearer reception

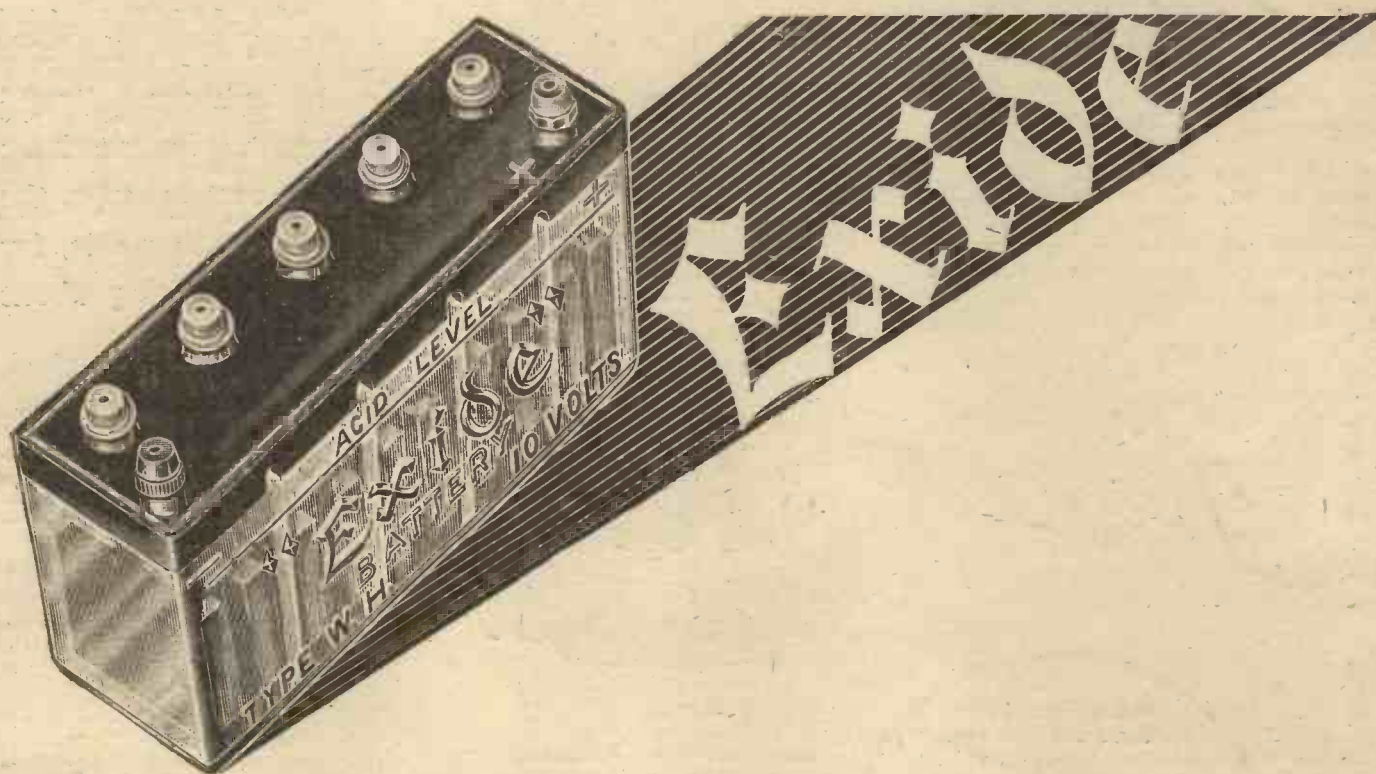
 —the Exide

High Tension Battery gives you the programme truthfully. It adds nothing, no background of buzz or crackle, no harshness. It makes your set more stable.

Improved selectivity

 —the Exide H.T. Battery helps

to cut out interfering stations. Its voltage does not fluctuate or fall. It gives silent, steady service to the end of its charge. And it can be easily, cheaply recharged—no new batteries to be bought. You listen at less cost with the Exide H.T. Battery in your set.



Make sure you have an Exide next time—keep in mind that nine out of every ten British ships rely for their wireless on the **Exide Battery.**

Prices per 10-volt unit: W.J. 2,500 milliamps 5/- • W.H. 5,000 milliamps 6/3 • W.T. 10,000 milliamps 12/-

Obtainable from Exide Service Stations or any reputable dealer. Exide Service Stations give service on every make of battery. Exide Batteries, Clifton Junction, near Manchester. Branches at London, Manchester, Birmingham, Bristol and Glasgow

We're giving Father a new H.T. for our radio



I'm sure nothing will please him better—or us! From the time that we first had the wireless set Dad has continually preached the virtues of what he calls a wet H.T. of the C.A.V. make; how it will improve reception by cutting out those funny crackling noises, and then he goes on to talk about less trouble, constant volume and all that.

Anyway, if all the things are true that he said about the new C.A.V. type, the one which he says is “built like a car battery” it will be a good investment. So we have taken the hint, and I'm certain that the improvement will make it worth while, for Dad does know what he is talking about on the subject of wireless.

It's a **CAV** of course

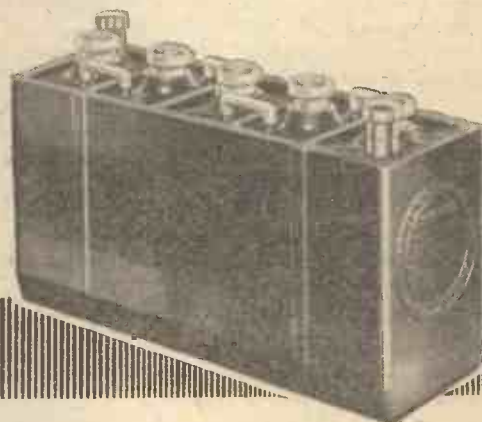


60 VOLT
ASSEMBLY
5,000 Milliamps

Price
£2-5-0

10 VOLTS **6'3** 5000 MILLIAMPS

ALSO IN 2500 & 10,000 MILLIAMPS



WRITE FOR CATALOGUE F. 4.

CAVandervell & Co. Ltd.
ACTON, LONDON, W 3

SPECIFY THE C.A.V. JELLY ACID BATTERY—THE PERFECT L.T. FOR ALL PORTABLES.

Via Ether

A Beethoven Anniversary

TUESDAY, December 16, is the 160th anniversary of this great master's birth. Hamburg is celebrating it by giving at 8 p.m. a Beethoven concert, which will be preceded by a talk on the composer and his connexion with Hamburg. Beethoven's was in many ways a tragic life. His deafness was an affliction of more than usual poignancy. On these anniversaries one is reminded of the great dramatist Grillparzer's words which he uttered at Beethoven's grave:—

"Wir stehen weinend an den zerrissenen Saiten des verklungenen Spiels."

A little earlier on **TUESDAY**, at 7.30, it might repay to tune in Warsaw for the concert to be broadcast from there by the Warsaw Philharmonic Orchestra. This, by the way, will be relayed by Prague and the Czechoslovak stations. The soloist is M. Jan Kiepura, a tenor singer who a year or two ago created something of a *furor*. **WEDNESDAY** is Poland's national evening. Part of Warsaw's concert—in some cases the whole of it—will be relayed by a number of European stations such as London Regional, Kalundborg, and Radio-Paris. At 7.10 p.m. on **THURSDAY** Frankfurt and Stuttgart will give an operatic broadcast—Boieldieu's *opera comique*, *Jean de Paris*. An effort should be made on **FRIDAY** to tune in one of the Bavarian stations. The Viennese conductor, Professor Franz Schalk, is paying a visit to Munich and is conducting the symphony concert which will be transmitted from that station at 8 p.m. The programme includes Bruckner's Fourth Symphony (the "Romantic"), and since Professor Schalk is a great interpreter of Bruckner's music this should be a memorable evening. For the opera-lover there is the broadcast from Radio-Paris, at 8.45 p.m. on **FRIDAY**, of Gluck's *Iphigénie en Tauride*, and finally, at 7.40 p.m. on **SATURDAY**, the transmission from Rome of Verdi's *Falstaff*, which I have mentioned in another paragraph.

English Sonatas from Munich

At Ravag's next **SUNDAY** morning's concert the Vienna Ladies' Symphony Orchestra will officiate. I look forward to hearing this musical combination at a time which is more favourable for hearing Vienna. At the time of writing I have not yet seen the Hilversum programme, but have no doubt that the Mengelberg concert, relayed at 2.10 p.m. from the Concert Hall, Amsterdam, will figure in it as usual. The first part of the programme of Gaston Poulet's concert, to be transmitted at 5.30 from Radio-Paris, contains an item not often heard—i.e., Brahms's Concerto for Violin, Violoncello, and Orchestra. It will be a safe plan to travel to one of the Bavarian stations for a programme at 6.15 of English music. Sonatas by Debussy, Sir Edward Elgar, and Cyril Scott will be played. At 8 o'clock in the evening the Milan trio of stations will give us a relay from La Scala, Milan. For those who prefer a lighter entertainment, I would mention the Radio-Paris broadcast at 8 p.m.—"Une Soirée à Montmartre."

Nicolai's *The Merry Wives of Windsor*

ON **MONDAY** next, at 6.35 p.m., Nicolai's sparkling opera *The Merry Wives of Windsor* will be performed at the National Theatre, Munich, and it will be relayed by the Bavarian group of stations. The artistic life of this composer was an interesting one, though, alas, all too short. Born at Königsberg in 1810, he became organist at the German Embassy Chapel at Rome when still a very young man. Here he learnt to know and to appreciate the art of Italian singing, and his acquaintance with Donizetti soon decided him to turn to the composition of dramatic music. In 1841 he left Rome to take up the position of conductor at the Vienna Opera House, and while there another change in his artistic activities took place. He turned to the writing of music for comedies, and as his first he selected Shakespeare's *Merry Wives of Windsor*. The first production took place in March, 1848, at Berlin, whither the composer had moved. Unfortunately, it was to be his only *opera buffa*, for a year later he died suddenly at the early age of thirty-eight. Ever since its first production, the opera-houses all the world over have been performing this work, and its appeal is undiminished to this day. Nicolai strived to blend—after the manner of Mozart—German instrumentation with the Italian art of singing. One recalls the opening bars of the overture, a tune that by its alluring melody makes an instant appeal and lingers in the memory. In connexion with this operatic broadcast it is interesting to recall that Verdi turned to the same comedy for the book of the only *opera buffa* which he wrote, and which was to be his swan song. A transmission of Verdi's *Falstaff* will be heard from Rome at 7.40 p.m. on Saturday, December 20.

Educational Broadcasting in the United States

AN exchange of ideas in broadcasting, and the adoption in one country of programme items which are the speciality of another country, are eminently desirable features of the international aspect of broadcasting. We in this country have adopted and broadcast a great deal of American dance music. On the other hand, I see from an article entitled "New U.S.A. Educational Council," which appeared in *World-Radio* last week, that certain B.B.C. ideas in regard to educational broadcasting have been adopted in the United States. Which country has the better part of the exchange will, of course, be a matter of emphatic opinion. A new National Advisory Council on Radio in Education has been formed in the United States, the object of which is "to further the development of the art of radio broadcasting in American education." It will have the undoubted effect of encouraging multiplication in broadcasting programmes of educational features, and will seek to mould public opinion on this matter with the object of securing for educators a larger share of broadcasting time. It is the intention of the National Council to create in due course regional organisations which will have at least a certain resemblance to the B.B.C. Area Councils. The new Council will be watched with sympathy by

British educators who support the development of educational broadcasting in their own country, for its establishment in the land where competitive broadcasting prevails and commercial considerations are paramount is a sign of the impression that the example of Britain in the educational field has created abroad. One must wish the Council every success in the task of tackling a complicated situation in a big way.

"Se non è vero . . ."

THOSE who know South Germany and the Austrian Tirol will appreciate a little story I overheard the other evening about M. Tristan Bernard, the witty and very French author of "English as She is Spoke" (*L'Anglais tel qu'on le parle*). If not true, it certainly deserves to be. M. Bernard was seated, it appears, one night in a café in Paris where every language on earth except French seemed to be spoken. Looking round rather disconsolately in search of a compatriot, "Tristan" suddenly caught sight of a French friend sitting several tables away. He rose, and applying his hands to his mouth to make the sound travel, shouted joyfully across the tumult: "*Grüss Gott, Landsmann!*" Like Eugène in his famous little comedy, M. Bernard was doing his best in difficult circumstances. It is not surprising that, as I read recently in *World-Radio*, so good a "trier" has turned his attention to the broadcast drama. M. Bernard himself likes to tell a good story. I remember hearing him, shortly after the War, narrate how an English staff officer commented on the efforts of a Paris street musician who was producing dreadful sounds from a clarinet. A French officer, wishing to excuse the performance of his countryman, remarked to his brother-in-arms: "It is not so easy, you know, to play an instrument like that." Whereupon the Englishman retorted: "*Je voudrais que ce fut impossible!*"

... è ben trovato."

It was probably the same officer who, according to a story told by M. Bernard, once accompanied a journalist on a visit to the trenches during the War. The two set out one dark night, and all went well until after a time, when it occurred to the journalist, who had not previously spoken to the officer, that the latter was behaving in a very strange way. He began to whisper: "Barbed wire on the left," "Shell-hole on the right," "Mind the broken wall," "Now follow the path," and so on. The journalist grew nervous. Thinking there might be an enemy listening-post in the neighbourhood, he asked, also in a whisper: "How far are we now from the front line?" To his amazement, he got the answer back: "Twenty kilometres." "Then why," asked the journalist, still whispering, "are you talking like that?" "*Monsieur*," returned the officer, "*Je souffre d'extinction de voix!*" If this story is true, it only shows how easily fiction may be translated into fact. I certainly remember hearing a similar story, in slightly different form, at least twenty years ago.

ETHERVIATOR

Letters to the Editor

Identity Announcements and the Average Listener
To the Editor of WORLD-RADIO

SIR,—“Commander, R.N. (Retired),” in his letter in your paper dated Nov. 28, thanks a lady correspondent who wants all broadcasting stations to announce their names before each item on their programmes.

So say all of us who are novices at listening. Just the name of the station, mentioned slowly and distinctly, would remove most of our troubles.
Yours, etc.,

F. O'DONOHUE.

Castlereagh, Co. Roscommon, Nov. 30, 1930.

Is Foreign Listening Worth While?

To the Editor of WORLD-RADIO

SIR,—May I crave a small space in your columns to reply to your correspondent, who asks: “Is Foreign Listening Worth While?”

Like your correspondent, I am using a fairly selective three-valve set (screened-grid), and can assure him that foreign listening is worth while. I get good results from London Regional, and even better results from the Mühlacker station, yet, although only one degree on the dial separates these two stations, neither causes any interference to the other.

I may add that from a record of my hours of listening I find that for every seven hours of B.B.C. programmes I have recorded four hours of various foreigners. I have held Motala and Kalundborg from four to five hours at a stretch, when these have been sending out their “Radio Balls,” which proves that not all the foreign stations are subject to fading every few minutes, though I have recorded fading at one period on both these stations.

Yours, etc., P. DEWING.

Burnham Market, nr. Kings Lynn, Dec. 1, 1930.

To the Editor of WORLD-RADIO

SIR,—The correspondence on the present difficulties in obtaining stations without interference only emphasises the fact that modern sets are not sufficiently selective to meet present-day conditions.

A receiver of knife-edge selectivity is generally defective in quality, owing to the elimination of the side-bands. My own set is a four-valve: 2 S.G. Detector, and 1 L.F., with three tuning condensers.

Quality is undoubtedly present, and although selective to a great degree, I am unable to obtain many stations absolutely clear without using a selectivity unit. Even this will not separate some of them, although my aerial is only 50ft. long (I have just cut some 10 to 15ft. off).

The letter of Mr. Garnet Wolseley in your current issue rather amused me. I fully sympathise with Mr. Wolseley, but my complaint here is not that I cannot get the German clear of the British stations, but *vice versa*: (1) 5GB is interfered with by Langenberg, (2) Manchester swamped by Toulouse, (3) Brookmans Park No. 1 swamped by Mühlacker. Also Rome and Stockholm interfere with each other. My selectivity unit enables me to deal pretty well with all these except No. 3. In this case Mühlacker breaks through all defences.

When Slaithwaite opens on the Manchester wavelength it needs only an increase of power at Langenberg to put us in this part of the country “as you were.”

Some alarm is now apparent in the South owing to a report that Radio-Paris intends working on 60 kW. I do not think this will affect us very much up here, but will undoubtedly affect the South.

I would like to agree with your other correspondent, Mr. Blair, that Strasbourg fades as

much as any other medium-wave station, although it comes in very strongly.

Yours faithfully,

ELWYN HUGHES.

80, Aelygarth, Caernarvon, Dec. 1, 1930.

To the Editor of WORLD-RADIO

SIR,—Your correspondent, Mr. G. H. Davey, expresses some extremely controversial opinions.

He states he uses a “selective” S.G.v.1 receiver and that a “new station (presumably French . . .)” interferes with reception of the Regional. This French station is presumably Strasbourg-Brumath. Now the Regional works on 842 kc/s and Strasbourg on 869 kc/s, a gap of 27 kc/s. I fear that when Mühlacker gets into its stride on 833 kc/s he will have more cause for complaint, for with two high-power transmitters working within 10 kc/s and with a fairly unselective set a certain amount of interference would be expected.

The expression “selective” has a different meaning to each set owner, but I am afraid Mr. Davey cannot reasonably claim this virtue for his receiver. I am situated in a large building of part steel construction; my aerial is badly screened and is but 18ft. in height, and, furthermore, the best earth I can get entails a lead of 30ft. Yet with what I term a moderately selective S.G.v.2 set I can entirely separate the Regional from Mühlacker, a difference of 9 kc/s, and Barcelona from Strasbourg, a difference of 9 kc/s.

The circuit is absolutely straightforward S.G.-transformer, coupled to grid detector, followed by two transformer-coupled L.F. stages. The length of my aerial is 18ft., and the whole set is aluminium screened.

With such a set it is surely easy to separate stations working on present wavelengths?

(Continued on page 944.)

POLAR

MAKES TUNING EASIER

because:

The Polar method of Fast and Slow Motion control gives you direct and definite control over your condenser, with no noisy gears. The reduction movement runs on ball-bearings and the main shaft is suspended on ball races at either end, resulting in an action which is marvellously smooth yet precise.



POLAR SLOW MOTION DIFFERENTIAL

For very accurate differential control, where small and sensitive adjustments are necessary. Insulated spindle. No hand capacity. Very smooth and silent action.

| | | | | | |
|--------|-----------|-----|-----|-----|-----|
| .00015 | each side | ... | ... | ... | 7/6 |
| .0001 | “ | “ | ... | ... | 7/3 |
| .00025 | “ | “ | ... | ... | 8/- |
| .0003 | “ | “ | ... | ... | 8/6 |



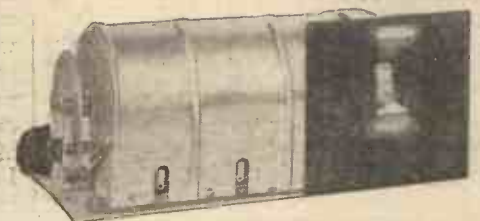
POLAR DRUM DRIVE

An improved slow-motion drum drive with smooth, precise action. Clearly marked scale, 0-180. Recessed aperture with window for illumination. Metal Escutcheon, Bronze finish. Suitable for single or ganged condensers mounted parallel to panel.

Price - - - 8/6

24 PAGE POLAR CATALOGUE (R) FREE.

Here is the New Polar TUB CONDENSER



The “Tub” shown fitted with Drum Dial reading but controlled by end drive.

This entirely new production, a triple-ganged fully screened condenser, is designed expressly to meet the needs of modern multi-stage single control sets. Three separate condensers are mounted on a common spindle and mounted in a die-cast frame. These are accurately matched, being guaranteed within 1 mmf. up to .0001 and over that within 1%. Trimmers are provided for any necessary adjustment. Each section is separately screened and totally enclosed, and each rotor independently earthed.

Price - - - - - 30/-

Disc Drive and Drum (as illustrated above) 37/6
With Polar Drum Drive - 38/6
With Polar Disc Drive - 35/-

Foreign Languages

Aids to Listening

GERMAN

(Letzter Artikel dieser Serie)

KARL: Während dieser Fünfrohrenapparat als Batterie-Empfänger immer noch sehr brauchbar ist—die Schaltung erlaubt auch eine Gleichrichtung am Audion mit einem Kristall-Detektor anstatt mit einer Röhre und ausserdem Empfang bei Verwendung von einer Röhre bis zu fünf Röhren nach Belieben—gestattet natürlich der Netzanschlussempfänger mit Schirmgitterröhren einen besseren Fernempfang

GEORGE: Zweifellos hatten Sie diesen Empfänger im Gedanken, als Sie die Möglichkeit eines besseren Fernempfanges bei Tage erwähnten.

K: Allerdings! Bei Tage hat man den Vorteil, nicht auf die Gunst der Heavyside-Schicht angewiesen zu sein, sondern einen gleichmässigen direkten Empfang, ohne den mindesten Fading-Effekt zu erhalten.

G: Aber dabei ist es nicht möglich, so weit hinauszureichen.

K: Richtig; jedoch wenn die Verstärkung viel grösser ist, dann wird der Nachteil der Reichweite teilweise ausgeglichen. Dieser Netzanschlussapparat zum Beispiel hat nur drei Röhren (ausser der ersten Netzanschlussröhre), aber dagegen einen erheblich grösseren Verstärkungsfaktor als der Fünfrohren-Empfänger, der mit gewöhnlichen Batterien betrieben wird. Alles in allem muss man zugeben, dass die modernen Röhren und Apparate Möglichkeiten des Empfanges bieten, welche in früheren Entwicklungszeiten des Rundfunks nicht in Betracht kamen. Früher meinte man, dass ausser unvermeidlichen elektrischen Störungen der Fading-Effekt fast der einzige Störungseffekt war, der sich nicht abstellen liess. Jetzt durch direkten Fernempfang—ist es auch möglich, den Fading-Effekt abzustellen.

G: In welchen Punkten sind Ihre Röhren und Ihr Apparat als besonders modern zu betrachten?

K: Zunächst sind diese Wechselstrom-Netzanschluss-Röhren indirekt geheizt. Die Kathoden der Röhren sind nicht, wie in gewöhnlichen Röhren, Heizfilamente, sondern kleine Metallröhrchen, die mittels eines glühenden Wolframdrahtes aus dem elektrischen Netz geheizt werden. Solche Kathoden ergeben wegen ihrer vergleichsmässig viel grösseren Oberfläche eine grössere Menge von Elektronen und verursachen einen grösseren Emissionsstrom. Dann ist der Empfänger besonders sorgfältig geschirmt—was natürlich von grosser Wichtigkeit für den Fernempfang ist.

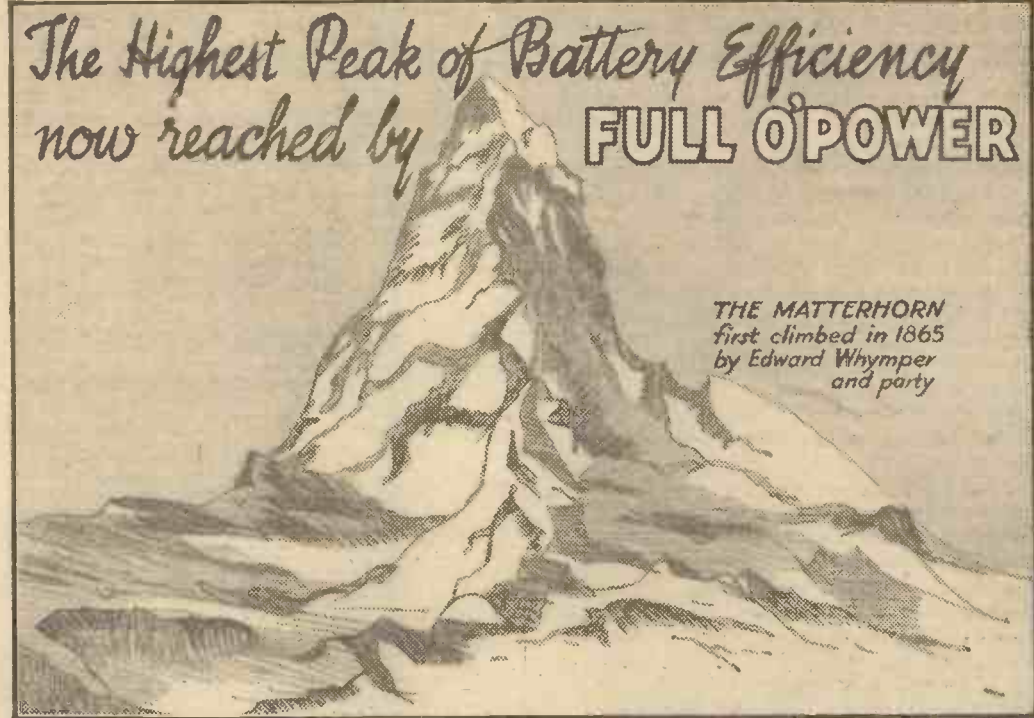
G: Meinen Sie vielleicht wegen Luftstörungen?

K: Jawohl! Die moderne Praxis hat gezeigt, dass viele der Rundfunkstörungen gar nicht so weit in der Luft zu suchen sind, und können durch gute Abschirmung und tadellosen Netzanschluss in überraschender Weise beseitigt werden. Damit sind die Verstärkungsmöglichkeiten beinahe unbeschränkt. Dieser Apparat ist ganz mit Aluminium geschirmt und die drei Stufen sind dann auch einzeln geschirmt. In der ersten Abteilung befindet sich die Netzanschlussröhre, in der zweiten die Hochfrequenzstufe und in der dritten sind die Detektor- und Niederfrequenzröhren.

G: Ueber welche Entfernung erhalten Sie Fernempfang während des Tages?

K: Das ist natürlich von der Stärke des Senders abhängig. Aber ich kann mir nicht wohl denken, dass irgendwo in Europa auch in Zukunft die politischen Grenzen dieser Empfänger viele Grenzen bilden würden. Selbstverständlich geht das weit über die alten Ideen von

(Continued on page 944)



IT is only the adventurous few who can claim to have climbed the Matterhorn; for skill and endurance above the ordinary are needed to conquer those remote heights. Yet, once the summit had been reached, these men must have been proud and happy. They could achieve no more. Their effort had been worth while.

It has taken years of patient thought—of experiment—of skilful improvement—to evolve the Full O'Power Battery. And now it is confidently offered to the public as the highest peak of Battery efficiency.

The exclusive use of seamless drawn zinc cylinders is only one of the novel and up-to-date features included in this remarkable Battery.



Send for the
FULL O'POWER
Booklet,

select the size and type of Battery most suitable for your set and place an order with your Dealer. The results will undoubtedly please you.

Buy one today & test it for yourself!

SIEMENS BROTHERS & CO., LIMITED, WOOLWICH, S.E.13.

(Continued from page 943)

enim Rundfunk-Dienstgebiet. Nicht nur die Sender heutzutage, sondern auch die Empfänger sind viel leistungsfähiger.

G.: Wenn man soviel mit drei Röhren erreicht, was würde man mit mehr als drei Röhren nicht erreichen können?

K.: Allerdings haben nicht alle Dreiröhrenapparate den Verstärkungsfaktor dieses Apparates, aber doch viele. Mit einem solchen Apparat umkreist man bei Tage Europa und bei Nacht die Welt. Sie bemerken auch, dass die Bedienungsriffe ziemlich einfach sind. Der Drehkondensator mit einem Trommelantrieb ersetzt die Drehkondensatorknöpfe des älteren Apparates und ausser dem Rückkoppelungsknopf und dem Ein- und Ausschalter des Apparates gibt es weiter nichts, um das man sich zu kümmern hat. Wenn Sie Zeit haben, suchen Sie mich morgen auf, und wir werden nicht so sehr die Leistung des Apparates als die Leistung der Sender Europas prüfen. So betrachtet man heutzutage das Glück des Rundfunkempfanges.

Glossary

Gleichrichtung: Detection.

Schirmgitterröhre: Screened grid valve.

Heavyside-Schicht: Heavyside Layer.

Wechselstrom-Netzanschluss-Röhren: A.C. heated valves.

Hochfrequenzstufe: High frequency stage.

Niederfrequenzröhre: Low frequency valve.

Emissionsstrom: Electron current

Abschirmung: Shielding

Wolframdraht: Tungsten wire.

Trommelantrieb: Drum control

Rückkoppelungsknopf: Reaction control.

Ein- und Ausschalter: On and off switch.

ITALIAN

L'idioma gentile (IV)

(continuazione e fine)

A Dunque (*well then*), se è vero quello che Lei mi disse la volta scorsa (cioè che Dante, con la sua "Divina Commedia," suggellò la vittoria del fiorentino su tutti gli altri dialetti d'Italia) la questione della lingua letteraria in Italia trovò molto presto la sua definitiva soluzione?

B.—Macché (*nothing of the kind*)! Proprio tutt'al contrario! Fu precisamente con Dante che cominciò a dibattersi quella lunghissima, e molto spesso tediosa, questione della lingua. E un po' di colpa (sia detto con tutto il dovuto rispetto) ce l'ebbe proprio il "gran padre Dante"!

A.—Come, come? Che mai mi dice? E perchè?

B.—Come, perchè! Perchè Dante, mentre da un canto (*on one side*) scriveva la "Commedia" in pretto (*pure*) fiorentino, dall'altro canto, quando speculava intorno alla lingua, diceva che la lingua letteraria non doveva essere nè il fiorentino, nè nessun altro determinato dialetto; ma piuttosto una specie d'italiano o "volgare illustre," costituito dagli elementi comuni a ciascun dialetto, e non contaminato da nessuna delle loro particolarità linguistiche. E Lei capirà bene che, dopo di lui, tutti quei letterati italiani che non vollero assoggettarsi alla supremazia del fiorentino, s'appellarono sempre all'autorità di Dante; il quale, fiorentino di nascita, aveva, in teoria, condannato la sua stessa lingua materna.

A.—Eh già, me l'immagino; era una buona arma in mano dei non fiorentini. E ci sono state dunque molte polemiche al riguardo?

B.—Polemiche? Vere battaglie! Fiumi d'inchiostro si son versati da tutt' e due i campi! Anzi, più tardi, le questione si complicò, e i

letterati si divisero, non più in due, ma in tre campi. Quando, con l'andar del tempo, Dante e il Petrarca e il Boccaccio diventarono dei "classici" per le generazioni seguenti, ci furono di quelli che dissero che l'italiano letterario non doveva essere semplicemente il fiorentino, ma precisamente il fiorentino di Dante, il fiorentino del Trecento (*XIV Cent.*). E così per molto tempo in Italia c'è stata questa triplice divisione fra gli scrittori: quelli che volevano che si scrivesse nel fiorentino moderno, quelli che parteggiavano per il fiorentino del Trecento, e quelli che patrocinavano una comune lingua italiana.

A.—E fino a quando ci sono state queste discussioni?

B.—Fino a non molto tempo fa, fino al secolo scorso.

A.—Ma possibile! E Lei vorrebbe dire che un secolo fa c'erano in Italia dei letterati che scrivevano nella lingua del Trecento?

B.—C'erano—fortunatamente pochi, però. Ma se Lei vuole accertarsene, legga qualche classicista del tempo, del Cesari (1760-1828), per esempio. E per notare meglio il contrasto fra l'affettazione trecentistica e la lingua moderna, paragoni quella prosa artificiale alla prosa naturale e robusta ad un tempo del Manzoni, per esempio.

A.—Parla del famoso autore dei "Promessi Sposi"? E a quale delle tre scuole apparteneva il Manzoni?

B.—Egli, in verità, aveva idee sue, originali. Ma così, all'incirca, dovremmo dire che era col-primo gruppo, con quelli che volevano che si scrivesse nel fiorentino moderno; nel fiorentino delle persone colte, naturalmente.

A.—Ed ora, ai giorni nostri, continuano ancora queste polemiche?

B.—Oh no, per fortuna. E Lei capirà bene le ragioni. Una quantità di cose sono accadute in meno d'un secolo in Italia. Pensi, innanzi tutto, alla grande influenza che, nei rispetti della lingua, deve avere avuto l'unità politica dell'Italia; unità che non esisteva fino a settant'anni fa. E poi, lo stesso spirito italiano è cambiato, facendosi più pratico, più attivo; e ben lo rispecchia la prosa moderna, che è tanto più spedita, agile ed esplicita; quasi come se il pensiero, di cui essa è l'espressione, fosse impaziente delle leziosaggini, delle ricercatezze, delle affettazioni d'una volta.

S. BREGLIA.

LETTERS TO THE EDITOR

(Continued from page 942)

I would advise Mr. Davey to add another L.F. stage and to sharpen up his aerial circuit, for if he does this he will find he can call his set selective and will not need to suggest that the "power of our own stations be increased to wipe out a lot of these foreign stations."

I will make no comment on the latter suggestion. It speaks for itself.

Yours faithfully,

R. NEWINGTON.

Croydon, Nov. 29, 1930.

To the Editor of WORLD-RADIO

SIR,—With reference to Mr. William Blair's complaint, in your issue of Nov. 28, that Strasbourg is one of the worst Continental faders, I would say that my experience has been the direct opposite, and that Strasbourg is one of my loudest and most consistent foreigners.

At the same time I would suggest the following three explanations:—

1. As Mr. Blair mentions Vienna, Milan, Toulouse, Langenberg, and Berlin (stations which I can only receive with difficulty), it would seem as if the "range" of his dial were for about 300 to 600 metres, whereas mine is

from 215 to 400 metres at good strength and for 400-600 at indifferent strength. I have noticed that with the tuning condenser's vane full out my lowest station, Flensburg (218 m.), is subject to the approximate two minutes' periodical fading of which Mr. Blair complains; this leads me to suppose that he is receiving Strasbourg near one end (the "vanes out" end) of his dial. Stations in the first and last thirds of the dial—i.e., with vanes nearly full out or nearly full in—are always more difficult to receive.

2. Mr. Blair's set may not be very selective, which might cause Strasbourg to be drowned by London Regional during the latter's loud periods (London Regional being very liable to fluctuation in this district).

3. Possibly the most likely explanation is that Mr. Blair is suffering from the attentions of a neighbour who has his set in an unstable condition and who constantly tries to tune in to Strasbourg.

Yours faithfully,

CHARLES D. M. KEYWORTH.

106, Calder Street, Glasgow, S.2, Dec. 1, 1930.

To the Editor of WORLD-RADIO

SIR,—With reference to Mr. G. H. Davey's letter, it would be interesting to know if his set is suitable for receiving long-wave stations. I fully agree with most of his remarks concerning foreign stations, so far as the medium waves are concerned. Apparently, it is Mühlacker which is ruining his reception of London Regional, and not a French station, as suggested. On my four-valve set I receive the London station well for a few minutes, but then it will fade and the German slowly comes in, rendering reception impossible until the London station resumes his strength some minutes later. I must say, however, that I get a few foreign stations very well with but little fading or interference, such as Rome, Stockholm, Toulouse, and Strasbourg.

I advise Mr. Davey to turn to the long waves for perfect reception of foreign stations. My experience is as follows:—

Huizen.—Clear, but not loud; Radio-Paris.—Very good, no interference from 5XX; Königs Wusterhausen.—Good when 5XX is not working; Eiffel Tower.—Very good; Warsaw.—Variable; Motala.—Good; Kalundborg.—Excellent. Oslo.—Very good.

With regard to Mr. Wolseley's letter, may I point out that at one time Königs Wusterhausen was well separated from 5XX, until his wavelength was altered (not 5XX's). In this part of the country, Langenberg is well clear of 5GB, but fades frequently. Frankfurt is fairly well received here.

Yours faithfully,

J. E. A.

29, Glen Eldon Road, Lytham St. Annes, November 30, 1930.

To the Editor of WORLD-RADIO

SIR,—Judging by the correspondence on identification of foreign stations appearing in the current issue of your excellent weekly, it is evident that there are still some listeners who do not possess the book of "Station Identification Panels."

Although my knowledge of foreign languages is nil, I have been able, with the aid of the panel and list of stations in *World-Radio*, to recognise forty transmitters quite easily. Although at times there is something on in which I haven't the faintest interest, at least I have the satisfaction of knowing to whom I am listening, and of being able to turn to my friends with the information that they are listening to Moscow, Algiers, etc., as the case may be.

Yours faithfully,

Nov. 28, 1930.

MILU.

SWITZERLAND

is the Country

FOR

those who wish to have a really good time and enjoy the

WINTER SPORTS

under ideal conditions.

For full information apply to:

SWISS FEDERAL RAILWAYS,
11B, Regent Street,
LONDON — S.W.1

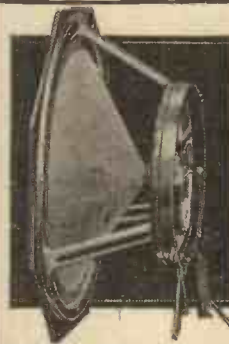
Illustrated Booklets, Maps, Hotel Guides, Fare Lists and Time Tables supplied free on application, as also by the principal Tourist Agents

Don't waste that unit



The Squire 97B—a single cone cradle, with 9½ in. vellum cone and ebonised octagonal front. Chassis assembly (excluding unit)

15/-



The Squire 101—a double diaphragm model, with double floating suspension. Chassis assembly (excluding unit) Plus 3/- royalty.

WRITE TO US DIRECT IF NECESSARY

39/-

TRY it in a Squire chassis and see what fine results you will get. The cast aluminium cradles of Squire speakers, with their rigid structure and solid members, entirely eliminate backlash, resonance and muffling. Every minute motion of the armature is communicated without loss to the diaphragm. No cheap chassis can be as satisfactory as a Squire. Squire chassis are solid—and British.

All Squire cradles will take standard units—Blue Spot, Hegra, Bullphone, Ormond, etc. Full particulars of all models, including new Sylphone Moving Coil, on application.

FREDERICK SQUIRE

LTD.

Kings Works, Leswin Place, Stoke Newington, N.16.

M.C. 11

PUT YOUR UNIT ON

VIBRANTI

IT MUST IMPROVE THE TONE!



Size:

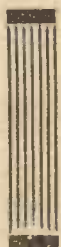
24 in. x 24 in. x 1 in.

CENTRE OPENING 9½ in. or

12 in. DIAMETER.

THE SUPER ONE-PIECE BAFFLE

CAN BE FIXED IN A CORNER, HUNG FROM THE PICTURE-RAIL, OR—IF FITTED AS ILLUSTRATED—PLACED IN ANY CONVENIENT SPACE.



SUPPLIED IN SIX ATTRACTIVE FINISHES at 9/6, 10/6 and 11/6 each SCREEN FITTINGS:

(as shown above)

OXIDISED COPPER, 5/3 set
OXIDISED SILVER, 6/6 set

FROM RADIO DEALERS

or

CHAS. BORST & SONS

306-308, Euston Road, LONDON, N.W.1

Make some DX listener or short-wave "fan" happy this year—give him a pair of these—



Ericsson Telephones are comfortable, wearable and wonderfully sensitive. Found hooked up to every really good long distance set. Three resistances—one price 12/6d.

All good dealers stock them, or direct from

ERICSSON TELEPHONES, LTD.

120, 2,000 and 4,000 ohms

67/73, Kingsway, London W.C.2.

12/6

Ericsson

BRITISH SUPERSENSITIVE TELEPHONES.

keep a log:

this Stations Identification Booklet is the ideal, the best log-book. It contains wavelengths, frequencies, power, call signs and interval signals of every important European station, and some American short-wave stations. It costs only one shilling, post free—of the B.B.C. Bookshop, Savoy Hill, London, W.C.2.—*It's new, and it's trustworthy!*

WORLD-RADIO STATIONS
IDENTIFICATION PANELS
BOOKLET

RADIO FOR THE MILLION

10/- DOWN

Wonderful reception obtained in all parts of the Country on the "CHORALIAN THREE"

Complete with beautiful toned Loud Speaker.
Cash Price £9 10s.
or on easy payment terms.

UNIQUE FREE after sales service to all purchasers.

Apply for descriptive pamphlet to

CHORALIAN RADIO LTD., Parliament Mansions,
Victoria Street, London, S.W.1.

Better Reception for London Listeners!

Thousands of London Listeners testify to their improved reception of the *alternative* programmes and foreign stations since HIRING the famous 'C.A.V.' High Tension Accumulators for less than the cost of an unreliable Dry Battery.

Full particulars of this economical High Tension Accumulator Hire Service Post Free.

Write for Folder 'C.'

RADIO SERVICE (LONDON), LTD.,
105, Torriano Avenue, Camden Rd., N.W.5.

Telephone: North 0623 (3 lines).

WIN *your* Boy a Raleigh Cycle!

ALL YOU DO IS

Buy your boy Bing!

Bing engines, carriages, signals, stations,exact models of the real railroads! Made to last. Made for boys who will grow into keen-brained men!

Not only will Bing trains give your boy hours of amusement, but also will they give him a chance of winning a Raleigh Cycle or Blackbird Fountain Pen! Particulars of the new Bing Shunting Competition can be obtained from any shop or store. Enquire on your way home to-night and—buy your boy Bing!

Buy him a

BING

TRAIN FOR XMAS

On sale at all leading Toyshops and Stores.
In case of difficulty in obtaining, write for names of nearest Bing Stockists to:

L. REES & COMPANY,
12, NEW UNION STREET,
LONDON, E.C.2.

TECHNICAL SECTION

The Technique of Broadcasting

1.—The Development of Studio Acoustics.

IT has been a more or less familiar fact ever since the inception of broadcasting, that in order to obtain the best results it is necessary to provide some kind of draping in the studios where the various performances which are broadcast actually take place. Nearly everyone interested in matters relating to broadcasting must be familiar with photographs of the earlier studios in which the walls and ceiling are seen to be very heavily draped with curtains of some kind.

The reason given for this treatment was that it was necessary for the reduction of echo, which for some mysterious reason was supposed to need suppression far more in the case of a broadcast performance than in that of a concert or public speech given under ordinary conditions. Even to-day one hears similar views expressed in certain quarters, but there is little doubt that they are, to a very large extent, erroneous. The truth of the matter seems to be that if the acoustic conditions in a room are such as to give *real* satisfaction when one listens to music directly, without the intervention of broadcasting, then such a room is suitable with little or no further modification for use as a broadcast studio.

The earlier view seems to have arisen for various reasons. The imperfections of the apparatus employed for both transmission and reception soon after broadcasting commenced were such that the reproduction bore little resemblance to the original. The microphone and the loud speaker were not the least to offend in this respect. The characteristics of these instruments were of such a type that the effects of a too "echoey" room even for direct listening were exaggerated in the process of reproduction, hence it was found to be some advantage to reduce echo to a minimum.

Psychological Effects

The matter may also have been to some extent psychological. If we are listening to an orchestra in an acoustically bad hall, our eyes, as well as our ears, tell us what is going on, and we tend to have our attention distracted from any effects which the bad acoustics may produce. In broadcasting, however, this distraction is no longer operative, and we become, if we are at all critical, very conscious of any of the effects under consideration, particularly if, as already indicated, they are in any way exaggerated by defects in the apparatus which is employed.

Moreover, a person who is actually present at a performance in a building of a certain type, draws, unconsciously and to a considerable extent, upon his previous experience, and even before the orchestra, for example, begins to play, knows to a very large extent what kind of a result to expect. He is therefore not surprised by what he hears, but when, as in broadcasting, the conditions under which the performance takes place are less evident, an unexpected, and possibly an unwelcome effect is the result.

Suspensions that possibly the conditions of the draped studio were not, after all, the best for broadcasting were first aroused after the manifest success of certain "outside broadcasts" of performances from concert halls of good acoustics, and from places such as the Grand Hotel, at Eastbourne. It was found that the results obtained under these conditions were definitely more pleasing to musical taste than



No. 3 studio at Savoy Hill as it appeared in 1926.

Note the heavily draped walls and ceiling.

those obtained by the use of the heavily draped studios hitherto employed.

It is now time to consider what are the characteristics of a room, or a building, which render it capable of giving a pleasing result when used for a musical performance. The matter was the subject of a really scientific investigation for the first time about thirty years ago, when

CONTENTS OF TECHNICAL SECTION

| | |
|-------------------------------------|----------|
| The Technique of Broadcasting | page 947 |
| Home Battery Chargers | " 948 |
| Thoughts on Receivers and Reception | " 950 |
| Christmas Topics by "Decibel" | " 953 |
| Heterodyne Interference | " 954 |
| Short-Wave Notes | " 955 |
| Mystery of the Ether | " 956 |

Professor W. C. Sabine, of Harvard University, became interested in the question. He established that the distinguishing property of an auditorium is its "reverberation period." This is a term which requires some explanation.

Most people, whether of scientific attainments or not, realise to-day that sound is a wave motion, the atmosphere being the medium by which the waves are transmitted. As such, it is necessarily a form of energy. Mechanical work has to be done, in order that a sound may be

produced, whether by the voice or, for example, by means of some kind of musical instrument.

Reflection and Absorption

If, therefore, a musical instrument were to continue emitting a steady note in a closed room the walls, floor and ceiling of which were perfect reflectors of sound, the amount of sound energy in the room would continue to increase. This is another way of saying that the noise would get continually louder as long as the instrument continued to play. This does not actually happen in practice, because the walls of buildings are never perfect reflectors of sound; in other words, they always absorb a certain proportion of the sound energy incident upon them. What the value of the percentage of absorbed sound is depends, partly on the material of which the walls are composed, and partly on the pitch or frequency of the sound. This matter will be elaborated in a subsequent article.

Thus, if an instrument starts to play in a room, the sound energy, and consequently, the loudness of the sound, begins to rise, and, at the same time, the walls begin to absorb sound, the rate of absorption being proportional to the intensity of sound in the room. Plainly a time will come when the rate of sound absorption is equal to the rate of emission of sound from the instrument. After this time the sound intensity in the room remains constant as long as the instrument continues to play. The time taken for this condition to be reached is at the most only a few seconds.

If now the instrument suddenly ceases to play, the sound intensity begins to decrease, owing to the absorption which is still taking place at the walls. The time, in seconds, taken for a fairly loud sound to die away to inaudibility in this manner, is called the reverberation period, and is a definite property of the room concerned. In scientific terms it is defined as the time taken for the intensity of sound in the room to decrease to one-millionth part of its initial value.

One unfortunate effect of the older studios was that they were depressing to the eye, as well as to the ear. The heavy hangings did not lend themselves at all readily to any pleasing scheme of decoration, and it is fairly safe to say that such studios would not be tolerated to-day from the decorative point of view, even if their acoustic properties were satisfactory.

Towards the end of the period during which curtained studios were employed, efforts were made to improve them by providing lighter hangings, and making some of the curtains removable at will, so as to provide some control of the properties of the studio. This, however, was far from satisfactory. Such studios were definitely "boomy," great trouble being experienced with the base instruments.

In the next article we shall see what the requirements are as regards reverberation time for a good room or auditorium, and shall proceed to a consideration of the means which may be adopted to bring about the desired conditions, particularly in regard to the construction of suitable studios for broadcasting.

(To be continued.)

Free! Nowhere else can you get a booklet that tells you in such simple language how you can convert your spring-motor gramophone into an electrical gramophone

—How, too, you can play and amplify your gramophone records through the medium of your radio set. Send off the coupon below for your free copy of this unique Booklet. There are so many ways of incorporating a Pick-Up circuit in order to amplify gramophone records that very few owners of Pick-Ups are getting the best results. Once your gramophone is converted you will be amazed at the difference in results—the clarity, sweetness and the realism are almost an unbelievable advance.

| | |
|---|--|
| HARLIE GRAMOPHONE PICK-UP (To fit on Tone Arm). £1 7 6 | HARLIE ELECTRIC GRAMOPHONE MOTOR. |
| Loud-clear; swivel joint for needle insertion; handsome; solid; best cobalt steel magnet; life-like; no needle scratch; minimum wear on record surface. Catches the light and shade effect in reproduction. | As illustration. Constant speed—specially designed for every type of gramophone. FOR A.C. MAINS ONLY. Absolutely silent electrically and mechanically. Requires no attention. A newly designed speed regulator with readable dial always remains accurate. Only 35 watts electrical consumption. Being an Induction Motor it gives NO interference with Radio. |
| MOD. P.U.A. | £3 : 17 : 6 |
| MOD. 32 | 5s. 6d. |
| MOD. 35 | £7 : 12 : 6 |

DE-LUXE OAK CABINET,
complete with electric motor, automatic stop and pick-up (illustration is cut away to show how the motor is mounted).



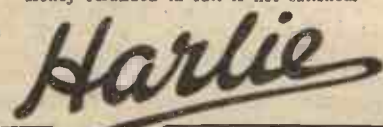
MOD. P.U.A.
£3 : 17 : 6
Unconditionally guaranteed for one year.

MOD. 32
Fixed very simply, and so arranged that when the Tone Arm or Pick-Up Arm touches the extended arm of the Automatic Stop it immediately switches off the motor.

MOD. 35
£7 : 12 : 6
(Please state A.C. Mains voltage and cycles when ordering.)

SEVEN DAYS FREE TRIAL. A GENUINE OFFER.

We invite you to test these wonderful new Harlie products for seven days free in your own home. Money refunded in full if not satisfied.



To: HARLIE BROS. (Edmonton), LTD. (Dept. W.R.1), Baham Road, Lower Edmonton, N.9.

- Please send me free your new Booklet on "HOW TO USE A PICK-UP, ELECTRICAL MOTOR, ETC."
- Or, Order your requirements under our 7 days FREE TRIAL.

Name

Address

"Home" Battery Chargers

THE majority of listeners who are situated at an inconvenient distance from a battery charging station are, unfortunately, without an electric light supply. Also, it may be thought that those who have electric mains would prefer "all-mains" receivers. On the other hand, however, many listeners whose homes are fitted with electric light are already in possession of receivers which draw their current supplies from batteries. Accumulators are, of course, almost a *sine qua non* so far as the filament supply is concerned. High-tension current may be supplied from dry batteries, or, in the case of the more ambitious type of receiver, high-tension accumulators may be used. It is with the latter, and the low-tension accumulator that this article is concerned.

Low-Tension Charging from A.C. Mains
Most listeners are, doubtless, already familiar with the types of trickle chargers which are on the market; these are, of course, an extremely satisfactory means of keeping a two-, four- or six-volt accumulator fully charged and in good condition, and obviate the bother often associated with having batteries charged.

Possibly, the best-known type of trickle charger is that employing a metal-oxide rectifier, the mains voltage being stepped down to the value required for charging by means of a suitable transformer. These trickle chargers are usually somewhat similar to the arrangement shown in the theoretical diagram (Fig. 1). They are available in two types—for alternating current of 100 to 125 volts, and 200 to 250 volts. Variations between these respective limits are

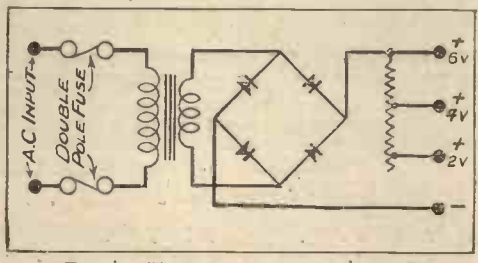


Fig. 1.—Typical L.T. trickle charger

sometimes neglected, as the output of the unit need not be so critical as that of a transformer supplying current direct to a receiver without an intervening battery.

It is sometimes found that a trickle charger can be connected up permanently to the accumulator and the set used at the same time. If, however, it is found that this produces a "hum" in the loud speaker, the trickle charger should be disconnected from the mains while the set is in use. Alternatively, if the plug from which the supply is taken is fitted with a switch, this may be used, or a switch may be fitted in one of the leads to the "input" side of the charger. There is no need to disconnect the charger from the accumulator, as, even if the battery is not charging, no current can flow back through the charger.

It will be noticed that a resistance is shown in the sketch; this, of course, serves to limit the current when a two or four-volt battery is being charged, otherwise the current would rise excessively, due to the lower resistance of the circuit, with, possibly, disastrous results. The output of a charger of this type is usually of the order of half an ampere. This is sufficient to keep quite a large battery in good condition. For instance, if a battery is used to supply one ampere for six hours per day, and is on charge for the remaining eighteen hours, it will replace the current taken and allow an ample safety margin. This is presuming that the

charger is switched off during the time the set is working. If the battery is charging the whole time, the working load can, of course, be greater. A trickle charger should not, however, be expected to re-charge a completely exhausted battery unless a long period can be allowed without working the battery, and, even then, only if the cells are in first-class condition. The first charge of a battery should always be given at the rates specified by the manufacturers. This is usually much more than a trickle charger can give, except in the case of certain small cells.

It is, of course, a comparatively simple matter to make a charger capable of delivering up to about two amperes of rectified current. Several types of metal rectifiers are available, and mains transformers to suit are made by many well-known manufacturers. A charger of this type is also useful for polarising a moving-coil speaker when the field winding is of the low-tension type. The output of the charger can be fed direct to the speaker, and a convenient arrangement is to connect the charger output to a double pole double-throw switch, so that it can be used to polarise the loud speaker while the set is in use, and to re-charge the battery during "rest" hours. A resistance can be inserted in the battery circuit to reduce the charging rate.

Should a slight mains hum be audible in a speaker which is polarised as described above, this can usually be cleared by connecting a large capacity electrolytic condenser across the terminals of the field winding. It is, perhaps, unnecessary to add that it should be ascertained that the hum is actually being caused in this way, by switching on the field circuit when the set is not working. The moving-coil circuit should, of course, be connected up. In addition to the metal rectifier types of chargers, there are several types on the market in which a valve, or other rectifier, is employed.

High-Tension Charging from A.C. Mains

Both of the types of chargers already mentioned can also be obtained for charging high-tension accumulators. It is also possible to "trickle charge" high-tension accumulators from alternating current mains by means of a simple half-wave rectifier, such as that shown in Fig. 2, but it is, of course, essential that the voltage of the battery to be charged should be considerably less than that of the mains. This arrangement is comparatively cheap to install, as no high-voltage power transformer is required.

All the apparatus needed is a small transformer, which may be of the type known as bell transformers, to heat the filament of the rectifying

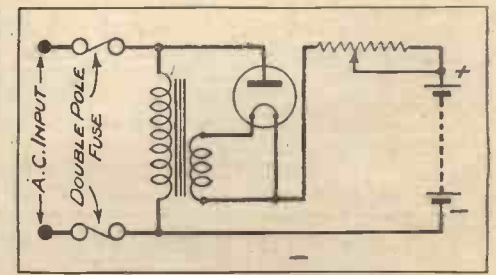


Fig. 2.—Half-wave H.T. trickle charger

valve, the valve itself, with holder, and a voltage-regulating resistance. If a transformer giving the voltage required by the valve filament is not available, one giving a higher voltage can be used and a suitable resistance connected in series with the output winding. No centre tap is needed, as with full-wave rectification, and the inclusion of a resistance, therefore, introduces no further complication. For the rectifier almost

any low-impedance valve can be used. An ordinary power valve, with the anode and grid connected together, will be quite suitable, but the output must be arranged according to the safe anode dissipation of the valve if it is to have a reasonable life. Valves specially designed for half-wave rectification are obtainable.

A variable power resistance provides a convenient method of adjusting the charging current, but an ordinary metal-filament electric lamp can be used if desired; this will give a visible indication that the charger is working, and the current passing can be calculated roughly if a suitable meter is not available. A lamp designed to work on a voltage equal to, or greater than, the charging voltage will be suitable. The charging voltage, of course, is the difference between that of the battery and the mains, less an allowance for voltage drop, due to the internal

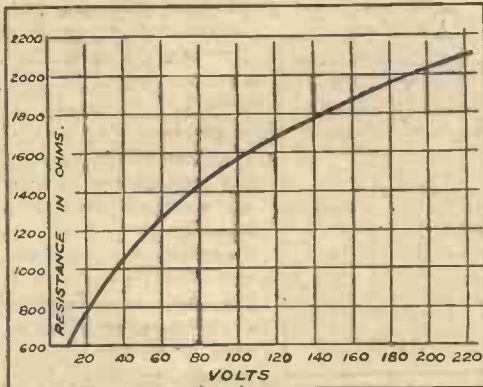


Fig. 3.—Resistance curve of metal-filament vacuum lamp

resistance of the rectifying valve. Taking a typical example, it may be desired to charge a high-tension accumulator of 120 volts from 230-volt alternating current mains. Using a valve of 160 ohms impedance, and a 1,500 ohm variable power resistance in series, the charging current can be adjusted to the maximum anode current specified by the manufacturers of the valve, in this case 120, or less, as required.* Using a 230-volt, 60-watt metal-filament lamp instead of the variable power resistance, the current passed is approximately 70 milliamps.

The resistance of any lamp, when passing the current for which it was designed, can easily be ascertained; the amount of current passed at the full voltage for which the lamp was designed is found by dividing the rating in watts by the working voltage; thus a 200-volt, 100-watt lamp will pass $\frac{1}{2}$ an ampere at 200 volts. Obviously, therefore, its resistance can be found by dividing the current (in amperes) into the voltage; in this case the resistance is, of course, 400 ohms. This is the resistance of the filament at its full temperature, but the resistance decreases rapidly as the temperature is decreased—i.e., with a lower voltage applied across the filament. For instance, a 230-volt, 25-watt lamp has a resistance of approximately 2,130 ohms when the filament is at its full temperature. At 120 volts, however, its resistance is only about 1,700 ohms, and falls lower if the voltage is reduced further. A curve is given (Fig. 3) showing the approximate resistance values at different temperatures of a typical metal-filament vacuum lamp.

When using the above method of charging, the battery should first be completely disconnected from the receiver (including intermediate tappings), otherwise the mains would become "earthed" through the earth connection of the wireless set. Precautions should also be taken to prevent anyone coming into contact with any "live" parts of the charging apparatus.

(To be continued)

GREATEST RADIO SENSATION

NEW 3-VALVE SET OBTAINS OVER 50 STATIONS ON LOUD-SPEAKER WITH DAVENTRY 5GB WORKING

This is the New Northampton Plating Co. Super Selective 3-Valve Loud Speaker set, which is now offered to the public. After months of careful research a circuit has been designed superior in selectivity to a screen grid set and yet remarkably simple. It can be used not only for cutting out the local station, but for other disturbances such as Morse. It is the simplest, cheapest, and most selective in the world. No soldering required or coil changing. Experts have declared it absolutely unique. Over fifty stations have been obtained on loud speaker with aerial 20 ft. high, using cheap valves, including Cardiff, Paris, Madrid, Manchester, Stuttgart, Toulouse, Hamburg, Glasgow, Frankfurt, Rome, Langenberg, Berlin, Brussels, Hilversum, Kalundborg, Konigswusterhausen, Radio Paris. These were obtained 3 miles from Daventry while 5GB was working. Thousands of novices, with no knowledge of wireless, have built the old Northampton Plating Co. Super 2 and 3 in all parts of the world and have been astounded by the results even with cheap components, but the New Super Selective 3 makes other sets old-fashioned and marks the greatest improvement in valve sets for years. In order to give everyone the opportunity of testing out the new circuit, two 6d. Blue Prints, 1 for new Super Selective Two, and 1 for Super Selective 3-Valve will be supplied for 3d. each. Please write clearly in block letters. **LETTERS MUST BE FULLY STAMPED**

READ THE LATEST REPORTS BY THE LEADING RADIO EXPERTS OF THE DAY:

"I refer to the receiver marketed by the Northampton Plating Co. as a kit set at a price that is more than reasonable. I had a pleasant surprise when I first operated it. I found there were 12 or 13 Stations easily brought in at loud-speaker strength on the medium wave in addition to 5GB. The set has remarkable qualities of selectivity and sensitivity, two characteristics rarely coupled in any one receiver. It must be set down as a definite advance." (NOTTINGHAM JOURNAL, December 21st, 1929.)

"Those who are too far from a station to use a crystal and are deterred from wireless by the present high cost of valves will find it best to make a set from the Northampton Co.'s blue prints for two or three valves, price 3d. each. If they cannot afford a Mullard, the same company supply excellent valves at 4s. 11d., which give admirable reception, though so cheap. A thoroughly good two-valve set ought not to cost more than £2 10s. including everything, and a three valve about 11s. more." (REYNOLDS NEWS, Jan. 12th, 1930.)

