M.O. No. 209d.

METEOROLOGICAL OFFICE.

BRITISH METEOROLOGICAL AND MAGNETIC YEAR BOOK,

PART III., SECTION 2.

GEOPHYSICAL JOURNAL, 1912,

COMPRISING

DAILY VALUES OF THE METEOROLOGICAL AND GEOPHYSICAL ELEMENTS

AT THREE OBSERVATORIES OF THE METEOROLOGICAL OFFICE;

TOGETHER WITH

WIND COMPONENTS AT FIXED HOURS AT FOUR ANEMOGRAPH STATIONS;

DAILY VALUES OF SOLAR RADIATION AT SOUTH KENSINGTON;

TABULATIONS AND ANNUAL SUMMARY OF OCCASIONAL SOUNDINGS OF THE UPPER AIR;

PRECEDED BY AN INTRODUCTION.

Published by Authority of the Meteorological Committee.

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METEOROLOGICAL OFFICE.

BRITISH METEOROLOGICAL AND MAGNETIC YEAR-BOOK: GEOPHYSICAL JOURNAL.

INTRODUCTION.

THE Geophysical Journal gives daily values for the meteorological and geophysical elements observed at the three observatories of the Meteorological Office. Data are given for Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism. Wind components are also given for four additional anemograph stations.

All values are referred to Greenwich Mean Time, and the hours are counted from midnight and numbered 1 to 24.

All the units employed are based on the C.G.S. system.

The tables are as follows :—

1. A table of notes on the records derived from the **Galitzin Seismograph** (two horizontal components) at **Eskdalemuir**, giving the period and amplitude of the microseisms not attributed directly to wind or other local disturbance of like character; the character of the earthquakes according to the following notation, with notes on the computed distance of the epicentre, and the "phases" shown by the traces. The magnitude of an earthquake is indicated by—

I. Perceptible, II. Conspicuous, or III. Strong. When it is possible to assign the distance Δ of the epicentre, one of the following letters is added, viz. :—

d (domesticus) Local.
v (vicinus) $\Delta <$ 1000 km.
r (remotus) Δ 1000 to 5000 km.
u (ultimus) $\Delta >$ 5000 km.

P. is the time of arrival of the first phase (longitudinal waves).
S. is the time of arrival of the second phase (transverse waves).
L. is the time of arrival of the long waves.

The co-ordinates of the epicentre relative to the station are—

Δ = distance measured along the arc of the great circle.
a = azimuth (0° to 360°) measured from North through East.

This table is intended as a Journal of seismological events for purposes of reference so far as concerns the more violent incidents recorded in the trace.

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2. **Daily meteorological data** at 9 h. and 21 h. G. M. T. for **Valencia Observatory** in the form customary for entering the corresponding data which are published for sixteen stations in the British Isles in Section III. of the Year Book (Daily Readings at Meteorological Stations of the First and Second Orders). The instrumental values in the table are taken from the self-recording instruments at the Observatory.

Pressure is given in "millibars" (1000 millibars = one megadyne per square centimetre). One millibar is approximately equivalent to the pressure of 0·75008 mm. of mercury. The name is used in the Journal, following the example of Professor Bjerknes of Christiania in his work for the Carnegie Institute of Washington. The expression of atmospheric pressure in millibars involves any necessary reduction of the readings of the barometer to standard temperature and latitude.

Temperatures are given in units on the Kelvin Absolute Scale, *i.e.* in centigrade degrees measured from a zero 273° below the normal Freezing Point of water. Temperatures below 273° A. (0° C.) are printed in small type.

Vapour Pressure, deduced from the readings of the dry and wet bulb by Glaisher's Tables, is given in millibars.

Wind Velocity is expressed in metres per second.

Wind Direction is given in points of the Compass, 32 to the complete revolution, from True North (32), through East (8). No direction is given when the anemometer shows a smaller velocity than 1·4 metres per second.

Precipitation is given in millimetres of equivalent rainfall.

Sunshine, from the Campbell-Stokes instrument, in hours. The mean daily duration is given instead of the total for the month, in accordance with the practice adopted for the other parts of the Year Book. The estimation of cloud amount and the symbols for weather are in accordance with the conventions of the International Meteorological Committee.

A column of **Remarks** in which a summary of the weather for each day is given, the international weather symbols and the letters of the Beaufort Notation being used as far as possible. These symbols and letters are as follows :—

BEAUFORT NOTATION AND INTERNATIONAL WEATHER SYMBOLS.

b.	blue sky.	w.	dew.	h.	hail.
c.	clouds (detached).	x.	hoar frost.		soft hail.
o.	overcast.		ice crystals.	t.	thunder.
g.	gloomy, dull appearance.		rime.	l.	lightning.
u.	ugly, threatening appearance.		glazed frost.		thunderstorm.
		e.	water deposited copiously on exposed surfaces, without rain falling.		gale.
v.	visibility, unusually clear atmosphere.			q.	squally.
		p.	passing showers.		solar corona.
z.	haze.	d.	drizzling rain.		solar halo.
m.	mist, light fog.	r.	rain.		lunar corona.
f.	fog.	s.	snow.		lunar halo.
fe.	wet fog, *i.e.*, fog which deposits water copiously on exposed surfaces.		snow drift.		rainbow.
			snow lying (more than half the surrounding country covered with snow).		aurora.
					zodiacal light.

The figure ^{0} attached to a symbol indicates very slight, whilst the figure ^{2} indicates strong or heavy : thus $\bullet^0$ = slight rain, $\bullet^2$ = heavy rain.

The table also contains the measurements of the **Magnetic elements** made at Valencia on selected days.

3. A corresponding **meteorological table** for **Kew Observatory**, with a column for **Solar Radiation** in watts per square centimetre, observed between 11 h. and 13 h. unless otherwise stated. The usual conventional unit for solar radiation, the gramme-calorie per square centimetre per minute, is equivalent to seven hundredths of a watt per square centimetre (·0697 Callendar and Barnes 1902). Instead of the magnetic data, columns are provided for **readings at 10 h. of thermometers exposed in the ground** at depths of 1 foot (0·31 m.) and 4 feet (1·22 m.) below the surface.

4. A corresponding **meteorological table** for **Eskdalemuir Observatory**.

5. A table of values of **electrical and magnetic measurements** for **Kew Observatory**. Daily values of the **potential gradient**, volts per metre in the open, are given for the four hours, 3 h., 9 h., 15 h., 21 h., except on the occasions when the trace is so disturbed that a satisfactory reading cannot be obtained. The potential gradient is positive when the potential in the atmosphere is positive compared with the earth. The values are the means for the period from half an hour before to half an hour after the hour named. A negative potential gradient is indicated by a short thick "-" before the number. When the true value is lost because the trace goes beyond the limit of registration within the hour, a value may be assigned to the hour, which is essentially an underestimate. Such values are marked with an asterisk (*). When the fluctuations are too large to permit of such an estimate of the hourly mean, but the dominant sign of the potential gradient is known, "x" is inserted with an appropriate sign.

The value of the **potential gradient** "in the open" is computed from the readings of the trace of an electrograph with a water-dropping collector projecting from the observatory wall, by means of a factor determined by observations with a standardised electrometer above a flat area.

The **total charge on the ions**, positive and negative, per cubic centimetre and their respective mobilities are determined by measurements with Ebert's Aspiration apparatus, extending over about an hour, between 14h. and 16h. unless it is otherwise stated.

The **conductivity** in electromagnetic units is computed from the quantity of positive and negative electricity collected and the velocity of the ions for a volt per centimetre as determined with the Ebert apparatus; the figure obtained is multiplied by 10^{25} before it is inserted in the table.

The **Air-Earth Current**, c_1, is computed from the conductivity and the potential gradient, and it is therefore dependent upon measurements recorded in the other columns. The current c_2 is determined, independently of the conductivity measurements, with the apparatus designed by Mr. C. T. R. Wilson, and measurements with this apparatus are made at Kew. c_1 and c_2 do not strictly correspond; c_2 (deduced directly from a measurement of the current from the atmosphere into a freely exposed and virtually earth-connected conductor) depends on the number and mobility of the ions of one sign only (positive when the potential gradient is positive); while in calculating c_1 the number and mobility of the ions of both signs are taken into account. At Eskdalemuir only the values of c_1 are obtained, and these are given for comparison with the corresponding data for Kew.

The **electric character of the day** is indicated both for Kew and for Eskdalemuir

by the figures 0, 1, or 2, according to the character of the trace of the electrograph as regards negative electric potential; thus 0 means no negative potential; 1, one or more excursions of limited duration to the negative side of the scale; 2, negative potential extending in the aggregate over at least two hours.

For Eskdalemuir an estimate is also given of the character of the days as regards the range of potential irrespective of sign within the hourly periods for which an estimate of the mean potential has to be made in the process of tabulation. This characterisation of the day is indicated by the letters *a*, *b*, *c*, according to the range of oscillation within the hour, using a range of about 1000 volts as a criterion: *a* means that for no hour of the day was there a range of 1000 volts; *b* that that range of oscillation was reached in one hour at least but in fewer than six hours; *c* that the critical range was reached in six hours or more.

These specifications must not be understood to be rigid criteria. More definite specifications can be given after longer experience.

The Magnetic Tables are sufficiently explained in the headings. The magnetic character of the day is given on the scale "0," "1," "2" of the International Magnetic Commission.

The values of magnetic force are all given in terms of γ, or ·00001 C.G.S. magnetic unit, so that 18564 γ = ·18564 C.G.S.

6. Gives tables of **electrical and magnetic data** for **Eskdalemuir** corresponding with those for Kew, except that at Eskdalemuir the geographical components of magnetic force are directly recorded.

7. A table of **wind components** for four principal anemograph stations of the Meteorological Office. The components resolved along the directions of the four cardinal points are given in metres per second.

8. A table giving the results of the **exploration of the free atmosphere** over the British Isles up to heights of 3000 m. by means of **kites and pilot balloons.** Directions are given in degrees from true N. (through East). The other units are as in tables 2, 3, 4.

9. A table giving the results of **soundings of the upper air by registering balloons and pilot balloons.**

W. N. SHAW
(*Director*).

Meteorological Office,
London, S.W.,
28*th August* 1912.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

JANUARY 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 4*d*.

Second Year.—No. 1. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	5	0·8		3rd I, Disturbed 11 h.–12 h.
2	5	1·1		
3	5	1·5	I.	4th Iu, P?=3 h. 56 m. 16 s., S=4 h. 2 m. 21 s., L=4 h. 20 m. Iu, P=15 h. 58 m. 30 s., S=16 h. 7 m. 59 s., Δ=8180 kms., α nearly true north. Epicentre 51° N., 177° E.
4	5-6	1·5	Iu, Iu.	
5	5	1·9	I.	
6	5	1·5		
7	4-5	1·6		5th I, Trace of long waves 3 h. 43 m.
8	5-6	2·8	I.	
9	5-6	4·4		8th I, Trace of long waves 9 h. 22 m.
10	5-6	3·5		
11	5-6	2·5		20th I, P=4 h. 20 m. 46 s., S=4 h. 30 m. 44 s., Δ=8750 kms. Minute marks failed.
12	5-6	1·8		
13	6	2·4		
14	5-6	4·3		21st I, Feeble disturbance between 2 h. and 3 h. Time marks failed.
15	6	3·5		
16	6	5·2		23rd I, Feeble long waves 20 h. 36 m.
17	6	4·9		
18	5-6	2·8		24th IIr, P=16 h. 28 m. 25 s., S=16 h. 32 m. 36 s., Δ=2570 kms., α=56° 34′ E. of S. Epicentre 39° 16′ N. 21° 53′ E.
19	5-6	2·5		
20	5	1·9	I.	25th I, Long waves 1 h. 48 m. Ir, P=19 h. 57 m. 55 s., S=20 h. 2 m. 5 s., Δ=2560 kms.
21	5	1·3	I.	
22	5	0·9		
23	4-5	0·8	I.	26th I, Long waves 14 h. 8 m. Iu, P? S=14 h. 58 m. 57 s., L=15 h. 14 m. I, Disturbed 18 h. 51 m.–19 h. 14 m.
24	4-5	1·0	IIr.	
25	5-6	1·3	I, Ir.	
26	6	1·1	I, Iu, I.	31st I, Disturbed 12 h. 15 m.–12 h. 25 m. I, Disturbed 12 h. 58 m.–13 h. 45 m. L?=13 h. 3 m. IIu, P=20 h. 21 m. 55 s., S=20 h. 30 m. 11 s., Δ=6750 kms, α Doubtful, but towards N.
27	4-5	0·7		
28	4-5	0·5		
29	5	0·8		An explanation of the notation used is given in the preface.
30	4-5	0·9		
31	5-6	1·3	I, I, Iu.	

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.
Heights above Ground:—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h. Dir.	9 h. Vel.	21 h. Dir.	21 h. Vel.	Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	mib.	mib.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%		m/sec.		m/sec.	Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	1028·5	1028·8	81·9	81·5	83	81	10·5	10·9	94	99	15	5	16	4	9≡0	10≡0	1·0	—	Dull. ≡0 *p*.	...	...	...
2	1028·7	1026·6	81·8	82·3	82	81	10·5	10·5	92	90	17	3	18	4	10≡0	10≡0	0·5	—	Misty and overcast all day.	...	...	...
3	1024·8	1021·0	83·1	82·9	*x* 84	82	12·2	11·5	98	94	19	4	16	4	10≡0	10≡0	12·2	—	≡0. Overcast. ● from 23 h.	...	...	...
4	1013·7	1008·0	83·6	81·8	*x* 84	81	12·6	9·5	99	86	20	6	25	7	10≡0	10	6·9	—	Heavy mist and ● mostly.	...	...	...
5	1006·9	1002·7	79·2	79·0	81	77	7·5	8·5	78	92	24	11	18	4	3	10●	26·2	3·2	Frequent ▲● showers.	...	...	...
6	978·1	979·8	83·9	82·2	*x* 84	80	12·2	10·2	94	88	21	12	22	12	10≡0	9≡0	4·3	—	●2 early. Gloomy, with ≡0.	...	...	...
7	995·5	1008·2	78·6	78·5	82	78	7·8	7·1	86	81	2	7	10	7	4	5	21·1	4·3	Fair.	...	...	...
8	990·8	984·8	83·5	80·9	*x* 84	80	12·2	9·5	96	90	16	9	20	7	10≡0●	1	3·6	—	Heavy mist and ● *a*.	17917	20 35·2	68 9·3
9	990·3	999·5	81·1	79·8	82	79	9·5	9·2	88	92	22	7	16	5	7≡0	0	9·9	3·9	≡0; fair to fine.	...	...	...
10	993·9	998·1	83·2	82·6	*x* 84	82	11·9	10·5	95	89	15	11	16	7	10≡0●	10	1·3	—	≡0; gloomy.	...	...	...
11	1010·8	1014·2	79·9	81·0	82	79	8·5	9·2	86	85	18	2	16	5	3	5	7·6	5·4	Fair; good visibility.	...	...	...
12	1014·5	1005·5	82·3	81·8	*x* 84	81	11·5	11·2	98	99	15	6	15	9	10≡0	10≡0●	21·6	—	Heavy mist and ● throughout.	...	...	...
13	1005·7	1001·3	82·5	82·5	*x* 84	82	11·5	11·5	98	98	15	7	15	8	10≡0	10≡0●	8·6	—	Gloomy.	...	...	..
14	1005·8	1006·2	78·5	80·1	83	78	8·2	8·8	91	87	22	5	15	6	3	9≡0	9·7	5·3	● early, then generally fair.	...	...	...
15	989·4	986·3	80·3	81·8	82	80	8·8	9·8	88	87	12	16	15	7	10≡0●	10≡0	23·9	—	Gloomy. ≡0 ●.	...	...	...
16	987·8	998·3	81·8	79·0	83	79	9·8	8·8	87	93	16	8	16	3	8≡0	10	12·2	—	⌇ 2 h. Frequent ▲● showers.	...	...	...
17	1004·5	1010·1	78·4	77·3	81	76	8·5	7·8	95	95	5	2	—	1	4	3	—	4·4	Fair.	...	...	...
18	1012·5	1007·1	76·8	80·1	81	74	7·8	8·5	95	86	—	0	12	9	6	10	0·8	0·3	Fair to gloomy. ≡0.	...	...	...
19	1004·4	1004·9	82·1	82·9	*x* 84	81	9·2	9·2	81	76	13	10	12	10	10	7	—	0·9	Frequent squalls.	...	...	...
20	1003·7	1003·5	82·8	81·7	83	81	9·2	8·8	75	80	8	7	12	7	7	2	4·6	0·2	Fair to dull; clearing 22 h.	...	...	...
21	1011·5	1011·4	81·8	81·4	83	80	8·2	8·8	73	79	12	7	8	9	7	1	0·5	—	Strong wind all day.	...	...	...
22	1008·4	1007·8	79·2	77·4	81	76	7·8	7·1	81	87	8	7	5	7	2	2	—	6·9	Fine.	17923	20 34·2	68 11·6
23	1005·7	998·8	74·6	77·6	79	75	4·8	7·1	67	85	5	7	6	9	1	8	11·4	3·4	Fine to dull.	...	...	...
24	995·9	997·5	79·8	79·5	81	79	7·8	7·8	79	82	9	9	8	4	7	10	1·5	0·3	● early, then fair. ∞.	...	...	...
25	1002·6	1009·7	77·4	75·3	79	75	6·8	6·1	82	84	7	5	6	3	7	0	—	0·6	Fair.	...	...	...
26	1012·8	1016·8	76·7	75·5	79	75	6·8	6·5	84	88	7	4	—	1	3	3	—	1·8	Fine.	...	...	...
27	1019·3	1020·7	74·1	75·4	78	*n* 72	4·8	5·4	69	74	6	3	9	5	5	2≡0	—	6·4	⌴. Fine. ∞ *p*.	...	...	...
28	1018·4	1016·4	77·3	78·4	79	74	6·8	7·5	80	86	9	6	10	9	10	10≡0	2·0	—	Very dull.	...	...	...
29	1019·8	1024·9	77·9	77·2	80	77	6·1	5·8	69	70	10	6	10	4	3	2	—	4·9	Fine.	...	...	..
30	1025·7	1024·3	77·6	75·0	79	75	5·8	5·8	67	82	10	6	8	4	6	10∞	—	2·3	Fair. ∞ in afternoon.	...	...	...
31	1018·3	1012·2	78·5	78·4	80	77	6·8	6·5	75	73	10	4	9	5	10∞	9∞	—	—	Dull with ∞.	...	...	...
Means	1007·4	1007·6	80·0	79·7	81·7	78·3	8·8	8·6	85	86		6·4		5·9	6·9	6·7	191·4	1·76	Monthly **Totals** or **Means**.	17920	20 34·7	68 10·5
Normal 40 years	1012·9	1013·1	79·8	79·9	82·4 (35 years)	77·5 (35 years)	8·5	8·6 (25 years)	87	87		6·5 (30 years)		6·4 (30 years)	—	—	147·3	1·57 (30 yrs)	**Normals**, 35 years.			

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3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity. Vapour Pressure.		Humidity. Percentage.		Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3 m.	1·2 m.	
			200+	200+	200+	200+									Tenths of Sky covered.					200+	200+	200+	
	mib.	mib.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		°	°	°	
1	1031·3	1031·7	80·9	81·4	83	80	9·8	10·2	92	91	—	1	23	2	10≡⁰	4	—	—	—	76	80·2	80·9	Dull all day.
2	1031·5	1029·2	78·6	81·1	82	78	8·2	8·5	91	79	20	3	23	4	5≡⁰	10	—	1·7	·026	74	79·9	81·1	Fine till 12 h. ; dull later.
3	1024·4	1022·1	81·7	82·3	83	81	8·5	9·8	76	85	23	6	23	3	10≡⁰	10		1·3	—	80	80·0	81·2	Dull. ≡⁰
4	1015·8	1007·6	82·1	83·2	83	82	9·5	11·2	84	90	21	4	20	5	10≡⁰	10		5·8	—	80	80·4	81·2	Dull, with ●.
5	999·3	1002·3	81·0	77·4	83	77	8·2	6·5	78	75	24	6	23	5	1	0		5·8	2·7	·059	77	80·8	81·3	● till 7 h., then fine.
6	990·8	975·4	77·4	83·6	*x*84	77	7·5	9·8	91	77	12	5	22	10	10≡⁰	6		10·4	—	—	72	79·3	81·3	Dull with ● 6 h.–17 h.
7	986·7	1010·8	77·9	75·0	83	74	6·8	5·4	78	76	1	3	28	2	10	1≡⁰		—	—	—	76	79·7	81·3	● and strong wind early.
8	1014·6	998·6	72·6	77·5	80	72	*4·4*	7·8	*75*	91	—	1	13	6	10≡	10●		7·9	—	·049	67	78·3	81·3	Dull, with ≡. ● *p*.
9	997·2	1004·4	80·3	79·1	83	78	9·2	8·2	91	85	19	4	20	3	4	0		0·3	4·9	—	71	78·1	81·3	Fine.
10	1014·5	1018·2	75·8	80·7	81	75	7·1	9·2	94	89	—	0	15	3	*10*≡	9		—	—	—	69	78·0	81·2	≡² till 15 h.
11	1017·7	1020·4	79·7	78·2	81	77	8·2	8·2	81	92	15	7	14	2	10	0≡⁰		0·5	—	—	74	78·4	80·9	Dull. ≡² about 18 h.
12	1024·9	1022·9	77·6	77·4	80	77	8·2	7·8	98	92	—	1	—	1	10≡	7≡⁰		1·3	—	—	70	78·3	80·8	≡² early ; fair *p*.
13	1020·1	1018·0	79·9	80·1	82	80	9·2	8·8	93	88	12	3	14	3	10≡⁰	10		—	—	—	71	78·6	80·8	Overcast and misty.
14	1015·6	1015·4	79·3	80·3	81	79	7·8	8·8	83	88	16	5	15	2	10≡⁰	10		—	—	—	79	79·1	80·7	Overcast throughout.
15	1011·8	1008·8	79·9	80·4	80	80	8·8	9·2	89	90	11	4	12	4	10≡⁰	10		0·3	—	—	79	79·3	80·7	Dull. ≡⁰
16	1006·8	1008·5	79·3	79·3	81	79	8·5	8·8	89	91	9	4	9	4	10≡⁰	10≡⁰		9·4	—	—	78	79·4	80·7	Dull and misty. ● *p*.
17	1011·4	1012·8	75·9	73·8	79	74	6·5	5·4	86	85	7	12	8	7	10●≡⁰	10✲●		13·5	—	—	75	79·2	80·8	Strong wind, with ▲●✲.
18	1011·3	1014·2	74·0	76·4	78	74	5·4	7·1	84	90	8	5	19	6	10≡⁰	10		1·0	—	—	73	77·8	80·8	✲ early, ≡⁰ all day.
19	1020·6	1016·9	73·8	78·7	79	72	6·1	8·5	93	92	—	1	7	4	*10*≡	10≡⁰		1·8	—	—	68	78·0	80·7	≡² *a*. Dull all day.
20	1015·4	1016·3	79·7	79·8	82	79	8·8	8·8	91	91	7	3	—	1	10●≡	10≡⁰		0·3	—	—	77	77·9	80·7	≡ to fair.
21	1018·7	1017·0	79·0	76·8	80	77	8·8	7·5	95	93	—	1	—	1	10≡⁰	*10*≡		—	—	—	73	78·2	80·7	Dull. ≡ *n*.
22	1013·1	1007·4	76·3	77·9	79	76	7·1	8·2	92	92	—	1	6	5	10≡	10≡⁰		5·1	—	—	76	78·3	80·6	≡ most of day.
23	1005·5	1003·5	78·4	78·7	79	78	7·8	8·2	90	88	5	5	5	7	10≡	10		7·9	—	—	77	78·4	80·6	≡ ● *a*. Dull throughout.
24	999·5	1000·1	77·0	78·0	81	77	7·5	8·2	91	93	4	3	28	2	10●≡	10≡●		8·6	0·1	—	76	78·5	80·6	≡ or ● most of day.
25	1003·0	1006·6	76·8	76·3	78	75	7·1	7·1	89	91	27	2	—	1	10≡⁰	?2≡⁰		6·9	—	—	74	78·5	80·6	Dull and misty. Fine *n*.
26	1010·4	1015·0	76·8	75·7	78	73	6·5	5·4	80	72	2	5	3	5	10≡⁰	0		—	—	—	70	78·0	80·4	Dull to fine.
27	1020·3	1023·0	75·1	73·1	76	72	*4·4*	4·1	*63*	65	2	5	3	5	10≡⁰	0≡⁰		—	—	0·8	70	77·3	80·4	≡⁰. Fine at times.
28	1025·1	1025·5	69·4	70·2	75	69	4·1	4·1	86	81	—	1	—	0	?0≡⁰	?0⌣≡⁰		—	—	1·6	62	76·3	80·3	⌣≡⁰. Fair to fine.
29	1026·2	1026·1	66·8	71·2	76	*n* 65	*3·1*	3·1	*76*	**57**	—	0	—	0	?0≡	0≡⁰		—	2·8	·027	*n* 61	75·2	80·2	⌣≡ *a*. ; fine later.
30	1025·9	1021·6	69·6	74·6	77	69	3·1	5·4	67	77	—	1	26	2	4≡⁰⌣	10≡⁰		—	4·2	—	62	74·8	80·2	⌣≡⁰. Fine most of day.
31	1016·4	1014·1	74·2	73·3	77	72	5·1	4·8	76	78	21	2	—	1	10≡⁰✲	10≡⁰		—	1·6	—	69	74·7	79·9	✲⁰ 9 h.–10 h., finer *p*.
Means	1013·7	1013·4	77·0	77·8	80·1	75·7	7·1	7·6	85	85		3·4		3·3	8·5	6·7	88·1	0·66	—	72·8	78·4	80·0	Monthly **Totals** or **Means**.
Normal 40 years	1016·6	1016·5	76·3	76·8	79·1 (35 years)	74·3 (35 years)	6·8	6·9	86	85 (25 years.)		3·5 (30 years)		3·6 (30 years)	—	—	44·9	1·39 (30 yrs)	—	—	—	—	**Normals.**

