

— A "Christmassy" Number —

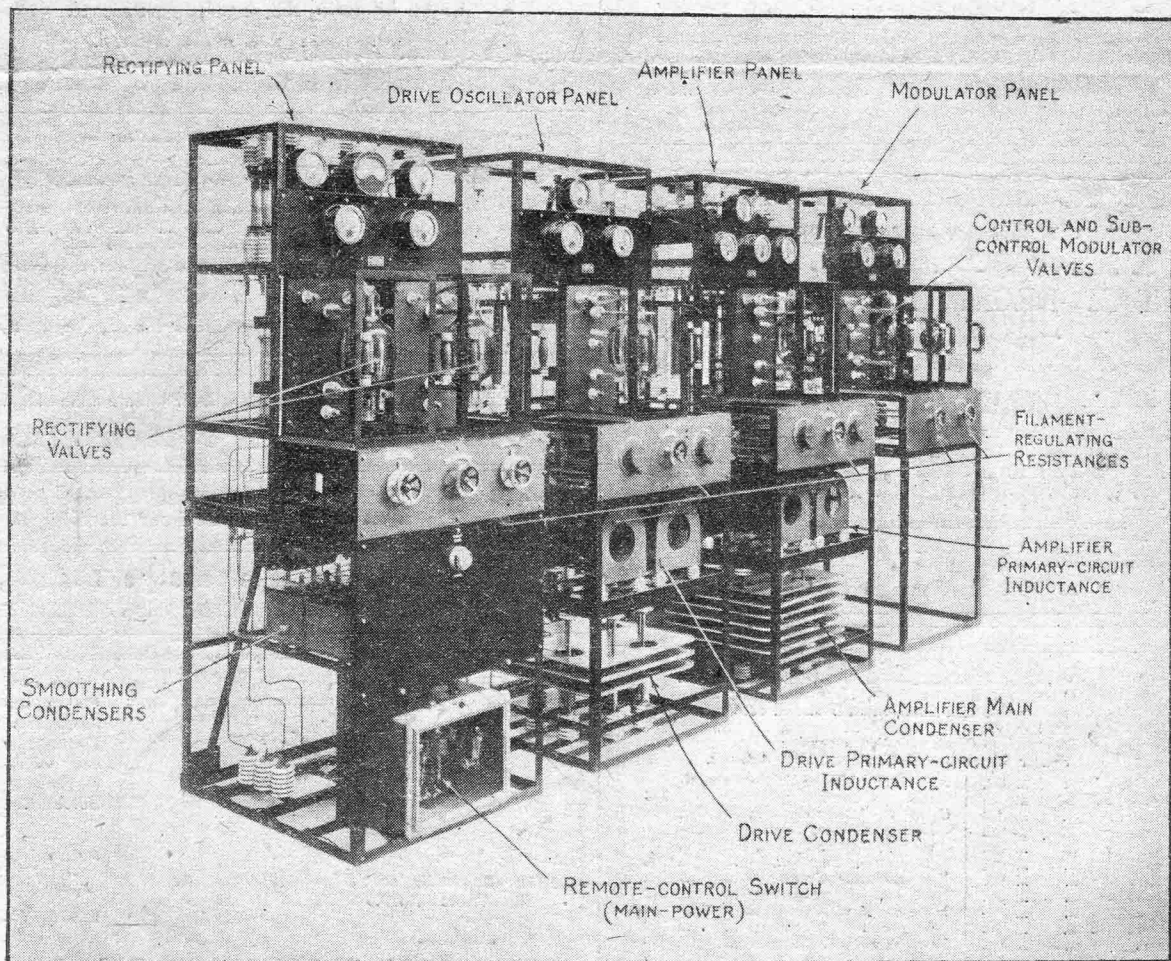
A Visit
to
2 L O

Amateur Wireless And Electrics

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BROADCASTING APPARATUS AT 2 L O. (See Special Article on pages 678 and 679.)

EVERYONE knows the familiar words "Hullo, hullo, hullo, 2LO, the London Broadcasting Station calling," and most of us have tried at one time or another to imagine what sort of a place a big transmitting station must be. You can believe, therefore, how delighted I was when, the other day, the telephone brought an invitation to spend an evening at Marconi House with Mr. A. R. Burrows, the announcer, who up till then had been "a voice but nothing more."

The Broadcasting Room

The broadcasting room is on the seventh floor, but fortunately there is a lift. Imagine a mixture of a large drawing-room, an office and a tent, and you have some idea of what 2LO looks like. The furniture consists of a grand piano, a number of comfortable chairs for the artistes who are awaiting their turns, music stands, a filing cabinet and a large desk. The floor is covered with a thick, sound-deadening carpet, whilst walls and ceiling are draped with hangings in order to do away with the curious resonant sound that accompanies transmissions from a room whose sides and top are bare.

