

I hope that this latter evidence will make clear that the first known case of wireless telegraphy being used for increasing the safety of life at sea was by means of Marconi equipment, using the Marconi system of wireless telegraphy.

I have the honour to remain,

Yours faithfully,  
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<sup>1</sup> Fahie, J. J., 1899. *A History of Wireless Telegraphy, 1838-1899.*

<sup>2</sup> Fleming, J. A., 1906. *Principles of Electric Wave Telegraphy & Telephony.*

<sup>3</sup> Slaby (Charlottenburg), April 1898. 'The New Telegraphy', *Century Magazine.*

## AIDS TO LAND NAVIGATION

SIR,

The importance attached to marine and air navigational aids tends to make the land aspect of the problem be forgotten. This aspect exists, and now, when opinions are formed, the views of members of the Institute on this subject could be of great value and would be most welcome.

Land navigation is normally carried out by map and compass and, where greater accuracy is required, by survey methods. In places, however, compasses become unreliable and maps inadequate; then an additional aid, either radio or DR is desirable.

In general a ground-to-ground radio system necessitates a comparatively low frequency. With a vehicle-borne receiver the aim would be to provide over a wide coverage (in the order of 200 miles) co-ordinate presentation down to 100 yards with an accuracy of 200 yards. For mapping purposes, that is, the filling in of subsidiary detail, this degree of accuracy is insufficient. It might however be possible by limiting the coverage to 20 miles, and employing mobile transmitters, and perhaps using the same receiver circuits, to read down to 10 yards with an accuracy of 20 yards. With mobile transmitters there are difficulties in producing the necessary overlay to the area being mapped.

An aid working entirely by radio means is not necessarily the solution. The radio spectrum is crowded, and a DR system independent of radio is therefore attractive. Such a system would have one great advantage, in that when an accurate fix is obtained by other means, all previous running errors would be eliminated; also the serious disadvantage of the inaccuracy inherent in the magnetic compass when mounted in a vehicle, and also when used in high latitudes. A DR system using a radio compass is a possible solution.

It would be of interest to hear the views of members on these possibilities.

Yours faithfully,  
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