READ THESE TESTIMONIALS.

"I have had your Super 3 since Sept., 1929, and have had wonderful results; about 50 stations at full loud-speaker strength; and can get most of these any night of the week, chief among them being: Paris, Eiffel Tower, Budapest, Prague, Belgrade, Stockholm, Madrid, Toulouse, Stuttgart, Barcelona, Turin, Moravska-Ostrava, Rome, Algiers, Langenberg, Oslo, Lahti and Kaunas. Wishing you every success."—W. T., Emsworth, Hants, 17/1/30.

"I have now built up your Super Three-valve set, and, independent of price, I have never heard or seen a set to beat it. We are still getting fresh stations, and up to the present have logged 20 at full loud-speaker strength. As I am writing we are bearing an Aria from Rome. My last set cost me about £25. Your Super Three has cost me less than £5, including accumulators."—W. A. P., Norwich, 3/2/30.

"I feel I must write and congratulate you on a wonderful circuit. I have now had your 'Northampton 3' only two nights, but in those two nights it has fully justified itself. I have poorest of poor indoor aerials and I have in 10 minutes logged 16 stations on the Loud Speaker. I have had to insert a volume control because of the power of the local station (Bournemouth, 70 miles away) and 5GB. I have just received Oslo, Paris (2), Hamburg, Berlin, Budapest, and many others. Your '3' gives 90 per cent. better results than you specify. Wishing your sets the best of luck in the future."—Yours very satisfied, C.D.N.

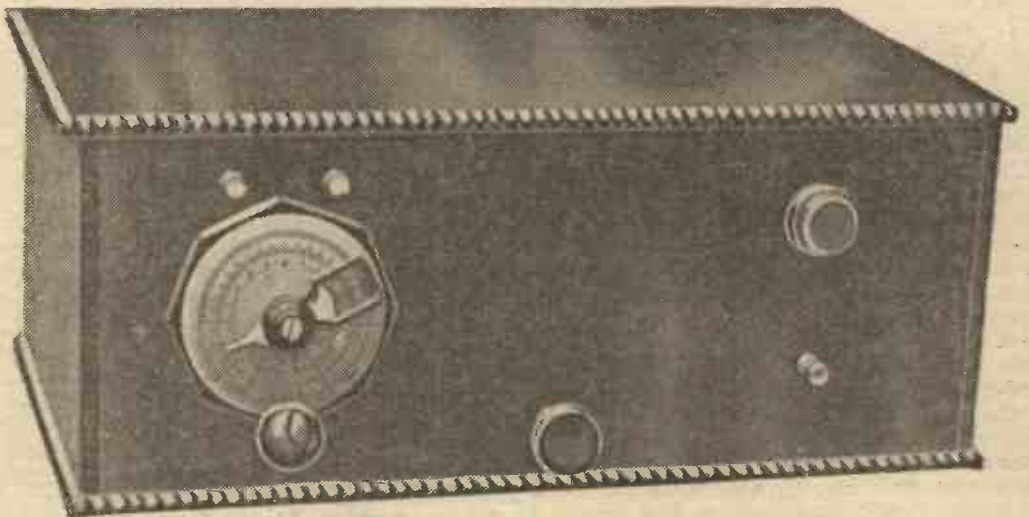
NEW SUPER 4-VALVE PORTABLE SEPARATES TWO BROOKMANS PARK STATIONS UNDER THE AERIALS

This is the latest model circuit by the Northampton Plating Co. offered to the public for the first time. It has been specially designed to satisfy the requirements of the new regional stations. Owing to its wonderful selectivity, it requires no wavetrap and obtains under favourable conditions a large number of Continental Stations at loud speaker strength, including Toulouse, Hilversum, Eiffel Tower, Konigswusterhausen, and Radio Paris. At less than half the price of a high-class portable set, it is acknowledged under severe technical tests to be far superior. In order to show what marvellous results can be obtained, the set was placed between two aerials at the entrance to Brookmans Park, and the two programmes were easily separated. The set was also taken on 1,000-mile motor-tour over England and Wales. On the South coast and East coast many stations were easily obtained on loud speaker at good strength. Even in Wales, where reception is difficult, excellent results were also obtained. In order that everyone may be able to construct this unique portable set, a full size shilling Blue Print, with full details and instructions, can be obtained from Northampton Plating Co. for 6d. Letters must be fully stamped. **NAME AND ADDRESS IN BLOCK LETTERS.**



Northampton Plating Co. Super A.C. Eliminator.

Special offer. 7 days' approval test. This A.C. eliminator, value £4, will be sent to any address on payment of 59/- cash or C.O.D., with the guarantee that if it is not superior to any other eliminator on the market, and not giving complete satisfaction, the money will be instantly refunded if returned in good condition and undamaged. It is guaranteed to be most silent in operation, giving over 20 milliampères, and suitable for all 2, 3 and 4 valve sets. Test it for yourself. Trade enquiries invited. **STATE MAINS, VOLTAGE & CYCLES.**



**X TURN TO PAGE 987 for special list of X
WIRELESS AND CYCLE BARGAINS**

Owing to the enormous number of enquiries and orders, write clearly Name and Address in Block Letters to the firm that made Radio popular. Letters must be fully stamped. Address enquiries to Dept. W.R.
**NORTHAMPTON PLATING CO., Radio & Cycle Manufacturers.
NORTHAMPTON.**

* In the actual test, a full-wave rectifying valve, with anode pins connected together, was used as it happened to be available.

Thoughts on Receivers and Reception

SOME years ago—four, to be precise—I made a broadcast receiver. In designing it, the first and practically only criterion was that it should give first-class quality on the local station (2LO), from which a field strength of about 8 mV/m was available, and also from Daventry 5XX, which gave a slightly smaller field strength. Mains operation seemed very desirable, but at the time suitable components and mains-operated valves were not available, and considerable difficulty was experienced in eliminating hum. However, the receiver which resulted took its H.T. supply for all valves, its grid bias and L.T. supply for the two L.F. stages from A.C. mains, while a 6-volt accumulator and a 9-volt grid battery supplied the H.F. and detector valves.

A tuned anode circuit was used for the H.F. valve, and the detector worked as an anode-bend detector—at the time the best method of detection, due, firstly, to our lack of knowledge of how best to use a grid leak detector to ensure linearity and, secondly, to the lower degrees of modulation used at the transmitters. Triode valves of the L.S.5 type, with the grid and anode strapped together, were used to rectify the H.T. supply in the absence of suitable rectifying valves. Separate feed was used to each stage, and the grid bias to the L.F. stages was decoupled in the manner now well known.

Complete freedom from motor-boating was not achieved at the outset with full magnification in the L.F. stages, owing to the use of a common resistance in the negative H.T. lead to provide the grid bias, as the mains transformer did not contain sufficient secondary windings to permit the power stage filaments to be heated separately. However, it was never necessary to use the set "all out," and so it served for some time. The total feed to the set was about 90 mA and 300 volts were used at the anodes of the power valves. A relay, with its field coil in the main H.T. circuit, and which, therefore, became energised as soon as the mains were switched on, was used to switch on the H.F. and detector valve filaments; perhaps not the best practice, as the H.T. came on first, but it reduced to unity the operation of switching on, and in use did not seem to reduce valve life unduly.

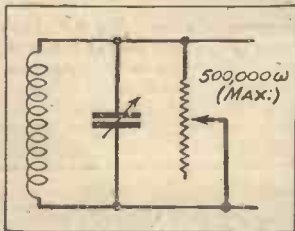


Fig. 1.—A method of H.F. volume control

The set was housed in an old oak cupboard measuring approximately 28ins. wide, 18ins. deep and 28ins. high. The mains unit occupied the bottom, the L.F. amplifier the middle, and the H.F. and detector unit the top shelf—the components of each unit being mounted on a wooden baseboard covered with copper sheet. Inter-connections between the units were made externally at the back. Originally a cone-type loud speaker was used, and this stood on the top of the cupboard, but this has since been replaced by various moving-coil and other types of loud speakers, fitted in an open baffle 3ft. square, and forming a separate piece of furniture. A still later addition is a gramophone motor and pick-up fitted inside an old oak chest, which is used for record storage as well. Screened leads (lead-covered cable) connect up the three units.

To return to the set itself, the results obtained from the local station and from 5XX were excellent, and an occasional foreign station was

heard. Gradually, however, the power of foreign stations was increased, and it became possible to hear more of them, especially of the German stations. Ordinary plug-in coils had been used for the H.F. circuits, and, in order to improve sensitivity and to get better results from distant stations, it was decided to use more efficient coils for the aerial circuit,

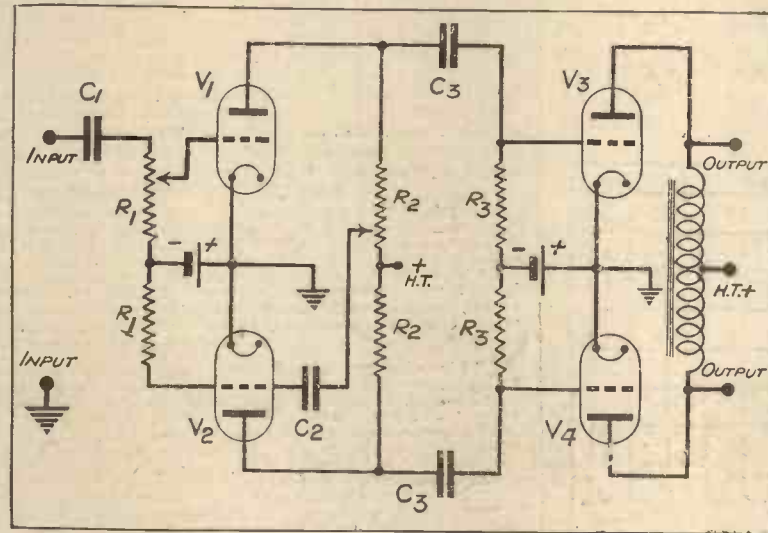


Fig. 2.—Paraphase Amplifier with variable anode tapping

and an efficient H.F. transformer, designed by Mr. R. E. H. Carpenter, to replace the tuned anode circuit. A difficulty arose here, for the use of such low damped circuits for local reception resulted in serious cutting of sidebands—giving high-note loss after detection, while the detector became over-loaded.

A solution to this was suggested, however, in the form of a high-frequency volume control, which consisted of a variable non-inductive high resistance having a maximum value of 500,000 ohms. One of these resistances was connected across each tuned circuit. (See Fig. 1.) On distant stations, where such volume control was not required, the resistance, at maximum, did not affect either the sensitivity or the selectivity, whereas on the local station the damping introduced resulted in a flat resonance curve and no appreciable loss of sidebands. Admittedly selectivity was affected, but it was found later to be quite adequate for Regional Scheme requirements. In the light of the further increase in power of foreign stations, however, the selectivity is now quite inadequate, but this point will be dealt with at some length in due course.

The performance of the set was further improved considerably with the advent of the modern A.C. triode valves—which were fitted in H.F., detector, and first L.F. stages. This allowed complete A.C. operation of the set, with the exception of the grid bias to the H.F. and detector valves. It was more convenient to retain the small 9-volt dry battery

than to fit the necessary decoupling arrangements. In addition to the improvements made to the high-frequency side of the set, the appearance on the market of new components also allowed considerable improvement to be made on the low-frequency side, and to the mains unit. The old mains transformer, which had L.T. windings arranged to suit the valves in use when it was designed, has been replaced by one which will suit modern valves, and has five secondaries—for high-tension up to 250 mA at 500—500 volts, or 300—300 volts; for rectifier filaments 3 amps. at 3.75—3.75 volts; for filaments of output valves up to 3 amps. at 3—3 volts; for heaters of A.C. valves up to 6 amps. at 4 volts, and for grid bias, 120 volts. A metal rectifier now provides grid bias, up to 100 volts being available across a potential divider.

The advantages of working the audio-frequency stages of the amplifier with pairs of valves in phase opposition, were recognised, but it was not desired to depart from resistance capacity coupling and, therefore, the ordinary push-pull scheme, involving as it does the use of transformers, was

not adopted. Later, however, Mr. R. E. H. Carpenter brought out his "Paraphase" scheme, the subject of British Patent Specifications Nos. 325,833 and 333,143, whereby the advantages of phase opposition working can be combined with those of resistance coupling. Use is made of the fact that the grid and anode A.C. potential in a triode valve are 180° out of phase. The first L.F. stage consists of two valves, the first of which is fed in the normal way from the detector, and the

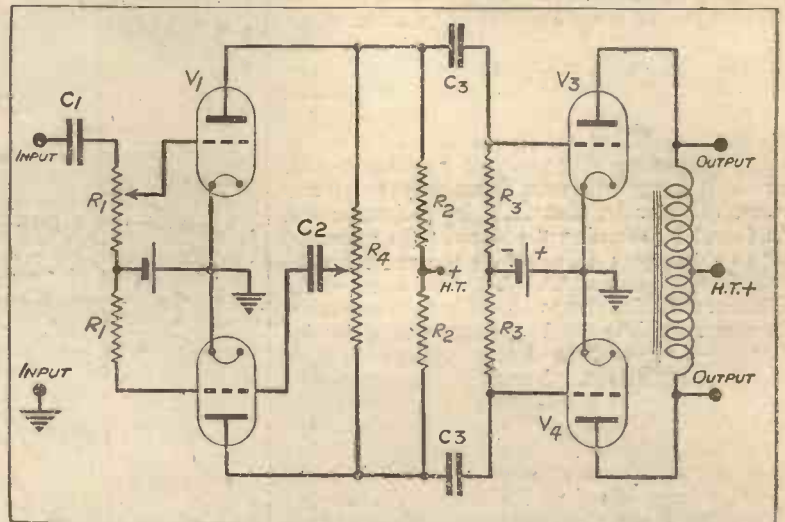


Fig. 3.—An arrangement employing a potentiometer

second of which is fed from a suitable point in the anode circuit of the first, so that the amplitude of the voltage is the same as that fed to the grid of the first valve, but 180° out of phase with it. The anodes of these two valves are then coupled, through condensers, to the grids of the output stage valves in the ordinary way.

By means of a variable tapping on the anode resistance of the first L.F. valve (see Fig. 2), or

(Continued in col. 2, page 955)

SIFAM Provide Perfect XMAS GIFTS

CIRCUIT TESTING ADAPTER

By plugging on to the spike of a voltmeter it instantly detects Short Circuits, Open Circuits, Condenser Trouble, Bad Connections and also tests Valve Filaments. Including battery.



2/6

POCKET VOLTMETER 7/6
6-12v.

"SIFAMETER"

The Triple Test Meter

gives measurements of 0.15 for L.T. and G.B., 0.150 volts for H.T., 0.50 Milliamps for plate current consumption.

10/-

SIFAM PANEL MOUNTING METERS

A complete range for every measurement, including the

MOVING IRON



U.A. 66-7/6

and the



ELIMETER

for measuring eliminator voltages from 220 to 500 volts D.C.

FROM 30/-

SIFAM 9-Range METER

A complete test set which gives accurate readings of filament volts, filament current, grid bias volts, plate volts and plate current for all valves; also eliminator current L.T. and H.T., battery charging voltage or current.

PRICE £3 15 0

SIFAM RADIO FUSES

provide a reliable protection against overload for valves and meters. From 100 M.A. to 5 AMPS.

Price complete with clip 1/3



YOUR RADIO DEALER CAN SUPPLY

Send a postcard for the New "Sifam" Literature.

SIFAM ELECTRICAL INSTRUMENT CO., LTD.,
BUSH HOUSE, ALDWYCH, LONDON, W.C.2

The Best of XMAS GIFTS



TROPIC BOWL FIRE

A gift of real utility which will provide your friends with comfort and good cheer for a long time to come.

Imagine a polished copper bowl rimmed with nickel and a nickelled back, the whole being mounted on a solid, beautifully shaped stand. A six foot cord will connect the fire to any electrical point in the room. The insulation is so thorough that there is not the slightest risk of shock. The fire will consume very little (3/5ths of a unit per hour) running at full heating efficiency (600 watts).

POST FREE

to any address in the United Kingdom.

Price - - - 25/-
Spare Element 3/6



Fully Guaranteed for one year. Cash refunded in full if not satisfied.

NOTE.—Be sure to state voltage required when ordering.

SIFAM ELECTRIC IRONS
200 to 250 volts. Life guarantee. Special Xmas offer. Price 10/6, post free.

Always on view at the Showrooms of

SIFAM ELECTRICAL INSTRUMENT CO. LTD.,
WEST WING, BUSH HOUSE, LONDON, W.C.2.



Use your private

D.C. PLANT

or

D.C. MAINS

to operate an

A.C.

ALL-ELECTRIC RECEIVER

or

RADIO GRAMOPHONE

Models suitable for 32v, 50v, 100v and 200 volts D.C. are available.



Send coupon for free booklet.

D.C. to A.C.
ROTARY TRANSFORMER

To The M-L Magneto Synd., Ltd., Radio Dept. F, Coventry.

Please send me free copy of "The Book of the M-L Rotary Transformer."

Name.....

Address.....

WISHING YOU ALL AN "EKCO" XMAS

"EKCO" All-Electric Radio is as irresistible to the kiddies as it is to 'grown-ups.' "EKCO" will bring you a feast of Christmas entertainment from Continental as well as home stations....dance music, vaudeville, concerts, orchestral music, Dickens' portrayals, football commentaries and a host of other interesting features.

"EKCO" All-Electric Sets operate direct from your electric supply. No batteries—no accumulators—no replacements—no renewals—permanently perfect radio—PLUG-IN—THAT'S ALL. As simple, safe and reliable as your electric light.

The "EKCO" 3-valve Receiver No. 313 is superior to ordinary four and five valve sets. Requires no aerial, gives multi-station reception with razor-keen selectivity, complete reliability, one knob tuning calibrated in wavelengths, volume to order, natural tone adjustable to any speaker, gramophone pick-up sockets, Westinghouse Valveless Rectification, low upkeep costs. In cabinet of tenacit bakelite—dark jade, dark mahogany or medium oak. Receiver and Loud-Speaker form one symmetrical whole as shown in illustration, or can be purchased separately. Receiver £22. 10. 0 (complete with valves).

There is also the "EKCO" 2-valve set No. 312 at £14. 10. 0.—easily superior in performance to standard 3-valve sets.

"EKCO" Speakers stand on 3-valve Receiver No 313 as shown, or support 2-valve Set No. 312. "Ekcone" Speaker £4. 10. 0. "Ekcoil" Moving Coil Speaker—D.C. £8. 12. 6. A.C. £11. 0. 0.

**"EKCO" SETS ARE OBTAINABLE BY
EASY PAYMENTS SPREAD OVER
TWO YEARS.**

SEE...HEAR...AND BUY at the nearest radio dealer's or write now for particulars of "EKCO" All-Electric Sets and details of how you can operate your present battery set or portable from your electric supply with an "EKCO" Power Unit and so finish with batteries and accumulators for ever.

E. K. Cole, Ltd., Dept. W.R., "EKCO" Works,
Southend-on-Sea.



EKCO

ALL-ELECTRIC RADIO

Christmas Topics

By "DECIBEL"

WELL, I suppose you have all been trying to remember where you put that pair of extra large stockings that you keep for Christmas, and that you have all informed Santa Claus how much you would like one of those radio-gramophones that cost only £100, and say "Mamma" when you squeeze them!

By the way, how does one communicate with Father Christmas in these modern times? I have heard of messages being spoken into the loud speaker, but that does not seem to me to be very sound, as a loud speaker usually makes a very poor microphone. I suppose the telephone is as good a method as any, although I have no doubt some of you have been in touch with the old gentleman by means of morse, or wireless telephony on short waves.

Santa Claus's Whiskers

I understand that Santa Claus moves with the times to the extent of employing motor-cars and aeroplanes to cover his rounds quickly, but he still seems to stick to his long whiskers. I really think he ought to have them removed, particularly as I don't think he need even go to the trouble of having them shaved off if a remark my own daughter (aged five) made the other day has any significance. She had just seen him at one of the large stores and seemed to be fairly impressed, but she remarked as she came away, "His whiskers looked to be stuck on."

Now what does that imply? Personally, I think it implies a great deal. It may mean that, as the old man isn't as young as he used to be, his whiskers and hair have begun to look a bit moth-eaten, and he has to wear false whiskers and a wig to preserve his dignity.

On the other hand, he may have dispensed with whiskers in private life and thinks it is necessary for professional dignity to wear whiskers when about his official duties, just as tall hats are still considered necessary by some business men and politicians. On the other hand, however (and I must say this in a whisper), it doesn't mean that the old fellow is a fraud, does it? Is my daughter beginning to suspect that such may be the case?

In these days of wireless, aeroplanes, motor-cars, television, telephones, etc., children have become so sophisticated. The natural curiosity of the young, further developed by the general scientific spirit of the age, must tend to make the modern child look for the whys and the wherefores. Hence the significance of Santa Claus's whiskers appearing to be stuck on.

Is a scientific upbringing an advantage or a disadvantage? That is a question I do not propose to discuss now; it is much too heavy to go with plum pudding and turkey. I do want to say a few words, however, on this auspicious occasion, as the best people say, to my fellow knob-twiddlers and ether-searchers, so pray silence for your Uncle Decibel.

First of all, let me ask you what you were thinking of doing on Christmas Eve. Were you thinking of pulling your set to pieces and rebuilding it? "I hadn't thought of it," say you, wondering what on earth I am getting at. All right; but you were thinking of spending a large part of the time seeing what all the stations in Europe and, perhaps, part of America were doing, weren't you? Yes, you will say, being truthful, and not desiring to deceive your dear Uncle Decibel, but still puzzled as to what he is driving at. And you were thinking of showing off your set to all your friends who visit you at Christmas, were you not? Of course, you say, Why not? Righto; now we are off, and anything I am now going to say does not apply to you, but to the other fellow up the road.

Live and Let Live

In this very mixed world of ours everybody is not a wireless "fan." Some people are interested in the technical side of wireless more than the entertainment side; others know nothing and care less about the fascination of building and trying out their own receivers. At Christmas time in particular, people of very mixed likes and dislikes will be gathered together for mutual enjoyment, and in the majority of cases a wireless set of some description will also be present at the festivities.



"Decibel" sets a good example

Special Christmas programmes will be provided by all stations, both in this country and abroad, and some of these will no doubt be considered worth listening to by even the worst grumbler. Now what I would like to impress on the fellow up the road—not you, of course—is that it would be greatly appreciated by everyone if he remembered that what is one man's meat is another man's poison.

It may please him to demonstrate the reaching-out capabilities of his set to his friends, but it does not follow that it will please them; neither does it follow that if he makes his set oscillate during the process that it will please other listeners in the neighbourhood. Many people will show a polite interest but would much rather listen to the programme or play bridge. Even the kiddies would rather their daddy or big brother played a game with them than fiddled with his beastly wireless.

Do you get me, Steve? Hurrah! Away with "Technical Topics" and on with the dance. A Happy Christmas to you all, and don't forget—"Live and let live."

NEITHER BOOM NOR RESONANCE



Mr. Barton Chapple has "nothing but praise" for the new W.B. Permanent Magnet Moving Coil Speaker. "A nice crisp note is revealed" he says, "while a very even balance is maintained throughout the musical scale—nothing boomy, nothing shrill." Hear this new speaker yourself—your dealer will demonstrate.

Available in chassis form with 14in. baffle,
 £6 : 6 : 0
 Oak Cabinet Model,
 £8 : 8 : 0
 Mahogany, £8 : 18 : 6
 Walnut, £9 : 9 : 0



Made by the Makers of the famous W.B. Cone Speakers, Switches and Valve Holders.

Whiteley Electrical Radio Co., Ltd., Radio Works, Nottingham Road, Mansfield, Notts.

FREE

from



BILLY MAYERL HIS OWN BOOKS

Here is your chance to get at the truth of your problem—how to learn the piano. Billy Mayerl, famous all over the world for his brilliant playing, answers in these two books the questions you've always wanted to ask.

Can it be done without drudgery? Is there an easy road to success? Must I be a genius? Billy Mayerl tells you clearly, implicitly—the truth.

Both his books are absolutely FREE to readers of this paper—one for beginners, one for pianists who want to learn syncopation. Mark your enquiry "Beginner" or "Syncopation," as the case may be.

THE BILLY MAYERL SCHOOL,
 Studio 7, 29, Oxford Street, London, W.1.

Birmingham Branch: 49, St. Albans Road, Smethwick.

Overseas Branches.—South Africa: P.O. Box 5828, Johannesburg, Transvaal. New Zealand: 175/177, Hereford Street, Christchurch. India: P.O. Box 81, Bombay.

Heterodyne Interference

A method of overcoming this trouble by means of a "filter" at the receiving set

DURING the winter months distant transmitting stations are liable to interfere with the reception of local stations, as most readers are aware. This interference is due to part of the energy transmitted by the distant station being radiated in directions other than the horizontal, and being reflected from the Heaviside layer, eventually reaching the ground again several hundred miles from the transmitter. During darkness this indirect ray, as it is called, may suffer very little attenuation, and may, therefore, give appreciable signal strength at places where it reaches the ground, although there may be very little signal strength due to the direct ray which has travelled over the surface of the earth and become very weak.

The strength of the indirect ray usually varies fairly considerably owing to the uneven nature of the Heaviside layer, but at times may be sufficient to cause serious interference hundreds of miles away from the transmitter. The most common type of interference results in a high-pitched whistle being heard from the loud speaker, the frequency of this whistle being normally 9,000 cycles per second, which is the difference in frequency allowed by international agreement, between the carrier frequencies allotted to stations on adjacent wavelengths.

In some cases more severe interference is experienced from powerful transmitters, and the actual modulation may be heard either clearly or in a very distorted form. Interference of this nature is very difficult to eliminate without spoiling the quality of reception from the local station, as it means that sidebands are being received from the interfering station and these overlap the sidebands of the local station. Hence, the removal of interfering sidebands is liable to result in the removal of sidebands from the local station, with the result that quality suffers.

Sharply tuned circuits or filters are, therefore, not very satisfactory for eliminating interference of this nature, and the most satisfactory method is to use a directional aerial, so that there is very little pick-up from the direction from which the interfering indirect ray arrives. As this direction is liable to vary, however, a simple frame aerial is not always entirely satisfactory, although it is usually fairly effective if it can be rotated.

Fortunately, the most general form of interference is that due to the heterodyne note caused by the interfering carrier, and simple remedies are sufficient to remove this. If the allotted frequencies of the local station and that of the interfering station are adhered to, the audible note has a frequency of 9,000 cycles per second, and suitable filters can be fitted to the receiver to eliminate notes of this frequency.

Such filters will, of course, remove any 9,000 cycle notes transmitted by the local station, but, provided the filter employed is sufficiently sharp to remove only notes within a few hundred cycles of 9,000 cycles per second, no audible ill-effect will be produced on the reception from the local station.

If the filter is not so sharp it will filter out frequencies other than 9,000 cycles per second, and filters of this kind can be used to eliminate to some extent sideband interference at the expense of good reception of the higher notes from the local station.

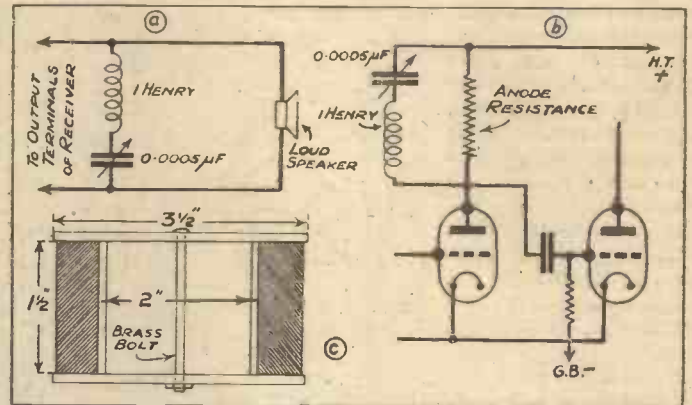
In order to remove a heterodyne note with a frequency of 9,000 cycles per second, a circuit

tuned to this frequency can be introduced into the low-frequency circuits of the receiver to by-pass all currents of this frequency. The relative values of inductance, capacity and resistance of this tuned circuit must be such that the impedance of the circuit at a frequency of 9,000 cycles per second must be very low compared with the impedance of the alternative path at this frequency, and must be high at all other frequencies compared with the impedance of the alternative path at these frequencies.

Hence, the resistance of the filter should be kept sufficiently small to give low impedance at a frequency of 9,000, and the ratio of inductance to capacity should be sufficiently large to give high impedance at other frequencies.

A Heterodyne Filter

In most cases a filter consisting of an inductance of 0.5 to 1 henry in series with a variable condenser will be satisfactory. Actually a capacity of about 0.0003 microfarad is required to tune an inductance of 1 henry to 9,000 cycles, so that a 0.0005 microfarad variable condenser is suitable for use with such an inductance. If the inductance is as low as 0.5 henry, a slightly larger variable condenser will be necessary, and a capacity of 0.0006 mfd. will be required. This can, of course, be obtained by connecting a



Alternative methods of connecting the filter and details of the inductance coil

small fixed condenser of, say, 0.0003 mfd. across a 0.0005 mfd. variable condenser, or by using a 0.001 mfd. variable condenser.

The filter should be connected across an impedance which is not greater than about 25,000 ohms if it is not to affect frequencies other than 9,000 cycles per second, but it can, of course, be connected across higher impedances if a slight reduction in the higher audio frequencies can be accepted. If it is connected across too low an impedance, it will not remove entirely a 9,000 cycle heterodyne note, as the resistance of the filter will be comparable with the alternative path through the impedance across which it is connected, and the latter will not be completely by-passed.

Provided that the inductance used in the filter has a fairly low resistance, the filter is quite effective when connected across a normal high-resistance loud speaker (shown at (a) in the illustration), as the impedance of the latter is quite high at a frequency of 9,000 cycles per second. If a low-resistance loud speaker is used with a step-down output transformer, the filter can be connected across the primary of the transformer.

If it is found that the filter is not sufficiently effective when connected in either of the above ways, it will be necessary to connect it across a

(Continued at foot of column 2, page 955)

LATEST & GREATEST IN CONE SPEAKERS!

—The new LOEWE RADIO model EB 85—
Radio's greatest advance in Cone-Speaker manufacture. Price 42/- complete. Unit only, 12/- Unit and Chassis, 16/6. Full details from

THE LOEWE RADIO CO., LTD.,
4, Fountain's Rd., Tottenham, N.15.
Phone: Tottenham 3911/2.

LOEWE RADIO

SHAFTESBURY SOCIETY AND Ragged School Union (1844)

Patrons: THE KING AND THE QUEEN.
Treasurers: SIR EDWIN DODD and WALTER SCOLES, Esq.

Of Your Charity, Send a **CHRISTMAS GIFT** To Help London's Poorest Children

CRIPPLE MISSION (9,100 on register).
13 CHILDREN'S HOMES AND CAMPS.
BAREFOOT MISSION (garments, boots, toys, etc.).
158 ASSOCIATED MISSIONS IN SLUMLAND.

Donations in Money and in Goods are urgently needed and will be gratefully acknowledged

by ARTHUR BLACK, General Secretary,
John Kirk House, 32, John Street, W.C.1.

Short-Wave Notes

THE 20 kW., 16.9-metre station at Bangkok, Siam, now appears to give regular transmissions on two days per week, namely, Sunday, from 12 noon to 2.30 p.m., and from 6 to 8 p.m.; Tuesday, from 1 to 3 p.m., and from 6 to 8 p.m. These times are convenient for British listeners, and good reception should be the rule in most cases.

On several evenings last week, W2XAD was received at good strength at 6 p.m., but began to fade out at about 7 to 7.30 p.m., and had practically disappeared before 8 p.m. On the other hand, the American 49-metre stations were well received later in the evening, notably W8XK (48.86), although some of them, for instance W2XE, suffered from fading at first.

A communication received from the Constantine station informs us that transmissions take place on Mondays and Fridays at 10 p.m., the wavelength employed being 45 metres.

Readers' Reports

Rome (80). Good loud speaker reception at Scarborough (Yorks) during the evenings of Nov. 20, 21 and 22. No fading, but static interfered at times. Music, opera, and call "Radio Roma." (Receiver o-v-2.)

Moscow (50). Loud speaker reception of speech (no music) at Twickenham, 4 to 5 p.m. on Nov. 24. (Adaptor—S.G.—v-1 set.)

Chicago (49.34). Steady 'phone reception, signal only slightly above static level at Windermere, 2.30 a.m., Nov. 23. (6-valve super-het. receiver.)

Bound Brook (49.18). Heard at moderate 'phone strength, fading rather badly, at Northallerton, 11 to 12 p.m., Nov. 13. Orchestral programme. (o-v-2 set.) Also received at poor 'phone strength, 9.30-10 p.m., Nov. 22, at Rochester. Relay of football match. (S.G.—v-pentode set.)

Nairobi (49). Received at poor 'phone strength at Northallerton, 7 to 7.30 p.m., Nov. 14. Bad fading. Gram. records. (o-v-2 set.) Also heard, at moderate 'phone strength, clear of static but with some slow fading, at Rochester, 7 to 7.30 p.m., "Nov. 28, dance records and announcement 7LO the Nairobi station of the East African Broadcasting Co."

Saigon (49). Weak 'phone reception with bad fading at Rochester, 2.20 p.m., Nov. 27. (S.G.—v-pentode set.) Received also at Hove (Sussex), 2 to 3 p.m., Nov. 30, at good 'phone strength on indoor aerial, but with bad fading. Concert by "Orchestre de Radio Saigon" and close-down at 3 p.m. with time signal. (o-v-pentode.)

Georgetown (43.86). Good L.S. reception, no fading, at Darlington, 11 p.m. to 1 a.m., Nov. 23. (o-v-2 set.)

Manila (43.5)? Heard at Rochester, 2.28 to 3.30 p.m., Nov. 30. Good 'phone strength, some noise jamming. Music, many items recognised and call "Radio Manila." (S.G.—v-pentode receiver.) No Manila station on this wavelength in S.W. list.

Lisbon (42.9). Heard at Bow (London, E.), announcing tests and inviting reports. Records from 10 to 11.15 p.m. Closed down with Portuguese National Anthem. Good L.S. strength, slight static. (6-valve S.-Het.)

Sydney (31.28). Heard at Bow (London, E.), relaying 2FC, from 12.30 to 3 a.m., Nov. 28. Fair L.S. strength, slight static and fading. Programme of light music followed by dance music—many items recognised. (6-valve super-het. set.)

*Numerous reports have been received from all parts of the country regarding W2XAF, W2XAD (particular mention being made of the "ball game" on Nov. 22), also W8XK and Zeesen, but lack of space prevents publication this week.

(For list of Short-Wave Stations see page 959)

THOUGHTS ON RECEIVERS, ETC.

(Continued from page 950)

by a potentiometer connection (see Fig. 3), it is possible to adjust the voltage fed to the second valve grid, so that it is of the correct magnitude. In either case, a point of balance is sought, indicated by zero signal when listening on telephones connected as shown in Fig. 4. The resistances R_5 must be exactly equal.

It is interesting to note that this method of balancing gives the desirable condition of both valves in the first L.F. stage having the same output voltage, although, owing to slightly different characteristics of the two valves, the voltages applied to their grids may not be exactly equal. In arranging a paraphase

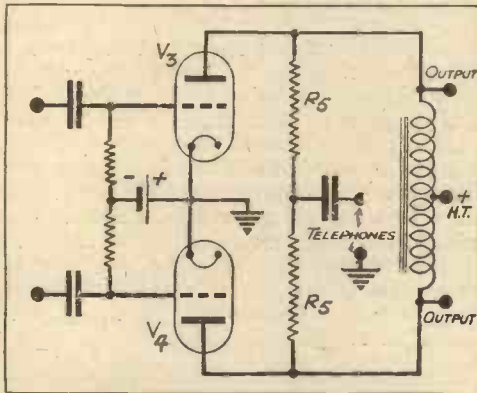


Fig. 4.—Method of obtaining balance

amplifier, it is well to bear in mind two conditions which should be fulfilled, in order to ensure that the voltage applied to the grid of one valve of the first L.F. stage is the mirror image of that applied to the grid of the other.

(1) The valves should work on linear characteristics.

(2) The condenser (C_2 in Figs. 2 and 3) should be of negligible reactance in comparison with condenser C_1 and, in practice, may be five to ten times the capacity of the condenser normally associated with the grid leak R_1 .

If a high-resistance loud speaker is used, it can be connected directly to the anodes of the output stage as shown, without any condensers, as both anodes are at the same D.C. potential. If a low-resistance loud speaker is used, then an output transformer with centre-tapped primary is necessary, but, as the D.C. flux in the primary winding cancels out, the lower end of the frequency characteristic will not suffer by any reduction in inductance, and the usual choke-capacity connection is not required. It is well to remember that, in the paraphase output stage, the valve anode-filament paths are effectively in series—and that the total impedance of the anode output circuit is, therefore, double that of one of the valves.

(To be continued)

HETERODYNE INTERFERENCE

(Continued from opposite page)

higher impedance such as an anode resistance (see diagram b), or one of the windings of an intervalve transformer.

The tuning will, of course, be sharp, and a condenser with a vernier dial is an advantage, though not essential. An inductance which has been found to give satisfactory results in a number of cases, consists of about 4,000 turns of No. 32 or No 30 gauge, double silk, or double cotton-covered copper wire, on a former made up as indicated at (c) in the accompanying drawing. The overall diameter of the completed coil is about 3½ inches, and about 1½ lbs. of wire are required. The inductance is about 0.8 henry, and, therefore, a 0.0005 microfarad variable condenser is suitable.

W. G.

COMPELS

Your Set to Give BETTER RESULTS!

The "PATENT
"GOLSTONE" NO-MAST AERIAL

BRINGS IN STATIONS HITHERTO UN-
OBTAINABLE. PROVIDES INCREASED VOLUME,
PURITY AND SELECTIVITY. INTERFERENCE REDUCED TO A MINI-
MUM. NO POLES OR MASTS. CANNOT BE BLOWN DOWN BY
STRONGEST GALE.

The
'GOLSTONE' PATENT NO-MAST AERIAL

In Use at
Windsor Castle

Is Permanent and can be Easily Fitted without any technical knowledge. Obtainable from all First Class Radio Stores.

Complete, ready for use, with down lead ... **24/-**
Or with Negrolac down lead, strongly recommended ... **30/-**
No other Aerial Wire required.

Write for Catalogue giving Full Particulars, with extracts from Technical Press Reports, and enthusiastic testimonials.

WARD & GOLDSTONE, Ltd.,
(W.R.), Pendleton, Manchester.

WILL YOU LIGHT A CANDLE?

THE BITTER WINDS OF ADVERSITY HAVE LEFT MANY CHILDREN IN THE DARKNESS AND THE COLD. DURING THE YEAR 725 SUCH LITTLE ONES HAVE BEEN RECEIVED IN THE CHILDREN'S HOME. AND THERE IS STILL A

WAITING LIST

FOR WHOM WE MEAN TO FIND A HOME BEFORE CHRISTMAS

| | |
|---|---|
| <p>All ye who Christians be, Oh, light my tiny candle here for me It has gone out; I am not very old, And as I travelled in the cold A bitter wind with all his might Blew, and put out my little light</p> | <p>All ye who Christians be, Will ye not list to me, Who have so often prayed I might not be afraid? I am a little frightened,—can't you see? Oh, light my little candle here for me. EDNA NORMAN (By permission)</p> |
|---|---|

Your GIFT of FIVE GUINEAS

WILL LIGHT A CANDLE IN A DARK PLACE BY SECURING THE IMMEDIATE ADMISSION OF ONE OF THESE LITTLE ONES.



MY CHRISTMAS CANDLE

Please Light a Candle for me by taking a child from the Waiting List into the Children's Home.

I enclose Five Guineas, and should be glad to have some particulars of the child received.

Name

Address

Principal: REV. W. HODSON SMITH.

General Treasurers:

THE RT. HON. LORD WAKEFIELD OF HYTHE, C.B.E., LL.D.

SIR THOMAS BARLOW, Bt., M.D., F.R.S.

NATIONAL CHILDREN'S HOME & ORPHANAGE

30 Branches (Founded by Dr. Steppenson) 4,000 Children

Chief Offices: Highbury Park, London, N.5

W.R.

Remittances may be forwarded through any Branch of the National Bank Ltd.

Mystery of the Ether

By RALPH STRANGER

Author of "Mystery of Electricity," "Mystery of Magnetism" etc.

PROFESSOR EINSTEIN, of relativity fame, speaking at the opening of the last wireless exhibition at Berlin, denounced those wireless listeners who do not take the slightest interest in radio science, and who do not try to grasp the elementary principles of wireless communication. He said: "Those people who thoughtlessly make use of the wonders of technical and scientific development without having grasped any further from an intelligent point of view than the cow does of the botanical structure of the plants that she devours in comfort, should be ashamed of themselves."

I do think Professor Einstein is a little too hard on the wireless listener. Every human being is naturally curious, everybody would like to be perfectly at home with his, or her, wireless receiver, but how is one to satisfy such curiosity if there has been no previous scientific training? After all, the majority of textbooks on this subject are difficult for a beginner to follow, as many authors appear to write not for those who do not know, but for those who already know a great deal. Even if one has the necessary preliminary knowledge, it will be found that many things are taken for granted, and many elementary matters left unexplained. This fault lies not so much with the authors, but with our present indefinite knowledge of the laws of Nature.

The Ether

If one is to understand the principles of wireless communication, one must know something about the nature and the manner of propagation of "wireless waves," as we have to explain, to our own satisfaction, how the void between the transmitting and the receiving aerials is bridged so as to make the exchange of intelligible signals possible without the aid of any intervening conductors.

Here we come against our first difficulty. We find that the opinion of the scientific world is divided. One school of thought holds that wireless waves are waves in the ether, an all-pervading medium that fills all space, be it the interstellar space, or the space within the boundaries of atoms. Thus we are given to understand that, if not for this ether, there would be no light and no heat rays, our skies would be only a black void, and we would be unaware of the existence of the sun, the moon, the numerous stars, and other heavenly objects.

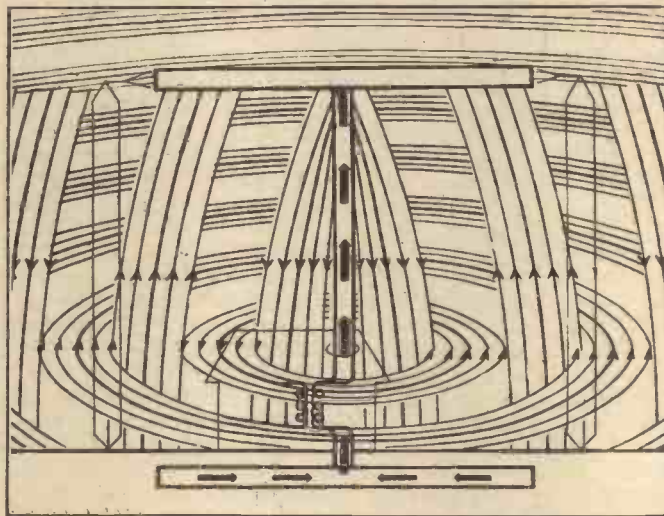
There are also reasons to believe that, if there were no ether, there would be no matter. As we shall see later, there is a theory that electrons and protons are made of ether. Of the ether itself we are told that it is a continuous medium possessing "density" and "elasticity," two properties making it possible for the ether to be disturbed, and for the disturbance to die down owing to the "inertia" of the ether. It is not known definitely what sort of density, elasticity, or inertia the ether possesses, but we do know that it is not the ordinary mechanical density, elasticity, and inertia. The ether itself, and its properties, are something unique.

We know that it has two particular properties, namely, the electric and the magnetic property, and it is possible that the electric property corresponds to elasticity, and the magnetic property to density—Sir Oliver Lodge in "Ether and Reality." All this appears to be very mystifying at first, but as we progress with our studies we shall find that there is a ray of light in all this darkness.

The other school of scientific thought tells us that there is no ether, that what we call "a wave in the ether" is really matter, and that

all matter is really waves, that the difference between "free" waves and matter is that matter is a sort of "bottled waves." Thus it would appear that there are really no ether waves but just little bits of matter which change their properties with the speed at which they travel. Thus an electron, if it attains the speed of 186,000 miles per second becomes a "wave." We shall go into these mysteries in due course, and see what the scientists are really driving at. They do not talk of such things without strong experimental evidence, but how this evidence is to be interpreted is another matter.

It is all very confusing to us ordinary folk, and although we do our best to visualise "bottled waves," try to understand the meaning of time, and get accustomed to think in four dimensions, we find it very hard to reconcile the new scientific ideas with what we call common sense. Our trouble is that while a mathematician can think in any number of dimensions he likes, just by adding a few more symbols to his formulæ, he is quite unable to interpret his thoughts to us in simple everyday language.



By Courtesy of Gommert-Films, Berlin

Electro-magnetic Waves

But to return to the ether. Since, at the moment, there appears to be no conclusive evidence against the existence of the ether, and since we have to try and form some idea of the nature of wireless waves, we shall have to side with those scientists who believe in the existence of this all-pervading continuous medium, and employ it as a tool in our digging for truth. After all, according to Sir Oliver Lodge, the only people who really and effectively deny the ether are those who assert that in the dispute between Galileo and the College of Cardinals, one side was as right as the other; in other words, that since we know only relative motion, it makes no difference whether the earth rotates on its axis or whether the heavenly bodies rotate round it once a day. This being so, we shall adopt the view that ether does exist.

Wave-motion

We all know perfectly well the meaning of the word wave. We are familiar with waves in water and air. In both cases we know the physical properties of both media, and we know that water and air waves consist of regular or periodic changes in the groupings of the molecules of the medium in question. On the surface of water the molecules, when disturbed,

move up and down, forming peaks and troughs, without travelling in any other direction. Thus, if we were to place a cork on the surface of disturbed water it would bob up and down without moving forwards or backwards. When the molecules of the air are disturbed there is produced a periodic series of condensations and rarefactions spreading in all directions from the seat of the disturbance.

What happens when ether is disturbed? There is no question of displacement of molecules there. Since we do not know definitely the physical properties of ether we can only guess them by working backwards with the ether wave as a starting point. We know this much, that an ether wave simply means that there are two "fields" existing—the electric field vertically, and the magnetic field horizontally, *i.e.*, at right angles to each other, both fields rapidly alternating in intensity and direction, and travelling together in space with a speed of 186,000 miles a second. Both fields appear and disappear together; if one is stopped, the other stops too.

This is the reason that ether waves are referred to as electro-magnetic waves. An ether wave is not really a wave in the same sense as a water or an air wave is a wave. But it is spoken of as a wave in the same way as we speak of a heat wave, an influenza wave, etc. It simply means that certain things happen with

a varying intensity and are of a periodic character. Since all ether waves are of the same nature, the wireless wave then simply means that there are two rapidly radiated fields, the electric and the magnetic field, growing and diminishing in step.

It is clear, therefore, that if we are to understand the nature of wireless waves, and their manner of propagation, we have to study the relation between ether and matter, the influence of matter on ether, and the influence of ether on matter. You can see now how futile are the water and air wave analogies. Such analogies are very misleading. To illustrate my point I will relate you a story told a few years ago by Professor G. W. O. Howe. Here is his story verbatim.

"A colleague of mine once undertook to explain to an old lady from Ireland the nature of mysterious operations taking place at the transatlantic wireless station at Clifden. He commenced by pointing out that if one stood on the west coast of Ireland and threw a stone into the sea, a wave or a ripple would spread out over the surface of the water, and if a large piece of rock were thrown in, a very large wave would be produced, and with a little imagination we could picture the wave travelling right across the Atlantic and being observed by someone on the American coast. . . . He then explained how, with a supply of stones, or pieces of rock and a code, messages might be transmitted. Having thus paved the way, as he thought, he gave an elementary lecture on electro-magnetic waves and wireless telegraphy.

.. . . At the conclusion, the lady thanked him very much, and said that he made it all very clear, but that, until he explained it, she had not the faintest idea that they had to throw rocks into the sea."

(To be continued)

ELIMINATING L.F. DISTORTION.

The concluding article of this series has been unavoidably held over this week.—ED.

Two Wonderful Valves—

*Highest Efficiency
Lowest Price!*

Super-Detector

Slope - - 2 Ma/V
Mag. Factor 15
Fil. Current 0.15

6/6



Hyper-Power

(2 volt.)

Slope - - 2.3 Ma/V
Mag. Factor 5
Fil. Current 0.3

8/-

Steep Slope, low impedance, splendid volume, beautiful tone. Wonderful reproduction of the bass notes.

Ask your dealer or write for free folder to:—

Impex Electrical Ltd., Dept. E, 58, High Road, Leytonstone, E.11



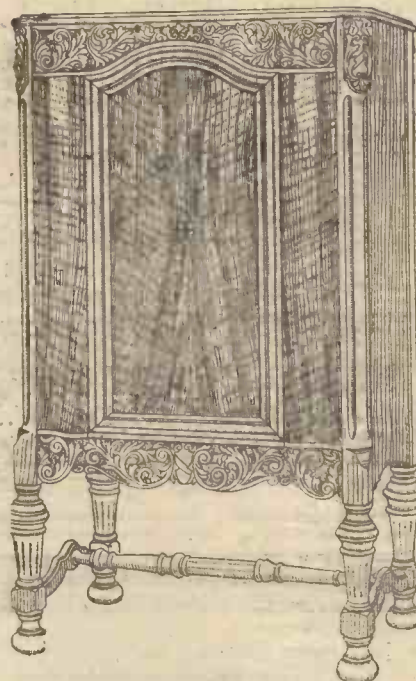
Best way to all Stations

FADA Radio

ALL EUROPE WITH ONE KNOB CONTROL. IN THE NEW A.C. SCREEN GRID ALL MAINS FADA 44

£48

Complete with valves: any voltage 100 - 250 50-60 cycles.



FADA 44. LOWBOY (sliding doors)

SPECIAL FEATURES:—

- 1—Self-contained moving-coil speaker.
- 2—ONE TUNING KNOB ONLY.
- 3—8 valves (3 screen grid).
- 4—Automatic volume control (compensates for fading).
- 5—Gramophone Jacks for pick-up.
- 6—FLASHOGRAPH flashes your station in lights as dial is turned.

You are invited to visit our new Show-rooms (Opposite the POLYTECHNIC INSTITUTE).

Sole Distributors:—

HOWARD THOMAS & CO. LTD.

MORLEY HOUSE,
320, Regent St., W.

Telephone :
Langham 4231.

PROGRAMME SECTION

Continental Programme Events

SUNDAY, DECEMBER 14

Concerts

- 10.5 a.m. Vienna: Concert by Ladies' Symphony Orchestra.
 11.0 " Copenhagen: Orchestral.
 11.0 " Königsberg, Frankfurt, Stuttgart: Orchestral.
 11.15 " Warsaw: Orchestral.
 3.0 p.m. Frankfurt, Stuttgart, Langenberg: Orchestral.
 5.30 " Radio-Paris: Relay of the "Concert Poulet."
 6.15 " Munich: Recital of English Sonatas.
 7.0 " Munich and all German stations: An evening in old Bavaria.

Operas

- 12.5 p.m. Vienna: "Rigoletto" (Gramophone records from La Scala, Milan).
 7.40 " Rome: "The Merry Widow" (Lehár).
 8.0 " Milan-Turin: Relay from La Scala, Milan.

Other Events

- 8.0 p.m. Radio-Paris: "Une Soirée à Montmartre."

MONDAY, DECEMBER 15

Concerts

- 7.0 p.m. Copenhagen: Operatic concert.
 7.30 " Langenberg, Frankfurt, Stuttgart: Orchestral.
 7.30 " Milan-Turin: Symphony concert.
 7.40 " Rome: Modern Italian songs.
 8.0 " Hamburg: Manfred - Gurlitt compositions.
 9.30 " Radio-Paris: Instrumental and vocal.

Concerts

- 6.35 p.m. Munich: "The Merry Wives of Windsor" (Nicolai).

TUESDAY, DECEMBER 16

Concerts

- 6.30 p.m. Frankfurt, Stuttgart: Symphony Concert.
 7.30 " Warsaw, etc., Prague, etc. Relay concert, solist M. Jean Kiepara.
 8.0 " Hamburg: Beethoven commemoration concert.
 8.20 " Munich: Chamber music.

Operas and Operettas

- 7.0 p.m. Copenhagen: A Danish comic opera by J. B. E. Hartmann.
 7.40 " Rome: "Maggiolata Veneziana" (Selvaggi).
 8.0 " Radio-Paris: "Madame Butterfly"

WEDNESDAY, DECEMBER 17

Concerts

- 8.0 p.m. Warsaw, Radio-Paris: Polish National evening.
 8.5 " Copenhagen: Polish National evening.
 8.5 " Munich: String orchestra.

Operas and Operettas

- 9.30 p.m. Radio-Paris: "Don Quixote" (Massenet).

THURSDAY, DECEMBER 18

Concerts

- 7.0 p.m. Copenhagen: Orchestral and choral.
 8.45 " Radio-Paris: Instrumental and vocal.
 10.0 " Hamburg: Serenades by orchestra.

Operas and Operettas

- 7.0 p.m. Munich: "Schwarzwaldmädel" (Jessel).
 7.10 " Frankfurt, Stuttgart: "Jean de Paris" (Boieldieu).

FRIDAY, DECEMBER 19

Concert

- 7.15 p.m. Warsaw: Symphony Concert (Yugoslav music).
 8.0 " Munich: Symphony concert.
 8.15 " Rome: Instrumental and vocal.
 9.10 " Copenhagen: Chamber music.
 9.10 " Stuttgart, Frankfurt: Symphony concert.

Operas and Operettas

- 8.45 p.m. Radio-Paris: "Iphigénie en Tauride" (Gluck).

SATURDAY, DECEMBER 20

Concerts

- 8.55 p.m. Copenhagen: Orchestral.

Operas and Operettas

- 7.30 p.m. Stuttgart, Frankfurt: "The Bird Fancier" (Zeller).
 7.40 " Rome: "Falstaff" (Verdi).

Heard on the Continent

By "CENTRAL EUROPEAN"

TO begin my fortnightly reports with a statement of excellent reception conditions has by now become a matter of course—indeed, it is some time since so happy a state of affairs has remained constant for so long a period. At the time of writing this report a high atmospheric pressure lies over the Scandinavian stations, and their signal strength has been reduced in consequence. I have, before this, pointed out the apparent connexion between atmospheric pressure and strength of reception. This is a most interesting fact, and one that affords the listener who is also interested in physics an excellent field for study.

As before, Kalundborg easily holds the record for quality and constancy, except that strong morse interferences, which are particularly noticed on this frequency, occasionally mar this excellence. Conditions on the 1,000 metres wave-band are also very interesting. In addition to Leningrad, I have also heard the Danish high-power station Sorö, a station formerly used for broadcasting, and which—as I learn from Denmark—now transmits news and Press reports, and also acts as telephony transmitter between Denmark and Iceland. The stations in the region below 1,000 metres—they are almost all Russians—are received with great strength. The Swiss transmitters Geneva and Lausanne maintain their usual silence—not even the carrier-wave can be identified. Their geographical situation is apparently not favourable for distant reception, since, as every distant listener knows, stations with far lower power are heard at much greater distance.

Kaiserslautern, which is now transmitting on Augsburg's wavelength, cannot be heard. A little lower on this wave-band the reception of Lyon la Doua is notable for its strength and clarity. But the interferences with Langenberg are, at the moment, quite considerable. They probably emanate from the Russian station Simferopol. Madrid EAJ7 continues to be

(Continued on page 960).

**WE WISH
OUR CUSTOMERS
& READERS OF
"WORLD-RADIO" A
HAPPY XMAS**

CHEAPER & BETTER

LARGEST
MANUFACTURER
OF
READY-TO-
ASSEMBLE
RADIO
CABINETS



SEND 3d.
IN STAMPS
FOR
56-PAGE
ILLUSTRATED
CATALOGUE

MODEL No. 191

CHAS. A. OSBORN, Dept. W.R.,

The Regent Works, Arlington St., London, N.1. Telephone: Clerkenwell 5090. And at 21, ESSEX ROAD, ISLINGTON, N.1. (1 min. from the Agricultural Hall). Telephone: Clerkenwell 5634.



**SUNDAY 2 p.m. to 3 p.m.
RADIO PARIS-DECCA CONCERT**

People who really care about good gramophone music automatically tune in every Sunday at 2 p.m. to Radio-Paris. Then for an hour they listen to a most delightfully varied concert of the latest Decca Records. Everything from an overture to a "hot" chorus, from Carl Brisson's magic voice to The Garden Scene from 'Faust.' Astonishing that such fine records cost only, 10 in. 2/-, 12 in. 3/6. But listen and judge for yourself. Tune in on Sunday to Radio-Paris 2 p.m. to 3 p.m. (1,725 metres wave length) and hear such records as these:—

**Mabel Constanduros and
Michael Hogan**

Father Sweeps the Chimney

F.2027 2/-

Tom Jones and His Orchestra
(at the Grand Hotel, Eastbourne)

Idyll: Passonelle (Passional Idyl) Razigade

F.2012 2/-

**DECCA
SUPREME RECORDS**

Write for complete Decca List, Dept. 233, THE DECCA RECORD CO., LTD., 13, Brixton Road, S.W.9.

