

Research Department.

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Drawings: Nil.

WEST OF ENGLAND RELAY STATION:

INTERIM REPORT.

From the sites already tested in the Bristol area at Dundry and Cornwell Farm, the signal along the distant portions of the Somerset and North Devon coasts is not great enough to provide a service, and consequently a further series of experiments has been commenced to investigate the possibility of putting a transmitter in a more suitable location.

There are three possible alternatives: First, to site the transmitter in Wales in the Barry area, from which district a sea path to the whole of the Somerset and North Devon coast would be obtained, and also a path partly over sea to Bristol and Bath. Second, to test the service from a site on the coast between Clevedon and Weston-super-Mare, which would also give a good sea path in the Somerset direction, and would probably produce better conditions in Bristol and Bath because the distance is less than from Barry. Third, to utilise the existing National transmitter at Washford radiating about 30 kW., a course which does not offer much prospect of success, even with a directional aerial

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system, because of the extremely bad conductivity near this station, and the low wavelength of 203.5 metres available for this service. During the contour measurements in progress on the West Regional transmitter, it was discovered that the signal strength at Ilfracombe was only 3 mV/metre, and in Bath only 9 mV/metre for 65 kW. radiated, and this on a wavelength of 373 metres.

Options have been obtained on two sites in each of the Barry and Clevedon areas, and experiments have now been completed on one site in the former district on a wavelength of 202 metres.

The site tested is at Sully Bay, adjacent to the foreshore and on a sub-strata of Keuper Marl. Unfortunately, local losses were found to be considerable due to poor conducting subsoil, the values of sigma obtained being of the order of 0.5×10^{-13} c.g.s. units in westerly directions, and 0.3×10^{-13} c.g.s. units easterly towards Bristol. (See Table I).

A list of spot readings is given in Table II, from which it will be seen that while the service to the Somerset coast is good, the signal in Bristol and Bath for 10 kW. radiated is quite inadequate, partly because the distance from Barry is too great.

From a consideration of these results it is apparent that the other site in the Barry district, which is at Wenvoe, two miles further inland, would be even less satisfactory, and consequently this site has not been tested.

Tests are now in progress on a site at Clevedon, Somerset, situated near Colehouse Lane Station, one mile south of Clevedon, on a

sub-strata of alluvium within half a mile of the shore of the Bristol Channel. The path to the Somerset coast is along the Bristol Channel to the west, and as the distance easterly to Bristol is only twelve miles, this site gives promise of a good service. The second site in this area is situated on the shore at Sand Bay, sixteen miles from Bristol and two miles north of Weston-super-Mare. Here also the sub-strata is alluvium, and there is a good path to Somerset, but the distance from Bristol and Bath may be too great and thus prejudice the service. An option has also been obtained on a site at Cadbury Camp, four miles north-east of Clevedon and eight miles from Bristol, on a ridge of carboniferous limestone. Undoubtedly the service to Bristol and Bath would be good, but it is not proposed to test this site except as a last resort on account of legal difficulties, poor access and trouble with public services.

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TABLE I.

Local conductivity measurements at Sully Bay.

<u>Direction.</u>	<u>Distance:</u> <u>kms.</u>	<u>Average</u> $\sigma \times 10^{13}$ <u>c.g.s.</u>
Barry.	16	0.54
Wenvoe.	9	0.54
Penarth.	5	0.28
Lavernock.	3	0.32

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TABLE II.

Spot readings from Silly Bay.

<u>Location.</u>	<u>E(mV/m).</u> <u>5 kW.</u>	<u>E(mV/m).</u> <u>10 kW.</u>
Gloucester.	1.09	1.54
Cheltenham.	0.89	1.26
Cirencester.	0.75	1.06
Swindon.	0.81	1.15
Malmesbury.	1.13	1.6
Chippenham.	1.08	1.53
Bristol.	4.0	5.65
Clevedon.	22.2	31.4
Weston-super-Mare.	27.6	34.0
Bath.	1.73	2.45
Devizes.	0.89	1.26
Wells.	5.1	7.2
Bridgewater.	16.8	23.8
Taunton.	4.3	6.1
Tiverton.	1.5	2.1
Ilfracombe.	3.9	5.5
Barnstaple.	0.82	1.16
Bideford.	0.78	1.1