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	997·9	997·9	80·9	80·1	*x*81	80	10·5	9·5	99	94	20	7	20	8	10≡⁰	10≡⁰	0·3	—	—	—	—	—	Dull and misty. ●⁰.
2	997·8	992·5	79·4	79·4	80	79	9·2	8·8	97	90	16	5	16	13	10≡⁰	10≡⁰	2·3	—	—	—	—	—	Dull and misty.
3	990·9	990·0	78·2	72·4	*x*81	72	7·1	5·1	81	85	24	3	—	1	3	2	2·0	5·0	—	—	—	—	Occasional ⊎ 18 h.–21 h.
4	981·3	972·1	74·7	79·1	80	73	6·8	8·8	99	93	—	0	24	3	10≡⁰●	10●⁰	3·8	—	—	—	—	—	Dull and misty. ●⁰.
5	965·5	964·6	75·1	75·7	79	75	6·1	5·8	85	78	24	6	24	10	10✲⁰	3	1·3	1·7	—	—	—	—	✲● early and 12 h.
6	959·0	952·3	73·5	74·1	76	74	5·8	5·8	91	88	—	1	2	7	9	10✲●	1·5	—	—	—	—	—	✲● after 15 h.
7	968·0	985·1	71·8	67·5	74	67	4·4	2·7	79	70	4	9	—	1	3	0	—	5·7	—	—	—	—	✲● till 1 h. ⌣
8	984·5	965·8	68·1	72·5	73	64	3·1	5·4	73	92	—	1	12	13	10	10✲	6·1	—	—	—	—	—	✲² after 16 h.
9	961·0	973·2	76·7	74·7	77	73	7·1	6·5	88	93	20	4	—	1	9	10	2·3	—	—	—	—	—	✲ early then ●. Misty *p*. ⊠
10	983·7	983·5	75·2	77·0	78	71	6·8	6·8	92	84	32	2	14	7	8	10	6·6	1·8	—	—	—	—	Fine till 15 h., then misty.
11	981·9	987·4	78·1	77·5	80	77	8·2	8·2	94	96	16	7	20	4	10≡⁰●⁰	10	2·0	—	—	—	—	—	Generally overcast and dull.
12	990·2	988·0	78·5	78·9	79	78	8·5	8·8	94	94	20	5	16	7	10	10≡⁰●⁰	11·7	—	—	—	—	—	Dull, wet, and misty.
13	984·1	984·5	80·1	80·3	*x*81	77	9·5	10·2	95	99	16	9	16	5	10≡⁰●	10≡⁰●	5·3	—	—	—	—	—	Dull, wet, and misty.
14	980·6	983·8	78·8	77·4	*x*81	76	8·2	7·8	90	95	16	7	—	1	10≡⁰●	10	12·4	—	—	—	—	—	Dull, wet, and misty.
15	980·8	976·7	75·2	78·0	79	71	6·1	7·8	85	85	—	1	12	10	10≡⁰	7∞	9·9	—	—	—	—	—	●⁰ about noon.
16	975·4	980·5	78·4	75·8	79	75	8·2	6·8	89	89	12	10	12	12	10●	10✲●	**16·0**	—	—	—	—	—	● till 18 h. ; ✲● afterwards.
17	989·5	991·5	72·5	72·6	75	71	5·4	4·8	91	79	12	15	12	10	10✲	10	0·3	—	—	—	—	—	✲ till noon. ⊠ 1½ in.
18	991·2	986·0	73·0	72·6	74	72	5·4	5·1	86	82	8	10	8	3	10	10✲	2·8	—	—	—	—	—	✲ after 15 h. 30 m. ✲² after
19	990·0	991·6	72·7	72·3	74	72	5·4	4·4	87	77	—	1	32	4	10≡⁰	0∞	0·8	—	—	—	—	—	⊠. Fine *n*. [20 h. ⊠
20	989·8	988·9	74·9	76·3	76	71	6·8	7·1	97	93	4	5	4	3	*8*≡⁰	10≡⁰	1·5	—	—	—	—	—	Misty generally.
21	987·8	987·1	76·4	75·2	78	74	7·5	6·5	95	92	—	1	*4*	2	9	10≡⁰●⁰	3·6	—	—	—	—	—	Misty. ●⁰ after 20 h.
22	984·9	983·4	74·1	72·1	75	70	5·8	3·7	88	64	—	1	—	1	9	8	—	4·2	—	—	—	—	●⁰ early *a*.
23	984·4	982·9	69·0	71·2	76	68	2·4	4·1	**55**	79	—	1	—	1	1	1	0·5	3·7	—	—	—	—	✲ showers *p*.
24	977·8	973·0	70·6	74·2	75	70	3·7	5·4	72	81	4	5	32	9	2	9	0·8	0·9	—	—	—	—	✲ and ✲● *p*.
25	975·3	982·9	74·7	74·1	76	72	5·8	4·8	81	70	2	11	2	7	9	6	—	0·5	—	—	—	—	● and ✲● *a*. ⊎ *p*.
26	988·0	991·3	72·7	73·4	75	72	4·8	4·4	80	70	32	5	32	3	9	10	0·3	4·0	—	—	—	—	✲⁰ ●⁰ occasionally.
27	994·9	995·7	71·9	72·5	75	71	4·8	5·1	83	83	—	0	—	1	9	10	—	—	—	—	—	—	Fine generally.
28	995·9	996·4	72·2	66·8	74	65	4·8	2·4	84	59	—	1	—	0	10	0≡⁰	—	—	—	—	—	—	≡ *a*. Fine *n*.
29	998·2	998·5	63·9	71·0	72	*n* 63	1·7	4·1	56	76	—	0	—	0	3	10	—	0·1	—	—	—	—	⌣. Very fine till 16 h.
30	996·0	988·7	67·8	77·4	78	66	2·4	6·8	56	81	—	0	24	9	9	10	2·5	—	—	—	—	—	✲● showers after 22 h.
31	988·3	985·5	71·0	70·6	75	69	3·7	3·4	69	70	—	1	—	1	7	9	—	1·5	—	—	—	—	Cloudy to overcast.
Means	984·4	983·9	74·2	74·6	77·0	71·9	6·0	6·0	84	83		4·3		5·1	8·3	7·9	96·6	0·94	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	—	

* No record.

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. KEW OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 1·93.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air-Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	255	475	170	180	—	—	—	—	—	—	—	0	0	512	12 15	478	16 36	34	53·8	16 18	49·9	23 20	3·9
2	285	445	330	320	30	30	—	—	—	—	0·60	0	0	509	12 29	484	1 5	25	51·4	16 0	49·6	2 20	**1·8**
3	115	225	380	215	—	—	—	—	—	—	—	0	0	511	13 34	487	1 21	24	53·9	24 0	50·5	1 13	3·4
4	*x*±	210	180	105	—	—	—	—	—	—	—	1	0	517	13 25	487	22 52	30	54·9	12 20	52·2	21 57	2·7
5	115	210	300	490	420	360	—	—	—	—	0·70	1	1	516	23 50	482	0 53	34	54·0	4 35	49·4	23 36	4·6
6	200	− 95	20	180	—	—	—	—	—	—	—	2	0	516	13 34	486	1 23	30	**56·3**	**12 10**	48·8	0 10	7·5
7	*x*±	320	405	615	—	—	—	—	—	—	—	1	0	517	22 0	494	1 10	23	53·7	11 22	48·5	5 10	5·2
8	500	660	*	− 95	—	—	—	—	—	—	—	2	0	**519**	**13 53**	490	0 51	29	50·9	10 3	46·9	21 34	4·0
9	130	645	415	575	300	240	0·60	0·00	0·20	0·75	0·85	0	1	515	13 35	481	18 22	34	48·7	2 32	**46·0**	**14 44**	2·7
10	435	925	860	415	—	—	—	—	—	—	—	0	0	518	13 30	487	21 56	31	52·3	11 38	46·2	0 0	6·1
11	125	380	40	395	—	—	—	—	—	—	—	1	1	510	6 45	459	20 46	51	52·2	20 23	47·0	2 10	5·2
12	490	585	550	245	510	330	0·95	0·00	0·50	2·60	0·30	1	1	514	7 26	**455**	**23 2**	**59**	**56·3**	**11 26**	48·6	2 35	**7·7**
13	150	275	275	190	—	—	—	—	—	—	—	0	1	511	6 27	461	13 43	50	52·8	11 0	47·5	3 48	5·3
14	200	300	300	340	—	—	—	—	—	—	—	0	1	515	0 22	477	3 40	38	50·3	0 50	48·2	0 10	2·1
15	140	455	285	465	—	—	—	—	—	—	—	0	0	504	14 18	485	2 55	19	52·3	11 2	48·5	8 30	3·8
16	190	510	550	−225	—	—	—	—	—	—	—	2	0	507	13 33	490	4 40	17	53·3	12 10	49·7	0 0	3·6
17	125	*x*−	435	−530	700	150	—	—	—	—	0·55	2	0	**519**	**7 15**	485	10 31	34	—	—	—	—	—
18	−300	285	150	225	—	—	—	—	—	—	—	2	0	503	6 9	481	13 33	22	—	—	—	—	—
19	225	625	275	330	—	—	—	—	—	—	—	1	0	512	13 50	488	3 21	24	54·7	10 45	47·6	21 10	7·1
20	490	490	690	380	—	—	—	—	—	—	—	1	0	517	14 17	498	21 35	19	51·7	12 33	47·1	20 20	4·6
21	215	235	*	560	—	—	—	—	—	—	—	0	0	512	13 23	496	1 45	**16**	54·2	10 58	48·9	0 10	5·3
22	565	585	465	395	480	510	—	—	—	—	0·25	1	1	**519**	**7 56**	472	21 10	47	55·4	13 20	48·0	21 58	7·4
23	−340	500	330	350	—	—	—	—	—	—	—	**2**	0	505	6 39	484	0 58	21	53·0	10 36	50·5	0 10	2·5
24	−530	−285	245	*x*±	300	240	—	—	—	—	0·50	**2**	0	509	9 10	489	14 46	20	55·6	14 2	49·6	21 32	6·0
25	225	225	265	95	730	220	—	—	—	—	0·10	1	0	505	13 46	489	3 50	**16**	53·6	12 15	47·8	21 30	5·8
26	350	575	890	1060	150	240	—	—	—	—	0·55	0	0	508	18 59	486	2 55	22	52·7	10 33	49·1	3 30	3·6
27	755	1325	870	1000	—	—	—	—	—	—	—	0	0	517	14 53	495	10 30	22	52·7	11 50	49·3	7 45	3·4
28	805	795	*	915	—	—	—	—	—	—	—	0	0	510	19 20	487	23 50	23	53·9	12 30	47·6	5 10	6·3
29	720	1135	1115	1220	—	—	—	—	—	—	—	0	0	513	23 58	479	10 0	34	53·8	12 0	48·9	2 30	4·9
30	925	1085	945	710	590	420	—	—	—	—	0·80	0	0	516	0 0	484	12 50	32	54·9	12 0	48·1	3 30	6·8
31	265	415	490	720	220	260	—	—	—	—	0·55	0	0	508	15 10	486	21 9	22	53·6	11 20	48·6	19 10	5·0
M.	280	524	457	428	—	—	—	—	—	—	—	—	—	512	—	483	—	29	53·3	—	48·6	—	4·8

6. ESKDALEMUIR OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 5·4.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air-Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	North Component.					West Component.					Vertical Component.				
														Maximum. 15000 γ +.			Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.			Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.																	
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	γ	h m	γ	γ	h m	γ	h m	γ	γ	h m
1	231	266	289	243	—	—	—	—	—	—		1 *a*	1	10 2	1023	985	16 36	268	10 39	231	23 20	16 47	410	400	8 30
2	168	46	162	75	—	—	—	—	—	—		1 *a*	0	12 55	1019	998	0 8	251	11 12	232	0 14	22 55	406	399	9 20
3	64	197	341	462	—	—	—	—	—	—		1 *a*	1	13 33	1022	1005	1 0	255	13 32	239	8 45	24 0	402	396	9 20
4	202	358	222	−740	—	—	—	—	—	—		1 *b*	1	14 2	1024	999	22 50	254	12 43	221	21 57	22 50	403	394	7 0
5	−87	187	163	222	—	—	—	—	—	—		1 *b*	1	**23 42**	**1047**	991	15 35	261	15 26	217	23 33	19 5	402	393	9 0
6	82	140	472	297	—	—	—	—	—	—		1 *a*	0	6 2	1026	998	1 19	256	12 21	219	0 10	20 0	397	393	0 54
7	76	105	484	292	—	—	—	—	—	—		0 *a*	0	21 56	1039	1006	23 45	256	12 48	225	22 10	19 50	397	389	10 0
8	146	198	175	*x*	—	—	—	—	—	—		1 *c*	0	21 38	1032	1004	0 50	256	13 2	230	21 33	18 20	393	387	10 30
9	*x*	309	898	420	—	—	—	—	—	—		1 *c*	1	13 34	1024	986	18 18	262	18 45	243	3 10	18 30	404	**386**	**0 0**
10	181	35	630	268	—	—	—	—	—	—		1 *a*	1	13 25	1039	999	21 55	261	11 34	234	24 0	22 0	397	389	12 10
11	187	35	210	222	—	—	—	—	—	—		2 *b*	1	5 40	1026	968	20 36	262	20 15	226	23 15	**21** 0	412	389	0 0
12	175	227	315	303	—	—	—	—	—	—		1 *b*	1	7 21	1033	968	22 59	279	**15 16**	196	23 43	**23 0**	**425**	**386**	**7 40**
13	*x*	297	175	157	—	—	—	—	—	—		1 *a*	2	6 23	1035	**967**	**13 41**	269	11 51	199	0 0	0 30 / 13 45	416	393	6 30
14	117	70	−624	624	—	—	—	—	—	—		1 *b*	1	0 12	1046	987	16 27	259	12 59	225	0 3	20 0	408	399	0 40
15	408	262	87	262	—	—	—	—	—	—		1 *a*	0	22 45	1013	996	11 40	259	13 3	233	2 6	16 0	407	403	5 0
16	−356	−1160	−1108	−822	—	—	—	—	—	—		2 *b*	0	13 59	1019	1003	10 12	255	12 52	234	5 35 / 20 42	21 0	407	400	5 20
17	−583	566	414	157	—	—	—	—	—	—		1 *c*	1	7 14	1035	998	10 31	269	11 23	235	0 44	19 0	407	397	7 30
18	152	117	146	262	—	—	—	—	—	—		0 *a*	1	5 59	1023	983	11 30	260	13 7	223	3 59	16 30	409	400	3 50
19	134	6	344	449	—	—	—	—	—	—	No Observations.	1 *a*	0	20 44	1030	1008	1 42	256	13 13	223	21 9	20 35	406	399	8 0 to 9 0
20	560	−222	309	−478	—	—	—	—	—	—		1 *b*	1	21 56	1028	1009	9 30	260	12 32	221	20 16	20 35	406	399	13 0
21	140	431	216	210	—	—	—	—	—	—		1 *b*	0	14 45	1026	1008	11 15	257	13 24	238	1 0	17 0 to 18 0	406	404	0 0
22	*x*	140	216	297	680	510	0·7	1·4	1·2	—		1 *b*	1	22 1	1038	985	21 9	275	13 18	**187**	**21 53**	21 30	420	397	2 50
23	222	169	420	781	—	—	—	—	—	—		0 *b*	0	5 31	1019	997	0 50	260	11 16	222	0 19	20 30	414	405	0 0
24	280	152	192	93	—	—	—	—	—	—		0 *b*	1	5 15	1023	992	14 37	267	14 3	237	21 45	15 30	414	405	9 10
25	6	87	58	93	—	—	—	—	—	—		1 *a*	1	21 34	1023	1001	3 46	255	10 35	227	21 27	18 0	414	406	9 0
26	198	268	280	548	—	—	—	—	—	—		0 *a*	0	21 36	1019	1005	2 54	254	10 38	230	4 12	20 30	411	408	0 0
27	332	297	152	222	—	—	—	—	—	—		0 *a*	0	14 55	1028	1006	10 50	255	12 6	241	24 0	22 12	410	406	16 0
28	239	175	618	455	—	—	—	—	—	—		0 *a*	0	22 51	1027	999	23 45	261	12 32	229	23 52	22 25	413	405	0 50
29	385	507	501	245	—	—	—	—	—	—		1 *a*	0	23 57	1039	993	10 20	256	12 32	231	0 0	0 0	417	407	12 15
30	326	472	187	163	—	—	—	—	—	—		1 *b*	1	21 56	1021	997	12 44	261	14 3	231	3 30	18 0	418	405	0 0
31	227	921	239	361	—	—	—	—	—	—		0 *a*	0	14 49	1023	998	20 53	259	11 20	230	20 0	21 10	415	406	11 30
M.	151	175	212	195	—	—	—	—	—	—		—	—	—	1028	995	—	—	260	226	—	—	402	392	—

x Indeterminate. * No record.