SHORT WAVE STATIONS

The times quoted are reduced to G.M.T.

| M | Kcs | Station | Power | Time |
|-------|--------|--|---|------|
| 80 | 3750 | Rome (Italy) 3RO | 0 kW. (aerial) | |
| 70.1 | 4280 | Khabarovsk (U.S.S.R.) | 9 a.m. to 12 noon. | |
| 61 | 4918 | Radio LL (France) | 0.5 kW. | |
| 50 | 5172 | Prague (OKIMPT) | TUES. and FRI., 7.30-9.30 p.m. | |
| 52 | 5769 | Bergedorf (Germany), AFL | 3 kW. | |
| 50 | 6000 | Moscow, TUE., THUR. & SAT. | 12n'n-1p.m. | |
| 50 | 6000 | Barcelona Radio Club EAJ25 | SAT. 8-9 p.m. News and gram. rec. | |
| 49.83 | 6020 | Chicago (Ill.) W9XF. Relays WENR | 5kW. SUN. 2-6.30 p.m. 9.30 p.m.-12 m'nt. 2-7 a.m. Weekdays, 4-5.45 p.m. 9.30 p.m.-1 a.m. and (ex. SAT.) 2.30-7 a.m. | |
| 49.67 | 6040 | New York (W2XAL) | 0.25 kW. TUES., 12 m'nt.-5 a.m. WED., 12 m'nt.-2 a.m. FRI., 12 m'nt.-4 a.m. SAT. 12 m'nt.-3 a.m. | |
| 49.5 | 6060 | Cincinnati W8XAL. Relays WLW | | |
| 49.5 | 6080 | Philadelphia (Pa.) W3XAU | 0.5 kW. Relays WCAU. Daily 2-9 p.m. THURS. and FRI., 2 p.m.-6 a.m. | |
| 49.4 | 6072 | Vienna, 0.4 kW. TUES., 10 a.m.-12 noon. THURS., 2-3 p.m. SAT., 10 p.m.-12 m'nt. | | |
| 49.34 | 6080 | Chicago (Ill.) W9XAA | 0.5 kW. Relays WCFL. Daily 2-5 a.m. | |
| 49.22 | 6095 | Toronto (Canada) VE9GW | 0.015 kW. Daily, 11.45 a.m.-5 p.m., 9 p.m.-5 a.m. | |
| 49.18 | 6105 | Bound Brook (N.J.) W3XAL | 12 kW. Weekdays, 10-11 p.m. and 4-6 a.m. | |
| 49.1 | 6110 | Bombay (India) VUB | 1 kW. Testing MON., WED. and FRI., 5.30-6.15 p.m. | |
| 49.02 | 6120 | Richmond Hill, N.Y. (W2XE) | 0.3 kW. Relays WABC. D'ly, 1 p.m.-5 a.m. next day. | |
| 49 | 6122 | Nairobi (Kenya) 7LO | Daily 4-7 p.m. Relays G5SW occasionally, 7-8 p.m. | |
| 49 | 6122 | Saigon (French Indo-China) | Irregular. | |
| 48.86 | 6140 | Pittsburgh East (W8XK) | Relays KDKA. WED. and SAT., 10 p.m.-5 a.m. | |
| 48.8 | 6147 | Manila (Philippine Islands) KZRM | Daily 8 a.m.-3 p.m. (Except MONDAY) | |
| 48.62 | 6170 | Tegucigalpa (Honduras) HRB | 2.5 kW. Daily (except MON.), 1.30-5 a.m. | |
| 48.35 | 6205 | Bogota (Colombia) HKC | Daily, 3 p.m. | |
| 47 | 6382 | Funchal (Madeira) CT3AG | THURS. and SAT., 10 p.m.-1 a.m. | |
| 45 | 6667 | Constantine (Algeria) 8 KR | 0.2 kW. MON. and FRI. 10 p.m. | |
| 44 | 6818 | San Lazaro (Mexico) XDA | 3 kW. 1 a.m. | |
| 43.86 | 6840 | Georgetown (British Guiana) VRY | 0.12 kW. SUN. 10.45 p.m.-2.15 a.m. THURS. 12.15 a.m.-2.15 a.m. Occasional evng. transmissions. | |
| 43 | 6976 | Madrid (EAR110) | TUES. and SAT., 10.30 p.m.-12 m'nt. | |
| 42.9 | 6991 | Lisbon (Portugal) CT1AA | 0.7 kW. FRI. 10-11.15 p.m. | |
| 41.6 | 7211 | Tenerife Radio Club (Canary Islands) | | |
| 41 | 7316 | Radio Vitus | Testing. | |
| 40.2 | 7463 | Lyons YR | Weekdays, 4.30-5.30 p.m. | |
| 39.7 | 7556 | Bogota (Colombia) HKF | | |
| 37.78 | 7968 | Bangkok (Siam) HSP | 20 kW. Irregular. | |
| 34.68 | 8650 | Long Island (N.Y.) W2XV | Experimental. FRI., 11 p.m.-1.30 a.m. | |
| 32.5 | 9230 | Paris, Eiffel Tower (FL) | Time Signal 8.56 a.m. and 8.56 p.m. | |
| 32 | 9375 | Berne (Switzerland) EH00C | | |
| 32 | 9375 | San Lazaro (Mexico) XDA | 20 kW. 9 p.m. | |
| 31.51 | 9520 | Lynby (Denmark) OXY | 0.5 kW. Relays Copenhagen. Daily 7 p.m. to close down. | |
| 31.48 | 9530 | Schenectady N.Y. (W2XAF) | 10 kW. (Aer.). Relays WGY. Daily from 12.30 p.m. to 4 a.m. | |
| 31.30 | 9560 | Zeesen (Germany) | 8 kW. Relays Königs Wusterhausen, generally 1 p.m.-12.30 a.m. | |
| 31.35 | 9569 | Springfield (Mass.) W1XAZ | 8-10 p.m. | |
| 31.4 | 9554 | Manila K1XR | Relays KZRM. | |
| 31.28 | 9590 | Eindhoven (Holland) PCJ | 25 kW. WED., 5-9 p.m. THURS., 7-9 p.m., 11-12 p.m. (fortnightly). 12 midnight-1 a.m. FRI., 1-4 a.m. 7-9 p.m. SAT., 1 a.m.-2 a.m. 2-5 a.m., 5-7 a.m. | |
| 31.28 | 9590 | Philadelphia (Pa.) W3XAU | 0.5 kW. Daily (except THURS. and FRI.), 9 p.m.-6 a.m. | |
| 31.28 | 9590 | Sydney VK2ME | | |
| 31.25 | 9600 | Bergen LGN | | |
| 30.75 | 9756 | Agen | TUES. and FRI., 9-10.15 p.m. | |
| 30.88 | 9715 | Heredia (Costa Rica) NRH | 7.5 watts. Daily 10-11 p.m. and 2-3 a.m. | |
| 30.5 | 9836 | Danzan (Poland) | 0.25 kW. TUES., 6.45-9.45 p.m. THURS., 6.30 p.m.-1 a.m. | |
| 30 | 10,000 | Bergrade | MON. only, 8-9 p.m. | |
| 29.5 | 10,167 | Bangkok (Siam) HSG | 1 kW. MON., 1-4 a.m. | |
| 28.98 | 10,350 | Buenos Aires LSK | 20 kW. Daily 1-3 a.m. | |
| 26.1 | 11,495 | Manila K1XR | Relays KZRM. | |
| 25.6 | 11,718 | Winnipeg (Canada) CJRX | 2 kW. Daily (except SUN.) from 11.30 p.m.-1.30 a.m. | |
| 25.53 | 11,751 | Chelmsford (G5SW) | 10 kW. (Aer.) Relays 5XX daily (except SAT. and SUN.) from 12.30-1.30 p.m., and from 7 p.m.-12 m'nt. Except News Bulletin. | |
| 25.42 | 11,800 | Vienna, 0.24 kW. TUES., 2-4 p.m. WED., 10 p.m.-12 m'nt; THURS., 10 a.m.-12 noon. | | |
| 25.27 | 11,870 | Calcutta (India) VUC | 0.03 kW. Testing. | |
| 25.25 | 11,880 | Pittsburgh East (W8XK) | 5 p.m.-3 a.m. | |
| 24.5 | 12,240 | Manila (Philippine Islands) K1XR | Relays KZRM. Weekdays, 10 a.m.-2 p.m. | |
| 23 | 13,657 | Rabat (Radio Maroc) 6kW | (Relays m'n st'n.) | |
| 21.5 | 13,950 | Bucharest (Romania) | 0.25 kW. WED. and SAT., 7.10 p.m. | |
| 21.3 | 14,080 | San Lazaro (Mexico) | Daily at 4 p.m. News. | |
| 19.72 | 15,210 | Pittsburgh East (W8XK) | Relays KDKA, WED. and SAT., 12 noon-4 p.m. | |
| 19.56 | 15,340 | Schenectady (W2XAD) | 20 kW. Relays WGY. Daily (except SAT.) 6-9 p.m. | |
| 18.0 | 17,750 | Bangkok (Siam) HSI | 20 kW. SUN. 12 noon-2.30 p.m. and 6-8 p.m. TUES. 1-3 p.m. and 6-8 p.m. | |
| 16.8 | 17,850 | Bandoeng (Java) PLE | 30 kW. | |
| 16.3 | 18,404 | Kootwyk (Holland) | PCK. From 7 a.m. | |
| 16 | 18,750 | San Lazaro (Mexico) XDA | 20 kW. 4 p.m. | |
| 15.94 | 18,818 | Bandoeng (PLE) | TUES., 1.40-3.40 p.m. | |
| 15.5 | 19,351 | Nancy (France) | 9.10 p.m. | |
| 15.02 | 19,937 | Buenos Aires (Monte Grande) LSG | | |

For Long and Medium Wave Stations see p. 982.

Last Week's Log

By "THE SEARCHER"

(November 30 to December 6)

OWING to the arrangements for the Christmas Number of *World-Radio*, which necessitate an earlier press day than usual, my report can cover only the first half of the week between November 30 and December 6. If, therefore, fellow-listeners found either that no stations at all were receivable on the Thursday, Friday, and Saturday nights, or that conditions were abnormally good, they must please bear in mind that these days are outside the scope of this week's article, which is historical and not prophetic.

The week opened very well indeed. I do not remember hearing a single atmospheric during the first three evenings, and stations were coming through with fine strength. Fading, though still present, seems to be less marked than it has been, and in many cases the periods between *maxima* and *minima* seem to be longer.

My new set, with its seven valves, is at last installed, and I fear that if I reported all the stations received with it two things would happen. In the first place the Editor would not be able to find sufficient space to print them; in the second, readers might doubt my veracity. Perhaps the safest course is to confine my detailed report to a single 100 metres, and since there are many popular stations between 300 and 400 metres, those wavelengths will do admirably as limits. Bordeaux-Lafayette was an immense signal; Zagreb gave full loud speaker volume, as did Wilno. Oviedo was apparently not working, but very good reception was obtained from Göteborg, Breslau, Naples, Brussels No. 2, Brno, Strasbourg, Barcelona, Graz, and Stuttgart. Neither Bergen nor Fredrikstad was strong, though both sufficed for loud speaker reception. Hamburg was an enormous signal, but Lwów did not appear to be in action. Toulouse, Frankfurt, and Bucharest, all at fine strength, complete the catalogue.

I should mention, by the way, that both Graz and Stuttgart, or Mühlacker, were receivable without a trace of interference at fifteen miles from Brookmans Park, with the London Regional transmitter in full blast.

Perhaps I had better turn to the more easily credible performances of my four-valve set. With this, Nürnberg was good on the Monday, though Turin was jammed on that night by a heterodyne. Breslau showed considerable fading. Hilversum and Hamburg were excellent signals, and Toulouse obtained a "very good" mark on all three nights. Frankfurt showed some fading on the Sunday, but was otherwise good. Katowice was a little below par in the matter of signal strength. Stockholm has been uniformly good, and Rome was enormous. Langenberg was better on the Monday than on other nights and the same applies to Budapest.

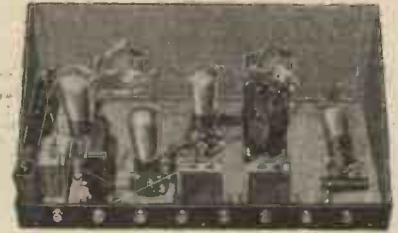
Lyons Doua has been fading rather badly, and a heterodyne was in evidence on the Sunday. Prague, though receivable, has not been too strong. Brussels has varied a good deal. He showed enormous strength on the Monday. Milan has been a very good signal. Witzleben is still a little below expectations.

On the long waves one has had a real chance of hearing distant stations owing to the absence of atmospherics. Three stations have been outstandingly good. These are Oslo, Kalundborg, and the Eiffel Tower. Zeesen was excellent on the Sunday, though a falling off was noticed on the Monday, with a return to strength on the Tuesday. Radio-Paris has generally been good, though one period was noticed when he was distinctly below his normal strength. Is Bratislava trying out a new high-powered transmitter outside broadcasting hours? I have had quite good daylight reception from him.

-EDDYSTONE-

HOMELAND FOUR

SHORT WAVE RECEIVER KIT OF PARTS.



A RECEIVER designed for Home construction and capable of reception of s.w. programmes at Loud Speaker strength over vast distances and under adverse conditions. Simple to operate—only one tuning dial. Smooth reaction control and no unpleasant capacity effects. Wave-length range from 12.5 to 85 metres and from 250-550 metres. Coils for any between wave-lengths up to 2,000 metres can be obtained. Receiver is built on a metal chassis which is ready drilled for assembly and includes all components, wires, screws, etc., needed to make up the complete receiver.

Kit complete without valves, £10

Constructional booklet with diagrams and details. SIXPENCE.

Send for list No. 39 of S.W. apparatus.

Sole Manufacturers: STRATTON & CO., LTD., London Service Depot: Bromsgrove Street, O. Webb, Ltd., 164, Charing Cross Road, W.C.2. Birmingham.

This is the Present he'll appreciate most!

TAKE A LOAD OFF HIS SHOULDERS

Just the present you are looking for! Men all over the world are adopting this new British invention which has superseded both braces and belts. The "SPAN" BRACER is smarter, healthier, and much more efficient. Gloriously free, it enables a man to ride, walk, and lounge in the utmost comfort, and garments to hang perfectly even-ment. There is no abdominal strain with the "SPAN," the elastic sections allowing for muscular movement. Ideal for sports, business, and evening wear.



Back View



Front View



Side View

The Junior "SPAN" is ideal for Boys' wear. On growing boys, braces drag shoulders down and restrict chest expansion. Belts constrict the abdomen. The "SPAN" gives the body full freedom and supports the lumbar region of the back. Ask for the "Junior" Model. In all sizes.

Price 2/9. White and Grey only.

General Sir Aylmer Hunter-Weston, K.C.B., D.S.O., R.E. M.P., writes: "Your 'SPAN' BRACERS are excellent." A Doctor, M.D. of Lancashire (18643), writes: "I feel I owe a debt of gratitude for your splendid invention. An enjoying wonderful freedom."

BUY HIM A 'SPAN' BRACER

Patent Half Belt.

Sold in BLACK, POST FREE, GREY, WHITE, and BROWN, complete with set of self-fixing threadless buttons, 4/9. Directions for attachment, and our guarantee of satisfaction.

If your Outfitter does not stock, send direct to the Sole Manufacturers, mentioning size of waist and colour preferred, and enclosing cheque or P.O. to cover instructions.

THE SPAN BRACER, Co., (Dept 17), Castle Green, Bristol. Illustrated booklet free on request.

Which Station Was That?

Answers to Correspondents

BOUBUTT (Guernsey): PLR (Bandoeng) Java. **CAROLUS** (Norwich): PTT Strasbourg. **KEBLEITE** (Oldham): Huizen. Gramophone records followed by time signal. **SEARCHER** (Ashby-de-la-Zouch): Stuttgart (Mühlacker); relay of a concert from Frankfurt, hence the metronome interval signal. Mühlacker is on 360.1 m., not 405 m. **AUDIO** (Shefford): The talk was from Scheveningen-Haven (Holland); commercial news and bulletins, etc.; the music in background possibly a test by Oslo, as no transmission was advertised for that time. **JOHNO** (Wakefield): Algiers; Oriental concert. **TADD** (Nelson): (1) Edinburgh; (2) a test by Oslo. **WINDY** (Paignton): Your estimate of wavelength—viz., 300-400 metres—is much too vague; regret, cannot trace. **MONTSU** (Colne): (1) Radio Strasbourg PTT; (2) Mühlacker (high power station) relaying Stuttgart or Frankfurt programmes; (3) Munich direct; (4) yes, Głogów. **B. G. S.** (Blackpool): Yes, Vienna; (2) Riga. **NIDWALDEN** (Barlaston): (1) Berne, announcements and news both in French and German; (2) yes; (3) Yes. **PUGE** (Holt): Eiffel Tower; relay of gramophone recital daily from Ecole Supérieure, Paris. **AJAX** (Ramsgate): Yes, early morning physical exercises from Moscow. Eastern European time is 2 hours in advance of G.M.T. **DOUBLE ZESS** (Stoke-on-Trent): Scheveningen-Haven (Holland); commercial bulletins, Stock Exchange quotations, etc. **A. F. I.** (Bow): Regret cannot trace from condenser readings alone. **WAG** (Miteham): (1) Königs-wusterhausen relaying Berlin; (2) Eiffel Tower. **MUCKABOUT** (Drury Lane): (1 and 2) Langenberg relaying Cologne; bells from studio; (3) according to interval signal, Turin, but might have been a relay by Milan; cannot tell from your condenser readings; (4) you do not state what you want to know. **DE BARRI** (Cosham): Strasbourg PTT. **GRID LEAK** (?): Moravská-Ostrava relaying from Prague a performance of *The Merchant of Venice* by the English Players. **MAD BRAIN** (Hartley Winney): (3) Stuttgart interval signal broadcast through Mühlacker high-power station; (4) Leningrad; interference from fog beacons. (40) either 2,000 or 4,000 ohms. **NOVICE** (Portland): Katowice; (2) Eiffel Tower. Please number your queries. **OH KAY BABY** (Birkenhead): Bordeaux-Lafayette. **BM/GAAA** (Roe ampton): Ljubljana. **BUSMAN** (Fulham): Stuttgart (Mühlacker), relay of orchestral concert from Wiesbaden. **DX2BE** (Ayr): Yes, Natan-Vitus, Paris. **GURIOUS** (Southampton): Warsaw. **Z. Z. Z. Z.** (St. Andrews): (1) regret cannot trace. We do not recognise the call; (2) possibly Ste. Assise (France) on 14.28 m. working with Buenos Aires. **ALSYVRON** (Stratford): Radio-Idzerda, The Hague (Holland). **NOVO** (Becken, am): Cannot trace a transmission from the readings of your dials only. **NAVILLUS** (S.E.17): Nice-Juan-les-Pins. Relay of a play. **FIBRE BILL** (Penge): (1) Algiers; Oriental concert; (2) Hörby relaying early morning service. **KISS ME** (Hove): Brussels No. 2. The call was: "Ici poste d'essai S.B.R." **WENDY** (Hollington): From other reports received we understand that this is JOAK, Tokio (Japan), on 24.8 m. PLR, Bandoeng is on 28 m. **SEE MOOR** (Hove): Apparently, an amateur transmitter in your neighbourhood. **LONG WAVE** (Bournemouth): Moscow (Trades Unions); Scheveningen Haven is on 1,071 m., and

Hilversum now on 298 m. **HOBBY** (Swansea): Bandoeng (Java). **BENoit** (S.E.18): (1) regret, cannot trace; we do not recognise the call; (2) apparently harmonics. **SANS FIL** (Clifton): Mühlacker (Stuttgart) high-power station. **IVA KLUE** (Cricklewood): Moscow (Trades Unions). **HAR-GAR** (N.W.10): Cologne. **BOSQUE** (Gillingham): San Sebastian (E.A.18). **ROBERT LE DIABLE** (S.E.23): (1) 1st harmonic Radio Toulouse; (2) apparently, harmonic of London or direct pick-up on your receiver. **UNUSUAL** (Netley): Brussels (No. 2). **EVIE** (Dagenham): PTT Strasbourg; announcements in French (woman) and German (Man). **TATTERS** (W.5): Katowice. **LIZ** (Holborn): Kaiserslautern (now on 559.7 m.) exceptionally relaying a concert from Huizen. **J. S. R.** (Eastbourne): Radio Maroc (Rabat). **THREE VALVER** (Weymouth): Radio PTT Strasbourg. **DINGO** (Dublin): (1) This was Eiffel Tower; own broadcast of records; (2) Kharkov; (3) Brussels high-power station testing; (5) Palace of Industry, Moscow. **PILOT** (Hambrook): (1) apparently Moscow-Popoff; details of programmes are not published. (2) no, not according to programme, but would tally with PTT Grenoble. **COLIN** (Liverpool): Yes, Croydon aerodrome in communication with French or Belgian airplane. **BANCO** (Watford): Velthem-Louvain (Belgium) testing. **EBOR** (Hebden Bridge): (1) Cannot account for wavelength, but an experimental television transmission by the Baird process through London Regional and National; (2) apparently a test, cannot trace. **SCOTTY-KIN** (Glasgow): Radio Natan-Vitus (Paris). **TRACKER** (Ormskirk): Wavelength is surely wrong; Radio PTT Strasbourg. **T. B.** (Shotton): Not New York, but Radio-Idzerda The Hague (Holland). **NELSON** (York): We regret that we cannot give you the title, as no details of the gramophone recital were published. Advise writing to the Mitteldeutscher Rundfunk Leipzig (Germany). You may do so in English. **SAPPER** (Punjab): Hamburg; a relay of an English lesson given from Berlin studio. **L.M.** (Bow): Please send full address.

The Alternative Postal Service

In addition to the free service of "Which Station was That?" printed in these columns, replies to queries can be obtained within forty-eight hours of receipt of details on payment of 6d. in stamps or P.O., accompanied by coupon and stamped addressed envelope. Each query should be numbered and the questions on the coupon carefully answered. Letters must be addressed to the Editor, *World-Radio*, Savoy Hill, W.C.2. Envelopes (containing *paid postal queries* only) to be marked in left-hand top corner "Postal Query Service."

IDENTIFICATION COUPON (No. 99.)

This coupon is valid for ONE QUESTION only, and should be cut out and attached to a separate sheet, upon which the following questions should be answered in the order shown. No coupon more than one month old is valid.

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

HEARD ON THE CONTINENT

(Continued from page 958)

heard only feebly, which is rather extraordinary since formerly it was always a good signal. I must mention the strength of Glasgow, Manchester, Aberdeen, and Cardiff. Considering their low energy, they come through extremely well. I now come to the great region of interferences: Mühlacker, London Regional, and Graz, which are all partly drowned by the Warsaw harmonic. Mühlacker, moreover, is so strong that the reception of London Regional is not enjoyable. Bordeaux-Lafayette is heard extremely well ever since it increased its power. If reception conditions remain the same as they are now, we may look forward to deriving great pleasure from listening during the holidays.

Schedule of Advance Programmes

(STRICTLY COPYRIGHT)

For the benefit of traders who may wish to make arrangements for demonstrating, we are printing each week a schedule of the programmes to be transmitted by the National, London Regional, and Midland Regional stations. It will be noticed that these schedules concern programmes to be transmitted a fortnight hence, and it is felt that they will also be of particular service to those of our readers living abroad who will be able to use them in connection with the reception of the Experimental Short Wave Station G5SW, which relays the National (5XX) Programme from 7 p.m.

SUNDAY, DECEMBER 28

| | NATIONAL | LONDON REGIONAL | MIDLAND REGIONAL |
|-------------------|-------------------------------|-----------------|--------------------|
| AFTERNOON | Church Cantata Light Music | Military Band | As London Regional |
| EVENING PROGRAMME | Orchestral Concert | Hotel Orchestra | As London Regional |

MONDAY, DECEMBER 29

| | NATIONAL | LONDON REGIONAL | MIDLAND REGIONAL |
|--------------------------|---|---|--|
| MORNING | Organ Recital | Studio Concert | As London Regional |
| AFTERNOON | Orchestral Concert Gramophone Records Light Music | Restaurant Music As Midland Regional | As London Regional Cinema Orchestra |
| FIRST EVENING PROGRAMME | Talks A Dickens Fantasy | Light Music Talk | Studio Orchestra As London Regional |
| SECOND EVENING PROGRAMME | Chamber Music Outside Dance Music | Vaudeville Outside Dance Music | As London Regional As London Regional |

TUESDAY, DECEMBER 30

| | NATIONAL | LONDON REGIONAL | MIDLAND REGIONAL |
|--------------------------|--|---|------------------------------------|
| MORNING | Songs of Winter Cinema Organ | Instrumental Music As Midland Regional | As London Regional Cinema Organ |
| AFTERNOON | Restaurant Music Studio Dance Music Cinema Orchestra | As Midland Regional | Studio Orchestra |
| FIRST EVENING PROGRAMME | Talks Military Band | Light Music | Orchestral Concert |
| SECOND EVENING PROGRAMME | Talk Dance Music | A Dickens Fantasy Outside Dance Music | As London Regional |

WEDNESDAY, DECEMBER 31

| | NATIONAL | LONDON REGIONAL | MIDLAND REGIONAL |
|--------------------------|--|---|--|
| MORNING | Gramophone Records | Organ Recital Gramophone Records | As London Regional As London Regional |
| AFTERNOON | Restaurant Music Symphony Concert | As Midland Regional National Programme | Studio Orchestra |
| FIRST EVENING PROGRAMME | Talks Vaudeville | Band Concert | Studio Orchestra |
| SECOND EVENING PROGRAMME | Orchestral Concert New Year's Eve Programme | Mozart Concert As National | As London Regional As National |

THURSDAY, JANUARY 1

| | NATIONAL | LONDON REGIONAL | MIDLAND REGIONAL |
|--------------------------|---|---|--------------------------------------|
| MORNING | Cinema Organ | As Midland Regional Cinema Orchestra | Ballad Concert As London Regional |
| AFTERNOON | Light Music Evensong Restaurant Music | As Midland Regional | Studio Orchestra |
| FIRST EVENING PROGRAMME | Talks Orchestral Concert | Light Music Organ and Choral | Band Concert As London Regional |
| SECOND EVENING PROGRAMME | Song and Instrumental Recital Dance Music | Studio Dance Music Outside Dance Music | Pantomime |

FRIDAY, JANUARY 2

| | NATIONAL | LONDON REGIONAL | MIDLAND REGIONAL |
|--------------------------|--|---|--|
| MORNING | Sonata Recital Organ Recital | As Midland Regional | Studio Orchestra |
| AFTERNOON | Gramophone Records Restaurant Music | Restaurant Music As Midland Regional | As London Regional Dance Music |
| FIRST EVENING PROGRAMME | Talks Revue | Light Music | Studio Orchestra |
| SECOND EVENING PROGRAMME | Symphony Concert Dance Music | Military Band Dance Music | As London Regional As London Regional (till 11 p.m.) |

SATURDAY, JANUARY 3

| | NATIONAL | LONDON REGIONAL | MIDLAND REGIONAL |
|--------------------------|---|--------------------------------------|---------------------------------|
| MORNING | Cinema Orchestra | As National | As National |
| AFTERNOON | Outside Broadcast Band Concert Cinema Organ | As National As National | Military Band Cinema Organ |
| FIRST EVENING PROGRAMME | Talks Vaudeville | Light Music | Light Music Studio Orchestra |
| SECOND EVENING PROGRAMME | Talk Military Band Dance Music | Chamber Music Outside Dance Music | Dance Music |

ORDER NOW FOR XMAS

A "TOBY" Convertible Chair will be sent carefully packed and carriage paid, for seven days' free trial, upon receipt of deposit of 10/-.

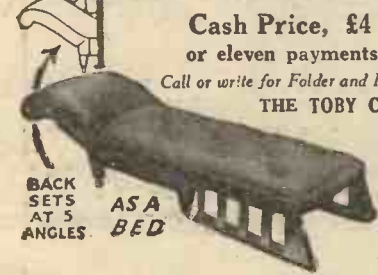


ASA CHAIR

Money returned if dissatisfied.

The **"TOBY"**
Convertible EASYCHAIR
(PATENT NO. 292808)

The "TOBY" is a fully-upholstered arm-chair, fitted with springs, and converts quite easily into a lounge or bed giving real "Spring-mattress" comfort. When used in this position, has no obstructive side-pieces. The back sets at 5 different angles. British made throughout. There is nothing so convenient and comfortable as the "TOBY" in the world.



BACK SETS AT 5 ANGLES. ASA BED

Cash Price, £4.18.6 or eleven payments of 10/-

Call or write for Folder and Patterns to:

THE TOBY CONVERTIBLE CHAIR CO.,

2, LUDGATE HILL, LONDON, E.C.4.

The Hospital Chapel.



The Two-Fold Work for Cancer Calls for Further Extension

The Cancer Hospital (Free) is the first special Hospital in London devoted to Cancer Treatment and Research. It is equipped with the most up-to-date appliances. Poor patients are admitted free. In addition to the accommodation for operable cases in the early stages of the disease, a certain number of beds are provided for advanced cases who may remain for life. An Urgent Appeal is made for £150,000 for a new Radiological block and other extensions now being erected which will add 80 beds to the Hospital, and also for Radium.

Please send cheques, crossed Coutts & Co., to the Secretary.

THE CANCER HOSPITAL

(Incorporated under Royal Charter.)

FULHAM ROAD, LONDON

Christmas Extras for Fatherless Boys and Girls.

Will you remember the children of the Alexandra Orphanage this Christmas and help to give them a really happy time? They come from all parts of the country, and, at the School at Haverstock Hill, London, N.W., there are 370 of them, aged from a few months to 15 years. Suitable children amongst them are receiving a secondary education, and some of the boys will be chosen for private training as Officers of the Mercantile Marine. £10,000 needed annually above the assured income. Please, at this season of goodwill, send a gift to help them.

ALEXANDRA ORPHANAGE

(Founded 1758)

President :

H.R.H. The PRINCE OF WALES, K.G.

Treasurer :

The Rt. Hon. Lord MARSHALL of CHIPSTEAD, P.C., K.C.V.O.

Secretary: Fred. J. ROBINSON, A.C.I.S.

OFFICES: 34/40, Ludgate Hill, E.C.4.

Would you like an Annual Report?



Perfectly harmless. Blank Shots only used.

DELL & COMPANY,
45/51, Church Row, E.2.

Telephone: Bishopsgate 4541.

BURGLARS FLY And Crowds gather

At the report of the Walden Revolver. Very useful for all kinds of sports, for scaring footpads, dogs, etc., also for stage effects. No licence required. Eight shots without reloading.

Can be obtained from most Wholesale Houses or direct from the Manufacturers.



YOUR XMAS GIFT.

If you are on D.C., for 30/- you can make your set

AN ALL MAINS RECEIVER.

The "SECOL" Eliminator will replace your H.T. Batteries and charge your Accumulator. "50% improved reproduction and no hum."

E. PAROUSSI,
10, Featherstone Bldgs., High Holborn, London, W.C.1.
Phone: Chancery 7010.

RADIO - GRAM CABINETS.

MAKE YOUR OWN

with our guaranteed R.T.A. Furniture Sets.

Send P.C. for Free Catalogue and Price List.

Dept. W.R., LONDON WOODWORKERS SUPPLY Co., Ltd.,
199, HIGH ROAD, LEE, LONDON, S.E.13.



MAKE A GRAMOPHONE AT a quarter shop prices. Or buy Cabinets for Wireless. Order set as shown. British double spring motor, 12in. velvet turntable, swan arm, metal sound-box, amplifier, needle cups, for £1 17 3 p.p., and build your own Cabinet. Portable Gramophones from 15/6, postage 1/8. Motors from 7/6. Lists free. 64-pp. 1931 Catalogue No. 210 with reduced prices. Drawing and How to Make Gramos, 3d. Estab. 26 years.

Regent Fittings Co., W.R., 120, Old St., London, E.C.1.

NOW ONLY 17'6

THE WORLD'S MOST ECONOMICAL BATTERY..



The world's most economical battery—Columbia 4780—Triple Capacity—now costs only 17/6. It is economical—it gives you smooth flowing power for hour after hour, day after day, month after month. And such radio—pure, evenly balanced, and entirely trouble free. Remember Columbia 4780—the battery you have waited for.

For Large Sets employing power valves, Columbia "Layerbilt"—truly a battery and a half. No. 4486. 45 volts. 24/-
For 2- or 3-Valve Sets, Columbia No. 4721. 10/6
For Portables. Columbia No. 4755. 99 volts. 18/-
Columbia Grid Bias Battery, 9 volts. No. 4756. 2/-

Columbia RADIO BATTERIES

J. R. MORRIS, Imperial House,
15 Kingsway, London, W.C.2.

Scotland: J. T. Cartwright, 3 Cadogan Street, Glasgow.

**MAXIMUM EFFICIENCY
AT A MINIMUM OF
OUTLAY!**

The  *Four*

SCREENED GRID PORTABLE

The "Ormond" Four Screened Grid Portable proves its marked superiority over all others not simply in value for money but in the exceptional volume and range of British and Continental stations. It is of extremely handsome appearance and is supplied in handsome figured Oak Cabinet. Fitted with the famous Ormond Four Pole Adjustable Loud-speaker Unit.

Low Price—Amazing Selectivity—Fine Reproduction and Quality of Tone—Simple to Operate.

Supplied complete, including Turntable and all Accessories, ready for immediate use. Royalties Paid.

16 *Gns*
IN OAK

Also available in Solid Mahogany Cabinet.

Price—£17 : 17 : 0

THE ORMOND ENGINEERING CO., LTD.

Ormond House, Rosebery Ave., London, E.C.1.

Telephone : Clerkenwell 5334/5/6 & 9344/5/6.
Telegrams : "Ormondengi, Smith."



SUITCASE MODEL

This receiver comprises a similar circuit to the Cabinet model, assembled in attractive suitcase form. It is handsomely finished with panel and interior fittings in mahogany shade, and supplied complete with all accessories and ready for immediate use. Royalty paid.

Price £16 : 16 : 0

FOR SELECTIVITY AND SENSITIVITY

Daventry 5XX

NATIONAL PROGRAMME

193 kc/s (1,554.4 metres) (35 kW.)

(December 14-20)

SUNDAY (DEC. 14)

- 10.30-10.45 a.m.—Time Signal (Greenwich), Weather Forecast. 3.0 p.m.—Church Cantata (No. 129) Bach. Gelobet sei der Herr, mein Gott (I Praise Thee evermore, my God). Singers: Mary Hamlin (Soprano), Doris Owens (Contralto), George Parker (Bari-tone), The Wireless Chorus. Players: Michael Mullinar (Harp-sichord), Leslie Woodgate (Organ), Edward Walker (Flute), John Field (Oboe d'Amore), Laurence Turner (Violin). The B.B.C. Orchestra, conducted by Stanford Robinson. 3.55 p.m.—For the Children. 4.15 p.m.—Chamber Music. The Pro Arte String Quartet: Alphonse Onnou (Violin), Laurent Halleux (Violin), German Prevost (Viola), Robert Maas (Violoncello). 5.15 p.m.—"In a Persian Garden" by Liza Lehmann. Dorothy Bennett (Soprano), Esther Coleman (Contralto), Herbert Thorpe (Tenor). Foster Richardson (Bass). 5.45-6.15 p.m.—"Science and Religion"—XII. Dr. L. P. Jacks, Litt.D., LL.D. (Professor of Philosophy, Manchester College, Oxford). 7.55 p.m.—St. Martin-in-the-Fields. 8.45 p.m.—The Week's Good Cause. Appeal on behalf of The St. Martin's Christmas Fund, by the Rev. Pat McCormick. Relayed from St. Martin-in-the-Fields. 9.50 p.m.—"The News." Weather Forecast, General News Bulletin; Shipping Forecast. 9.5 p.m.—Albert Sandler and the Park Lane Hotel Orchestra. Vivien Lambelet (Soprano). 10.30 p.m.—Epilogue. 10.40-11.0 p.m.—The Silent Fellowship.

MONDAY (15)

- 10.0 a.m.—Commemoration Service from King's College, London. 10.30 a.m.—Time Signal (Greenwich), Weather Forecast. 10.45-11.0 a.m.—"Keeping Fit In Everyday Life"—VII. Dr. Letitia Fairfield: "Hygiene and Common Sense." 12 noon.—Organ Recital, by Edgar T. Cook. Sylvia York Bowen (Soprano). 1.15 p.m.—An Orchestral Concert. National Orchestra of Wales (Leader, Louis Levitus), conducted by Warwick Braithwaite. 2.0-2.30 p.m.—Gramophone Records. 4.0 p.m.—Jack Payne and his B.B.C. Dance Orchestra. 4.30 p.m.—A Light Classical Concert. Fay Ferguson (Pianoforte). The British String Quartet. 5.15 p.m.—The Children's Hour. 6.0 p.m.—Poetry of To-day—XVI. 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin; London Stock Exchange Report; Fat Stock Prices for Farmers. 6.40 p.m.—The Foundations of Music. Modern English Violin and Piano-forte Sonatas, played by Sybil Eaton and Michael Mullinar. 7.0-7.20 p.m.—"New Books." Miss V. Sackville-West. 7.25 p.m.—"World Order or Down-fall?"—VI. Professor Arnold Toynbee: "The Great Society." 7.45 p.m.—Vaudeville.

(Continued from page 965)

The Midland Studio Chorus. Directed by Nigel Dallaway. 10.15 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. 10.30 p.m.—12 midnight (London).—Dance Music. 10.30-10.40 p.m. (Midland).—As London.

FRIDAY (19)

- 10.15 a.m. (London).—National Programme. 11.0-11.30 a.m. (London).—Experimental Television Transmission by the Baird Process (356.3 m. Vision; 261.3 m. Sound). 12.9 p.m.—A Request Programme. The Midland Studio Orchestra, directed by Frank Cantell. Bernard Sims (Baritone). 1.15 p.m.—Light Music. Moschetto and his Orchestra.

- 9.0 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. 9.15 p.m.—Shipping Forecast; New York Stock Market Report. 9.20 p.m.—Mr. Douglas Woodruff: "Christmas Games." 9.35 p.m.—A Recital of Icelandic Folk Songs. By Engel Lund (Soprano). Pianoforte, Ferdinand Rauter. 10.0 p.m.—An Orchestral Concert. Megan Foster (Soprano). The B.B.C. Orchestra, conducted by Stanford Robinson. 11.0 p.m.—12 midnight.—Dance Music. Time Signal, Greenwich, at 11.30.

TUESDAY (16)

- 10.15 a.m.—The Daily Service. 10.30 a.m.—Time Signal (Greenwich), Weather Forecast. 10.45-11.0 a.m.—"Where Your Food Comes From"—VIII. 12 noon.—A Ballad Concert. Victoria Maitland (Contralto), Trevor Glyn (Tenor). 12.30 p.m.—Edward O'Henry, at the Organ. 1.0 p.m.—Light Music. Leonardo Kemp and his Piccadilly Hotel Orchestra. 2.0 p.m.—Experimental Transmission for the Radio Research Board by the Fotograph Process. 2.5 p.m.—Interlude. 2.10-2.25 p.m.—For the Schools. "Out of Doors Week by Week."—XII. Mr. Eric Parker. 4.0 p.m.—Jack Payne and his B.B.C. Dance Orchestra. 4.30 p.m.—The Prince of Wales Playhouse Orchestra, conducted by Frank Westfield. 5.15 p.m.—The Children's Hour. 6.0 p.m.—Major Raphael Jackson (one of H.M. Deputy Lord-Lieutenants of the County of London): "Playing Fields of Great Britain." 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin, London Stock Exchange Report; Fat Stock Prices for Farmers. (Time Signal, Greenwich, at 6.30 p.m.). 6.40 p.m.—The Foundations of Music. Modern English Violin and Piano-forte Sonatas, played by Sybil Eaton and Michael Mullinar. 7.0-7.20 p.m.—"Plays and the Theatre." by Mr. James Agate. 7.25 p.m.—A1 or C3? The Future of the Race"—VI. Mrs. Mary Adams, M.Sc.: "Whither Mankind?" 7.45 p.m.—The Gershom Parkinson Quintet. 8.0-8.30 p.m.—Sir James Jeans, F.R.S.: "The Stars in Their Courses."—V. "Out in the Depths of Space Beyond the Milky Way." 8.31 p.m.—Quintet Music. (contd). 9.0 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. (Time Signal, Greenwich, at 9.0 p.m.). 9.15 p.m.—Shipping Forecast; New York Stock Market Report. 9.20 p.m.—Mr. Victor Hely-Hutchinson. Talks about Music. 9.40 p.m.—Speech by H.R.H. The Prince of Wales, K.G., following the Annual Banquet of The Incorporated Sales Managers' Association. Relayed from The Guild-hall. 10.0 p.m.—Jack Payne and his B.B.C. Dance Orchestra, and an Item from The London Palladium.

- 11.0 p.m.—12 midnight.—Dance Music. (Time Signal, Greenwich, at 11.30 p.m.).

WEDNESDAY (17)

- 10.15 a.m.—The Daily Service. 10.30 a.m.—Time Signal (Greenwich), Weather Forecast. 10.45-11.0 a.m.—"The Week in Westminster." by Miss Megan Lloyd George, M.P. 12 noon.—Gramophone Records. (Time Signal, Greenwich, at 1.0 p.m.). 1.0 p.m.—Light Music. Frascati's Orchestra, directed by Georges Haeck. 2.0-2.30 p.m.—Songs of Hugo Wolf. Alice Vaughan (Contralto), Bertram Davis (Tenor). 3.30 p.m.—Symphony Concert. The Bournemouth Symphony Orchestra, conducted by Sir Dan Godfrey. 4.45 p.m.—Reginald New at the Organ. 5.15 p.m.—The Children's Hour. 6.0 p.m.—"Going to Live in the Country."—IV. Mr. J. W. Robertson Scott: "The Wisdom of the Old Hands." 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin. (Time Signal, Greenwich, at 6.30 p.m.). 6.35 p.m.—London Stock Exchange Report, Fat Stock Prices for Farmers. 6.40 p.m.—The Foundations of Music. Modern English Violin and Piano-forte Sonatas, played by Sybil Eaton and Michael Mullinar. 7.0-7.20 p.m.—Mr. Stanley Unwin: "English Books abroad." (Under the auspices of the Department of Overseas Trade). 7.25 p.m.—"Industry Looks Ahead."—XII. Mr. Frank Hodges: "The Change in Industrial Control." 7.45 p.m.—Interval. 8.0 p.m.—B.B.C. Symphony Concert, relayed from the Queen's Hall. May Busby, Muriel Brunskill, Parry Jones, Horace Stevens, The National Chorus (Chorus Master, Stanford Robinson), The B.B.C. Symphony Orchestra (Leader, Arthur Catterall), conducted by Hermann Scherchen. Beethoven's Mass in D (Missa Solemnis). 8.45 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. (Time Signal, Greenwich, at 9.0 p.m.). 9.0 p.m.—B.B.C. Symphony Concert. Part II of Missa Solemnis. 10.5 p.m.—Topical Talk. 10.20 p.m.—Shipping Forecast; New York Stock Market Report. 10.25 p.m.—The Gershom Parkinson Quintet, Joan Leggett (Soprano). 11.10 p.m.—12 midnight.—Dance Music. (Time Signal, Greenwich, at 11.30 p.m.).

THURSDAY (18)

- 10.15 a.m.—The Daily Service. 10.30 a.m.—Time Signal (Greenwich), Weather Forecast. 10.45-11.0 a.m.—Mrs. Stafford Northcote: "Children's Dressmaking." 12 noon.—Edward O'Henry at the Organ. Time Signal, Greenwich, at 1.0 p.m.). 1.0 p.m.—A Concert. Grace Reynolds (Contralto), Arthur Wilkes (Tenor), Marjorie Bloese (Piano-forte). 2.0-2.30 p.m.—Gramophone Records. 3.0 p.m.—Evensong from Westminster Abbey.

FRIDAY (20)

- 10.15-11.0 a.m. (London).—National Programme. 1.0-2.0 p.m. (London).—National Programme. 2.30 p.m. (London).—National Programme. 3.10 p.m. (London).—A Brass Band

- 3.45 p.m.—Jack Payne and his B.B.C. Dance Orchestra. 4.30 p.m.—Light Music. The Grosvenor House Orchestra, directed by Joseph Meeus. 5.15 p.m.—The Children's Hour. 6.0 p.m.—V. C. Clinton Baddeley, reading from "David Copperfield" by Charles Dickens. 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin; London Stock Exchange Report and Market Prices for Farmers. Time Signal, Greenwich, at 6.30 p.m.). 6.40 p.m.—The Foundations of Music. Modern English Violin and Piano-forte Sonatas, played by Sybil Eaton and Michael Mullinar. 7.0 p.m.—"The Cinema." Mr. Francis Birrell. 7.25 p.m.—"What is Liberty?"—VI. Professor Ernest Barker, Litt.D., LL.D., Professor of Political Science, Cambridge University. 7.45 p.m.—Vaudeville. 9.0 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. Time Signal, Greenwich, at 9.0 p.m.). 9.15 p.m.—Shipping Forecast; New York Stock Market Report. 9.20 p.m.—Talk. 9.40 p.m.—"The Flowers are Not for You to Pick." A Play for the Microphone, written by Tyrone Guthrie. Produced by Peter Creswell. 10.40 p.m.—12 midnight.—Dance Music. Jack Payne and his B.B.C. Dance Orchestra. During the Dance Music to-night dominance will be given to the latest dance band music by British Composers. Time Signal, Greenwich, at 11.30 p.m.). 12 midnight-12.5 a.m. (Friday).—Experimental Transmission for the Radio Research Board, by the Fotograph Process.

FRIDAY (19)

- 10.15 a.m.—The Daily Service. 10.30 a.m.—Time Signal (Greenwich), Weather Forecast. 10.45-11.0 a.m.—"Reading for Fun"—VIII. Mrs. Oliver Strachey: "Some Types of Novels—Short Stories and other Books." 12 noon.—A Sonata Recital. Maude Gold (Violin), May Jardine (Piano-forte). 12.30 p.m.—Organ Recital by Bert-ran Hollins. Foster Manley (Bass). 1.30-2.30 p.m.—Gramophone Records by Christopher Stone. 4.0 p.m.—Light Music. Moschetto and his Orchestra. 5.15 p.m.—The Children's Hour. 6.0 p.m.—Mr. F. W. Miles: "Christmas Gardening." 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin; London Stock Exchange Report; Fat Stock Prices for Farmers. Time Signal, Greenwich, at 6.30 p.m.). 6.40 p.m.—The Foundations of Music. Modern English Violin and Piano-forte Sonatas, played by Sybil Eaton and Michael Mullinar. 7.0-7.20 p.m.—The B.B.C. Music Critic. Mr. Ernest Newman. 7.25 p.m.—"The Dark Continent"—XII. The Marquis of Lothian, C. H.: "The Question-Mark of Africa." 7.45 p.m.—A Piano-forte Recital by Ernest Lush. 8.0 p.m.—The Philharmonic Choir and The London Symphony Orchestra, conducted by Charles

- Kennedy Scott. Messiah (Handel) (with Handel's Orchestration). Artists: Dora Labbette, Mary Morris, Tudor Davies, Harold Williams. Relayed from the Queen's Hall. Time Signal, Greenwich, at 9.0 p.m.). 9.0 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. 9.15 p.m.—The Philharmonic Choir. Part II. Relayed from the Queen's Hall. 10.15 p.m.—"People and Things." The Hon. Harold Nicolson. 10.30 p.m.—Shipping Forecast; New York Stock Market Report. 10.35 p.m.—12 midnight.—Dance Music. Time Signal, Greenwich, at 11.30 p.m.).

SATURDAY (20)

- 10.15 a.m.—The Daily Service. 10.30 a.m.—Time Signal (Greenwich), Weather Forecast. 10.45-11.0 a.m.—"Hobbies and Handicrafts"—XIII. Mr. C. Noel Heath: "Woodcuts at Home." (Time Signal, Greenwich, at 1.0 p.m.). 1.0-2.0 p.m.—Light Music. The Commodore Grand Orchestra, directed by Joseph Muscant. 2.30 p.m.—Carol Service by The Royal Choral Society, conducted by Malcolm Sargent, relayed from The Royal Albert Hall. 3.10 p.m.—Arsenal v. Newcastle United. A Running Commentary on the second half of the Association Football Match. Commentator, George F. Allison, relayed from the Arsenal Football Ground, Highbury. 4.10 p.m.—Jack Payne and his B.B.C. Dance Orchestra. 4.45 p.m.—Reginald New at the Organ. 5.15 p.m.—The Children's Hour. 6.0 p.m.—A Recital of New Songs. 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin; Football Results; Fat Stock Prices for Farmers. (Time Signal, Greenwich, at 6.30 p.m.). 6.40 p.m.—London Sports Bulletin. 6.45 p.m.—The Foundations of Music. Modern English Violin and Piano-forte Sonatas, played by Sybil Eaton and Michael Mullinar. 7.0 p.m.—Topical Talk. 7.20 p.m.—The Week's Work in the Garden, by the Royal Horticultural Society. 7.30 p.m.—The Wireless Military Band, conducted by Hermann Scherchen. The Programme will include Old German Military Marches and Concertmusik by Hindemith. (Time Signal, Greenwich, at 9.0 p.m.). 9.0 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. 9.15 p.m.—Shipping Forecast. 9.20 p.m.—"Edges of the World"—XVI. Major C. K. Cochran-Patrick: "An Air Surveyor: Charting Unknown Countries." 9.35 p.m.—A Musical Comedy Programme. Kathlyn Hilliard (Soprano), Winifred Williamson (Contralto), John Turner (Tenor), Thorpe Bates (Baritone), John Kelly (Bass). The B.B.C. Orchestra, conducted by Joseph Lewis. 10.35 p.m.—12 midnight.—Dance Music. Ambrose's Band, from the May Fair Hotel. (Time Signal, Greenwich, at 11.30 p.m.).

- 8.0 p.m. (Midland).—Organ Recital by S. D. Cunningham. 8.25 p.m.—Regional News. 8.30 p.m.—"The Spirit of Adventure"—XII. 9.0 p.m. (London).—The B.B.C. Orchestra, Conducted by Charles Webber. Francesca Duret (Soprano), Roy Henderson (Baritone), 9.0 p.m. (Midland).—"Folk Songs of the Manx." Arranged and introduced by Dr. James Lyon. Presented by Emilie Waldron (Soprano), Winifred Payne (Contralto), Geoffrey Dams (Tenor), Harold Howes (Baritone). 10.15 p.m.—"The Second News." Weather Forecast, Second General News Bulletin. 10.30-10.35 p.m. (Midland).—Experimental Transmission for the Radio Research Board by the Fotograph Process. 10.30-12.0 midnight (London).—Dance Music.



THE MAN WHO TRANSFERRED

When he improved the set with an Ever Ready battery it was as good as a transfer from the pit to the stalls.

The Ever Ready gives what listeners want. Gives long life. But not at the cost of efficiency. It works steadily—not in spurts. Silently—not with a crackle. Powerfully—not below the capacity of the set. It lasts but it does not slack. The battery goes on but the loud speaker doesn't go off. You must try the Ever Ready. It is made by an exclusive process—a specially thorough process. It is guaranteed to give satisfactory service by a company which has been making reliable batteries for 28 years. *Ever Ready batteries are made for all wireless sets. If you own a portable you can obtain an Ever Ready of the right size and shape to fit it. Write for free list, which gives full particulars, including exact dimensions in inches.*



**BRITISH MADE
HIGH TENSION
BATTERIES**

The batteries that give unwavering power

THE EVER READY CO. (GREAT BRITAIN) LTD., HERCULES PLACE, HOLLOWAY, LONDON, N.7

REGIONAL PROGRAMMES

(December 14-20)

London

842 kc/s (356.3 m.)
(45 kW.)

SUNDAY (DEC. 14)

- 3.30 p.m. (London).—The Wireless Military Band. Conducted by B. Walton O'Donnell. Eric Marshall (Baritone).
- 3.30 p.m. (Midland).—Excerpts from Bach's "Christmas Oratorio." Relayed from Malvern College, Malvern. The Malvern College Choral Society. The Orchestra (Leader, Paul Beard). Conducted by John A. Davison (Director of Music, Malvern College).
- 4.45 p.m. (Midland).—Duets for Two Pianofortes. Russell Green and Esmond Ingal.
- 5.0-5.15 p.m.—A Reading from the Apocrypha: "The Wisdom of Solomon."
- 7.55 p.m. (London).—National Programme.
- 8.45 p.m. (Midland).—The Week's Good Cause: An Appeal on behalf of the Birmingham Mail Christmas Tree Fund, by Mr. H. F. Harvey.
- 8.50 p.m.—"The News." Weather Forecast, General News Bulletin.
- 9.0 p.m.—Regional News.
- 9.5 p.m.—Sunday Orchestral Concert—VIII. The B.B.C. Orchestra (Leader, Arthur Catterall). Conducted by Hermann Scherchen. Zoltan Szekely (Violin).
- 10.30 p.m.—Epilogue.

MONDAY (15)

- 10.0 a.m. (London).—National Programme.
- 11.0-11.30 a.m. (London).—Experimental Television Transmission by the Baird Process (356.3 m. Vision; 261.3 m. Sound).
- 12 noon.—A Ballad Concert. Marion Smith (Contralto). Wilfred Gartrell (Tenor). Judith de Leeuw (Pianoforte).
- 1.0 p.m.—Light Music. Leonardo Kemp and his Piccadilly Hotel Orchestra.
- 2.0-3.0 p.m.—Lozells Picture House Orchestra, conducted by Ernest Parsons.

- 4.0 p.m. (London).—National Programme.
- 5.15 p.m. (London).—Jack Payne and his B.B.C. Dance Orchestra.
- 5.15 p.m. (Midland).—Children's Hour.
- 6.0 p.m. (Midland).—As London.
- 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin.
- 6.40 p.m. (London).—A Brass Band Concert. St. Hilda's Band, conducted by James Oliver. A. E. Rogers (Baritone).
- 6.40 p.m. (Midland).—The Midland Studio Orchestra, directed by Frank Cantell. Joseph Donovan (Saxophone). Charles Hill (Tenor).
- 8.0 p.m.—Monsieur E. M. Stéphan: French Talk.
- 8.30 p.m.—Regional News.
- 8.35 p.m.—String Orchestral Concert. Harold Williams (Baritone).
- 9.45 p.m.—Jack Payne and his B.B.C. Dance Orchestra.
- 10.15 p.m.—"The Second News." Weather Forecast, Second General News Bulletin.
- 10.30 p.m.—12 midnight.—Dance Music.
- 10.30-11.0 p.m. (Midland).—As London.

TUESDAY (16)

- 10.15 a.m. (London).—National Programme.
- 11.0-11.30 a.m. (London).—Experimental Television Transmission by the Baird Process (356.3 m. Vision; 261.3 m. Sound).
- 12 noon.—A Concert. Kathleen Stuart Baker (Soprano). The Sylvan Trio.
- 1.0 p.m.—Reginald New at the Organ.
- 2.0-3.0 p.m.—The Midland Studio Orchestra, directed by Frank Cantell.
- 4.0 p.m. (London).—National Programme.
- 5.15 p.m. (London).—Jack Payne and his B.B.C. Dance Orchestra.
- 5.15 p.m. (Midland).—Children's Hour.
- 6.0 p.m. (Midland).—As London.

- 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin.
- 6.40 p.m. (London).—An Organ Recital by Reginald Dixon.
- 6.40 p.m. (Midland).—Light Music. Pattison's Salon Orchestra, under the direction of Norris Stanley.
- 7.0 p.m. (London).—Reginald King's Orchestra. Silvio Sideli (Baritone).
- 7.30 p.m. (Midland).—A Military Band Concert. The City of Birmingham Police Band, conducted by Richard Wassell. Nellie Southworth-Elkington (Soprano). Silvio Sideli (Baritone).
- 8.0 p.m. (London).—Orchestral Concert. The Choral and Orchestral Union of Glasgow, relayed from St. Andrew's Hall, Glasgow. The Scottish Orchestra (Leader, Sidney Bowman), conducted by Nikolai Malko.
- 8.30 p.m. (Midland).—Dance Music. Jack Kerr and his Band.
- 9.0 p.m. (Midland).—Folk Songs and Dances. The Midland Studio Orchestra, directed by Frank Cantell. The Midland Studio Chorus, conducted by Nigel Dallaway.
- 10.15 p.m.—"The Second News." Weather Forecast, Second General News Bulletin.
- 10.30 p.m.—12 midnight.—Dance Music. Sid Bright and his Piccadilly Players, and The Piccadilly Grill Band, directed by Jerry Hoey, from the Piccadilly Hotel.
- 10.30-11.0 p.m. (Midland).—As London.
- 12 midnight-12.30 a.m. (Wednesday). (London).—Experimental Television Transmission by the Baird Process (356.3 m. Vision; 261.3 m. Sound).

WEDNESDAY (17)

- 10.15 a.m. (London).—National Programme.
- 11.0-11.30 a.m. (London).—Experimental Television Transmission by the Baird Process. (356.3 m. Vision; 261.3 m. Sound.)

- 12 noon.—Organ Recital. By Walter Vale. Samuel Saul (Baritone).
- 1.0 p.m.—Gramophone Records.
- 1.30-3.0 p.m.—The Midland Studio Orchestra. Directed by Frank Cantell. Dennis Goodyear (Tenor). Johan Hock (Violoncello).
- 3.30 p.m. (London).—National Programme.
- 5.15 p.m. (London).—Dance Music. Jack Kerr and his Band.
- 5.15 p.m. (Midland).—Children's Hour.
- 6.0 p.m. (Midland).—As London.
- 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin.
- 6.40 p.m. (London).—The Victor Olof Sextet. Rebé Hillier (Contralto). Barrington Hooper (Tenor).
- 6.40 p.m. (Midland).—The Midland Studio Orchestra. Directed by Frank Cantell. Edna Mowbray Miners (Contralto). Guy Magrath (Viola).
- 8.0 p.m.—Mr. Otto Siepman: German Talk.
- 8.30 p.m.—Regional News.
- 8.35 p.m.—Polish National Programme. Relayed from Warsaw. The Warsaw Philharmonic Orchestra. Conducted by Gregorie Fitelberg: Violin Concerto—third movement (M. Karowicz) (Soloist, Madame Irene Dubiska); Fantasy Polonaise (Paderewski) (Pianoforte Solo, Madame Sophie Rabcewicz).
- 9.0 p.m.—A Military Band Concert. The Wireless Military Band. Conducted by B. Walton O'Donnell. Harry Brindle (Baritone). Hilda Blake (Soprano).
- 10.15 p.m.—"The Second News." Weather Forecast, Second General News Bulletin.
- 10.30 p.m.—12 midnight.—Dance Music.
- 10.30 p.m. (Midland).—Experimental Television for the Radio Research Board by the Fultograph Process.
- 10.35-11.0 p.m. (Midland).—As London.

Midland

626 kc/s (479.2 m.)
(38 kW.)

THURSDAY (18)

- 10.15 a.m. (London).—National Programme.
- 11.0-11.30 a.m. (London).—Experimental Television Transmission by the Baird Process. (356.3 m. Vision; 261.3 m. Sound.)
- 12 noon.—The Shepherd's Bush Pavilion Orchestra. Directed by Louis Levy.
- 1.10 p.m.—A Lunch Hour Carol Service. Relayed from St. Martin's Parish Church, Birmingham.
- 1.50 p.m.—The Midland Studio Orchestra. Directed by Frank Cantell. Leonard Gordon (Baritone).
- 3.0 p.m. (London).—National Programme.
- 5.15 p.m. (London).—Jack Payne and his B.B.C. Dance Orchestra.
- 5.15 p.m. (Midland).—Children's Hour.
- 6.0 p.m. (Midland).—As London.
- 6.15 p.m.—"The First News." Weather Forecast, First General News Bulletin.
- 6.40 p.m.—"Food Supply and the Future"—VI. Dr. J. B. Orr: "The Influence of Dietary Customs on the Future Development of the Race."
- 7.0 p.m. (London).—The J. H. Squire Celeste Octet.
- 7.0 p.m. (Midland).—A Symphony Concert. The City of Birmingham Orchestra. Conducted by Leslie Heward. Osmond Davis (Tenor). Mary Abbott (Pianoforte).
- 7.45 p.m. (London).—Chamber Music. Robert Murchie (Flute). The Pro Arte String Quartet.
- 8.55 p.m.—Regional News.
- 9.0 p.m. (London).—Choral and Orchestral Concert. "Down South." The Wireless Chorus. The B.B.C. Orchestra. Conducted by Joseph Lewis. Olive Kavann (Contralto). Stanley Riley (Bass).
- 9.0 p.m. (Midland).—Organ Recital by Dr. Harold Rhodes.
- 9.35 p.m.—"Come, Pipe a Song."

(Continued on page 963.)

The Problem of the Elder Lad

THE CHURCH LADS' BRIGADE

FOUNDED 1891. INCORPORATED 1893.

Patron: H.M. THE KING.

Vice-Patron: H.R.H. THE PRINCE OF WALES.

President:

Field-Marshal H.R.H. the Duke of Connaught, K.G., K.T.

Governor and Commandant:

Field-Marshal Sir Claud W. Jacob, G.C.B., G.C.S.I., K.C.M.G.

Withdrawal of the Cadet Grant.

THE CHURCH LADS' BRIGADE

The Best and Oldest Church Organisation for the Elder Lads, 14 to 21 years of age, must carry on its work in training Christian Citizens.

IT HAS HUNDREDS OF DEVOTED OFFICERS.

WILL YOU HELP them in their Important and Self-sacrificing Task and the C.L.B. Lads who bear so large a proportion of the cost, by sending a Donation.

DONATIONS will be gratefully received by the Secretary, The Rev. Edgar Rogers, O.B.E., M.A., F.S.A., General Headquarters, Aldwych House, Catherine Street, Aldwych, London, W.C. 2, Eng.

TANNOY

PRODUCTS

NEED NO ATTENTION

MORE VOLUME

CHEAPER THAN DRY BATTERIES

MAINS UNITS

Incorporating Weatherhouse Reetifiers

H.T. from £2.17.6.

H.T. and L.T. Combined £5.10.0.

Special Models for Portable Receivers

Mfgs. of :-

TANNOY-RADIOGRAMS=

'ALL-ELECTRIC' from 45 gns.

Write for leaflets and demonstrations to :-

TANNOY PRODUCTS,
DALTON ST.
WEST NORWOOD, S.E.27.

Christmas Coal and Comforts

Nothing is more pitiful than to see old people shivering by fireless grates.

THE FRIENDS OF THE POOR

Have hundreds of old and sick—many of gentle birth—half-starving on slender incomes. They need coal, blankets, etc.

