LETTERS TO EDITOR

ADDITIONAL MAGNETIC OBSERVATIONS OBTAINED BY THE *CINCO DE OUTUBRO* OFF THE COAST OF PORTUGAL.

Besides the data given in the Reports¹ of the Missão Hidrográfica da Costa de Portugal the following additional values, all referred to the year 1915, were determined:

Latitude 39° 52' N, longitude 9° 18' W: Declination 16° 15' W; inclination 58° 26' N; total intensity 0.4396 C. G. S.; horizontal intensity 0.2302 C. G. S.

Latitude 37° 01' N, longitude 7° 27' W: Declination 15° 07' W; inclination 55° 16' N; total intensity 0.4290 C. G. S.; horizontal intensity 0.2444 C. G. S.

Lisbon, March 20, 1919.

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¹Ministério da Marinha, Missão Hidrográfica da Costa de Portugal. Relatório dos trabalhos executados durante a campanha do aviso *Cinco de Outubro*, em 1913, e 1914, Lisboa, 1915, 1918.

NOTE ON A POSSIBLE EXPLANATION OF THE "ELECTRIC TIDE" OBSERVED AT JERSEY¹.

On page 34 of the March 1919, issue of this Journal Father Dechevrens says "If the electromotive force is to be sought in the movement of the waters of the ocean, its greatest variation will accompany the greatest movements which naturally precede by some time the slack water of low and high tides." This, of course, looks to the electromagnetic induction-effects produced by the tidal waters in cutting across the Earth's magnetic field as the explanation of the phenomenon under discussion. It is the purpose of this note to suggest briefly an entirely different line of inquiry which also leads to a possible explanation of the observed effects.

Several interesting articles by Mr. E. G. Bilham² have recently come to the writer's attention. In the first of the articles cited, it is shown that the water level in an experimental well at Kew Observatory responds to variations in the local barometric pressure. In the other two papers the well was shown to follow the fortnightly oscillation of the mean level of the Thames, and well-marked solar and lunar diurnal-variations were found for each of 24 consecutive months. The short-period tides of the solar and lunar series were found to take the form of double oscillations with two maxima and two minima during 24 hours. The "spring tides" occur in the well 3.3 days after they occur in the river and the lunar fortnightly tides 5.1 days later than in the river. It is assumed that these are the times required for the respective waves to travel through the subsoil from the river to the well.

Now in the March 1918, number of this Journal, pp. 37 and 38, we find that for the Jersey measurements the *galvanized* water-pipe system of the St. Louis Observatory was connected through a sensitive galvanometer to the gas-

¹See *Terr. Mag.*, Vol. 23, pp. 37-39, 1918; *Terr. Mag.*, Vol. 23, pp. 145-147, 1918; *Comptes Rendus*, Vol. 167, pp. 552-555, 1918; *Terr. Mag.*, Vol. 24, pp. 33-38, 1919.

²See *Proc. Roy. Soc.*, Vol. 94, pp. 165-181, 1918; *Proc. Roy. Soc.*, Vol. 94, pp. 476-478, 1918; *Q. J. R. Meteor. Soc.*, Vol. 44, pp. 171-189, 1918.