An explanation of the Headings of the columns is given in the Preface.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	6·7	...	2·7	...	7·2	...	3·1	...	8·5	...	3·6	...	8·1	...	3·6	...	16·1	12	30
2	4·9	...	4·9	...	3·6	...	3·6	...	5·4	...	5·4	...	7·6	...	5·4	...	16·1	22	40
3	4·9	...	4·9	...	4·9	...	4·9	...	3·1	...	4·5	...	4·9	...	4·9	...	12·5	3	50
4	4·9	...	4·9	...	4·9	...	4·9	...	2·2	...	3·1	...	4·0	...	9·4	...	15·7	20	55
5	...	...	11·6	...	...	...	14·8	...	...	...	15·7	...	...	...	14·3	...	21·5	15	30
6	1·8	...	3·1	...	1·8	...	...	9·4	4·0	...	2·7	...	...	3·1	...	1·8	14·3	10	15
7	...	5·4	...	8·1	...	7·2	...	7·2	...	7·2	...	4·9	...	0·9	...	1·8	16·1	8·5, 8·15	
8	2·7	...	...	3·6	3·6	...	...	5·4	5·8	...	...	8·5	8·1	...	...	...	21·0	17	0
9	6·3	...	4·0	...	4·0	...	4·0	...	4·5	...	6·7	...	1·3	...	7·2	...	17·9	0	15
10	1·3	...	...	2·2	4·3	...	...	4·5	8·1	...	...	5·4	8·1	...	...	5·4	17·0	16	25
11	10·3	...	...	1·8	5·4	...	...	...	2·2	...	3·1	...	3·1	...	3·1	...	20·1	0	55
12	4·0	...	4·0	...	5·4	...	3·6	...	6·7	...	...	...	8·5	...	...	3·6	17·4	21	40
13	9·8	...	...	1·8	6·3	...	...	...	8·1	...	...	1·8	8·5	...	...	3·6	17·9	0	40
14	8·1	...	...	3·1	10·3	...	...	4·5	...	...	7·6	...	0·9	...	1·8	...	19·2	8	5
15	1·8	...	...	1·3	3·1	...	...	3·1	9·4	...	...	6·3	9·8	...	...	6·7	21·0	23	25
16	12·5	...	...	8·5	7·6	...	...	7·6	5·8	...	...	4·0	3·6	...	...	3·6	23·3	3	40
17	1·8	...	...	1·8	...	...	...	5·8	...	...	...	10·7	...	1·3	...	6·3	14·8	13	55
18	...	2·2	...	10·7	...	1·8	...	10·3	...	1·3	...	5·8	0·5	...	...	1·8	18·3	4	25
19	4·5	...	...	0·9	4·0	...	...	4·0	1·8	...	...	4·0	0·9	...	...	4·5	9·8	4·15, 7·5	
20	...	...	...	10·3	0·9	...	...	5·4	...	1·3	...	6·7	...	0·9	...	4·9	13·0	5	15
21	2·7	...	...	0·5	2·2	...	0·5	...	3·1	...	1·3	...	1·3	...	...	1·3	8·1	0	35
22	2·2	...	...	1·3	1·3	...	...	0·9	...	2·7	...	2·7	...	6·3	...	4·0	10·7	20	15
23	...	3·6	...	5·4	...	1·8	...	10·3	...	2·7	...	12·5	...	1·8	...	10·3	18·3	15	10
24	...	1·8	...	9·8	...	1·8	...	8·5	...	3·1	...	7·2	...	0·9	...	5·4	13·4	0	15
25	...	0·5	...	1·8	...	4·0	...	1·8	...	6·3	...	2·7	...	4·0	...	4·0	8·1	16	25
26	...	3·6	...	5·4	...	3·1	...	4·5	...	3·6	...	5·4	...	1·3	...	3·6	10·7	12	5
27	...	...	...	2·7	0·9	...	...	4·9	1·8	...	...	2·7	0·9	...	...	1·8	7·2	11	45
28	0·9	...	...	1·8	0·9	...	...	1·3	2·7	...	...	1·8	2·7	...	...	3·6	6·7	16	55
29	1·8	...	...	2·7	0·9	...	...	1·3	0·5	...	...	0·5	0·5	...	...	0·5	5·4	3	15
30	1·3	...	...	1·3	...	0·9	5·4	...	...	3·1	7·6	...	...	1·8	8·9	...	12·1	23	30
31	...	1·8	9·8	...	...	5·4	3·6	...	...	4·9	4·9	...	...	4·5	...	0·9	13·9	6	15
S+N & W+E	114·1		136·7		109·7		149·1		119·9		159·8		110·1		138·0				
S−N & W−E	76·3		−36·9		57·7		−52·3		47·5		−27·4		56·5		−20·8				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	9·4	24
2	*	*	*	*	*	*	*	*	0·9	...	2·7	...	1·8	...	4·0	...	13·0	24
3	...	2·7	13·4	...	...	4·9	12·1	...	...	4·0	9·4	...	...	1·8	4·5	...	17·4	1
4	...	0·5	0·9	...	0·5	...	0·9	...	2·2	...	3·1	...	2·7	...	...	2·7	7·2	17, 19, 20
5	1·3	...	0·9	...	4·9	...	3·1	...	0·9	...	0·5	...	...	2·7	...	13·9	16·1	20
6	...	1·8	...	8·9	...	1·8	...	10·3	...	1·8	...	8·1	...	3·6	...	8·5	10·3	7, 9, 11
7	...	4·0	...	4·0	...	5·8	1·3	...	...	11·6	4·9	...	...	9·4	3·6	...	12·5	15
8	...	2·7	1·3	...	...	1·3	...	0·5	3·1	...	...	7·2	5·4	...	...	13·4	15·2	23
9	3·1	...	...	14·8	3·1	...	...	16·1	6·7	...	...	16·1	6·3	..	...	14·8	18·3	11
10	5·4	...	...	13·0	7·6	...	...	11·6	10·7	...	...	10·7	13·0	...	...	13·0	19·2	24
11	13·4	...	...	13·4	14·3	...	...	5·8	7·6	...	...	...	7·2	...	1·3	...	20·1	5
12	8·1	...	1·8	...	8·1	...	1·8	...	4·5	...	0·9	...	4·5	...	...	6·7	13·0	23
13	13·0	...	...	8·5	13·4	...	...	2·7	11·6	...	...	...	14·3	...	...	5·8	17·9	6
14	14·8	...	...	9·8	14·3	...	...	9·8	17·4	...	...	10·7	7·2	...	...	1·3	19·7	11
15	4·5	...	1·8	...	8·5	...	...	5·8	12·5	...	...	12·5	15·2	...	...	15·2	21·9	22
16	15·7	...	...	15·7	16·1	...	...	16·1	15·2	...	...	15·2	15·2	...	...	15·2	24·1	19
17	14·3	...	...	14·3	16·1	...	...	16·1	13·4	...	...	13·4	10·7	...	...	16·1	22·8	5, 9, 11
18	12·5	...	...	12·5	12·1	...	...	12·1	6·3	...	...	13·9	8·5	...	...	12·5	18·8	1
19	7·2	...	...	10·7	8·5	...	...	3·6	4·0	...	...	2·7	2·2	...	...	1·3	13·9	2
20	2·7	...	...	1·8	4·5	...	...	3·1	6·3	...	...	1·3	5·4	...	...	0·9	6·3	7, 15
21	3·1	...	...	...	...	5·4	...	0·9	...	4·0	2·7	...	...	5·4	2·2	...	6·7	23
22	...	4·0	4·0	...	...	4·0	2·7	...	...	4·9	2·2	...	...	4·0	0·9	...	6·7	2, 11
23	...	3·1	...	...	...	2·7	...	1·8	...	1·8	...	0·9	...	0·9	...	0·5	4·0	2
24	...	1·3	...	0·5	...	1·8	...	0·9	...	...	...	2·7	...	2·7	...	2·7	4·0	23
25	...	3·6	...	3·6	...	4·9	...	4·9	...	8·1	...	...	...	6·7	1·3	...	10·7	23
26	...	6·7	...	...	...	6·3	2·7	...	...	7·2	...	...	...	4·0	0·9	...	8·9	6, 12
27	...	1·3	1·8	...	...	0·9	0·9	...	*	*	*	*	0·9	...	1·3	...	3·1	1
28	...	0·9	4·5	...	...	...	2·7	...	...	1·8	4·0	...	...	0·5	2·2	...	4·5	2, 3, 12
29	...	0·5	1·8	...	...	0·9	1·3	...	...	0·9	2·2	...	...	...	3·1	...	5·4	24
30	0·9	...	4·5	...	5·4	...	7·6	...	...	9·8	9·8	...	...	8·9	8·9	...	13·9	15
31	...	13·4	5·8	...	...	8·1	5·4	...	...	4·9	2·2	...	...	0·9	4·0	...	14·8	2, 3
S+N & W+E	166·5		174·0		186·2		164·6		184·1		160·0		172·0		182·7			
S−N & W−E	73·5		−89·0		86·2		−79·6		62·5		−70·8		69·0		−106·3			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	2·2	...	...	0·9	2·7	...	...	1·3	1·8	...	1·3	...	3·6	...	...	...	6·3	10	25
2	3·1	...	1·8	...	2·7	...	0·9	...	2·7	...	2·7	...	3·6	...	3·6	...	8·9	23	5
3	...	...	5·8	...	...	1·3	6·7	...	...	1·3	6·7	...	...	...	6·7	...	12·5	23	35
4	...	...	9·4	...	1·8	...	8·5	...	1·8	...	8·9	...	3·6	...	8·1	...	19·7	23	45
5	...	7·2	10·3	...	...	6·3	15·2	...	...	9·4	13·9	...	...	3·6	8·1	...	24·6	6	0
6	7·2	...	10·3	...	...	...	18·3	...	...	3·1	16·1	...	...	...	17·4	...	24·6	14	10
7	...	3·1	15·7	...	...	5·4	13·4	...	...	8·9	1·8	...	0·9	...	...	4·5	26·4	3	55
8	8·5	...	...	8·5	13·9	...	...	5·8	9·4	...	4·0	...	7·6	...	7·6	...	18·3	8	50
9	5·8	...	8·9	...	5·4	...	8·1	...	...	...	10·3	...	2·2	...	5·4	...	17·0	13	0
10	7·6	...	...	1·3	11·2	...	...	2·2	11·6	...	...	2·2	13·9	...	...	5·8	20·1	17	40
11	4·5	...	3·1	...	...	0·9	4·0	...	...	1·8	3·1	...	1·3	...	3·1	...	13·9	1	15
12	4·0	...	4·0	...	3·6	...	1·3	...	6·3	...	...	1·3	8·9	...	...	1·8	12·5	21·40, 22·15	
13	8·9	...	1·8	...	8·1	...	...	1·8	8·9	...	...	1·8	11·2	...	...	2·2	13·9	21	35
14	10·7	...	...	2·2	4·0	...	5·8	...	...	2·7	1·8	...	...	0·9	1·8	...	14·3	4	55
15	8·1	...	...	3·1	10·7	...	...	2·2	13·0	...	...	2·7	12·5	...	...	4·9	20·6	12	50
16	9·8	...	1·8	...	4·9	...	...	...	3·6	...	...	2·7	4·0	...	...	0·9	19·2	1	20
17	2·7	...	...	0·5	2·7	...	...	0·9	1·3	...	...	0·5	0·9	...	...	1·8	6·3	23·25, 23·40	
18	0	...	...	0·9	...	4·0	...	1·8	...	1·8	1·3	...	4·0	...	4·0	...	11·6	23	55
19	8·5	...	...	8·5	8·5	...	...	8·5	4·9	...	...	7·6	4·5	...	...	10·7	16·1	3·25, 8·0	
20	4·0	...	...	9·4	7·6	...	...	11·2	7·6	...	3·1	...	7·2	...	3·1	...	18·8	10	30
21	6·3	...	...	1·3	5·8	...	...	4·0	4·0	...	...	5·8	4·0	...	...	9·8	14·3	17	30
22	4·9	...	...	7·6	4·0	...	...	9·8	2·2	...	...	12·1	1·8	...	...	8·9	18·3	16	20
23	...	0·5	...	2·2	...	0·5	...	2·7	7·2	...	...	3·1	4·5	...	...	1·8	10·3	13	40
24	1·8	...	...	8·1	4·9	...	...	7·6	1·3	...	0·9	...	...	...	7·6	...	13·0	10	45
25	0·9	...	...	3·6	...	...	0	...	0·5	...	0·5	...	1·3	...	1·8	7·2	3	35	
26	...	1·3	...	1·8	...	1·3	...	5·8	...	1·8	...	4·0	...	1·3	...	6·3	11·6	20	10
27	...	3·1	...	4·5	...	1·3	...	6·3	...	...	...	7·2	0·9	...	...	4·9	11·6	11	15
28	0·5	...	...	3·1	1·3	...	...	5·8	4·5	...	...	6·7	5·8	...	...	8·9	16·5	23	45
29	9·4	...	...	9·4	8·9	...	...	8·9	3·1	...	...	8·1	1·8	...	...	8·5	16·5	6	20
30	0·9	...	...	4·0	...	...	...	3·6	0	...	...	0·9	0	...	...	0·9	6·7	1·15, 1·30	
31	0	0	0	0	0	0	0	0	0·5	...	...	1·8	2·2	...	...	3·1	8·1	23	50
S+N & W+E	135·5		153·8		133·7		172·4		127·0		144·9		118·0		164·0				
S−N & W−E	105·1		−8·0		91·7		−8·0		65·4		7·9		103·8		−11·0				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	0·9	...	1·8	...	0·9	...	1·8	...	0·9	...	2·2	...	...	...	5·4	...	9·8	21	45
2	...	...	3·6	...	...	...	1·8	...	...	...	2·2	...	0·5	...	3·1	...	9·4	23	25
3	0·9	...	5·4	...	...	...	4·9	...	...	...	4·5	...	...	...	3·1	...	12·1	2	5
4	...	...	3·1	...	...	...	5·4	...	1·3	...	3·6	...	1·3	...	2·7	...	8·9	7	55
5	4·5	...	6·7	...	...	...	5·4	...	...	1·8	9·4	...	...	...	8·5	...	16·1	13	35
6	...	...	6·7	...	2·2	...	2·2	...	8·1	...	...	8·1	...	...	...	9·4	15·2	14	0
7	...	7·6	...	7·6	...	7·2	...	7·2	...	4·0	...	4·0	...	1·3	1·3	...	15·7	9	40
8	...	1·8	1·8	...	...	0·9	2·7	...	2·7	...	...	0·9	10·3	...	...	7·2	20·1	22	35
9	4·0	...	...	1·8	2·7	...	2·7	...	0·5	...	2·2	...	1·3	...	1·3	...	17·9	0	10
10	0·9	...	2·2	...	0·9	...	2·2	...	0·9	...	1·8	...	4·0	...	...	6·3	9·8	21	0
11	6·7	...	...	4·5	8·5	...	...	1·8	5·4	...	...	2·2	1·8	...	1·3	...	15·7	5	35
12	0·0	...	0·9	...	0·9	...	2·7	...	0·5	...	1·3	...	0·5	...	0·5	...	5·8	18	30
13	1·8	...	0·9	...	5·8	...	...	1·3	3·1	...	1·3	...	4·0	...	...	4·0	10·7	10	30
14	3·1	...	...	1·3	6·3	...	...	2·7	3·6	...	...	...	4·5	...	1·8	...	11·6	6	25
15	5·8	...	...	2·2	5·8	...	...	5·8	6·3	...	...	6·3	5·4	...	...	8·5	13·0	21	5
16	5·4	...	...	7·6	4·5	...	...	10·3	2·7	...	...	12·5	...	...	...	15·7	18·8	19	10
17	...	...	...	18·3	...	...	...	20·1	...	...	...	17·4	...	...	...	19·2	27·3	8	0
18	...	...	...	16·5	...	...	...	15·2	8·1	...	...	8·1	5·4	...	...	5·4	20·1	0	55
19	2·7	...	0·9	...	0·5	...	0·5	...	0·9	...	...	4·5	1·8	...	...	9·4	11·6	1	55
20	1·3	...	...	7·6	0·9	...	...	4·5	0·9	...	...	4·9	0·5	...	...	1·3	7·6	2	40
21	0·0	...	...	0·9	0·9	...	...	4·5	...	...	4·0	...	...	...	3·1	...	7·6	11	50
22	...	...	1·8	...	0·5	...	2·2	...	...	...	0·9	...	...	...	2·7	...	5·4	9	10
23	...	...	...	4·9	...	...	...	9·4	...	2·2	...	10·7	...	4·5	...	10·7	13·9	23	35
24	...	4·9	...	12·5	3·1	...	1·3	...	4·5	...	...	...	0·5	...	0·9	...	17·0	1	55
25	0·0	0·0	0·0	0·0	...	0·5	2·2	...	1·3	...	2·7	...	1·3	...	2·7	...	6·3	13	10
26	0·5	...	3·1	...	...	7·6	...	3·1	...	6·7	...	4·5	...	6·7	...	6·7	13·0	6	45
27	...	6·3	...	6·3	...	4·0	...	9·8	...	2·7	...	6·3	...	2·2	...	4·9	14·8	6	50
28	...	0·0	...	0·5	...	0·0	...	0·9	...	0·5	1·8	...	...	0·5	2·7	...	4·9	0	30
29	...	0·5	3·1	...	...	0·5	1·8	...	...	1·3	1·8	...	...	1·8	1·8	...	6·7	12	30
30	...	1·3	1·3	...	...	2·2	2·2	...	...	2·7	1·8	...	...	3·6	...	...	8·5	23	15
31	...	5·4	2·2	...	...	5·4	0·9	...	...	2·7	2·7	...	...	2·7	1·8	...	12·5	11	45
S+N & W+E	66·3		138·0		72·7		139·5		76·3		134·6		66·4		153·4				
S−N & W−E	10·7		−47·0		16·1		−53·7		27·1		−46·3		19·8		−62·0				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time.

* No record.

† Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.

‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8.

§ Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

PYRTON HILL. **K. 1.** January 5. 10 h. 55 m. to 11 h. 30 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
Greatest height	700	...	273	...	...	...	...	...	Nearly clear. A few clouds, not reached from W.N.W.
	1000	...	...	...	...	...	...	...	
	500	...	274·5	...	...	...	275	18	
100 m. above ground	250	...	277·5	12	...	...	270	16	
Ground level	150	...	278	5	90	7·8	260	11	
Computed for M.S.L.	0	...	...	...	...	...	230	22	...

BRIGHTON. **K. 1.** January 7. 10 h. 30 m. to 12 h. 30 m.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
600	...	273·5	...	95	6·0	...	15	8	Overcast. Stratus and var. types of high cloud. Scud at about 500 m. Wind decreasing in strength.
1000	...	...	...	...	...	...	...	...	
500	...	274·6	...	95	6·6	...	25	9	
215	...	276·4	5·1	85	6·7	...	10	8	
115	...	277	6	85	6·9	...	360	5	
...	...	...	...	...	...	...	20	9	...

BRIGHTON. **K. 2.** January 14. 10 h. 20 m. to 12 h. 20 m.

Greatest height	635	...	274·7	...	100	6·9	...	?	?	Overcast. Stratus. Kite disappeared in cloud 500 m. above sea. Wind decreasing with altitude to almost nil.
	1000	...	...	...	...	...	...	...	...	
	500	...	...	...	...	...	...	...	...	
	215	...	277·5	15	100	8·5	...	290	4	
Ground level	115	...	279	...	88	8·3	...	280	4·9	
Computed for M.S.L.	...	...	...	...	...	...	...	200	12	...

BRIGHTON. **K. 3.** January 20. 11 h. 0 m. to 12 h. 30 m.

...	...	...	...	...	...	...	...	...	Nearly overcast. Stratus and alt. cu. Scud, 300 m. above sea. Wind decreasing with altitude.
...	...	...	...	...	...	...	...	...	
500	...	280·5	...	75	7·8	...	150	?	
215	...	276·7	−18	90	7·1	...	120	?	
115	...	280	33	92	9·2	...	100	9	
...	...	...	...	...	...	...	165	16	...

BRIGHTON. **K. 4.** January 27. 10 h. 45 m. to 12 h. 40 m.

Greatest height	...	...	...	...	...	...	...	...	...	Half overcast. St. Cu. no clouds reached. Ground wind at descent 60°. 15 m.p.s.
	1000	...	265·8	8·8	100	3·6	...	60	18	
	500	...	270·2	8	95	4·8	...	60	var.	
	215	...	273	12	80	4·9	...	60	17	
Ground level	115	...	274·2		90	6 0	...	40	8	
Computed for M.S.L.	...	...	...	...	...	...	...	80	14	...

BRIGHTON. **K. 5.** January 28. 10 h. 30 m. to 12 h. 30 m.

...	...	...	...	...	...	...	...	...	Clear sky. Trace doubtful above 500 m., but probably correct as given.
1000	...	268·5	5·8	50	2·2	...	100	1·2	
500	...	271·4		80	4·4	...	100	1·2	
215	...	?	...	?	?	...	80	?	
115	...	274	...	100	6·6	...	60	8·9	
...	...	...	...	...	...	...	90	16	

ABERDEEN. **P. 1.** January 12. 11 h. 10 m.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.–E.	Components. S.–N.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	
Greatest height	3110	...	...	...	...	At 3110 m. balloon entered some high St Cu. cloud above which were some slight A. Cu. with direction 270°.
	3000	244	9·3	+3·0	+3·9	
	2500	238	2·7	+2·3	+1·4	
	2000	245	5·7	+5·2	+2·4	
	1500	252	4·4	+4·1	+1·5	
	1000	254	5·0	+4·8	+1·3	
	500	235	11·7	+9·6	+6·5	Calm region between 2300 and 2500 very marked.
100 m. above ground	130	213	7·5	+4·3	+6·1	
Ground level	30	200	4·4	+1·5	+4·1	
Computed for M.S.L.		210	16	+8·0	+14	Two theodolites. Base 810 m. at 43° 45′. Lift 48 gr.

P. 2. January 24. 11 h. 30 m.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.–E.	Components. S.–N.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	
825	74	10·1	−9·8	−2·6	The second of two ascents. Both balloons were lost in snowstorms. The velocity and direction at 825 are those for the previous minute.
...	...	...	...	...	
...	...	...	...	...	
...	...	...	...	...	
...	...	...	...	...	
...	68	9·1	−8·6	−3·1	
200	78	9·5	−9·4	−2·6	
...	80	5·6	−5·5	−9·7	
	85	9	9	1	Two theodolites. Base 1520 m. at 24° 10′. Lift 51·5 gr.

P. 3. January 26. 11 h. 20 m.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.–E.	Components. S.–N.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s	
2155	...	...	...	...	Balloon lost in high haze.
...	...	...	...	...	
...	...	...	...	...	
...	12	13·0	−2·3	−13·8	
...	15	13·4	−3·4	−12·9	
...	19	12·1	−4·1	−11·4	
...	2	8·9	0	−8·9	
...	332	7·4	+3·7	−6·6	
...	315	4·9	+3·5	−3·5	
...	30	6	−3·0	...	Two theodolites. Lift 52·5 gr.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

1912. January 30. 3 h. 5 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	13·6 km.	? mb.	215° A.
Lowest Temperature	9·6 km.	268 mb.	215° A.
Base of Stratosphere	9·6 km.	268 mb.	215° A.
* Type	No. 1.		

From observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	770·9 mm.	1027 mb. 1023 mb.
Temperature,	— °	— °A. ° — °A.
Vapour Pressure,		— mb. — mb.
Gradient Wind :—Direction,		— °. 315°.
Velocity,		0 m/s. 6·3 m/s.
Correction for Curvature,		— m/s. — m/s.
Final Components, W. to E.		0 m/s. + 4·4 m/s.
Final Components, S. to N.		0 m/s. − 4·4 m/s.

Sounding No., R. 2.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, . . near Bognor.
Distance, ... 98 km.
and
Orientation, . . . 168°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
13	157	215	+1			Light N.W. wind, cloudy, after clear morning.
12	184	216	0			
11·5	200	216	−1			
11	217	216	2			
10	252	215				
9	293	217	5			Base of Stratosphere.
8·9	300	217	7			
8	341	222				
7	396	229	8			
6·9	400	229				
6	457	237	8			
5·4	500	242				
5	529	245	7			
4·1	600	252				
4	604	252	8	45	0·5	
3	688	260	3	50	1·1	
2·9	700	261				
2	782	263	5	70	2·0	Inversion 262° to 263° at 1·7 km.
1·8	800	271				
1	888	268		95	4·0	
0·9	900	276				
Ground M.S.L.	987 —	273 —		95 —	5·8 —	

1912. January 4. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	11·8 km.	201 mb.	219° A.
Lowest Temperature	10·7 km.	236 mb.	216·5° A.
Base of Stratosphere	10·7 km.	236 mb.	216° A.
* Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	760·2 mm.	1013 mb. 1007 mb.
Temperature,	— °	— °A. ° — °A.
Vapour Pressure,		— mb. — mb.
Gradient Wind :—Direction,		270°. 250°.
Velocity,		13 m/s. 14·3 m/s.
Correction for Curvature,		— m/s. — m/s.
Final Components, W. to E.		+13 m/s. +13·2 m/s.
Final Components, S. to N.		0 m/s. 5·2 m/s.

Sounding No., R. 1.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 38 m.
Place of Fall, Narborough, Norfolk.
Distance, ... 216 km.
and
Orientation, . . . 124°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
11	224	217	2·5			Base of Stratosphere.
10	263	219·5	7			
9·2	300	225	5			
9	307	226·5	7·5			
8	356	231·5	7·5			
7·2	400	238	6·5			
7	410	239				
6	471	246·5	6·5			
5·6	500	249				
5	540	253	7			
4·2	600	260				
4	616	261	4			
3·0	700	265	6			
2	795	271	6·5			
1·9	800	271				
1	897	277·5				
0·1	1000	282				
Ground M.S.L.	1009 —	282·5 —				

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A. = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—Type 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
Type 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given.
Type 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

FEBRUARY 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 4*d.*

Second Year.—No. 2. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	5-6	2·3		5th I, Trace of long waves 2 h. 16 m.
2	4-5	2·1		
3	5-6	1·5		13th Ir, P=8 h. 8 m. 36 s., S=8 h. 12 m. 35 s., Δ=2430 kms., α=56° 3′ E. of S. Epicentre 40° N., 21½° E. Iu, P uncertain, S=17 h. 0 m. (at hour break). L=17 h. 16 m., Δ about 10000 kms.
4	6	2·0		
5	5-6	2·0	I.	
6	4-5	1·7		15th I, P and S uncertain. L=3 h. 34 m., Disturbed till 4 h. 7 m.
7	5	2·8		
8	6-7	4·1		16th I, P and S uncertain. L=10 h. 26 m.
9	5-6	3·3		
10	5-6	1·8		19th I, P=10 h. 43 m. 15 s. S and L uncertain. Disturbed till 11 h. 46 m. Iu, S=23 h. 11 m. 51 s., L=23 h. 19½ m.
11	5	1·7		
12	4-5	1·0		20th Iu, S=13 h. 26 m. 22 s., L=13 h. 46 m. I, Trace of long waves at 23 h. 3 m.
13	4-5	0·5	Ir, Iu.	
14	6	0·9		21st I, Trace of long waves 5 h. 50 m. I, Long waves at 8 h. 29 m. I, Long waves at 18 h. 16 m.
15	4-5	1·2	I.	
16	5	1·4	I.	22nd I, P and S uncertain. L=14 h. 14 m.
17	6	1·3		
18	5	1·0		24th I, Feeble disturbance at 11 h. 14 m. I, P and S uncertain. L=15 h. 0 m.
19	4-5	0·8	I, Iu.	
20	4-5	0·8	Iu, I.	25th I, Disturbance starting at 3 h. 3 m. Phases uncertain. Long waves not clearly shown until 3 h. 48 m. I, Long waves 11 h. 3 m. I, Long waves 22 h. 4 m. I, Long waves 23 h. 15 m.
21	4-5	0·7	I, I, I.	
22	4-5	0·8	I.	
23	4-5	1·2		26th Ir, P?=20 h. 38 m. 45 s., S=20 h. 41 m. 33 s., L=20 h. 44 m., Δ=1620 kms. ?
24	5	1·0	I, I.	
25	4-5	0·8	I, I, I, I.	27th I, P=0 h. 22 m. 5 s., S=0 h. 27 m. 37 s. Long waves not clear, while at 0 h. 40 m. the seismogram has the characteristic appearance of a comparatively near earthquake.
26	4-5	0·8	Ir.	
27	5-6	0·8	I.	
28	5-6	1·7		
29	7	3·6		

An explanation of the notation used is given in the preface.

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.
Heights above Ground:—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
			200+	200+	200+	200+									Tenths of Sky covered.							
	mib.	mib.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		γ.	° ′	° ′
1	1004·9	1001·5	76·6	74·6	79	74	6·1	5·1	75	72	7	8	5	4	7	0	—	0·9	Fair. Cleared quickly *p.*	...	...	...
2	1002·9	1004·2	71·3	71·8	75	*n* 71	3·4	3·1	61	51	6	4	6	7	0	0	—	7·9	Fine.	...	...	...
3	1002·0	998·6	72·1	73·0	76	*n* 71	*4·8*	*3·4*	*80*	*57*	8	5	9	7	2	2	—	5·9	Fine. ⊔ in evening.	...	...	...
4	993·8	985·8	73·8	75·2	76	72	*5·4*	*5·8*	*82*	*67*	8	7	11	12	2∞	*10*≡⁰	0·8	0·9	Hazy. ✲ *n.*	...	...	...
5	975·9	971·3	76·8	80·6	81	75	6·5	9·5	80	91	9	12	13	8	8	*10*≡⁰	19·3	—	Squally. ≡⁰●	...	...	...
6	974·2	980·9	80·1	77·8	81	77	8·5	7·8	85	91	16	5	22	3	*3*	*1*	7·9	0·2	Fair to dull. Fine evening.	...	...	...
7	968·3	971·8	82·9	82·6	84	77	11·5	11·2	94	94	16	9	16	7	10≡⁰	*10*	3·6	0·2	Gloomy with ≡⁰.	...	...	...
8	966·9	965·9	82·7	82·8	84	82	10·5	10·5	89	89	8	5	14	9	10≡⁰	*10*≡⁰	8·6	0·6	≡⁰. Showery.	17915	20 35·2	68 9·8
9	966·7	979·4	81·8	79·9	83	79	10·9	8·2	96	82	15	6	21	7	10	*2*	0·8	0·2	Dull and showery.	...	...	...
10	986·3	983·9	77·3	80·4	82	77	7·5	7·5	91	73	11	3	6	6	9	*10*	—	0·3	Dull.	...	...	...
11	981·6	989·2	78·8	80·3	82	78	7·5	8·8	82	86	6	9	6	6	8≡⁰	*5*	0·3	—	Overcast.	...	...	...
12	998·4	1004·1	79·1	80·1	81	78	8·5	8·5	90	86	32	4	7	4	3∞	*10*	—	0·4	Fair, but with ∞.	...	...	...
13	1009·1	1008·0	73·5	81·0	82	73	6·1	8·8	96	83	—	1	11	6	0∞	*10*	1·3	7·2	⌙; fine; ∞.	...	...	...
14	1007·7	1004·7	82·9	83·4	84	81	10·9	11·9	89	96	12	6	14	10	10	*10*≡⁰●	13·5	—	Dull. ≡⁰	...	...	...
15	1004·1	1010·4	82·2	80·7	84	81	10·9	9·8	94	94	15	5	16	5	8≡⁰	*3*	5·6	4·6	Misty, with ●; clearing *p.*	...	...	...
16	1000·4	1006·1	83·4	82·6	84	82	11·9	9·5	94	78	15	12	16	7	10≡⁰●	*10*	—	—	Gloomy, with ≡⁰●⁰.	...	...	...
17	1009·4	1009·8	81·0	79·3	84	78	10·2	9·2	95	97	16	4	—	0	10≡⁰	*3*	0·3	—	Misty. Clearing in evening.	...	...	...
18	1005·7	993·0	80·1	78·2	81	78	8·5	7·8	86	90	6	7	4	9	10≡⁰	*10*≡⁰	11·9	—	Overcast, with ≡⁰●.	...	...	...
19	988·0	1000·6	78·6	80·2	81	78	8·2	7·1	90	70	31	13	29	12	10≡⁰	*6*	3·6	1·2	≡⁰, squally and clear later.	...	...	...
20	1005·6	1001·4	76·6	79·5	81	76	6·1	6·8	78	71	—	1	9	8	3	*10*	0·8	6·7	Fine; good visibility.	...	...	...
21	1000·9	999·3	81·8	83·5	*x* 85	80	10·9	12·6	97	98	16	3	15	5	7	*10*≡⁰●	17·0	3·4	Fair *a.* Gloomy with ≡⁰● *p.*	...	...	...
22	994·5	997·0	84·0	84·2	*x* 85	84	12·9	11·9	99	89	15	9	15	9	10≡⁰	*10*≡⁰	2·8	0·1	Gloomy, with ≡⁰.	17914	20 32·2	68 9·9
23	1006·3	1009·7	80·6	79·1	84	77	8·8	7·8	85	82	22	5	—	1	1	*1*	1·0	8·7	Fine; good visibility.	...	...	...
24	1007·4	1006·3	80·1	79·0	82	77	8·2	8·5	79	89	12	5	28	5	10	*10*	8·1	—	Dull, with ≡⁰●.	...	...	...
25	1008·8	1007·8	79·5	81·4	84	76	8·8	8·5	91	76	16	3	15	6	3	*10*≡⁰	3·1	5·9	Fair.	...	...	...
26	1002·0	1002·8	82·8	83·2	*x* 85	81	11·5	10·2	95	82	20	7	19	11	8	*5*	0·3	5·1	Fair to misty. ⊼ in evening.	...	...	...
27	1012·1	1011·2	82·7	83·7	84	82	10·5	12·2	88	96	15	6	16	7	7≡⁰	*10*≡⁰	0·5	0·5	Gloomy, with ≡⁰.	...	...	...
28	1003·6	988·5	83·2	83·2	84	81	12 2	10·9	97	88	15	10	16	11	10≡⁰●	*10*	14·7	—	≡⁰. ●² 4 h.–7 h. 30 m.	...	...	...
29	998·4	1000·8	82·4	82·3	84	81	9·8	10·2	83	87	19	9	16	7	3	*10*≡⁰	6·6	6·4	Fine and clear. ≡⁰⊔ *p.*	...	...	...
Means	996·1	996·3	79·6	80·1	82·0	77·8	8·9	8·7	88	83		6·3		6·9	6·6	7·2	132·4	2·31	Monthly **Totals** or **Means.**	17915	20 33·7	68 9·9
Normal 40 years	1012·2	1012·2	79·6	79·8	82·6 (35 years)	77·5 (35 years)	8·4	8·4	87 (25 years)	86 (25 years)		6·0 30 years		6·1 30 years	—	—	125·6	2·54 30 yrs	**Normals,** 40 years.			