DO SEND HELP

— TO —

The Hon. Treasurers,
THE FRIENDS OF THE POOR,
42, Ebury Street, S.W.1.

LISTEN TO RADIO-PARIS ON SUNDAY, DEC. 14th, at 2 o'clock

£1,000 in PRIZES.

RECORD CHOOSING
COMPETITION

• 1st Prize — £750 •
 2nd Prize—£100— 3rd Prize—£50
 and 200 Consolation Prizes of Ten Shillings each

ON SUNDAY, DECEMBER 14th, 1930—make a note of date—the Decca Record Co., Ltd., will broadcast 16 of their famous Records from Radio-Paris between 2 and 3 p.m. The first 12 records form the subject of this Competition, and will be played in the order given here.

ORDER OF PROGRAMME AND COMPETITION NUMBERS.

1. MARCH OF THE 3rd DRAGOONS
2. FONSO (MY HOT SPANISH KNIGHT)
3. I'M STILL AT YOUR BECK AND CALL
4. A SLAVE TO LOVE
5. THE TWO GUITARS
6. LITTLE RUSSIAN ROSE.
7. WHEN LOVE COMES IN THE MOONLIGHT
8. FATHER SWEEPS THE CHIMNEY
9. WHEN OTHER LIPS
10. WHO CARES?
11. WHISPERING OUT OF THE SOUTH
12. I'M LEARNING A LOT FROM YOU

All you have to do is to get a sheet of paper and write your full name and address in ink at the top in plain letters. Then make out a list of the Records mentioned in the programme, in what you consider to be their order of merit, using the Competition Numbers only. Don't write the names of the Records, but the numbers next to the names. First write the number of your first choice; then underneath it the one you like second best, and continue downward with the other 10 numbers in the order you like best. There must be no other writing on the paper.

POST YOUR ENTRY TO:
 RECORD CHOOSING COMPETITION,
 29A, CHARING CROSS ROAD,
 LONDON, W.C.2

enclosing a crossed Postal Order for *One Shilling.*

You may send in as many entries as you like in the same envelope, each entry to be on a separate sheet of paper on which your name and address appears. A Postal Order must be enclosed covering the number of entries, such as 2s. for 2 entries, 3s. for 3 entries, etc.

All entries must be received not later than Thursday, December 18th, 1930.

A list will be prepared in which the records will be placed in order of popular vote. The record receiving the highest number of votes for first place will be placed first; that receiving the next highest number of votes for first place will be placed second and so on.

The Competitor who has correctly got furthest down the list before differing from the popular vote will receive the first prize of £750. The Competitor who has got next furthest down will receive the second prize of £100. The Competitor who has got next furthest down will receive the third prize of £50. The 200 consolation prizes will be awarded in a similar manner. In the event of a tie, consideration will be given to the Competitor placing the next most popular number nearest to the correct sequence. Should two or more winning entries be exactly alike, the prize money will be divided.

A well-established firm of Incorporated Accountants has been appointed to check the entries, prepare the correct list therefrom, and to allocate the prizes.

It is to be distinctly understood that the full amount of £1,000 will be positively awarded before Christmas, even if yours is the only entry!

Cheques will be posted to successful Competitors immediately the Auditors have allocated the Prizes.

The Order of Merit, as ascertained by public vote, together with the List of Prize Winners, will be published in this paper on January 9th, 1931.*

The Decca Record Co., Ltd., are not associated in any way other than letting the organisers use their broadcast programmes for the purposes of the competition.

The Prize Money has been lodged in trust for the Competitors with one of the Joint Stock Banks.

If through some unforeseen circumstance the Decca Concert should not be broadcast on December 14th, the programme advertised above will be given on Sunday, December 21st, at the same hour, and all the conditions of this competition will apply, but the closing date will be one week later.

No correspondence will be entered into in regard to this Competition. The Auditors' decision as to the allocation of the prizes will be final.

**Owing to the fact that the paper goes to press 15 days before publication, it is impossible to publish the Result earlier.*



**NO BACKLASH
 NO NOISE**
 —perfection for
 Ultra Short Waves

No. 2-9-6
3" KNOB DIAL



Drum makes a
**COMPLETE
 REVOLUTION**

The scale of this latest Dial is fully as open as that of usual 6in. patterns. The reduction ratio is 18-1 and the drum develops sufficient power to drive several ganged condensers. Backlash and noise have been eliminated. **ALL** makes condensers. (Special Illuminating Bracket, 9d. extra).

WITH MOULDED FINGER PLATE IN BLACK OR WALNUT BAKELITE, RETAILS AT **10/6**

Supplied with "Utility" "Mite" Condensers at following prices:
 With .0005 "Mite" Condenser ... 16/6
 With .0003 "Mite" Condenser ... 18/6

No. W. 181
**MICRO
 DIAL
 RATIO
 100 - 1**



Thousands in use!
 Reads either direction and gives finest possible tuning. Fixed aluminium scale surveyed by hair-line cursor.

Vernier adjustment obtained by rotating small central knob. Can be used with ALL makes condensers, without bushes. When ordering, state diameter Condenser spindle. **N.B.**—Note bakelite rim of this pattern—it considerably enhances its appearance.

PRICE 7/6 EACH

W.170 is a dial at same price—with similar mechanism but revolving bakelite scale.

1930-31 LIST FREE

Illustrates and prices "Utility" Condensers and Switches for every purpose. Write for a copy. Most high-class Wireless Dealers stock "Utility" Guaranteed Components, but in case of difficulty we can supply by return of post.

WILKINS & WRIGHT LTD
 HOLYHEAD RD *Utility* BIRMINGHAM

PROGRAMMES FOR SUNDAY (December 14)

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

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

BARCELONA (Spain)

Radio-Barcelona (EAJI). 860 kc/s (349 m.); 8 kW.
8.0 a.m.—First Edition of the Radio Journal.

8.30—9.0 a.m.—Second Edition of the Radio Journal.

11.0 a.m.—Chimes from the Cathedral and Meteorological Report.

11.15 a.m. (approx.)—1.0 p.m.—Interval.

1.0 p.m.—Sextet Selections and Gramophone Records. Pasodoble, Mi torero (J. M. Canals). Pericon, Cantos de mi tierra (Hervas). Fox-trot, Frey (Volart). Artagnan (Dotras Vila). Selection from the Musical Comedy, "Agua, azucarillos y aguardiente" (Chueca). Pompador (Millan). Intermezzo from "La boda de Luis Alonso" (Giménez). By the Camp Fire (Siede). Selection from "Le jongleur de Notre Dame" (Massenet). Waltz Song, That's All (H. Tilsley). Oriental March (Ailbout).

3.0 p.m.—Programme for Hospitals and Benevolent Institutions—Gramophone Records.

4.0—5.30 p.m.—Interval.

5.30 p.m.—Agricultural Talk in Catalan, followed by Part Relay of an Opera (to be announced) from the Gran Teatro del Liceo.

8.15 p.m.—Selections by the Station Orchestra.

9.0 p.m.—Concert of Gramophone Records.

12 midnight (approx.)—Close Down.

BOLZANO (Italy)

Ente Italiano Audizioni Radiofoniche. 662 kc/s (453.2 m.); 0.2 kW.

9.30 a.m.—Gramophone Records of Sacred Music.

10.0—11.30 a.m.—No Transmission.

11.30 a.m.—Time Signal.

11.45 a.m.—Variety Concert.

12.45 p.m.—Relay of the Bells of the Convent of Gries.

3.0 p.m.—Variety Concert from the Casino di Cura, Gries.

4.55 p.m.—News Bulletin.

6.45 p.m.—Concert of Light Music.

7.45 p.m.—Sports Notes, Miscellaneous Reports and News Bulletin.

8.0 p.m.—Time Signal.

8.2 p.m.—Concert. Symphonic Poem, Finlandia (Sibelius). Overture, "The Merry Wives of Windsor" (Nicolai). Selection (Moussorgsky). Selection from "Le Maschere" (Mascagni). Soprano Solos: (a) Ave Maria (Schubert), (b) Ich liebe Dich (Grieg), (c) Serenata (Mascagni). Shadows on the Nile (Schinelli). Selection from "Frederica" (Lehár). An den Frühling (Grieg). Serenade, Invano (Amadei).

9.45 p.m.—Gramophone Dance Music.

10.45 p.m.—Sports Notes and News.

BRATISLAVA (Czechoslovakia)

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

Transmits at intervals from 7.0 a.m.

6.30 p.m.—Popular Orchestral Selections.

7.10 p.m.—Pianoforte Recital. Sonata in F Minor, Op. 5 (Brahms). Romance in F Sharp Major (Schumann). Intermezzo in A Major (Brahms). Etudes (Chopin).

8.0 p.m.—Cabaret Programme.

9.0 p.m.—Programme from Prague.

9.15 p.m.—Programme 7 Announcements and Theatre Review.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 3 kW.

Transmits at intervals from 7.30 a.m.

5.0 p.m.—Agricultural Report, followed by German Transmission: Airs and Songs.

5.30 p.m.—Programme of Fairy Tales.

5.45 p.m.—Talk: Derangements of the Vocal Organs.

5.55 p.m.—Programme from Prague.

9.15 p.m.—News and Theatre Notes.

9.20 p.m.—Programme from Moravská-Ostrava.

BRUSSELS (No. 2) (Belgium)

887 kc/s (338.2 m.); 12 kW.

6.0 p.m.—Programme for Children.

7.15 p.m.—Gramophone Concert.

8.0 p.m.—Concert. Trio No. 1 (Haydn). O Nachtgegal (Clemens von Papa). Hodie Christus natus est (Sweelinck). Recitative and

Aria from "Oedipe à Colone" (Sacchini). La Folia (Corelli). Brug omhoog (De Jong). Kerstnacht (Wambach). Trio No. 3 (Beethoven). Zoet lief, Ge wilt van mij al scheiden (Verhaeren), Selection (Schumann). O Liefste (Gevaert). Kerstliede (Gevaert). De Stille Maier (Sabbe). Jolande (Wambach). Artevelde's Geest (Benoit). Dances (Schubert). In the interval, Talk.

COLOGNE (Germany)

Westdeutscher Rundfunk. 1,319 kc/s (227 m.); 1.7 kW.

See Langenberg Programme.

COPENHAGEN (Denmark)

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

9.0 a.m.—Divine Service from the Garrison Church.

10.30 a.m.—Weather Report and News Bulletin.

11.0 a.m.—Chimes from the Town Hall.

11.2 a.m.—Instrumental Concert. Overture, "Titus" (Mozart). Waltz, Die Schönbrunner (Lanner). Selection from "Lucia di Lammermoor" (Donizetti). Oxen Minuet (Haydn). Tambourin (Gossec). Viennese Music from "The Duchess of Chicago" (Kálmán). Slovakian March (Neruda).

12 noon—1.0 p.m.—Language Lessons.

12 noon—Talk in English: Sir Francis Drake and his Cousin, Sir John Hawkins.

12.20 p.m.—Talk in German: Christmas in German Song.

12.40 p.m.—Talk in French.

1.0 p.m.—Instrumental Concert. Minuet from the Music to "Le Bourgeois Gentilhomme" (Lully). Waltz (Sinding). Gavotte (Gossec). Finale from the First Trio (Haydn). Schlummerlied (Rob. Schumann). Waltz (Birkedal-Barfod). Violin Solos: (a) Schön Rosmarin from "Old Viennese Songs," No. 3 (Kreisler), (b) Caprice in A Minor (Wieniawsky), (c) Canzonetta (Fini Henriques). Norwegian Roundel (Sandby).

1.45 p.m. (approx.)—Reading: Julebud (Vollquartz), followed by Concert (contd.). Theme with Variations from the Fourth Trio (Beethoven). German Dance (von Dittersdorf). Pizzicato (Godard). Elegy and Saltarelle for 'Cello (van Goens). Danish Folk Song (Herman Sandby). Serenade from the Music to "Renaissance" (Lange-Müller). Hungarian Dances, Nos. 5 and 6 (Brahms).

3.0 p.m.—Gramophone Records of International Vocal Artists.

3.30 p.m.—Programme for Children.

4.0 p.m.—Divine Service Relay.

5.20 p.m.—Talk: The World's Deepest Gold Mine—Morro velho, in Brazil.

5.50 p.m.—Weather Report.

6.0 p.m.—News Bulletin.

6.15 p.m.—Time Signal.

6.17 p.m.—Sports Notes.

6.30 p.m.—Talk: King Feisal of Irak.

7.0 p.m.—Town Hall Chimes.

7.2 p.m.—Orchestral Concert. Overture, "Czar and Carpenter" (Lortzing). Polonaise from "His Life for the Czar" (Glinka). Dagmar Waltz and Gallop, Zuav (Lumbye). Selection from "Cavalleria rusticana" (Mascagni). Marche mauresque (Moszkovsky). Finale from "Orpheus in the Underworld" (Offenbach). Gallop, Kosakenritt (Millocker).

8.0 p.m.—"The Hansen Family"—A Humorous Episode (Jens Locher).

8.15 p.m.—Concert by the Danish Vocal Quartet. Danish Folk Songs: (a) Ravnen flyer om Aften, (b) Marsk Stig, (c) Lave og Jon. Three Songs (Poul Schierbeck): (a) Vaer stille Hjerter, (b) Hvor du var gaert, (c) Nu ruger paa Røden. Two Songs (Aage Larsen): (a) Sommerise, (b) Paa Sivensak.

8.40 p.m.—Humorous Tales.

9.5 p.m.—Orchestral Concert (contd.). Russian March (Ganne). Waltz, La Gitana (Bucalossi). Torch Dance (Meyerbeer). Selection from "The Geisha" (Jones). Norwegian Dance, No. 2 (Grieg). March, The Liberty Bell (Souza).

9.50 p.m.—Dance Music from the Palace Hotel.

11.0 p.m. (in the interval)—Town Hall Chimes.

11.30 p.m. (approx.)—Close Down

CORK (Ireland)

(6CK). 1,337 kc/s (225 m.); 1.5 kW.
8.30—11.0 p.m.—See Dublin.

11.0 p.m.—Weather Report, Time, National Anthem and Close Down.

CRACOW (Poland)

Polskie Radio. 1,229 kc/s (244 m.); 1.5 kW.
8.25 a.m.—Divine Service and Organ Recital, relayed from Wilno.

10.58 a.m.—Time Signal. Bugle Call from the Tower of St. Mary's Church, Weather Report and Programme Announcements.

11.15 a.m.—Concert from Warsaw.

1.0 p.m.—Talk for Agriculturists: Fruit-growing.

1.20 p.m.—Concert, relayed from Warsaw.

1.30 p.m.—Agricultural Talk and Music, relayed from Warsaw.

2.0 p.m.—Agricultural Report.

2.40 p.m.—Programme for Children, relayed from Warsaw.

3.10 p.m.—Talk: The Diplomacy of the November Rising.

3.30 p.m.—Gramophone Concert.

3.40 p.m.—Talk from Warsaw.

3.55 p.m.—Gramophone Records.

4.0 p.m.—Talk on Music, relayed from Warsaw.

4.20 p.m.—Concert and Talk from Warsaw.

6.0 p.m.—Miscellaneous Items, News and Programme Announcements.

6.25 p.m.—Gramophone Records.

6.40 p.m.—Literary Programme, relayed from Warsaw.

7.10 p.m.—Talk and Concert of Swiss Music, relayed from Warsaw.

8.10 p.m. (in the interval)—Literary Programme.

9.10 p.m.—Theatre Review, relayed from Warsaw.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.5 kW.
8.30 p.m.—Time Signal.

8.32 p.m.—Concert by the Workers' Union of Ireland Band.

9.0 p.m.—Dorothy McClure (Soprano).

9.15 p.m.—Selections by the Workers' Union of Ireland Band.

9.30 p.m.—W. F. Watt (Tenor).

9.45 p.m.—Dina Copeman (Pianist).

10.0 p.m.—Sponsored Programme.

11.0 p.m.—Time Signal, National Anthem, Weather Report and Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW. Relay by Cassel, 1,220 kc/s (246 m.).

6.15 a.m.—Programme from Hamburg.

7.30 a.m.—Morning Recital from the Advent Church, Cassel.

9.0 a.m.—Reading of Unpublished Letters of Goethe's Niece, Lulu Schlosser.

9.30 a.m.—Choral Concert.

10.30 a.m.—Talk: The Post-War Development of Frankfurt.

11.0 a.m.—Concert from Königsberg 1,085 kc/s (276 m.).

12.45 p.m.—Programme arranged by the Wiesbaden Board of Agriculture.

1.0 p.m.—Programme for Children.

2.0 p.m.—Rural Programme—Two Talks.

3.0 p.m.—Orchestral Concert.

5.0 p.m.—Programme to be announced.

5.20 p.m.—Talk: The Role of Agriculture in German and Foreign Civilisation.

5.50 p.m.—Programme arranged by the Frankfurter Zeitung.

6.20 p.m.—Sports Notes.

6.30 p.m.—Programme from Stuttgart.

7.0 p.m.—Programme from Munich.

9.15 p.m.—News, Sports Notes and Weather.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.7 kW. Relay by Bremen, 950 kc/s (315.8 m.); Flensburg, 1,373 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,202 kc/s (232.2 m.).

5.55 a.m.—Weather Report.

6.0 a.m.—Chimes and Concert from the Limer "Cap Polonia" in Hamburg Port.

7.15 a.m.—Time, Weather, News and Programme Announcements.

8.20 a.m. (from Hanover)—Divine Service from Brunswick Cathedral.

10.30 a.m.—Concert from the Restaurant Ostermann.

11.15 a.m.—Bruno Schönlanck Recital.

12 noon.—Weather Report.

12.5 p.m.—Sponsored Advent Concert.

1.0 p.m.—Orchestral Concert.

2.0 p.m.—Relay from Frankfurt of the Second Half of the Football Match, North Germany v. South Germany.

2.45 p.m.—Café Walfhof Children.

3.30 p.m.—Programme for Children—Christmas Songs and Music.

4.0 p.m.—Programme for Children.

4.45 p.m.—Advent Music, relayed from the Parish Church, Eutin.

5.20 p.m. (from Kiel)—Selections from "Stratagem and Love"—Opera (E. Dupuy, arr. G. Hartmann).

6.5 p.m. (from Kiel)—Soprano and Baritone Solos and Duets in North German Dialect.

6.30 p.m.—Talk on Sports: Is Cricket dying out?

6.40 p.m.—Sports Notes and Weather.

7.0 p.m.—Orchestral and Vocal Concert of Old Bavarian Music, relayed from Munich.

8.30 p.m.—Orchestral Concert. Overture, "Das Glöckchen des Eremiten" (Maillart). Wedding March from "A Midsummer Night's Dream" (Mendelssohn). Trumpet Solo: The Lost Chord (Sullivan). Norwegian Bridal Procession (Grieg). Serenade (Schubert). Rustle of Spring (Sinding). Barcarolle from "The Tales of Hoffmann" (Offenbach). Concert Waltz in E major (Moszkovsky). Fantasia, Traumbilder (Lumbye). Little Waltz (Carceno). Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss).

9.0 p.m. (in an interval)—News and Announcements.

10.0 p.m.—Dance Music.

HUIZEN (Holland)

160 kc/s (1,875 m.); 8.5 kW.
8.10—9.10 a.m.—Programme of the Catholic Radio Society (K.R.O.). Morning Recital.

9.30 a.m.—Programme of the Christian Radio Society (N.C.R.V.). Divine Service from the Reformed Church, The Hague.

11.40 a.m.—4.40 p.m.—Programme of the K.R.O.

11.40 a.m.—Sextet Concert. Song from "Der Kovettenkapitän" (Kaper). In der Heintzenmännchen Bar (Rosen). Waltz, Mon rêve (Waldfreuz).

11.55 a.m.—Talk by the President of the K.R.O.

12.10 p.m.—Concert (continued). It happened in Monterey (Wayne). Selection from "The Drum Major's Daughter" (Offenbach). Serenade (Heykens). Ballet Suite (Popy). Ballgeföster (Meyer-Helmund). A.B.C. Popourri (Kozák). In meinem Herzen ist nur Platz für Eine! (May). Hunters' March (Reckling).

1.10 p.m.—Literary Talk: Gogol, the Heart of Russia.

1.40 p.m.—Religious Instruction.

1.40 p.m.—Orchestral and Choral Concert. Florentine March (Fucik). Czardas (Bouman). Old Dutch Christmas Carol for Women's Choir (Averkamp). St. Jansvier, for Women's Choir (Wierts). Selection for Women's Choir, with Piano-forte accompaniment: Droomme Vrouw kom (Bonset). De rots in zee (Richard Holl). Schoonheid (Olivier Koop). Verbeidend, for Male Voice Choir (Rijken). Lauda Sion (Olivier Koop). Herfst (Olman). Ballet Suite (Popy). Valse interrompue (Montagne). Euterpe's Feestmarsch (de Roog).

4.10 p.m.—Programme for Hospitals.

4.40 p.m.—Programme of the N.C.R.V. Divine Service from the Juliana Church, Veendam.

7.25 p.m. till Close Down.—Programme of the K.R.O.

7.25 p.m.—Talk: Thoughts on Christian Unity.

7.50 p.m.—Football Results.

7.55 p.m.—Orchestral and Vocal Concert. Overture, "Fra Diavolo" (Auber). Selection from "Samson and Delilah" (Saint-Saëns). Songs: (a) Aria from "The Huguenots" (Meyerbeer), (b) Parla Waltz (Arditi). Ave Maria (Gounod-Bach). Irish Folk Music (Percy Grainger): (a) Dance, Mock Morris, (b) Irish Tune from County Derry. British Folk Music (Percy Grainger): (a) Molly on the Shore, (b) Shepherd's Hey. Songs: (a) Aria from "A Masked Ball"

(Verdi), (b) Zerlina's Aria from "Don Juan" (Mozart), (c) Pamina's Aria from "The Magic Flute" (Mozart). Entr'acte Music and Ballet Music from "Rosamunde" (Schubert). Meditation from "Thais" (Massenet). Selection from "The Merry Peasant" (Fall). Waltz, Roses of the South (Strauss). Operetten-Revue (Fetras). Drachsel Marsch (Fucik).

8.40 p.m. (in the interval)—News Bulletin.

10.20 p.m.—Epilogue by the Choir.

10.40 p.m. (approx.)—Close Down.

JUAN-LES-PINS (France)

1,205 kc/s (249 m.); 1.5 kW.
1.0 p.m.—News and Gramophone Concert.

2.0 p.m.—The Marseillaise.

2.15 p.m. (approx.)—8.30 p.m.—No Transmission.

8.30 p.m.—News Bulletin, Amusement Guide, Concert, Wireless Music Hall and Revue (Edmond Bigot).

9.30 p.m.—New Gramophone Records.

10.0 p.m.—The Marseillaise and Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW. See Copenhagen Programme.

LANGENBERG (Germany)

Westdeutscher Rundfunk. 635 kc/s (473 m.); 17 kW. Relay by Aix-la-Chapelle, 1,319 kc/s (227 m.); Cologne, 1,319 kc/s (227 m.); and Münster, 1,319 kc/s (227 m.). Transmits at intervals from 5.45 a.m.

5.20 p.m.—"An Hour's Entertainment"—Variety Programme.

7.0 p.m.—Old Bavarian Programme, relayed from Munich.

8.30 p.m.—"Sursum Corda"—Hymn to the Church—a Choral Work (Piechler).

LJUBLJANA (Yugoslavia)

Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
7.0 a.m.—Agricultural Talk.

8.30 a.m.—Service relayed from a Church.

9.0 a.m.—Religious Talk.

Programmes for Sunday—(Cont.)

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.); 8.5 kW. Programme relayed from *Turin*, 1,013 kc/s (296.1 m.); and *Genoa*, 961.2 kc/s (312 m.).
 9.15 a.m.—Giornale radio.
 9.30 a.m.—Reading from the Bible.
 9.45 a.m.—Gramophone Records of Sacred Music.
 10.15—10.30 a.m. (from *Turin*).—Agricultural Report.
 11.15 a.m.—12.55 p.m.—Variety Concert.
 12 noon (in the interval).—Time Signal.
 3.15 p.m.—Folklore Programme.
 4.0 p.m.—Dance Music from the Hotel Continental.
 4.50 p.m.—Film Review.
 5.30 p.m.—Sports Notes.
 5.40 p.m. (from *Turin*).—Variety Programme.
 6.20 p.m.—Announcements.
 6.30 p.m.—Concert of Light Music.
 7.10 p.m.—Giornale radio.
 7.30 p.m.—Time Signal.
 7.32 p.m.—Gramophone Records.
 7.50 p.m.—News Bulletin.
 8.0 p.m.—Relay of an Opera (to be announced) from the Scala Theatre. Talks in the intervals. After the Programme, Concert from the Cova Restaurant.
 10.0 p.m. (in an interval).—Giornale radio.
 10.55 p.m.—News Bulletin.
 11.0 p.m. (approx.).—Close Down.

MORAVSKÁ-OSTRAVA (Czechoslovakia)

1,130 kc/s (263 m.); 11 kW. Transmits at intervals from 7.30 a.m.
 11.0 a.m.—Concert from the Vitkovic Exhibition.
 12.30 p.m.—Programme from *Prague*.
 3.0 p.m.—Afternoon Concert from the Exhibition.
 4.30 p.m.—Programme from *Prague*.
 9.15 p.m.—Programme Announcements and Theatre Review.
 9.20 p.m.—Dance Music Programme.

MOTALA (Sweden)

222.5 kc/s (1,348 m.); 40 kW. See *Stockholm* Programme.

MUNICH (Germany)

563 kc/s (533 m.); 1.7 kW. Relay by *Augsburg*, 536 kc/s (560 m.); *Kaiserslautern*, 536 kc/s (560 m.); and *Nürnberg*, 1,256 kc/s (239 m.).
 9.45 a.m.—Chimes from Our Lady's Church.
 10.10 a.m.—"Missa Choralis" for Mixed Choir and Organ (Liszt).
 11.0 a.m.—Military Band Music, relayed from the Feldherrnhalle.
 12.10 p.m.—Time Signal, Weather Report and Programme Announcements.
 12.15 p.m.—Agricultural Talk.
 12.40 p.m.—Gramophone Kaleidoscope—A Variety Sequence of Request Records.
 1.30 p.m.—Chess for Beginners.
 2.0 p.m.—Talk for Women: Correct Feeding and Healthy Children.
 2.20 p.m.—Talk: The Munich Business Man's Office.
 2.45 p.m.—Post Office Talk: The Christmas Parcel.
 3.0 p.m.—Orchestral and Soloist Concert.
 4.30 p.m.—Talk: Art and Technique.
 5.0 p.m.—Talk: The Reconstructing of a Christmas Manger, with Soprano Solos.
 5.40 p.m. (from *Nürnberg*).—The Nürnberg Look-out.
 6.10 p.m.—Weather and Sports Notes.
 6.15 p.m.—Violin and Pianoforte Recital. Sonata for Violin and Pianoforte, No. 2 (Deliuss). Cantata for Violin and Pianoforte, Op. 82 (Elgar). Suite, Tallahassee (C. Scott).
 7.0 p.m.—Concert of Old Bavarian Music. Choral and Orchestral Selections, Recitations, Zither Music and Yodelling.
 8.30 p.m.—Orchestral Concert. Rhapsody on a Merry Bavarian Folk Melody, (Pfitzinger). Waltz, Traüme auf dem Ozean (Gungl). Selection from "Die geschiedene Frau" (Fall). Folk Songs and Fairy Tales (Kozák). Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss). Mussinamarsch (Carl).
 9.20 p.m.—Time, Weather, News and Sports Notes.

9.45 p.m.—Orchestral Concert from the Café Stadt Wien.
 11.0 p.m. (approx.).—Close Down.

PARIS (France)

Poste Parisien. 914 kc/s (329 m.); 1.2 kW.
 9.0 a.m.—Transmission of Pictures.
 8.25 p.m.—Gramophone Records, Talk and News Bulletin.
 9.0 p.m.—Concert with the collaboration of Artists from the Opéra and Opéra-Comique. Overture, "Tannhäuser" (Wagner). Ronde française (Boëllmann). Andante from the Sixth Symphony—the Pastoral (Beethoven). Conductor: M. Théodore Mathieu. German Dances (Mozart). Italian Caprice (Tchaikovsky). La Vierge à la crèche (César Franck). March, Orient et Occident (Saint-Saëns).

PARIS (France)

Radio-Paris (CFR). 174 kc/s (1,725 m.); 17 kW.
 8.0 a.m.—News and Press Review.
 8.30 a.m.—Physical Culture Lesson.
 11.0 a.m.—Elementary Book-keeping Lesson.
 11.30 a.m.—Gramophone Records.
 12 noon.—Religious Address by the Reverend Father Lhande.
 12.30 p.m.—Gramophone Records of Sacred Music.
 12.45 p.m.—News Bulletin.
 1.0 p.m.—Gramophone Concert. In the interval, Bilboquet plays Tric-Trac.
 2.0 p.m.—Concert of Decca Records.
 4.30 p.m.—The Five o'Clock Odeon.
 5.30 p.m.—Concert conducted by M. Gaston Poulet, relayed from the Sarah Bernhardt Theatre. Suite in D (Bach). Concerto for Violin, Cello and Orchestra (Brahms). Images d'Epinal (Dupérier). Songs: (a) Der Erlkönig (Schubert), (b) Morgen and (c) Cécilie (R. Strauss). La Mer (Debussy).
 7.0 p.m.—Agricultural Report and Racing Results.
 7.15 p.m.—Economic and Social Notes and News.
 7.30 p.m.—Radio-Paris Circus.
 8.0 p.m.—Concert—"An Evening in Montmartre." In the intervals at 8.30 p.m., Sports Review and Announcements, and at 9.15 p.m., Press Review, News and Time Signal.

POZNAŃ (Poland)

896 kc/s (335 m.); 1.9 kW. Also relayed on 9,830 kc/s (30.5 m.) from 4.30—5.30 p.m. and 5.45—6.45 p.m.
 Transmits at intervals from 8.0 a.m.
 5.45 p.m.—Orchestral Concert.
 6.45 p.m.—Miscellaneous Items and News.
 7.0 p.m.—Yugoslavian Educational Programme, relayed from the University. In the intervals, Theatre Notes and Programme Announcements.
 9.0 p.m.—Time, News, Sports and Police Notes.
 9.15 p.m.—Dance Music from the Wielkopolska Café.
 11.0 p.m. (approx.).—Close Down.

PRAGUE (Czechoslovakia)

Strasnice. 617 kc/s (487 m.); 5.5 kW.
 7.0 a.m.—Gramophone Records.
 7.30 a.m.—Organ Recital from the Czechoslovakian Church, *Djevice*.
 8.0 a.m.—Sacred Music from Brno.
 9.0 a.m.—Agricultural Report.
 9.30 a.m.—Chess Programme.
 9.50 a.m.—Concert of Modern Czechoslovakian Music.
 11.0 a.m.—Time and Chimes.
 11.4 a.m.—Military Band Concert.
 12.30 p.m.—Agricultural Report.
 1.30 p.m.—Social Notes.
 4.30 p.m.—See *Moravská-Ostava*.
 4.30 p.m.—Programme for Workers.
 5.0 p.m.—German Transmission: Christmas Carols.
 5.55 p.m.—Introductory Talk to the following Transmission.
 6.0 p.m.—"The Lantern" Opera (Novak), relayed from the National Theatre. Sports Notes in the interval.
 9.0 p.m.—Time and News.
 9.15 p.m.—News, Theatre Notes and Programme Announcements.
 9.20 p.m.—Programme from *Moravská-Ostava*.

ROME (Italy)

Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.). 75 kW. Relay by *Naples*, 905 kc/s (332 m.), and *ZRO* 3,750 kc/s (80 m.).
 9.0 a.m.—Reading from the Bible.
 9.15 a.m.—Gramophone Records of Sacred Music.

9.45 a.m.—Sports Notes and Amusement Guide.

10.0 a.m.—12 noon.—No Transmission.
 12 noon.—Quintet Concert.
 1.0—3.30 p.m.—No Transmission.
 3.30—4.0 p.m.—Programme for Children, Weather, Time, and Vocal and Instrumental Concert, followed by Dance Music.
 6.50 p.m.—News and Sports Notes.
 7.0 p.m.—Announcements and Press Review.
 7.30 p.m.—Time Signal.
 7.32 p.m.—"The Merry Widow"—Operetta in Three Acts (Lehár). In the intervals: Talk and Fashion Review and at 9.55 p.m. (approx.). News.

SEVILLE (Spain)

Union Radio. (E.A.J.s.) 815 kc/s (368 m.); 1.5 kW.
 2.0—3.0 p.m.—Instrumental Concert and Songs, followed by Argentine Tangos, Flamenco Song Recital and Dance Music.
 3.0—9.0 p.m.—Interval.
 9.0 p.m.—Concert. Part I. Violin Recital. Lento and Allegro from the Sonata in G Major (Tartini). Bourrée in B Minor (Bach). Slavonic Dance (Dvorák-Kreisler). Souvenirs (Drda). Allegro (Ficco). Spring (Milhaud). Guitar (Moszkowsky). Part II. Opera Selections. Two Selections from "Manon" (Massenet): (a) Adieu, notre petite table, (b) Duet—the Reading of the Letter. Two Selections from "Norma" (Bellini), (a) Mere all' altar di venera, (b) Itte sul colle, O Druidi. E lucevan le stelle, from "La Tosca" (Puccini). "The Curse, from "The Force of Destiny" (Verdi). Spinning Chorus from "The Flying Dutchman" (Wagner). Wedding March from "Lohengrin" (Wagner). Part III. Flamenco Song Recital and Dance Music.
 11.0 p.m. (approx.).—Close Down.

STOCKHOLM (Sweden)

Radiotjänst (SASA). 689 kc/s (436 m.); 75 kW. Relay by *Boden*, 250 kc/s (1,200 m.); *Göteborg*, 932 kc/s (322 m.); *Hörby*, 1,166 kc/s (257 m.);

AS GOOD AS A MOVING COIL SPEAKER THE HEGRA MAGNET-DYNAMIC 56!

Leading Radio critics agree that the Hegra Magnet Dynamic Speaker gives an astonishingly good performance. The special magnet system, enabling a very small air gap to be employed, gives strict uniformity of response; the speaker can comfortably handle an input up to 4 watts.

For Christmas Radio, for a present—to yourself or a friend—you cannot do better than buy a Hegra Speaker.

NOTE.—Both the Hegra Magnet Dynamic and the Cabinet Speakers are fitted with a triple lead, giving different impedance values according to the output valves used.

If you have any difficulty, write to—
GEORGE BECKER, LTD.,
 39, Grafton Street, Tottenham Court Road, London, W.1.



THE "T" TYPE SPEAKER
 In Walnut Cabinet - £2 12 0



THE "S" TYPE SPEAKER
 In Walnut Cabinet - £3 5 0



THE "V" TYPE SPEAKER
 In Walnut Cabinet - £3 5 0



HEGRA SPEAKERS ARE STOCKED BY ALL REPUTABLE DEALERS.

Programmes for Sunday—(Cont.)

Motala, 222.5 kc/s (1,348 m.); **Ostersund**, 389 kc/s (770 m.); **Sundsvall**, 554 kc/s (542 m.).
 9.30 a.m.—Topical Talk.
 10.0 a.m.—Divine Service.
 11.45 a.m.—Weather Report.
 12 noon.—Choral Concert, relayed from "Skansen."
 1.0 p.m.—Symphony Concert relayed from **Hälsingborg**, 1,301 kc/s (231 m.).
 3.0 p.m.—Programme for Children.
 4.0 p.m.—Gramophone Records.
 4.30 p.m.—Reading.
 4.55 p.m.—Chimes from the Town Hall.
 5.0 p.m.—Evensong.
 6.15 p.m.—Musical Programme.
 7.25 p.m.—Dramatic Programme.
 8.40 p.m.—Concert of Light Music.
 10.0 p.m. (approx.)—Close Down.

STUTTGART (Germany)

Süddeutscher Rundfunk, 833 kc/s (360 m.); 1.7 kW; and **Mühlacker**, 75 kW. Relayed by **Freiburg**, 527 kc/s (570 m.).
 Transmits at intervals from 6.0 a.m. to 6.30 p.m.—Georg von der Vring reads from his own Works.
 7.0 p.m.—Programme of Old Bavarian Music relayed from **Munich**.
 8.30 p.m.—Orchestral Concert, relayed from **Munich**.
 9.15 p.m. (approx.)—News Bulletin.

TOULOUSE (France)

Radiophonie du Midi, 779 kc/s (385 m.); 8 kW.
 12.30 p.m.—Roman Catholic Service, followed by *Concert*. Three Little Set Pieces (Satie). *Heinzelmännchens Wachtparade* (Noack). *Cinderella's Wedding March* (Rhode). Selection from "The Czarevitch" (Lohár). *Waltz* from "Le pas des fleurs" (Delibes). *Valse triste* (Sibelius). *Spring Song* (Sibelius).
 1.30 p.m.—Agricultural Report.
 1.45 p.m.—Protestant Service.
 5.0 p.m.—Concert of Dance Music.
 6.0 p.m.—Transmission of Pictures.
 6.15 p.m.—Wool Market Prices.
 6.20 p.m.—*Violin Recital*. *Scottish Lullaby* (Schwab). *Danse nègre* (Scott). *Andalusian Romance* (Sarasate). *Mazurka* (Zarevsky). *Serenade* (Drdla). *Allegretto* (Bocherini).

6.45 p.m.—*Concert by a Symphony Orchestra*. *Overture, La Patrie* (Bizet). *Overture, "Ramuntcho"* (Pierné). Selection from "Mariantana" (Wallace).
 7.15 p.m.—*Programme of Recitations*. Selections from the Second and Fifth Acts of "L'Aiglon" (Rostand). *Ça ne m'a pas réussi* (Villars).
 7.30 p.m.—News Bulletin.
 7.45 p.m.—*Accordion Recital*.
 8.0 p.m.—*Violoncello Recital*. *Prayer from "La Tosca"* (Puccini). Selection from "Madame Butterfly" (Puccini). *Solveig's Song* (Grieg). *La Troyenne* (Massenet). *Si mes vers avaient des ailes* (Hahn). *Intermezzo, Goyescas* (Granados). *Andalusia* (Granados).
 8.30 p.m.—*Song Cycle, Die schöne Müllerin* (Schubert).
 9.0 p.m.—*Concert of Opéra and Opéra-Comique Music*. Selections from "Peer Gynt" (Grieg): (a) Morning, (b) The Death of Ase, (c) Anitra's Dance, (d) In the Hall of the Mountain King, (e) Ingrid's Lament, (f) Arab Dance, (g) Return of Peer Gynt, (h) Solveig's Song. Death of Don Quixote from "Don Quixote" (Massenet). Two Selections from "Le Jongleur de Notre Dame" (Massenet). Two Selections from "La Favorita" (Donizetti). Two Selections from "Prince Igor" (Borodin).
 10.0 p.m.—*Concert by a Viennese Orchestra*. Selection (Kozák). *Destiny* (Baynes). *Quand l'amour meurt* (Crémieux). *Delta* (Brausen). *Pomona* (Waldteufel). *I kiss your little hand, Madame* (Erwin). *Les Patineurs* (Waldteufel), followed by Spanish Song Recital.
 11.0 p.m.—*Recital of Songs and Monologues*.
 11.30 p.m.—*Concert of Military Music*.
 11.45 p.m.—Transmission of Pictures.
 12 midnight.—News and Close Down.

VIENNA (Austria)
Radio-Wien, 581 kc/s (516.3 m.); 20 kW. Relayed by **Graz**, 851 kc/s (352.5 m.); **Innsbruck**, 1,058 kc/s (283.5 m.); **Klagenfurt**, 662 kc/s (453.2 m.); and **Linz**, 1,220 kc/s (245.9 m.).

9.20 a.m.—*Concerto for Violin and Organ* (Max Springer).
 10.5 a.m.—*Concert by the Viennese Women's Symphony Orchestra*. *Concerto grosso for String Orchestra and Pianoforte* (E. Bloch). *Violin Concerto in E Minor* (Bach). *Hymn to the Rising Sun*, for String Orchestra, Organ and Harp (R. Mandl). *Serenade in C Major* (R. Fuchs). *Sinfonietta for String Orchestra and Harp* (P. Graener). *Four Styrian Country Dances* (H. Potpeschnigg).
 12 noon.—Time and Programme Announcements.
 12.5 p.m.—"Rigoletto"—*Opéra* (Verdi), on Gramophone Records, by the Cast of the Scala Theatre at Milan.
 2.0 p.m.—Time Signal.
 2.5 p.m.—*Orchestral Concert*. *Overture, "Raymond"* (Thomas). *Waltz, Bad, Haller Promenaden* (Dostal). Selection from "The Queen of Sheba" (Goldmark). *Violin Solos*: (a) Old Viennese Melodies, *Alt-Wien* (Drdla), (b) *Serenade* (Pierné). *Festa di maggio* (Culotta). *Overture, "The Three Wishes"* (Ziehrer). Scenes from "Frederica" (Lehár). *Fortissimo—Fantasia on the Works of Kalmán*. *Sturmgalopp* (Kozák).
 3.45 p.m.—Talk: Methods of Stamp-Collecting.
 4.0 p.m.—With Reynard the Fox through Thick and Thin"—Reynard's Hardest Time.
 4.30 p.m.—*Quartet Concert of Chamber Music*. *Pianoforte Quintet, Lui et elle, Op. A, No. 18* (Juan Manén). The Composer at the Pianoforte.
 5.0 p.m.—*Pianoforte Recital of Romanian Music by Julius Hertz*. *Song-tina* (Michel Andric). *Joujoux pour ma Dame* (Mibail Jora). Theme and Variations (Stan Golestan).
 5.30 p.m.—*Travelogue: Heligoland*.
 6.0 p.m.—*Dialogue between R. Auernheimer and Oskar Maurusolf-Fontana: Austrian Writers*.
 6.30 p.m.—Time, Sports Notes and Programme Announcements.
 6.40 p.m.—*Orchestral Concert*. *Overture, "Simplizius"* (Joh. Strauss). *Waltz, Eiskünstler* (Ertl). *Violin Solo: Hungarian Fantasia* (Lehár). *Souvenir, Pizzicato Polka* and *Dance of the Elves from the Little Suite* (Josef Klein). Two Bagatelles

for String Orchestra, Gemieden—*Vergessen* (Béla v. Uj). Theme with Variations, *Reminiscences of "The Carnival of Venice"* (Joh. Strauss, Sen.). *Weihnachstraum* (Eidenberg). *Overture, "Das Modell"* (Suppé).
 7.30 p.m.—"Cece"—*Play* (Luigi Pirandello), followed by "Schlager" Wireless Play (Frank Warschauer and Julian Stein).
 9.45 p.m. (approx.)—News Bulletin.
 9.55 p.m. (approx.)—Dance Music Programme with Vocal Interludes.

WARSAW (Poland)

Polskie Radio, 212 kc/s (1,411 m.); 14 kW.
 8.25 a.m.—*Mass and Organ Recital*, relayed from **Wilno**.
 10.58 a.m.—Time Signal, Bugle Call from the Tower of St. Mary's Church, Meteorological Report and Programme Announcements.
 11.15 a.m.—*Symphony Concert*.
 1.0 p.m.—Talk for the Housewife.
 1.20 p.m.—Musical Interlude.
 1.30 p.m.—Talk: How to construct a Poultry-Run.
 1.50 p.m.—Musical Interlude.
 2.0 p.m.—Talk: Housing Animals.
 2.20 p.m.—Musical Interlude.
 2.40 p.m.—Programme for Children.
 3.0 p.m.—Answers to Correspondents.
 3.20 p.m.—Gramophone Records.
 3.40 p.m.—Talk on the November Rising: Were they Traitors?
 3.55 p.m.—Gramophone Records.
 4.0 p.m.—Talk: The Literature of Music.
 4.20 p.m.—*Orchestral Concert*. *Overture, "Mignon"* (Thomas). *Waltz* (Delibes). *Spanish Rhapsody* (Lalo). *Symphonic Poem, Danse macabre* (Saint-Saëns). *Suite No. 2 from "L'Arlésienne"* (Bizet). *Rakoczy March* (Berlioz).
 5.45 p.m.—Talk: Illusory Hopes.
 6.0 p.m.—Miscellaneous Items.
 6.25 p.m.—Gramophone Records.
 6.40 p.m.—Literary Programme.
 7.10 p.m.—Talk: Swiss Music.
 7.20 p.m.—*Concert of Swiss Music*. *Variations and Fugue, Op. 21, for Piano* (Courvoisier). *Soprano Solos*: (a) *Das bescheidene Wünschlein* (Schoeck), (b) *Tretzliedchen* (Niggli), (c) *Le coeur gai s'enivre de l'heure* (Maurice). *Three Pieces for Piano, Op. 12* (Schulthess). *Sept pièces brèves for Piano* (Honegger). Popular

Swiss Songs in Swiss-German, *Romanche*, Italian and French.
 8.25 p.m.—*Literary Programme*. In the interval, Programme Announcements and Theatre Review.
 8.40 p.m.—*Pianoforte Recital*. *Ballade in F Minor* (Chopin). *Preludes in G Major, B Flat Minor, C Sharp Minor and E Flat Minor* (Scriabin). Selections (Rachmaninoff): (a) *Elegy No. 1, Op. 3*, (b) *Prelude in G Minor*.
 9.10 p.m.—*Revue from the Morskio Oko Theatre*. In the interval, News.

WILNO (Poland)

Polskie Radio, 959 kc/s (312.8 m.); 0.5 kW.
 8.25 a.m.—Chimes and Divine Service from the Cathedral.
 10.58 a.m.—Time Signal and Bugle Call from the Wilno Tower.
 11.15 a.m.—*Concert from Warsaw*.
 1.0 p.m.—Talk by Jean Jurkowsky.
 1.20 p.m.—Agricultural Talks and Concert from **Warsaw**.
 2.40 p.m.—Programme for Children, Talks, Popular Concert and Talk, relayed from **Warsaw**.
 6.5 p.m.—"The Wilno Cuckoo"—Humorous Radio Journal.
 6.25 p.m.—Programme Announcements for Monday and Miscellaneous News.
 6.40 p.m.—Literary Programme, Concert, and Literary Quarter-of-an-Hour from **Warsaw**.
 8.25 p.m.—Concert from **Warsaw**.
 9.10 p.m.—*Revue from Warsaw*.

ZÜRICH (Switzerland)

Radiostation Zürich, 653 kc/s (459 m.); 0.75 kW.
 10.0 a.m.—*Orchestral Concert*.
 11.2 a.m.—Time and Weather.
 11.30 a.m.—Weather Report and Gramophone Concert.
 2.0 p.m.—Gramophone Concert.
 3.0 p.m.—Selections from Russian Literature, with Musical Interludes.
 6.30 p.m.—Religious Address.
 7.0 p.m.—*Sonata for Violin and Piano* (Mozart).
 7.30 p.m.—*Recital of Tenor Solos by Werner Huber*, followed by *Orchestral Concert of Request Items*.
 9.0 p.m.—Weather Report, News Bulletin, Sports Notes and Close Down.

FOR CHRISTMAS — ELECTRIFY YOUR SET—ANY SET ANY PORTABLE WITH

All-electric radio is the cheapest, most convenient, most reliable radio. At Christmas your set must be at its best—electrify it with a Regentone Combined Unit. Regentone Combined Units (A.C. or D.C.) fit inside any portable—they are suitable for any standard 2-3- or 4- valve receiver.

Regentone Combined Units (either A.C. or D.C.) will be appreciated as Christmas gifts by your friends who have battery-operated sets. For year after year they will give convenient, care-free radio, at a fraction of the cost of battery-operation.

Write today for FREE Art Booklet and read why leading British Set Manufacturers recommend Regentone for their own sets.



IT FITS IN HERE



MODEL W.5. A.C. Combined Unit (Illustrated) (H.T. with L.T. Charger) £5:17:6
 D.C. Combined Unit. (H.T. with L.T. Charger) £3:19:6

PROGRAMMES FOR MONDAY (December 15)

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

BARCELONA (Spain)

Radio-Barcelona (EAJ1). 860 kc/s (349 m.); 8 kW. Transmits at intervals from 8.0 a.m. 1.0 p.m.—Sextet Selections and Gramophone Records. Pasodoble, Palmas y pitos (J. Franco). Tango, Cruz de palo (Barbieri). Waltz, Perlița (M. Farré de Calzadilla). Junto a la reja (Gomis). Selections from "El señor Joaquín" (Caballero). Love Scene, Hébé (Piermé). One Step, Madrid (L. E. de Francesco). Serenata morisca (Chapi). Selection from "Tabouche" (Yvain). Berceuse, Love's Lullaby (Vermeire). Pasodoble, Hueva (Oltra). In the interval, Theatre Notes and Cinematograph Review. 3.0 p.m.—Programme for Hospitals and Benevolent Institutions—Gramophone Records. 4.0—5.30 p.m.—Interval. 5.30 p.m.—International Market Prices and Exchange Quotations, followed by Concert of Gramophone Records. 6.0 p.m.—Instrumental Selections by the Trio Iberia. Caprice, Amoríos (Mateu). Selection from "Mireille" (Gounod). Berceuse de Jocelyn (Godard-Delsaux). Minuet, Marquise (Charmettes). Pasodoble, Alma gitana (Refalá-Canonge), followed by News Bulletin. 7.0 p.m.—Gramophone Records and Sports Notes. 9.0 p.m.—Chimes and Exchange Quotations. 9.5 p.m.—Humorous Review of the Week's Events in Verse, written and delivered by the Actor-Author, Joaquín Montero. 9.20 p.m.—Orchestral Concert. Foxtrot, Frey (Volart). Selection from "La casta blanca" (Serrano-Pachelco). Aragonesa (de Falla). Schottische, Finolis (Acord). Waltz, (Waldteufel). March, The Woman Soldier (G. T. Bombic). 10.0 p.m.—News Bulletin. 10.5 p.m.—Ramon Portusach reads his Story "Professional Rivalry." 10.20 p.m.—Choral Concert by the Orfeo Montserrat. Songs in Catalan. 11.0 p.m.—Gramophone Records. 12 midnight (approx.)—Close Down.

BASLE (Switzerland)

941 kc/s (319 m.); 0.25 kW. Transmits at intervals from 11.30 a.m. 4.0 p.m.—Gramophone Records of Orchestral Music. 6.28 p.m.—Time and Weather, relayed from Berne, 743 kc/s (403 m). 6.30 p.m.—Talk: The Catastrophe of 1914. 7.0 p.m.—Concert by the Basic Workers' Musical Society, relayed from the Hall of the Pestalozzi School House. 8.20 p.m.—The Sea and its Men—A Literary Programme arranged by Hermann Gerig. Selection from the drama "Die Hoffnung auf Segen." 9.0 p.m.—News, Weather and Time Signal. 9.10 p.m.—Orchestral Concert of Light Music, relayed from the Metropole. 9.30 p.m. (approx.)—Close Down.

BOLZANO (Italy)

Ente Italiano Audizioni Radiofoniche. 662 kc/s (453.2 m.); 0.2 kW. Transmits at intervals from 11.20 a.m. 3.0 p.m.—Concert from the Casino di Curà, Gries. March (Homann). Waltz from "Die Fledermaus" (Joh. Strauss). Overture, "The Mute of Portici" (Auber). Song of the Lark, Op. 34, No. 3 (Tchakovsky). Selection from "Don Carlos" (Verdi). Suite, Roma (Bizet). Aubade à Mimi (Scasola). Potpourri of Popular Motives (Lindsay). Foxtrot. 4.55 p.m.—News Bulletin. 6.45 p.m.—Concert of Light Music. Ballata in linea (Toni). Overture, "Isabella" (Suppé). Andante for Violin and Pianoforte, L'ultima Addio (Licari). Selection from "Lia" (Ceccarini). Selection from "Addio Giovinezza" (Bettinelli). Tarantella, Grotta azzurra (Olivieri). 7.45 p.m.—Miscellaneous Reports and News Bulletin. 8.0 p.m.—Time Signal. 8.1 p.m.—Concert. The Fifth Sym-

phony (Beethoven). Mezzo-Soprano Solos: (a) Bel nunc che adoro (Cimarosa), (b) La viellie (Biangini), (c) Chanson triste (Duparc). Overture, "Norma" (Bellini). Prelude to the First Act of "La Traviata" (Verdi) Overture, "Il Seraglio" (Mozart). Radio Encyclopaedia in the interval. 10.0 p.m.—News Bulletin.

BRATISLAVA (Czechoslovakia)

1,076 kc/s (279 m.); 14 kW. Transmits at intervals from 10.30 a.m. 4.30 p.m.—Talk: The History of the Order of the Charitable Brethren in Slovakia. 4.55 p.m.—Trio Concert. 5.55 p.m.—Talk on Book-keeping. 6.15 p.m.—Programme from Prague. 6.50 p.m.—Programme from Brno. 8.0 p.m.—Programme from Prague. 9.25 p.m.—Programme Announcements. 9.30 p.m.—Programme from Moravská-Ostrava.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 3 kW. Transmits at intervals from 10.15 a.m. 6.15 p.m.—Programme from Prague. 6.50 p.m.—Cabaret Concert. 8.0 p.m.—Programme from Prague. 9.25 p.m.—News and Theatre Notes. 9.30 p.m.—Programme from Moravská-Ostrava.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 1 kW. Relayd by Kalundborg, 260 kc/s (1,153 m). Transmits at intervals from 6.30 a.m. 2.30 p.m.—Talk for the Housewife (from the Odense Studio). 2.35 p.m.—Concert of Wind-Instrument Music. Janitschar March (Siede). Overture, "Les Brigands" (Offenbach). Waltz from "The Gipsy Baron" (Joh. Strauss). Selection, "The Witch" (Enna). Selection from the Oratorio "Mors et Vita" (Gounod). Solweig's Song from "Peer Gynt" (Grieg). March from "Der lustige Krieg" (Joh. Strauss). Pianoforte Solos: (a) Caprice in C Major (Alnaes), (b) Fantasi-Polonaise (Neupert), (c) Valse-impromptu (Schytte). Marine March (Ryning). Waltz from "The Dollar Princess" (Fall). Selection from "La Traviata" (Verdi). Two Selections (Heise): (a) Husker du i Høst, (b) Minuet. Fantasia on Danish National Melodies (Lanzky). Polonaise from "La Vie Parisienne" (Offenbach). Jysk-Regiments March (Tryschner). 4.40 p.m.—Exchange Quotations. 4.50 p.m.—Talk (to be announced). 5.20 p.m.—English Language Lesson. 5.50 p.m.—Weather and News. 6.15 p.m.—Time Signal. 6.25 p.m.—Report of the Workers' Radio Society. 6.30 p.m.—Review of Politics for the Past Month. 7.0 p.m.—Town Hall Chimes. 7.2 p.m.—Concert of Opéra-Comique Music. Overture, "The Daughter of the Regiment" (Donizetti). Aria from "The Daughter of the Regiment" (Donizetti). Selection from "Fra Diavolo" (Auber). Overture, "Jean de Paris" (Boieldieu). Two Arias from "The Black Domino" (Auber). Selection from "Zampa" (Hérold). Overture, "Le Roi l'a dit" (Delibes). 8.15 p.m.—News Bulletin. 8.30 p.m.—Programme of Modern Danish Literature and Music. 10.0 p.m. (approx.)—Close Down.

CORK (Ireland)

(6CK). 1,337 kc/s (225 m.); 1.5 kW. 1.30 p.m.—Weather Forecast and Gramophone Selections. 6.0 p.m.—Exchange, News Bulletin and Gramophone Records. 6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio. 1,229 kc/s (244 m.); 1.5 kW. Transmits at intervals from 10.40 a.m. 5.45 p.m.—Miscellaneous Items, News Bulletin and Programme Announcements. 6.10 p.m.—Agricultural Report. 6.25 p.m.—Gramophone Records. 6.35 p.m.—Radio Journal. 6.55 p.m.—Review of Books.

7.15 p.m.—Talk from Warsaw. 7.30 p.m.—Opera on Gramophone Records, relayed from Warsaw, followed by Talk and News. 10.0 p.m.—Dance Music, relayed from Warsaw. 11.0 p.m.—Bugle Call from the Tower of St. Mary's Church.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.5 kW. 1.30—2.0 p.m.—Time Signal, Weather Report, Stock Report and Gramophone Concert. 2.0—6.0 p.m.—Interval. 6.0 p.m.—Gramophone Records. 6.15 p.m.—Programme for Children. 7.0 p.m.—Gramophone Records. 7.20 p.m.—News Bulletin. 7.30 p.m.—Time Signal. 7.32 p.m.—Irish Language Lesson by Sile Ni Dhubbghain. 7.45 p.m.—Hilda Knowles: Monologues. 8.0 p.m.—Selections by the Station Orchestra. 8.15 p.m.—C. G. Hearne (Baritone). 8.25 p.m.—Sydney Greene (Pianist). 8.35 p.m.—Elizabeth Young and Company in a Sketch. 9.5 p.m.—Talk by Professor Busted. 9.20 p.m.—Selections by the Station Orchestra. 9.30 p.m.—Sponsored Programme. 10.30 p.m.—Time Signal, News Bulletin, Weather Report and Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW. Relayd by Castel, 1,220 kc/s (246 m). Transmits at intervals from 5.15 a.m. 5.5 p.m.—Talk: Youth, Profession and Sport. 5.30 p.m.—Time Signal and Programme Announcements. 5.55 p.m.—Talk: People of our Own Time. 6.0 p.m.—Time, Weather, and Economic Notes. 6.5 p.m.—English Language Lesson. 6.30 p.m.—Chamber Music, relayed from the Saalbau. String Quartet No. 1, Op. 7 (Bela Bartok). String Quartet in B Flat Major, No. 4—the Hunt (Mozart). 7.30 p.m.—Concert relayed from Langenberg, 635 kc/s (473 m.). 9.0 p.m.—News, Sports Notes and Weather Report. 9.20 p.m.—Dancing Lesson. 10.5 p.m.—Dance Music Programme. 11.0 p.m. (approx.)—Close Down.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.7 kW. Relayd by Bremen, 950 kc/s (315.8 m.); Flensburg, 1,375 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.). Transmits at intervals from 5.20 a.m. 3.0 p.m.—Programme for Young People. Concert by a Choir of Schoolgirls and Schoolboys. Part I. Secular Songs, Part II. Winter Songs and Christmas Carols. 3.45 p.m.—Poets of Westphalia—Recitations, Vocal Solos and Choral Selections. 4.45 p.m.—Talk on International Trade—Columbia as a Market. 5.10 p.m.—Sponsored Concert of Gramophone Records. 6.0 p.m.—Elementary English Language Lesson, relayed from Berlin (Königs Wusterhausen). 6.25 p.m.—Dialogue for Workers: Women in Parliament. 6.50 p.m.—Frankfurt Exchange and Hamburg Fruit and Vegetable Market Prices. 6.55 p.m.—Meteorological Report. 7.0 p.m.—"An Hour's Relaxation"—Orchestral Concert, conducted by José Eibenschütz. Overture, "The Two Hussars" (Doppler). Selection from "Hansel and Gretel" (Humperdinck). Songs: (a) Marienlied (Marx), (b) Und niemand hats gesehn (Loewe). Little Orchestral Suite (Debussy). Dance from "Madame Sherry" (Hoschna). Selection from "The Merry Peasant" (Fall). 8.0 p.m.—Manfred Gurliitt Recital. Explanatory Notes by the Composer, who will be at the Pianoforte. Chamber Concerto No. 1 in A Major, Op. 20, for Pianoforte and Small Orchestra. Scenes from "Soldiers"—Opera. 9.0 p.m.—Weather Report, Political and Miscellaneous Announcements, Sports Notes, Local and Police

Intelligence, News and Topical Report. 9.20 p.m.—Concert, relayed from the Ostermann Restaurant. 10.15 p.m. (from Hanover).—Concert from the Café Petri.

