Report of Magnetical Observations at Falmouth Observatory for the Year 1898. Latitude 50° 9′ 0″ N., Longitude 5° 4′ 35″ W.; height, 167 feet above mean sea-level.

The Declination and the Horizontal and Vertical Forces are deduced from hourly readings of the photographic curves, and so are corrected for the diurnal variation.

The results in the following tables, Nos. I, II, III, IV, are deduced from the magnetograph curves which have been standardised by observations of deflection and vibration. These were made with the Collimator Magnet, marked 66A, and the Declinometer Magnet, marked 66C, in the Unifilar Magnetometer No. 66, by Elliott Brothers, of London. The temperature correction (which is probably very small) has not been applied.

In Tables V and VI the Vertical Force values, also deduced from the Photographic Curves, have been standardised by observations of Dip and of Horizontal Force, and are published for the first time. The January results are based on four days' means, and the June and October results on the means of three days only. No temperature correction has been applied, and this probably has modified to some extent the apparent law of variation of the Vertical Force throughout the twenty-four hours. As is not unusual with a new instrument, some discontinuities occurred in the course of the year.

In Table VII, H is the mean of the absolute values observed during the month (generally three in number), uncorrected for diurnal variations and for any disturbance. V is the mean of the products of the tangent of Dip and H.

In Table VIII the Inclination is the mean of the absolute observations, the mean time of which is 3 P.M. The Inclination was observed with the Inclinometer No. 86, by Dover, of Charlton, Kent, and needles 1 and 2, which are 3½ inches in length.

The Declination and the Horizontal and Vertical Force values given in Tables I to VI are prepared in accordance with the suggestions made in the Fifth Report of the Committee of the British Association on comparing and reducing magnetic observations, and the time given is Greenwich Mean Time, which is 20 minutes 18 seconds earlier than local time.

The following is a list of the days during the year 1898 which were selected by the Astronomer Royal as suitable for the determination of the magnetic diurnal variations, and which have been employed in the preparation of the magnetic tables :—

January	3, 4, 7, 9, 23.
February	1, 3, 7, 26, 27.
March	1, 3, 4, 24, 31.
April	1, 9, 21, 22, 29.
May	7, 19, 21, 23, 25.
June	5, 13, 17, 20, 21.
July	2, 10, 15, 16, 18.
August	1, 8, 10, 15, 25.
September	6, 7, 12, 21, 26.
October	4, 8, 12, 16, 18.
November	5, 10, 14, 29, 30.
December	11, 12, 17, 23, 26.

EDWARD KITTO,
Magnetic Observer.

Table I.—Hourly Means of Declination at the Falmouth on Five selected quiet Days in

(18° + West.)

Hours	Mid.	1	2	3	4	5	6	7	8	9	10	11
					Winter.							
1898.	′	′	′	′	′	′	′	′	′	′	′	′
Jan. ..	37·5	37·9	38·3	38·4	38·3	38·0	37·8	37·7	37·4	37·4	37·6	38·9
Feb. ..	37·8	38·0	38·0	38·0	38·1	38·0	37·7	37·6	37·5	37·1	37·3	38·7
March.	37·9	38·0	37·9	38·0	37·7	38·4	37·9	37·7	37·1	36·2	36·6	38·7
Oct. ..	34·9	35·2	35·3	35·4	35·0	35·3	35·1	34·5	33·3	33·2	34·7	37·2
Nov. ..	35·7	35·8	36·4	36·5	36·5	36·4	36·2	36 1	36·1	36·0	36·8	38·1
Dec. ..	34·9	35·2	35·7	36·1	35·8	35·8	35·6	35·6	35·3	35·5	36·3	36·6
Means	36·5	36·7	36·9	37·1	36·9	37·0	36·7	36·5	36·1	35·9	36·6	38·0
					Summer.							
	′	′	′	′	′	′	′	′	′	′	′	′
April ..	38·6	38·7	38·4	38·4	38·0	37·9	38·1	37·5	36·4	36·0	36·9	38·9
May ..	36·9	37·1	36·9	36·8	36·2	35·1	33·5	32·2	31·7	32·5	35·1	38·6
June ..	37·6	37·9	37·5	37·3	36·6	35·3	33·8	33·2	33·2	33·1	35·0	38·1
July ..	37·8	37·3	37·0	36·7	36·2	35. 4	34·1	33·8	33·7	34·3	36·2	38·4
Aug. ..	36·8	36·9	36·3	35·8	35·7	35·4	34·7	34·3	33·9	34·8	36·8	39·3
Sept. ..	35·5	35·6	35·0	35·2	34·5	34·3	33·8	33·9	33·6	33·9	35·6	37·9
Means	37·2	37·3	36·9	36·7	36·2	35·6	34·7	34·2	33·8	34·1	35·9	38·5