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity. Vapour Pressure.		Humidity. Percentage.		Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
	mib.	mib.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		200+ °	200+ °	200+ °	
1	1006·8	998·5	73·3	74·6	76	72	*5·4*	4·8	*87*	70	22	2	24	2	10≡0	10≡0	—	0·3	—	66	74·6	79·7	⌣≡0., then dull to fair.
2	993·0	998·0	69·6	69·3	73	68	2·4	2·7	51	62	28	2	32	5	3	0≡0	—	2·5	—	62	74·4	79·6	Fine intervals. ✲0 *p.*
3	1000·1	1001·8	67·9	70·1	74	*n* 67	2·1	3·1	48	66	23	2	31	2	0	3	0·3	6·7	—	*n* 60	74·3	79·6	Fine. ✲0 at times 18 h.–22 h.
4	1001·6	998·8	70·3	69·9	71	70	3·7	3·1	72	59	5	10	8	6	10≡0	?0≡0	—	—	—	65	74·1	79·4	⊠. ✲ between 6 h. and 11 h.
5	991·5	984·5	68·7	73·7	74	68	2·4	5·4	58	85	8	8	6	6	9≡0	10≡0	1·0	—	—	65	74·0	79·1	Dull. ✲0
6	987·0	986·3	75·4	79·5	81	73	*6·8*	8·8	*93*	92	6	2	14	3	?10≡●	10≡0	—	—	—	72	74·0	79·1	≡●0 *a.* Dull.
7	993·8	991·0	77·4	79·7	83	77	7·5	8·5	91	86	19	3	14	3	7	10	0·3	2·7	—	73	74·1	79·0	Fine *a.* Fair *p.*
8	983·1	984·9	81·4	83·5	84	80	8·8	9·8	80	78	13	6	13	4	10	7	6·1	—	—	76	74·2	78·7	Dull with ● till 15 h.
9	984·7	988·7	82·3	81·8	84	81	10·5	9·8	90	89	13	4	17	5	10	9	2·5	—	—	77	75·8	78·7	Dull throughout.
10	995·2	993·1	79·4	78·5	84	78	8·5	7·8	89	88	17	3	7	4	10	10≡0	1·0	4·9	·062	72	77·1	78·6	Fine most of day.
11	991·7	995·2	80·2	79·9	84	78	8·8	8·2	88	82	14	2	11	4	7	0	5·8	4·0	—	75	77·4	78·6	● early. Fine after 8 h.
12	994·1	998·3	79·3	81·7	83	79	8·8	8·8	91	78	7	2	15	7	10≡0	10●	1·3	0·2	—	74	77·7	78·7	● *a.* Dull.
13	1001·5	1007·1	79·9	79·6	81	79	8·2	8·8	82	90	17	4	26	3	10≡0	10	—	—	—	78	78·3	78·9	Overcast all day.
14	1014·0	1019·2	79·3	79·6	81	79	8·2	7·1	86	74	32	4	3	3	9	10≡0	—	0·8	—	75	78·3	79·1	Fair *a.* Overcast and misty
15	1020·0	1018·6	78·4	80·4	82	77	7·1	8·8	81	87	11	4	17	3	10≡0	*10*	0·8	—	—	75	78·4	79·1	Dull throughout. [later.
16	1019·9	1019·4	81·7	82·8	85	81	10·9	10·9	96	91	17	3	15	2	10≡0	*10*	—	0·1	—	79	78·9	79·2	≡0. Overcast most of day.
17	1017·3	1014·9	80·9	81·2	*x* 87	79	8·8	9·5	83	87	16	3	—	1	8≡0	*8*	—	3·2	·039	72	79·6	79·3	Fine most of day.
18	1009·9	1003·3	81·2	81·4	85	79	9·8	9·2	90	85	9	2	16	2	?8≡0	*4*	—	0·5	—	74	79·4	79·4	⊕ 10 h. 30 m. Fair to fine.
19	998·3	992·8	82·6	81·9	84	81	10·2	9·5	85	84	15	4	18	7	10	*10*	0·8	0·2	—	74	79·7	79·6	Dull most of day.
20	996·1	1007·0	79·8	79·9	82	78	8·8	7·8	90	76	21	4	23	4	10	*10*	—	—	—	79	79·7	79·6	Dull throughout.
21	1010·9	1014·2	76·7	81·4	82	74	6·8	10·2	87	93	—	1	14	2	10≡0	*10*≡0	0·3	—	—	66	79·1	79·7	⌣≡0 *a.* Overcast generally.
22	1015·3	1014·3	83·2	84·6	85	81	11·9	12·6	95	92	16	4	19	5	10●	*10*●	3·8	—	—	77	79·6	79·8	Dull. ● 11 h.–16 h.
23	1012·1	1008·8	84·6	83·7	86	82	11·9	12·2	88	94	18	8	18	2	10	*10*●	8·6	—	—	84	80·8	80·0	Overcast.
24	1013·4	1010·4	80·3	81·3	84	79	8·8	9·8	88	92	—	1	14	2	9≡0	*10*	0·5	0·7	—	77	81·2	80·1	Fair to dull. ≡0.
25	1009·9	1013·1	82·4	81·0	84	80	10·9	9·8	94	92	16	4	21	2	7	*5*≡0	0·3	1·6	—	79	81·2	80·2	Fine to dull.
26	1015·5	1014·3	77·9	83·2	84	75	8·2	11·5	92	93	21	2	18	6	9	*10*	0·5	0·5	—	69	80·4	80·2	⌣≡0. Fair, then overcast *p.*
27	1017·8	1021·9	83·4	83·1	*x* 87	83	8·8	10·5	70	84	22	8	19	7	5	*8*	—	5·4	—	80	80·8	80·3	Fine.
28	1021·3	1013·9	83·8	84·1	*x* 87	83	11·2	11·2	86	85	19	6	15	7	10	6	0·8	1·6	—	80	81·3	80·5	Fair intervals.
29	1009·6	1014·3	83·5	82·5	86	82	10·5	10·2	84	85	18	7	18	6	10	2	0·5	2·7	—	79	81·7	80·6	Dull *a.* Fine *p.*
Means	1004·3	1004·4	78·8	79·8	82·1	77·3	8·2	8·6	83	84		3·8		3·9	8·7	7·7	35·2	1·33	—	73·6	77·9	79·5	Monthly **Totals** or **Means.**
Normal 40 years	1015·0	1015·0	76·7	77·1	80·1	74·9	6·6	6·7	86	85		3·8		3·6	—	—	38·7	2·11	—	—	—	—	**Normals, 40 years.**
					35 years		25 years.				30 years		30 years					30 yrs					

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	977·4	972·9	71·4	68·5	74	67	3·7	2·4	69	53	32	4	32	9	6	0	—	7·0	—	—	—	—	Clear sky after 15 h.
2	973·8	972·3	69·6	67·3	72	65	3·1	1·0	68	30	4	11	—	1	1	0	—	6·9	—	—	—	—	✲ showers 6 h.
3	973·6	978·0	67·9	64·6	71	63	2·4	1·4	57	46	32	5	32	2	2	0	0·5	6·7	·074	—	—	—	✲2 showers 9 h.–10 h.
4	978·3	974·7	62·3	64·1	71	*n* 61	1·4	1·0	46	34	—	1	—	1	0	0	—	7·0	—	—	—	—	Generally fine.
5	967·7	962·5	67·1	69·9	71	*n* 61	1·7	3·1	48	66	12	3	12	5	2	2	—	6·3	—	—	—	—	∞ *a.*
6	958·9	956·5	72·8	74·4	76	69	5·1	6·5	82	96	12	4	4	2	10✲0	10●	10·7	0·2	—	—	—	—	▲ noon. ✲● showers late *p.*
7	958·6	956·3	75·8	78·3	79	74	7·1	8·5	96	96	16	5	14	5	10≡0	10●0≡0	11·9	—	—	—	—	—	Dull and wet throughout.
8	956·2	951·2	78·5	77·7	79	77	8·5	8·2	95	96	12	3	18	4	10●	10●	5·8	—	—	—	—	—	Dull, wet, and misty, early *a.*
9	954·7	955·6	78·5	79·8	82	77	8·2	9·5	90	97	—	1	16	3	9	10	4·6	0·5	—	—	—	—	Wet and misty early. ● showers
10	959·6	967·6	78·1	74·3	80	74	8·2	6·5	94	94	—	1	—	0	10≡0	10≡0	1·5	—	—	—	—	—	Wet and misty. [after 11 h.
11	968·9	972·0	74·6	77·0	78	72	6·1	7·8	92	94	4	4	4	4	10≡0	10	0·5	0·8	—	—	—	—	Variable. Dull evening.
12	975·6	977·1	76·2	76·2	77	76	6·8	7·1	87	94	4	7	4	8	10	10≡0	0·8	—	—	—	—	—	Overcast and misty.
13	979·6	984·0	76·5	76·1	78	76	7·5	7·1	94	92	4	9	4	1	10≡0	9	—	—	—	—	—	—	Overcast and misty.
14	988·1	989·6	77·0	75·9	80	75	7·1	6·5	88	87	8	2	12	3	4	9	—	5·7	—	—	—	—	Overcast till 8 h.
15	986·6	983·8	75·2	79·2	80	74	6·1	9·2	84	97	16	4	16	9	10≡0●	10≡0	6·9	—	—	—	—	—	Overcast and misty.
16	987·9	982·8	77·4	81·3	82	77	7·8	10·5	93	95	16	4	16	14	10≡0	10≡0	2·0	0·3	—	—	—	—	Overcast and misty. Stormy
17	984·8	983·5	78·5	78·7	80	78	8·8	8·8	96	98	16	4	20	4	10≡0	10≡0	0·3	—	—	—	—	—	Overcast and misty. [evening.
18	984·0	976·2	76·3	77 4	79	75	7·8	7·8	99	92	—	1	4	10	10≡0	10≡0	4·3	—	—	—	—	—	Overcast and misty. ● *p.*
19	967·1	963·6	77·5	79·6	82	77	8·2	9·2	97	95	*8*	2	32	2	10≡0●	10●	6·9	0·1	—	—	—	—	Overcast *a.* Dull evening.
20	967·3	974·7	78·2	75·5	80	74	7·8	6·1	90	85	28	3	8	2	10≡0	1	—	4·2	—	—	—	—	Dull *a.* Fine *p.* ∞.
21	980·6	982·1	72·9	77·9	79	70	5·8	7·5	92	85	—	0	—	1	10	10	1·0	1·8	—	—	—	—	Fair to dull.
22	980·2	975·0	80·2	80·7	83	78	9·5	10·5	95	100	14	4	20	11	10●	10●≡0	13·5	—	—	—	—	—	Overcast and misty.
23	969·7	978·8	81·4	77·4	82	76	10·2	6·8	93	80	16	19	22	5	10	9	1·8	1·2	—	—	—	—	Fine. ⊔ 18 h.–20 h.
24	982·7	980·8	73·4	73·0	79	71	5·4	5·4	86	86	—	1	—	1	2	3	3·1	2·1	—	—	—	—	Dull *a.* and *p.* Fine afternoon.
25	978·2	980·3	74·8	77·5	80	72	6·5	8·2	92	98	—	1	20	7	10●0≡0	10	0·8	2·0	—	—	—	—	Driving ● till 15 h.
26	976·5	975·2	78·4	79·5	81	78	8·2	8·5	93	87	16	12	22	10	10●0	8≡0	13·0	—	—	—	—	—	Frequent ●.
27	977·6	981·9	79·4	80·2	81	78	7·8	9·5	81	95	22	13	20	12	9	10≡0	9·4	—	—	—	—	—	Frequent ●.
28	983·0	975·1	80·1	82·9	*x* 84	80	9·5	10·5	96	87	18	13	20	11	10≡0●0	10≡0	7·1	—	—	—	—	—	● till 15 h. Misty.
29	967·8	975·0	79·6	79·3	83	79	9·2	9·2	92	96	20	13	20	12	10≡0●	10	2·5	0·5	—	—	—	—	●2 showers. ▲ noon.
Means	974·0	973·8	75·5	76·0	78·7	73·2	6·7	7·0	86	85		5·3		5·4	8·1	7·6	108·9	1·85	—	—	—	—	Monthly **Totals** or **Means.**
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.
Note.—The cloud amounts in italic type at Kew were taken at 18 h.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·75.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.			γ	h m	γ	h m	γ	′	h m	′	h m	′
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².													
1	695	615	480	315	360	240	—	—	—	—	0·45	0	0	516	23 20	496	1 24	20	53·3	12 50	47·2	22 25	6·1
2	515	565	$x\pm$	665	—	—	—	—	—	—	—	1	1	521	7 38	486	22 30	35	53·3	13 28	44·4	22 30	8·9
3	540	760	495	*	—	—	—	—	—	—	—	0	0	517	7 50	491	16 26	26	53·0	12 20	47·9	16 28	5·1
4	*	*	*	*	—	—	—	—	—	—	—	?	0	523	13 0	491	16 40	32	52·2	12 10	46·9	2 53	5·3
5	*	*	750	350	—	—	—	—	—	—	—	0?	0	517	14 30	494	1 13	23	50·9	12 0	48·0	2 30	**2·9**
6	340	565	395	250	—	—	—	—	—	—	—	1	0	**526**	**13 43**	502	23 58	24	51·7	11 46	48·4	7 18	3·3
7	170	600	455	515	450	270	0·70	0·20	0·45	2·15	0·75	0	0	519	14 16	495	23 43	24	51·9	12 14	45·9	22 48	6·0
8	315	425	50	340	—	—	—	—	—	—	—	2	0	516	7 0	490	1 38	26	54·0	12 3	45·9	3 47	8·1
9	145	375	135	250	—	—	—	—	—	—	0·30	2	0	516	12 33	494	1 45	22	51·9	12 20	47·7	0 0	4·2
10	120	480	360	395	—	—	—	—	—	—	—	0	1	516	15 10	486	22 20	30	55·2	13 46	45·9	24 0	9·3
11	275	435	300	435	—	—	—	—	—	—	—	1	1	511	13 38	482	2 10	29	52·9	10 30	44·3	0 20	8·6
12	−290	445	−170	0	—	—	—	—	—	—	—	2	1	516	12 20	477	16 56	39	53·7	12 32	43·9	19 20	9·8
13	110	240	240	315	—	—	—	—	—	—	—	1	1	510	8 49	474	17 48	36	54·3	12 30	41·4	17 34	12·9
14	170	420	315	575	—	—	—	—	—	—	—	0	0	511	23 26	493	9 48	18	52·9	12 45	46·7	23 16	6·2
15	280	565	310	205	480	0	—	—	—	—	0·60	0	0	507	20 40	487	4 5	20	53·5	13 0	46·6	20 40	6·9
16	155	310	250	310	—	—	—	—	—	—	—	0	1	525	13 55	490	19 19	35	53·4	11 40	43·4	19 36	10·0
17	205	455	395	375	—	—	—	—	—	—	—	0	1	516	14 52	476	4 22	40	55·8	1 32	**40·9**	**20 13**	**14·9**
18	—	460	425	485	—	—	—	—	—	—	—	0	1	516	3 5	490	10 36	26	52·1	13 5	44·5	3 30	7·6
19	105	300	215	135	—	—	—	—	—	—	—	1	0	515	14 1	496	2 53	19	53·4	12 53	47·6	8 52	5·8
20	70	70	215	375	390	120	1·10	0·00	0·45	0·95	0·40	1	0	509	12 33	492	23 42	17	54·4	12 24	46·7	22 12	7·7
21	340	625	265	385	—	—	—	—	—	—	—	0	0	510	13 40	491	9 25	19	53·5	12 40	48·1	21 25	5·4
22	190	290	70	105	—	—	—	—	—	—	—	1	0	518	14 25	491	10 13	27	53·5	12 43	47·4	20 30	6·1
23	45	145	170	−205	—	—	—	—	—	—	—	1	1	512	14 11	479	19 55	33	54·6	17 32	47·4	21 26	7·2
24	35	400	240	255	—	—	—	—	—	—	—	1	1	518	0 53	474	21 8	**44**	54·6	13 39	44·0	21 5	10·6
25	—	255	250	335	—	—	—	—	—	—	—	0	1	517	1 8	480	2 20	37	56·0	12 37	47·3	2 10	8·7
26	275	395	190	220	—	—	—	—	—	—	—	1	1	511	6 40	**468**	**11 15**	43	**56·7**	**12 7**	44·8	3 42	11·9
27	75	205	—	215	—	—	—	—	—	—	—	0	0	503	22 22	485	3 30	18	53·3	12 0	48·9	22 50	4·4
28	70	240	205	255	—	—	—	—	—	—	—	0	0	506	6 54	490	19 9	**16**	52·4	13 10	47·2	19 10	5·2
29	105	250	205	265	—	—	—	—	—	—	—	1	0	514	20 53	475	11 46	39	54·2	12 58	47·8	22 19	6·4
M.	178	393	246	276	—	—	—	—	—	—	—	—	—	515	—	487	—	28	53·5	—	46·1	—	7·4

* No record—jet frozen.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·4 till Feb. 7th. then 5·5.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	North Component.					West Component.					Vertical Component. §				
														Maximum. 15000 γ +.		Minimum. 15000 γ +.			Maximum. 5000 γ +.		Minimum. 5000 γ +.			Maximum. 45000 γ +.		Minimum. 45000 γ +.		
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.			h m	γ	γ	h m		h m	γ	γ	h m		h m	γ	γ	h m	
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².																		
1	318	318	405	—	—	—	—	—	—	—	—	1 *a*	0	23 17	1033	1004	10 56		12 52	258	227	22 28		0 0	333	327	8 30	
2	—	—	—	902	—	—	—	—	—	—	—	—	1	7 40	1029	998	18 17		13 34	262	209	22 31		22 40	340	324	8 30	
3	—	—	—	—	—	—	—	—	—	—	—	—	1	7 48	1030	999	16 7		14 0	259	231	16 27		16 30	338	325	7 50	
4	—	—	—	—	—	—	—	—	—	—	—	—	1	12 56	1028	999	16 39		12 12	261	228	2 53		17 0	334	322	11 30	
5	—	—	445	—	—	—	—	—	—	—	—	—	0	14 7	1029	1011	0 18		14 7	252	232	0 21		1 35	333	325	10 40	
6	—	—	—	*x*	—	—	—	—	—	—	—	—	0	13 42	1034	1015	5 5		13 46	255	**236**	24 0		24 0	330	324	**13** 10	
7	*x*	397	−418	*x*	—	—	—	—	—	—	—	2 *c*	0	21 23	1027	1007	18 35		13 25	256	220	22 48		22 55	334	327	8 20	
8	295	271	707	171	—	—	—	—	—	—	—	1 *b*	1	6 50	1033	1005	10 0		12 4	265	219	3 46		22 0	338	326	8 **30**	
9	324	471	147	*x*	—	—	—	—	—	—	—	1 *b*	0	22 52	1030	1012	8 45		1 53	257	227	6 10		23 30	333	327	11 **30**	
10	*x*	277	188	689	—	—	—	—	—	—	—	1 *b*	1	4 20	1035	995	22 55		**13 45**	**276**	217	24 0		22 38	337	323	5 20	
11	159	300	342	−12	—	—	—	—	—	—	—	1 *a*	1	13 36	1022	997	14 26		9 36	257	206	0 20		20 10	330	322	11 0	
12	12	112	194	277	—	—	—	—	—	—	—	1 *a*	1	19 6	1040	987	20 14		12 19	266	212	19 20		**20 43**	**344**	320	10 50	
13	147	147	230	536	—	—	—	—	—	—	—	1 *a*	1	22 47	1027	987	14 18		8 25	262	**182**	**17 34**		17 50	341	323	8 45	
14	59	236	259	324	—	—	—	—	—	—	—	1 *a*	0	23 25	1032	1002	13 6		12 44	251	227	24 0		19 23	336	329	11 30	
15	147	306	271	342	—	—	—	—	—	—	—	1 *b*	0	20 36	1029	1002	10 9		13 0	257	224	20 41		20 50	332	323	10 **30**	
16	401	318	342	−247	—	—	—	—	—	—	—	1 *b*	1	19 37	1036	1001	19 18		13 0	261	203	19 33		19 22	335	320	13 0	
17	183	577	424	424	—	—	—	—	—	—	—	0 *a*	1	20 26	1040	981	1 23		12 10	262	188	20 12		20 22	333	309	2 15	
18	224	247	−783	159	—	—	—	—	—	—	—	1 *b*	1	3 24	1033	1007	10 13		2 41	259	216	3 32		16 30	334	319	3 15	
19	395	−118	212	−830	—	—	—	—	—	—	—	1 *b*	1	5 57	1024	1005	11 13		13 12	256	228	5 31		2 20	329	320	12 50	
20	−2144	177	312	560	—	—	—	—	—	—	—	2 *b*	0	19 41	1021	1006	11 0		12 20	256	220	22 11		22 30	325	311	12 22	
21	188	436	318	230	—	—	—	—	—	—	—	0 *a*	0	20 22	1031	1007	11 10		13 20	257	230	20 32		0 30	325	315	13 50	
22	318	159	−465	324	—	—	—	—	—	—	—	1 *b*	0	20 30	1028	1007	11 0		13 16	255	214	20 31		20 50	320	311	13 50	
23	218	94	*x*	147	—	—	—	—	—	—	—	1 *b*	1	4 42	1028	990	19 53		17 29	264	213	21 52		20 0	334	312	10 30	
24	230	348	218	459	—	—	—	—	—	—	—	0 *a*	1	**20 22**	**1062**	994	21 7		12 22	263	195	21 8		20 11	328	309	12 20	
25	94	342	259	241	—	—	—	—	—	—	—	1 *b*	1	1 5	1045	1006	11 6		12 38	266	214	2 12		19 45	323	304	1 30	
26	100	118	124	141	—	—	—	—	—	—	—	1 *b*	2	6 12	1037	**979**	**11 8**		12 5	273	201	4 33		21 25	325	**299**	**9 8**	
27	47	−35	118	77	—	—	—	—	—	—	—	1 *c*	1	22 19	1027	1002	11 16		12 3	249	229	22 50		22 0	321	313	11 0	
28	130	130	59	112	—	—	—	—	—	—	—	1 *a*	1	6 56	1022	1005	10 40		14 55	247	215	19 8		19 10	323	315	12 0	
29	−795	29	71	59	—	—	—	—	—	—	—	1 *c*	1	20 45	1044	997	11 34		12 55	252	215	22 15		16 0	321	312	12 10	
M.	10	216	168	176	—	—	—	—	—	—	—	—	—	—	1032	1000	—		—	259	216	—		—	331	318	—	

x Indeterminate.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument.

An explanation of the Headings of the columns is given in the Preface. The final values adopted will be published in the annual volume.