HUIZEN (Holland)

260 kc/s (1,875 m.); 8.5 kW. 7.55 a.m. till Close Down.—Programme of the Christian Radio Society (N.C.R.V.). 7.55—9.10 a.m.—Morning Concert 10.10 a.m.—Divine Service. 10.40 a.m.—Reading by Miss Doyen. 11.10 a.m.—Gramophone Records. 11.40 a.m. (in the interval)—Police Notes. 12.10 p.m.—Organ Recital from a Church in Amsterdam. Prelude and Fugue on the Name B.A.C.H. (Liszt). Adagio from the First Sonata, and War March of the Priests from "Athalie" (Mendelssohn). Prelude and Fugue in G Major (Bach). Canonetta, Alla Marcia and Vision (Rheinberger). Concerto No. 2 (Handel). Scherzo Toccatina and Adagio from the Fourth Symphony (Widor). Finale and Chorale: How zal ik u ontvangen. 1.25 p.m.—Gramophone Records. 1.40 p.m.—Programme for Schools. 2.15 p.m.—Talk: How to keep Cut Flowers fresh. 2.55 p.m.—Dressmaking Lesson. 3.25 p.m.—Gramophone Records. 3.40 p.m.—Programme for Hospitals. 4.40 p.m.—Instrumental Concert. Sonata and Fugue for two Pianos (Mozart). Improvisation on a French Song of the Year 1700 for two Pianos (Reinecke). Sonata, Op. 167, for Flute and Piano (Reinecke). Andante and Variations, Op. 46, for Two Pianos (Schumann). Pièces symphoniques Op. 14, for Pianoforte for Four Hands (Grieg). 6.10 p.m.—Carol-Singing for Children with Introductory Talk. 6.40 p.m.—Singing Lesson. 7.10 p.m.—Police Notes. 7.40 p.m.—Military Band Concert. March, The Vanished Army (Alford). Overture, Weihnachtsfest (Nehl). 8.10 p.m.—Talk: The Dispute about the Insurance Contract. 8.30 p.m.—Concert (contd.). Réverie (Vieuxtemps). Fantasia on Motives from "Samson and Delilah" (Saint-Saëns). Peace March from "Rienzi" (Wagner). 9.0 p.m.—Talk on Insurance. 9.30 p.m.—News Bulletin. 9.40 p.m.—Concert (contd.). Prelude and Scenes from "Der Evangelist" (Kienzl). Tone Picture, Fröhliche Weihnacht (Ködel). Poedelmarsch (Nehl). 10.15 p.m.—Gramophone Records. 11.10 p.m. (approx.)—Close Down.

11.10 p.m.—Gramophone Records. 11.40 a.m. (in the interval)—Police Notes. 12.10 p.m.—Organ Recital from a Church in Amsterdam. Prelude and Fugue on the Name B.A.C.H. (Liszt). Adagio from the First Sonata, and War March of the Priests from "Athalie" (Mendelssohn). Prelude and Fugue in G Major (Bach). Canonetta, Alla Marcia and Vision (Rheinberger). Concerto No. 2 (Handel). Scherzo Toccatina and Adagio from the Fourth Symphony (Widor). Finale and Chorale: How zal ik u ontvangen. 1.25 p.m.—Gramophone Records. 1.40 p.m.—Programme for Schools. 2.15 p.m.—Talk: How to keep Cut Flowers fresh. 2.55 p.m.—Dressmaking Lesson. 3.25 p.m.—Gramophone Records. 3.40 p.m.—Programme for Hospitals. 4.40 p.m.—Instrumental Concert. Sonata and Fugue for two Pianos (Mozart). Improvisation on a French Song of the Year 1700 for two Pianos (Reinecke). Sonata, Op. 167, for Flute and Piano (Reinecke). Andante and Variations, Op. 46, for Two Pianos (Schumann). Pièces symphoniques Op. 14, for Pianoforte for Four Hands (Grieg). 6.10 p.m.—Carol-Singing for Children with Introductory Talk. 6.40 p.m.—Singing Lesson. 7.10 p.m.—Police Notes. 7.40 p.m.—Military Band Concert. March, The Vanished Army (Alford). Overture, Weihnachtsfest (Nehl). 8.10 p.m.—Talk: The Dispute about the Insurance Contract. 8.30 p.m.—Concert (contd.). Réverie (Vieuxtemps). Fantasia on Motives from "Samson and Delilah" (Saint-Saëns). Peace March from "Rienzi" (Wagner). 9.0 p.m.—Talk on Insurance. 9.30 p.m.—News Bulletin. 9.40 p.m.—Concert (contd.). Prelude and Scenes from "Der Evangelist" (Kienzl). Tone Picture, Fröhliche Weihnacht (Ködel). Poedelmarsch (Nehl). 10.15 p.m.—Gramophone Records. 11.10 p.m. (approx.)—Close Down.

11.10 p.m.—Gramophone Records. 11.40 a.m. (in the interval)—Police Notes. 12.10 p.m.—Organ Recital from a Church in Amsterdam. Prelude and Fugue on the Name B.A.C.H. (Liszt). Adagio from the First Sonata, and War March of the Priests from "Athalie" (Mendelssohn). Prelude and Fugue in G Major (Bach). Canonetta, Alla Marcia and Vision (Rheinberger). Concerto No. 2 (Handel). Scherzo Toccatina and Adagio from the Fourth Symphony (Widor). Finale and Chorale: How zal ik u ontvangen. 1.25 p.m.—Gramophone Records. 1.40 p.m.—Programme for Schools. 2.15 p.m.—Talk: How to keep Cut Flowers fresh. 2.55 p.m.—Dressmaking Lesson. 3.25 p.m.—Gramophone Records. 3.40 p.m.—Programme for Hospitals. 4.40 p.m.—Instrumental Concert. Sonata and Fugue for two Pianos (Mozart). Improvisation on a French Song of the Year 1700 for two Pianos (Reinecke). Sonata, Op. 167, for Flute and Piano (Reinecke). Andante and Variations, Op. 46, for Two Pianos (Schumann). Pièces symphoniques Op. 14, for Pianoforte for Four Hands (Grieg). 6.10 p.m.—Carol-Singing for Children with Introductory Talk. 6.40 p.m.—Singing Lesson. 7.10 p.m.—Police Notes. 7.40 p.m.—Military Band Concert. March, The Vanished Army (Alford). Overture, Weihnachtsfest (Nehl). 8.10 p.m.—Talk: The Dispute about the Insurance Contract. 8.30 p.m.—Concert (contd.). Réverie (Vieuxtemps). Fantasia on Motives from "Samson and Delilah" (Saint-Saëns). Peace March from "Rienzi" (Wagner). 9.0 p.m.—Talk on Insurance. 9.30 p.m.—News Bulletin. 9.40 p.m.—Concert (contd.). Prelude and Scenes from "Der Evangelist" (Kienzl). Tone Picture, Fröhliche Weihnacht (Ködel). Poedelmarsch (Nehl). 10.15 p.m.—Gramophone Records. 11.10 p.m. (approx.)—Close Down.

JUAN-LES-PINS (France)

1,205 kc/s (249 m.); 1.5 kW. 1.0 p.m.—News Bulletin, Amusement Guide and Gramophone Concert. 2.0 p.m.—The Marseillaise. 2.15 (approx.)—8.30 p.m.—No Transmission. 8.30 p.m.—News Bulletin, Amusement Guide, Meteorological Forecast, Agricultural and Horticultural Reports and Musical Programme. 9.0 p.m.—Concert. Trio for Piano, Flute and Cello (Weber). Sous les Oliviers (Quertant). Prelude and Fugue in G Major (Bach). Etude for Piano (Glazounoff). Adagio (Tartini). Pastorale (Couperrin-Cassado). Habanera (Ravel). 10.0 p.m.—The Marseillaise and Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW. See Copenhagen Programme.

KOSICE (Czechoslovakia)

1,022 kc/s (293 m.); 2.5 kW. Transmits at intervals from 10.30 a.m. 4.10 p.m.—Concert of Russian Songs and Romances. 4.30 p.m.—Pianoforte Recital from the Works of Chopin. Waltzes. Variations brillantes, Op. 12. Waltzes. 5.40 p.m.—A Triolet: Polish, Czech and Slovakian. 6.15 p.m.—Programme from Prague. 6.50 p.m.—Programme from Brno. 8.0 p.m.—Programme from Prague. 9.15 p.m.—Local News, Report in

Hungarian and Programme Announcements. 9.30 p.m.—Programme from Moravská-Ostrava.

LJUBLJANA (Yugoslavia)

Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW. Transmits at intervals from 11.15 a.m. 6.0 p.m.—Polish Language Lesson. 6.30 p.m.—Talk on Hygiene. 7.0 p.m.—Talk on Gymnastics. 9.0 p.m.—Weather Report, and News Bulletin.

MADRID (Spain)

Union Radio (EAJ7). 707 kc/s (424 m.); 2 kW. Transmits at intervals from 11.45 a.m. 2.0 p.m.—Chimes, Time Signal and Weather Forecast, followed by Mátage (Bregel). Intermezzo from "Cavalleria rusticana" (Mascagni). Hungarian Dance No. 6 (Brahms). Selection from "El Juramento" (Gaztambide). Selection from "La Bohème" (Puccini). Gavotte (Rodrigo). Military March in E (Schubert). 3.25 p.m.—Theatre Notes. 3.30 p.m.—Concert of Newly-Released Gramophone Records. 3.45—7.0 p.m.—Interval. 7.0 p.m.—Chimes, Exchange and Market Prices, followed by Topical Review: Sports Section. 7.30 p.m.—Dance Music Programme. 8.25 p.m.—News Bulletin. 12 midnight.—Chimes and Close Down.

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.); 8.5 kW. Programme relayed by Turin, 1,013 kc/s (296.1 m.); and Genoa, 961.2 kc/s (312 m.). Transmits at intervals from 7.15 a.m. 3.25 p.m.—Giornale radio. 3.35 p.m.—Programme for Children and Review. 4.0 p.m.—Gramophone Records. 4.50—5.10 p.m.—Giornale radio and Agricultural Report. 6.20 p.m.—Announcements and Report of the Royal Geographical Society. 6.30 p.m.—Variety Concert. 7.15 p.m.—Giornale radio; Weather. 7.30 p.m.—Time Signal. 7.32 p.m.—Symphony Concert. Overture, "Euryanthe" (Weber). The Fifth Symphony in C Minor (Beethoven). Science Talk. 9.0 p.m. (approx.)—Comedy Programme, followed by Concert from the Cova Restaurant. 10.0 p.m. (in an interval)—Giornale radio. 10.5 p.m.—News Bulletin. 11.0 p.m. (approx.)—Close Down.

MORAVSKÁ-OSTRAVA (Czechoslovakia)

1,139 kc/s (263 m.); 11 kW. Transmits at intervals from 10.15 a.m. 6.15 p.m.—Programme from Prague. 6.20 p.m.—Satire in Silesian Folk Songs, with Introductory Talk. 6.50 p.m.—Programme from Brno. 8.0 p.m.—Programme from Prague. 9.25 p.m.—Programme Announcements and Theatre Review. 9.30 p.m.—Dance Music Programme.

MUNICH (Germany)

536 kc/s (533 m.); 1.7 kW. Relayd by Augsburg, 536 kc/s (560 m.); Kaiserslautern, 536 kc/s (560 m.); and Nürnberg, 1,256 kc/s (239 m.). Transmits at intervals from 5.45 a.m. 3.10 p.m.—Time Signal, Weather Report and Agricultural Notes. 3.25 p.m. (from Nürnberg).—Soprano Song Recital from the Works of Karl Schöfer. The Composer at the Pianoforte. Three Songs to Verse by Alfred Graf: (a) Gesegnet sei das Leid, (b) Spät-herbst, (c) Der verlorene Sohn. Four Songs to Verse by Ernst Kraus: (a) Eine Pfirsichblüte kam in mein Zimmer geschnitten, (b) Im Schweigen der Nacht, (c) Der Dichter, (d) Winter. Children's Songs to Verse by Elisabeth Dauthendey. 4.0 p.m.—Programme for Children: Making Christmas Calendars. 4.25 p.m.—Orchestral Concert, conducted by Karl Liszt. Scherzo and Minuet (Schubert). Two Legends (Dvorák). Alsatian

Programmes for Monday—(Cont.)

Peasant Dances (G. Merklng). Les millions d'Arlequin (Drigo). Bohemian Dances (Nedbal). Humoresque (Reger). Selection from "Eugen Onegin" (Tchaikovsky).
 5.25 p.m.—Time Signal, Weather Report and Agricultural Notes.
 5.45 p.m.—Review of Books in connection with the Week's Programmes.
 6.0 p.m.—Wireless Report: Sports.
 6.30 p.m.—Introductory Talk to the following Transmission.
 6.35 p.m.—"The Merry Wives of Windsor"—Opera in Three Acts (Nicolaï), relayed from the National Theatre.
 9.20 p.m.—Time Signal, Weather Report, News Bulletin and Sports Notes.

PARIS (France)

Poste Parisien. 914 kc/s (329 m.); 1.2 kW.
 9.0 a.m.—Transmission of Topical Pictures.
 8.25 p.m.—Gramophone Records, Talk and News Bulletin.
 9.0 p.m.—Concert with the collaboration of Opéra and Opéra-Comique Artists. Overture, "Martha" (Flotow). Berceuse (Gabriel Dupont). Selection from "A Midsummer Night's Dream" (Thomas). Rustle of Spring (Sinding). Selection from "Monsieur Beaucaire" (Messager). Pianoforte Solo by M. Maurice Béché: Oiseaux tristes (Ravel). Selection from "Sylvia" (Delibes). Kolisskova (Akimenko). Selection from "No, no, Nanette" (Youmans). Dans la montagne (Fourdrain). A Doll's Wedding March (Lecocq).

PARIS (France)

Radio-Paris (CFR). 174 kc/s (1,725 m.); 17 kW.
 Transmits at intervals from 6.45 a.m.
 12.30 p.m.—Gramophone Concert. Overture, "Preciosa" (Weber). Aria from "L'Africaine" (Meyerbeer). Preludes to the First and Third Acts of "La Traviata" (Verdi). Duets from "La Traviata" (Verdi). Selection from "Messidor" (Bruneau). Les

adieux à la forêt from "L'Attaque du Moulin" (Bruneau). Selection from "Pénélope" (Fauré). Overture, "The Mastersingers" (Wagner). Selections from "Tristan und Isolde" (Wagner). In the intervals at 1.0 p.m.—Exchange Quotations and News, and at 1.30 p.m.—Exchange Quotations.
 2.0 p.m.—Exchange; Market Prices.
 3.30 p.m.—Exchange Quotations.
 3.45 p.m.—Gramophone Concert.
 4.55 p.m.—News and Exchange Quotations.
 6.0 p.m.—Agricultural Report and Racing Results.
 6.25 p.m.—New York Exchange Rates.
 6.30 p.m.—Gramophone Concert. Marche écossaise (Debussy). L'Égyptienne (Rameau). Minuet from "Le Bourgeois Gentilhomme" (Lully). Selection from "Don Quichotte" (Massenet). Andalusian Romance from "Spanish Dances" (Sarasate). Largo (Handel) Ballet Music from "Rosamunde" (Schubert).
 7.0 p.m.—Talk and Readings dedicated to Jean Brunhes, by Mme. Brunhes-Delamare.
 7.45 p.m.—Commercial Prices, Economic and Social Notes and News.
 8.0 p.m.—Concert. "Il faut qu'une porte soit ouverte ou fermée"—One-Act Comedy (de Musset). Selection of Old Drinking Songs. Cello Solos: (a) Serenade (Castro), (b) Ballade No. 2 (Delune), (c) Tambourin (Somis-Bazelaire). Songs: (a) The Young Princess (Grieg), (b) Hommage (Strauss), (c) Down the Don, (d) Berceuse, and (e) Serenade (Moussorgsky). Introduction and Allegro for Harp, with accompaniment for String Quartet, Flute and Clarinet (Ravel). In the intervals at 8.30 p.m.—Sports Review and at 9.15 p.m.—Press Review, News and Time Signal.

POZNÁN (Poland)

806 kc/s (335 m.); 1.9 kW.
 Transmits at intervals from 6.15 a.m.
 5.45 p.m.—Talk arranged by the Committee for Physical Training and Military Preparation.
 6.0 p.m.—Talk: The Film and the Cinema.
 6.15 p.m.—Programme for Women.

6.25 p.m.—Talk: The Modern Social Movement.
 6.40 p.m.—Topical Talk.
 6.55 p.m.—Miscellaneous Items and News.
 7.10 p.m.—Recital of Soprano Solos.
 7.30 p.m.—Programme relayed from Warsaw. In the intervals, Theatre Notes and Programme Announcements.
 9.0 p.m.—Time, News, Sports and Police Notes.
 9.15 p.m.—Topical Talk.
 9.30 p.m. (approx.)—Close Down.

PRAGUE (Czechoslovakia)

Strasnice. 617 kc/s (487 m.); 5.5 kW.
 Transmits at intervals from 10.15 a.m.
 6.15 p.m.—News Bulletin.
 6.20 p.m.—Concert. Folk Songs of Many Lands. Czechoslovakian Songs: (a) My Sweetheart, (b) A Country Wake, (c) Caprice, (d) Goodnight, (e) At Louny. English Songs: (a) The Oak and the Ash, (b) Where the Bee sucks, (c) Cherry ripe, (d) Old Folks at Home. French Songs: (a) Si le Roy m'avait donné, (b) Bergerettes. Russian Songs: (a) Elimai, (b) Beautiful Hadischa, (c) Musician, (d) Mon Tari.
 6.50 p.m.—Programme from Brno.
 8.0 p.m.—Talk on Japan.
 8.10 p.m.—Concert of Japanese Music.
 9.10 p.m.—News, Theatre Review and Sports Notes.
 9.25 p.m.—Programme Announcements.
 9.30 p.m.—Programme from Moravská-Ostrava.
 10.0 p.m.—Chimes.

ROME (Italy)

Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.); 75 kW. Relayed by Naples, 905 kc/s (332 m.); and 2RO 3,750 kc/s (80 m.).
 Transmits at intervals from 7.15 a.m.
 4.0 p.m.—Reading from his Short Story, "Pendentif," by G. Ciuffo.
 4.20 p.m.—Reading of the Programme of the following Concert.
 4.30 p.m.—Concert relayed from Roman Philharmonic Academy, with the collaboration of Castellnuovo-Tedesco.
 6.45 p.m.—Giornale radio, News, Sports Notes and Miscellaneous Reports.

7.0 p.m.—Announcements and Press Review.
 7.30 p.m.—Time Signal.
 7.40 p.m.—Concert of Modern Italian Songs. Orchestra: Doretta (Quintottrillo). Bel Soldatin (Magliani). Come le rose (Lama). Bella spagnola (Di Chiara). Come l'onda (Mario). Stornelli del cuore (Gill). Perché mi baci (Tagliareri). Fili d'oro (Buonogiovanni). Duet: La canzone dell'eco (Bonavolonta). Reading of Anecdotes by Sacha Guitry. Mandoline Selections, Farfalla (Mario). Gina mia (Gill). Stornelli spagnoli (Magliani). Salotto bleu (Bonavolonta). Bolero d'amore (Falvo). Notte sul mare (Valente). Tic-tic-tic-tac (Lama). Duet, La più bella del villaggio (Falvo). Topical Review. Mandoline Selections. Tramonto d'un sogno (de Curtis). Castigliana (Magliani). Addio signora (Simi). Rispetti all'antica (Gill). Ladra (Mario). L'addio del bersagliere (Lama). Passano gli studenti (Simi). Two Selections (Bonavolonta): (a) Ah! la donna (for three Voices), (b) Marcia delle bambole.
 9.55 p.m. (approx.)—News.

SEVILLE (Spain)

Union Radio. (EAJ5.) 815 kc/s (368 m.); 1.5 kW.
 2.0 p.m.—Musical Selections, Flamenco Songs and Dance Music.
 3.0—9.0 p.m.—Interval.
 9.0 p.m.—Concert. Part I. Pianoforte Recital: Aufschwung (Schumann). Feuilles mortes (Debussy). Golliwog's Cake-Walk from "Children's Corner" (Debussy). Prelude and Etude (Scriabin). Fire Dance (de Falla). Nocturne in B Flat (Chopin). Waltz in A Flat (Chopin). Campanella (Paganini-Liszt). Part II. Impressions of Asturia. Part III. Flamenco Song Recital and Dance Music.
 11.0 p.m. (approx.)—Close Down.

WARSAW (Poland)

Polskie Radio. 212 kc/s (1,411 m.); 14 kW.
 Transmits at intervals from 10.40 a.m.
 3.15 p.m.—Programme for Children.
 3.45 p.m.—Gramophone Records.
 4.15 p.m.—Talk from Cracow.

4.45 p.m.—Concert of Light Music from the Café Gastronomja.
 5.45 p.m.—Miscellaneous Items.
 6.10 p.m.—Agricultural Correspondence and Quotations.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Radio Journal.
 7.0 p.m.—Talk on Music.
 7.30 p.m.—Gramophone Records: "Madame Butterfly"—Opera (Puccini), performed by the Artists of The Scala at Milan. In the interval, Programme Announcements and Theatre Review.
 9.0 p.m.—Talk: London by Day.
 9.15 p.m.—Gramophone Records.
 9.50 p.m.—Meteorological Report, Police and Sports Notes.
 10.0 p.m.—Dance Music Programme.
 11.0 p.m. (approx.)—Close Down.

WILNO (Poland)

Polskie Radio. 959 kc/s (312.8 m.); 0.5 kW.
 Transmits at intervals from 10.58 a.m.
 3.45 p.m.—Gramophone Records for Young People.
 4.15 p.m.—Talk from Cracow.
 4.45 p.m.—Two Reports: Microphone Visits to (a) An Antique Shop and (b) A Wilno Bookshop.
 5.20 p.m.—Concert of Light Music from Warsaw.
 5.45 p.m.—Sports Notes.
 6.0 p.m.—Programme Announcements for Tuesday and Miscellaneous News.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—News from Warsaw.
 7.0 p.m.—Talk from Warsaw.
 7.30 p.m.—Gramophone Relay from Warsaw.
 9.50 p.m.—News and Dance Music from Warsaw.
 11.0 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)

Radiostation Zürich. 653 kc/s (459.4 m.); 0.75 kW.
 Transmits at intervals from 11.30 a.m.
 6.30 p.m.—Time Signal and Weather Report.
 6.33 p.m.—Talk: The Care of Children.
 7.0 p.m.—Orchestral Concert of French Music.
 7.30 p.m.—"Abu Hassan"—Opéra-Comique in One Act (Weber).
 8.30 p.m.—Orchestral Concert of Operetta music from the Works of Suppé, Fall and Kálmán.
 9.0 p.m.—Weather Report, News Bulletin and Close Down.

HERE'S CHRISTMAS COMFORT FOR YOU

"Stay the Night"
 The "Stay the Night" is the best bed-settee made and is obtainable only from us. Our Argyll Street showrooms are the largest bed-settee showrooms in the country.

BED-SETTEES AND 3-PIECE BED-SETTEE SETS

OVER 40 ATTRACTIVE MODELS AND 100 TASTEFUL COVERING FABRICS, AT MODERATE PRICES

In recent years a growing number of people have found the modern Bed-Settee a great convenience—especially in small houses or flats. The "Stay the Night" is very handsome as a settee in any model, and opens out in two easy movements to a full size double spring bed, 6ft. 3in. long by 4ft. 6in. wide (or baby models if desired). The blankets fold away inside the settee when closed.

THE "STAY THE NIGHT" is a fine example of British workmanship. In appearance it will do credit to your home. It will often be a great convenience as a bed to your relations or friends. It costs no more than an ordinary settee.

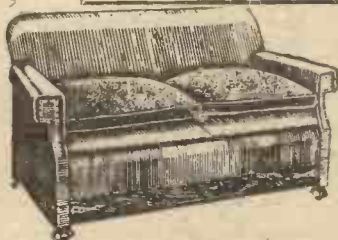
PRICES from £8:15:0 (or 16 monthly payments of 13/3)

High quality 3-piece bed-settee sets from £14:14:0

IN SMALL HOUSES EVERY SETTEE SHOULD BE A BED-SETTEE



A cane-panel model.



A hide or rexine model with loose velvet cushions.

CUT OUT AND POST COUPON TO-DAY

To BED-SETTEES LTD., 12-14, Argyll Street, Oxford Circus, W.1

Please send me by return free catalogue and selection of patterns without obligation.

NAME.....

ADDRESS.....

PROGRAMMES FOR TUESDAY (December 16)

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

BARCELONA (Spain)

Radio-Barcelona (EAJ1). 860 kc/s (349 m.); 8 kW.
 Transmits at intervals from 8.0 a.m.
 1.0 p.m.—Instrumental Sextet Selections and Gramophone Records. March (Hereder). Schottische (Escolano). Alma argentina (Torens). Brise de mer (Schitt). Selection from "El puñao de rosas" (Chapl). Oriental (Albéniz). Waltz, Soupir d'amour (Drigo). Valencian Dances (Coronado). Selection from "Madame Butterfly" (Puccini). Foxtrot, Californian Serenade (J. G. Gilbert and H. Nicholls). Pasodoble, Olé to gitano (Aróm). In the interval, Theatre Notes and Cinematograph Review.
 3.0 p.m.—Programme for Hospitals and Benevolent Institutions—Gramophone Records.
 4.0—5.0 p.m.—Interval.
 5.30 p.m.—International Market Prices and Exchange Quotations, followed by Concert of Gramophone Records.
 6.0 p.m.—Instrumental Selections by the Trio Iberia. Wedding Day on Troldhaugen (Grieg). Selection from "La petite dame du train bleu" (Parés-van Parys). Cordoba (Albéniz). Intermezzo from "Cavalleria rusticana" (Mascagni). Pasodoble, Viva Aragón (Roca-Traveria), followed by News Bulletin.
 7.0 p.m.—Gramophone Records.
 8.30 p.m.—Elementary English Lesson, arranged by the Massé School.
 9.0 p.m.—Chimes, Exchange Quotations and Part Relay of an Opera (to be announced), from the Gran Teatro del Liceo. In the interval, Fortnightly Report of the Institute of Hygiene. After the Programme, Final News Bulletin.

BOLZANO (Italy)

Ente Italiano Audizioni Radiofoniche. 662 kc/s (453.2 m.); 0.2 kW.
 Transmits at intervals from 11.20 a.m.
 3.0 p.m.—Concert relayed from the Gries Casino.
 4.55 p.m.—News Bulletin.
 6.45 p.m.—Concert of Light Music.
 7.45 p.m.—Miscellaneous Reports and News.
 8.0 p.m.—Time Signal.
 8.2 p.m.—Variety Concert. Meditation (v. Blon). Overture, "The Kiss" (Smetana). Prologue to "I Paghiacci" (Leoncavallo). Selection from "Fra Gherardo" (Pizzetti). Violin Solos: (a) Adagio (Corelli-Corti), (b) Provençal Legend: Nicolette s'endort (Rech), (c) Waltz (Brahms). Three Selections from "A Scandinavian Lyric" (Palmgren). Zampognata al vento (Lay). Selection from "The Blue Mazurka" (Lchár). Talk in the interval.
 10.0 p.m.—News Bulletin.
 10.5 p.m.—Gramophone Concert of Light Music.
 10.30 p.m. (approx.)—Close Down.

BRATISLAVA (Czechoslovakia)

1,076 kc/s (279 m.); 14 kW.
 Transmits at intervals from 10.30 a.m.
 4.30 p.m.—Talk: Matrimonial Crises and the Family.
 4.50 p.m.—Orchestral Concert from the Works of Beethoven. Overture, Egmont. Andante from the Fourth Symphony. Violin Concerto in D Major, Op. 61.
 4.55 p.m.—German Transmission: Slovakian Lesson.
 6.15 p.m.—Programme from Prague.
 6.20 p.m.—Orchestral Concert.
 7.25 p.m.—Programme from Prague.
 9.15 p.m.—Programme Announcements.
 9.20 p.m.—See Prague Programme.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 3 kW.
 Transmits at intervals from 10.15 a.m.
 6.20 p.m.—"The Angel"—a Biblical Dream (Cech).
 7.25 p.m.—Programme from Prague.
 9.15 p.m.—News Bulletin and Theatre Review.
 9.20 p.m.—Programme from Prague.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 1 kW.
 Relayed by Kalundborg, 260 kc/s (1,153 m.).
 Transmits at intervals from 6.30 a.m.
 2.0 p.m.—Instrumental Concert. Wedding March from "A Midsummer Night's Dream" (Mendelssohn-Bartholdy). Overture, "Le Maçon" (Auber). Waltz, Très jolie (Waldteufel). Selection from "The Pearl Fishers" (Bizet). Dance from the Ballet "Et Folkensagn" (Gade). Ave Maria (Schubert). Selection from the Music to "Once upon a time" (Lange-Müller). Old Danish Songs. March from "The Merry Widow" (Lehár). Overture, "Die schöne Galathée" (Suppé). Hesperus Waltz (Lumbye). Selection from "Lilac Time" (Schubert-Berté). Selection from the Music to the Pantomime "Scaramouche" (Sibelius). March, Turkish Patrol (Michaelis).
 4.0 p.m.—Programme for Children: Reading and Pianoforte Solos.
 4.40 p.m.—Exchange Quotations and Fish Market Prices.
 4.50 p.m.—Interval in Swedish.
 5.20 p.m.—German Language Lesson.
 5.50 p.m.—Weather Report.
 6.0 p.m.—News Bulletin.
 6.15 p.m.—Time Signal and Announcement of the Railways' Travel Facilities for Christmas.
 6.25 p.m.—Report of the Danish Radio Clubs.
 6.30 p.m.—Talk (to be announced).
 7.0 p.m.—Town Hall Chimes.
 7.2 p.m.—"St. Swithin's Day"—Romantic Comedy in Three Acts. (Heiberg). Music by Hartmann.
 8.30 p.m.—News Bulletin.
 8.45 p.m.—Cello Recital from the Works of Popular Composers. Divertissement on Austrian Folk Songs (Romberg). Musette (Offenbach). Gavotte (Popper). Mazurka (Neruda).
 9.5 p.m.—Concert of Modern Opera Music. Overture, "Im Reiche des Indra," and Waltz from "Casanova" (Lincke). Selection from "Bouche à Bouche" (Yvain). Shimmy, Tennis Foxtrot and Waltz Boston from "Countess Maritza" (Kálmán). Selection from "The Czarevitch" (Lehár). Dance Melody from "The Student Duchess" (Fall). March from "Sunny" (Kern).
 10.0 p.m. (approx.)—Close Down.

CORK (Ireland)

(6CK). 1,337 kc/s (225 m.); 1.5 kW.
 1.30 p.m.—Weather Forecast and Gramophone Selections.
 6.0 p.m.—Exchange, News Bulletin and Gramophone Records.
 6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio. 1,229 kc/s (244 m.); 1.5 kW.
 Transmits at intervals from 10.40 a.m.
 5.45 p.m.—Miscellaneous Announcements, News Bulletin and Programme Announcements.
 6.10 p.m.—Agricultural Report.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Radio Journal.
 7.0 p.m.—Talk, relayed from Warsaw.
 7.15—7.30 p.m.—Interval.
 7.30 p.m.—International Concert from Warsaw.
 9.15 p.m.—Gramophone Records.
 9.50 p.m.—News from Warsaw.
 10.0 p.m.—Dance Music, relayed from Warsaw.
 11.0 p.m.—Bugle Call from the Tower of St. Mary's Church.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.5 kW.
 1.30—2.0 p.m.—Time Signal, Weather Report, Stock Exchange Quotations, and Gramophone Records.
 2.0—6.0 p.m.—Interval.
 6.0 p.m.—Gramophone Records.
 6.15 p.m.—Programme for Children.
 7.0 p.m.—Gramophone Records.
 7.15 p.m.—News Bulletin.
 7.30 p.m.—Time Signal.
 7.32 p.m.—Leigheacht Gaedhilge.
 7.45 p.m.—Josephine MacParland: Recitations.
 8.0 p.m.—Selections by the Station Sextet.
 8.15 p.m.—P. J. Duffy (Baritone).
 8.25 p.m.—L. Thompson and Mrs. Miley: Violin and Pianoforte Recital.
 8.45 p.m.—May Doyle (Soprano).
 9.0 p.m.—Talk to Farmers by J. Carroll, M.Sc.A.R.C.S.: Insect

Pests of the Fruit Garden, and how to control them.

9.15 p.m.—Selections by the Station Sextet.
 9.30 p.m.—Sponsored Programme.
 10.30 p.m.—Time Signal, News Bulletin, Weather Report and Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW.
 Relayed by Cassel, 1,220 kc/s (246 m.).
 Transmits at intervals from 5.15 a.m.
 3.0 p.m.—Orchestral Concert. Homage March (Grieg). Lyric Suite, Op. 54 (Grieg). Songs from the Rilke Cycle (Marx). Concertino for Flute (Chaminade). March, Vienna-Berlin (Schrammel). Fantasia on the Operettas of Kálmán. Bauermarsch (Fall). Waltz, Nur für Natur (Joh. Strauss). Marching Song, Was nützt mir ein schönes Mädchen (Ailbouth).
 4.45 p.m.—Economic Notes.
 5.5 p.m.—Talk: The Rhenish-Frankish Theatre.
 5.30 p.m.—Time and Programme Announcements.
 5.35 p.m.—Talk: The German Business Man's Clerk Abroad.
 6.0 p.m.—Time, Weather and Economic Notes.
 6.5 p.m.—Talk: The Care of Fruit and Vegetables in Winter.
 6.30 p.m. (from Höchst).—Symphony Concert. Orchestral Suite, Le Tombeau de Couperin (Ravel). Concerto in D Major for Violin and Orchestra (Bocherini). The Fourth Symphony in B Flat Major (Beethoven).
 8.15 p.m.—"The Author speaks"—Literary Gramophone Review by Dr. Franz Wallner.
 9.15 p.m.—News, Sports Notes and Weather Report.
 9.35 p.m.—Answers to Queries in Connection with the Programme, "The Voice and its Interpretation."
 10.0 p.m.—Concert of Light Music.
 11.0 p.m. (approx.)—Close Down.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.7 kW. Relayed by Bremen, 950 kc/s (315.8 m.); Flensburg, 1,373 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).
 Transmits at intervals from 5.20 a.m.
 3.0 p.m. (from Hanover).—Concert by the Hanover Symphony Orchestra, conducted by Otto Ebel von Sosen, relayed from the Crystal Palace. Leonora Overture, No. 1 (Beethoven). Aria for Coloratura Soprano with Violin obbligato from "Apollo and Hyacinthus" (Mozart). Symphony No. 2 in D Major, Op. 36 (Beethoven).
 4.0 p.m.—Dialogue: Advice on Careers—the North Mark Agricultural Labour Bureau.
 4.25 p.m. (from Hanover).—Agricultural Talk: The Manuring of Meadows and Pasture-land.
 4.50 p.m.—Sponsored Concert of Gramophone Records.
 5.25 p.m.—Talk on Economic Geography: Brazil.
 5.35 p.m.—Talk on International Trade: The Brazilian Coffee Monopoly.
 6.0 p.m.—Vocal and Orchestral Concert of New Christmas Music. Music on an Old Christmas Carol, arranged for Small Orchestra (Carl Gerhardt). Two Little Christmas Cantatas (Heinrich Spitta): (a) "Wir kommen daher mit unserem Stern," for Women's Voices and Strings, (b) "Lieb Jesulein," for Soloist, Mixed Choir and String Orchestra. Music on an Old Christmas Carol, for String Orchestra (Günther Pook). "Die heiligen drei Könige"—Cantata for Soloists, Mixed Choir and Chamber Orchestra (E. L. v. Knorr).
 6.50 p.m.—Frankfurt Exchange, and Hamburg Egg Market Prices.
 6.55 p.m.—Weather Report.
 7.0 p.m. (from Bremen).—German Folk Song Recital by the Ansari Choir, conducted by Hermann Niemeyer. Es ist ein Ros' entsprungen (Michael Praetorius). Vom Himmel hoch, Ihr Engel kommt (Air from the Cologne Song Book, 1623, arr. A. von Ottegraven). Folk Melody, Die Schöne (arr. F. E. Koch). Röslein auf der Heiden (arr. E. Taubert). Ein Blümlein auserlesen (Folk Melody, arr. G. Schumann). Die

Sonne scheint nicht mehr (Folk Melody, arr. G. Schumann). Wohin mit der Freud? (F. Silcher). Von alten Liebesliedern (Joh. Brahms). Die Würzburger Glockli (Folk Melody, arr. M. Reger). Weihnachtslied (Old Folk Melody, arr. Carl Thiel).

8.0 p.m.—Concert on the 160th Anniversary of the Birth of Beethoven. North German Elements in Beethoven's Music. The Station Orchestra, conducted by José Eibenschütz. Talk by Otto Reiner. Scherzo and Storm Music from the Pastoral Symphony. Overture, Egmont. Allegretto from the Eighth Symphony. Finale from the Seventh Symphony.

9.0 p.m.—Weather Report, Political and Miscellaneous Announcements, Sports Notes and Local and Police Intelligence, News and Topical Report.
 9.20 p.m.—"Round the World"—Concert. Overture, "Don Juan" (Mozart). Waltz, Tales from the Vienna Woods (Joh. Strauss). Hungarian March (Liszt). Ej uchnjem (Weninger). Viatka (Barch). Chinese Melody, Geisha Waltz from "The Geisha" (Jones). Song (Lake). Salvator Rosa (Gomez). Mississippi Mood (Klemm). Beau Geste (Riesefeld). Enemies of Women (Peters). French March (Saint-Saëns). Selection (Castorina). Vamos Torero (Anzheino). Humoresque and Slavonic Dance (Dvorák). Reitermarsch (Rubinstein).

HUIZEN (Holland)

160 kc/s (1,875 m.); 8.5 kW.
 7.40 a.m. till Close Down.—Programme of the Catholic Radio Society (K.R.O.).
 7.40—8.55 a.m.—Gramophone Records.
 11.10 a.m.—Address by the Rev. Perquin.
 11.40 a.m.—Police Notes.
 12.10 p.m.—Trio Concert. Vers l'avenir (Vlesing). In deinen Augen da wohnt die Liebe! (Dauber). Waltz, Immer oder Nimmer (Waldteufel). Polish National Dance (Scharwenka). Selection from "Henry VIII." (Saint-Saëns). Cello Solo: Zomer-Avondlied (van Antwerpen). Selection from "The Little Dutch Girl" (Kálmán). Valse lente (Chopin). Ballet égyptien (Luigini). Stars and Love (Jac Grit). Finale.
 1.40 p.m.—Programme for Women: Two Talks.
 2.40 p.m.—Dressmaking Lesson.
 3.10 p.m.—Wireless Notes.
 4.40 p.m.—Gramophone Records.
 5.55 p.m.—Programme arranged by the Radio Association.
 6.10 p.m.—Talk: The Gold Mass.
 6.40 p.m.—Talk by F. H. E. Guljé.
 7.10 p.m.—Police Notes.
 7.40 p.m.—Concert by the Arnhem Orchestral Society. Overture, "Anacreon" (Cherubini). Eine kleine Nachtmusik (Mozart). Overture, "Euryanthe" (Weber). "In 't Braobaansch Kantoorke"—Wireless Play. Symphony No. 3 (Brahms).
 9.55 p.m.—Popular Quintet Concert. K.R.O. March (Lustenhouwer). Barcarolle (Offenbach). Waltz, Weaner Mad'ln (Ziehrer). Violin Solo: Wiegenlied. Grieg. Erinnerungen (Urbach). Xylophone Solos. Potpourri, Sie hören jetzt (Dostal). Good-bye (Tosti). Selection from "Lilac Time" (Schubert). Tirili (Ganglberger). Finale.
 11.40 p.m.—Time Signal.
 11.42 p.m. (approx.)—Close Down.

JUAN-LES-PINS (France)

1,205 kc/s (249 m.); 1.5 kW.
 1.0 p.m.—News Bulletin, Amusement Guide and Gramophone Concert.
 2.0 p.m.—The Marseillaise.
 2.15—8.30 p.m.—No Transmission.
 8.30 p.m.—News Bulletin, Meteorological Report, Amusement Guide, Theatre Review, Talk by Monsieur Besneux of the French Astronomical Society and Symphony in C Minor, No. 3 (Saint-Saëns), followed by Recitations: (a) A une madone (Baudelaire), (b) Passé tendresse (Géraldy), (c) Reading from "Le Bourgeois Gentilhomme" (Molière), (d) Le Faucheur Basque (Rostand), (e) Triomphe (Victor Hugo).
 10.0 p.m.—The Marseillaise and Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
 See Copenhagen Programme.

LJUBLJANA (Yugoslavia)

Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
 Transmits at intervals from 11.15 a.m.
 6.0 p.m.—German Language Lesson.
 6.30 p.m.—Talk on Astronomy.
 7.0 p.m.—Concert from the Works of the Slovene Composer, M. Premrl.
 9.0 p.m.—Weather Report, News Bulletin and Light Music.

MADRID (Spain)

Union Radio (EAJ7). 707 kc/s (424 m.); 2 kW.
 Transmits at intervals from 8.0 a.m.
 2.0 p.m.—Chimes, Time Signal and Weather, followed by Concert. Pasodoble, Vito (Lope). Minuet (Paderevsky). Czardas (Hubay). The Nutcracker Suite (Tchaikovsky). Minuet from "La Viejezita" (Caballero). Scene from "Kamennoi-Ostrov" (Rubinstein). Himno de la Exposición de Sevilla (Alonso). In the interval, Cinematograph Review.
 3.20 p.m.—Theatre Notes, News Bulletin, Announcements of Talks and Exchange Quotations.
 3.30 p.m.—Concert of Newly-Released Gramophone Records.
 3.45—7.0 p.m.—Interval.
 7.0 p.m.—Chimes, Exchange Quotations and Market Prices, followed by Dance Music Programme.
 8.25 p.m.—News Bulletin.
 8.30—9.15 p.m.—Interval.
 9.15 p.m.—English Pronunciation Lesson.
 9.30 p.m.—Chimes, Time Signal and Exchange Quotations, followed by Talk on Contemporary Spanish Composers: Ernesto Halffter, with illustrations from his Works.
 11.55 p.m.—News Bulletin.
 12 midnight.—Chimes and Close Down.

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.); 8.5 kW. Programme relayed by Turin, 1,013 kc/s (296.1 m.); and Genoa, 961.2 kc/s (312 m.).
 Transmits at intervals from 7.15 a.m.
 4.0 p.m.—Gramophone Records.
 4.50 p.m.—Giornale Radio and Agricultural Report.
 6.20 p.m.—Announcements.
 6.30 p.m.—Variety Concert.
 7.15 p.m.—Giornale radio; Weather.
 7.30 p.m.—Time Signal.
 7.32 p.m.—Evening Concert.
 8.50 p.m.—Talk (to be announced). After the Concert: Music relayed from the "Gay" Hall, Turin.
 10.0 p.m. (in an interval).—Giornale Radio.
 10.55 p.m.—News Bulletin.
 11.0 p.m. (approx.)—Close Down.

MORAVSKÁ-OSTRAVA (Czechoslovakia)

1,139 kc/s (263 m.); 11 kW.
 Transmits at intervals from 10.0 a.m.
 6.15 p.m.—Programme from Prague.
 6.20 p.m.—Brass Band Concert from the Exhibition.
 7.25 p.m.—Programme from Prague.
 9.15 p.m.—Programme Announcements and Theatre Review.
 9.20 p.m.—See Prague Programme.

MUNICH (Germany)

563 kc/s (533 m.); 1.7 kW.
 Relayed by Augsburg, 536 kc/s (560 m.); Kaiserslautern, 536 kc/s (560 m.); and Nürnberg, 1,256 kc/s (239 m.).
 Transmits at intervals from 5.45 a.m.
 3.10 p.m.—Time Signal, Weather Report and Agricultural Notes.
 3.25 p.m.—Franz Kranewitter—a Tyrolean Writer. Programme of Recitations and Songs.
 3.50 p.m.—Review of Christmas Books.
 4.25 p.m.—Orchestral Concert, conducted by Karl List. Selection from "Iolanthe" (Tchaikovsky). Rosenhiedler (Ph. Eulenburg). Harlequin and Columbine (K. Kaskel). Romance (Ravel). Torch Dance of the Brides of Kashmir (Rubinstein). Blues from "Jonny spielt auf" (Krenek). Spring Serenade (Lacombe).

Programmes for Tuesday—(Cont.)

5.25 p.m.—Time Signal, Weather Report and Agricultural Notes.
 5.45 p.m. (from Nürnberg).—Lesson in Esperanto.
 6.5 p.m.—Talk for Workers.
 6.35 p.m.—Concert by the Munich Printers' Choral Society. An einem Bächlein (Waelrent, arr. J. Renner). Vilanella alla Napolitana (Donati, arr. Reger). Trostvogel and Nachtmusik from "Des Schäfers Dafnis erster Liederkrantz" (Lendva). Sunrise (Cornelius). Hymn to Fire (Zenger).
 7.5 p.m.—"In the Virgin Forest"—the Thoughts and Actions of Herr Maxe of Munich.
 7.20 p.m.—Zither Concert. Festmarsch III. (J. Haustein). Waltz, Aus der Liebe goldner Zeit (W. Hintermeyer). Character Piece, Der Rose Hochzeitszug (Jessel). Styrian Dances, Die Kniebohrer (A. Huber). Hoch- und Deutschmeistermarsch (Ertl).
 7.55 p.m.—"The Snowed-up Path"—a Little Radio Sequence.
 8.5 p.m.—Chamber Music by String Quartet. String Quartet in F Major (H. Kaminsky). String Quartet in G Minor (Haydn).
 9.20 p.m.—Time Signal, Weather Report, News Bulletin and Sports Notes.

PARIS (France)

Poste Parisien. 914 kc/s (329 m.); 1.2 kW.
 9.0 a.m.—Transmission of Topical Pictures.
 8.25 p.m.—Gramophone Records, Talk (to be announced) and News Bulletin.
 9.0 p.m.—Concert with the collaboration of Opera and Opéra-Comique Artists. Overture, "Russian and Ludmilla" (Glänka). Allegretto and Waltz for Flute and Orchestra (Godard). Finale from the Sixth Symphony—the Pastoral (Beethoven). Conductor: M. Francis Casadesus. Second Suite for Wind Instruments (Théodore Dubois). Legend for Orchestra. The Swan of Tuonela (Sibelius). Serenade (Borodin). Aragonese Dance (Granados).

PARIS (France)

Radio-Paris. (CFR). 174 kc/s (1,725 m.); 17 kW.
 Transmits at intervals from 6.45 a.m.
 12.30 p.m.—Gramophone Concert from the Works of Beethoven on the 160th Anniversary of his Birth. Overture, "Egmont." In questa tomba oscura (Sung by Chaliapin). The Eighth Symphony. Overture, Coriolanus. Aria from "Fidelio." Kyrie, Gloria, from the Mass in D. In the intervals at 1.0 p.m.—Exchange Quotations and News and at 1.30 p.m.—Exchange Quotations.
 2.0 p.m.—Exchange; Market Prices.
 3.30 p.m.—Exchange Quotations.
 3.45 p.m.—Gramophone Concert. Selections (Bach): (a) Gavotte in G Minor, (b) Toccata, (c) Musette, (d) Sanctus from the Mass in B, (e) Aria from the Suite in D, (f) Gavotte. Les vieilles de chez nous (Levadé). Habanera (Sarate). Tambourin chinois (Kreisler). Waltz and Etudes Nos. 2 and 5 (Chopin). Chorale in A Minor for Organ (Franck).
 4.55 p.m.—News and Exchange Quotations.
 6.0 p.m.—Agricultural Report and Racing Results.
 6.25 p.m.—New York Exchange Rates.
 6.30 p.m.—Gramophone Concert. Melodies from Sound Films. Selection from "The Merry Widow" (Lchár Luxembourgt" (Lchár). Two Selections from "Mannequins" (Szulc). Selection from "The Hollywood Revue" (Edwards).
 7.0 p.m.—Literary Review: "Severine" (Lacache).
 7.30 p.m.—Elementary German Lesson.
 7.45 p.m.—Commercial Prices, Economic and Social Notes and News.
 8.0 p.m.—"Madame Butterfly"—Opera (Puccini) for Soloists and the Station Orchestra under the direction of M. Henri Défosse. In the intervals at 8.30 p.m.—Sports Notes and at 9.15 p.m.—Press Review, News and Time Signal.

POZNAŃ (Poland)

896 kc/s (335 m.); 1.9 kW. Also relayed on 9,830 kc/s (30.5 m.), from 12.5—1.0 p.m.
 Transmits at intervals from 6.0 a.m.
 5.15 p.m.—Elementary French Lesson.
 5.30 p.m.—Programme on the occasion of the Pomeranian Fête.
 6.30 p.m.—Miscellaneous Items and News.
 6.50 p.m.—Transmission of an Opera (to be announced). In the intervals, Theatre Review and Programme Announcements.
 9.45 p.m.—Time Signal, News Bulletin, Sports Notes and Police Announcements.
 10.0 p.m.—Dance Music Programme relayed from the Café Esplanade.
 11.0 p.m. (approx.)—Close Down.

PRAGUE (Czechoslovakia)

Strasnice. 617 kc/s (487 m.); 5.5 kW.
 Transmits at intervals from 10.15 a.m.
 6.15 p.m.—News Bulletin.
 6.20 p.m.—Talk (to be announced).
 6.30 p.m.—Flute Recital. Fantasia for Flute (Klicka). Scotch Pastoral (C. Scott). Symphonic Canzona (Karg-Elert).
 7.25 p.m.—Introductory Talk to the following Transmission.
 7.30 p.m.—International Concert relayed from Warsaw.
 9.0 p.m.—Time, News and Sports Notes.
 9.15 p.m.—News, Theatre Notes and Programme Announcements.
 9.20 p.m.—Orchestral Concert from the Czechoslovakian Automobile Club.
 10.0 p.m.—Chimes.

ROME (Italy)

Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.); 75 kW. Relayd by Naples, 905 kc/s (332 m.); and 2RO. 3,750 kc/s; (80 m).
 Transmits at intervals from 7.15 a.m.
 4.0 p.m.—Concert. Selection from "Il Guarany" (Gomez). Tenor Solo from "A Masked Ball" (Verdi). Soprano Solo from "The Pearl Fishers" (Bizet). Prelude to the First Act of "William Ratcliff" (Mascagni). Tenor Solo from "The Girl from the Golden West" (Puccini). Soprano

Solo from "Gloria" (Cilea). Selection from "La Tosca" (Puccini). Tenor Solo from "Aida" (Verdi). Soprano Solo from "La sonnambula" (Bellini) Intermezzo from the Second Act of "Il Voto" (Giordano). Duet for Soprano and Tenor from Act I. of "Lucia di Lammermoor" (Donizetti). Selection from "Zampa" (Hérold).
 6.30 p.m.—Wireless Telegraphy Lesson and Atmospheric Signals.
 6.50 p.m.—Giornale radio, News and Sports Notes.
 7.0 p.m.—Announcements and Press Review.
 7.30 p.m.—Time Signal.
 7.40 p.m.—"Maggiolata Veneziana"—Opera in Three Acts (Rito Selvaggi). In the intervals: Humorous Talk and Topical Review.

SEVILLE (Spain)

Union Radio. EAJ5. 815 kc/s (368 m.); 1.5 kW.
 2.0 p.m.—Musical Selections, Flamenco Song Recital and Dance Music.
 3.0—9.0 p.m.—Interval.
 9.0 p.m.—Concert. Part I. Organ Recital. Toccata in C (Bach). Largo (Händel). Salut d'amour (Elgar). Fuga alla giga (Bach). Ave Maria (Schubert). The Swan (Saint-Saëns). Träumerei (Schumann). Fantasia in C Minor (Bach). Part II. Selection from "Los Verdeños"—Musical Comedy (Guerrero), followed by News Bulletin, Exchange Quotations, Market Prices and Meteorological Report. Part III. Flamenco Song Recital and Dance Music Programme.
 11.0 p.m. (approx.)—Close Down.

WARSAW (Poland)

Polskie Radio. 212 kc/s (1,411 m.); 14 kW.
 Transmits at intervals from 10.40 a.m.
 4.15 p.m.—Talk: Stanislas Brzozowski.
 4.45 p.m.—Symphony Concert.
 5.45 p.m.—Miscellaneous Items.
 6.10 p.m.—Agricultural Report.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Radio Journal.
 6.55 p.m.—Gramophone Records.
 7.0 p.m.—Talk (to be announced).
 7.15—7.30 p.m.—Interval.

7.30 p.m.—International Concert. Soloist: Jan Kiepura. Overture, In the Tatras (Zelensky). Songs: Arias from (a) "The Haunted Castle" (Moniuszko), (b) "Légende du Baltique" (Novovjejsky), (c) "Manon" (Massenet). Sur les corail des lèvres (Marczewsky). Songs (Tagliaferri): (a) Amore canta, (b) Quanta varche. Song in English (Abraham). Aria in Italian from "Manon" (Massenet). Aria in Italian from "Turandot" (Puccini). In the interval, Programme Announcements and Theatre Review.
 9.15 p.m.—Gramophone Records.
 9.50 p.m.—Meteorologica Report, Police and Sports Notes.
 10.0 p.m.—Dance Music Programme.
 11.0 p.m. (approx.)—Close Down.

WILNO (Poland)

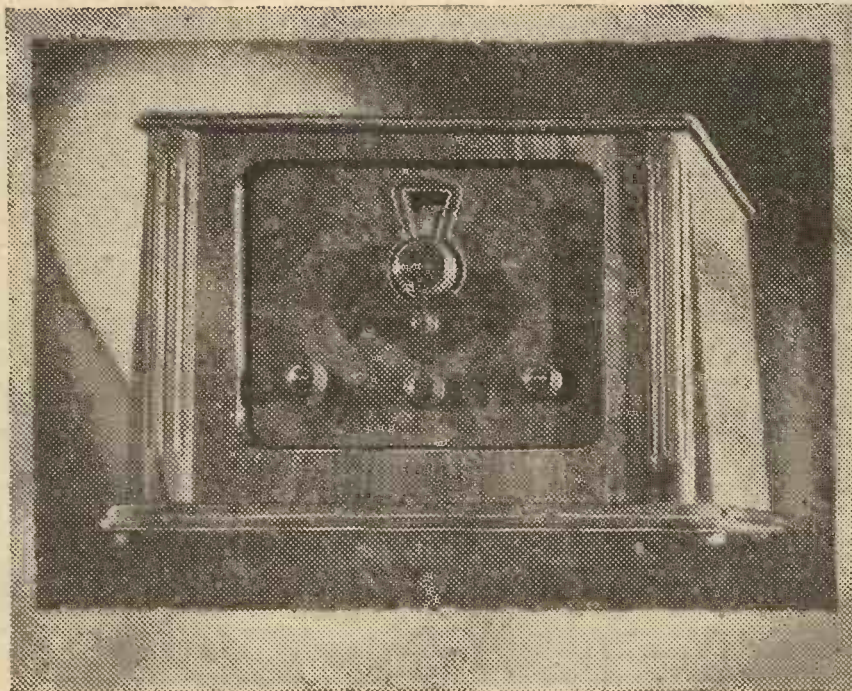
Polskie Radio. 959 kc/s (312.8m.); 0.5 kW.
 Transmits at intervals from 10.58 a.m.
 5.45 p.m.—Social Report.
 6.0 p.m.—Programme Announcements and Miscellaneous Items.
 6.10 p.m.—Agricultural Report from Warsaw.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Programme from Warsaw.
 7.15 p.m.—Dialect Programme: Humorous Monologue by Aunt Albinowa.
 7.30 p.m.—International Concert relayed from Warsaw. In the interval, Weekly Artistic Journal.
 9.15 p.m.—Gramophone Concert.
 10.0 p.m.—Relay of Foreign Station.
 11.0 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)

Radiostation Zürich. 653 kc/s (459 m.); 0.75 kW.
 Transmits at intervals from 11.30 a.m.
 3.0 p.m.—Orchestral Concert from the Carlton Elite Hotel.
 4.15 p.m.—Programme for Children.
 4.45 p.m.—Weather Report.
 6.30 p.m.—Time Signal and Weather Report.
 6.33 p.m.—Talk: The Organisation of the Swiss in Foreign Lands.
 7.0 p.m.—Orchestral Concert: Dances and Light Music.
 7.45 p.m.—Programme (not yet announced) relayed from Berne, 743 kc/s (403 m.).
 9.0 p.m.—Weather Report, News Bulletin and Close Down.

VARLEY HAVE SOLVED THE GREAT PROBLEM!

Up to now high quality of reproduction has always meant a sacrifice in selectivity—and vice versa. That is the great problem in radio to-day—quality and selectivity. And Varley have solved it! Both press and public are lavish in their praise of this Varley Senior all-electric receiver and gramophone amplifier.



The quality is beautiful, the selectivity extraordinary. Modern, the height of efficiency—in short "Varley." Hire purchase terms available. Write for leaflet and name of nearest dealer, who will gladly arrange a demonstration free of all cost or obligation. By all means hear and see it! You will be quite astounded.

Price £26 for A.C. supply or D.C.



PROGRAMMES FOR WEDNESDAY (December 17)

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

BARCELONA (Spain)

Radio-Barcelona (EAJ1). 860 kc/s (349 m.); 8 kW.
 Transmits at intervals from 8.0 a.m.
 1.0 p.m.—Sextet Selections and Gramophone Records. In the interval, Theatre Notes and Cinematograph Review.
 3.0 p.m.—Programme for Hospitals and Benevolent Institutions—Gramophone Records.
 4.0—5.30 p.m.—Interval.
 5.30 p.m.—International Market Prices, Exchange Quotations and Concert of Gramophone Records.
 6.0 p.m.—*Instrumental Selections by the Trio Iberia*. Réverie, La voix des cloches (Luigini). Violin Solo: Bolero (J. Cuadrado). Selection from "Qu'en dit l'abbé" (L. Urgel-Letoyre). Minuet, L'accordée de village (Steck). Pasodoble, Morena y sevillana (Fusté); followed by News Bulletin.
 7.0 p.m.—Gramophone Records.
 8.30 p.m.—Elementary French Lesson, arranged by the Massé School.
 9.0 p.m.—Chimes, and Exchange Quotations.
 9.5 p.m.—*Orchestral Concert*. March, Good Luck (W. Vieth). Waltz, Cissie (Volart). Sérènes (Marie). Spanish Dance No. 10 (Granados). Morning from "Peer Gynt" (Grieg). Bolero (Breton). Overture No. 3, Leonora (Beethoven).
 10.0 p.m.—News Bulletin.
 10.5 p.m.—"Mar i Cel"—Drama in Three Acts in Catalan (Angel Guimerà).
 12 midnight (approx.)—Close Down.

BOLZANO (Italy)

Ente Italiano Audizioni Radiofoniche. 662 kc/s (453.2 m.); 0.2 kW.
 Transmits at intervals from 11.20 a.m.
 3.0 p.m.—*Concert* relayed from the Casino, Gries. March, Children of Spring (Blankenburg). Waltz, Les Sérènes (Waldteufel). Overture, Heimkehr aus der Fremde (Mendelssohn). Selection from "Silvano" (Mascagni). Selection from "Le Tribut de Zamora" (Gounod). Intermzzo (Schubert). Violin Solo: Zigeunerweisen (Sarasate). Selection from "Madame di Thebe" (Lombardo). Foxtrot.
 4.55 p.m.—News Bulletin.
 6.45 p.m.—*Concert of Light Music*. Intermzzo (Anapeta). Overture, "Idomeneus" (Mozart). Intermzzo, Sorriso di bimba (Tonelli). A Melody by Delibes (Urbach). Selection from "L'amante nuova" (Ostali). Song, Occhi neri (Evaristi).
 7.45 p.m.—Miscellaneous Reports and News Bulletin.
 8.0 p.m.—Time Signal.
 8.2 p.m.—*Variety Concert*. Intermzzo, Risveglio montano (Cortopassi). Overture, "Athalie" (Mendelssohn). Humoresque (Dvorák). Selection from "Romeo and Juliet" (Gounod). Tenor Solos: (a) Aria from "Adrienne Lecouvreur" (Cilea), (b) Aria from "The Mastersingers" (Wagner). Selection from "Le Villi" (Puccini). Suite (Schinelli). Selection from "Jeannette" (Crepaldi). Spanish Serenade (Puligheddu). Talk in the interval.
 10.0 p.m. (approx.)—News Bulletin.