Table II.—Diurnal Inequality of the Falmouth

Hours	Mid.	1	2	3	4	5	6	7	8	9	10	11
					Summer mean.							
	′	′	′	′	′	′	′	′	′	′	′	′
	−0·4	−0·3	−0·7	−0·9	−1·4	−2·0	−2·9	−3·4	−3·8	−3·5	−1·7	+0·9
					Winter mean.							
	′	′	′	′	′	′	′	′	′	′	′	′
	−0·9	−0·7	−0·5	−0·3	−0·5	−0·4	−0·7	−0·9	−1·3	−1·5	−0·8	+0·6
					Annual mean.							
	′	′	′	′	′	′	′	′	′	′	′	′
	−0·7	−0·5	−0·6	−0·6	−1·0	−1·2	−1·8	−2·2	−2·6	−2·5	−1 3	+0·8

Observatory, determined from the Magnetograph Curves each Month during 1898.

Noon	1	2	3	4	5	6	7	8	9	10	11	Mid.
					Winter.							
′	′	′	′	′	′	′	′	′	′	′	′	′
40·1	40·2	39·9	39·0	38·9	38·7	38·2	37·7	37·5	37·2	37·2	37·4	37·8
40·2	41·4	41·3	40·8	39·8	39·1	38·7	38·1	38·1	37·7	37·5	37·5	37·3
41·6	43·1	43·4	42·4	41·2	40·1	39·6	39·3	38·9	38·8	38·5	38·4	38·4
39·7	40·4	40·1	39·2	37·2	36·5	36·6	36·2	35·6	35·3	35·2	35·3	35·1
39·4	39·9	39·4	39·0	38·1	37·7	36·4	36·3	36·2	35·8	35·6	35·5	36·0
37·6	37·5	37·4	36·8	36·2	35·7	35·3	35·1	34·8	34·5	34·4	34·6	34·8
39·8	40·4	40·3	39·5	38·6	38·0	37·5	37·1	36·9	36·6	36·4	36·5	36·6
					Summer.							
′	′	′	′	′	′	′	′	′	′	′	′	′
41·5	43·8	44·9	43·6	42·2	41·2	40·3	39·2	39·2	39·2	38·7	38·6	38·3
41·4	43·0	42·7	41·1	39·4	37 8	36·6	36·6	36·8	36·9	36·8	36·8	36·1
40·7	42·1	41·8	41·0	39·8	39·0	38·0	37·7	37·1	37·4	37·5	37·8	37·8
41·2	42·6	42·3	41·5	40·1	38·8	38·2	38·0	37·9	37·9	37·7	37·5	37·5
41·7	43·4	43·2	42·6	40·9	39·4	38·2	37·5	37·6	37·3	37·3	37·2	37·1
40·8	41·9	41·3	40·0	37·8	36·3	35·7	35·8	35·8	35·2	35·3	35·6	35·5
41·2	42·8	42·7	41·6	40·0	38·8	37·8	37·5	37·4	37·3	37·2	37·3	37·1

Declination as deduced from Table I.

Noon	1	2	3	4	5	6	7	8	9	10	11	Mid.
					Summer mean.							
′	′	′	′	′	′	′	′	′	′	′	′	′
+3·6	+5·2	+5·1	+4·0	+2·4	+1·2	+0·2	−0·1	−0·2	−0·3	−0·4	−0·3	−0·5
					Winter mean.							
′	′	′	′	′	′	′	′	′	′	′	′	′
+2·4	+3·0	+2-9	+2·1	+1·2	+0·6	+0·1	−0·3	−0·5	−0·8	−1·0	−0·9	−0·8
					Annual mean.							
′	′	′	′	′	′	′	′	′	′	′	′	′
+3·0	+4·1	+4·0	+3·1	+1·8	+0·9	+0·2	−0·2	−0·4	−0·6	−0·7	−0·6	−0·7

Table III.—Hourly Means of the Horizontal Force at Falmouth Five selected quiet Days in

0·18000 + (C.G.S. units).