7. **Tables of Wind Components in metres per second at fixed hours,** together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	5·8	2·2	...	...	5·4	3·6	...	...	6·7	6·7	...	...	8·5	...	5·8	15·7	15	50
2	...	12·1	2·2	...	...	15·2	...	6·3	...	7·6	...	11·6	...	3·1	...	3·1	25·5	11	30
3	...	4·9	7·2	...	...	6·3	...	4·0	...	4·0	...	4·0	...	1·3	...	6·7	16·5	2	55
4	...	...	...	8·1	...	...	...	9·8	...	2·2	...	12·1	...	...	...	4·9	18·8	10	55
5	1·3	...	...	5·8	...	...	...	11·6	...	...	...	10·3	...	...	...	7·2	15·7	9	40
6	...	...	...	5·4	0·5	...	...	3·1	3·1	...	...	3·1	6·7	...	...	2·7	10·7	22	15
7	5·4	...	3·6	...	6·3	...	...	2·7	14·8	...	...	6·3	11·2	...	...	4·5	25·5	15	30
8	0·9	...	...	4·9	...	...	...	7·2	3·1	...	...	4·9	7·6	...	...	3·1	12·5	20	35
9	1·8	...	...	4·0	6·3	...	...	6·3	7·6	...	...	3·1	6·7	...	...	1·3	13·9	9	35
10	4·5	...	...	...	2·7	...	3·6	...	3·6	...	...	...	...	...	...	7·2	14·3	4	10
11	...	2·2	..	10·7	...	3·1	...	14·8	...	2·2	...	10·7	..	1·8	...	8·1	21·0	9	0
12	...	3·1	...	8·1	...	5·8	...	8·9	...	5·8	...	8·9	...	7·2	...	7·2	17·0	13	0
13	...	8·1	...	3·6	...	8·9	...	...	...	4·0	...	...	...	0·9	...	...	12·1	7	0
14	...	0·5	1·3	...	...	0·9	2·2	...	3·1	...	...	...	2·2	...	...	2·2	6·3	22	30
15	5·4	...	...	3·6	9·8	...	...	1·8	8·5	...	...	1·8	5·4	...	2·2	...	18·8	10	15
16	4·0	...	...	0·9	6·3	...	...	2·7	9·4	...	...	...	8·5	...	...	...	18·3	14	5
17	5·4	...	0·9	...	4·5	...	0·9	...	3·1	...	...	0·5	1·8	...	...	0·5	12·1	0	30
18	...	1·3	...	3·1	...	3·6	...	5·4	...	5·4	...	7·6	1·8	...	...	0·5	14·8	13	10
19	4·0	...	...	2·7	5·8	...	...	5·8	6·3	...	...	2·7	4·0	...	...	2·7	13·4	12	15
20	...	4·9	4·9	...	...	4·9	12·1	...	...	2·7	6·7	...	...	...	2·7	...	19·2	6	40
21	...	...	1·8	...	0·9	...	...	4·5	5·4	...	...	0·9	4·0	...	...	1·8	9·8	23	45
22	7·2	...	...	3·1	8·1	...	...	3·1	10·3	...	1·8	...	8·1	...	...	...	17·0	12	45
23	9·8	...	...	...	7·6	...	5·4	...	3·1	...	3·1	...	2·2	...	2·2	...	18·8	4	40
24	0·5	...	0·9	...	3·6	...	1·3	...	4·0	...	...	0·9	1·8	...	...	2·7	8·1	22	55
25	5·8	...	...	...	...	2·2	5·4	...	5·4	...	3·6	...	4·9	...	2·2	...	11·6	6	50
26	6·7	...	1·3	...	9·4	...	...	...	8·9	...	3·6	...	8·1	...	3·1	...	17·4	11	55
27	12·1	...	8·1	...	5·8	...	5·8	...	8·9	...	3·6	...	7·6	...	5·4	...	25·0	4	25
28	7·6	...	3·1	...	10·7	...	...	...	9·8	...	...	...	10·7	...	...	2·2	21·5	23	25
29	11·6	...	...	...	8·5	...	3·6	...	10·3	...	1·8	...	8·5	...	3·6	...	19·7	4	5
S+N & W+E	136·9		101·5		153·1		141·9		169·3		120·3		134·6		95·8				
S−N & W−E	51·1		−26·5		40·5		−54·1		88·1		−58·5		89·0		−53·0				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	...	12·1	4·9	...	...	14·8	3·1	...	...	9·8	...	6·7	...	2·7	...	13·9	19·2	20
2	...	...	...	5·4	...	4·9	4·9	...	...	4·9	...	2·2	...	...	...	9·4	12·1	23
3	...	1·3	...	7·2	...	4·0	...	0·9	*	*	*	*	...	3·6	1·3	...	10·3	1
4	...	1·8	0·5	...	...	0·5	2·2	...	...	0·9	4·5	...	1·3	...	3·1	...	4·9	14
5	2·2	...	3·1	...	2·2	...	2·2	...	11·2	...	...	2·2	8·5	...	...	5·8	12·5	17
6	10·3	...	...	4·5	12·1	...	...	4·9	11·6	...	...	7·6	12·5	...	...	4·9	13·9	15
7	8·9	...	...	8·9	7·2	...	...	...	8·1	...	1·8	...	13·9	...	...	5·8	15·7	19
8	11·2	...	...	2·2	9·4	...	1·8	...	8·9	...	...	5·8	7·2	...	...	10·3	13·0	1
9	8·5	...	...	1·8	7·6	...	5·8	...	7·6	...	...	7·6	6·3	...	...	4·0	11·2	14
10	8·9	...	...	1·8	6·3	...	...	4·0	7·6	...	...	5·8	0·9	...	...	0·0	10·3	1
11	...	0·0	0·9	...	...	0·0	0·9	...	...	0·9	0·0	...	4·9	...	...	0·9	5·8	18
12	1·8	...	...	2·7	1·8	...	...	2·7	2·7	...	...	3·6	2·2	...	...	5·8	6·3	18, 21
13	2·2	...	...	4·9	4·0	...	...	4·0	3·6	...	...	2·7	4·9	...	...	3·1	6·3	2
14	5·4	...	...	3·6	4·5	...	...	0·9	4·5	...	0·9	...	6·3	...	...	...	6·7	5, 23
15	8·1	...	...	...	9·8	...	...	1·8	13·9	...	...	5·8	10·3	...	...	...	15·2	15
16	2·7	...	3·0	...	...	2·7	1·8	...	2·2	...	5·8	...	10·7	...	...	4·5	12·5	23
17	10·3	...	...	...	9·4	...	1·8	...	4·9	...	2·2	...	6·3	...	2·7	...	11·2	5
18	7·2	...	4·9	...	5·4	...	3·6	...	...	...	6·7	...	...	...	0·9	...	7·2	11
19	...	3·1	...	3·1	...	4·5	...	10·3	...	6·7	...	9·8	...	1·3	...	3·1	13·0	12
20	...	0·0	...	0·9	1·3	...	...	0·9	...	2·7	...	1·3	...	1·3	...	2·7	3·6	5
21	...	0·9	...	2·2	...	0·5	...	1·3	1·8	...	...	1·8	8·9	...	...	1·8	9·4	23
22	8·5	...	...	1·8	7·6	...	...	1·3	8·9	...	...	8·9	9·8	...	...	4·0	14·3	17
23	6·7	...	...	...	5·4	...	...	...	2·7	...	...	1·3	...	5·8	13·4	...	17·9	19
24	...	1·8	9·4	...	1·8	...	8·5	...	2·2	...	5·4	...	1·3	...	2·2	...	10·3	1
25	1·3	...	0·9	...	5·4	...	2·2	...	8·1	...	3·1	...	8·5	...	5·8	...	10·7	20
26	4·9	...	4·9	...	7·2	...	4·9	...	8·9	...	...	...	5·4	...	5·4	...	9·4	19
27	4·9	...	3·1	...	4·0	...	4·0	...	...	2·2	11·6	...	...	0·5	1·3	...	13·0	12
28	0·9	...	1·8	...	8·9	...	...	3·6	1·8	...	8·1	...	7·6	...	1·3	...	12·1	10
29	10·3	...	...	...	9·4	...	1·8	...	4·5	...	6·7	...	9·4	...	4·0	...	11·6	6
S+N & W+E	146·2		88·4		162·6		86·1		143·8		129·9		162·3		121·4			
S−N & W−E	104·2		−13·6		98·6		12·9		97·6		−16·3		131·9		−38·6			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	2·7	...	...	6·7	5·4	...	...	5·4	...	...	...	5·8	...	3·6	...	8·5	13·0	23	35
2	...	2·7	...	6·7	...	7·6	...	7·6	...	8·1	...	5·4	...	1·8	...	10·3	17·0	13	55
3	1·3	...	...	6·3	...	...	...	5·8	1·3	...	...	6·3	1·8	...	...	10·3	16·5	22	35
4	4·9	...	...	12·1	2·7	...	...	14·3	9·4	...	...	13·9	9·8	...	...	14·8	24·1	22	50
5	9·8	...	...	14·8	5·8	...	...	13·4	7·2	...	...	7·2	5·4	...	0·9	...	23·7	3	30
6	6·3	...	...	2·7	4·0	...	1·8	...	3·6	...	...	...	8·9	...	1·8	...	16·1	16	50
7	8·1	...	...	1·8	17·0	...	...	7·2	13·9	...	...	2·7	7·6	...	...	5·4	26·0	11	10
8	7·2	...	...	10·7	9·4	...	...	4·0	9·8	...	...	1·8	13·0	...	...	2·7	20·6	20	10
9	11·2	...	...	4·5	7·2	...	...	...	8·1	...	3·6	...	2·2	...	11·2	...	24·6	19	5
10	2·7	...	4·0	...	1·3	...	...	6·3	...	...	...	14·8	4·0	...	...	20·6	28·2	20	10
11	2·7	...	...	14·3	12·1	...	...	2·2	6·3	...	...	6·3	3·6	...	...	5·4	24·1	4	55
12	1·8	...	...	9·8	...	3·1	...	4·9	...	7·6	5·4	...	...	7·6	5·4	...	14·3	3	25
13	...	6·3	4·0	...	...	4·9	3·1	...	...	3·1	1·8	...	...	0·9	0·5	...	10·7	0	20
14	...	2·2	1·3	...	4·9	...	...	4·9	6·3	...	...	4·0	8·9	...	...	5·8	14·3	22·40,	22·50
15	9·8	...	...	1·8	6·7	...	...	...	2·7	...	4·0	...	2·2	...	0·9	...	13·4	0	50
16	6·7	...	...	2·7	11·2	...	...	4·5	9·8	...	...	1·8	3·6	...	...	...	17·0	11	5
17	3·1	...	1·3	...	3·1	...	...	1·3	4·5	...	...	0·9	4·5	...	...	0·9	8·5	18	0
18	2·7	...	...	1·8	2·7	...	...	6·7	5·8	...	...	5·8	11·2	...	...	2·2	21·0	23	35
19	15·7	...	...	...	5·8	...	8·5	...	...	3·1	16·1	...	...	8·1	19·7	...	27·7	17	55
20	...	6·7	16·1	...	...	4·9	7·6	...	1·8	...	1·3	...	6·3	...	...	6·3	24·1	0	5
21	2·7	...	6·7	...	3·6	...	3·6	...	5·4	...	0·9	...	6·3	...	4·0	...	12·1	19	35
22	8·5	...	1·8	...	11·2	...	2·2	...	7·6	...	4·9	...	8·5	...	3·6	...	15·7	10	30
23	10·3	...	4·5	...	6·7	...	2·7	...	...	3·1	...	1·8	...	0·5	...	0·0	15·7	2	50
24	0·0	0·0	0·0	0·0	2·7	...	...	2·7	4·9	...	...	...	6·3	...	...	...	17·9	23	55
25	...	7·2	10·7	...	...	3·1	4·5	...	...	...	3·6	...	4·0	...	2·7	...	19·7	0	20
26	8·9	...	...	1·3	8·9	...	5·8	...	3·1	...	8·1	...	5·4	...	8·1	...	16·5	23	35
27	2·2	...	12·1	...	4·0	...	5·8	...	8·1	...	3·1	...	7·2	...	4·9	...	15·2	3	15
28	8·9	...	3·6	...	8·1	...	...	1·8	10·7	...	...	2·2	14·8	...	3·1	...	19·7	20	50
29	11·2	...	11·2	...	5·4	...	5·4	...	6·3	...	6·3	...	8·5	...	1·8	...	20·1	2	50
S+N & W+E	174·5		175·8		173·5		144·0		161·6		139·8		176·5		161·8				
S−N & W−E	124·3		−21·2		126·3		−42·0		111·6		−21·6		131·5		−24·6				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	0·9	4·0	...	...	...	3·1	...	...	...	4·0	...	...	1·8	3·1	...	9·8	17	5
2	...	2·2	2·2	...	...	...	3·1	...	...	8·5	...	12·5	...	7·6	...	4·9	20·6	11	35
3	...	...	4·0	...	...	...	5·4	...	...	1·3	7·2	...	...	6·7	...	16·5	23·3	18	45
4	...	2·7	...	13·9	...	...	...	14·3	...	...	...	11·2	...	...	...	10·3	18·3	0	50
5	12·5	...	...	2·7	...	...	...	12·5	2·7	...	...	13·4	2·2	...	...	12·1	16·5	4	15
6	1·8	...	...	1·8	0·5	...	1·3	...	1·8	...	...	1·8	2·2	...	...	0·9	11·6	0	15
7	1·8	...	...	...	1·8	...	1·8	...	4·9	...	...	0·9	6·7	...	...	...	12·5	15	5
8	4·9	...	...	2·2	4·9	...	...	2·2	4·9	...	...	2·2	4·5	...	...	...	18·8	16	15
9	...	...	...	0·9	4·5	...	...	1·8	4·5	...	...	1·8	5·4	...	...	...	14·3	21	15
10	4·5	...	...	...	3·1	...	...	...	3·1	...	...	...	4·5	...	..	3·1	11·6	4	10
11	...	...	...	7·2	1·8	...	...	4·0	1·8	...	...	4·0	2·2	...	...	0·9	9·8	5	50
12	3·1	...	...	4·5	3·1	...	...	7·2	4·5	...	...	...	4·9	...	...	c·9	10·7	14	45
13	4·5	...	...	0·9	4·5	...	...	4·5	2·7	...	...	3·6	...	...	...	4·9	11·2	0	45
14	...	4·0	...	4·0	...	3·6	...	2·7	...	4·0	...	1·8	...	3·1	...	0·5	10·3	6	45
15	...	2·2	...	0·5	...	0·9	...	0·0	3·1	...	...	3·1	4·0	...	...	0·9	10·7	18	40
16	2·7	...	2·7	...	1·3	...	1·3	...	4·5	...	...	...	3·1	...	...	...	10·3	22	15
17	4·0	...	...	1·8	2·7	...	0·5	...	3·6	...	...	...	1·8	...	...	...	8·1	3	10
18	2·7	...	...	...	2·7	...	...	..	4·0	...	...	...	2·2	...	...	1·3	7·6	15	5
19	2·7	...	...	0·5	3·1	...	...	...	4·5	...	...	0·9	4·5	...	...	0·9	10·3	23	40
20	4·9	...	...	...	2·2	...	2·2	...	...	1·3	7·2	...	...	...	5·4	...	13·9	14	40
21	...	...	3·6	...	...	0·5	3·1	...	4·0	...	...	...	2·7	...	...	...	7·6	15	15
22	3·1	...	...	...	5·4	...	...	...	4·9	...	...	0·9	3·1	...	3·1	...	13·0	18	5
23	4·5	...	4·5	...	2·2	...	1·3	...	4·0	...	2·7	...	...	...	2·2	...	13·4	12	20
24	...	0·9	0·5	...	...	1·8	1·8	...	...	1·8	..	...	0·5	...	...	1·3	6·7	0	50
25	0·9	...	...	1·8	1·8	...	...	1·8	1·8	...	...	0·5	2·2	...	...	0·5	7·2	10	40
26	1·3	...	1·3	...	2·2	...	2·2	...	5·4	...	2·2	...	4·0	...	4·0	...	13·4	12	10
27	4·9	...	2·2	...	1·8	...	10·2	...	0·9	...	5·4	...	4·0	...	4·0	...	17·9	8	30
28	4·5	...	6·7	...	2·7	...	4·0	...	4·5	...	1·8	...	4·9	...	...	2·2	16·1	21	55
29	5·8	...	...	1·3	5·4	...	...	...	3·1	...	3·1	...	3·6	...	2·7	...	14·3	11	20
S+N & W+E	88·0		75·7		64·5		92·3		96·1		92·2		92·4		86·6				
S−N & W−E	62·2		−12·3		50·9		−9·7		62·3		−25·0		54·0		−37·6				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time. * No record. † Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.
‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8. § Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

BRIGHTON. **K.** 6. February 11. 10 h. 0 m. to 12 h. 20 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
Greatest height	...	...	...	...	...	...	...	...	Clear sky overhead, little Ci. St. E. and N. horizons. Wind gradually decreasing above 533 m.
	1000	...	274·6	...	80	5·5	240	10	
	500	...	277	5·2	90	7·3	210	15	
100 m. above ground	215	...	279·6	9·1	90	8·7	180	17	
Ground level	115	...	281·6	20	90	10·0	180	7	
Computed for M.S.L.	0	...	...	...	...	...	165	17·8	...

BRIGHTON. **K.** 7. February 15. 10 h. 45 m. to 12 h. 50 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
1100	...	273	...	60	3·7	250	14	A little Fr. St., afterwards clear sky.
1000	...	...	...	...	...	...	...	
500	...	273·5	...	100	6·3	180	12	
215	...	275·8	8·1	85	6·3	180	10	
115	...	279·8	4·0	82	8·1	180	6·7	
0	...	...	...	...	...	?	?	...

BRIGHTON. **K.** 8. February 17. 11 h. 30 m. to 12 h. 45 m. G.M.T.

Greatest height	...	...	...	...	...	...	...	...	...	A little Ci. St. Wind veered rapidly above 100 m. Lowest temp. 280·3, at about 250 m.
	1000	...	?	...	?	?	...	220	13	
	500	...	284	...	43	5·6	...	200	13	
	215	...	?	...	?	?	...	?	?	
Ground level	115	...	282·5	...	73	8·6	...	130	4·5	
Computed for M.S.L.	0	...	...	...	...	...	...	205	8·7	...

BRIGHTON. **K.** 9. February 18. 11 h. 40 m. to 13 h. 30 m. G.M.T.

...	...	...	...	...	...	...	...	...	Overcast St., no clouds reached. Clear sky followed.
1000	...	287	...	40	6·3	...	200	15	
500	...	?	...	?	?	...	?	?	
215	...	?	...	?	?	...	?	?	
115	...	284	...	74	9·6	...	120	6	
0	...	...	...	...	...	...	180	8·8	...

BRIGHTON. **K.** 10. February 25. 10 h. 0 m. to 11 h. 30 m. G.M.T.

Greatest height	700	...	277	...	100	8·1	...	240	...	Overcast St., lowest about 100 m. Wind steady, never exceeding 6·7 m.p.s
	1000	...	...	...	...	...	...	...	...	
	500	...	278	...	100	8·7	...	240	...	
	215	...	?	...	94	?	...	240	...	
Ground level	115	...	282	...	94	10 7	...	240	5·8	
Computed for M.S.L.	0	...	...	...	...	...	...	225	8·4	...

BRIGHTON. **K.** 11. February 29. 11 h. 0 m. G.M.T.

185	...	280·2	...	82	8·3	...	240	19	Overcast St. Ascent abandoned owing to excessive pull of kite.
1000	...	...	...	...	...	...	...	...	
500	...	...	...	...	...	...	...	...	
215	...	...	...	...	...	...	...	...	
115	...	281·8	...	82	9·2	...	210	9	
0	...	...	...	...	...	...	220	21·6	...

ABERDEEN. **P.** 4. February 7. 11 h. 17 m.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	
Greatest height	1230	...	...	...	...	Two theodolites to 750 m. Results at 1000 m. estimated from observations at one Station.
	1250	...	...	...	...	
	1000	219	26·0	+16·4	+20·3	
	750	216	17·0	+10·0	+13·8	
	500	220	13·0	+ 8·3	+10·0	
	250	218	11·0	+ 6·8	+ 8·7	
100 m. above ground	130	213	6·3	+ 3·4	+ 5·3	Balloon disappeared at 1230 m. in high mist. Uniform A. St. above.
Ground level	30	200	2·2	+ 0·7	+ 2·1	
Computed for M.S.L.	0	204	17·8	+ 7·3	+16·3	Two theodolites. Base 920 m. at 15°. Lift 60·5 gr.

P. 5. February 21. 11 h. 27 m.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	
1500	179	12·2	−0·2	+12·2	Balloon lost in high haze. St. Cu. above from about 180°.
1250	181	6·6	+0·1	+ 6·6	
1000	194	5·9	+1·4	+ 5·7	
750	197	6·4	+1·9	+ 6·1	
500	183	4·8	+0·2	+ 4·8	
250	157	3·8	−1·5	+ 3·5	
130	150	4·5	−2·3	+ 3·9	
30	160	2·6	−0·9	+ 2·4	
0	?	?	...	...	Two theodolites. Base 810 m. at 43° 45′. Lift 55 gr.

P. 6. February 23. 11 h. 10 m.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	
...	...	...	...	...	Balloon lost in Ni. St. cloud at 500 m. to 600 m.
1250	...	...	...	...	
1000	...	...	...	...	
750	...	...	...	...	
500	183	19·6	+1·0	+19·6	
250	172	13·0	−1·8	+12·9	
130	...	...	...	...	
30	160	7·9	−2·7	+ 7·4	
0	203	19·4	+7·6	+17·6	Two theodolites. Base 810 m. at 43° 45′. Lift 47 gr.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

1912. February 1. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	16·6 km.	89 mb.	220° A.
Lowest Temperature	11·5 km.	...	213° A.
Base of Stratosphere	11·5 km.	...	213° A.
* Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	756·4 mb.	751·6 mb.
Temperature,	2·2 °A.	0·6 °A.
Vapour Pressure,	0·15 mb.	0·11 mb.
Gradient Wind :—Direction,	330°.	0°.
Velocity,	8·5 m/s.	13·9 m/s.
Correction for Curvature,	− ·3 m/s.	0 m/s.
Final Components, W. to E.	+4·3 m/s.	0 m/s.
Final Components, S. to N.	−7·4 m/s.	−13·9 m/s.

Sounding No., R. 1.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 38 m.
Place of Fall, Sacombe Park, Ware, Herts.
Distance, and Orientation, . . . 232 km. 140°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
16	96	220				
15	100		+0·5			
15	115	219·5				
14	136	219	+0·5			
13	159	217	+ 2			
12	186	215	+ 2			
11	200		0			
11	217	215				
10	257	222·5				
9						Pen not marking.
8						
7						
6						
5						
4·5						
4						
3·5						
3						
2·5						
2						
1·5						
1						
Ground M.S.L.	1003 —	272 —				

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A. = 0° C.).
Heights are given in kilometers (km.).

*Base of Stratosphere.—Type 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
Type 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given.
Type 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

MARCH 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 4*d.*

Second Year.—No. 3. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	6	3·0		3rd, Small disturbance 21 h. 32 m.
2	5-6	1·9		
3	5-6	1·1	I.	5th Iu, P uncertain, S=1 h. 34 m. 31 s., L=1 h. 38 m.
4	5	1·0		
5	5-6	1·4	Iu.	8th I, Trace of disturbance 2 h. 15 m. I, Disturbed 15 h. 18 m.-15 h. 32 m.
6	5-6	1·5		
7	6	1·0		11th Iu, Probably two shocks. P=10 h. 28 m. 18 s., S=10 h. 36 m. 58 s., Δ=7250 kms., and P=10 h. 32 m. 18 s., S=10 h.
8	6	1·6	I, I.	40 m. 53 s., Δ=7120 kms., α nearly true north. Epicentre 60° N., 177° E. I, Long waves 12 h. 49 m.-13 h. 26 m. I, P?=15 h. 58 m. 14 s. Long waves 16 h. 29 m.-17 h. 5 m.
9	5-6	1·5		
10	4-5	1·1		13th I, Long waves 20 h. 18 m.-21 h. 25 m.
11	4-5	0·5	Iu, I, I.	
12	4-5	1·0		14th I, S=7 h. 9 m. 41 s., L=7 h. 21 m.
13	4-5	0·6	I.	
14	6	1·6	I.	16th I, Disturbed 14 h. 29 m.-15 h. 33 m.
15	6-7	1·9		
16	5	1·4	I.	18th I, A few long waves at 0 h.
17	5-6	1·9		
18	5	1·9	I.	22nd Iu, S=1 h. 39 m., L=1 h. 45 m. I, L=5 h. 25 m. I, L=18 h. 54 m.
19	5	2·0		
20	5-6	1·7		23rd I, Small disturbance 8 h. 51 m.
21	4-5	1·4		
22	4	1·2	Iu, I, I.	24th Iu, S=12 h. 41 m. 46 s., L=13 h. 2 m.
23	4-5	0·8	I.	
24	5	1·0	Iu.	25th I, Disturbed 5 h.-6 h. 30 m. Seismogram much confused by microseisms.
25	5-6	1·1	I.	
26	4-5	1·0		*Note.*—Records all much confused by wind effects and microseisms.
27	4-5	0·8		
28	5-6	1·9		
29	6-7	2·3		An explanation of the notation used is given in the preface.
30	5	1·4		
31	5	1·2		

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H=9·2 m. Barometer Cistern, H_b=13·7 m.