BRATISLAVA (Czechoslovakia)

1,076 kc/s (270 m.); 14 kW.
 Transmits at intervals from 10.30 a.m.
 4.30 p.m.—Programme for Children.
 4.45 p.m.—Gramophone Records
 5.55 p.m.—Lesson in Esperanto.
 6.15 p.m.—*Concert*. Arias from "Rinaldo" (Händel). Aria from "The Creation" (Haydn). Selection from "Iphigenia in Aulis" (Gluck). Sonata in A Flat Major (Beethoven). Aria, Bella mia fiamma (Mozart).
 6.50 p.m.—Programme from Prague.
 9.15 p.m.—Programme Announcements.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 3 kW.
 Transmits at intervals from 10.15 a.m.
 6.15 p.m.—Programme from Prague.
 6.20 p.m.—Moravian Authors' Programme; Reading from the Works of A. Tryb.
 6.50 p.m.—Programme from Prague.
 9.15 p.m.—News and Theatre Notes.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 1 kW. Relay by Kalundborg, 260 kc/s (1,153 m.).
 Transmits at intervals from 6.30 a.m.
 2.30 p.m.—*Instrumental Concert*. March, Les Banderilleros (Volpatti). Spanish Waltz, Torero (Translatour). Minuet (Paderewsky). Selection from "Les Brigands" (Offenbach). Entr'acte Gavotte from "Mignon" (Thomas). Meditation (Glazounoff). Selection from the Music to "En Söndag paa Amager" (Heiberg).
 3.15 p.m. (approx.)—Talk for Children, followed by *Concert (contd.)*. Selection from "Sylvia" (Delibes). Prelude (Svendsen). Old Copenhagen Melodies. Chant crépusculaire (Brusselmans). Chinese Dance from the Nutcracker Suite (Tchaikovsky). Waltz, A Summer Evening (Waldteufel). Comedy Overture (Kéler-Béla).
 4.40 p.m.—Exchange Quotations and Fish Market Prices.
 4.50 p.m.—Talk (from the Aarhus Studio).
 5.20 p.m.—French Language Lesson.
 5.50 p.m.—Weather Report.
 6.0 p.m.—News Bulletin.
 6.15 p.m.—Time Signal.
 6.25 p.m.—Report of the Non-Political Danish Radio Clubs.
 6.30 p.m.—Gardening Talk.
 7.0 p.m.—Town Hall Chimes.
 7.2 p.m.—*Orchestral Concert from the Works of Lully*. Torch Dance, Waltz, Krolls Balklange. Mazurka, Columbine. Mester Erik-Polka. Indian War Dance from "Fjernet fra Danmark" (Cæcilie-Vals). Concert Polka for two Violins. Gallop, Salut for August Bournonville.
 7.45 p.m.—Reading of Anecdotes (Carl Arctander).
 8.5 p.m.—*Polish National Evening*. Overture, "Halka" (Moniuszko). Polonaise in A Major for Violin (Wieniawsky). Mazurka for Violin (Mlynarsky). Lithuanian Rhapsody (Karłowicz). Reading of a Short Story: "The Priest" (Casimir Tetmajer). Pianoforte Solos: (a) Three Polish Dances (Paderewsky), (b) Scherzo in B Minor, and (c) Ballade in G Minor (Chopin).
 9.20 p.m.—News Bulletin.
 9.35 p.m.—*Recital of Violin Duets*. Duet for Two Violins, in D Major, Op. 70, No. 6 (Mozart). Duet for Two Violins, Op. 102, No. 2 in F Major (Haydn).
 10.5 p.m.—Dance Music relayed from Nimb's Restaurant.
 11.0 p.m. (in the interval).—Town Hall Chimes.
 11.30 p.m. (approx.)—Close Down.

CORK (Ireland)

(6CK.) 1,337 kc/s (225 m.); 1.5 kW.
 1.30 p.m.—Weather Forecast and Gramophone Selections.
 6.0 p.m.—Exchange, News Bulletin and Gramophone Records.
 6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio. 1,229 kc/s (244 m.); 1.5 kW.
 Transmits at intervals from 10.40 a.m.
 5.45 p.m.—Miscellaneous Items, News Bulletin and Programme Announcements.
 6.10 p.m.—Agricultural Report.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Radio Journal.
 7.0 p.m.—Talk: The Europeanisation of Spain.
 7.15 p.m.—Talk from Warsaw.
 7.30 p.m.—Programme from Warsaw.
 7.45 p.m. (in an interval).—Literary Programme from Warsaw.
 8.0 p.m.—Polish National Concert relayed from Warsaw.
 9.30 p.m.—News from Warsaw.
 10.0 p.m.—Dance Music from Warsaw.
 11.0 p.m.—Bugle Call from the Tower of St. Mary's Church.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.5 kW.
 1.30—2.0 p.m.—Time Signal, Weather Report, Stock Report and Gramophone Concert.
 2.0—6.0 p.m.—Interval.
 6.0 p.m.—Gramophone Records.
 6.15 p.m.—Programme for Children.
 7.0 p.m.—Gramophone Records.
 7.20 p.m.—News Bulletin.
 7.30 p.m.—Irish Lesson by M. O'Maolain.

7.45 p.m.—German Language Lesson by Olga von Wenckstern.
 8.0 p.m.—Royal Irish Academy Students' Musical Union Concert, relayed from the Gresham Hotel.
 9.0 p.m.—Selections by the Station Sextet.
 9.30 p.m.—Sponsored Programme.
 10.30 p.m.—Time Signal, News Bulletin, Weather Report and Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW. Relay by Casel, 1,220 kc/s (246 m.).
 Transmits at intervals from 5.15 a.m.
 3.0 p.m.—*Orchestral Concert*. Selections (Wagner): (a) Prelude to "Lohengrin" (b) Albumblatt, (c) Two Arias from "Tannhäuser" (d) Sailor's Chorus from "The Flying Dutchman." Selections (Brahms): (a) Röslein dreie in der Reife, (b) Kommt dir manchmal in den Sinn. Romance in F Major for Violin and Orchestra (Strauss): (a) Die Nacht, (b) Lied des Steinklopfers. Overture, "Die schöne Galathée" (Suppé). Waltz, Wine, Woman and Song (Joh. Strauss). Grinzing-Lied (Benatzky). Waltz, Wiener Praterleben (Translatour). Deutscher Regimentsmarsch (Jurek).
 4.45 p.m.—Economic Notes.
 5.5 p.m.—"The Artist and his Public"—Report from the Frankfurt Artists' Christmas Saleroom.
 5.30 p.m.—Time and Programme Announcements.
 5.35 p.m.—Programme from Stuttgart.
 6.0 p.m.—Time, Weather, and Economic Notes.
 6.15 p.m.—Programme from Stuttgart.
 6.30 p.m.—Christmas—an Improvisation by Paul Laven.
 6.50 p.m.—"Leben wider Willen"—Wireless Play (Fritz Peter Buch).
 7.50 p.m.—Talk: The Instruments of an Orchestra, with illustrations by the Whole Orchestra.
 8.30 p.m.—Concerto in A Minor, Op. 54, for Piano and Orchestra (Schumann).
 9.0 p.m.—The Letter Box.
 9.30 p.m.—News, Sports Notes and Weather Report.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.7 kW. Relay by Bremen, 950 kc/s (315.8 m.); Flessburg, 1,373 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).
 Transmits at intervals from 5.20 a.m.
 3.0 p.m. (from Kiel).—*Concert by the Flensburg Municipal Orchestra* conducted by Kurt Barth. Programme from the Works of Grieg and Svendsen. Part I—Grieg. Concert Overture, Im Herbst, Op. 11. Aus Holbergs Zeit—Suit in Old Style for String Orchestra, Op. 40. Four Norwegian Dances, Op. 35 (arr. for Orchestra by Hans Sitt). Part II—Svendsen. Norwegian Rhapsody, No. 3, Op. 21. Romance for Violin and Orchestra, Op. 26. Legend, Zorahayde, Op. 11. Norwegian Artists' Carnival, Op. 14.
 4.30 p.m.—Talk: German Dramatists of the Nineteenth Century—Franz Grillparzer and Ch. D. Grabbe.
 4.55 p.m.—Talk for Workers: New Dwellings for Artisans and Employees.
 5.15 p.m.—Sponsored Concert of Gramophone Records.
 6.0 p.m.—Talk: East Frisian Writers—Moritz Jahn.
 6.25 p.m.—Frankfurt Exchange and Hamburg Fruit and Vegetable Market Prices.
 6.30 p.m.—Talk on Topical Questions.
 6.55 p.m.—Meteorological Report.
 7.0 p.m. (from Hanover).—*Concert by a Zither Trio and String Quartet*. Zither Selection: Hymn, Zur Weihe des Tages (P. Spiegelberg). String Quartet Selection: Andante from the Sonata, Op. 55 (Kubla). Zither Trio: Andalusian Intermzzo, Carmen Silva (F. Kollmaneck). String Quartet Selection: Minuet in F Major (Kreutzer). Zither Trio: Töne Poem, Des Sängers Fluch (P. Spiegelberg). String Quartet: Little Folk Songs and Fairy Tales (Komzák). Zither Trio: Folk Song Cycle (W. Mickenschreiber).
 8.0 p.m.—Simon Bolivar Memorial Programme, on the Centenary of his Death.

9.0 p.m.—Weather Report, Political and Miscellaneous Announcements, Sports Notes, Local and Police Intelligence, News and Topical Report.
 9.20 p.m. (from Bremen).—Orchestral Concert from the Atlantic Café.
 10.15 p.m.—Concert from the Faun-Diele.

HUIZEN (Holland)

160 kc/s (1,875 m.); 8.5 kW.
 7.55 a.m. (till Close Down).—Programme of the Christian Radio Society (N.C.R.V.).
 7.55—9.10 a.m.—Morning Concert.
 10.10 a.m.—Service for Hospitals.
 10.40 a.m.—*Harmonium Recital and Songs*. Psalm 89: Verses 1 and 2. Hymn 112—Verses 6 and 7. Soprano Solos (Tierie): (a) 't Is stil om mij henen, (b) O, Jesu, (c) 't Was duister en stil in het ronde. Prelude (Kühmstedt). Andante (Merkel). Two Songs (Tierie): (a) Wees gegroet (b) Kerstnacht. Adagio (Merritt). Gebed (Lichtl). Two Songs (Tierie): (a) Jub'land daalt ut 's hemels zalen, (b) Jezus, mijn Herder, mijn Heiland en Heer. Adagio (Mendelssohn). Song without Words (Mendelssohn). Postludium (Reinhardt).
 11.40 a.m.—Police Notes.
 12.10 p.m.—*Vocal and Instrumental Concert*. Psalm 81: Verses 1, 2 and 12. Four Hymns, with accompaniment for Violin, Cello and Pianoforte. Trio Selection from "La Serva Padrona" (Pergolesi). Four Hymns, with Trio accompaniment: (a) Hymn 39, Verses 1, 2 and 3, (b) Al is eng ook de poort (de Heer), (c) In den hemel is het schoon (de Heer) (d) Hymn 49, Verses 1—5. Selection for Trio from "Joshua" (Händel). Four Sacred Songs, with Trio accompaniment: (a) De Heer is mijn Herder, (b) Op bergen en in dalen, (c) Ontwaakt, gij den slaapt (Bastiaans), (d) Hoe leit dit kindeken. Andante con moto from the Trio in B Flat Major (Schubert).
 1.40 p.m.—*Vocal and Instrumental Concert*. Prelude and Fugue for Pianoforte (J. S. Bach). Contralto Solos, with Pianoforte accompaniment: (a) Recitative and Aria from the Christmas Oratorio (J. S. Bach), (b) Aria from "Judas Maccabaeus" (Händel). Sonata for Violin and Pianoforte (J. S. Bach).
 2.25 p.m.—Reading: "Overwonnen" (Thiele).
 2.55 p.m.—*Concert (continued)*. Three French Carols for Contralto (arr. Willem Pijper). (a) La messe de minuit, (b) Noël des roys mages. (c) Entre le boeuf et l'âne gris. Sonata for Violin and Pianoforte (Tartini). Two Old Dutch Songs (arr. Willem Pijper): (a) Heer Jezus heeft een hofken, (b) Die minne, di in mijn harte leyt. Fantasia in C Minor for Pianoforte (Mozart). Contralto Solos, with Pianoforte accompaniment (Hugo Wolf): (a) Denk es, o, Seele, (b) Schlafendes Jesuskind.
 3.55 p.m.—Gramophone Records.
 4.40 p.m.—Programme for Children.
 5.40 p.m.—Talk for Agricultural Workers: Winter Work on the Land and in the Garden.
 6.25 p.m.—Programme for Young People—Talk: Plants and Animals at the Coming of Winter.
 6.55 p.m.—Gramophone Records.
 7.10 p.m.—Police Notes.
 7.40 p.m.—*Concert by the Arnhem Orchestral Society*, relayed from Arnhem. Overture, "Anacreon" (Cherubini).
 7.50 p.m.—Gramophone Record: Double Concerto in A Minor, Op. 102, for Violin, Cello and Orchestra (Brahms).
 8.25 p.m.—Talk by D. C. A. Bout.
 8.55 p.m.—*Concert (continued)*. Symphony No. 3 (Brahms).
 9.40 p.m.—News Bulletin.
 9.50 p.m.—Gramophone Records.

JUAN-LES-PINS (France)

1,205 kc/s (249 m.); 1.5 kW.
 1.0 p.m.—News Bulletin, Amusement Guide and Trio Concert. Selection from "The Bohemian Girl" (Balfe). Ma blonde aimée (Volpatti). Selection from "The Puritans" (Bellini). Janara (Pallini). Selection from "Le roi d'Ys" (Lalo). Chant sans paroles (Tchaikovsky), Norwegian Dances (Grieg).
 2.0 p.m.—The Marseillaise.
 2.15 p.m. (approx.)—8.30 p.m.—No transmission.

8.30 p.m.—News Bulletin, Amusement Guide and Orchestral Concert from the Hotel Ruhl, Nice.
 10.0 p.m.—The Marseillaise and Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
 See Copenhagen Programme.

LJUBLJANA (Yugoslavia)

Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
 Transmits at intervals from 11.15 a.m.
 6.0 p.m.—Russian Language Lesson.
 6.30 p.m.—Talk on Social Geography.
 7.0 p.m.—Programme relayed from Prague.
 9.0 p.m.—Weather Report and News Bulletin.

MADRID (Spain)

Union Radio (EAJ7). 707 kc/s (424 m.); 2 kW.
 Transmits at intervals from 8.0 a.m.
 2.0 p.m.—Chimes, Time Signal and Weather Report, followed by *Concert*, Andalusian Scenes (Breton). La Chevelure from "Chansons de Bilitis" (Debussy). Selections from "La Villana" (Vives). Fire Magic from "Die Walküre" (Wagner).
 3.20 p.m.—Theatre Review, News Bulletin, Announcement of Talks and Exchange Quotations.
 3.30 p.m.—Concert of Newly-Released Gramophone Records.
 3.45—6.0 p.m.—Interval.
 6.0 p.m.—*Symphony Concert*, relayed from the Teatro Calderon. Conductor: Hans Weissbach. Overture, Leonora (Beethoven). The Merry Pranks of Till Eulenspiegel (R. Strauss). Symphony No. 6 (Pathétique) (Tchaikovsky). Suite (Remacha). Overture, "The Mastersingers" (Wagner).
 8.25 p.m.—News Bulletin.
 8.30 p.m.—Silent Night.
 12 midnight.—Chimes and Close Down.

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.); 8.5 kW.
 Programme relayed by Turin, 1,013 kc/s (296.1 m.); and Genoa, 961.2 kc/s (312 m.).
 Transmits at intervals from 7.15 a.m.
 4.0 p.m.—Gramophone Records.
 4.50—5.10 p.m.—Giornale radio and Agricultural Report.
 6.20 p.m.—Announcements.
 6.30 p.m.—Variety Music.
 7.15 p.m.—Giornale radio; Weather.
 7.30 p.m.—Time Signal.
 7.48 p.m.—The Doctor's Advice.
 8.0 p.m.—Relay of an Opera from the Scala Theatre. In the First interval, Talk: The Scientific Organisation of Work; in the Second interval: Theatre Notes. After the Relay: Dance Music from the Alfieri Restaurant, Turin.
 10.0 p.m. (in an interval)—Giornale radio.
 10.55 p.m.—News Bulletin.
 11.0 p.m. (approx.)—Close Down.

MORAVSKÁ-OSTRAVA (Czechoslovakia)

1,139 kc/s (263 m.); 11 kW.
 Transmits at intervals from 10.0 a.m.
 6.15 p.m.—Programme from Prague.
 6.20 p.m.—Wallachian Programme.
 6.50 p.m.—Programme from Prague.
 9.15 p.m.—Programme Announcements and Theatre Review.

MUNICH (Germany)

563 kc/s (533 m.); 1.7 kW. Relay by Augsburg, 536 kc/s (560 m.); Kaiserslautern, 536 kc/s (560 m.); and Nürnberg, 1,256 kc/s (239 m.).
 Transmits at intervals from 5.45 a.m.
 3.10 p.m.—Time Signal, Weather Report and Agricultural Notes.
 3.25 p.m.—*Orchestral Concert*, relayed from the Hotel "Bayerischer Hof." Waltz, Erinnerung an Hütteldorf bei Wien (C. Hoffmann). Ständchen (Schubert). Potpourri, Wiener Operetten Revue (Robrecht). Interludes.
 4.25 p.m.—Programme for Children—Announcement of the Prize-winning Essays. Reading: "The Tale of the First Christmas Tree" (W. Schmidkunz) and Recital of Christmas Songs.
 5.25 p.m.—Time Signal, Weather Report and Agricultural Notes.
 5.45 p.m.—French Language Lesson.
 6.5 p.m.—Wireless Report: Science.

Programmes for Wednesday—(Cont.)

6.35 p.m.—Talk for the Working Mother: The Kindergarten.
 7.0 p.m.—Gramophone Request Concert.
 8.5 p.m.—Orchestral Concert, conducted by Karl List. Dramatic Overture (P. Eck). Two Pieces for String Orchestra (C. Ehrenberg): (a) Frieden, (b) Perpetuum mobile. Suite, Pelleas and Melisande (Sibelius.) Interlude: "Major Cypress loses Patience"—a Story with Six Proposals of Marriage (Michael Arlen). Selection from "Der Blumen Rache" (A. Hornstein).
 9.20 p.m.—Time Signal, Weather Report, News Bulletin and Sports Notes.
 9.45 p.m.—Concert of Light Music, relayed from the Neue Börse.

PARIS (France)

Poste Parisien. 914 kc/s (329 m.); 1.2 kW.
 9.0 a.m.—Transmission of Topical Pictures.
 8.25 p.m.—Gramophone Records, Talk (to be announced) and News Bulletin.
 9.0 p.m.—Concert with the collaboration of Opera and Opéra-Comique Artists. Overture, "Galatée" (Victor Massé). Un bal d'oiseaux (Lacôme). Selection from "Ariadne" (Massenet). Le baiser d'Eunice, from "Quo Vadis" (Nougés). Selection from "Le vingt huit jours de Clairette" (V. Roger). Variations concertantes for Clarinet and Piano (Weber). Selection from "Sigurd" (Reyser). Berceuse arabe (Chaminade). Selection from "Passionnement" (Messager). Mazurka from "Tarass-Boulba" (Samuel Rousseau). March of the Gladiators (Souza).

PARIS (France)

Radio-Paris. (CFR). 174 kc/s (1,725 m.); 17 kW.
 Transmits at intervals from 6.45 a.m.
 12.30 p.m.—Gramophone Concert. Selections (Massenet): (a) Ballet Music from "Hérodiade" (b) Two Selections from "Hérodiade." (c) Two Selections from "Werther," (d) Ballet Music,

Madrilène and Finale, and Rapsodie mauresque from "Le Cid," (e) Three Selections from "Manon." Selections (Puccini): (a) Selection from "La Bohème," (b) Des Grieux' Romance from "Manon Lescaut," (c) Four Selections from "La Tosca," (d) March from "Turandot." In the intervals at 1.0 p.m.—Exchange Quotations and at 1.30 p.m.—Exchange Quotations.

2.0 p.m.—Exchange; Market Prices.

3.30 p.m.—Exchange Quotations.

3.45 p.m.—Gramophone Concert. Les Plaisirs champêtres (Montecclair-Casadesus). Selections (Weckerlin): (a) Maman, dites-moi, (b) Bergère légère, (c) O ma tendre musette. Toccata (Scarlatini). Pastoral with Variations (Mozart). Quartet in F (Haydn).

4.55 p.m.—News and Exchange Quotations.

6.0 p.m.—Agricultural Report and Racing Results.

6.25 p.m.—New York Exchange Rates.

6.30 p.m.—Gramophone Concert. Kermesse from "Faust" (Gounod). Ballad of the King of Thulé and Jewel Song from "Faust" (Gounod). Selection from "The Tales of Hoffmann" (Offenbach). Selection from "Lakmé" (Delibes). Recitations: (a) Les Loups et les Brebis (La Fontaine), (b) Les Vieux (Daudet).

7.0 p.m.—Talk on Horticulture.

7.15 p.m.—Talk: Science for Amateurs.

7.30 p.m.—Medical Talk: The Care of the Teeth.

7.45 p.m.—Commercial Prices, Economic and Social Notes and News.

8.0 p.m.—Polish National Evening. Readings dedicated to Poland. Variations on "Don Juan" for Piano and Orchestra (Chopin). The Second Symphony (Szymanovsky). In the interval at 8.30 p.m.—Sports Review.

9.15 p.m.—Press Review, News and Time Signal.

9.30 p.m.—"Don Quichotte"—Opera in Five Acts (Massenet) by Soloists and the Station Orchestra under the direction of M. Henri Défosse.

POZNAŃ (Poland)

896 kc/s (335 m.); 1.0 kW.
 Transmits at intervals from 6.15 a.m.
 5.45 p.m.—Review of New Books.
 6.0 p.m.—Transmission for Soldiers: Literary and Musical Programme.

7.0 p.m.—Topical Talk.

7.15 p.m.—Miscellaneous Items, followed by News Bulletin.

7.30 p.m.—Concert of Light Music. Orchestral Selection. Soprano Solos: (a) Aria from "Frasquita" (Lehár), (b) Aria from "Die Bajadere" (Kálmán), (c) Aria (Ziehrer). Orchestral Selection. Zither Solos. Orchestral Selection.

Soprano Solos: (a) Aria from "The Merry Widow" (Lehár), (b) Aria from "Lilac Time" (Schubert). Orchestral Selection. In the intervals, Theatre Review and Programme Announcements.

9.0 p.m.—Time Signal, News Bulletin, Sports Notes and Police Announcements.

9.15 p.m.—Dance Music Programme relayed from the Café Polonia.

11.0 p.m. (approx.)—Close Down.

PRAGUE (Czechoslovakia)

Strasnice. 617 kc/s (487 m.); 5.5 kW.

Transmits at intervals from 10.15 a.m.

6.15 p.m.—News Bulletin

6.20 p.m.—Concert by the Pupils of the Klarov Institute for the Blind.

6.50 p.m.—Introductory Talk to the following Transmission.

7.0 p.m.—Symphony Concert conducted by O. Jeremias, relayed from the Town Hall. Sinfonietta (Axman). Concerto for Violin and Piano (Prokofieff). Song Cycle (Vomacka). Spanish Caprice (Rimsky-Korsakoff).

9.0 p.m.—Time, News and Sports Notes.

9.15 p.m.—News, Theatre Notes and Programme Announcements.

9.30 p.m.—Time, News and Sports Notes.

9.45 p.m.—News, Theatre Notes and Programme Announcements.

9.55 p.m.—Time, News and Sports Notes.

10.10 p.m.—Time, News and Sports Notes.

10.25 p.m.—Time, News and Sports Notes.

10.40 p.m.—Time, News and Sports Notes.

10.55 p.m.—Time, News and Sports Notes.

Arias for Soprano: (a) Pianete aure (Carissimi), (b) Spirite, pur spirite (Donaudy). Hebrew Melody, Eili, Eili (Weninger). Soprano Solo from "Anna Bolena" (Donizetti). Two Entr'actes (Ganne). Soprano Solo from "I Capuletti ed i Montecchi" (Bellini). Fantasia, Gaudiosa (Signorelli). Dance Music Selections.

6.45 p.m.—Giornale Radio, News and Sports Notes.

7.0 p.m.—Announcements and Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish).

7.30 p.m.—Time Signal.

7.32 p.m.—Talk: The Doctor's Advice.

7.55 p.m.—"L'Arlesienne"—Opera in Three Acts (Bizet). In the intervals: Humorous Items and Topical Review.

9.55 p.m. (approx.)—News Bulletin.

SEVILLE (Spain)

Union Radio (E.A.J.S). 815 kc/s (368 m.); 1.5 kW.

2.0 p.m.—Instrumental Concert, followed by Song Recital.

3.0—9.0 p.m.—Interval.

9.0 p.m.—Concert. Part I. Instrumental and Choral Selections.

Part II. Selection from "La Meiga"—Musical Comedy (Guiridi). Part III. Flamenco Song Recital and Dance Music Programme.

11.0 p.m. (approx.)—Close Down.

STUTTGART (Germany)

Süddeutscher Rundfunk. 833 kc/s (360 m.); 1.7 kW, and Mühlacker, 75 kW. Relayed by Freiburg, 527 kc/s (570 m.).

Transmits at intervals from 5.15 a.m.

5.35 p.m.—Lesson in Esperanto.

6.15 p.m.—Talk with Gramophone Illustrations: Folk Melodies from Yugoslavia.

6.30 p.m.—Programme from Frankfurt.

7.0 p.m.—Simon Bolivar Memorial Programme, relayed from Berlin.

8.0 p.m.—Programme from Frankfurt.

8.30 p.m.—Programme from Frankfurt.

8.55 p.m.—Programme from Frankfurt.

9.20 p.m.—Programme from Frankfurt.

9.45 p.m.—Programme from Frankfurt.

10.10 p.m.—Programme from Frankfurt.

10.35 p.m.—Programme from Frankfurt.

11.0 p.m.—Programme from Frankfurt.

Transmits at intervals from 10.40 a.m.
 4.45 p.m.—Popular Orchestral Concert.

5.45 p.m.—Miscellaneous Items.

6.25 p.m.—Gramophone Records.

6.35 p.m.—Radio Journal.

6.55 p.m.—Gramophone Records.

7.0 p.m.—Lesson in Book-keeping.

7.15 p.m.—Talk by E. Porebski.

7.30 p.m.—Musical Interlude.

7.45 p.m.—Literary Programme: From the Life of a Dramatist.

8.0 p.m.—Concert of Polish Music by the Philharmonic Orchestra. Prelude to "Mona Lisa" (Rozycki). Variations on Themes from "Don Juan" for Piano and Orchestra (Chopin). Second and Third Movements from the Concerto for Violin and Orchestra (Karłowicz). Polish Fantasia for Piano and Orchestra (Paderevsky). Orchestral Selections (Karłowicz): (a) Song of Love and Death, (b) Song of Eternity. Violin Solos: (a) Roxane's Song (Szymanovsky), (b) Cracovienne (Statkovsky).

9.30 p.m.—Meteorological Report, Police and Sports Notes.

10.0 p.m.—Dance Music Programme.

11.0 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)

Radiostation Zürich. 653 kc/s (459 m.); 0.75 kW.

Transmits at intervals from 11.30 a.m.

3.0 p.m.—Orchestral Concert from the Carlton Elite Hotel.

4.15 p.m.—Gramophone Concert.

4.45 p.m.—Weather Report and Market Prices.

4.50 p.m.—Talk for Young People: The Theatre of To-Day and Yesterday.

5.30 p.m.—Readings from the Journal of the Brothers Goncourt, with Interludes of Contemporary Music on Gramophone Records.

6.30 p.m.—Time Signal and Weather Report.

6.32 p.m.—Talk: Swiss Parliamentary Activities.

7.0 p.m.—Programme on the occasion of the 160th Anniversary of the Birth of Beethoven.

8.20 p.m.—Orchestral Concert of Italian Music.

9.0 p.m.—Weather Report, News Bulletin and Close Down.

The Power Unit that Supplies those extra volts—SAY SIX-SIXTY FOR 200 VOLTS H.T. Automatic Grid Bias too, safeguarding your valves. Replaces existing batteries in a moment—takes no more room. Price £6. 6. 0. An L.T. winding (5 amps at 4 volts A.C.) enables you to use the unit at any time with A.C. Valves for All-Mains operation.

The Highly Successful Six-Sixty A.C. Valves give added range and power. They are standard replacements, and ideal for A.C. Mains Sets. You can now use them also in practically any battery receiver, and modernise it to All-Mains operation without altering a single wire. Selected Sets of Six-Sixty A.C. Valves to suit your circuit, together with the Power Unit and the necessary 5/4 pin Valveholder Adaptors, are available as a complete A.C. All-Mains Conversion Equipment from £8. 5. 0.

Write for FREE Booklet giving full details of the whole Six-Sixty range.

SAY SIX-SIXTY

(B.Y.A. RADIO VALVES AND EQUIPMENT)

SIX-SIXTY RADIO CO., LTD., Six-Sixty House, 17/18, Rathbone Place, Oxford Street, London, W.1.

Tel.: Museum 6116/7



PROGRAMMES FOR THURSDAY

(December 18)

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

BARCELONA (Spain)

Radio-Barcelona (EAJ). 860 kc/s (349 m.); 8 kW.
 Transmits at intervals from 8.0 a.m.

1.0 p.m.—Sextet Selections and Gramophone Records. March, San Sebastian (Dufort). Pericon, Aires camperos (Vidal). Schottische, El chico de la portera (Lerma). Alma andaluz (Mariani). Selection from "La balada de la luz" (Vives). Foxtrot, Ninetta (Siede). Amorette (Bullerian). En la Alhambra (Bretón). Selection from "The Flying Dutchman" (Wagner). Valse en sourdine (Ackermans). Pasodoble (Nebreda). In the interval, Theatre Notes and Cinematograph Review.

3.0 p.m.—Programme for Hospitals and Benevolent Institutions—Gramophone Records.

4.0—5.30 p.m.—Interval.

5.30 p.m.—International Market Prices and Exchange Quotations, followed by Concert of Gramophone Records.

6.0 p.m.—Programme for Children—Jokes, Tales, Riddles, Recitations and Reading from "Robinson Crusoe" (Defoe).

6.30 p.m.—Instrumental Selections by the Trio Iberia. Phantom Melody (Kettelbey). Selection from "The Fortune Teller" (Tirzah). Plegraria (Martinez Bisbal). Pasodoble, Ecos españoles (Marquina), followed by News Bulletin.

7.0 p.m.—Gramophone Records.

8.30 p.m.—Elementary English Lesson, arranged by the Massé School.

9.0 p.m.—Chimes, Exchange Quotations and Part Relay of an Opera (to be announced) from the Gran Teatro del Liceo. In the interval, News Bulletin.

BOLZANO (Italy)

Ente Italiano Audizioni Radiofoniche. 662 kc/s (453.2 m.); 0.2 kW.
 Transmits at intervals from 11.20 a.m.

3.0 p.m.—Concert from the Casino, Gries. March, San Lorenzo (Sylvia). Waltz, Roses of the South (Strauss). Overture, "Cosi fan tutte" (Mozart). Symphonic Prelude (De Micheli). Selection from "The Tales of Hoffmann" (Offenbach). Five Selections from "A Midsummer Night's Dream" (Mendelssohn). Selection from "Das Veilchen vom Montmartre" (Kálmán).

4.30 p.m.—Programme for Children.

4.45 p.m.—Gramophone Records.

6.45 p.m.—Quartet Concert for Plucked Strings.

7.45 p.m.—Miscellaneous Reports and News.

8.0 p.m.—Time Signal.

8.2 p.m.—Vocal and Instrumental Concert, relayed from the Circolo Unione Savoia. Overture, "Le maschere" (Mascagni). Preludes to the Second, Third and Fourth Acts of "Carmen" (Bizet). The Death of Isolde, from "Tristan and Isolde" (Wagner). Selection from "Boris Godouoff" (Moussorgsky). Intermezzo from the "Third Act of "Manon Lescaut" (Puccini). Overture, "The Barber of Seville" (Rossini). In the interval, Talk on Science.

9.45 p.m.—Gramophone Dance Music.

10.45 p.m.—News Bulletin.

BRATISLAVA (Czechoslovakia)

1,076 kc/s (279 m.); 14 kW.
 Transmits at intervals from 10.30 a.m.

4.30 p.m.—Talk: Money and Children.

4.50 p.m.—Dance Music.

5.0 p.m.—Orchestral Concert from the Works of Weber. Overture, "Oberon". Concerto in F Minor Op. 73, for Clarinet. Overture, "Turandot". Overture, "Preciosa". Selection. Overture, "Peter Schmolli". Overture, "Euryanthe."

6.15 p.m.—Programme from Prague.

6.20 p.m.—Orchestral Concert. Overtures (Lincke). Blues Potpourri (Weill). Selections (Dostal). Waltz-Intermezzo (Translatour). Rocco Gavotte (Translatour). Czech Songs (Translatour-Piskacek).

7.0 p.m.—Programme from Prague.

9.15 p.m.—Programme Announcements.

9.20 p.m.—See Prague Programme.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 3 kW.
 Transmits at intervals from 10.15 a.m.

6.15 p.m.—Programme from Prague.

6.20 p.m.—Brass Band Concert.

7.0 p.m.—Concert by the Station Orchestra, conducted by Janota. Programme of French Opera Music. Overture, "Si j'étais roi" (Adam). Aria from "La Dame Blanche" (Boieldieu). Overture, "Le Roi l'a dit" (Delibes). Aria from "La Part du Diable" (Auber).

7.30 p.m.—Programme from Prague.

9.15 p.m.—News and Theatre Notes.

9.20 p.m.—See Prague Programme.

BRUSSELS (No. 2) (Belgium)

887 kc/s (338.2 m.); 12 kW.
 7.30 p.m.—Gramophone Concert.

8.0 p.m.—Concert. Vox Populi (Hazen). Overture, Tempelweihe (Keler-Béla). Aria for Tuba (Christophe). Selection from "Tannhäuser" (Wagner). Cornet. Dust: Sabel en Lans (Andrieu). Selection from "The Merry Widow" (Lehár). Ballade (Candael). Grand Fantasia for Two Clarinets (Marsal). O Sole Mio (Capua). Selection from "The Czardas Princess" (Kálmán). Potpourri. In the interval, Talk by M. L'Abbé Van Hoecq.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 1 kW. Relay by Kalundborg, 260 kc/s (1,153 m.); Transmits at intervals from 6.30 a.m.

2.0 p.m.—Instrumental Concert. The Honey-moon March (Rosey). Overture, "Banditenstreich" (Suppé). Madrigal (Simonetti). Waltz from "The Czardas Princess" (Kálmán). Selection from "The Little Dutch Girl" (Kálmán). Serenata amorosa (Beccé). Pièce romantique (Chaminade). Spanish One-step, Toledo (Padilla).

2.45 p.m. (approx.)—Reading (Leskov), followed by Concert (cont'd). March (Souza). Schottische, La petite Tonkinoise (Scott). Waltz, Charmaine (Rappe and Pollack). Old Minuet (Sgambati). Arioso (Händel). Minuet in G Major (Beethoven). Amelia Waltz (Lumbye). March (Ganne).

4.0 p.m.—Programme for Boys.

4.40 p.m.—Exchange Quotations and Fish Market Prices.

4.50 p.m.—Talk: Broadway.

5.20 p.m.—English Language Lesson.

5.50 p.m.—Weather Report.

6.0 p.m.—News Bulletin.

6.15 p.m.—Time Signal.

6.24 p.m.—Report of the Jutland Listeners' Association.

6.30 p.m.—Talk on Jewish Culture: The Jews at the Present Time.

7.0 p.m.—Town Hall Chimes.

7.2 p.m.—Twelfth Concert from the Axelborg Studio. Overture to the Cantata, "Der Himmel lacht, die Erde jubiliert" (Joh. Seb. Bach). Concerto grosso, Op. 3, No. 2, in B Flat Major for Oboes, Bassoon, Violins, Cello, String Orchestra and Cembalo (Händel). Choral Selections: (a) Si eut cervus (Pasterina), (b) Dixit Maria (Hassler), (c) Jubilate Deo (Orlando di Lasso), (d) So fahr ich hin, and (e) Selig sind die Toten (Schützten). Sinfonie concertante for Violin, Cello, Oboe, Bassoon and Orchestra (Haydn). Choral Selections: (a) Ach weh das Leiden, and (b) Tanzen und springen (Hassler), (c) In stiller Nacht (Brahms), (d) Dronning Dagmar, and (e) Ramund (Th. Laub), (f) Über allen Gipfeln, (g) Et Eventyr i Dyrehaven, and (h) Natten er saa stille (Weyse), (i) Modersmaalet (Rung).

9.0 p.m.—News Bulletin.

9.15 p.m.—Dance Music relayed from the Palace Hotel.

11.0 p.m. (in the interval).—Town Hall Chimes.

11.30 p.m. (approx.)—Close Down.

CORK (Ireland)

(6CK). 1,337 kc/s (225 m.); 1.5 kW.
 1.30 p.m.—Weather Forecast and Gramophone Selections.

6.0 p.m.—Exchange, News Bulletin and Gramophone Records.

6.15 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio. 1,229 kc/s (244 m.); 1.5 kW.
 Transmits at intervals from 10.40 a.m.

5.45 p.m.—Miscellaneous Items, News Bulletin and Programme Announcements.

5.55 p.m.—Programme of Recitations.

6.10 p.m.—Agricultural Report.

6.24 p.m.—Gramophone Records.

6.35 p.m.—Radio Journal.

7.0 p.m.—Talk from Warsaw.

7.15 p.m.—Talk for the Housewife.

7.30 p.m.—Evening Concert.

8.30 p.m.—Dramatic Programme, relayed from Wilno.

9.15 p.m.—Recital of Opera Arias, relayed from Warsaw.

9.50 p.m.—News from Warsaw.

10.0 p.m.—Dance Music from Warsaw.

11.0 p.m.—Bugle Call from the Tower of St. Mary's Church.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.5 kW.
 1.30—2.0 p.m.—Time Signal, Weather Report, Stock Exchange Quotations and Gramophone Concert.

2.0—6.0 p.m.—Interval.

6.0 p.m.—Gramophone Records.

6.15 p.m.—Programme for Children.

7.0 p.m.—Gramophone Records.

7.10 p.m.—News Bulletin.

7.30 p.m.—Time Signal.

7.32 p.m.—French Conversation Lesson by Mlle. M. T. Giudicelli and Mme. Marcelle O'Connell.

7.45 p.m.—Talk on Literature and the Drama by Aodh de Blacám.

8.0 p.m.—Selections by the Station Orchestra.

8.30 p.m.—Eddie O'Dwyer (Soprano).

8.40 p.m.—Frank O'Higgins: Selections on the Traditional Fiddle.

8.50 p.m.—Selections by the Station Sextet.

9.0 p.m.—Tom Madden and Company in a Variety Programme.

9.30 p.m.—Sponsored Programme.

10.30 p.m.—Time Signal, News Bulletin, Weather Report and Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW. Relay by Cassel, 1,220 kc/s (246 m.).
 Transmits at intervals from 5.15 a.m.

4.45 p.m.—Economic Notes.

5.5 p.m.—Talk on Topical Questions (Subject and Speaker to be announced).

5.30 p.m.—Time Signal and Programme Announcements.

5.35 p.m.—Talk: The Régime of the League of Nations in the Saar District.

6.0 p.m.—Time Signal, Weather Forecast and Economic Notes.

6.5 p.m.—French Language Lesson.

6.30 p.m.—Topical Report: The Enquiry into the Catastrophe to the Airship R 101 (arr. Actuals).

7.10 p.m.—"Jean de Paris"—Opéra-Comique in Two Acts (Boieldieu).

8.45 p.m.—Kasimir Edschmid reads from his own Works.

9.15 p.m.—News Bulletin, Sports Notes and Weather Report.

9.35 p.m.—Orchestral Concert.

11.0 p.m. (approx.)—Close Down.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.7 kW. Relay by Bremen, 950 kc/s (315.8 m.); Flensburg, 1,373 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).
 Transmits at intervals from 5.20 a.m.

3.0 p.m.—Talk for Women: Toy-making.

3.45 p.m. (from Bremen).—"By the Fireside"—Recitations and Violin and Pianoforte Selections. Andante con moto from the Sonata appassionata (Beethoven). Recitations: (a) Dämmerstunde (Friedrich Adler), (b) Leben (Johanna Wolff), (c) Das tiefe Wort (Walter Bloem). Violin Solos: (a) Arietta (Bach), (b) Andantino (Haydn). Recitations: (a) Verleugnete Ewigkeit (E. G. Kolbenheyer), (b) Heilige Tage (Lulu v. Strauss-Torney), (c) Am Abend vor Weihnachten (Wilhelm Lobsien), (d) Alle Jahre wieder (W. Hey). Violin Solos: (a) Arietta (Fasolo), (b) Andantino (Barbella).

4.30 p.m.—Dialogue: Advice on Careers for Boys leaving the National Schools.

4.50 p.m.—Sponsored Concert.

5.35 p.m.—Alcoholic Poisoning and its Significance to National Health.

6.0 p.m.—The Story of Advent, by Max Sidow.

6.50 p.m.—Frankfurt Exchange.

6.55 p.m.—Weather Report.

HUIZEN (Holland)

160 kc/s (1,875 m.); 8.5 kW.
 7.40—8.55 a.m.—Programme of the Catholic Radio Society (K.R.O.). Gramophone Records.

9.40—10.40 a.m.—Programme of the Christian Radio Society (N.C.R.V.).

9.40 a.m.—Selections by a Ladies' Choir.

10.10 a.m.—Service for Hospitals.

11.10 a.m.—1.40 p.m.—Programme of the K.R.O.

11.10 a.m.—Religious Address by the Rev. L. H. Perquin.

11.40 a.m.—Police Notes.

12.10 p.m.—Trio Concert. In deinen Augen liegt das Herz von Wien (Stolz). Pour un baiser (Tosti). Kaiser Walzer (Joh. Strauss). Gavotte (Mahy). Selection from "Die Bajadere" (Kálmán). Air de Ballet (Massenet). Selection from "Samson and Delilah" (Saint-Saëns). Wiegelielje (Henri Swat). Achtung! Achtung! Wir senden Tanzmusik (Dostal). Le Réveil du Papillon (Jakma). Finale.

1.40 p.m. till Close Down.—Programme of the Christian Radio Society.

1.40 p.m.—Gramophone Records.

2.25 p.m.—Lesson in Handicrafts.

3.25 p.m.—Gramophone Records.

3.40 p.m.—Programme for Hospitals.

4.40 p.m.—Concert of Chamber Music for Violin, Cello and Pianoforte. Trio, Op. 11 (Chaminade). Trio, Op. 18 (Saint-Saëns). Trio, Op. 18 (Albéric Magnard).

5.55 p.m.—Dressmaking Lesson.

6.10 p.m.—Talk: Keeping Canaries.

6.40 p.m.—Lesson in Malay.

7.10 p.m.—Police Notes.

7.40 p.m.—Concert relayed from a Church in Baarn. "The Christmas Oratorio" (Bach), by the Hallelujah Oratorio Association of Baarn, for Soloists and Orchestra. In the interval—Talk: In the Holy Land.

10.10 p.m.—News Bulletin.

10.20 p.m.—Gramophone Records.

11.10 p.m. (approx.)—Close Down.

JUAN-LES-PINS (France)

1,205 kc/s (249 m.); 1.5 kW.
 1.0 p.m.—News Bulletin, Amusement Guide and Gramophone Concert.

2.0 p.m.—The Marseillaise.

2.15 p.m. (approx.)—8.30 p.m.—No Transmission.

8.30 p.m.—News Bulletin, Amusement

Guide, Meteorological Report and Talk: The Oceanographical Museum at Monaco. Concert of Spanish Music, followed by Cabaret Programme.

10.0 p.m.—The Marseillaise and Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
 See Copenhagen Programme.

LJUBLJANA (Yugoslavia)

Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
 Transmits at intervals from 11.15 a.m.

6.0 p.m.—Serbo-Croatian Language Lesson.

6.30 p.m.—Talk on Geology.

7.0 p.m.—Educational Talk.

7.30 p.m.—Organ Recital.

9.30 p.m.—Weather Report and News Bulletin, followed by Concert of Gramophone Records.

MADRID (Spain)

Union Radio (EAJ7). 707 kc/s (424 m.); 2 kW.
 Transmits at intervals from 8.0 a.m.

2.0 p.m.—Chimes, Time Signal, and Weather Report, followed by Concert. Overture, Fingal's Cave (Mendelssohn). Ave Maria (Gounod). Potpourri (Stolz). Selection from "La Juive" (Halévy). Song of the Hindu Merchant (Rimsky-Korsakoff). Selection from "Lohengrin" (Wagner).

3.20 p.m.—Theatre Review, News Bulletin, Announcement of Talks and Exchange Quotations.

3.30 p.m.—Concert of Newly-Released Gramophone Records.

3.45—7.0 p.m.—Interval.

7.0 p.m.—Chimes, Exchange, Market Prices and Topical Review: Children's Section.

7.30 p.m.—Dance Music Programme.

8.25 p.m.—News Bulletin.

8.30—9.30 p.m.—Interval.

9.30 p.m.—Chimes and Time Signal, followed by Relay from the Teatro del Liceo, Barcelona.

11.55 p.m.—News Bulletin.

12 midnight (approx.)—Close Down.

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.); 8.5 kW. Programme relayed by Turin, 1,013 kc/s (296.1 m.); and Genoa, 961.2 kc/s (312 m.).
 Transmits at intervals from 7.15 a.m.

4.0 p.m.—Gramophone Records.

4.50 p.m.—Giornale Radio and Agricultural Report, followed by Announcements in German.

6.20 p.m.—Announcements and Report of the Royal Geographical Society.

6.30 p.m.—Variety Concert.

7.15 p.m.—Giornale Radio; Weather.

7.30 p.m.—Time Signal.

7.32 p.m.—Variety Programme. In the interval, Talk on Art and Literary Review. After the Programme, Concert from the Cova Restaurant.

10.0 p.m. (in the interval).—Giornale radio.

10.55 p.m.—News Bulletin.

11.0 p.m. (approx.)—Close Down.

MORAVSKÁ-OSTRAVA (Czechoslovakia)

1,130 kc/s (263 m.); 11 kW.
 Transmits at intervals from 10.0 a.m.

6.20 p.m.—Concert of Light Music.

7.0 p.m.—Cabaret Programme.

7.30 p.m.—Programme from Prague.

9.15 p.m.—Programme Announcements and Theatre Review.

9.20 p.m.—See Prague Programme.

MUNICH (Germany)

563 kc/s (533 m.); 1.7 kW. Relay by Augsburg, 536 kc/s (560 m.); Kaiserslautern, 536 kc/s (560 m.); and Nürnberg, 1,256 kc/s (239 m.).
 Transmits at intervals from 5.45 a.m.

3.10 p.m.—Time Signal, Weather Report and Agricultural Notes.

3.25 p.m.—Soprano Song Recital. Three Songs (R. Strauss): (a) Die Nacht, (b) Die Georgine, (c) Allerleien. Four Songs (R. Trunk): (a) Pan, (b) Unter Blüten, (c) Frühlingssonne, (d) Suleika.

3.55 p.m.—Reading by the Author: Ballads in Prose (Florian Seidl).

4.25 p.m.—Orchestral Concert, conducted by Karl List. Tzigane Waltz, Mirka (Ranzato). Soldiers on Parade (Fern. Limental). Waltz;

Programmes for Thursday—(Cont.)

Trumideale (Fucik). Ständchen (Zimmer). Florentine Intermezzo (H. Waghalter). Selection from "The Gipsy Baron" (Joh. Strauss). Automobile March (Translateur).
 5.25 p.m.—Time Signal, Weather Report and Agricultural Notes.
 5.45 p.m.—Talk: Horse-breeding and its Prospects.
 6.5 p.m.—Talk: The International Statistical Congress in Tokio.
 6.30 p.m.—Talk: The Law in Everyday Life.
 7.0 p.m.—"The Bird Fancier"—Operetta in Three Acts (Zeller).
 9.20 p.m.—Time Signal, Weather Report, News Bulletin and Sports Notes.

PARIS (France)

Poste Parisien. 914 kc/s (329 m.); 1.2 kW.
 9.0 a.m.—Transmission of Topical Pictures.
 8.25 p.m.—Gramophone Records, Talk (to be announced) and News Bulletin.
 9.0 p.m.—Concert from the Works of Massenet, under the direction of M. Estyle, with the collaboration of Artistes from the Opéra and Opéra-Comique. Overture, "Phèdre." Elégie and Saturnales from the Incidental Music to "Les Erynnies." Angelus from "Scènes pittoresques." Ballet Music from "Le Cid." Sous les tilleuls from "Scènes alsaciennes." La fête from "Scènes napolitaines." March and Stretto from the First Orchestral Suite.

PARIS (France)

Radio Paris (CFR). 174 kc/s (1,725 m.); 17 kW.
 Transmits at intervals from 5.45 a.m.
 12.30 p.m.—Gramophone Concert. Cantos canarios (Power). Montanges regalados. Basque Hymn: Guernikako arbonal (Bonnal). Roussignolet (Despourrins). Quand lon merle santo al prat (Cayla-Canteloube). Bruno zayas (Castellanos). Flor de España (Luna-del Villat). El nino judio (Luna-Paso-Alvarez). Zigeunerweisen (Borganoff). Selections (Doczy): (a) Akar merre haytom a fejem, (b) Szabad neked esapardanak lenni. Maria, Mari (di Capua). Quammo, a Femmena vo (de Cres-

enzo). Morogenko. Ukranian Song, Crayfish. Arab Song: Soubhana Moubeddel. Songs of the Hebrides (Kennedy-Fraser). La processio de Sant Bartomeu (Catala). In the intervals at 1.0 p.m.—Exchange Quotations and News, and at 1.30 p.m.—Exchange Quotations.
 2.0 p.m.—Exchange; Market Prices.
 3.30 p.m.—Exchange Quotations.
 3.45 p.m.—Dance Music Programme.
 4.15 p.m.—Programme for Children.
 4.55 p.m.—News and Exchange Quotations.
 6.0 p.m.—Agricultural Report and Racing Results.
 6.25 p.m.—New York Exchange Rates.
 6.30 p.m.—Gramophone Concert. Foxtrot, After the Clouds roll by (Clare-Levant). If I had a Talking Picture of You (de Sylva-Brown-Henderson). Foxtrot, Les Lilas (Doelle). I'm following you (Dreyer-Macdonald). Foxtrot, Le trésor de Paris (Andolfi). Triste Paica (Pecci). A Year from Today from "New York Nights" (Jolson - Macdonald - Dreyer). Tango, Consejo Sano (Pizarro).
 7.0 p.m.—Talk: The House of Molière—Sophie Croizette and Worms.
 7.15 p.m.—Talk on Artists: The Drawing of Animals.
 7.30 p.m.—Elementary Book-keeping Lesson.
 7.45 p.m.—Commercial Prices, Economic and Social Notes and News.
 8.0 p.m.—Concert. "Contes Bruns" (Balzac), by M. Balpêtre and his Company. Variations for Piano, Violin and Cello (Beethoven). Songs: (a) Le Secret and (b) Fleur jetée (Fauré), (c) Two Bohemian Songs (Dvořák), (d) Two Arab Melodies (Perex). Pianoforte Solos: (a) Gavotte (Prokofieff), (b) Waltz, La Proleuse (Défosse), (c) Toccata (Ravel). Sonata No. 1 for Cello and Piano (Fauré). In the intervals at 8.30 p.m.—Sports Review, and at 9.15 p.m.—Press Review, News and Time Signal.

POZNAŃ (Poland)

896 kc/s (335 m.); 1.9 kW. Also relayed on 9,830 kc/s (30.5 m.), from 7.30—8.30 p.m.
 Transmits at intervals from 6.0 a.m.

5.45 p.m.—Talk: Economic Questions.
 6.0 p.m.—Elementary English Lessons.
 6.15 p.m.—Programme of Humorous Dialogues.
 6.30 p.m.—Political Talk.
 6.45 p.m.—Talk on Agricultural Problems.
 7.0 p.m.—Programme for Short-Wave Enthusiasts.
 7.15 p.m.—Miscellaneous Items, followed by News Bulletin.
 7.30 p.m.—Violin and Pianoforte Recital. Sonata in D Minor for Violin and Pianoforte (Brahms). Four Sonatas for Pianoforte (Scarlati). Violin Solos: (a) Grave (Friedemann-Bach). Gavotte (Rameau), (b) Sarabande and Tambourin (Leclair). In the intervals, Theatre Review and Programme Announcements.
 8.30 p.m.—Programme relayed from Warsaw.
 9.15 p.m.—Time Signal, News Bulletin, Sports Notes and Police Announcements.
 9.30 p.m. (approx.)—Close Down.

PRAGUE (Czechoslovakia)

Strasnice. 617 kc/s (487 m.); 5.5 kW.
 Transmits at intervals from 10.15 a.m.
 6.15 p.m.—News Bulletin.
 6.20 p.m.—Programme from Brno.
 7.0 p.m.—Recital of Songs.
 7.30 p.m.—Concert of Polish Folk Music.
 9.0 p.m.—Time, News and Sports Notes.
 9.15 p.m.—News, Theatre Notes and Programme Announcements.
 9.20 p.m.—Organ Recital from the Beranek Cinema.
 10.0 p.m.—Time and Chimes.

ROME (Italy)

Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.); 75 kW. Relayd by Naples, 905 kc/s (332 m.), and 2RO 3750 kc/s (80 m.).
 Transmits at intervals from 7.15 a.m.
 4.0 p.m.—Vocal and Instrumental Concert, followed by Report for Philatelists.
 6.45 p.m.—Giornale Radio, News and Sports Notes.
 7.0 p.m.—Announcements and Press Review.
 7.30 p.m.—Time Signal.
 7.40 p.m.—Variety Concert, with Recitations.

9.55 p.m.—News Bulletin.
 10.0 p.m.—Dance Music Programme.
 11.0 p.m. (approx.)—Close Down.

SEVILLE (Spain)

Union Radio (EAJ5). 815 kc/s (368 m.); 1.5 kW.
 2.0 p.m.—Musical Selections, Flamenco Song Recital and Dance Music Programme.
 3.0—9.0 p.m.—Interval.
 9.0 p.m.—News Bulletin, Exchange Quotations, Market Prices and Meteorological Report, followed by Symphony Concert. Overture "Iphigenia in Aulis" (Gluck). Iberia (Debussy). Seventh Symphony in A (Beethoven). Symphonic Poem, Don Juan (R. Strauss). Fire Dance from "El amor brujo" (de Falla), followed by Flamenco Song Recital and Dance Music Programme.
 11.0 p.m. (approx.)—Close Down.

STUTTGART (Germany)

Süddeutscher Rundfunk. 833 kc/s (360 m.); 1.7 kW., and Mühlacker, 75 kW. Relayd by Freiburg, 527 kc/s (570 m.).
 Transmits at intervals from 5.15 a.m.
 6.30 p.m.—See Frankfurt Programme.
 9.0 p.m.—News Bulletin.
 9.20 p.m.—Programme from Frankfurt.
 11.30 p.m. (from Mannheim)—Night Concert.
 12.30 a.m. (Friday)—Close Down.

WARSAW (Poland)

Polskie Radio. 212 kc/s (1,411 m.); 14 kW.
 Transmits at intervals from 10.40 a.m.
 4.45 p.m.—Concert. Suite for Cello (Händel). Allegro moderato from the Sonata for Piano and Cello (Boccherini). Soprano Solos: (a) Two Arias from "Turandot" (Puccini), (b) Primavera (Tirindelli). Pieces for Cello. Soprano Solos: (a) Mon rossignol (Zelensky), (b) Tu ne sais pas (Karłowicz), (c) Valse (Marcewsky).
 5.45 p.m.—Miscellaneous Items.
 6.10 p.m.—Agricultural Report.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Radio Journal.
 6.55 p.m.—Gramophone Records.
 7.0 p.m.—Talk: Ethics and Politics.
 7.15 p.m.—Wireless Technical Talk.
 7.30 p.m.—"Au patinage"—Humorous Sketch, followed by

Programme Announcements and Theatre Review.
 8.30 p.m.—Maria (Malczewsky), relayed from Wilno.
 9.15 p.m.—Recital of Opera Arias. Arias from (a) "Adrienne Lecouvreur" (Cilea), (b) "Le Cid" (Massenet), (c) "The Force of Destiny" (Verdi), (d) "Manon Lescaut" (Puccini).
 9.50 p.m.—Meteorological Report, Police and Sports Notes.
 10.0 p.m.—Dance Music Programme.
 11.0 p.m. (approx.)—Close Down.

WILNO (Poland)

Polskie Radio. 959 kc/s (312.8 m.); 0.5 kW.
 Transmits at intervals from 10.58 a.m.
 3.30 p.m.—Symphony Concert on Gramophone Records.
 4.15 p.m.—Talk relayed from Cracow.
 4.45 p.m.—Concert on the Occasion of the 25th Anniversary of the Lutnia Musical Society. Programme of Polish Music.
 5.45 p.m.—Social Review.
 6.0 p.m.—The Letter Box.
 6.20 p.m.—Programme Notes and Miscellaneous Announcements.
 6.35 p.m.—News from Warsaw.
 7.0 p.m.—Talk from Warsaw.
 7.15 p.m.—Talk: In the Glare of the Footlights.
 7.30 p.m.—Programme from Warsaw.
 8.30 p.m.—"Maria"—Wireless Poem (Antoine Malczewsky. Music by Gavrinski).
 9.50 p.m.—News and Dance Music from Warsaw.
 11.0 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)

Radiostation Zürich. 653 kc/s (459 m.); 0.75 kW.
 Transmits at intervals from 11.30 a.m.
 3.0 p.m.—Orchestral Concert from the Carlton Elite Hotel.
 4.15 p.m.—Programme for Children.
 4.45 p.m.—Weather Report.
 6.30 p.m.—Time Signal and Weather Report.
 6.33 p.m.—Industrial Talk.
 7.0 p.m.—Scottish Programme: Reading of Scottish Ballads by Kate Graber, with Orchestral Interludes. After the Programme, Orchestral Concert of Request Items.
 8.20 p.m.—Weather Report, News Bulletin and Close Down.

EMISSION UP TO 20 MILLIAMPS

that's why this new H.T. Battery
works wonders in a portable!

To do themselves justice portables require an exceptional amount of power. Up till now they haven't received it. But here's Fuller's new product—the Sparta H.T. Battery W.O.P.100 for Portables which has an emission up to 20 milliamps. Fit one into your Portable now, and listen to the difference it makes. You're only half acquainted with your Portable until you fit a Sparta H.T. Battery.

Fuller 'Sparta' Dry H.T. Battery for Portables. W.O.P.100. 100 volts (reads 108) 10" x 5" x 3" 15/-

Guaranteed emission up to 20 milliamps.



Obtainable through Fuller Service Agents or any reputable dealer. Full list of sizes and types post free.

FULLER ACCUMULATOR COMPANY (1926) LTD., CHADWELL HEATH, ESSEX.

