Geographical Section of the British Association at Southport, he delivered an address on "Terrestrial Magnetism in its Relation to Geography," which was published in various periodicals and has recently been republished in the "Annual Report of the Smithsonian Institution for 1903."

Having been promoted to the rank of Captain on the retired list in 1891, Captain Creak was created a C. B. in 1901, for his services at the Admiralty when he retired from his post. For many years he has been an earnest advocate of magnetic surveys at sea as a necessary part of the inquiry into the nature of Terrestrial Magnetism.

LETTERS TO EDITOR

INTERRUPTIONS TO TELEGRAPH LINES IN NEW SOUTH WALES, AUSTRALIA, AS OBSERVED FROM THE CHIEF OFFICE (SYDNEY) ON OCTOBER 31, 1903.

At 4 p. m.,¹ the current on the Melbourne quadruplex circuit fluctuated considerably, and at 5 p. m., southern quadruplex circuits suddenly disclosed a foreign element. Two copper wires were the first affected, the galvanometers indicating a varying current from 10 to 25 degrees, which was located between Mittagong and Goulburn.

Other southern circuits were unworkable. The disturbance appeared much stronger further south than Goulburn.

At 6:50 p. m., it was necessary to close the No. 2 side of the Bathurst (Western) quadruplex.

The Northern quadruplex circuits though not so seriously affected worked indifferently after 6 p. m.

These conditions continued in a more or less aggravated form right up to 8:15 p. m., when most of the offices were closed for business.

The telegraph lines running in a southerly direction were the most violently affected.

OTTO J. KLOTZ.

Ottawa, Canada.

PRINCIPAL MAGNETIC DISTURBANCES RECORDED AT CHELTENHAM MAGNETIC OBSERVATORY, SEPT. 1-NOV. 30, 1904.²

[Only the most notable storms are here given.]

11. Began suddenly on September 24th, at 14^h 44^m, 75th meridian mean time, and ended on September 26th, at about 5^h. The maximum and minimum ordinates are as follows:

¹ The times given, according to the information courteously supplied by the Superintendent of the Sydney office, Mr. Young, applies to the 150th meridian, and is hence 10 hours ahead of Greenwich.

² See preceding issues of *T. M.* for reports of previous disturbances. The Observatory is situated 5^h 07^m 4 west of Greenwich.

	Maximum	75 M. M. Time	Minimum	Time	Range
		h m		h m	
D	47'.5	Sep. 25, 12 10	19'.5	Sept. 24, 22 03	28'.0
H	52.3 mm.	" 24, 14 57	16.5 mm.	" 25, 10 21	68.8 mm. or 114 γ
Z	59.3 mm.	" 24, 20 32	47.8 mm.	" 25, 0 30	11.5 mm. or 61 γ

12. Began about 17^h on October 6th, and ended about 16^h on the 8th. The maximum and minimum ordinates are as follows:

	Maximum	75 M. M. Time	Minimum	Time	Range
		h m		h m	
D	50'.5	Oct. 7, 3 24	27'.8	Oct. 7, 19 19	22'.7
H	59.9 mm.	" 7, 21 59	10.0 mm.	" 8, 13 01	66.9 mm. or 114 γ
Z	56.4 mm.	" 7, 18 45	47.0 mm.	" 7, 3 47	9.4 mm. or 50 γ

13. Began about midnight on October 20th, and ended at about 4^h, on October 22d. The maximum and minimum ordinates are as follows:

	Maximum	75 M. M. Time	Minimum	75 M. M. Time	Range
		h m		h m	
D	47'.5	Oct. 21, 13 46	18'.1	Oct. 21, 20 15	29'.4
H	59.6 mm.	" 20, 17 58	8.6 mm.	" 21, 12 08	68.2 mm. or 115 γ
Z	58.0 mm.	" 21, 20 05	49.2 mm.	" 20, 12 26	8.8 mm. or 48 γ

14 and 15. The first began at 1^h 27^m on November 4th, and ended about 13^h on November 5th; the second began about 19^h 43^m on November 15th, and ended about 8^h, on November 18th. The maximum and minimum ordinates are as follows:

November 4-5.

	Maximum	75 M. M. Time	Minimum	75 M. M. Time	Range
		h m		h m	
D	49'.8	Nov. 4, 12 07	28'.6	Nov. 4, 18 52	21'.2
H	53.0 mm.	" 4, 22 01	7.0 mm.	" 4, 18 44	46.0 mm. or 77.6 γ
Z	53.4 mm.	" 4, 18 47	46.0 mm.	" 4, 9 39	7.4 mm. or 40.4 γ

November 15-18.

	Maximum	75 M. M. Time	Minimum	75 M. M. Time	Range
		h m		h m	
D	39'.9	Nov. 17, 2 27	22'.4	Nov. 16, 19 28	17'.5
H	52.4 mm.	" 15, 19 47	2.9 mm.	" 16, 2 21	49.5 mm. or 83.5 γ
Z	53.0 mm.	" 16, 18 19	45.7 mm.	" 17, 2 47	7.3 mm. or 39.8 γ

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