Hours	Mid.	1	2	3	4	5	6	7	8	9	10	11
						Winter.						
1898.												
Jan. ..	604	604	604	605	607	610	612	612	610	607	599	599
Feb. ..	623	622	621	622	623	625	627	626	626	625	621	615
March .	623	620	621	622	621	622	624	626	625	619	614	610
Oct. ..	638	639	639	636	636	637	636	636	632	623	616	613
Nov...	635	634	632	634	635	639	641	642	638	631	622	621
Dec. ..	635	635	636	638	637	638	639	639	638	636	635	633
Means	626	626	626	626	627	629	630	630	628	624	618	615
						Summer.						
April ..	622	619	620	619	618	617	617	617	613	608	600	596
May ..	636	634	632	630	631	630	624	615	609	602	598	599
June ..	639	637	635	635	635	634	630	626	618	614	610	612
July..	630	629	629	628	628	628	624	616	610	605	604	611
Aug. ..	648	646	643	641	642	639	636	632	625	619	617	620
Sept. ..	622	624	622	621	619	618	616	613	609	603	597	596
Means	633	632	630	629	629	628	625	620	614	609	604	606

Table IV.—Diurnal Inequality of the Falmouth

Hours	Mid.	1	2	3	4	5	6	7	8	9	10	11
					Summer mean.							
	+ ·00006	+ ·00005	+ ·00003	+ ·00002	+ ·00002	+ ·00001	− ·00002	− ·00007	− ·00013	− ·00018	− ·00023	− ·00021
					Winter mean.							
	·00000	·00000	·00000	·00000	+ ·00001	+ ·00003	+ ·00004	+ ·00004	+ ·00002	− ·00002	− ·00008	− ·00011
					Annual mean.							
	+ ·00003	+ ·00003	+ ·00002	+ ·00001	+ ·00002	+ ·00002	+ ·00001	− ·00002	− ·00006	− ·00010	− ·00016	− ·00016

Observatory, determined from the Magnetograph Curves on each Month during the Year 1898.

Noon	1	2	3	4	5	6	7	8	9	10	11	Mid.
					Winter.							
602	606	608	606	606	608	609	612	612	611	611	611	609
615	619	621	621	621	621	623	624	624	626	625	625	626
609	613	616	617	620	621	622	626	627	627	626	627	627
619	625	633	636	636	639	640	642	643	642	641	641	640
626	632	632	633	636	639	640	643	643	642	638	637	636
635	636	637	637	639	639	640	639	640	639	639	639	637
618	622	625	625	626	628	629	631	632	631	630	630	629
					Summer.							
600	606	611	614	618	623	628	628	627	626	623	626	625
601	609	617	624	629	635	639	641	644	643	641	640	636
620	625	631	634	637	640	642	644	646	644	641	641	638
617	620	624	630	632	635	637	639	638	639	638	635	634
628	631	630	634	639	645	649	653	656	655	653	654	651
604	613	615	618	620	623	623	629	630	631	630	628	627
612	617	621	626	629	634	636	639	640	640	638	637	635

Horizontal Force as deduced from Table III.

Noon	1	2	3	4	5	6	7	8	9	10	11	Mid.
					Summer mean.							
−·00015	−·00010	−·00006	−·00001	+·00002	+·00007	+·00009	+·00012	+·00013	+·00013	+·00011	+·00010	+·00008
					Winter mean.							
−·00008	−·00004	−·00001	−·00001	·00000	+·00002	+·00003	+·00005	+·00006	−·00005	+·00004	+·00004	+·00003
					Annual mean.							
−·00012	−·00007	−·00004	−·00001	+·00001	+·00005	+·00006	+·00009	+·00010	+·00009	+·00008	+·00007	+·00006

Table V.—Hourly Means of the Vertical Force at Falmouth Five selected quiet Days in

0·43000 + (C.G.S. units).

Hours.	Mid.	1	2	3	4	5	6	7	8	9	10	11
						Winter.						
1898.												
Jan. ..	610	611	613	613	613	612	611	609	608	607	606	603
Feb. ..	616	616	615	616	616	615	615	614	614	614	612	606
March.	614	616	618	618	619	619	620	621	622	621	615	608
Oct. ..	561	564	565	566	566	567	566	566	565	563	556	550
Nov. ..	555	555	556	557	557	557	556	556	555	554	552	553
Dec. ..	531	531	531	530	530	530	530	529	529	528	528	526
Means	581	582	583	583	584	583	583	583	582	581	578	574
						Summer.						
April ..	557	559	561	562	563	563	563	563	562	559	554	542
May ..	602	603	603	605	607	610	610	609	604	596	585	577
June ..	596	599	601	603	605	608	609	606	601	596	587	570
July ..	523	525	526	527	528	529	530	530	527	521	517	505
Aug. ..	554	555	557	560	563	567	569	570	567	560	554	548
Sept. ..	557	557	557	558	559	560	562	565	563	557	559	539
Means	565	566	568	569	571	573	574	574	571	565	559	547