FULLER

"SPARTA" DRY H.T. BATTERIES

PROGRAMMES FOR FRIDAY (December 19)

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

BARCELONA (Spain)

Radio-Barcelona (EAJ 1), 860 kc/s (349 m.); 8 kW.
Transmits at intervals from 12.30 p.m.
1.0 p.m.—Exchange Quotations and Concert. Sextet Selections and Gramophone Records. March (O. Perns). Schottische, A que no! (Gordo and Leffer). Tango, Regina Riviera (Cerato). To Spring (Grieg). Ecos del Cantabrico (Fernandez). Cradle Song (Flament). One Step (Raely). Selection (Siede). Selection from "The Blue Mazurka" (Lehar). Fandango (Romero). Pasodoble (Versalles).
3.0 p.m.—Programme for Hospitals and Benevolent Institutions—Gramophone Records.
4.0 p.m.—5.30 p.m.—Interval.
5.30 p.m.—International Market Prices and Exchange, followed by Concert of Gramophone Records. Bohemian March (Soperas). Selection from "Don Juan" (Mozart). Tango (Batellori). Waltz (Via). Selection (Dove). Charleston.
6.0 p.m.—Programme for Women.
6.40 p.m.—Trio Music and News.
7.0 p.m.—Gramophone Records.
8.30 p.m.—Elementary French Lesson.
9.0 p.m.—Chimes and Exchange Quotations.
9.5 p.m.—Orchestral Concert. Parade March (Roland). Waltz (Arenas). Lament (Ropartz). Charleston (Villajos), followed by Recital of Songs.
10.0 p.m.—News Bulletin.
10.5 p.m.—Musical Anecdotes.
10.20 p.m.—Orchestral Concert relayed from the Café Español.
12 midnight (approx.)—Close Down.

BOLZANO (Italy)

Ente Italiano Audizioni Radiofoniche. 662 kc/s (453.2 m.); 0.2 kW.
Transmits at intervals from 11.20 a.m.
3.0 p.m.—Concert from the Casino. Grieg. Hungarian March (Liszt). Waltz, Traume (Fucik). Overture, "The Siege of Corinth" (Rossini). Réve angélique (Rubinstein). Selection from "I promessi sposi" (Ponchielli). The Third Symphony, in E Major (Mozart). Selection from "Die Fledermaus" (Strauss). Foxtrot.
4.55 p.m.—News Bulletin.
6.45 p.m.—Concert of Light Music. Hesitation Waltz, Glycine (Brero). Overture, "Gloria" (Frontini). Scherzo patetico (Palombi). Selection from "Giovanni Galuppi" (Montemezzi). Potpourri, Danza, folle danza (Dolz). Song: Donine facili (De Serra).
7.45 p.m.—Miscellaneous Reports and Bulletin of the Italian Alpine Club, followed by News Bulletin.
8.0 p.m.—Time Signal.
8.2 p.m.—Variety Concert. Tramoto sul Tabor (Escobar). Symphonic Poem (Leuschner). Spanish Dance (Sarasate). Selection from "Othello" (Verdi). Violin Solos: (a) Morning (Grieg), (b) Gavotte (Rameau), (c) Berceuse, (d) Waltz for Violin (Hummel). Intermezzo, Nostalgia (Previsiol). Suite, Impressioni d'Oriente (Amadei). Selection from "The Maid of the Black Forest" (Jessel). Talk in the interval.
10.0 p.m.—News Bulletin.
10.5 p.m. (approx.)—Gramophone Concert.
10.30 p.m. (approx.)—Close Down.

BRATISLAVA (Czechoslovakia)

1,076 kc/s (279 m.); 14 kW.
Transmits at intervals from 10.30 a.m.
3.30 p.m.—Chamber Music for Cello. Sonata in G Minor (Händel). Sonata in A Major, Op 69 (Beethoven).
4.30 p.m.—Hungarian Transmission.
5.25 p.m.—Pianoforte Recital. Petite Suite (Borodin). Yugoslav Selections (Slavensky): (a) Serbian Dances, (b) Prayer, (c) Croatian Dances.
5.55 p.m.—Slovak Lesson.
6.15 p.m.—Programme from Prague.
9.15 p.m.—Programme Announcements.
9.20 p.m.—Programme from Prague.
BRNO (Czechoslovakia)
878 kc/s (342 m.); 3 kW.
Transmits at intervals from 10.15 a.m.

5.55 p.m.—Talk: The Plastic Arts.
6.15 p.m.—Programme from Prague.
9.15 p.m.—News Bulletin and Theatre Review.
9.20 p.m.—Programme from Prague.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 1 kW. Relay by Kalundborg, 260 kc/s (1,153 m.).
Transmits at intervals from 6.30 a.m.
2.0 p.m.—Concert from the Hotel d'Angleterre.
2.45 p.m. (in the interval)—Concert of Operetta and Vaudeville Songs Operetta Songs: (a) Two Songs (Zeller), (b) Song from "Lilac Time" (Schubert). Vaudeville Songs: (a) Song from "Den Tredje", (b) Song from "Aprilsnarrene", (c) Song from "Af Asken og i Ilden" (Heise).
4.0 p.m.—Programme for Children. Old Danish Dance Music.
4.40 p.m.—Exchange Quotations and Fish Market Prices.
5.0 p.m.—Town Hall Chimes.
5.2 p.m.—Talk by Kai Hammerich.
5.20 p.m.—German Language Lesson. Songs and Readings.
5.50 p.m.—Weather Report.
6.0 p.m.—News Bulletin.
6.15 p.m.—Time Signal.
6.24 p.m.—Report of the Christian Listeners' Association.
6.30 p.m.—Talk: The Danish Silver Industry.
7.0 p.m.—Town Hall Chimes.
7.2 p.m.—Sacred Concert from St. Bennet's Church, Ringsted. Songs: (a) Der flyver saa mange Fugle smaa, (b) Jeg beder Naadens Gud (Anderson), (c) Herre, er det dig der kommer i, and (d) Lykken er ikke Gods eller Guld (Lange-Müller). Prelude and Fugue for Organ in D Minor (Pachelbel). Songs: (a) Morgenklokkerne, and (b) Der er nogle der bestandigt (Gunder Knudsen), (c) En Sangers Bøn (Reissiger). Organ Fantasia on "Lover den Herre" (Gade). Songs: (a) Den store, hvide Flok (Grieg), (b) Den evige Sne (Windling), (c) Guds Tugt (Andersen), (d) Maegtigste Kriste (Flemming).
8.15 p.m.—Programme by Knud Heglund (Actor).
8.25 p.m.—"The Camberley Triangle"—Comedy in One Act (A. A. Milne).
8.55 p.m.—News Bulletin.
9.10 p.m.—Concert of Chamber Music. Trio for Flute, Violin, and Cello in G Major (Haydn). Trio for Violin, French Horn and Piano-forte in F Major, Op. 40 (Brahms).
10.10 p.m. (approx.)—Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW. Relay by Casel, 1,220 kc/s (246 m.).
Transmits at intervals from 5.15 a.m.
3.0 p.m.—Orchestral Concert, relayed from the [Kurhaus, Wiesbaden]. Overture, "A Midsummer Night's Dream" (Thomas). Seliges Waldgeheimnis (Kienzl). Carmen Suite, No. 2 (Bizet). Variations from the Quartet in A Major for String Orchestra, Op. 18 (Beethoven). Prelude, "Hansel and Gretel" (Humperdinck). Waltz, Wiener Rathausbaltänze (Joh. Strauss). Selection from "Aida" (Verdi). March, Der alte Fritz (F. v. Blon).
4.45 p.m.—Economic Notes.
5.5 p.m.—Review of Books and the Cinematograph.
5.30 p.m.—Time Signal and Probable Programme Alteration Announcements.
6.35 till Close Down.—Programme from Stuttgart.
9.50 p.m. (in the interval)—News Bulletin, Sports Notes and Weather Report.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.7 kW. Relay by Bremen, 950 kc/s (315.8 m.); Flensburg, 1,373 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).
Transmits at intervals from 5.20 a.m.
3.0 p.m.—Fairly Tale Programme.
4.0 p.m.—Talk: German Emigration Overseas.
4.25 p.m. (from Hanover)—Talk: What do we understand by Scrofula?
4.50 p.m.—Sponsored Concert.
5.25 p.m. (from Bremen)—Talk: What Advantages has the Automatic Telephone System for Subscribers?
5.40 p.m.—Talk for Workers: Protection against Wrongful Dismissal in the Factory Council Law.
6.0 p.m.—Advanced English Lesson, relayed from Königs Wusterhausen.
6.25 p.m.—Talk for Ramblers: Our Native Woods in their Winter Garb.
6.50 p.m.—Frankfurt Exchange and Hamburg Fruit, Vegetable and Egg Market Prices.
6.55 p.m.—Weather Report.
7.0 p.m.—Relay from Stockholm: Selma Lagerlöf reads her "Legend of Christ".
7.30 p.m. (from Kiel)—"The Child"—A Tragi-Comedy in Three Acts (Ottomar Enking). North German Translation by Paul Jessen.
9.15 p.m.—Meteorological Report, Political and Miscellaneous Announcements, Sports Notes, Local and Police Intelligence, News and Topical Report.
9.35 p.m.—Vocal and Orchestral Concert of Waltz Music. Wiener Blut (Joh. Strauss). Waltz Intermezzo (Delibes). Frauenliebe (Fahrbach). Faust Waltz (Gounod). Sensitive (Amadei). Song, Kiss Waltz (Arditi). Donauwellen (Ivanovici). Valse brune (Ganne). Mimosas Waltz from "The Geisha" (Jones). Little Waltz (Carenò). Ballirenen (Lehar). Song, Wiener Walzer (Benatzky). Waltz from "The Czardas Princess" (Kalmán).

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
See Copenhagen Programme.
LJUBLJANA (Yugoslavia)
Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
Transmits at intervals from 11.15 a.m.
6.0 p.m.—French Language Lesson.
6.30 p.m.—Programme for Women.
7.0 p.m.—Talk on Films.
7.30 p.m.—Programme (to be announced), relayed from Belgrade, 694 kc/s (432.3 m.).
9.30 p.m.—Weather and News Bulletin.
MADRID (Spain)
Union Radio (EAJ 7). 707 kc/s (424 m.); 2 kW.
Transmits at intervals from 8.0 a.m.
2.0 p.m.—Chimes, Time Signal and Weather Report, followed by Concert. Pascale from "El bato" (Chueca). Largo from the Fifth Symphony (Dvorák). Selection from "La Bejarana" (Serrano and Alonso). Selection from "The Puritans" (Bellini). Intermezzo from "Naila" (Delibes). Turkish March (Moussorgsky). In the interval, Film Review.
3.20 p.m.—Theatre Review. News Bulletin, Announcement of Talks and Exchange Quotations.
3.30 p.m.—Concert of Newly-Released Gramophone Records.
3.45—7.0 p.m.—Interval.
7.0 p.m.—Chimes, Exchange Quotations, Market Prices and Topical Review; Theatre Section.
7.30 p.m.—Dance Music Programme.
8.25 p.m.—News Bulletin.
8.30—8.45 p.m.—Interval.
8.45 p.m.—English Pronunciation Lesson.
9.30 p.m.—Chimes, Time Signal, Exchange Quotations and Recital of Opera Music. Selections from "Il Trovatore" (Verdi), "Hansel and Gretel" (Humperdinck), and "Carmen" (Bizet).
10.0 p.m.—Band Concert from the Hotel Nacional.
11.55 p.m.—News Bulletin.
12 midnight.—Chimes, and Close Down.
MILAN (Italy)
Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.);

9.15 p.m.—Selections by the Station Sextet.
9.30 p.m.—Sponsored Programme.
10.30 p.m.—Time Signal, News Bulletin, Weather Report and Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW. Relay by Casel, 1,220 kc/s (246 m.).
Transmits at intervals from 5.15 a.m.
3.0 p.m.—Orchestral Concert, relayed from the [Kurhaus, Wiesbaden]. Overture, "A Midsummer Night's Dream" (Thomas). Seliges Waldgeheimnis (Kienzl). Carmen Suite, No. 2 (Bizet). Variations from the Quartet in A Major for String Orchestra, Op. 18 (Beethoven). Prelude, "Hansel and Gretel" (Humperdinck). Waltz, Wiener Rathausbaltänze (Joh. Strauss). Selection from "Aida" (Verdi). March, Der alte Fritz (F. v. Blon).
4.45 p.m.—Economic Notes.
5.5 p.m.—Review of Books and the Cinematograph.
5.30 p.m.—Time Signal and Probable Programme Alteration Announcements.
6.35 till Close Down.—Programme from Stuttgart.
9.50 p.m. (in the interval)—News Bulletin, Sports Notes and Weather Report.

HAMBURG (Germany)

Norag (ha, in Morse). 806 kc/s (372 m.); 1.7 kW. Relay by Bremen, 950 kc/s (315.8 m.); Flensburg, 1,373 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).
Transmits at intervals from 5.20 a.m.
3.0 p.m.—Fairly Tale Programme.
4.0 p.m.—Talk: German Emigration Overseas.
4.25 p.m. (from Hanover)—Talk: What do we understand by Scrofula?
4.50 p.m.—Sponsored Concert.
5.25 p.m. (from Bremen)—Talk: What Advantages has the Automatic Telephone System for Subscribers?
5.40 p.m.—Talk for Workers: Protection against Wrongful Dismissal in the Factory Council Law.
6.0 p.m.—Advanced English Lesson, relayed from Königs Wusterhausen.
6.25 p.m.—Talk for Ramblers: Our Native Woods in their Winter Garb.
6.50 p.m.—Frankfurt Exchange and Hamburg Fruit, Vegetable and Egg Market Prices.
6.55 p.m.—Weather Report.
7.0 p.m.—Relay from Stockholm: Selma Lagerlöf reads her "Legend of Christ".
7.30 p.m. (from Kiel)—"The Child"—A Tragi-Comedy in Three Acts (Ottomar Enking). North German Translation by Paul Jessen.
9.15 p.m.—Meteorological Report, Political and Miscellaneous Announcements, Sports Notes, Local and Police Intelligence, News and Topical Report.
9.35 p.m.—Vocal and Orchestral Concert of Waltz Music. Wiener Blut (Joh. Strauss). Waltz Intermezzo (Delibes). Frauenliebe (Fahrbach). Faust Waltz (Gounod). Sensitive (Amadei). Song, Kiss Waltz (Arditi). Donauwellen (Ivanovici). Valse brune (Ganne). Mimosas Waltz from "The Geisha" (Jones). Little Waltz (Carenò). Ballirenen (Lehar). Song, Wiener Walzer (Benatzky). Waltz from "The Czardas Princess" (Kalmán).

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
See Copenhagen Programme.
LJUBLJANA (Yugoslavia)
Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
Transmits at intervals from 11.15 a.m.
6.0 p.m.—French Language Lesson.
6.30 p.m.—Programme for Women.
7.0 p.m.—Talk on Films.
7.30 p.m.—Programme (to be announced), relayed from Belgrade, 694 kc/s (432.3 m.).
9.30 p.m.—Weather and News Bulletin.

MADRID (Spain)

Union Radio (EAJ 7). 707 kc/s (424 m.); 2 kW.
Transmits at intervals from 8.0 a.m.
2.0 p.m.—Chimes, Time Signal and Weather Report, followed by Concert. Pascale from "El bato" (Chueca). Largo from the Fifth Symphony (Dvorák). Selection from "La Bejarana" (Serrano and Alonso). Selection from "The Puritans" (Bellini). Intermezzo from "Naila" (Delibes). Turkish March (Moussorgsky). In the interval, Film Review.
3.20 p.m.—Theatre Review. News Bulletin, Announcement of Talks and Exchange Quotations.
3.30 p.m.—Concert of Newly-Released Gramophone Records.
3.45—7.0 p.m.—Interval.
7.0 p.m.—Chimes, Exchange Quotations, Market Prices and Topical Review; Theatre Section.
7.30 p.m.—Dance Music Programme.
8.25 p.m.—News Bulletin.
8.30—8.45 p.m.—Interval.
8.45 p.m.—English Pronunciation Lesson.
9.30 p.m.—Chimes, Time Signal, Exchange Quotations and Recital of Opera Music. Selections from "Il Trovatore" (Verdi), "Hansel and Gretel" (Humperdinck), and "Carmen" (Bizet).
10.0 p.m.—Band Concert from the Hotel Nacional.
11.55 p.m.—News Bulletin.
12 midnight.—Chimes, and Close Down.
MILAN (Italy)
Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.);

1.40 p.m.—Talk on Cookery.
2.25 p.m.—Wireless Notes.
2.55 p.m.—Gramophone Records.
4.10 p.m.—Orchestral Concert. Flemish Kermeesse and Serenade from "Milena" (Blockx). Two Flemish Dances (Blockx). Overture, "Poet and Peasant" (Suppé). Selection from "Mignon" (Thomas). Waltz, Wine, Woman and Song (Strauss). Cello Solos: (a) Après un rêve (Fauré), (b) Minuet (Valensin). Selection from "Die Fledermaus" (Strauss). Valse triste (Sibelius). In a Monastery Garden (Kettelbey). Spanish Serenade for Cello (Popper). Offenbachiana (Conradi). Berceuse from "Jocelyn" (Godard). Potpourri, Deutsche Marschperlen (Blankenburg).
6.25 p.m.—Elementary English Lesson.
6.55 p.m.—Talk: Flemish Humour.
7.10 p.m.—Police Notes.
7.40 p.m.—Concert by the Haarlem Orchestral Society. Overture, Egmont (Beethoven). Pianoforte Concerto No. 3 (Beethoven).
8.40 p.m.—News Bulletin.
8.50 p.m.—Felix Timmermans in a Humorous Talk.
9.10 p.m.—Concert (contd.). Symphonic fantastique (Berlioz).
10.10 p.m.—Gramophone Records.
11.40 p.m. (approx.)—Close Down.

JUAN-LES-PINS (France)

1205 kc/s (249 m.); 1.5 kW.
1.0 p.m.—News Bulletin, Amusement Guide and Trio Concert. Selection from "Prometheus" (Beethoven). Swedish Song (Cantoux). Selection from "Cavalleria Rusticana" (Mascagni). Elégie (Fauré). Selection from "Aida" (Verdi). Wiegand (Brahms). Rhapsody (Liszt).
2.0 p.m.—The Marseillaise.
2.15 (approx.)—8.30 p.m.—No transmission.
8.30 p.m.—News Bulletin, Amusement Guide, Meteorological Report, Film Review and "Le Filibustier"—Play in Three Acts (Richepin).
10.0 p.m.—The Marseillaise and Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
See Copenhagen Programme.
LJUBLJANA (Yugoslavia)
Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
Transmits at intervals from 11.15 a.m.
6.0 p.m.—French Language Lesson.
6.30 p.m.—Programme for Women.
7.0 p.m.—Talk on Films.
7.30 p.m.—Programme (to be announced), relayed from Belgrade, 694 kc/s (432.3 m.).
9.30 p.m.—Weather and News Bulletin.

MADRID (Spain)

Union Radio (EAJ 7). 707 kc/s (424 m.); 2 kW.
Transmits at intervals from 8.0 a.m.
2.0 p.m.—Chimes, Time Signal and Weather Report, followed by Concert. Pascale from "El bato" (Chueca). Largo from the Fifth Symphony (Dvorák). Selection from "La Bejarana" (Serrano and Alonso). Selection from "The Puritans" (Bellini). Intermezzo from "Naila" (Delibes). Turkish March (Moussorgsky). In the interval, Film Review.
3.20 p.m.—Theatre Review. News Bulletin, Announcement of Talks and Exchange Quotations.
3.30 p.m.—Concert of Newly-Released Gramophone Records.
3.45—7.0 p.m.—Interval.
7.0 p.m.—Chimes, Exchange Quotations, Market Prices and Topical Review; Theatre Section.
7.30 p.m.—Dance Music Programme.
8.25 p.m.—News Bulletin.
8.30—8.45 p.m.—Interval.
8.45 p.m.—English Pronunciation Lesson.
9.30 p.m.—Chimes, Time Signal, Exchange Quotations and Recital of Opera Music. Selections from "Il Trovatore" (Verdi), "Hansel and Gretel" (Humperdinck), and "Carmen" (Bizet).
10.0 p.m.—Band Concert from the Hotel Nacional.
11.55 p.m.—News Bulletin.
12 midnight.—Chimes, and Close Down.
MILAN (Italy)
Ente Italiano Audizioni Radiofoniche. 599 kc/s (501 m.);

8.5 kW. Programme relayed by Turin, 1,013 kc/s (296.1 m.); and Genoa, 961.2 kc/s (312 m.).
Transmits at intervals from 7.15 a.m.
4.0 p.m.—Gramophone Records.
4.50 p.m.—Giornale radio and Agricultural Report.
6.20 p.m.—Announcements.
6.30 p.m.—Variety Concert.
7.15 p.m.—Giornale radio; Weather.
7.30 p.m.—Time Signal.
8.0 p.m.—Variety Programme.
8.30—10.10 p.m.—Polish National Evening. In the intervals, at 8.30 p.m.—Comedy Programme, and at 9.30 p.m.—Talk: From Near and Far. After the Programme Concert from the Cova Restaurant.
10.10 p.m. (in the interval)—Giornale radio.
10.55 p.m.—News Bulletin.
1.10 p.m. (approx.)—Close Down.

MORAVSKÁ-OSTRAVA (Czechoslovakia)

1,139 kc/s (263 m.); 11 kW.
Transmits at intervals from 10.0 a.m.
6.15 p.m.—Programme from Prague.
9.15 p.m.—Programme Announcements and Theatre Review.
9.20 p.m.—Programme from Prague.

MUNICH (Germany)

563 kc/s (533 m.); 1.7 kW. Relay by Augsburg, 536 kc/s (560 m.); Kaiserslautern, 536 kc/s (560 m.); and Nürnberg, 1,256 kc/s (239 m.).
Transmits at intervals from 5.45 a.m.
3.10 p.m.—Time Signal, Weather Report and Agricultural Notes.
3.25 p.m.—Baritone Song Recital by Hans Streck. Richard Staab at the Pianoforte. Dignare o Domine from the "Te Deum" (Händel). Amarilli (G. Caccini). Adelaide (Beethoven). Three Songs (R. Strauss): (a) Befreit, (b) Freundschaft Vision, (c) Zueignung.
3.55 p.m.—Educational Talk: Children's Delight in Modelling and Painting.
4.25 p.m.—Concert by a Mandoline Orchestra. March, Die Wacht-parade (Blankenburg). Waltz, Münchener Kindl (Komzak). Interlude of Yodelling Duets and Viennese Songs. Serenade, Primo bacio (Sartori). Overture, "Im Reiche des Indra" (Lincke). Sofien-Marsch (Seiffert).
5.5 p.m.—Talk for Workers: Protection during Working Hours.
5.25 p.m.—Time Signal, Weather Report, Snow Report and Agricultural Notes.
5.45 p.m.—Talk: Christmas Shooting.
6.5 p.m.—Talk on Handicrafts.
6.25 p.m.—Talk: Wireless Legal Questions.
6.45 p.m.—Orchestral Concert, conducted by Ernst Hagel.
7.45 p.m.—Talk: A Quarter-of-an-Hour's World History.
8.0 p.m.—Symphony Concert by the Station Orchestra, conducted by Franz Schalk of Vienna. Concerto grosso (Händel). Fourth Symphony in E Flat Major—the Romantic (Bruckner).
9.20 p.m.—Time Signal, Weather and Snow Report, News Bulletin and Sports Notes.
9.45 p.m.—Experimental Programme—Language and Rhythm.

PARIS (France)

Poste Parisien. 914 kc/s (329 m.); 1.2 kW.
9.0 a.m.—Transmission of Topical Pictures.
7.25 p.m.—Gramophone Records and News Bulletin.
8.0 p.m.—Concert of Dance Music by Cricket Smith's Royal Box Band. Swinging in a Hammock (P. Wendling). Confessin' (Daugherty). Romance (W. Donaldson). He's my Secret Passion (A. Young). Good Evening (Seymour). When it's Springtime in the Rockies (R. Sauer). Veronica (R. Penso). There's Danger in your Eyes, Chérie (P. Wendling). It happened in Monterey (M. Wayne). Sittin' on a Rainbow (Yellen). Under a Texas Moon (Ray Perkins). Down the River of Golden Dreams (Shilkret). Should I? (N. H. Brown).
9.15 p.m.—Concert of French Songs with the collaboration of Music-Hall Artists.
10.30 p.m. (approx.)—Close Down.

PARIS (France)

Radio-Paris. (CFR). 174 kc/s (1,725 m.); 17 kW.
Transmits at intervals from 6.45 a.m.

Programmes for Friday—(Cont.)

12.30 p.m.—Gramophone Concert of Chamber Music. Les Plaisirs champêtres (Montclair-Casadesu). Sonata for Flute and String Instruments (Scarlati). Widmung (Schumann). The Nightingale (Alibieff). Cubana and Andaluza (de Falla). Chant sans paroles (Tchaikovsky). Ariettes oubliées (Debussy). Fata galantes and Mandolines (Debussy). Septet (Saint-Saëns). In the intervals at 1.0 p.m.—Exchange Quotations and News and at 1.30 p.m.—Exchange Quotations.

2.0 p.m.—Exchange; Market Prices.

3.30 p.m.—Exchange Quotations.

3.45 p.m.—Gramophone Concert. Popular Marching Songs. Selection from "Miss Decima" (Audran). Church Bells of Novgorod. Rustle of Spring (Sinding). Lusinga (Curtis). Je vous ai dans mon cœur (Nichols). Pluie de roses (Aignou). My Song of the Nile (Meyer). Rafe (Berniaux). Tango miedo (Aguilar). Parisian Doll (May-Wilder). Tango (Albeniz). Persian March (Ketyelbey).

4.30 p.m.—Talk: Great Musical Epochs.

4.55 p.m.—News and Exchange Quotations.

6.0 p.m.—Agricultural Report and Racing Results.

6.25 p.m.—New York Exchange Rates.

6.30 p.m.—Gramophone Concert. Selection from "Les Cloches de Corneville" (Planquette). Selection from "La Dame blanche" (Boieldieu). Duet from "The Merry Widow" (Lehár). Carmela (De Curtis). Il est gentil (Bousquet). Nina, Nini, Ninon (Borel-Clerc). Dans ma peniche (Borel-Clerc).

7.0 p.m.—Colonial Talk: The Annamite Peasant.

7.30 p.m.—Elementary English Lesson.

7.45 p.m.—Commercial Prices, Economic and Social Notes and News.

8.0 p.m.—Talk with Gramophone Illustrations: The Centenary of the "Symphonie fantastique"—Berlioz in 1830.

8.0 p.m.—Sports Review.

8.45 p.m.—"Upligénie en Tauride"—Opera (Gluck) for Soloists, Choir

and the Station Orchestra under the direction of M. Henri Défosse. In the interval at 9.15 p.m.—Press Review, News and Time Signal.

POZNAŃ (Poland)
896 kc/s (335 m.); 1.9 kW. Transmits at intervals from 6.15 a.m.

5.45 p.m.—Pianoforte Recital. Romance (Schumann). Elegy and Prelude (Rachmaninoff). Cordoba (Albeniz).

6.5 p.m.—Topical Talk.

6.20 p.m.—Intermediate French Lesson: Reading from "Le petit Chose" (Alphonse Daudet), with Explanatory Notes.

6.35 p.m.—Talk on Literature and Poetry.

6.50 p.m.—Advanced English Lesson.

7.5 p.m.—Miscellaneous Items, followed by News Bulletin.

7.15 p.m.—Symphony Concert relayed from Warsaw. In the intervals, Theatre Review and Programme Announcements.

9.30 p.m.—Time Signal, News Bulletin, Sports Notes and Police Announcements.

9.45 p.m.—Dance Music Programme relayed from the Café Esplanade.

PRAGUE (Czechoslovakia)
Strasnice. 617 kc/s (487 m.); 5.5 kW. Transmits at intervals from 10.15 a.m.

6.15 p.m.—News Bulletin.

6.20 p.m.—Talk (to be announced).

6.30 p.m.—Concert conducted by K. B. Jirák.

9.0 p.m.—Time, News and Sports Notes.

9.15 p.m.—Theatre Notes and Programme Announcements.

9.20 p.m.—Concert of Contemporary Music. Third String Quartet (Risager). String Quartet in D Major, Op. 19 (Albrecht).

ROME (Italy)
Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.); 75 kW. Relayed by Naples, 905 kc/s (332 m.) and ZRO 3750 kc/s; (80 m.). Transmits at intervals from 7.15 a.m.

4.0 p.m.—Vocal and Instrumental

Concert. Overture to the Oratorio, "Occasional" (Händel). Tenor Solos: (a) Caro mio ben (Giordano), (b) Elégie (Massenet). Canto d'amore (Pennati-Malvezzi). Romance for Tenor: L'ideale (Tosti). Song without Words (Mendelssohn). Tenor Solos: (a) Baciarmi (Buzzi-Peccia), (b) Principessa (Padilla). Three Hungarian Dancess. Dance Music Selections.

6.45 p.m.—Giornale radio; News and Sports Notes.

7.0 p.m.—Announcements and Press Review.

7.30 p.m.—Time Signal.

7.30 p.m.—Variety Concert.

8.15 p.m.—Concert. Sonata in A Major for Violin and Pianoforte (Pizzetti). Soprano Solos: (a) Aria from "The Daughter of the Regiment" (Donizetti), (b) Scherzo (Respighi), (c) Fior di campo (Broggi). "Don Juan's Adventure."—A Dialogue (Gabriele d'Annunzio). Mediaeval Ballad for Soprano (De Lucia). Violin Solos: (a) Serenata (Samazeuilh), (b) Scene from the Czarinas, No. 4 (Hubay). Prelude, "I Rantazzo" (Mascagni). Baritone Solo from "Christopher Columbus" (Franchetti). Selections for Soprano and Tenor from "Othello" (Verdi). Dances from "William Tell" (Rossini).

9.55 p.m. (approx.)—Close Down.

SEVILLE (Spain)
Union Radio (EJ5). 815 kc/s (368 m.); 1.5 kW.

2.0 p.m.—Musical Selections—Waltzes, Tangos Jotas and Bandonion Music, followed by Selections from Musical Comedies: (a) "Los Flamencos" (Vives), (b) "Al dorarse las espigas" (Balaguer), (c) El Romeral (Acevedo-Giles), (d) "Marina" (Arrieta). After the Programme, Flamenco Song Recital and Dance Music Programme.

3.0—9.0 p.m.—Interval.

9.0 p.m.—Concert. Part I—Selections from Musical Comedies (Chueca). (a) "La Gran Via," (b) "Aguia, azucarillas y aguadientes." Part II—Flamenco Song Recital: Tango de Cadiz. Medias granadinas.

Tarantas. Seguidillas gitanas. Fandanguillos. Solea. Seguidillas. Fandanguillos; followed by News Bulletin, Exchange Quotations Market Prices and Meteorological Report. Part III—Dance Musical Programme.

11.0 p.m. (approx.)—Close Down.

STUTTGART (Germany)
Süddeutscher Rundfunk. 833 kc/s (360 m.); 1.7 kW and Mühlacker, 75 kW. Relayed by Freiburg, 527 kc/s (570 m.). Transmits at intervals from 5.15 a.m.

5.35 p.m.—Talk: Illness among Employees and its Legal Consequences.

6.5 p.m. (from Mannheim).—Medical Talk: Unhygienic Habits.

6.30 p.m.—"Ski-ing"—a Variety Programme under the direction of Artur Georg Richter.

7.30 p.m.—"Renaissance, Baroque and Rococo." First Evening. "Italian Renaissance"—a Work for the Wireless (Paul Enderling). Introductory Talk with Literary Excerpts from the Works of Guarini, Torquato, Tasso, Polizano, Boccaccio, Bandello, Lorenzo di Medici, Michelangelo, Vittoria Colonna and Benvenuto Cellini and Music by Orlando di Lasso and Palestrina, followed by "A Comedy without a Title" (Nicolo Machiavelli).

9.10 p.m.—Symphony No. VII—The Hungarian Symphony (Waldemar von Baussnern). The Composer conducting the Philharmonic Orchestra.

9.50 p.m.—News Bulletin.

10.10 p.m.—Gramophone Dance Music.

WARSAW (Poland)
Polskie Radio. 212 kc/s (1,411 m.); 14 kW. Transmits at intervals from 10.40 a.m.

3.15 p.m.—Gramophone Records.

4.15 p.m.—Talk on Economics, relayed from Lwow, 788 kc/s (381 m.).

4.45 p.m.—Concert of Light Music.

5.45 p.m.—Miscellaneous Items.

6.10 p.m.—Agricultural Report.

6.25 p.m.—Gramophone Records.

6.35 p.m.—Radio Journal.

6.55 p.m.—Gramophone Records.

7.0 p.m.—Talk on Music.

7.15 p.m.—Symphony Concert of Yugoslav Music, relayed from the Philharmonic Hall. Symphonic Poem, Les champs ensoleillés (Bersa). Three Songs, to Orchestral Accompaniment, De mes notagnes. (Baranovic): (a) L'Angelus (b) Le Voisin, (c) Le parrain Martin. Concerto for 'Cello' (Tkalic), Three Dances (Krstic), Symphonic Poem, Kolo (Gotovac). In the interval, Programme Announcements and Theatre Review. After the Programme, Meteorological Report, Police and Sports Notes, Answers to Correspondents and Wireless Notes.

WILNO (Poland)
Polskie Radio, 959 kc/s (312.8 m.); 0.5 kW. Transmits at intervals from 10.58 a.m.

3.30 p.m.—Gramophone Records.

4.15 p.m.—Talks from Lwow, 788 kc/s (381 m.).

4.45 p.m.—The Microphone visits an Orphanage at Wilno.

5.20 p.m.—Light Music from Warsaw.

5.45 p.m.—Announcements.

6.0 p.m.—Programme and Miscellaneous Announcements.

6.10 p.m.—Agricultural Report from Warsaw.

6.25 p.m.—Gramophone Records.

6.35 p.m.—Radio Journal from Warsaw.

7.0 p.m.—Talk on Music.

7.15 p.m.—Symphony Concert from Warsaw. Film Review in the interval.

10.0 p.m.—Relay of Foreign Stations.

11.0 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)
Radiostation Zürich. 653 kc/s (459 m.); 0.75 kW. Transmits at intervals from 11.30 a.m.

6.33 p.m.—Talk: An Introduction to the Understanding of German Legends.

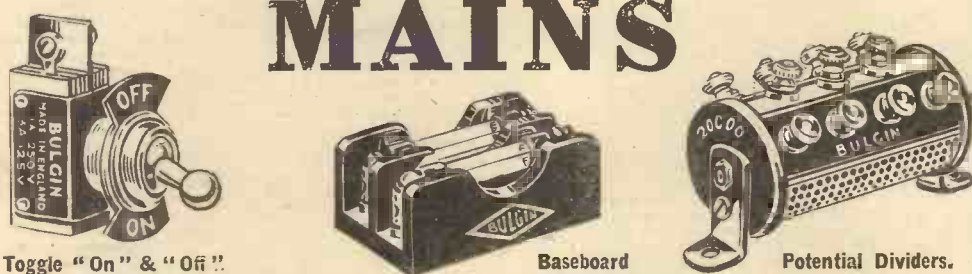
7.0 p.m.—Concert of Solos and Duets to the Lute.

7.55 p.m.—Divertissement for Two Clarinets and Bassoon (Mozart).

8.15 p.m. (approx.)—Orchestral Concert. From Lanner to Lehár.

9.0 p.m.—Weather Report, News Bulletin and Close Down.

MAINS



Toggle "On" & "Off" Switch.
Baseboard Twin Fuseholder.
Potential Dividers.

Eliminate

Eliminator troubles

by fitting

BULGIN

The Choice of Critics

MAINS FITTINGS

Each Bulgin component is subjected to rigorous test before being passed for sale to the public. Send for the new edition of our famous 60 pp. catalogue, 2d. post free.

A. F. BULGIN & Co., Ltd., (Phones: Holborn 1072, 2072.)

9, 10, 11, Cursitor Street, Chancery Lane, London, E.C.4.

TOGGLE "ON" & "OFF" SWITCH.

This MINIATURE Quick Make-and-break switch will carry 250 volts 1 amp., or 125 volts 3 amp. The operating lever is fully insulated. N.P. plate engraved "On" & "Off." 1/9

BASEBOARD TWIN FUSE-HOLDER COMPLETE WITH FUSES.

A double pole fuseholder designed for baseboard fixing and occupying the minimum amount of space. The two fuse units are divided by a bakelite bridge piece. The finger recesses are just sufficient width to extract the glass enclosed fuses without touching the metal parts. Complete with 2/6 two 1 amp. fuses.

POTENTIAL DIVIDERS.

Sturdily constructed with air-cooled perforated metal frame. None-inductively wound with best quality wire. Pure ebonite insulation. 10,000 ohms. 25 m/A. current or 20,000 ohms. 15 m/A. current. 7/6



CLIX FOR CONTACT

Is your set O.K. for Christmas?

Look to your Contact Points and specify CLIX for your replacements.

THE CLIX SHOWCASE

to be seen on your dealer's counter will help you. It's the little things that count!

CLIX "SPRING-SCREW" WANDER PLUG, 2d.



No. 8. Pat. Pro. Pat. Reg. Design.

HOOK TERMINAL, 2d.



No. 4 Pat.

Illustrated Folder on 27 Clix Fittings—Free.

LECTRO LINX, LTD.,

254, VAUXHALL BRIDGE ROAD, S.W.1.

PROGRAMMES FOR SATURDAY

(December 20)

BARCELONA (Spain)

Radio-Barcelona (EAJ 1). 860 kc/s (349 m.); 8 kW.
 Transmits at intervals from 8.0 a.m.
 1.0 p.m.—Sextet Selections and Gramophone Records. Military March (Ailbott). Foxtrot, A Sweetheart in Every Port (Laka). Java, The Java of '29 (Demon). Réverie (A. Cons). Selection from "Moros y Cristianos" (Serrano). Berceuse (Rimsky - Korsakoff). Bolero, Puerta de tierra (Albeniz). Minuet (Boccherini). Czardas, Ivanka (G. Michiels). Waltz, Vision of Love (Holmes). Pasodoble, La Macarena (M. Lizcano de la Rosa). In the interval, Theatre and Cinematograph Notes.
 3.0 p.m.—Programme for Hospitals and Benevolent Institutions—Gramophone Records.
 4.0—5.30 p.m.—Interval.
 5.30 p.m.—Market Prices and Exchange Quotations, followed by Gramophone Records of Dance Music.
 6.0 p.m.—Trio Selections. Serenata, Al pie de la Giralda (Mateu). Selection from "Phi-Phi" (Christine). Nocturne in D Flat (F. Salvat Vilaseca). Aria from "Louise" (Charpentier). Pasodoble, Sierra granadina (Daniel); followed by News Bulletin.
 7.0 p.m.—Gramophone Records.
 8.30 p.m.—Elementary German Lesson.
 9.0 p.m.—Chimes, Exchange Quotations, Agricultural Report and Market Prices.
 9.5 p.m.—Orchestral Concert. March, Farfaretta (Oudshoorn). Waltz, Wine, Woman and Song (Joh. Strauss). Tango, Nocturne, No. 2 (Jorda). Maracabo (Arom). Serenade, For Fanny (J. Vanden Eynde). Das le bois (Delmas). Anitra's Dance from the Peer Gynt Suite (Grieg).
 10.0 p.m.—News Bulletin.
 10.5 p.m.—Choral Concert, conducted by Pedro Jorda.
 11.0 p.m.—Gramophone Records.
 12 midnight (approx.)—Close Down

BRATISLAVA (Czechoslovakia)

1,076 kc/s (270 m.); 14 kW.
 Transmits at intervals from 10.30 a.m.
 4.30 p.m.—A Puppet Play.
 5.40 p.m.—Talk: Popular Customs on St. Thomas' Day.
 5.55 p.m.—Lesson in Esperanto.
 6.15 p.m.—Programme from Prague.
 7.40 p.m.—Programme from Brno.
 8.40 p.m.—Gramophone Records.
 9.20 p.m.—Programme from Prague.
 9.30 p.m.—Programme from Prague.
 10.0 p.m.—Programme from Moravská-Ostrava.

BRNO (Czechoslovakia)

878 kc/s (342 m.); 3 kW.
 Transmits at intervals from 10.15 a.m.
 6.15 p.m.—Programme from Prague.
 6.20 p.m.—Talk: The Arts and Broadcasting.
 6.40 p.m.—"A Thousand and One Nights"—Musical and Literary Programme. Scheherazade before the King. Overture, "Ali Baba" (Cherubini). A Tale about a Merchant and a Djinn. Overture, "Abu Hassan" (Weber). The Tale of the Second Night. Selection from "Il Seraglio" (Mozart). The Tale of the Third Night. Turkish March (Beethoven).
 7.40 p.m.—Concert from the Works of Janacek.
 8.40 p.m.—Gramophone Records.
 9.0 p.m.—Programme from Prague.
 9.20 p.m.—News Bulletin and Theatre Review.
 9.25 p.m.—Gramophone Records.
 9.30 p.m.—Programme from Prague.
 10.0 p.m.—Programme from Moravská-Ostrava.

COPENHAGEN (Denmark)

1,067 kc/s (281 m.); 2 kW.
 Relayed by Kalundborg, 260 kc/s (1,153 m.).
 Transmits at intervals from 6.30 a.m.
 2.30 p.m.—Orchestral Concert. March, The Standard Bearers (Fahrbach). Fantasia on Scottish Melodies (Oelschlegel). Two Selections for Strings: (a) Tendresse (Pente), (b) Flirtation (Steck). Bacchanal from "The Seasons" (Glazounoff). Habanera (Chabrier).
 3.15 p.m. (approx.)—Reading (Svend Fleuron); followed by Concert (contd.). Prelude to the Second Act of "Saul and David" (Nielsen).

sen). Prelude (Birkedal-Barfod). Allegro grazioso from the Symphonie pathétique (Tchaikovsky). Two Selections for Strings (Grieg): (a) Herzwunden, (b) An den Frühling. African Dance (Ganne). Karelska Garderegementets March.
 4.40 p.m.—Exchange Quotations and Fish Market Prices.
 4.50 p.m.—Talk from the Aarhus Studio.
 5.20 p.m.—French Language Lesson.
 5.50 p.m.—Weather Report.
 6.0 p.m.—News Bulletin.
 6.15 p.m.—Time Signal.
 6.30 p.m.—Talk by Ed. Eilschou Holm.
 7.0 p.m.—Town Hall Chimes.
 7.2 p.m.—Secular Programme of Christmas Songs and Poems. Introductory Talk. Recitations: (a) from "Peters Jull" (Johan Krohn), (b) Nissen (Kaalund). Songs: (a) Der er noget i Luften, (b) Sikken voldsom Traengsel og Alarm (Gregsens), (c) Lille Juleaften (Torriid), (d) Bort fra Døren, Hansemand (Lumbye), (e) Julenissen (Viggo Sanne), (f) Sang omkring Juletralet (Hartmann), (g) Juletralet, (h) Kanebjælderne, (i) Julesang 1850, and (j) Glæde Jul (Horneman).
 8.15 p.m.—Reading: The Young Pretender, from "Whiteoaks" (Mazo de la Roche).
 8.40 p.m.—News Bulletin.
 8.55 p.m.—Orchestral Concert. March, Disciplin (Lindebro). Spanish Comedy. Overture (Kéler-Béla). Liebeswalzer (Moszkovsky). On the Bosphorus (Lincke). Spanish Fantasia, Une fête à Aranjuez (Demersseman). In the Shades (Finck). Waltz, Allegro di bravura and Tarantella from the Gipsy Suite (German). Blues from "Jonny spielt auf" (Krenek).
 10.0 p.m.—Dance Music relayed from the Industri Restaurant.
 11.0 p.m. (in an interval)—Town Hall Chimes.
 11.15 p.m. (approx.)—Close Down.

CORK (Ireland)

(6CK). 1,337 kc/s (225 m.); 1.5 kW.
 1.30 p.m.—Weather Forecast and Gramophone Records.
 7.20 p.m.—Programme from Dublin.

CRACOW (Poland)

Polskie Radio. 1,229 kc/s (244 m.); 1.5 kW.
 Transmits at intervals from 10.40 a.m.
 5.45 p.m.—Miscellaneous Items. News Bulletin and Programme Announcements.
 6.10 p.m.—Agricultural Report.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Radio Journal.
 7.0 p.m.—Talk from Warsaw.
 7.15 p.m.—Review of Foreign Politics for the Past Week.
 7.30 p.m.—Concert of Light Music, relayed from Warsaw.
 9.0 p.m.—Talk from Warsaw.
 9.15 p.m.—Song Recital from Warsaw.
 9.50 p.m.—News Bulletin.
 10.0 p.m.—Dance Music Programme.
 11.0 p.m.—Bugle Call from the Tower of St. Mary's Church.

DUBLIN (Ireland)

(2RN). 725 kc/s (413 m.); 1.5 kW.
 1.30—2.0 p.m.—Time Signal, Weather Report and Gramophone Concert.
 2.0—7.20 p.m.—Interval.
 7.20 p.m.—News Bulletin.
 7.30 p.m.—Time Signal.
 7.32 p.m.—Talk to be announced.
 7.45 p.m.—Irish Lesson by Seamus O'Duinn.
 8.0 p.m.—The Station Sextet: Selections of Christmas Music.
 8.15 p.m.—J. O'Neill (Tenor): Christmas Songs.
 8.25 p.m.—The Station Sextet: Christmas Melodies by the Fireside (C. Lennox).
 8.45 p.m.—Talk to Farmers by P. A. Murphy, Sc.D., A.R.C.Sc.: The Story of the Potato Blight.
 9.0 p.m.—Ronald Bridgett (Bass).
 9.15 p.m.—May Fogarty (Violinist).
 9.30 p.m.—Sponsored Programme.
 10.30 p.m.—Time Signal, News Bulletin, Weather Report and Close Down.

FRANKFURT-am-MAIN (Germany)

770 kc/s (390 m.); 1.7 kW. Relayed by Cassel, 1,220 kc/s (246 m.).
 Transmits at intervals from 5.15 a.m.
 2.30 p.m.—Time Signal, Economic Notes and News Bulletin.
 2.55 p.m.—Weather Report.
 3.0 p.m.—Orchestral Concert. Symphonic Poem for Full Orchestra.

Orpheus (Liszt). Lenore, Symphony in E Major, Op. 177 (J. Raff). March, Ungarischer Sturm (Liszt), followed by Concert of Old Dance Music.
 4.45 p.m.—Economic Notes.
 5.5 p.m.—Talk: The German Currency.
 5.30 p.m.—Time Signal and Announcements of Programme Alterations.
 5.35 p.m.—Programme for Workers. Debate between H. Salzmann, H. Schaub and Paul Laven: Agricultural Labourers.
 6.0 p.m.—Time Signal, Weather Forecast and Economic Notes.
 6.5 p.m.—Spanish Language Lesson.
 6.30 p.m.—Mandoline Concert from Freiburg (See Stuttgart).
 7.30 p.m.—Programme from Stuttgart.
 9.30 p.m.—News, Bulletin, Sports Notes and Weather Report.
 9.50 p.m.—Orchestral Dance Music, relayed from Karlsruhe. (See Stuttgart).

HAMBURG (Germany)

Norag (ha, in Morse). 805 kc/s (372 m.); 1.7 kW. Relayed by Bremen, 950 kc/s (315.8 m.); Fleisburg, 1,373 kc/s (218 m.); Hanover, 530 kc/s (566 m.); and Kiel, 1,292 kc/s (232.2 m.).
 Transmits at intervals from 5.20 a.m.
 12.5 p.m.—Orchestral Concert of Operetta Music.
 2.30 p.m.—Review of Books: (a) Fairy Tales, (b) Astronomy.
 2.50 p.m.—Talk: The Stars visible at Christmas Time.
 3.0 p.m. (from Bremen)—Concert from on board the Liner "Stuttgart." "Sailors putting out to Sea," Greeting. Potpourri, From the Rhine to the Danube (Rhode). Emperor Waltz (Joh. Strauss). O du fröhliche, o du selige. Recitation: Christbaum auf See. Ich haite einst ein schönes Vaterland (Lassen). Christmas Reminiscences from my Sea-going Days, by Captain Adolf Winter. Song by the Ship's Quartet. Overture, "Morning, Noon and Night" (Suppé). German Song Potpourri (Hannemann).
 4.30 p.m.—"The Street"—Wireless Scenes, played by Children.
 5.0 p.m.—Reading of Christmas Tales (Otto Ernst), by the Author's Daughter.
 5.20 p.m.—Sponsored Concert.
 6.0 p.m. (from Kiel)—Baritone Song Recital and Pianoforte Solos from the Works of Richard Strauss. Auf stillen Waldespfad, Op. 9, No. 1. Wasserrose. Die sieben Siegel. Ein einsamer Quelle, Op. 9, No. 2. Im Spätboot. Lied des Steinklopfers. Träumerei. Winterweih. In goldner Fülle. Heidebild, Op. 9, No. 5. Das Tal. Winterliebe. Intermezzo, Op. 9, No. 3.
 6.55 p.m.—Meteorological Report.
 7.0 p.m. (from Bremen)—Concert by a Trumpet Corps, conducted by Carl Kaus. March, Durch Nacht zum Licht (E. Laukien). Overture, "The Golden Cross" (Brüll). "Andante from the Fifth Symphony (Haydn). Fantasia, Konradin Kreutzer (H. Bohne). March, Ein Manneswort (Fr. Pollak). Waltz from "Der Rosenkavalier" (R. Strauss). Entry of the Comedians—Character Piece after Smetana (J. Kubat). Potpourri of Soldiers' Songs (Hannemann). Interval. Cavalry Parade March (G. Hérold). Overture, "Peter Schmitt" (Weber). Four Selections from the Works of Old Masters: (a) Andante grazioso from the Twelfth Sonata (Mozart), (b) Minuet, No. 6 from "German Dances" (Schubert), (c) Little Cradle Song from "Albumblätter" (Schumann), (d) German Waltz (Beethoven). Selection from "Carmen" (Bizet). Army March III.
 9.0 p.m.—Weather Report, Political and Miscellaneous Announcements, Sports Notes, Local and Police Intelligence, News and Topical Report.
 9.30 p.m.—Concert of Music on Folk Instruments.
 10.30 p.m.—Preliminary Christmas Dance.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
 See Copenhagen Programme.

LJUBLJANA (Yugoslavia)

Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
 Transmits at intervals from 11.15 a.m.
 5.20 p.m.—Concert by the Wireless Orchestra.
 6.30 p.m.—English Language Lesson.
 7.0 p.m.—Concert by the Ljubljana Choir, followed by Selections of Light Music.
 9.30 p.m.—Weather and News Bulletin.
 MADRID (Spain)
 Union Radio (EAJ 7). 707 kc/s (424 m.); 2 kW.
 Transmits at intervals from 8.0 a.m.
 7.0 p.m.—Chimes, Exchange, Market Prices and Topical Review—Film Section.
 7.30 p.m.—Dance Music Programme.
 8.25 p.m.—News Bulletin.
 8.30—9.30 p.m.—Interval.
 9.30 p.m.—Chimes, Time, Exchange and Musical Comedy Selections.
 11.55 p.m.—News Bulletin.
 12 midnight.—Chimes and Close Down.

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 590 kc/s (501 m.). 8.5 kW.
 Programme relayed by Turin, 1,013 kc/s (296.1 m.); and Genoa, 961.2 kc/s (312 m.).
 Transmits at intervals from 7.15 a.m.
 4.50 p.m.—Giornale Radio and Agricultural Report, followed by Talk: Through Italy.
 5.10—6.20 p.m.—Interval.
 6.20 p.m.—Announcements.
 6.30 p.m.—Variety Concert.
 7.15 p.m.—Giornale Radio and Weather.
 7.30 p.m.—Time Signal.
 7.32 p.m.—Operetta Transmission. In the intervals, Talk and Review of New Books. After the Operetta,

the Station Sextet. Lou-Lou (F. Stip). Bleibe bei mir! (F. Hollaender). Waltz, Lustige Brüder (R. Völlstedt). Pizzicati (P. Stabel). Oriental Suite (Popy). Wenn die Geranien blüh'n auf meinem Balkon (W. Rosen). Lied des Bauern (Grieg). Only the Longing Heart (Tchaikovsky). Waltz, Hofballtänze (Lanner). Overture, "Orpheus in the Underworld" (Offenbach). Intermezzo from "Cavalleria rusticana" (Mascagni). Ich hab' eine kleine braune Mandoline (K. May).
 1.40 p.m.—Gramophone Records.
 2.10 p.m.—Question-Time for Young People.
 2.40 p.m.—Programme for Children.
 3.55 p.m.—Wireless Notes.
 4.10 p.m.—Midday Concert.
 5.40 p.m.—Time Signal.
 5.41 p.m.—Weekly Press Review.
 6.0 p.m.—Gramophone Records.
 6.10 p.m.—Lesson in Esperanto.
 6.40 p.m.—Talk on Ecclesiastical History: Fathers of the Church—Tertullian.
 7.10 p.m.—Police Notes.
 7.40 p.m.—Frisian Programme.
 8.40 p.m.—Concert by the Station Orchestra, conducted by Johan Gerritsen. March, Semper Fidelis (Sousa). Selection from "The Czardas Princess" (Kálmán). Overture, "Morning, Noon and Night" (Suppé). Salut d'amour (Elgar). Selection from "La belle Hélène" (Offenbach). Waltz from "The Count of Luxembourg" (Léhar). By the Swanee River (Myddleton). Pudding Potpourri (Morena). Carmen March (Fétras).
 10.40 p.m.—Relay from the Hotel Restaurant "Zomerzorg" at Leyden.
 11.40 p.m. (approx.)—Close Down.

JUAN-LES-PINS (France)

1,205 kc/s (249 m.); 1.5 kW.
 1.0 p.m.—News Bulletin, Amusement Guide, and Gramophone Concert.
 2.0 p.m.—The Marseillaise.
 2.15 (approx.)—8.30 p.m.—No Transmission.
 8.30 p.m.—News Bulletin, Amusement Guide, Meteorological Report and Orchestral Concert, relayed from the Palais de la Méditerranée, Nice.
 13.0 p.m.—The Marseillaise and Close Down.

KALUNDBORG (Denmark)

Kalundborg Radio. 260 kc/s (1,153 m.); 10 kW.
 See Copenhagen Programme.

LJUBLJANA (Yugoslavia)

Radio-Ljubljana. 522 kc/s (574.7 m.); 2.8 kW.
 Transmits at intervals from 11.15 a.m.
 5.20 p.m.—Concert by the Wireless Orchestra.
 6.30 p.m.—English Language Lesson.
 7.0 p.m.—Concert by the Ljubljana Choir, followed by Selections of Light Music.
 9.30 p.m.—Weather and News Bulletin.
 MADRID (Spain)
 Union Radio (EAJ 7). 707 kc/s (424 m.); 2 kW.
 Transmits at intervals from 8.0 a.m.
 7.0 p.m.—Chimes, Exchange, Market Prices and Topical Review—Film Section.
 7.30 p.m.—Dance Music Programme.
 8.25 p.m.—News Bulletin.
 8.30—9.30 p.m.—Interval.
 9.30 p.m.—Chimes, Time, Exchange and Musical Comedy Selections.
 11.55 p.m.—News Bulletin.
 12 midnight.—Chimes and Close Down.

MILAN (Italy)

Ente Italiano Audizioni Radiofoniche. 590 kc/s (501 m.). 8.5 kW.
 Programme relayed by Turin, 1,013 kc/s (296.1 m.); and Genoa, 961.2 kc/s (312 m.).
 Transmits at intervals from 7.15 a.m.
 4.50 p.m.—Giornale Radio and Agricultural Report, followed by Talk: Through Italy.
 5.10—6.20 p.m.—Interval.
 6.20 p.m.—Announcements.
 6.30 p.m.—Variety Concert.
 7.15 p.m.—Giornale Radio and Weather.
 7.30 p.m.—Time Signal.
 7.32 p.m.—Operetta Transmission. In the intervals, Talk and Review of New Books. After the Operetta,

Concert from the Alfieri Restaurant, Turin.
 10.0 p.m. (in the interval)—Giornale Radio.
 10.55 p.m.—News Bulletin.
 11.0 p.m. (approx.)—Close Down.

MORAVSKÁ-OSTRAVA (Czechoslovakia)

1,139 kc/s (263 m.); 11 kW.
 Transmits at intervals from 10.0 a.m.
 6.15 p.m.—Programme from Prague.
 6.20 p.m.—Gramophone Records.
 9.0 p.m.—Programme from Prague.
 9.20 p.m.—Programme Announcements and Theatre Review.
 9.25 p.m.—Gramophone Records.
 9.30 p.m.—Programme from Prague.
 10.0 p.m.—Radio Film.

MUNICH (Germany)

563 kc/s (533 m.); 1.7 kW. Relayed by Augsburg, 536 kc/s (560 m.); Kaiserslautern, 536 kc/s (560 m.); and Nürnberg, 1,256 kc/s (239 m.).
 Transmits at intervals from 5.45 a.m.
 2.45 p.m.—Time Signal, Weather Report, and Agricultural Notes.
 3.0 p.m.—Wireless Report: Travel and Communications.
 3.25 p.m.—Orchestral Concert, conducted by Karl List. Reminiscences of "La belle Hélène" (Fétras). Waltz from "The Girl in the Taxi" (Gilbert). Foxtrot Fantasia, Linke - Winke (Lincke). Concert Polka for Piccolo Solo, Tirili. Serenade, Priska (Rupprecht). Xylophone Solos. Selection from "Der Obersteiger" (Zeller). Mexican Dance (Holmer).
 4.40 p.m.—Talk: Sports for Young People.
 4.55 p.m.—Programme for Young People. Two Talks: (a) My Spare Time, (b) Christmas.
 5.25 p.m.—Time Signal, Weather Report and Agricultural Notes.
 5.45 p.m.—Violin and Pianoforte Recital of Dance Music. Minuet (Boccherini), arr. Sondheimer). Old French Gavotte (arr. Friedberg-Kreiser). The Twenty-fourth Caprice, March (Paganini). Plagera—Zapateado (Sarasate). Two Hungarian Dances (Brahms-Joachim). Tambourin chinois and La Gitana (Kreiser).
 6.15 p.m.—Wireless Notes.
 6.30 p.m.—Talk: Munich in Canada.
 6.55 p.m.—"Lieserl vom Schliersee"—Folk Play in Four Acts (Hans Neuert, after a Tale by Dr. Hermann v. Schmid. Music by Franz Voith).
 8.25 p.m.—Concert by the Station Orchestra. Overture, "Berlin, wie es weint und lacht" (Conradi). Gasteiner-Walzer (Kern). Selection from "Le Postillon de Longjumeau" (Adam). Selection from "The Rose of Stamboul" (Fall). Waltz, Estudiantina (Waldeufel). Old Marches.
 9.20 p.m.—Time Signal, Weather Report, News Bulletin and Sports Notes.
 9.45 p.m.—Gramophone Concert—Music in the Night.

PARIS (France)

Poste Parisien. 914 kc/s (329 m.); 1.2 kW.
 9.0 a.m.—Transmission of Topical Pictures.
 8.25 p.m.—Gramophone Records, Talk on the Theatre and News Bulletin.
 9.0 p.m.—Concert from the Works of Paul Dukas and Ravel, with the collaboration of Artists from the Opera and the Opéra-Comique. Overture, "Polyeucte" (Dukas). Villanelle for Horn and Orchestra (Dukas). La Valse (Ravel). Conductor: M. Francis Casadesus. Entr'acte from "Ariane et Barbebleue" (Dukas). Boléro (Ravel). Symphonic Poem, La Péri (Dukas), conducted by M. Théodore Mathieu.

PARIS (France)

Radio-Paris (CFR). 174 kc/s (1,725 m.); 17 kW.
 Transmits at intervals from 6.45 a.m.
 12.30 p.m.—Gramophone Concert. Pasodoble, Ylliada (Jauniux). Foxtrot, Paddy (Jacquet). Waltz, Folie (Cazès). Waltz Song (Cowler). Java, La renversée (Mola). Tango, Lachadora (Lomoto). Tango, Malevaie (Filiberto). Good Intentions (Friend). Foxtrot, Hot Fever (Porret). Waltz, Delilah (Nicholls). Sobre las olas (Rosas). Chanté un refrain d'amour (Mitchell). Le tango chat (Kogert). Gracia y sal

PARIS (France)

Radio-Paris (CFR). 174 kc/s (1,725 m.); 17 kW.
 Transmits at intervals from 6.45 a.m.
 12.30 p.m.—Gramophone Concert. Pasodoble, Ylliada (Jauniux). Foxtrot, Paddy (Jacquet). Waltz, Folie (Cazès). Waltz Song (Cowler). Java, La renversée (Mola). Tango, Lachadora (Lomoto). Tango, Malevaie (Filiberto). Good Intentions (Friend). Foxtrot, Hot Fever (Porret). Waltz, Delilah (Nicholls). Sobre las olas (Rosas). Chanté un refrain d'amour (Mitchell). Le tango chat (Kogert). Gracia y sal

Programmes for Saturday—(Cont.)