Heights above Ground:—Thermometers, h_t=1·2 m. Rain-gauge, h_r=0·6 m. Sunshine Recorder, h_s=12·8 m. Cups of Anemometer, h_a=13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
			200+	200+	200+	200+									Tenths of Sky covered.							
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		γ.	° ′	° ′
1	985·0	995·9	83·4	81·2	84	81	11·5	9·2	92	84	15	8	21	5	7	4	3·8	0·6	Showery and misty.	...	...	...
2	988·0	983·4	83·0	80·6	83	79	10·9	9·8	89	95	15	8	22	9	10	10●	9·4	0·2	⌈ 11 h.-11 h. 30 m. ▲● showers.	...	...	...
3	993·4	1000·9	81·0	79·2	83	79	8·8	7·8	83	82	24	7	21	5	5	3	16·3	4·6	Misty *a*. Unsettled *p*.	...	...	...
4	979·1	981·7	81·3	81·4	83	79	9·5	10·2	88	93	19	7	25	12	9≡0	10≡0	10·4	0·2	⌈▲ 7 h. 30 m.-8 h. Frequent	...	...	...
5	990·9	993·9	78·8	79·5	81	78	8·8	7·5	95	77	18	2	26	5	10≡0	2	1·5	—	●▲ showers *a*. [●2 showers.	...	...	...
6	1000·5	1009·9	75·9	79·7	82	*n* 75	6·8	7·8	91	78	—	0	26	5	7	7	3·6	5·8	▲⌣ *a*. Visibility.	...	...	...
7	1013·0	1000·6	78·5	81·0	82	76	7·8	9·2	84	88	21	4	15	9	6	10	16·8	4·4	▲ *a*. ▲●2 from 22 h. 30 m.	17898	20 32·3	68 10·7
8	992·2	992·7	80·7	79·0	82	77	8·5	7·5	81	81	19	6	17	5	7	3	6·9	6·2	▲● showers till 3 h. Showery.	...	...	...
9	991·7	992·2	79·3	79·4	83	77	8·2	8·5	85	88	16	4	14	9	6	10≡0●	13·5	6·0	⌈▲ *n*. Visibility.	...	...	...
10	998·7	1006·5	80·4	78·7	84	77	9·8	8·8	95	95	20	3	—	1	9	*1*	0·3	2·5	Frequent showers.	...	...	...
11	1015·3	1021·3	78·8	79·3	83	76	8·8	9·2	96	95	—	0	—	1	6≡0	*0*	0·3	8·4	⌣ *a*. Visibility.	...	...	...
12	1020·1	1015·2	82·1	83·3	83	80	9·5	12·2	83	97	16	6	20	6	10≡0	*10*≡0	9·7	—	Gloomy. ●0 11 h.-20 h.	...	...	...
13	1016·5	1012·2	83·1	83·1	84	82	12·2	12·2	100	99	17	3	15	4	10≡	*10*≡0	4·6	1·9	Intermittent ●0 18 h.-23 h.	...	...	...
14	1011·2	1007·1	81·5	78·5	83	78	10·5	8·2	95	92	20	4	19	2	8	*8*	3·3	5·1	Showery *a*. ▲ *p*.	...	...	...
15	1009·1	1011·5	78·7	78·7	81	76	6·5	8·2	70	90	26	7	22	2	7	*7*	8·4	7·8	▲ showers. Visibility.	...	...	...
16	1000·2	991·8	81·0	79·9	85	79	10·2	9·2	95	93	15	7	17	2	10≡0●	*3*	12·4	0·8	Frequent ● showers *a*.	...	...	...
17	985·6	978·6	79·3	78·2	82	78	9·2	7·8	98	88	—	1	15	5	8	*10*	4·6	2·1	Showery.	...	...	...
18	978·0	981·9	78·8	79·5	82	77	8·2	7·5	88	77	—	0	25	12	3	*10*	3·3	4·6	Fine *a*. Visibility. Showery *p*.	...	...	...
19	986·7	992·9	78·9	78·1	81	76	6·5	6·8	70	77	26	6	24	11	5	*3*	2·0	6·2	▲ showers *a*. Visibility.	...	...	...
20	993·1	982·1	76·8	79·5	82	*n* 75	6·8	8·8	84	91	25	3	13	10	5	*10*●	9·1	5·0	▲ showers *n*. and *a*. ● late *p*.	...	...	...
21	969·4	983·0	79·8	81·0	83	78	8·8	7·8	90	75	6	2	26	12	7	*3*	1·0	5·5	Fair; visibility.	17899	20 30·5	68 9·9
22	993·8	1004·9	80·6	79·6	82	79	*8·2*	8·8	77	90	27	10	—	1	7	*3*	10·2	6·0	Squally; fair.	...	...	...
23	996·2	992·2	82·1	83·1	84	79	10·2	9·8	88	81	21	9	21	16	7	*9*	3·6	4·0	● 0 h.-4 h. Visibility.	...	...	...
24	999·4	1004·8	81·7	83·7	*x* 86	81	10·5	11·9	94	93	16	5	18	5	10≡0●	*9*	1·5	—	Dull and misty.	...	...	...
25	1007·6	1010·4	84·0	83·0	85	83	12·9	12·2	98	99	16	5	15	7	10≡0●0	*10*	9·4	—	Heavy mist. ●0 from 13 h. 30 m.	...	...	...
26	1011·4	1015·7	83·4	81·8	83	81	11·9	10·2	94	91	16	9	21	8	10≡0	*2*	0·8	—	●0 till 3 h. Gloomy.	...	...	...
27	1018·6	1016·7	82·8	83·1	84	81	10·2	11·9	85	97	20	6	20	8	10	*10*	4·3	0·2	Visibility *a*. Misty *p*.	...	...	...
28	1021·3	1025·7	82·1	80·7	83	80	9·2	7·8	80	75	27	5	25	7	8	*5*	0·5	8·3	Fine; visibility.	...	...	...
29	1026·8	1023·3	81·0	81·1	84	80	7·8	9·5	73	90	22	8	22	8	9	*8*	2·3	2·8	Visibility.	...	...	...
30	1021·0	1013·1	82·0	81·0	84	80	8·5	9·2	76	86	24	7	21	5	7≡0	*10*	9·1	1·3	Misty.	...	...	...
31	997·5	1005·4	79·2	79·8	81	78	7·8	7·1	84	71	25	10	1	13	3	8	1·8	3·8	Clearing quickly *a*. Squally *p*.	...	...	...
Means	1000·4	1001·5	80·6	80·5	83·0	78·5	9·2	9·1	87	87		5·1		6·7	7·6	6·5	184·7	3·36	Monthly **Totals** or **Means**.	17899	20 31·4	68 10·3
Normal 40 years	1011·8	1012·1	80·0	80·1	83·4 (35 years)	77·4 (35 years)	8·5 (25 years)	8·5 (25 years)	85 (25 years)	85 (25 years)		5·6 (30 years)		5·6 (30 years)	—	—	108·1	4·01 (30 yrs)	**Normals**, 40 years.			

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Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity.				Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
							Vapour Pressure.		Percentage.														
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
			200 +	200 +	200 +	200 +														200 +	200 +	200 +	
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		°	°	°	
1	1009·1	1000·9	82·2	83·7	84	82	10·2	10·9	89	84	16	8	19	7	10	9	2·0	—	—	78	81·5	80·7	● *a.* and *p.*
2	1006·3	996·1	83·7	83·8	86	82	10·2	10·5	80	82	19	8	16	8	10	10●	5·6	0·6	—	77	81·4	80·7	● at times *p.*
3	995·3	1002·3	81·9	79·2	84	78	8·5	8·5	75	89	18	8	20	4	9●	1	3·1	4·5	—	76	81·4	80·8	▲● 16 h.–16 h. 30 m.
4	1003·2	988·6	80·3	81·6	84	78	8·8	8·5	85	76	16	5	19	11	10●	10	**10·7**	0·3	—	73	80·7	80·9	⟆ 16 h. 50 m. ● at times.
5	989·9	993·3	81·5	79·3	84	79	8·8	7·8	79	82	21	8	20	5	7	3	0·8	4·1	—	77	80·6	80·9	● 7 h. Fine to dull. ●⁰ *p.*
6	996·7	1003·6	78·7	78·4	83	77	7·5	7·1	83	79	21	4	24	2	8	0	—	5·5	—	72	80·2	81·1	Fair to fine.
7	1012·3	1014·4	78·6	77·4	83	75	7·1	6·5	78	78	24	2	22	3	3	10	0·3	7·4	—	71	79·7	81·1	⌣. Fine most of day. ● 18 h.
8	1008·3	1004·7	80·2	79·3	82	76	7·8	8·5	78	90	15	7	18	3	10	0	4·1	0·7	—	70	79·2	81·1	Dull *a.* ● 17 h.
9	1006·0	1005·5	81·3	79·2	84	78	9·5	8·2	**87**	86	16	6	11	**2**	7	2≡⁰	0·5	7·0	—	73	79·1	80·9	▲● 12 h. 30 m. Mostly fine.
10	1004·9	1007·9	80·8	79·1	84	77	9·2	8·5	86	90	—	1	—	1	9≡⁰	?0≡	—	0·2	—	75	79·7	80·9	●⁰ 4 h. Mostly dull.
11	1014·1	1020·9	76·4	78·1	82	75	7·8	8·5	98	96	—	0	—	1	*10*≡	10≡⁰	—	—	—	72	79·5	80·8	≡ *a.* Dull all day.
12	1026·1	1025·4	77·0	79·6	82	77	7·8	8·8	95	91	—	1	19	2	10≡⁰	10≡⁰	1·5	—	—	76	79·6	80·8	Dull all day.
13	1019·7	1017·5	82·0	83·6	84	80	10·2	11·9	91	93	18	7	20	3	10	10≡⁰	—	—	—	76	79·8	80·8	● 3 h.–5 h. and 7 h.–7 h. 30 m.
14	1016·5	1013·8	83·2	83·0	87	83	11·2	11·2	90	91	20	4	17	5	10	10	0·3	2·4	—	82	81·3	80·7	Dull *a.* ; finer later.
15	1006·3	1008·3	82·9	78·1	83	77	9·8	6·1	81	72	16	5	25	4	10	9	2·0	0·9	—	79	81·4	80·8	Dull. ● at times.
16	1010·8	1005·3	77·9	80·1	83	75	6·5	8·8	73	89	23	3	17	3	1	8	0·8	6·5	—	70	80·6	80·8	Fine till 14 h. ●⁰ 19 h.
17	996·8	987·5	79·8	80·2	81	79	9·2	9·5	89	93	15	6	18	3	10	10	7·4	—	—	78	80·7	80·9	● at times *a.* and *p.*
18	980·0	976·6	79·8	78·7	81	76	8·2	8·2	80	90	10	6	27	5	10●≡⁰	10	4·1	0·2	—	72	80·2	81·1	● at times *a.* and *p.*
19	986·2	990·2	77·6	77·5	82	76	7·5	7·5	88	88	21	6	18	4	10	10	1·0	2·9	—	71	79·8	81·1	● 8 h. 45 m.–9 h. 45 m. and 18 h.
20	996·3	998·1	78·8	77·1	81	74	6·5	6·8	69	82	22	6	16	5	4	9	2·8	5·6	—	71	79·7	81·0	Fine *a.* ● *p.* [30 m.–19 h. 30 m.
21	983·8	978·9	80·7	80·6	85	*n* 73	9·8	8·8	93	85	16	7	18	7	10●	10	4·8	2·4	·068	*n* 69	79·3	81·0	⟆▲● 13 h. ● at times *a.* and *p.*
22	987·4	1000·5	80·2	80·2	84	79	8·2	8·5	82	85	22	5	22	2	10	8	1·8	1·7	—	78	79·9	80·9	T 14 h. ● at times *a.* and *p.*
23	1006·4	998·7	78·6	80·6	81	76	8·2	9·8	91	94	—	1	14	2	10≡⁰	10●≡⁰	8·6	—	—	71	80·0	80·9	● 11 h.–15 h. and from 21 h.
24	1002·0	1010·9	83·0	84·1	86	81	8·8	11·5	73	87	23	7	19	5	9	10	—	2·5	—	77	80·2	80·9	● till 1 h. Fine to dull. ≺ 22 h.
25	1017·0	1022·4	85·7	84·4	*x* 89	84	12·9	11·5	88	86	19	6	19	6	10	10	—	0·8	—	83	81·4	80·9	Dull most of day.
26	1024·2	1021·4	85·0	84·2	89	83	9·5	10·9	**68**	83	18	5	17	2	10	10	—	4·3	·075	81	82·2	80·9	Fine 11 h.–16 h.
27	1020·0	1019·7	83·0	82·9	87	82	8·5	8·5	70	69	23	6	23	4	5	10	0·3	8·3	·069	79	82·5	81·1	Fine during day. ⋓ 19 h.
28	1017·2	1019·9	84·7	83·2	88	80	10·9	7·5	80	**60**	24	7	27	3	10	9	—	1·7	—	80	82·8	81·3	●⁰ 1 h. Dull to fine. ⋓ 22 h.
29	1024·3	1021·7	80·2	80·4	84	77	6·8	6·8	67	65	24	6	22	4	3	10	—	11·0	·080	72	82·3	81·3	Fine throughout. ⋓ 22 h.
30	1017·2	1016·1	81·3	80·2	85	79	6·8	7·5	61	73	24	8	21	3	4	9	—	10·2	·078	75	81·8	81·4	Fine throughout. ⋓ 22 h.
31	1006·5	995·3	80·9	78·3	83	77	8·8	8·5	83	94	18	5	—	1	10	9≡⁰	9·1	0·3	—	74	81·4	81·6	Dull till 16 h. ● 13 h.–16 h.
Means	1006·2	1005·4	80·9	80·5	84·0	78·2	8·8	8·8	82	84		5·2		3·8	8·4	7·6	71·6	2·97	—	75·1	80·6	81·0	Monthly **Totals** or **Means**.
Normal 40 years	1013·3	1013·1	78·1	78·4	82·4	75·2	7·1	7·3	81	81		4·3		3·5	—	—	39·1	3·47	—	—	—	—	**Normals, 40 years.**
					35 years		25 years.				30 years		30 years					30 yrs					

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	971·1	961·4	80·1	80·3	82	79	8·8	9·2	88	90	16	11	16	9	10●	10●⁰	10·7	—	—	—	—	—	Frequent heavy showers.
2	966·4	958·1	79·1	79·4	81	77	9·5	8·8	99	93	18	12	18	7	10≡⁰	10●	23·4	—	—	—	—	—	Continuous ● after 16 h.
3	956·6	965·3	78·3	77·9	81	77	8·2	7·1	92	84	20	8	20	10	10●	9	2·3	3·3	—	—	—	—	Variable and showery.
4	965·6	950·2	77·1	76·7	79	74	7·1	7·5	87	94	18	10	—	0	9	10●	7·9	0·5	—	—	—	—	✲[2] in afternoon.
5	954·8	960·4	76·1	75·9	81	74	6·5	6·5	84	85	28	5	26	3	9	1	0·3	5·5	—	—	—	—	
6	964·1	973·0	77·2	75·7	80	75	6·5	6·1	80	83	28	10	30	10	7	1	0·3	2·0	—	—	—	—	
7	978·6	979·8	75·9	75·2	80	*73*	6·8	6·5	89	87	24	5	20	3	9	2	3·1	1·9	—	—	—	—	
8	974·1	969·1	76·5	78·0	79	75	7·1	8·2	90	93	12	7	18	9	9	9	6·9	—	—	—	—	—	▲ 22 h 45 m.
9	971·5	975·1	76·4	76·9	80	75	7·5	7·1	95	90	14	6	—	1	10●⁰	9	4·8	0·6	—	—	—	—	
10	979·1	982·9	76·4	77·2	81	74	6·8	7·5	89	92	12	2	26	2	10●	5	1·5	1·2	—	—	—	—	
11	988·1	991·6	75·8	*72·9*	81	*71*	6·5	5·4	85	90	4	5	—	0	9	1	0·3	6·5	—	—	—	—	
12	992·6	986·6	76·8	78·9	79	*70*	8·2	8·8	100	97	16	8	20	12	10≡⁰●	10●	18·0	—	—	—	—	—	Continuous ● after 5 h.
13	985·1	985·8	81·3	79·8	*x* 84	79	9·8	9·8	92	99	22	5	18	3	10	10≡⁰●	2·5	2·8	—	—	—	—	
14	982·2	980·4	79·8	78·9	81	78	9·8	8·5	99	94	18	6	20	7	10≡⁰●	10	2·0	—	—	—	—	—	●⁰ early *a.* [–21 h.
15	975·2	978·0	78·4	73·4	81	*73*	7·5	5·1	86	79	22	4	28	4	9	0	—	4·0	—	—	—	—	▲ midday. Distant T. ⋔ 20 h.
16	978·4	970·9	*71·8*	77·1	80	*n* 67	4·8	7·8	85	95	—	1	16	5	10	10●	4·8	3·8	—	—	—	—	
17	962·3	956·9	79·2	77·7	81	77	9·2	7·8	97	94	14	5	—	1	10●	10	13·0	—	—	—	—	—	▲[2] 18 h.–15 m.
18	952·3	951·9	76·6	74·3	80	74	7·5	5·4	92	80	—	1	—	1	10●	9	0·3	2·5	—	—	—	—	
19	952·2	955·7	76·3	74·8	79	*70*	*5·8*	6·8	*76*	98	20	4	20	7	3	10●	6·6	3·3	—	—	—	—	
20	957·6	963·8	74·2	74·9	77	*72*	6·5	4·8	96	**69**	20	2	22	5	10✲	1	3·1	0·3	—	—	—	—	✲● showers.
21	956·1	952·7	73·9	75·6	76	*71*	5·1	6·8	79	91	8	8	4	7	9	10●⁰	4·1	0·2	—	—	—	—	✲ showers midday.
22	960·7	974·0	76·7	73·7	80	*70*	7·1	5·4	89	85	4	8	30	4	8●⁰	1	0·5	4·1	—	—	—	—	
23	975·7	968·8	73·1	77·2	81	*n* 67	6·1	6·5	100	79	—	1	12	5	10≡⁰	10	—	2·9	—	—	—	—	
24	970·4	975·7	78·5	78·9	82	77	7·8	8·8	87	94	—	1	20	7	10	10●	2·0	0·5	—	—	—	—	
25	981·7	985·3	80·9	80·2	*x* 84	80	9·5	10·2	91	100	20	10	20	6	9	10≡⁰●	16·3	4·9	—	—	—	—	
26	986·5	984·4	80·2	78·2	82	78	10·2	7·8	100	89	20	11	20	5	10≡⁰●	10≡⁰●	10·7	—	—	—	—	—	
27	982·4	983·2	80·7	79·0	83	79	7·8	8·8	75	95	22	11	20	6	10	7●	5·1	7·2	—	—	—	—	
28	982·2	986·9	80·6	75·0	82	74	8·2	5·8	79	83	22	12	26	9	8●	8	3·8	9·4	—	—	—	—	✲. Occasional ⌒. ≺ 24 h.
29	987·5	978·8	76·9	75·7	78	74	6·5	6·1	82	81	22	11	24	12	10●	7	**24·9**	1·8	—	—	—	—	≺ 21 h.
30	979·4	980·8	75·4	75·5	80	74	6·5	6·8	91	92	24	11	20	3	10✲	10●⁰	5·8	5·7	—	—	—	—	
31	970·1	972·9	77·4	73·9	80	*72*	7·8	5·4	93	83	20	7	2	8	10●⁰	9	3·1	—	—	—	—	—	✲ in evening.
Means	972·3	972·3	76·3	76·7	80·4	74·2	7·5	7·2	89	89		6·7		5·5	9·3	7·4	188·1	2·42	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.
Mean and maximum solar radiation for each day at South Kensington are given occasionally in Table 10.

5. KEW OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 1·78.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	85	−175	35	200	—	—	—	—	—	—	—	1	0	514	12 58	493	17 47	21	55·1	12 57	48·6	0 56	6·5
2	80	210	150	120	—	—	—	—	—	—	—	2	0	516	14 36	492	3 17	24	54·6	13 1	48·5	21 27	6·1
3	85	80	x±	350	—	—	—	—	—	—	—	2	0	513	13 45	490	20 23	23	53·8	13 10	45·7	21 18	8·1
4	140	190	x−	85	—	—	—	—	—	—	—	2	0	512	13 55	492	1 6	20	54·4	12 30	47·8	8 15	6·6
5	−20	15	150	225	—	—	—	—	—	—	—	2	1	518	20 40	486	17 16	32	56·7	13 14	47·5	8 28	9·2
6	80	105	210	315	—	—	—	—	—	—	—	1	1	518	23 13	490	17 2	28	55·5	14 26	42·2	23 7	13·3
7	155	400	x+	400	—	—	—	—	—	—	—	1	1	510	6 51	484	15 22	26	54·7	12 50	42·8	0 3	11·9
8	280	260	x−	470	—	—	—	—	—	—	—	2	2	523	21 0	**460**	**17 13**	63	**56·9**	**13 7**	41·7	22 13	15·2
9	210	315	305	505	—	—	—	—	—	—	—	0	1	519	1 2	470	10 28	49	54·8	0 45	45·7	21 10	9·1
10	250	480	330	320	—	—	—	—	—	—	—	0	1	502	13 35	466	19 55	36	54·7	13 31	44·7	22 55	10·0
11	495	715	315	350	—	—	—	—	—	—	—	1	0	511	19 5	482	8 41	29	53·8	13 3	47·0	0 46	6·8
12	280	495	355	330	180	120	—	—	—	—	—	0	0	510	8 12	482	17 19	28	55·8	14 33	47·4	8 5	8·4
13	190	185	85	220	330	200	1·05	0·45	0·45	0·40	—	1	0	509	7 36	494	2 43	**15**	54·7	13 23	47·4	8 5	7·3
14	70	120	190	165	560	580	0·05	0·00	0·05	0·10	0·60	0	0	521	19 5	495	3 47	26	55·6	12 58	46·6	8 28	9·0
15	70	175	x±	260	—	—	—	—	—	—	—	1	1	514	6 50	488	9 55	26	53·7	13 40	41·4	22 55	12·3
16	150	375	150	350	—	—	—	—	—	—	—	1	0	508	23 15	482	9 20	26	55·7	12 29	45·7	0 0	10·0
17	25	−210	−35	x−	—	—	—	—	—	—	—	2	0	505	22 42	484	9 53	21	53·3	12 29	46·2	9 3	7·1
18	190	450	350	−155	—	—	—	—	—	—	—	2	0	511	14 9	487	9 16	24	53·7	12 48	45·8	8 49	7·9
19	320	x−	150	350	—	—	—	—	—	—	—	2	0	511	19 37	483	10 2	28	55·8	13 21	45·8	8 50	10·0
20	280	260	225	x+	920	1010	0·45	0·00	0·45	1·00	0·55	1	0	520	23 8	476	10 56	44	56·0	13 13	45·5	8 45	10·5
21	450	35	x+	175	—	—	—	—	—	—	—	2	1	519	6 37	486	21 34	33	54·9	13 13	43·5	20 53	11·4
22	0	50	x+	295	330	150	0·90	0·00	0·30	—	—	2	1	527	1 45	466	11 12	61	54·0	13 20	**37·1**	**0 50**	**16·9**
23	210	470	x−	350	—	—	—	—	—	—	—	2	0	511	6 49	479	11 12	32	51·7	13 20	45·6	8 17	6·1
24	70	140	175	280	—	—	—	—	—	—	—	0	0	507	18 3	485	10 33	22	52·0	13 28	45·9	9 5	6·1
25	35	190	155	260	—	—	—	—	—	—	—	1	0	515	21 59	487	11 3	28	52·0	13 38	44·8	7 58	7·2
26	120	280	185	425	—	—	—	—	—	—	—	0	1	524	22 52	483	11 33	41	53·1	13 5	42·4	23 30	10·7
27	175	235	150	250	610	360	0·45	0·60	0·45	0·70	0·35	0	0	511	20 22	477	11 8	34	53·1	14 13	44·2	1 5	8·9
28	85	105	165	210	540	480	0·00	0·70	0·35	0·55	0·75	0	0	517	6 58	473	10 31	44	52·8	14 50	44·0	8 20	8·8
29	175	210	115	190	640	410	0·35	0·00	0·20	0·25	0·30	0	1	**536**	**15 13**	467	16 5	**69**	56·7	15 10	43·7	8 4	13·0
30	105	225	130	320	—	—	—	—	—	—	—	1	0	512	20 53	480	12 15	32	52·8	13 28	44·7	8 50	8·1
31	245	280	x±	625	—	—	—	—	—	—	—	2	0	515	20 59	470	10 18	45	55·2	13 10	44·5	7 56	10·7
M.	149	246	195	257	—	—	—	—	—	—	—	—	—	515	—	482	—	33	54·4	—	45·0	—	9·5