Table VI.—Diurnal Inequality of the Falmouth

Hours.	Mid.	1	2	3	4	5	6	7	8	9	10	11
						Summer mean.						
	+ ·00004	+ ·00005	+ ·00007	+ ·00008	+ ·00010	+ ·00012	+ ·00013	+ ·00013	+ ·00010	+ ·00004	− ·00002	− ·00014
						Winter mean.						
	·00000	+ ·00001	+ ·00002	+ ·00002	+ ·00003	+ ·00002	+ ·00002	+ ·00002	+ ·00001	·00000	− ·00003	− ·00007
						Annual mean.						
	+ ·00002	+ ·00003	+ ·00005	+ ·00005	+ ·00006	+ ·00007	+ ·00008	+ 00008	+ ·00006	+ ·00002	− ·00002	− ·00010

Observatory, determined from the Magnetograph Curves on each Month during 1898.

Noon	1	2	3	4	5	6	7	8	9	10	11	Mid.
					Winter.							
604	607	609	611	611	612	610	609	609	607	608	609	609
605	606	609	612	615	614	613	611	611	609	609	608	606
603	606	611	617	621	623	624	624	625	625	627	629	629
550	551	553	562	566	564	564	563	564	565	567	568	569
553	555	558	559	560	558	557	556	556	555	556	555	555
526	527	532	533	532	531	530	529	528	528	527	527	526
574	575	579	582	584	584	583	582	582	582	582	583	582
					Summer.							
537	538	545	553	557	560	563	562	560	559	559	559	559
575	580	586	596	602	605	606	606	601	597	598	598	598
563	570	575	582	585	590	590	587	582	578	578	580	581
498	499	504	511	514	517	517	515	515	512	513	515	518
543	542	544	550	556	559	559	558	556	556	556	558	558
530	527	531	539	544	545	545	545	545	546	543	544	544
541	543	548	555	560	563	563	562	560	558	558	559	560

Vertical Force as deduced from Table V.

Noon.	1	2	3	4	5	6	7	8	9	10	11	Mid.
					Summer mean.							
− ·00020	− ·00018	− ·00013	− ·00006	− ·00001	+00002	+ ·00002	+ ·00001	+ ·00001	− ·00003	− ·00003	− ·00002	− ·00001
					Winter mean.							
− ·00007	− ·00006	− ·00002	+ ·00001	+ ·00003	+ ·00003	+ ·00002	+ ·00001	+ ·00001	+ ·00001	+ ·00001	+ ·00002	+ ·00001
					Annual mean.							
− ·00013	− ·00012	− ·00007	− ·00003	+ ·00001	+ ·00002	+ ·00002	+ ·00001	·00000	− ·00001	− ·00001	·00000	·00000

Table VII.—Magnetic Intensity. Absolute Observations.
Falmouth Observatory, 1898.

1898.	C.G.S. measure.	
	H or Horizontal force.	V or Vertical force.
January	0·18603	0·43611
February	0·18600	0·43583
March	0·18585	0·43562
April	0·18593	0·43528
May	0·18607	0·43536
June	0·18611	0·43545
July	0·18611	0·43510
August	0·18628	0·43564
September	0·18602	0·43559
October	0·18609	0·43548
November	0·18624	0·43541
December	0·18636	0·43544
Means	0·18609	0·43553

Table VIII.—Magnetic Inclination. Absolute Observations.
Falmouth Observatory, 1898.

Month.		Mean.	Month.		Mean.
January	10	66° 54′·5	July	9	66° 50′·5
	19	66 54·3		21	66 50·5
	28	66 52·8		29	66 50·5
		66 53·9			66 50·5
February	8	66 52·5	August	10	66 51·2
	21	66 55·0		15	66 50·6
	26	66 52·4		28	66 51·0
		66 53·3			66 50·9
March	10	66 53·0	September	4	66 51·6
	19	66 55·9		25	66 51·9
	29	66 52·2		30	66 53·9
		66 53·7			66 52·5
April	7	66 52·5	October	14	66 50·7
	18	66 52·4		21	66 51·5
	19	66 52·2		29	66 52·8
	20	66 52·3			
	28	66 51·6			66 51·7
		66 52·2	November	11	66 50·8
				19	66 50·1
May	6	66 51·8		29	66 50·5
	17	66 52·2			
	27	66 50·6			66 50·5
		66 51·5	December	10	66 49·9
				21	66 49·4
June	10	66 51·5		31	66 50·1
	21	66 51·3			
	29	66 51·7			66 49·8
		66 51·5			