(Luchesi). Valse bleue (Margis). Three Red Roses (Kahn). Si je n'étais plus fidèle (Davis). Florentine March (Fucik). Tango, Consuelo (Alongi). In the intervals at 1.0 p.m.—Exchange Quotations and News, and at 1.30 p.m.—Exchange Quotations.
 2.0 p.m.—Exchange; Market Prices.
 3.30 p.m.—Exchange Quotations.
 3.45 p.m.—Programme for Children.
 4.30 p.m.—News Bulletin.
 4.45 p.m.—Concert relayed from the Salle Gaveau.
 6.30 p.m.—New York Exchange Rates.
 6.35 p.m.—Agricultural Report and Racing Results.
 7.0 p.m.—Talk arranged by the Union des Grandes Associations Françaises.
 7.10 p.m.—Talk by M. Emile Legouis: The Evolution of English Literature—Poets of the Elizabethan Period—Sidney, Spenser, and Shakespeare.
 7.30 p.m.—Advanced English Lesson.
 7.45 p.m.—Commercial Prices, Economic and Social Notes and News.
 8.0 p.m.—Literary Readings. The Origins of Poetry—Poet-Kings.
 8.30 p.m.—Sports Review.
 8.45 p.m.—"In the Railway Carriage"—Play (Verconsin), by MM. Dorival and Moulinot and Mlle. Brillant of the Comédie Française.
 9.0 p.m.—Concert by the Swiss Mixed Choir of Paris. In the interval, Press Review, News and Time Signal.

POZNAŃ (Poland)
 896 kc/s (335 m.); 1.9 kW.
 Transmits at intervals from 6.0 a.m.
 5.45 p.m.—Concert of Latvian and Polish Music. Theme with Variations, Op. 6. Cradle Song, Op. 18, and Prelude, Op. 19, No. 2 (Wibolt). Soprano Solos (Burkath), the Composer at the Pianoforte. Three Preludes, Op. 18, Prelude, Op. 45, and Fantasia in F Minor, Op. 49 (Chopin).
 6.30 p.m.—Talk: Educational Problems.
 6.45 p.m.—Talk: The Sociology of the Crowd.

7.0 p.m.—Talk: In the Shade of Mount Olympus.
 7.15 p.m.—Miscellaneous Items, followed by News Bulletin.
 7.30 p.m.—Programme relayed from Warsaw.
 9.0 p.m.—Time Signal, News, Bulletin, Sports Notes and Police Announcements.
 9.15 p.m.—Miscellaneous Items.
 9.30 p.m.—Dance Music Programme, relayed from the Café Polonia.
 11.0 p.m. (approx.)—Close Down.

PRAGUE (Czechoslovakia)
 Stranice. 617 kc/s (487 m.); 5.5 kW.
 Transmits at intervals from 10.15 a.m.
 6.15 p.m.—News Bulletin.
 6.20 p.m.—Brass Band Concert, conducted by Novak.
 7.10 p.m.—Concert by the Vinohrady Vocal Quartet.
 7.40 p.m.—Programme from Brno.
 8.40 p.m.—Cello Recital.
 9.0 p.m.—Time, News and Sports Notes.
 9.20 p.m.—Gramophone Records.
 9.30 p.m.—Popular Programme.
 10.0 p.m.—Programme from Moravská-Ostrava.

ROME (Italy)
 Ente Italiano Audizioni Radiofoniche (IRO). 680 kc/s (441 m.); 75 kW. Relayd by Naples, 905 kc/s (332 m.) and 2 R.O. 3750 kc/s (80 m.).
 Transmits at intervals from 7.15 a.m.
 4.0 p.m.—Concert. Symphonic Poem, Vltava (Smetana). Soprano Solos: (a) Aria from "The Puritans" (Bellini), (b) La capineia (Benedict). Twelve Variations on a Russian Theme for Pianoforte (Beethoven). Tenor Solos: (a) Aria from "I Lombardi" (Verdi), (b) Aria from "Mignon" (Thomas). Selection from "Pique Dame" (Tchaikovsky). Soprano Solos: (a) Quand tu chantes, (b) Aria from "The Huguenots" (Meyerbeer). Humorous Recitations. Cello Solos: (a) Adagio with Variations (Respighi), (b) La Fileuse (Dunkler). Tenor Solos: (a) Siegmund's Song from "Die Walküre" (Wagner), (b) Serenade from "Iris" (Mascagni). Pianoforte

Solos: (a) Lamento di un pastore (Rinaldi), (b) Scherzo (Brahms); Ballet Music from "Henry VIII" (Saint-Saëns).
 6.30 p.m.—Wireless Telegraphy Lesson and Atmospheric Signals.
 6.50 p.m.—Giornale Radio, News and Sports Notes.
 7.0 p.m.—Announcements, Report of the International Institute at Geneva, and Press Review.
 7.30 p.m.—Time Signal.
 7.40 p.m.—"Palstaff"—Opera in Three Acts (Verdi). In the intervals, Talk and Theatre Notes.
 9.55 p.m. (approx.)—News Bulletin.

SEVILLE (Spain)
 Union Radio. (EAJ5). 815 kc/s (368 m.); 1.5 kW.
 2.0 p.m.—Concert. Scherzo from "A Midsummer Night's Dream" (Mendelssohn). Romance from "Mignon" (Thomas). Concert Polka (Sauer). Foxtrot (Ibarra). Duet from "Marina" (Arrieta). Selection from "La Bohème" (Puccini). Schottische, Oiga, Oiga! (Casés). Tango, Mamita mia (Delfino). Waltz, Ramona (Wayne). Foxtrot, El desfile del amor (Puche). Una vida de mujer (Martinez Sierra); followed by Flamenco Song Recital and Dance Music Programme.
 3.0—9.0 p.m.—Interval.
 9.0 p.m.—News Bulletin, Exchange Quotations, Market Prices and Meteorological Report, followed by Opera Selection, "The Barber of Seville" (Rossini), for Soloists, Chorus and Orchestra.
 11.0 p.m. (approx.)—Close Down.

STUTT GART (Germany)
 Süddeutscher Rundfunk. 833 kc/s (360 m.); 1.7 kW, and Mühlbacher, 75 kW. Relayd by Freiburg, 527 kc/s (570 m.).
 Transmits at intervals from 5.15 a.m.
 6.30 p.m. (from Freiburg).—Mandoline Concert. Waltz, O Frühling, wie bist du so schön (Lincke). Original Overture (Köhler). Two Songs. Dream of Love after the Ball (Czibulka). Song, Tes Teux (Rabey). Song, A Toi (Lebrun). Italian Suite, On the Gulf of Naples (Eilenberg). E canta il grillo (Billi). Romance from

"Mephistopheles" (Boito). Selection from "Cavalleria Rusticana" (Mascagni). Two Songs. Serenade from "Die Najaden" (Rupprecht).
 7.30 p.m.—"The Bird Fancier"—Operetta in Three Acts (Zeller).
 9.50 p.m. (from Karlsruhe).—Dance Music by the Haas-Mahagony Orchestra.

WARSAW (Poland)
 Polskie Radio. 212 kc/s (1,411 m.); 14 kW.
 Transmits at intervals from 10.40 a.m.
 4.45 p.m.—Programme for Children relayed from Cracow, followed by Children's Concert.
 5.45 p.m.—Miscellaneous Items.
 6.10 p.m.—Agricultural Report.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—Radio Journal.
 6.55 p.m.—Gramophone Records.
 7.0 p.m.—Talk: The German Theatre of Today.
 7.15 p.m.—Talk: The Polish Government and Dictator in 1830.
 7.30 p.m.—Concert of Light Music. Overture, "Prince Methusalem" (Strauss). Petite Suite (Busser). Solo Selections. Song, Tu penses à moi (Meyer-Helmund). Waltz, Der Kuss (Strauss). Selection (Milhaud). Jeux de papillons (Leopold). Solo Selections. Souvenir de Vilno (Eilenberg). Spanish Serenade (Micheli). March (Marzec). In the interval, Programme Announcements and Theatre Review.
 9.0 p.m.—Talk: German, French and Polish Women.
 9.15 p.m.—Tenor Song Recital by the Negro Singer, Towje Hakchen la Rue. Two Hebrew Songs. Negro Spiritual (Burleigh). I'm singing your love song (Sylvia Brown-Henderson). A Caravan from China (Warren-Storey-Smith). Until (Sanderson).
 10.0 p.m.—Dance Music Programme.
 11.0 p.m. (approx.)—Close Down.

WILNO (Poland)
 Polskie Radio. 959 kc/s (312.8 m.); 0.5 kW.
 Transmits at intervals from 10.58 a.m.

3.45 p.m.—Concert from Warsaw.
 4.15 p.m.—Talk from Katowice. 734 kc/s (408 m.)
 4.45 p.m.—Programme for Children, from Warsaw.
 5.45 p.m.—Social Report.
 6.0 p.m.—Programme Announcements for the Coming Week.
 6.25 p.m.—Gramophone Records.
 6.35 p.m.—News Bulletin and Talk from Warsaw.
 7.15 p.m.—Talk: The Worship of St. Nicholas in Wilno.

7.30 p.m.—Concert of Light Music. Orchestral Selections. Songs: (a) Si tu veux, Marguerite (Valsien), (b) Révision (Franson and Christiné), (c) Je connais une blonde, and (d) Non, ça ne marche pas (Goetz and Sloan). Réverie (Kollmanek). Zither Selection: Ballad (Bauer). Orchestral Selections. Nocturne (Hubert). Waltz for Zither. Love Baby (Brooks). La danse des Zambèses (Borel-Clerc). Jouiou (Snyder). La Liqueur (Davis and Gauvin).
 9.0 p.m.—Talk and Concert from Warsaw.
 9.50 p.m.—News and Dance Music from Warsaw.
 11.0 p.m. (approx.)—Close Down.

ZÜRICH (Switzerland)
 Radiostation Zurich. 653 kc/s (459 m.); 0.75 kW.
 Transmits at intervals from 11.30 a.m.
 3.0 p.m.—Trio Concert.
 3.45 p.m.—Gramophone Concert.
 4.15 p.m.—Accordion Sextet Concert.
 4.45 p.m.—Weather Report and Market Prices.
 4.50 p.m.—Gramophone Concert.
 5.30 p.m.—Talk: The Problems of the Housewives' Organization.
 6.0 p.m.—Chimes from the Zürich Churches.
 6.18 p.m.—Talk: Italian Literature.
 6.30 p.m.—Talk: The Modern Training of Teachers.
 7.0 p.m.—Programme (not yet announced) relayed from Vienna, 581 kc/s (516.3 m.).
 9.0 p.m.—Weather Report and News Bulletin.
 9.10 p.m.—Gramophone Records of Dance Music.

REALISM IN RADIO

Bel-Canto

General Sales Manager,
 BEL-CANTO RADIO LTD.
 34/36, Oxford Street, W.1.
 Phone: Museum 4677
 Works: Warple Way, The Vale,
 Acton, W.3.
 Established 1926

The Ideal Present
 for **XMAS**
 AN ALL-ELECTRIC
 RADIO-GRAMOPHONE
 AND ONLY
£37:10:0

This amazing low figure creates a price revolution in this form of luxurious home entertainment. An all-electric radio-gramophone with the full reputation of "BEL-CANTO Radio" behind it, is now within the reach of all, and the price makes it a particularly suitable present to give this Xmas. It is easy to work and consumes less current than an ordinary house lamp.

Get a BEL-CANTO and ensure successful Xmas entertainment—the best of the broadcast and the best of the records at a touch.

The latest and most complete development of the radio industry is the BEL-CANTO Radio-Gramophone at £37.10.0, or £9.7.6 and 11 monthly payments of £2.16.3.

Other models at £48 and £75.

Also Loud Speakers and Units. Write for illustrated catalogue and terms.

Stations in Order of Frequencies and Wavelengths

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

The power figures in black type represent revisions received so far under the new power-rating scheme

| Kc/s | M. | Station | Dial Readings | Kc/s | M. | Station | Dial Readings | Kc/s | M. | Station | Dial Readings | | |
|-----------------|--------|---|---------------|--------|-------|---|---------------|--------|-------|---|--------------------------|--|--|
| EUROPEAN | | | | | | | | | | | | | |
| | | (Including Stations connected with the European System) | | | | | | | | | | | |
| 153 | 1961 | Ankara (Turkey), 2 kW. | | 770 | 390 | Frankfurt (Germany), 1.7 kW. | | 1211 | 247.7 | Kalmar (relays Stockholm), 0.25 | | | |
| 155 | 1935 | Kaunas (Lithuania), 7 kW. | | 779 | 385 | Toulouse (Radio) (France), 8 | | 1218.3 | 246.2 | Schaerbeck (Brussels) (Belgium) | | | |
| 160 | 1875 | Huizen (Holland), 8.5 kW. | | 788 | 381 | Lwów (Poland), 2.2 kW. | | | | Turku (Abo) (Finland) | | | |
| 167 | 1796 | Lahti (Finland) (relays Helsinki), 54 kW. | | *788 | 381 | Genoa (IGE) (Italy), 1.5 kW. | | | | (relays Helsinki), 0.6 kW. | | | |
| 174 | 1725 | Radio Paris (CFR), 17 kW. | | 797 | 376.4 | Manchester (2ZY) (Gt. Britain), 1.2 kW. | | | | Säffle (Sweden) (relays Stockholm), 0.4 kW. | | | |
| 183.5 | 1635 | Königs Wusterhausen (Zeeseen) (Germany), 35 kW. Relays Berlin. | | 806 | 372 | Hamburg (Germany), 1.7 kW. | | | | Eskilstuna (Sweden) (relays Stockholm), 0.25 kW. | | | |
| 193 | 1554 | Daventry National Station (Gt. Britain), 35 kW. | | 810 | 370.4 | Radio LL (France). | | | | Pietersaari (Jacobstad) (Finland) (relays Helsinki), 0.25 kW. | | | |
| 202.5 | 1481 | Moscow (Old Komintern) (RAI) (Russia), 40 kW. | | 815 | 368 | Fredriksstad (Norway), 0.8 kW. (relays Oslo). | | | 246 | Linz (Austria) (relays Vienna), 0.6 kW. | | | |
| 207.5 | 1445.7 | Eiffel Tower (FL), 15 kW. | | 824 | 364 | Seville (Union Radio) (EAJ1) (Spain), 1.5 kW. | | | | Cassel (Germany) (relays Frankfurt), 0.3 kW. | | | |
| 212.5 | 1411 | Warsaw (Poland), 14 kW. | | 825.3 | 363.4 | Bergen (Norway), 1 kW. | | | | Kiruna (Sweden) (relays Boden), 0.25 kW. | | | |
| 222.2 | 1350 | Kasbah (Tunis), 0.5 kW. | | 833 | 360 | Algiers (N. Africa), 1 kW. | | | 1220 | 244 | Cracow (Poland), 1.5 kW. | | |
| 222.5 | 1348 | Motala (Sweden) (relays Stockholm), 40 kW. | | 842 | 356.3 | Stuttgart (Germany), 1.7 | | | | 1238 | 242 | Belfast (2BE) (Ireland), 1.2 kW. | |
| 230.6 | 1304 | Moscow (Trades Unions), 75 kW. Kharkov (Russia), RV4, 25 kW. | | 851 | 352 | Mühlacker (Germany), 75 | | | | 1250 | 240 | Radio-Beziere (France), 0.6 kW. | |
| 250 | 1200 | Istanbul (Turkey), 5 kW. Boden (Sweden), 0.75 kW. | | 855.5 | 351 | London Regional Stn., 45 kW. | | | | 1256 | 239 | Nimes (France), 1 kW. | |
| 260 | 1153 | Kalundborg (Denmark) (relays Copenhagen), 10 kW. | | 860 | 349 | Graz (Austria) (usually relays Vienna), 9.5 kW. | | | | | | Nürnberg (Germany) (relays Munich), 2.3 kW. | |
| 268.0 | 1116 | Novosibirsk (Russia) R.A., 4 kW. | | 869 | 345 | Vienna, 9.5 kW. | | | | | | Örebro (relays Stockholm) (Sweden), 0.25 kW. | |
| 272 | 1103 | Moscow Popoff (Russia), 40 kW. | | 878 | 342 | Leningrad (Russia), 1.2 kW. | | | | | | Loz (Poland), 2.2 kW. Experimental. | |
| 279.6 | 1073 | Rostov-Don (Russia), 4 kW. | | 887 | 338.2 | Barcelona (Radio Barcelona) (EAJZ) (Spain), 8 kW. | | | | | | | |
| 283 | 1060 | Oslo (Norway), 75 kW. | | 896 | 335 | Strasbourg-Brumath (France), 15 kW. | | | | | | | |
| 300 | 1000 | Leningrad (Russia), 20 kW. | | 905 | 332 | Brno (Czechoslovakia), 3 kW. | | | | | | | |
| 320 | 937.5 | Kharkov (Russia), RV20. | | 905 | 332 | Brussels No. 2 (Belgium), 12 kW. (Flemish programme). | | | | | | | |
| 334.8 | 870 | Tiflis (Russia), 4 kW. | | 914 | 328.2 | Cadiz (Spain), 0.5 kW. | | | | | | | |
| 357 | 840 | Nijni Novgorod (Russia), 1.8 | | 923 | 325 | Poznan (Poland), 1.9 kW. | | | | | | | |
| 375 | 800 | Kiev (Russia), 20 kW. | | 932 | 322 | Naples (I NA) (Italy), 1.7 kW. | | | | | | | |
| 385 | 778 | Petrozavodsk (Russia), 2 kW. | | 941 | 319 | Grenoble (PTT) (France), 1.2 | | | | | | | |
| 389 | 770 | Ostersund (Sweden), 0.75 kW. (relays Sundsvall). | | 950 | 316 | Paris—Poste Parisien (France), 1.2 kW. | | | | | | | |
| 395 | 760 | Geneva (Switzerland), 1.5 kW. | | 954 | 314 | Breslau (Germany), 1.7 kW. | | | | | | | |
| 416.6 | 720 | Moscow (Experimental), 20 kW | | 959 | 312.8 | Göteborg (Sweden) (relays Stockholm), 15 kW. | | | | | | | |
| 428 | 700 | Minsk (Russia), 4 kW. | | 968 | 309.9 | Dresden (Germany) (relays Leipzig), 0.3 kW. | | | | | | | |
| 442 | 680 | Lausanne (Switzerland), HB2, 0.6 kW. | | 977 | 307 | Basle (Switzerland), 0.25 | | | | | | | |
| 511 | 587 | Hamar (Norway) (relays Oslo) 0.7 kW. | | 986 | 304 | Bremen (Germany) (relays Hamburg), 0.3 kW. | | | | | | | |
| 522 | 574.7 | Ljubljana (Yugoslavia), 2.8 kW. | | 995 | 301 | Marseille (PTT) (France) 1.5 kW. | | | | | | | |
| 527 | 570 | Freiburg - im - Breisgau (Germany) (relays Stuttgart), 0.3 kW. | | 1004 | 298.8 | Oviedo (Spain), 0.7 kW. | | | | | | | |
| 530 | 566 | Hanover (Germany), 0.3 kW. (relays Hamburg). | | 1022 | 293 | Wilno (Poland), 0.5 kW. | | | | | | | |
| 531 | 565 | Smolensk (Russia), 2 kW. | | 1031 | 291 | Cardiff (5WA) (Gt. Britain), 1.2 kW. | | | | | | | |
| 536 | 560 | Augsburg (Germany) (relays Munich), 0.3 kW. | | 1040 | 288.5 | Zagreb (Yugoslavia), 0.7 kW. | | | | | | | |
| 545 | 550 | Budapest (Hungary), 23 kW. | | 1044.6 | 287.2 | Bordeaux-Lafayette (PTT) (France), 35 kW. | | | | | | | |
| 554 | 542 | Sundsvall (Sweden), 15 kW. | | 1049 | 286 | Aberdeen (2BD) (Gt. Britain), 1.2 kW. | | | | | | | |
| 563 | 533 | Munich (Germany), 1.7 kW. | | 1058 | 283 | Falun (Sweden), 0.65 kW. | | | | | | | |
| 572 | 525 | Riga (Latvia), 13 kW. | | 1067 | 281 | Hilversum (Holland), 8.5 kW. | | | | | | | |
| 581 | 517 | Vienna (Rosenhügel) (Austria), 20 kW. | | 1071 | 280 | Kosice (Czechoslovakia) 2.5 | | | | | | | |
| 585 | 511 | Archangel (Russia), 1.2 kW. | | 1070 | 279 | Limoges, PTT (France), 0.98 kW. | | | | | | | |
| 590 | 509 | Brussels No. 1 (Belgium), 1.2 kW | | 1085 | 276 | Viiipuri (Viborg) (Finland), relays Helsinki, 15 kW. | | | | | | | |
| 599 | 501 | Milan (Italy), 8.5 kW. | | *1098 | 273.2 | British Relay Stations | | | | | | | |
| 603.5 | 497 | Moscow (Russia), 1.2 kW. | | 1103 | 272 | Bournemouth (6BM), 1.2 kW. | | | | | | | |
| 617 | 487 | Prague (Czechoslovakia), 5.5 kW | | 1103 | 272 | Bradford (2LS), 0.16 kW. | | | | | | | |
| 620 | 479 | Midland Regional Station (Gt. Britain), 38 kW. | | 1112 | 270 | Dundee (2DE), 0.16 kW. | | | | | | | |
| 630 | 470 | Simferopol (Russia), 1.2 kW. | | 1121 | 268 | Edinburgh (2EH), 0.4 kW. | | | | | | | |
| 635 | 473 | Langenberg (Germany), 17 kW | | 1130 | 265.4 | Hull (6KH), 0.16 kW. | | | | | | | |
| 644 | 466 | Lyons (La Doua), France (relays Ecole Supérieure, 2.3 kW. San Sebastian (EAJ8) (Spain), 0.3 kW. | | 1139 | 263 | Liverpool (6LV), 0.16 kW. | | | | | | | |
| 653 | 459 | Zürich (Switzerland), 0.75 | | 1148 | 261.3 | Newcastle (5NO), 1.2 kW. | | | | | | | |
| 662 | 453.2 | Porsgrund (Norway), (relays Oslo), 1.5 kW. | | 1157 | 259 | Plymouth (5PY), 0.16 kW. | | | | | | | |
| 666.5 | 450 | Aalesund (Norway), 0.3 kW. | | 1166 | 257 | Sheffield (6FL), 0.16 kW. | | | | | | | |
| 671 | 447 | Salamanca (Spain), EAJ22, 1 kW. | | 1175 | 255 | Stoke-on-Trent (6ST), 0.16 kW. | | | | | | | |
| 674 | 445 | Bolzano (Italy) (BZ), 0.2 kW. | | 1184 | 253 | Swansea (5SX), 0.16 kW. | | | | | | | |
| 680 | 441 | Danzig (Free City), 0.25 kW. (relays Königsberg). | | 1193 | 252 | Lyons (Radio) (France), 0.5 kW. | | | | | | | |
| 699 | 436 | Klagenfurt (Austria), 0.6 kW. (relays Vienna). | | 1205 | 249 | Montpellier (France), 1.2 kW. | | | | | | | |
| 694 | 432.3 | Tromsø (Norway), 0.1 kW. | | | | Berlin Relay (Germany), 0.6 kW. | | | | | | | |
| 707 | 424 | Uppsala (Sweden), 0.2 kW. (relays Stockholm). | | | | Magdeburg (Germany), 0.6 kW. | | | | | | | |
| 716 | 410 | Tampere (Tammerfors) (Finland) (relays Helsinki) 1 kW. | | | | Stettin (Germany) (relays Berlin), 0.8 kW. | | | | | | | |
| 721.1 | 416 | Nidaros (Trondhjem) (Norway), 1.2 kW. | | | | Innsbruck (Austria) (relays Vienna), 0.6 kW. | | | | | | | |
| 725 | 413 | Moscow (Russia), RA2, 1 kW. | | | | Uddevala (Sweden), 0.1 kW. (relays Göteborg). | | | | | | | |
| 734 | 408 | Paris (PTT) (Ecole Supérieure) (France), 1 kW. | | | | Varberg (Sweden), 0.3 kW. | | | | | | | |
| 739 | 406 | Notodden (Norway), 0.1 | | | | Copenhagen (Denmark), 1 kW. | | | | | | | |
| 743 | 403 | Rjukan (relays Oslo) (Norway), 0.15 kW. | | | | Radio Liège (Belgium). | | | | | | | |
| 748 | 401 | Rome (RO) (Italy), 75 kW. | | | | Bratislava (Czechoslovakia), 14 kW. | | | | | | | |
| 752 | 398.9 | Stockholm (Sweden) 75 kW. | | | | Königsberg (Germany) 1.7 kW. | | | | | | | |
| 761 | 394 | Malmöberg (relays Boden) (Sweden), 0.25 kW. | | | | Turin (Italy), 8.5 kW. | | | | | | | |
| | | Belgrade (Yugoslavia), 3 kW. | | | | Rennes (France), 1.2 kW. | | | | | | | |
| | | Madrid (Union Radio) (EAJ7), (Spain), 2 kW. | | | | Trollhättan, 0.3 kW. (relays Göteborg). | | | | | | | |
| | | Berlin (Witzleben) (Germany), 1.7 kW. | | | | Hudiksvall, 0.2 kW. (relays Sundsvall). | | | | | | | |
| | | Rabat (Morocco), 2.5 kW. | | | | Norrköping (Sweden), 0.25 kW. (relays Stockholm). | | | | | | | |
| | | Dublin (2RNN) (Ireland), 1.5 kW. | | | | *Kaiserslautern (Germany) (relays Munich), 0.3 kW. | | | | | | | |
| | | Katowice (Poland), 16 kW. | | | | Barcelona (EAJ13), Radio Catalana (Spain), 10 kW. | | | | | | | |
| | | Kharkov (Russia), 4 kW. | | | | Lille (PTT) (France), 1 kW. | | | | | | | |
| | | Berne (Switzerland), 1.1 kW. | | | | Moravská Ostrava (Czechoslovakia), 11 kW. | | | | | | | |
| | | Tallinn (Estonia), 0.7 kW. | | | | London National Stn., 63 kW. | | | | | | | |
| | | Glasgow (5SC), (Gt. Britain), 1.2 kW. | | | | Gleiwitz (Germany), (relays Breslau), 5.6 kW. | | | | | | | |
| | | Bucharest (Romania), 16 kW | | | | Hörby (Sweden) (relays Stockholm), 5 kW. | | | | | | | |
| | | | | | | Toulouse (PTT) (France), 1 kW. | | | | | | | |
| | | | | | | Leipzig (Germany), 2.3 kW. | | | | | | | |
| | | | | | | Almeria (Spain) (EAJ18), 1 kW. | | | | | | | |
| | | | | | | Juan-les-Pins (Nice) (France). | | | | | | | |
| | | | | | | | | | | | | | |

DEVIATIONS

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

| | | |
|--------|-------|-------------------------------|
| 536 | 560 | Kaiserslautern (Germany) |
| 696.8 | 430.5 | Belgrade (Yugoslavia) |
| 704.7 | 425.7 | Madrid, EAJ7 (Spain) |
| 958 | 313.2 | Genoa (Italy) |
| 1013 | 296.1 | Turin (Italy) |
| 1207.2 | 248.5 | Juan-les-Pins (Nice) (France) |
| 1213.1 | 247.2 | Kalmar (Sweden) |
| 1223 | 245.3 | Schaerbeck (Holland) |

EXTRA-EUROPEAN STATIONS

U.S.A.

| | | |
|-------|-------|----------------------------------|
| 662.1 | 454 | New York (WEAF), 25 kW. |
| 700 | 428.5 | Cincinnati, O. (WLW), 25 kW. |
| 720 | 416.6 | Chicago, Ill. (WGN), 25 kW. |
| 760 | 395 | Bound Brook, N.J. (WJZ), 25 kW. |
| 770 | 380 | Chicago, Ill. (WBMB), 25 kW. |
| 790 | 350 | Schenectady (WGY), 50 kW. |
| 800 | 375 | Fort Worth, Tex. (WBAP), 25 kW. |
| 980 | 306 | Pittsburg, Pa. (KDKA), 25 kW. |
| 990 | 303 | Springfield, Mass. (WBZ), 15 kW. |
| 1090 | 275.2 | St. Louis (KMOX), 25 kW. |
| 1100 | 272.6 | Atlantic City, N.J. (WPG), 5 kW. |

CANADA

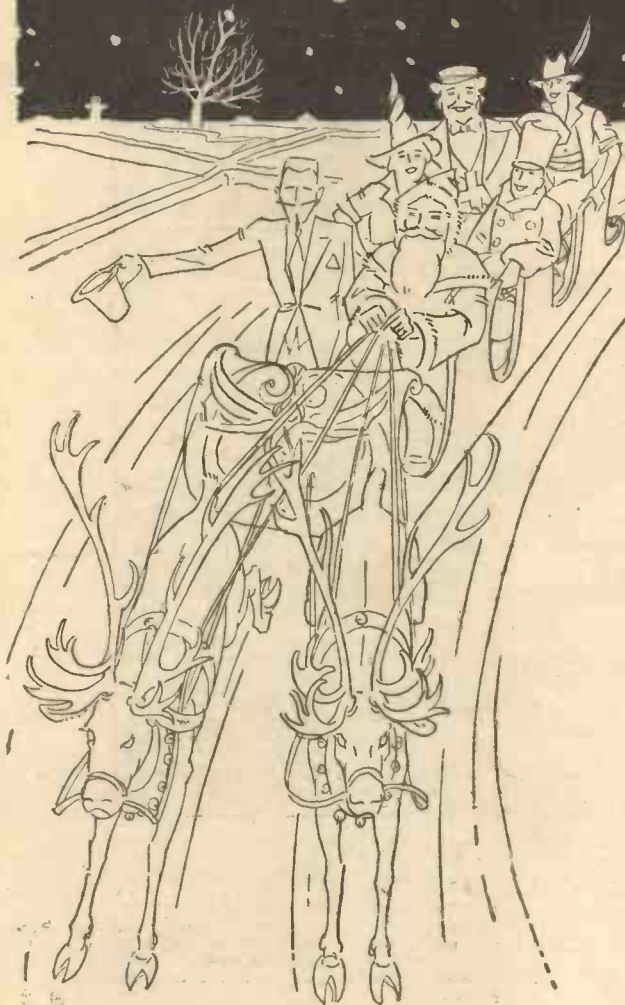
| | | |
|-----|-----|--------------------------|
| 690 | 435 | Calgary (CFCN), 1.8 kW. |
| 690 | 435 | Toronto (CKGW), 5 kW. |
| 730 | 411 | Montreal (CNRM), 1.6 kW. |

AUSTRALIA

| | | |
|-----|-----|------------------------|
| 665 | 451 | Sydney (2FC), 5 kW. |
| 690 | 435 | Perth (6WF), 5 kW. |
| 734 | 409 | Adelaide (5CL), 5 kW. |
| 779 | 385 | Brisbane (4QG), 5 kW. |
| 808 | 371 | Melbourne (3LO), 5 kW. |
| 838 | 353 | Sydney (2BL), 5 kW. |

* See Deviation List.

Enjoy an 'International' Christmas!



Entertainment from all Europe with this powerful Screened Grid Receiver

Listen to the jolly Christmas programmes of all the main European stations. Unlimited entertainment will be "on the air"—opera, bands, vaudeville, dance music—you can take your choice with a Cossor Empire Melody Maker. This remarkable Receiver has knife-edge selectivity, it will cut out your local station like magic and bring you the programme you want. Yet in spite of its efficiency you can buy the complete kit of parts for only £6. 17s. 6d. And so simple is its assembly that you need know nothing about Wireless—anyone can build it without soldering, sawing or drilling. Make sure of an "International" Christmas—hear the Cossor Empire Melody Maker to-day at your Dealers or use the coupon below.

Cossor Empire Melody Maker

Price includes three of the latest type Cossor Valves, handsome oak cabinet, and all the parts necessary for its rapid assembly.

£6-17-6

We have just issued a novel, circular Station Chart, which gives identification details of nearly 50 stations, with space for entering your own dial readings. Ask your dealer for a copy, price 2d. or send 2d. stamp to us and head your letter "Station Chart W.R."

16-page catalogue of Radio Sets now available.



.....
To A. C. Cossor, Ltd. Melody Dept., Highbury Grove, N.5
.....
Please send me free of charge Constructional Chart, which shows me how to assemble the Cossor Empire Melody Maker.
Name.....
Address.....
.....
W.R. 12/12/30



Very good and all that is stated in your advert. We have splendid results.
—W. Wilkinson, 15, Mill Rd., Cleethorpes.

Quite satisfactory, both English and foreign. Really wonderful value. Will not hesitate to recommend the set to anyone.

—F. Wood, 8, Hy. Nelson St., Sth. Shields.

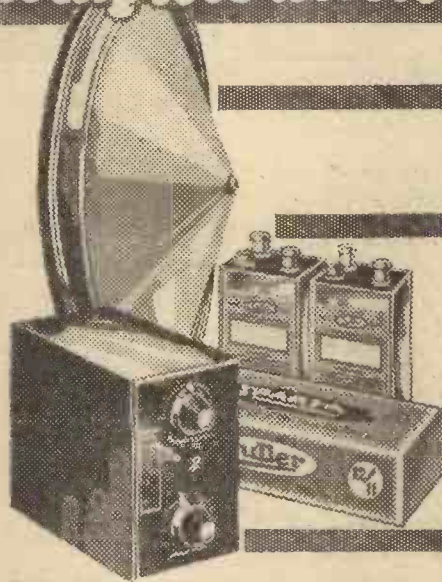
Received Double two Set with accessories quite safe. Am writing to say how pleased I am with it. This being my first set and having no previous experience with wireless, I must admit I was a bit windy about sending for one, as so many of my friends who have sets told me I was wasting £4 trying to get a set for that amount. Of course, they, like myself, are astonished at the results of this set.

—A. Holmes, 73, St. Anne's Road, South-end-on-Sea, Essex.

£1,000 GUARANTEE

The above testimonials are typical of the thousands we have received, the originals of which can be seen at our offices. We have deposited a cheque for £1,000 with our bankers, Barclays Bank, Ltd., Borough, London, S.E.1, which will be paid to anyone who can disprove the fact that each of the testimonials is entirely voluntary and not paid for in any shape or form.

What! the DOUBLE TWO Wireless, for only 36'7? Yes, if you buy it with the complete accessories equipment



AMPLION 21' Loud Speaker

2 FULLER 9' Sparta 2 Volt Accumulators

FULLER 12' Sparta H.T. & G.B. Battery

DOUBLE TWO 36'7 2 Valve Set Complete with Valves

All in Price

79'6

You may wonder why the amazingly low price of 50/- for the "Double Two" Set is even lower when bought with the complete accessory equipment.

It is because we wish to introduce to radio those many thousands who have not yet the joy of possessing their own wireless set.

Our past sales experience proves that thousands will avail themselves of this remarkable offer and purchase a complete "Double-Two" equipment. There are two coupons below. Post coupon A if you are sending cash! If you require fuller particulars send coupon B.

Hire Purchase Terms Available.

DOUBLE TWO 50' 2 Valve Set Alone (Complete with Valves)

WHAT THE PAPERS SAY

DAILY EXPRESS.—"A really efficient set at an extremely moderate price. Under actual test this neatly-built two-valve set received fourteen stations at full Loud-speaker strength, and this excellent performance by no means exhausts its possibilities."

DAILY SKETCH.—"Twenty broadcasting stations were received in London with an outside aerial."

DAILY MAIL.—"Performance is remarkably good. London Stations separated without difficulty. Foreign Stations picked up on Loud-speaker at comfortable strength. The designers of the 'Double-Two' are to be congratulated on having shown the way to Loud-speaker reception at the right price."

DAILY HERALD.—"The 'Double-Two,' as it is called, represents remarkable value for the money. Its transformer coupled circuit gives really surprising Loud-speaker volume."

SUNDAY PICTORIAL.—"... I have had the opportunity of trying out in my own house one of these amazing little sets... and I have no hesitation in saying that any reader who requires something cheap, good and simple in the way of wireless Receivers, will find exactly what he wants in the Double-Two... The Double-Two is undoubtedly a wonderful little set."

COUPON A Post to HUSTLER, SIMPSON & WEBB, Ltd., 55-57, Tanner Street, London, S.E.1.

Dear Sirs: Please send me by return, ready to use, carriage paid, with full instructions (illustrated) for fixing up:—

- (1) One Double Two Set, complete with valves, at 50/-
- or
- (2) with the additional accessories outfit as described, 79'6

(Cross out item not required)

for which I enclose.....in full payment.

NAME.....

W.R.1. ADDRESS.....

COUPON B Post (1d. stamp on an unsealed envelope will do) to: HUSTLER, SIMPSON & WEBB, LTD., 55-57, Tanner Street, London, S.E.1.

Dear Sirs,

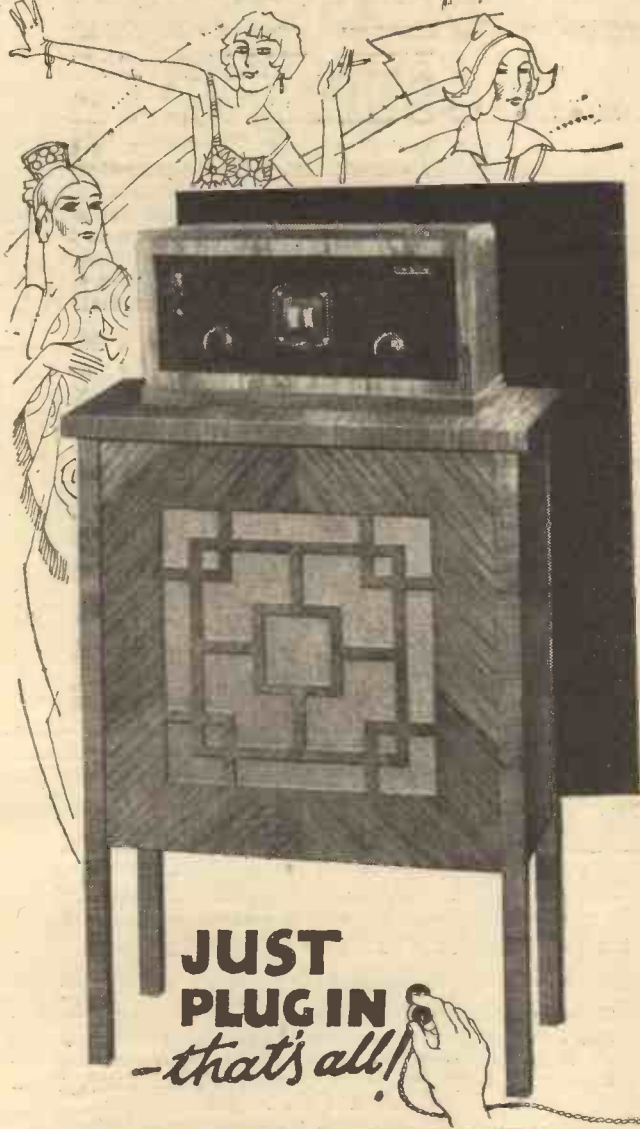
Please send me, without obligation, your illustrated folder and fullest details of your Double Two Wireless Set.

NAME.....

W.R.1. ADDRESS.....

I say! What a Xmas Present!

DANCE TO THE SPECIAL XMAS HOME and CONTINENTAL PROGRAMMES!



**JUST
PLUG IN**
-that's all!



"All Electric 4" Set complete. 4 valve S.G. receiver (as illustrated on top of cabinet speaker) in handsome polished walnut case ready for reception. Provided with pick-up sockets. Price £25 or £24.6 first payment.

All Electric Set with Pedestal Cabinet Loud Speaker Complete (as illustrated). Incorporating the Waters 20" Double Cone Chassis and Waters Star Unit. A handsome piece with remarkable tonal quality and volume. Price £31.6.0 or £2.15.6 first payment.

All Electric Radio-Gram. Paillard Electric turntable motor. Waters Double Cone Speaker, Unit and Pick-up and Waters A.C. all mains 4 receiver and amplifier. A superb instrument. Mahogany, £51. 10. 0. or £4. 11. 6 first payment. Walnut, £54. 10. 0. Oak, £50.

Hear it demonstrated. Your Dealer can supply.
Guaranteed for twelve months by:

THE STANDARD BATTERY CO.

(Dept. W.R.), 184/188, SHAFTESBURY AVENUE, LONDON, W.C.2.

M.B.

The "NIGHTINGALE" Straight Three

(Battery Operated)

BAKELITE, MAHOGANY or WALNUT CABINETS

Size: 17 in.
by 8 in. by
9 in. Less
Valves and
Batteries:
Dual range
250-2,000 M.



£4 - 15 - 0

BULLPHONE ELIMINATORS

Incorporating Westinghouse Metal Rectifiers

A.C.4 ELIMINATOR

In Bakelite Case.

30 milliamperes output at 150 volts. 4 Tappings, 2 Fixed, 2 Variable, with Grid Bias. 1½ to 15 volts

£5 - 15 - 0

With Trickle Charger

£6 - 17 - 6



A.C.1 ELIMINATOR

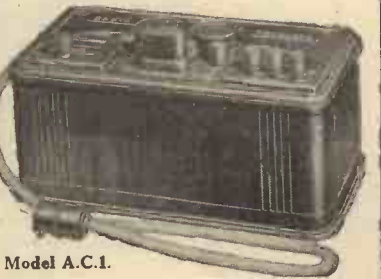
In Bakelite Case.

3 Tappings, 2 Variable, 1 Fixed. Output 120 volts at 20 milliamps

£4 - 12 - 6

With Trickle Charger

£5 - 15 - 0



Model A.C.1.

Easy Terms, 10/- deposit and balance in monthly payments. Ask your local dealer for particulars or write direct.

D.C. ELIMINATORS

In Bakelite Cases.

130 V. volts, 25 milliamps output.

Model 1. 3 Tappings, 75, 90 and 130 volts. **27'6**

Model 2. 1 Fixed and 2 Variable Tappings, utilising variable wire-wound resistances. **37'6**

(Installments not available on D.C. Models.)



Send for our Free Lists and Circuits.

BULLPHONE LTD.

(Dept. W.R.) 38, HOLYWELL LANE, LONDON, E.C.2.



**THE ONLY LOUD
SPEAKER WITH A
REINFORCED
DIAPHRAGM**

Rigidity and lightness have always been the aims of every loud-speaker manufacturer but only Celestion holds the World's right to produce the unique Celestion reinforced diaphragm. No other diaphragm so successfully combines lightness with rigidity. From no other diaphragm can you expect such faithful reproduction. For lifelike beauty of tone IT MUST BE CELESTION.

CELESTION CHASSIS D.20

A complete loud-speaker ready to be mounted in your portable, radio-gramophone or baffle

£3 : 3 : 0

Send for illustrated lists showing full range of Celestion models.

CELESTION LTD., Kingston-on-Thames
London Showrooms: 106, Victoria St., S.W.1

FOREMOST NAME

IN SOUND

REPRODUCTION

CELESTION

The Very Soul of Music
LOUD-SPEAKERS



**THE NEW
L.F. COUPLING UNIT**

This unit is specially designed to give a high quality coupling between the detector and first L.F. valve (or successive stages). It consists of an auto-coupled choke, resistance-fed from the detector valve anode. The values of the anode resistance and coupling condenser have been carefully selected so as to offer, in conjunction with the auto-transformer incorporated, a good balance over the audio-frequency range. By turning a switch, bass can be made to predominate in order to compensate for the deficiencies of certain loud-speakers.

Price 20/-

ILLUSTRATED LIST OF NEW COMPONENTS
SENT POST FREE. WRITE NOW.

Insist on
Wearite
Components
for best
results.

WEARITE
COMPONENTS

WRIGHT & WEARE, LTD.,
740, HIGH ROAD, TOTTENHAM, LONDON, N.17.
Phone: Tottenham 3847-8.

286



TWO 'EELEX' WINNERS

THE "EELEX" LEAD-IN SAFETY SWITCH. Protect yourself against thunderstorms by fitting the "EELEX." Prices now include a 2DW plug.
With 6in. tube 5/6
With 12in. tube 6/6
With 18in. tube 7/6

THE "EELEX" "THREE-IN-ONE" TERMINAL. A real boon to the amateur; takes three different types of connections—spades, pins and eyes or plain wire. 40 indicating tops; 6 different colours.

Write for list C100.

J. J. EASTICK & SONS, 118, Bunhill Row, E.C.

Phone: METROPOLITAN 0314.

**COME AND HEAR
THE BEST SPEAKER IN TOWN
FARRAND INDUCTOR £3 - 10
FROM STOCK**

This remarkable loud-speaker not only equals the moving coil but improves on its sensitiveness, clarity and beauty of tone. Cheaper to buy. Simple to operate. No batteries. Large quantities supplied without delay. Full details free on request.

WILL DAY, LTD.

(The Best in the West)

19, LISLE STREET, LEICESTER SQUARE, W.C.2.

**High-grade
QUEEN ANNE STYLE
WIRELESS CABINET**

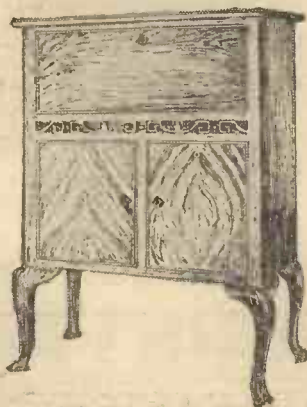
Figured Oak £5 5 0
Figured Mahogany .. £6 6 0
Figured Walnut £6 15 0
Carriage Paid.

Models from £2 : 2 : 0 to £20.

Manufacturer of all types of wireless and radiogram cabinets and furniture of every description. Thirty page illustrated catalogue post free.

**GILBERT,
CABINET MAKER,
SWINDON.**

Estimates Free. Estd. 1866.



DO YOU WANT

- A good and cheap portable set?
- A cabinet, of any type, in which to build your own?
- An ebonite or mahogonite panel—cut to size, drilled and engraved?
- Your set overhauled or repaired by an expert?
- A screw, nut, brass part or component of any kind?
- A reel of wire, enamelled, d.s.c. or d.c.c.—from 1/2oz. to 1lb?
- An intervalve or mains transformer, or the parts to build your own?
- Your own transformer rewound (from 4/-)?
- Your head-phones (singly, 2/6 or per pair, 4/-). Loud-speakers (from 4/-)?
- Magnetising (1/-; free with rewindings)?
- An eliminator for D.C. or A.C. mains?
- A loud-speaker, complete, from 17/6, upwards?
- A SEAMLESS VULCANITE CONE-DIAPHRAGM (with a perpetual guarantee)?

THE NEOPHONE can do it.

Send for illustrations and prices.
If in the neighbourhood, come and see for yourself.
THE NEOPHONE ENGINEERING CO., 8, Garrick St., W.C.2
(adjoining Leicester Square Tube Station).

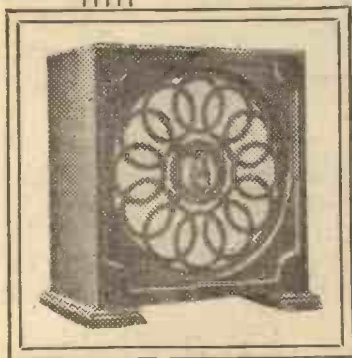
Tel.: Tem. Bar, 1039.

Trade enquiries invited.



FAMOUS DUPLEX LOUD SPEAKERS

THE truth and fidelity with which the **Brown** Duplex Loud Speaker below recreates the performance of the artiste is daily astonishing more and more listeners. Its tone and powers of reproduction are amazing: V.10, Oak, £5 0 0, V. 12, Oak, £7 0 0, (Mahogany 10/- extra), V. 15, fitted with pitch control, £12 10 0.



As
British
as
Britannia

S. G. BROWN, Ltd.,
Western Av., N. Acton, W.3

6882

... Every Station in Europe



"MAGNUM" BAND-PASS FOUR

Entirely A.C. Mains operated. The employment of two stages. S.G. with power output gives extraordinary sensitivity for foreign programmes. The tuning is by one control only, and provision is made for a Gramophone Pick-up. A highly selective set capable of receiving practically every transmitting station in Europe.

Complete and ready for use for 100/120 or 200/250 volts A.C. supply 40/100 cycles - - - £30.

Full particulars, including lists dealing with the Short Wave Superheterodyne Adaptor and Magnum Short Wave Converter, free on request.

BURNE-JONES & Co., LTD.,

"MAGNUM" HOUSE, 296 BOROUGH HIGH STREET, LONDON, S.E.1.

Telephone: Hop 6257/8.

Telegrams: Burjomaz, Sedist, London.

x SPECIAL x WIRELESS & CYCLE BARGAINS

| Usual Price. | Sale Price. | Usual Price. | Sale Price. |
|---------------------------------|-------------|--|-------------|
| 10/- Latest Type Cabinet 12 x 8 | 4/11 | 7/6 H.F. Choke ... | 3/11 |
| 5/- Ebonite for same 12 x 8 | 3/- | 12/6 Cone Speaker Cabinets ... | 7/11 |
| 5/11 Transformer ... | 3/6 | 2/- 12in. Cone Speaker Frets | 11d. |
| 4/6 .0005 Variable Condenser | 2/11 | 3/- 15in. ... | 1/11 |
| 2/- .002 Condenser ... | 1/3 | 6/6 Double Reading Voltmeter | 3/11 |
| 1/6 .0003 Condenser ... | 10d. | 10/6 6 Volt Amplion Valve ... | 3/11 |
| 1/- Grid Leak 2 meg. ... | 10d. | 17/6 New Cossor Type Long Wave Coils, pair ... | 9/6 |
| 1/- Anti-Mic. Valve Holder ... | 9d. | 12/6 Cone Unit ... | 6/11 |
| 2/3 Rheostat ... | 9d. | 7/6 Old Cossor Type Coils ... | 3/11 |
| 2/- Indoor Aerial ... | 9d. | 15/- Old Cossor Type Cabinets, 21 x 7 ... | 7/11 |
| 5/- Earth Tube ... | 1/6 | Ebonite for same ... | 3/11 |
| 10/- Guaranteed Phones ... | 4/11 | 12/6 Mullard Type Cabinet, 18 x 7 ... | 6/11 |
| 3/6 S.M. Dial ... | 1/11 | 7/6 Aluminium Panel, 18 x 7 | 3/11 |
| 5/- Cycle Tyre ... | 2/6 | 17/6 Dual Coil for M.M.3 ... | 12/6 |
| 6d. Panel Transfer ... | 3d. | Triotron Dull Emitter Valve ... | 4/11 |
| 15/- Titan Coil ... | 9/11 | 2/- Loud Speaker Cord ... | 11d. |
| Triotron Super Power Valve ... | 6/6 | 2/- Phone Cord ... | 11d. |
| 2/6 Daventry 5GB Coil ... | 1/3 | 6/6 S.L.F. Condenser ... | 3/11 |
| 9/- 50 Volt H.T. Battery ... | 4/11 | 21/- D.C. Eliminator, 15 M.amp. | 17/6 |
| 12/6 100 Volt H.T. Battery ... | 8/11 | £4 A.C. Eliminator, 20 M.amp. | 59/- |
| 5/6 2 Volt Accumulator ... | 3/6 | 17/6 Electric Iron, weight 5lb. | 7/11 |
| 2/- Accumulator Carrier ... | 11d. | 30/- Cone Speaker ... | 9/11 |
| 4/6 Neutralising Condenser ... | 2/11 | 'Phones Repaired ... | 2/6 |
| 4/- Reaction Condenser ... | 2/6 | 2/6 Cycle Tube ... | 1/3 |
| 5/- Diff. Reaction Condenser | 2/11 | | |
| 7/6 Volume Control ... | 3/11 | | |

New Cycles, Guaranteed, 59/11; with 3-speed, 79/11. With Dunlop Tyres, 10/- extra.

Parts supplied for Cossor Melody and all sets at Reduced Prices. Send now to avoid disappointment. Cash with order, or C.O.D. Special terms to those making sets. All goods guaranteed and exchanged if not satisfactory. Inquire for anything you want. Trade supplied. Send for our wonderful Bargain Price List W.R.

Owing to the enormous number of inquiries and orders, write clearly Name and Address in Block letters to the firm that made Radio popular. Letters must be fully stamped.

NORTHAMPTON PLATING CO.,
Radio and Cycle Manufacturers, NORTHAMPTON.

An Acceptable Christmas Gift!

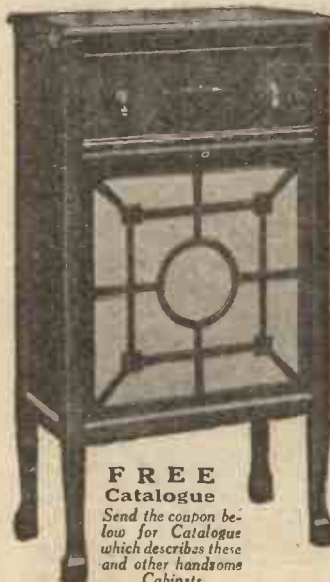


CABINET
for

PHILIPS RECEIVER and SPEAKER

The Camco Cabinet illustrated here has been specially designed for Philips' Receiver and a loud speaker. A removable baffle board is also supplied. The height of the cabinet is 40 ins. Camco Cabinets are made for the Philips 3 & Philips 4 Valve Sets. Prices from £6/0/0. You can also obtain a Camco Cabinet to convert a Philips Receiver into a modern radio gramophone.

Illustrated
CATALOGUE



FREE
Catalogue

Send the coupon below for Catalogue which describes these and other handsome Cabinets.

CARRINGTON MFG. Co., Ltd., (Works: 24, HATTON GARDEN, LONDON, E.C.1. S. Croydon.)

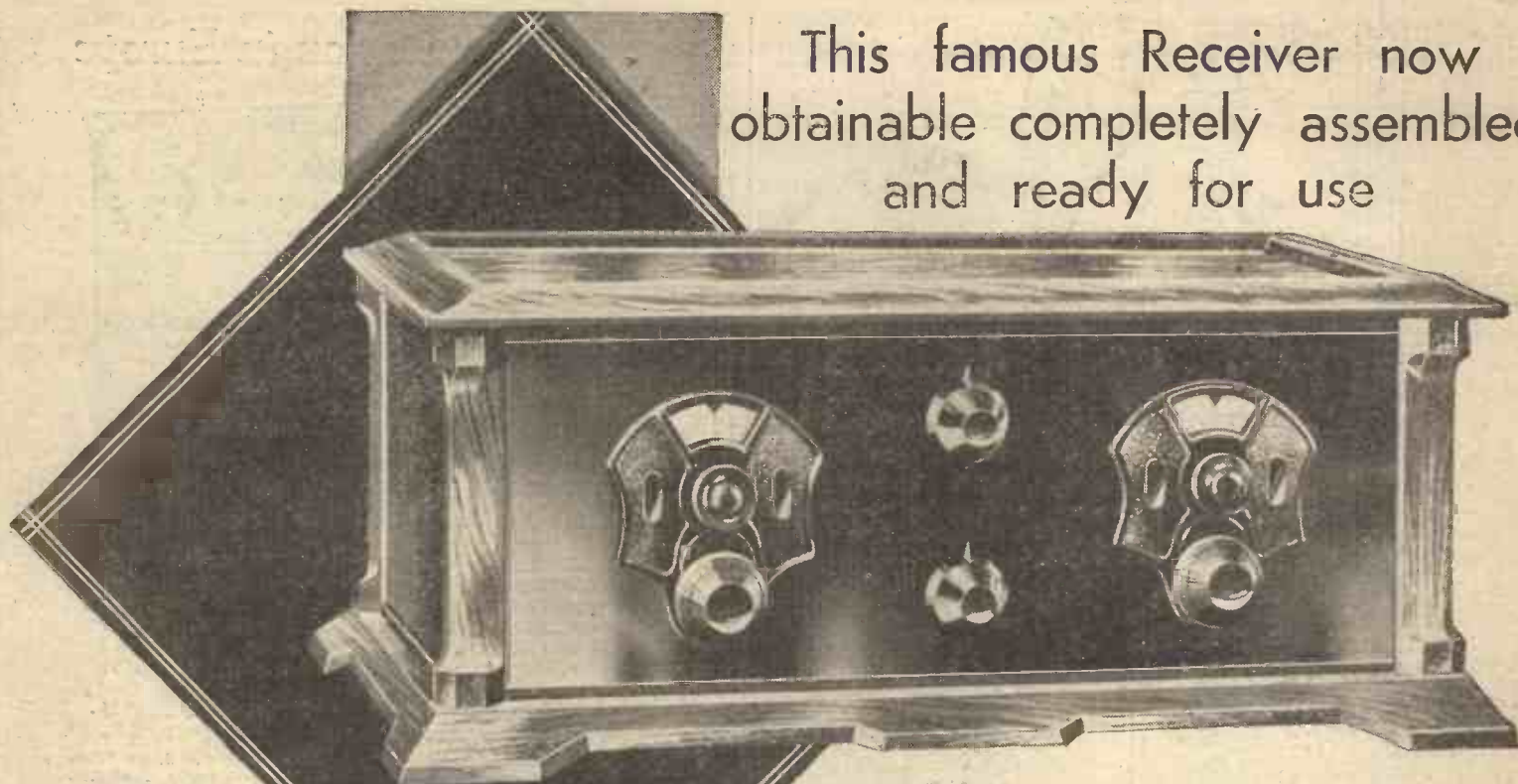
Name

Address

..... W. R.

ON
REQUEST

This famous Receiver now obtainable completely assembled and ready for use



The Simplest All-Wave Radio Set in the World

Tunes in to every broadcast wavelength 15—2,000 metres.

Cash price £14 or 12 monthly payments of 25/6 Post coupon now for full details

THE "Empire Link" All-Wave Receiver is the ideal home receiver. Not only will it bring you beautifully toned reception of the ordinary, medium and high wavelength programmes, but also full strength loud-speaker reception of wavelengths as low as 15 metres. Turn to the list of Short-Wave Stations in this issue. Think of the pleasure of being able to tune them in at full strength. Short waves offer the only really satisfactory means of long distance reception. Stations thousands of miles away come in loud, clear and free from interference with The "Empire Link." Simplicity with efficiency is the keynote of the whole receiver with extreme purity of tone.

“EMPIRE LINK” ALL-WAVE RECEIVER

The "Empire Link" represents the combined achievements of a number of leading Radio Research Experts. It puts you in touch with the Short Wave Stations of the World without any of the difficulties so common with the old type of short wave set. You can buy it complete and ready for use, or you can build it yourself from the easy-to-follow constructional plans. Complete Kit of Parts, including everything you need to build it, even 11 gns. Or 12 monthly payments of 21/-.

Valves are included with the complete receiver and with the Kit of Parts. POST COUPON NOW.

Sole Distributors:—

COUPON

To READY RADIO (R.R. Ltd.), 159, Borough High Street, S.E.1. Please send me (a) full particulars of The "Empire Link" All-Wave Receiver; (b) full constructional details of The "Empire Link" All-Wave Receiver. (Cross out item not required.)

NAME ADDRESS Use Block Letters. W.R.2. If you wish to receive particulars of our Hire-Purchase Terms, put a cross here.....

Ready Radio R.R.LD

159, BOROUGH HIGH STREET, LONDON BRIDGE, S.E.1.

Telephone: Hop 5555 (Private Exchange) Telegrams: READIRAD, SEDIST



... "Same to You!"

The NEW LONDON ELECTRON WORKS Ltd.

Telephones:
Grangewood 1408-9-1363

1 EAST HAM LONDON. E.6

Telegrams:
"Stannum. London."

Mullard

THE MASTER VALVE

A MILLION
AERIALS LEAD
DOWN TO
MULLARD
VALVES