Near the piano are the famous chimes, clearly seen in the photograph. They are operated by Mr. L. Stanton Jefferies, the accompanist, who puts real soul into the work! In the middle of the room is a pedestal supporting the microphone which is used by the announcer as well as by singers. A second microphone hangs from

**"A.W.'s" Special
Representative
Visits
2LO**

the open top of the piano, and others are at hand, adjustable to various heights.

The Change-over Switch

The change-over switch seen on the pedestal actuates a remote control in the instrument room which throws into action the whole of the transmitting gear. At one side of the concert room is a bracket which contains a tell-tale lamp, whose steady glow shows the announcer that the transmitter is working. This bracket also supports a pair of head phones connected to a receiving set working on a small frame aerial in a distant part of the building. He is thus able to listen-in and can signal to a singer to come nearer to the microphone or to move farther away from it.



SENATORE GUGLIELMO MARCONI,
G.C.V.O., LL.D., etc.,
of world renown, who made wireless broadcasting possible.

The Chimes

As the clock nears the hour Mr. Jefferies takes up his position at the chimes, whilst Mr. Burrows stands at the central microphone. "Quiet, please," says the announcer—a necessary warning, since others in the room often do not realise that anything that they say may be heard even in Shetland! The long hand touches the hour; over goes the switch and the chimes ring out. Mr. Burrows gives the general call and announces the first item. Then the switch is opened again whilst the first performer is getting into position. "Ready?" Singer and pianist nod; the



Mr. L. Stanton Jefferies, A.R.C.M. Mr. John Huntington baritone. Miss Olive Sturgess, contralto.

Transmission: Photographed in the Broadcasting Room at 2LO.

**Hullo C Q, "Amateur
A Happy Christmas"**

A little light on the wall bracket flashes on, and in a moment the first song is on its way to listeners in all parts of the country.

The Apparatus

So much for the concert room; and now for the apparatus. This is housed in a room some distance away and does the actual work of transmitting. Large notices outside the door give all and sundry warning that the place is dangerous. When you realise that the secondary winding of the main transformer gives a working potential of 22,500 volts you will see that such a warning is not out of place.

The transmitter (a photograph of this is



MR. ARTHUR R. BURROWS,
2 L O'S ANNOUNCER,

to so many thousands just "a voice"—and a clear voice, too.

A Broadcasting Station at Christmas

duce between them a direct current with a "ripple" of 600 per second. This is smoothed out by a double filtering system which actually makes the current more even than that supplied by a direct-current generator. One can understand now why 2 L O's transmission are so completely free from humming.

The filaments of the valves of the three remaining panels are lit by a 40-volt 330-ampere-hour accumulator. The drive oscillator receives its anode potential from the rectifier, its grid being connected to earth, which at 2 L O means the lead roof and the steel framework of the building. The valve of the next panel is a transmitter, whose grid potential is controlled, by means of reaction coils, by both the drive and the amplifier. In the positive

high-tension lead is a "speech-choke" connected to a large inductance which varies the potential on the anode of the oscillator valve. Each variation is carried to the aerial and so helps to produce the complex ripple which, superimposed on the carrier wave, conveys every modulation of speech or music.

The Modulator Panel

The modulator panel has two valves, a control and a sub-control. The plate of the first is connected through a high resistance to the speech-choke, which is also connected to the positive high-tension lead. Its grid is joined through a condenser to the anode of the second valve. When the microphone is spoken into, the varying resistance produced by the vibration of its diaphragm causes a variation to take place in the current flowing through the speech transformer. This produces changes in the potential on the grid of the sub-control valve, which then causes still larger variations on the grid of the main-control valve. This in turn varies the anode potential of the amplifier, and so the speech ripple is suitably built up.

My thanks are due to Mr. Burrows, who was kindness itself, and to Mr. R. H. White, M.I.E.E., M.I.R.E., whose explanations of the complex mechanism of the transmitting set made everything clear even to one who has had little practical experience of the transmitting and broadcasting side as distinct from the receiving side of wireless. LAMBDA.

shown on the cover) consists of four panels. That on the left is the rectifier, next come the drive oscillator and the amplifier; on the extreme right is the modulator.

Power comes from the ordinary supply mains, but a special arrangement is provided so that either of two entirely different sets of mains can be utilised. It is delivered in the basement of the building to a 10-h.p. motor coupled direct to a 6-kw. alternator which supplies current at 500 volts. From the alternator a cable runs to the transmitting room at the top of the building, where it is connected to the primary of a 6-kw. transformer, whose

r Wireless" speaking:
Christmas to You!

secondary winding gives out the terrific voltage already mentioned.

The Rectifying Panel

The function of the rectifying panel is to convert alternating current to direct at a pressure of 10,000 volts. The filaments of its valves are lighted from a transformer whose primary is connected to the main 500-volt alternating supply. Thus the filaments of these huge valves—they are as big as Rugby footballs—become the positive high-tension pole of the wireless circuit. Each valve deals with 300 alternations a second, and as they are so arranged that each of them deals with one side of the alternating waves, they pro-



Reception: A Typical Drawing-room Scene this Christmas.