6. ESKDALEMUIR OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component. §			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.															
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	83	107	x	59	—	—	—	—	—	—		1 b	1	0 58	1034	1004	13 55	12 57	266	227	0 57	16 55	330	317	13 0
2	71	89	−576	−790	—	—	—	—	—	—		2 c	0	21 28	1027	1008	9 10	13 7	262	230	21 27	22 30	331	321	12 30
3	−493	x	−154	−42	—	—	—	—	—	—		2 c	1	20 46	1033	1001	20 34	13 43	256	210	21 22	20 35	339	321	12 0
4	71	119	x	−202	—	—	—	—	—	—		2 c	0	14 53	1026	1002	10 47	12 31	259	224	1 0	16 0	337	325	11 50
5	−18	53	154	208	—	—	—	—	—	—		1 b	1	19 13	1035	998	11 57	13 57	269	219	17 49	18 0	343	319	12 52
6	154	119	113	143	—	—	—	—	—	—		1 a	1	23 10	1055	994	11 34	14 31	267	190	24 0	17 12	343	327	12 35
7	101	172	−6	172	—	—	—	—	—	—		1 b	1	23 30	1029	999	14 55	14 40	260	186	0 4	16 20	347	325	12 0
8	149	196	89	214	—	—	—	—	—	—		1 c	2	22 15	1047	**964**	**10 22**	12 31	270	185	22 10	18 13	373	307	4 38
9	244	154	291	380	—	—	—	—	—	—		1 b	1	1 5	1033	980	10 25	1 45	274	210	21 5	19 25	353	319	1 23
10	154	x	232	291	—	—	—	—	—	—		2 c	1	22 19	1027	978	19 51	13 33	267	205	23 13	19 52	368	330	**12 10**
11	309	143	196	285	440	240	1·1	2·2	1·0	2·0		0 a	0	19 3	1027	992	11 2	13 36	257	214	0 45	9 0	345	335	12 0
12	220	339	−327	x	—	—	—	—	—	—		2 c	1	8 10	1029	998	17 17	14 21	270	224	5 20	17 30	358	335	12 12
13	101	125	131	339	—	—	—	—	—	—		1 a	0	7 38	1027	1001	13 33	13 20	261	225	21 17	0 0	347	330	12 0
14	226	238	−24	208	—	—	—	—	—	—		1 b	1	19 3	1038	1005	10 58	13 44	268	224	9 9	20 45	349	331	12 50
15	x	184	131	184	—	—	—	—	—	—		1 b	1	22 41	1041	999	9 52	13 40	258	189	22 55	22 20	349	337	11 10
16	131	89	190	x	—	—	—	—	—	—		2 b	0	23 11	1027	991	10 55	12 29	266	213	0 0	16 0	346	332	12 0
17	131	−172	36	137	—	—	—	—	—	—		2 c	0	22 40	1027	999	11 0	13 25	251	222	9 30	21 0	347	325	12 0
18	83	x	261	166	—	—	—	—	—	—		2 b	1	5 59	1027	1003	11 23	14 8	258	221	8 49	24 0	348	330	12 6
19	160	190	x	−380	—	—	—	—	—	—		2 c	0	9 40	1027	989	11 10	13 30	265	219	9 39	9 0	349	332	12 30
20	−101	x	107	190	—	—	—	—	—	—		1 b	0	23 5	1035	985	10 55	13 19	269	217	9 48	17 10	354	341	12 0
21	184	255	−962	−71	—	—	—	—	—	—		1 b	1	23 52	1047	991	11 40	13 22	263	201	20 56	21 30	358	337	11 25
22	−659	x	113	143	—	—	—	—	—	—		1 b	1	0 7	1048	976	11 25	14 59	263	**153**	**0 52**	20 30	367	**299**	**2 0**
23	119	178	107	196	—	—	—	—	—	—		0 a	1	6 49	1028	991	11 16	13 35	249	223	8 16	17 0	359	347	12 0
24	154	125	131	83	—	—	—	—	—	—		1 a	0	23 45	1025	992	12 9	13 53	255	221	9 20	19 0	361	347	11 40
25	95	160	273	220	—	—	—	—	—	—		1 b	0	21 53	1041	994	12 18	11 53	257	220	8 19	21 40	360	350	12 0
26	59	119	119	x	—	—	—	—	—	—		2 c	1	22 45	1049	988	11 33	13 44	262	202	23 32	19 55	367	346	11 30
27	x	107	131	x	—	—	—	—	—	—		2 c	0	20 19	1034	986	11 36	12 11	262	210	1 5	19 40	363	348	12 0
28	30	83	125	x	—	—	—	—	—	—		1 c	1	7 41	1035	985	10 32	14 36	265	218	8 20	17 30	374	355	11 50
29	x	x	x	x	—	—	—	—	—	—		1 c	2	**15 13**	**1069**	972	15 53	**15 13**	**306**	215	8 5	**16 20**	**381**	351	11 50
30	x	x	131	−986	—	—	—	—	—	—		1 c	1	19 17	1029	990	12 14	12 36	262	222	9 32	17 0	368	360	12 40
31	−927	x	−754	119	—	—	—	—	—	—		2 c	0	18 31	1036	986	11 46	13 47	262	215	8 57	17 0	371	361	13 0
M.	144	131	−3	123	—	—	—	—	—	—		—	—	—	1035	992	—	—	264	211	—	—	354	334	—

x Indeterminate.

An explanation of the Headings of the columns is given in the Preface.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument. The final values adopted will be published in the annual volume.

7. **Tables of Wind Components in metres per second at fixed hours,** together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	7·6	...	...	...	9·4	...	...	4·0	10·3	...	...	...	6·7	...	6·7	...	21·0	23	45
2	4·9	...	4·9	...	8·1	...	...	...	8·9	...	...	...	6·7	...	1·3	...	25·5	1	20
3	5·8	...	5·8	...	4·5	...	6·7	...	3·6	...	5·4	...	3·1	...	7·6	...	20·1	5	15
4	4·0	...	4·0	...	11·2	...	...	4·5	8·5	...	...	...	7·2	...	3·1	...	22·8	10	30
5	...	...	13·0	...	2·2	...	11·2	...	3·1	...	3·1	...	1·8	...	4·5	...	21·0	4	50
6	...	3·1	7·6	...	...	...	8·9	...	...	3·1	7·2	...	...	4·9	7·2	...	11·6	21	30
7	1·3	...	7·2	...	3·1	...	8·1	...	4·9	...	4·9	...	4·9	...	3·1	...	13·4	9	20
8	8·1	...	...	3·6	9·8	...	...	9·8	7·6	...	3·1	...	6·7	...	2·7	...	25·0	9	40
9	5·4	...	...	0·9	5·4	...	...	0·9	8·1	...	...	1·8	3·1	...	...	...	14·3	7	45
10	2·7	...	...	1·3	0·5	...	...	0·9	...	1·3	...	...	...	1·8	...	...	6·3	0	10
11	...	0·9	...	...	...	0·5	...	...	...	3·1	3·1	...	...	1·3	1·3	...	6·7	16	45
12	4·0	...	1·8	...	5·8	...	1·3	...	8·1	...	3·1	...	8·9	...	...	...	18·3	22	45
13	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	16·1	0	15
14	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	13·0	0	10
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	16·5	14	25
16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	14·3	22	50
17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	11·2	2	35
18	*	*	*	*	*	*	*	*	...	0·5	3·1	...	0·5	...	2·7	...	10·3	3	25
19	0·9	...	2·7	...	1·8	...	10·3	...	6·3	...	6·3	...	4·5	...	10·7	...	19·2	15	40
20	10·3	...	10·3	...	4·5	...	10·3	...	5·8	...	2·2	...	6·7	...	...	1·3	24·6	2	10
21	7·2	...	...	7·2	7·6	...	...	4·9	3·1	...	...	3·1	...	6·7	...	4·5	17·4	6	35
22	...	2·7	1·8	...	...	2·2	3·1	...	...	4·5	1·8	...	...	3·1	4·5	...	8·9	4	55
23	1·3	...	0·9	...	4·0	...	...	4·0	...	...	...	3·6	4·5	...	...	1·8	10·3	10	50
24	3·1	..	7·6	...	3·1	...	7·6	...	5·8	...	1·3	...	5·8	...	2·2	...	16·1	10	30
25	5·4	...	3·6	...	7·2	...	1·3	...	8·1	...	3·6	...	8·1	...	1·8	...	14·3	21	20
26	8·1	...	...	...	9·4	...	1·8	...	10·3	...	...	...	1·3	...	3·6	...	17·4	16	15
27	7·2	...	4·9	...	4·9	...	7·6	...	7·6	...	3·1	...	7·6	...	5·4	...	15·7	21	5
28	4·9	...	4·9	...	...	1·8	8·1	...	...	1·3	6·7	...	...	...	10·3	..	16·5	22	50
29	..	...	13·0	...	4·9	...	7·2	...	5·8	...	5·8	...	5·4	...	13·4	...	24·6	23	0
30	2·7	...	12·5	...	2·7	...	12·5	...	3·6	...	5·4	...	3·6	...	5·4	...	20·1	0	20
31	3·6	...	3·6	...	4·9	...	4·9	...	1·3	...	1·3	...	...	8·5	3·6	...	21·5	23	45
S+N & W+E	105·2		123·1		119·5		139·9		134·6		79·0		123·4		108·7				
S−N & W−E	91·8		97·1		110·5		81·9		107·0		62·0		70·8		93·5				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	7·2	...	4·9	...	8·5	...	5·8	...	6·7	...	...	...	5·8	...	...	1·3	10·2	9
2	4·9	...	0·5	...	1·8	...	3·1	...	5·4	...	0·9	...	6·7	...	...	1·3	8·2	23
3	3·6	...	...	1·3	2·7	...	...	0·5	4·0	...	1·8	...	3·1	...	7·6	...	9·8	22, 23, 24
4	3·1	...	7·6	...	3·1	...	7·6	...	1·8	...	4·0	...	4·5	...	...	1·8	11·1	11
5	...	...	...	8·5	...	3·6	...	5·4	...	2·2	0·9	...	...	2·7	...	2·7	8·5	3, 5
6	...	1·3	...	2·7	...	2·7	1·3	...	...	3·1	...	...	...	...	3·1	...	5·2	1
7	...	2·7	1·3	...	...	1·8	...	1·8	...	1·3	...	1·3	...	...	...	1·8	6·2	5
8	...	3·6	...	0·9	...	0·5	...	2·2	1·3	...	...	5·8	6·7	...	...	6·7	10·8	23
9	9·4	...	...	...	6·3	...	...	...	7·2	...	...	...	7·6	...	...	1·3	9·8	1
10	4·0	...	0·9	...	5·8	...	...	...	6·3	...	...	1·3	5·4	...	...	3·6	8·2	24
11	8·5	...	...	3·6	7·6	...	...	1·3	7·6	...	...	3·1	7·2	...	...	3·1	10·2	11
12	8·1	...	1·8	...	10·3	...	...	...	5·4	...	3·6	...	7·6	...	3·1	...	11·1	11
13	2·2	...	3·1	...	...	0·5	1·8	...	1·8	...	...	2·7	6·3	...	...	4·0	8·9	23
14	7·2	...	...	1·3	5·8	...	5·8	...	...	...	1·3	...	...	0·9	...	0·9	8·5	9, 11
15	2·2	...	...	1·3	...	...	0·5	...	...	...	4·9	...	...	...	1·8	...	5·2	16
16	3·1	...	2·2	...	4·0	...	2·7	...	7·6	...	...	3·1	10·7	...	...	4·5	12·5	24
17	9·8	...	...	6·7	11·2	...	...	7·6	8·9	...	...	8·9	11·2	...	...	7·6	16·1	11
18	10·7	...	...	7·2	14·3	...	...	14·3	7·6	...	...	11·6	5·4	...	13·4	...	15·7	19
19	5·8	...	...	8·5	2·7	...	...	12·5	4·9	...	...	12·5	4·9	...	...	11·6	16·1	11
20	3·6	...	...	2·7	9·4	...	...	1·8	8·1	...	...	5·4	6·3	...	...	6·3	10·8	17
21	4·5	...	...	3·1	5·8	...	...	...	4·5	...	...	6·7	6·3	...	...	2·7	8·5	12, 18, 19
22	...	1·3	...	7·2	...	3·6	...	5·4	...	4·0	...	1·8	...	1·3	0·9	...	7·5	1
23	...	2·7	0·9	...	...	3·6	...	1·3	...	0·9	...	0·0	0·0	...	...	0·5	3·9	9
24	0·5	...	...	1·3	...	...	...	3·1	5·4	...	...	3·6	11·2	...	...	4·5	12·1	21
25	6·3	...	4·0	...	4·9	...	4·9	...	2·2	...	2·2	...	1·3	...	2·2	...	9·2	1
26	2·2	...	0·9	...	3·1	...	2·2	...	1·8	...	0·9	...	...	0·9	2·7	...	4·3	10, 12, 13
27	6·3	...	2·7	...	...	2·2	11·2	...	...	8·1	8·1	...	...	0·5	0·5	...	14·8	11
28	3·1	...	...	3·1	...	...	14·8	...	...	3·1	15·7	...	1·8	...	9·4	...	16·7	11
29	...	...	13·0	...	...	1·8	9·4	...	...	...	13·9	...	2·7	...	6·3	...	16·7	11
30	...	0·9	4·0	...	...	4·0	5·8	...	...	4·5	...	...	1·3	...	...	2·7	11·8	11
31	...	0·9	...	2·7	...	9·8	...	4·0	...	6·7	6·7	...	...	19·2	...	...	20·3	23
S+N & W+E	129·7		109·9		141·4		138·1		132·4		132·7		149·5		119·9			
S−N & W−E	102·9		−14·3		73·2		15·7		64·6		−2·9		98·5		−17·9			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	11·3	...	...	...	11·2	...	2·2	...	10·3	...	10·3	...	3·1	...	15·2	...	23·3	17	30
2	8·1	...	8·1	...	12·5	...	...	...	13·0	...	2·7	...	5·8	...	13·4	...	23·7	19	50
3	4·5	...	10·7	...	...	...	11·6	...	...	2·2	11·2	...	...	4·5	11·2	...	19·7	4	30
4	9·4	...	4·0	...	12·5	...	8·5	...	8·1	...	19·2	...	1·7	...	25·5	...	34·9	19	15
5	...	...	21·0	...	2·2	...	4·9	...	6·3	...	14·8	...	...	...	13·9	...	30·4	1	20
6	...	...	6·3	...	...	...	0·5	...	...	7·2	3·1	...	...	5·4	7·6	...	14·3	23	15
7	...	5·8	5·8	...	...	4·0	6·3	...	2·7	...	6·3	...	9·8	...	1·8	...	18·8	8	40
8	13·9	...	...	5·8	3·6	...	8·1	...	4·9	...	7·2	...	6·7	...	6·7	...	23·3	5	30
9	6·7	...	4·5	...	4·9	...	4·9	...	3·1	...	2·2	...	5·4	...	...	0·9	18·8	1	0
10	5·4	...	...	0·9	4·0	...	1·8	...	2·7	...	...	1·3	2·2	...	...	1·3	8·9	8	25
11	0·5	...	...	3·1	...	1·8	...	2·7	...	2·7	...	0·9	...	3·1	...	0·5	6·3	19	20
12	...	2·7	...	0·5	1·3	...	2·7	...	4·5	...	4·5	...	6·3	...	6·3	...	12·5	23	30
13	8·1	...	8·1	...	...	...	7·2	...	1·3	...	7·2	...	3·1	...	4·9	...	14·8	2	15
14	4·0	...	5·8	...	5·8	...	4·0	...	4·0	...	2·7	...	1·3	...	3·1	...	10·3	12	25
15	...	4·5	10·7	...	...	8·1	12·1	...	...	5·4	7·6	...	...	1·8	9·4	...	20·6	8	45
16	1·3	...	7·6	...	6·3	...	4·0	...	8·9	...	3·6	...	9·8	...	4·0	...	15·2	14	25
17	3·6	...	8·1	...	1·8	...	8·9	...	4·9	...	7·2	...	3·1	...	7·6	...	15·2	18	50
18	9·8	...	...	9·8	...	1·8	4·0	...	...	5·8	8·5	...	...	8·1	19·2	...	29·1	21	40
19	...	...	18·3	...	...	1·3	7·2	...	...	3·6	...	2·7	...	8·1	3·1	...	26·0	0	15
20	...	3·6	8·5	...	...	1·3	5·8	...	...	1·3	7·6	...	4·0	...	6·3	...	22·8	5	15
21	6·7	...	9·8	...	10·7	...	10·7	...	3·6	...	18·8	...	...	3·1	16·5	...	28·2	12	40
22	...	4·5	21·5	...	...	3·1	15·2	...	...	6·7	16·1	...	...	5·4	13·4	...	28·2	3	35
23	2·2	...	5·8	...	...	...	11·6	...	4·0	...	5·8	...	3·6	...	17·4	...	21·5	21	30
24	...	...	16·1	...	0·9	...	4·0	...	2·2	...	10·7	...	4·9	...	7·6	...	21·0	2	30
25	5·8	...	5·8	...	8·1	...	3·6	...	7·2	...	3·1	...	7·6	...	1·3	...	12·1	2	30
26	6·3	...	1·3	...	5·8	...	...	1·3	4·5	...	3·1	...	3·1	...	4·5	...	11·2	2	10
27	...	1·8	3·1	...	...	2·2	4·9	...	...	...	7·6	...	3·6	...	8·1	...	12·5	23	30
28	...	...	9·8	...	...	...	9·8	...	...	4·9	4·9	...	...	4·5	1·8	...	14·8	1	25
29	...	5·8	2·2	...	...	4·0	1·8	...	...	1·8	8·5	...	...	1·8	9·4	...	15·2	20	5
30	...	2·2	10·7	...	...	1·8	9·8	...	...	3·1	7·6	...	...	1·8	4·0	...	15·7	9	15
31	3·1	...	7·2	...	3·6	...	8·1	...	...	7·6	11·6	...	...	8·5	12·5	...	24·6	22	10
S+N & W+E	141·6		240·9		124·6		188·2		148·5		228·6		150·2		258·4				
S−N & W−E	79·8		200·7		65·8		180·2		43·9		218·8		38·0		253·0				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	4·5	...	1·8	...	6·7	...	1·3	...	8·1	...	...	...	5·4	...	...	...	21·0	14	45
2	6·3	...	6·3	...	6·3	...	2·7	...	6·3	...	2·7	...	5·8	...	...	...	18·8	19	20
3	5·4	...	3·6	...	5·4	...	3·6	...	3·1	...	4·5	...	3·1	...	2·2	...	17·9	0	15
4	1·8	...	4·0	...	4·9	...	3·1	...	9·8	...	...	...	6·3	...	1·3	...	24·6	16	40
5	7·2	...	4·9	...	3·1	...	8·1	...	...	...	7·2	...	2·2	...	5·8	...	19·2	3	15
6	...	...	3·9	...	0·9	...	5·4	...	..	0·9	4·3	...	1·3	...	2·7	...	11·6	19	50
7	...	1·3	3·1	...	...	2·2	4·9	...	...	1·8	4·5	...	...	...	2·3	...	11·2	9	50
8	0·9	...	2·6	...	4·3	...	...	...	8·1	...	...	3·6	4·9	...	2·2	...	21·5	17	5
9	2·7	...	1·8	...	3·9	...	...	...	6·7	...	...	2·7	4·0	...	...	1·8	13·4	13	55
10	2·2	...	...	4·9	1·3	...	...	2·7	0·5	...	...	2·7	0·0	...	...	0·9	6·7	1	55
11	0·5	...	...	2·2	...	1·8	1·3	...	...	3·1	0·5	...	...	1·3	0·9	...	8·1	15	40
12	...	2·2	0·9	...	...	0·9	0·5	...	1·8	...	1·8	...	2·7	...	1·8	...	7·2	2	50
13	2·7	...	2·7	...	6·3	...	2·7	...	1·3	...	3·1	...	0·9	...	2·2	...	13·9	9	40
14	0·9	...	1·8	...	1·3	...	3·1	...	0·9	...	1·3	...	2·6	...	...	...	8·1	21	50
15	3·9	...	...	...	5·6	...	...	...	4·9	...	...	0·9	...	...	3·0	...	12·5	7	55
16	...	2·7	6·3	...	...	7·2	3·1	...	...	...	5·2	...	1·8	...	1·8	...	11·6	10	50
17	3·6	...	0·9	...	6·6	...	...	...	8·1	...	...	1·8	9·8	...	...	4·0	18·3	17	10
18	3·6	...	1·3	...	5·2	...	...	...	4·0	...	...	9·8	3·3	...	...	...	15·2	0	20
19	...	1·3	6·3	...	3·1	...	4·5	...	2·2	...	4·9	...	3·1	...	0·5	...	13·4	16	15
20	2·7	...	1·3	...	2·2	...	5·4	...	2·2	...	4·9	...	3·1	...	1·3	...	12·5	13	40
21	4·9	...	...	...	9·8	...	...	6·7	3·6	...	3·6	...	4·6	...	...	...	18·8	10	30
22	3·1	...	0·5	...	...	...	4·3	...	...	...	5·6	...	...	1·8	3·1	...	13·4	1	10
23	...	1·3	3·6	...	...	...	2·6	...	4·0	...	...	1·8	4·0	...	...	4·0	10·3	17	30
24	3·6	...	...	2·7	0·5	...	...	0·5	...	0·9	1·8	...	2·7	...	0·5	...	7·2	11	30
25	2·7	...	2·7	...	0·9	...	4·5	...	3·1	...	4·5	...	3·1	...	3·1	...	11·2	13	20
26	2·2	...	3·1	...	3·6	...	2·7	...	2·7	...	3·6	...	4·5	...	0·9	...	11·2	12	45
27	2·7	...	2·7	...	...	...	6·7	...	...	...	7·2	...	...	...	3·3	...	15·2	12	35
28	1·8	...	4·5	...	...	...	6·7	...	...	2·7	6·7	...	...	...	5·6	...	13·0	16	45
29	...	...	3·1	...	...	...	9·2	...	...	...	7·5	...	4·9	...	3·1	...	15·2	11	40
30	1·3	...	7·6	...	...	...	9·8	...	...	1·8	9·4	...	...	...	5·2	...	18·8	9	30
31	1·8	...	3·1	...	4·5	..	3·1	...	1·3	...	3·6	...	1·3	...	0·9	...	13·4	11	0
S+N & W+E	81·8		94·2		98·5		109·2		93·9		121·7		88·5		64·4				
S−N & W−E	64·2		74·6		74·3		89·4		71·5		75·1		82·3		43·0				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time.

* No record.

† Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.

‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8.

§ Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.).

BRIGHTON. **K. 12.** March 2. 11 h. 0 m. to 12 h. 35 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	...	...	...	...	...	...	...	...	...	Overcast St., lowest 455 m. above Sea. Kite not flying true to wind.
	1000	...	...	...	...	...	...	...	...	
	500	950·8	279·6	6·0	88	6·4	1·182	?	19·7	
100 m. above ground	215	984·2	281·3	23	88	7·2	1·216	?	15·7	
Ground level	115	996·2	283·6		88	8·4	1·220	200	8·9	
Computed for M.S.L.	0	1010·0	...	...	...	...	...	245	18·5	...

BRIGHTON. **K. 13.** March 3. 11 h. 30 m. to 13 h. 10 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.		Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
...	...	...	...	...	...	...	...	...	St., Ni. and Ci. St. Lowest clouds about 500 m. Rain squalls at times. At 300 m. above Sea, wind 20 m.p.s.
1000	883·1	274·7	8·6	85	4·4	1·118	250	19	
500	939·1	279		80	5·6	1·170	230	19	
215	972·3	279·7	2·5	80	5·8	1·209	230	17·9	
115	984·2	280·6	9	88	6·9	1·219	230	11	
0	998·0	...	...	...	...	...	230	15·6	...

BRIGHTON. **K. 14.** March 7. 11 h. 0 m. to 12 h. 30 m. G.M.T.

Greatest height	...	...	...	...	...	...	..	...	...	Half overcast, light Fr. Cu. Wind erratic and never exceeding 9 m.p.s. Frequent convection currents.
	1000	...	...	...	...	...	...	...	...	
	500	954·2	277	11·6	55	3·3	1·198	320	?	
100 m. above ground	215	988·0	280·3	20	50	3·8	1·226	320	?	
Ground level	115	1000·0	282·3		55	4·8	1·232	320	5·4	
Computed for M.S.L.	0	1014·0	...	...	...	...	...	337	8·4	...

BRIGHTON. **K. 15.** March 9. 9 h. 50 m. to 12 h. 40 m. G.M.T.

	1335	855·2	272	6·6	80	3·4	1·093	220	12	Overcast, very thin St., kite seen through gaps. Lowest scud 100 m.
	1000	891·6	(274·2)	6·6	...	(4·4)	1·131	...	...	
	500	948·4	277·5	5·3	95	6·0	1·188	230	12	
	215	982·0	279	20	95	6·6	1·223	180	13	
	115	994·1	281		85	6·8	1·229	190	8	
	0	1008·0	...	...	...	...	...	199	14·7	...

BRIGHTON. **K. 16.** March 14. 10 h. 30 m. to 12 h. 20 m. G.M.T.

Greatest height	785	926·2	281·3	...	100	8·2	1·143	250	15	Fog. Kite not seen above 100 m. Wind direction by wire.
	1000	...	...	...	...	...	...	...	...	
	500	958·8	278	3·5	75	4·9	1·199	260	18	
100 m. above ground	215	992·8	279	26	100	7·0	1·237	260	13	
Ground level	115	1004·9	281·6		100	8·3	1·240	260	8	
Computed for M.S.L.	0	1019·0	...	...	...	...	...	246	9·3	...

