

## Automatic Radio Beacons

### Along Coasts of Canada

THE first of the eighteen radio beacons which the Canadian Government is installing along the Atlantic and Pacific coasts has recently been completed, and after strenuous testing, has been declared entirely satisfactory. These radio beacons, which are entirely automatic, are now being installed to supply a long-felt want, namely, some reliable means whereby shipping is afforded an adequate measure of protection from the dangerous shoals and fogs which prevail on the Northern Canadian coasts.

These radio beacons are to be installed in every lighthouse along the coasts, and though their transmissions are entirely automatic, it is necessary for the lighthouse-keeper to ensure the constant running of the gasoline unit which supplies the necessary power. The radio apparatus consists of a duplicate automatic transmitter, which emits a set code signal, thus enabling a radio operator on board ship to ascertain his whereabouts with accuracy. In the case of a breakdown, the keeper merely throws a switch over, and thus places a duplicate transmitter on the air.

Each of the beacons will have a special code signal of its own, and when an operator hears one of these signals he can be sure that his ship is near some dangerous location. If his ship carries direction-finding apparatus, he can locate the position of the ship by ascertaining the direction in which the signals are loudest. By taking cross-bearings from another beacon station, the exact position of the ship can be accurately plotted.

The beacon transmitters are so designed that about the only breakdown that is possible is one caused by a burnt-out valve. Should this occur, the keeper immediately places the other set in action, and substitutes another valve in the defective transmitter. Adequate warning is given, should anything go wrong, by a bell, which continues ringing until the transmission recommences.

The operation is entirely controlled by a clock. As the hands reach the set time, special electric contacts close the circuit and start the gasoline unit. When the engine is properly running, electric contacts on the power panel of the transmitter close and start up the motor-generator which supplies the current for the transmitter; the valves light up, and within one minute and forty-five seconds from the time that the clock closed contact the signals are

on the air. They continue for one minute, just sending out the call, such as VGZ, VGZ, VGZ, for a full minute. Then a two-minute pause follows; the signals go on again; another two-minute pause. Then the carrier note which goes out on the air is shut off, as the second contact on the clock closes the circuit. Once an hour, twenty-four times a day, 365 days in the year, that automatic procedure goes on. Only in fog will the transmitter function continuously, twenty-four hours a day.

The beacons operate on a wavelength of 1000 metres, and are powered with four fifty-watt transmitting valves. They have a positive range of 75 miles, while their signals have been heard loudly enough for direction-finding operations up to distances of 200 miles or more. It is expected that this chain of eighteen stations will be completed early in the coming year, and when completed, it will form yet another addition to the already large number of stations which are operated by the Canadian Government for the aid of marine navigation.

### Radio "Finesse"

ONE of the lesser-known aids to broadcasting is found in the use of coloured lights in the studio. It is fairly well established that there is a connection between colour and emotional response, and many broadcasting stations in England have recently been experimenting with a view to the use of colour in creating "radio-finesse." In some Continental studios it has been found that artists perform best under lights which show colours most suited, psychologically, to the "mood" of the broadcast.

### Helpful Hints

ONE advantage of square wire for set-building is that it offers a larger surface for screw-down connections.

WHEN a set has to be used in a rather dark corner it is not a bad plan to arrange a flashlamp bulb near the tuning dial, with a simple switch which puts it on when required.

WHERE joints are inevitable properly soldered ones must be used, for twisting wires together is certain to lead to trouble with bad contact.

FOR good quality loudspeaker work a power valve, or preferably a super-power valve, must be used in the last valve socket.

ONE advantage of using a small aerial is that you will stand a better chance of picking up foreign stations than when a large aerial is being "swamped" by a nearby transmitter.

ALWAYS bring the lead-in from the aerial straight to the set where it is possible to do so, so as to keep the aerial and earth leads as short as possible.

INSUFFICIENT high-tension voltage is the commonest cause of indifferent reproduction.

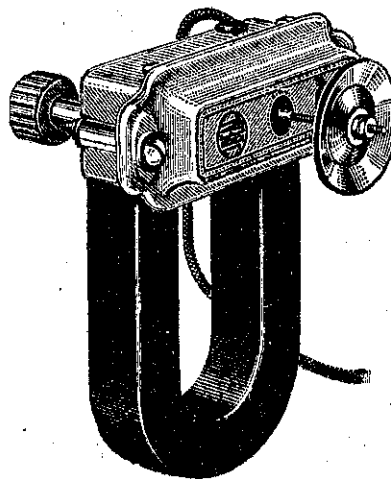
IF you use one of the three terminal fixed condensers, be certain that you wire it up the right way, as although it may work when connected wrongly, results will be very inferior to those obtainable under the correct conditions.

WHEN mounting condensers, etc., in rather inaccessible places, remember it is often an advantage to put the leads in place and screw them down before fixing the component in position.

### Table of Valve Equivalents

Type.	Mullard.	Arcturus.	Ce-Co.	Osram.	Phillips.
201A	PM5	—	A	DEL610	A609
112A	PM6	—	F12A	DEP610	B605
171A	AC4	71	J71	P625A	C603
245	DFA9	145	45	P625	E404
210	DFA7	—	L10	—	TB0410
250	DO20	150	L50	LS625	F704
280	DU2	180	R80	—	1560
281	DU10	181	R81	—	1562
226	AC3	120	M26	—	F109
227	102T	127	N27	—	F209
224	—	124	22SG	—	F242

NOTE.—The above are the nearest to the American types, but the characteristics are not exactly the same. However, they may conveniently be substituted for the American valves if the small alterations are observed. These may be obtained from a chart or from the carton of the valve in question.



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