# Better Wireless Reception

## A New Super-Selective Receiver

THE problem of reducing interference between wireless stations is now so acute in Europe and America that any proposal for relieving what is often called the congestion of the ether demands serious attention. Broadcasting or telephony stations are known to be the chief offenders in this overcrowding, in that, when transmitting speech or music, they occupy not only their nominal frequency but also a range of frequencies both above and below this nominal figure.

Some years ago a great step forward was made in solving this difficulty by Dr. J. R. Carson, of the American Telegraph and Telephone Company, who pointed out that it was not necessary to transmit the whole of this range of frequencies in order to convey the speech or music. It is only necessary to send a part of it, or what is called technically one of the side-bands. Working in this way it is possible to use more selective receivers, which reduce the amount of interference, both natural and artificial, which enters the receiving set.

This method of communication is known as single side-band telephony, and is used in the Trans-Atlantic telephone service between America and England. Up to the present, however, its use has not extended to broadcasting because of the more complicated receiving circuits required.

The announcement was made recently of the development of another system which is designed to assist in the solution of the same problem. With the Stenode Radiostat system of communication it is claimed that the "spread" of frequencies can be enormously reduced, a reduction of 50 times being mentioned. Such a possibility would be denied by most technical experts, for it is an axiom of modern wireless theory that the "spread" of a telephone station, even with single side-band working, must occupy at least the range of musical frequencies from, say, 50 to 5,000 cycles a second. Until full technical details of the methods to be used for transmission and the results of actual tests are disclosed, it is therefore difficult to be other than optical.

On the receiving side, however, it is much more likely that real progress has been made. In a typical form of Stenode Radiostat receiver, Dr. G. R. Robinson, the inventor of the system, has made use of the highly selective properties of the quartz crystal resonator, which up to now has not been used in ordinary broadcast receivers. It is well known that by the use of such a crystal in laboratory experiments, an extraordinary degree of selectivity may be obtained. But the difficulties in using such a crystal in an ordinary receiver are twofold. In the first place a crystal of a certain size is tuned to one frequency only; secondly, there is a certain electrical persistence in such a highly selective circuit which renders it sluggish and unable to follow such rapidly varying signals as are emitted by a broadcasting station.

Dr. Robinson has surmounted the first difficulty by using the super heterodyne principle, so that the frequency of any station that is received is converted first to the natural frequency of the crystal before being applied to it. To prevent the persistence of signals and so eradicate the electrical sluggishness of the circuit, Dr. Robinson uses a form of inaudible quenching signal in somewhat the same manner as is used in the Armstrong or Flewelling super-regenerative circuits. At the demonstration in London recently, the extreme selectivity of the receiver was illustrated by receiving a broadcast transmission on a frame aerial without a trace of interference from another transmitter a few feet away from the set. A photograph of this new receiver appears on page 9 of this issue.

# Testing Instruments

THE majority of listeners usually contrive to manage without a voltmeter or ammeter, but those who possess one generally find that a cheap instrument for measuring A and B battery voltages is sufficient for their needs. On the other hand, the serious experimenter finds that accurate measuring instruments are a real necessity, for without them it is impossible to ascertain whether the set is working up to a standard; any falling off in current consumption is instantly reflected in the tell-tale needle. Only meters of the moving-coil type are completely satisfactory for this work. In addition to serving as a check on the set an accurate measuring instrument like a milliameter is of valuable assistance in tracing faults. It is a good plan to connect a milliameter in the B battery circuit and an ammeter in the A battery circuit so that an instant check of the current consumption from both batteries is available.



# Short-Wave Notes

(Continued from page 32.)

morning at 6.15 talk was heard at R5 by a man. Soon after this a dialogue between the same man and a woman, and music later. No call was heard. The talk appeared to be German. On Thursday at the same time voices were audible at R3. Static was bad. Again on Saturday a speech was being delivered; laughing at times could be heard from the speaker's audience.

On 35.7 metres (about) on Friday morning at 6.15 several "Hullo's" and calling what I took to be 2BF. The talk was in English at R3, very clear, but morse interference spoilt reception. On about 31.5 metres (just clear of Zeesen, who was transmitting at the same time), a weak voice could be heard at 6.15 a.m. on Tuesday.

On Sunday afternoon at 4.45 on about 30.3 metres a man and woman were having a great yarn together. It was duplex. The station tuned in was, I think, the American side of the trans-Atlantic service, where the woman, probably the operator, was talking. All that was readable was "Hullo. London," at intervals. On 24.5 metres (about) at 6 a.m. on Wednesday a foreign voice was heard at R3.

# Broadcast Fees in America

## Highly Paid Singers

SINGING to-day is one of the most highly-paid professions in America. Even film stars must relinquish pride of place to the present favourites of fortune—operatic and lyric singers. Radio is responsible for the lucrative engagements now offered world-famous artists. In America, as is well known, broadcasting companies earn their money by advertisements. For a long time it has been the custom for departmental stores and big wholesale businesses to pay broadcasting companies for an allotment of 15 minutes on certain nights in the week.

Judiciously advertised, these recital entertainments are the chief enjoyment of thousands of radio listeners. At first simple and unassuming programmes were forthcoming, but now rich progressive companies rival one another in paying stupendous sums per minute to famous singers. The greater reputation enjoyed by the artist the greater audience will tune in.

Sir Harry Lauder recently received £3000 for singing three songs—£1000 a song. As a matter of fact, Sir Harry lowered his record by generously giving an encore. He was in Winnipeg at the time and his microphone was linked up with nearly every radio in the United States—there are 12,000,000 of them. He was engaged by a shoe manufacturer.

Al Jolson, the noted jazz singer, went on the air recently to the tune of £150 a minute, the engagement lasting ten minutes, thus netting Jolson the tidy sum of £1500. Mme. Francies Alda, who has just resigned from the Metropolitan Opera Company, is another favourite. Recently she was paid £600 for a short recital, and she now declares that she has abandoned the operatic stage for the microphone. At a luncheon given in her honour she said that she could not afford to disregard the stupendous money-making power of the radio. In the company of other stars she will give shortly six.

Radio listeners were particularly pleased with Sir Harry Lauder because he introduced his own songs. They find in America that professional announcers are apt to talk too long. Singers report that they miss the applause they receive in concert room or the opera house, but they have no long night hours and little travelling. Puccini operas.