BRIGHTON. **K. 17.** March 16. 10 h. 0 m. 12 h. 30 m. G.M.T.

	770	921·3	273	...	85	3·9	1·174	300	12	Half overcast. Ci.-St. and Fr.-Cu., latter just reached.
	1000	...	...	...	...	...	...	...	...	
	500	...	...	...	...	...	...	...	...	
	215	986·8	277·5	20	72	4·5	1·237	250	12	
	115	998·9	279·5		72	5·2	1·243	250	7	
	0	1013·0	...	...	...	...	...	193	11·2	...

BRIGHTON. **K. 18.** March 24. 10 h. 20 m. to 12 h. 20 m. G.M.T.

Greatest height	1160	884·8	275·8	3·8	85	4·7	1·116	310	19	Overcast St.-Cu., clouds just reached. Not sustainable at 100 m.
	1000	902·4	276·4	6·6	80	4·7	1·135	300	16	
	500	959·4	279·7	?	70	5·1	1·193	290	17·9	
100 m. above ground	215	...	?	?	?	...	...	?	?	
Ground level	115	993·1	281·8		82	6·9	1·225	260	13·4	
Computed for M.S.L.	0	1007·0	...	...	...	...	...	195	16·6	...

BRIGHTON. **K. 19.** March 27. 11 h. 0 m. to 12 h. 0 m. G.M.T.

	650	943·5	277·4	...	83	5·2	1·183	290	13·4	Clear. Very little Ci.-St.
	1000	...	...	...	...	...	...	...	...	
	500	961·0	278·5	6·0	83	5·6	1·200	300	9	
	215	995·0	280·2		83	6·3	1·234	260	14	
	115	1007·0	283·8	36	83	8·0	1·233	270	6·7	
	0	1021·0	...	...	...	...	...	193	11·0	...

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level—*continued.*

Soundings by Pilot Balloons (P.).

Aberdeen. P. 7. March 1. 11 h. 18 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.–E.	Components. S.–N.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	
Greatest height	1144	...	...	...	...	Balloon lost in loose Cu. cloud.
	1000	212	16	8·5	13·6	
	750	210	15	7·5	13·1	
	500	200	17	5·8	15·9	
	250	194	13	3·1	12·6	
100 m. above ground	130	193	8	1·9	7·8	
Ground level	30	180	7	0	7·0	
Computed for M.S.L.	0	220	19·9	12·7	5·3	Two theodolites. Base 920 m. at 15°. Lift 72 gr.

P. 8. March 6. 11 h. 20 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.–E.	Components. S.–N.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	
1100	329	11	5·7	− 9·5	Balloon entered Ni. Cu. cloud.
1000	328	11	5·8	− 9·4	
750	325	15	8·6	− 12·3	
500	320	17	10·9	− 13·1	
250	316	13	9·0	− 9·4	
130	312	13	9·6	− 8·7	
30	300	11	9·6	− 5·5	
0	320	9·2	5·9	− 7·1	Two theodolites. Lift 55 gr.

P. 9. March 8. 11 h. 15 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.–E.	Components. S.–N.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	
...	...	...	...	...	Balloon lost in St. Cu. cloud.
1000	...	...	...	...	
750	...	...	...	...	
500	180	6	0	6·0	
250	169	6	− 1·1	5·9	
130	167	6	− 1·4	5·8	
30	150	4	− 2·0	3·5	
0	180	8·3	0	8·3	Two theodolites. Lift 56 gr.

Aberdeen. P. 10. March 12.

Greatest height	...	...	...	...	...	Balloon lost in low St. and mist after one observation.
	2000	...	...	...	...	
	1750	...	..	...	...	
	1500	...	...	...	...	
	1250	...	...	...	...	
	1000	...	...	...	...	
	750	...	...	...	...	
	500	...	...	...	...	
	250	...	...	...	...	
100 m. above ground	130	...	...	...	...	
Ground level	30	...	...	...	...	
Computed for M.S.L.	0	220	19·7	12·6	15·2	...

P. 11. March 12. 11 h. 18 m. G.M.T.

	350	203	13	5·1	12·0	Balloon entered cloud bank.
	...	..	...	...	...	
	...	...	...	...	...	
	...	...	...	...	...	
	...	...	...	...	...	
	....	...	...	...	...	
	...	...	...	...	...	
	...	...	...	...	...	
	250	...	...	...	...	
	130	195	8	2·1	7·8	
	30	170	5	− 0·9	4·9	
	0	220	19·7	12·6	15·2	Two theodolites. Lift 50 gr.

P. 12. March 29. 11 h. 15 m. G.M.T.

2500	273	40	40·0	− 2·0	Average height in first 3 min. = 220 m.
2000	297	14	12·4	− 6·3	
1750	274	36	36·0	− 2·5	Average direction in first 3 min. = 263°.
1500	...	...	...	...	
1250	269	45	45·0	0·9	Average velocity in first 3 min. = 10 m.p.s.
1000	271	11	11·0	− 0·2	
750	268	22	22·0	0·7	
500	261	19	18·8	3·0	
250	...	...	...	...	
130	...	...	...	...	
30	270	14	14·0	0	
0	291	30·9	28·8	− 11·2	Two attached balloons, 2 metres apart. Lift of upper 48 gr., of both together 39 gr.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

1912. March 7. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	...	...	...
Lowest Temperature	...	...	...
Base of Stratosphere	...	...	...
* Type			

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	760·2 mm., 1014 mb.	761·5 mm., 1016 mb.
Temperature,	...	...
Vapour Pressure,	...	...
Gradient Wind :—Direction,	301°.	270°.
Velocity,	9·9 m/s.	9·6 m/s.
Correction for Curvature,	+0·8 m/s.	0 m/s.
Final Components, W. to E.	9·2 m/s.	9·6 m/s.
Final Components, S. to N.	−5·6 m/s.	0 m/s.

Sounding No., P. 1.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, ...
Distance, ...
and
Orientation, ...

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Velocity.	Components. W. to E.	Components. S to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	°	m/s.	W. to E.	S to N.	
9·0						300	14	12·4	−7·0	
8·0						300	12	10·4	−6·0	
7·0						305	11	9·0	−6·3	
6·0						305	11	9·0	−6·3	
5·0						300	11	9·6	−5·5	
4·5						300	12	10·4	−6·0	
4·0						300	11	9·6	−5·5	
3·5						305	11	9·0	−6·3	
3·0						310	10	7·7	−6·4	Most unusual uniformity of strength and direction.
2·5						305	8	6·6	−4·6	
2·0						305	10	8·2	−5·7	
1·5						310	12	9·2	−7·7	
1·0						310	12	9·2	−7·7	
0·5						300	11	9·6	−5·5	
Ground	...					...	...	...	...	
M.S.L.	1014					301	10·7	8·6	−5·2	Followed by one theodolite for 53 minutes.

1912. March 7. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	19·6 km.	55 mb.	220° A.
Lowest Temperature	8·5 km.	309 mb.	215·5° A.
Base of Stratosphere	8·5 km.	309 mb.	215·5° A.
* Type	No. 1.		

From observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	757·4 mm., 1010 mb.	759·2 mm., 1012 mb.
Temperature,	278° A.	279° A.
Vapour Pressure,	...	...
Gradient Wind :—Direction,	270°.	285°.
Velocity,	9·6 m/s.	11·3 m/s.
Correction for Curvature,	0 m/s.	0 m/s.
Final Components, W. to E.	9·6 m/s.	11·0 m/s.
Final Components, S. to N.	0 m/s.	− 2·9 m/s.

Sounding No., R. 3.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 38 m.
Place of Fall, Sutton cum Sound, near Retford.
Distance, ... 89 km.
and
Orientation, . . . 98°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
19	59	220	0			
18	69	220	+0·5			
17	81	220·5	0			
16	95	220·5	0			
15·7	100	220·5	0			
15	111	220·5	+0·5			
14	131	221	+1			
13	153	222	+0·5			
12	178	222·5	+0·5			
11·3	200	223	−4			
11	208	223				
10	243	219				
9	285	216				
8·7	300	215·5	+1			
8	334	217				
7	388	223·5	6·5			
6·8	400	225·5	9			
6	449	232·5				
5·3	500	237·5	7			
5	521	239·5	9·5			
4·0	600	249	7·5			
3	688	256·5	7·5			
2·9	700	257·5				
2	787	264				
1·9	800	263·5	7			
1	892	271				
0·9	900	272·5	13			
0·1	1000	276				
Ground	1005	276·5		...	...	
M.S.L.	1010	...		...	...	

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A. = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—Type 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
Type 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. Type 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

10. Solar Radiation at South Kensington.

Day.	JANUARY. Maximum Rate, Watts per cm².	Daily Amount, Calories per cm².	Duration of Sunshine.	FEBRUARY. Maximum Rate, Watts per cm².	Daily Amount, Calories per cm².	Duration of Sunshine.	MARCH. Maximum Rate, Watts per cm².	Daily Amount, Calories per cm².	Duration of Sunshine.	REMARKS.
			hr.			hr.			hr.	
1	No record		0·0	·019	38	0·1	·022	56	0·0	*Note.*—1 watt per cm² = 14·35 gramme-calories per cm² per minute.
2	·013	33	0·7	·019	54	0·2	·041	97	1·1	1 gramme-calorie per minute = 0·07 watt nearly.
3	·008	25	0·0	·021	80	3·0	·057	130	2·8	
4	·006	10	0·0	·020	27	0·0	·025	46	0·3	
5	·021	38	2·2	·017	48	0·0	·053	132	3·8	If the heat were distributed throughout the atmosphere 1000 gramme-calories per cm² would be sufficient to raise the temperature 4°·1 C. It would take 245 gramme-calories per cm² to raise the temperature of the whole atmosphere 1° C.
6	Instrument		0·0	·013	31	0·0	·050	164	4·6	
7	dismantled		0·0	·036	106	0·9	·048	175	6·1	
8	for repair		0·0	·018	25	0·0	·030	92	0·4	
9	·022	67	4·3	·017	50	0·0	·057	208	6·3	
10	·017	46	1·4	·035	107	3·2	·040	65	0·4	
11	·010	28	0·0	·036	84	1·3	·036	115	0·5	
12	·014	35	0·0	·024	45	0·4	·030	89	0·0	
13	·007	17	0·0	·006	11	0·0	·013	40	0·0	
14	·006	15	0·0	·024	38	0·3	·049	137	1·7	
15	·006	11	0·0	·024	57	0·0	·030	80	0·2	
16	·004	14	0·0	·017	41	0·0	·056	212	5·9	
17	·004	9	0·0	·032	119	2·9	·029	56	0·0	
18	·003	6	0·0	·016	65	0·0	·021	80	0·0	
19	·006	16	0·0	·019	40	0·0	·055	150	2·0	
20	·017	30	0·0	·011	22	0·0	·050	214	4·6	
21	·005	9	0·0	·017	49	0·0	·060	156	2·2	
22	·007	7	0·0	·008	29	0·0	·057	117	1·1	
23	No record		0·0	·012	28	0·0	·027	68	0·0	
24	·022	40	0·0	·031	68	0·1	·052	184	2·2	
25	·008	15	0·0	·041	65	0·6	·054	111	0·4	
26	·014	41	0·0	·036	68	0·3	·059	225	4·1	
27	·025	59	0·8	·039	>148	4·8	·069	320	8·1	
28	·018	45	0·1	·037	122	1·5	·039	134	0·8	
29	·017	63	1·5	·032	91	1·5	·064	324	10·5	
30	·016	50	0·8				·071	278	8·9	
31	·019	52	0·3				·022	85	0·0	
Total (For days with values in column 2)		781	12·1	..	1608	16·3	...	4340	79·0	
Mean (For days with values in column 2)		30	0·45	...	57·4	0·58	...	140	2·55	
Total (For all days)		...	12·1	...	...	21·1	...	...	79·0	
Mean (For all days)		...	0·39	...	...	0·73	...	...	2·55	
Ratio of Mean Daily Amount to Mean Duration.		67			99			55		

N.B.—The values of Solar Radiation at South Kensington are obtained from the records of a Callendar Instrument which depends upon the difference of temperature between a black and a bright wire exposed horizontally to radiation from the whole of the sky. The values may be taken as representing the total radiation and the maximum rate of radiation per cm² received by a horizontal surface. If it is desired to compare the values published for Kew and Eskdalemuir in Tables 3 and 4 with the simultaneous value recorded by the Callendar Instrument the former must be multiplied by the cosine of the zenith distance of the sun at the time of observation. The duration of sunshine in this table is obtained from a Campbell-Stokes Recorder.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

APRIL 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 4*d*.

Second Year.—No. 4. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	5	1·1		13th Ir, P=2 h. 46 m. 49 s., S=2 h. 52 m. 31 s., Δ=4190 kms. I, Disturbed 19 h. 14 m.–20 h.
2	4–5	0·8		
3	4–5	0·6		14th I, Disturbed 14 h.–14 h. 36 m. I, Disturbed 22 h. 54 m. to 1 h.
4	4–5	0·9		
5	4–5	0·9		15th I, P?=16 h. 26 m. 21 s., S=16 h. 35 m. 23 s. P? resembles the movement characteristic of eastern earthquakes that usually occurs about 4 min. after true P. Ir, P=23 h. 31 m. 3 s., S=23 h. 35 m. 23 s., L=23 h. 39 m., Δ=2690 kms.
6	5	1·1		
7	5	0·8		16th I, Feeble disturbance 3 h.–3 h. 14 m.
8	5–6	2·8		
9	5	1·2		17th I, P? S=4 h. 11 m. 50 s., L=4 h. 17 m. I, Feeble movement on West Component 16 h. 44 m.
10	4–5	0·7		
11	4–5	0·5		18th I, Long waves about 8 h. 30 m.
12	4–5	0·3		
13	4–5	0·2	Ir, I.	19th Ir, P=0 h. 25 m. 23 s., S=0 h. 29 m. 43 s., L=0 h. 33 m., Δ=2690 kms., *a* towards S.E. I, Long waves 15 h. 38 m.
14	4–5	0·3	I, I.	
15	4–5	0·4	I, Ir.	20th Iu, P=1 h. 52 m. 29 s., S=2 h. 2 m. 15s., Δ=8520 kms.
16	5	0·7	I.	
17	4–5	0·5	I, I.	21st Ir, S=3 h. 3 m. 3 s., L=3 h. 7 m.
18	4–5	0·3	I.	
19	4–5	0·7	Ir, I.	22nd I, Long waves 6 h.
20	4–5	0·8	Iu.	23rd Iu, P?=22 h. 6 m. 46 s., S?=22 h. 14 m. 47s., L=22 h. 25 m.
21	5	0·7	Ir.	
22	5	0·4	I.	24th I, Disturbed 3 h. 19 m.–3 h. 41 m.
23	6	0·6	Iu.	25th I, P=10 h. 36 m. 37 s., S?, L=10 h. 48 m.
24	6–7	0·6	I.	
25	6	0·5	I.	26th I, Long waves 2 h. 48 m.–3 h. 6 m. I, Disturbed 15 h. 4 m.–17 h.
26	5	0·2	I, I.	27th P?=4 h. 5 m. 47 s., S?=4 h. 16 m. 21 s., L=4 h. 36 m.
27	4–5	0·2	Iu.	
28	4–5	0·3		30th I, Long waves at 8 h 30 m.
29	4–5	0·4		
30	4	0·3	I.	An explanation of the notation used is given in the preface.

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H=9·2 m. Barometer Cistern, H_b=13·7 m.

Heights above Ground:—Thermometers, h_t=1·2 m. Rain-gauge, h_r=0·6 m. Sunshine Recorder, h_s=12·8 m. Cups of Anemometer, h_a=13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
			200+	200+	200+	200+									Tenths of Sky covered.							
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		γ·	° ′	° ′
1	1020·8	1026·0	79·1	79·3	82	77	5·8	7·8	62	81	3	5	17	2	1	*10*	1·0	10·6	Fine. Very dull evening.	...	...	...
2	1026·3	1029·5	82·9	81·4	85	79	11·9	10·5	98	96	20	5	—	0	10≡0	*8*	1·0	3·3	Misty *a*.; clearing after 15 h.	...	...	...
3	1030·3	1030·6	83·2	82·6	85	79	12·2	11·2	98	95	18	3	20	3	8	*10*≡0	0·8	1·3	≡0	...	...	...
4	1028·0	1024·3	82·9	83·7	85	82	11·9	11·5	97	90	19	5	20	8	10≡0	*10*≡0	0·3	1·2	≡0. Gloomy after 16 h.	...	...	...
5	1024·4	1026·6	84·3	83·9	85	83	13·2	12·9	98	98	21	7	21	8	10≡0	*10*≡0● 0	0·8	—	Overcast and heavy mist.	...	...	...
6	1026·7	1028·3	83·5	83·1	84	83	12·6	12·2	100	100	22	4	22	3	10≡0● 0	*10*≡0	0·5	—	Heavy mist or fog throughout.	...	...	...
7	1025·5	1020·8	82·9	82·8	86	82	11·9	11·2	98	93	22	5	21	6	8	*10*	0·5	4·2	Fair; dull evening.	...	...	...
8	1010·8	1013·7	82·3	79·9	83	78	10·5	7·8	92	79	26	12	27	11	8	*8*	0·8	4·3	Squally.	17880	20 30·7	68 9·5
9	1017·5	1013·6	81·1	81·5	83	77	7·8	9·8	73	90	—	1	25	8	4	*10*	0·8	7·7	Fair; good visibility.	...	...	...
10	1011·2	1012·7	82·5	82·8	84	81	10·9	9·2	91	81	25	8	1	3	10≡0	*10*	—	—	≡0 and dull.	...	...	...
11	1018·7	1024·8	81·7	80·0	83	76	7·8	7·8	68	77	31	4	—	1	8	*1*	—	5·6	Fair.	...	...	...
12	1028·8	1029·8	80·7	82·6	86	*n*75	8·8	10·9	84	91	—	0	—	1	8	*10*	—	3·2	Fair to fine. Dull evening.	...	...	...
13	1030·8	1031·3	83·8	81·8	87	81	11·5	10·9	90	95	—	1	—	1	10	*1*	—	3·4	Dull, then improving.	...	...	...
14	1031·5	1031·3	84·0	81·7	86	78	11·5	10·5	88	93	14	2	—	1	5	*2*	—	11·5	☌. Fair.	...	...	...
15	1029·1	1025·3	84·6	83·4	87	81	11·5	10·5	85	83	15	4	16	3	7	*9*	—	2·9	Fair to dull.	...	...	...
16	1020·2	1017·9	82·9	81·8	86	81	9·8	9·8	83	89	15	5	15	4	10	*2*	—	6·8	Dull *a*. Fine *p*.	...	...	...
17	1014·7	1012·1	84·1	82·5	85	81	8·8	9·8	67	84	12	6	15	5	3∞	*8*∞	2·8	8·4	∞, but fine.	...	...	...
18	1009·3	1008·7	83·1	82·6	86	81	10·2	10·2	83	85	14	6	14	6	8∞	*2*∞	—	5·0	∞. Fair.	...	...	...
19	1006·6	1005·3	84·0	84·2	85	82	11·2	12·2	85	91	15	10	15	9	10	*10*≡0	18·0	—	Gloomy. ● in afternoon.	...	...	...
20	1010·9	1019·1	81·7	81·9	85	81	10·9	9·8	96	87	26	3	—	0	10≡0● 0	*10*	2·5	—	≡0● most of day.	...	...	...
21	1024·4	1027·8	83·2	81·2	85	79	9·8	8·8	80	82	—	1	8	2	5	*1*	—	12·8	☌. Fine and clear.	...	...	...
22	1028·2	1027·2	82·8	82·8	86	77	9·8	9·5	83	79	32	4	6	4	4	*9*	—	13·4	Fine. Dull evening.	17879	20 29·0	68 10·9
23	1027·7	1028·0	85·3	84·3	*x*91	80	11·5	10·9	81	82	—	1	2	2	4∞	*2*∞	—	12·3	∞. Fine.	...	...	...
24	1027·4	1027·3	87·7	83·3	*x*91	79	9·8	9·8	58	79	9	3	—	0	0∞	*1*∞	—	13·2	∞. Fine.	...	...	...
25	1025·6	1020·6	84·7	83·8	*x*91	77	10·2	8·5	74	66	—	0	14	3	0∞	*10*	—	12·4	∞. Fine. Dull evening.	...	...	...
26	1013·9	1008·4	84·2	83·1	88	78	10·5	10·2	78	83	—	0	14	3	6∞	*10*	—	7·6	☌; fine; ∞.	...	...	...
27	1007·5	1010·2	85·7	85·4	88	81	11·2	10·2	77	70	—	1	7	4	6∞	*3*∞	—	10·4	☌. T² 15 h. 45 m.	...	...	...
28	1014·7	1018·6	86·3	83·2	89	80	11·5	10·2	74	82	—	1	5	2	0∞	*1*∞	—	12·9	Fine, but very hazy.	...	...	...
29	1020·8	1024·0	83·5	81·5	86	77	9·8	8·8	79	81	30	4	—	1	3	*1*	—	13·3	Fine.	...	...	...
30	1023·9	1022·7	84·5	84·3	86	77	9·8	12·9	73	97	13	6	17	2	10	*10*≡0	2·5	0·3	Dull, with ≡0●.	...	...	...
Means	1021·2	1021·6	83·4	82·5	85·9	79·5	10·5	10·2	83	86		3·9		3·5	6·5	6·6	32·3	6·26	Monthly **Totals** or **Means**.	17880	20 29·9	68 10·2
Normal 40 years	1011·1	1011·3	82·0	81·6	85·2 (35 years)	79·1	9·4	9·4	82	85 (25 years)		5·5 (30 years)		5·0 (30 years)	—	—	99·8	5·29 (30 yrs)	**Normals**, 40 years.			

Wt. 39025/327—375—1/13. N. & Co., Ltd. Gp. XV.

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

3. KEW OBSERVATORY, SURREY.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity.				Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
							Vapour Pressure.		Percentage.														
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
			200 +	200 +	200 +	200 +									Tenths of Sky covered.					200 +	200 +	200 +	
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		°	°	°	
1	1004·8	1019·8	78 o	77·7	82	76	6·1	5·4	70	62	31	9	30	2	9	4	—	7·7	—	71	80·8	81·7	● early, then fine.
2	1027·2	1026·9	78·4	82·2	85	74	6·1	9·8	70	83	26	4	25	3	2	10	—	8·2	—	67	80·2	81·7	⌙. Fine. Dull evening.
3	1031·0	1030·9	80·7	81·6	88	77	8·2	9·2	79	82	—	1	18	2	0≡⁰	1	—	11·2	·061	70	80·8	81·7	⌙. Fine throughout.
4	1030·2	1025·2	81·5	83·2	87	79	9·8	10·2	89	82	21	4	21	5	10	4	—	4·2	—	74	81·5	81·6	Dull to fine and clear.
5	1020·5	1021·9	84·1	84·7	89	81	10·9	11·2	82	82	22	6	22	4	10	2	—	1·8	—	79	81·9	81·7	Dull to fine.
6	1020·6	1024·0	87·1	85·2	91	83	11·9	11·2	73	80	23	9	23	2	6	3	—	11·1	—	79	82·5	81·7	Fine throughout.
7	1025·3	1019·7	84·7	84·6	90	82	11·2	10·9	82	79	23	2	23	4	9	10	—	2·4	—	79	83·5	81·8	Dull to fair. Overcast *n*.
8	1008·5	1002·6	82·6	81·2	86	80	8·5	6·1	72	57	22	8	23	6	10	0	0·3	2·1	—	81	83·6	81·8	Dull ; improving after 15 h.
9	1008·5	1009·2	78·6	78·4	82	76	5·4	6·1	58	69	29	8	21	4	4	10	1·0	11·3	—	72	82·4	81·9	Fine and clear.
10	1004·2	1009·6	79·7	79·2	83	77	6·5	7·5	64	78	29	7	—	1	6	5	—	7·6	·084	73	81·8	81·9	●⁰ showers early, then fine.
11	1013·3	1020·5	79·7	76·7	84	74	6·8	6·1	69	78	25	4	—	1	5	0≡⁰	—	8·8	—	67	81·3	82·0	⌙. Fine.
12	1029·9	1031·0	78·0	78·0	83	*n* 73	5·4	6·1	63	70	32	4	19	2	3	5	—	10·1	·044	*n* 64	80·7	81·9	⌙. Fine all day.
13	1031·5	1029·7	80·9	82·6	85	77	7·5	8·5	70	71	—	1	24	2	7	10	—	4·8	·054	71	81·2	82·0	Fine to fair.
14	1029·4	1028·1	82·4	83·3	87	80	9·5	8·2	79	66	24	2	32	2	10≡⁰	0	—	1·1	—	77	81·9	81·9	Dull till 11 h.
15	1028·5	1026·7	78·9	80·4	86	77	8·2	7·8	87	77	3	3	8	4	10≡⁰	10	—	4·1	—	71	81·8	81·9	≡⁰ *a*. Fair *p*.
16	1025·6	1021·7	81·5	80·8	86	76	8·5	7·1	78	68	8	3	7	4	8≡⁰	0	—	8·5	·067	69	81·8	81·9	Fine throughout.
17	1018·1	1014·7	81·3	81·5	88	79	8·8	8·5	82	76	5	4	8	3	0≡⁰	0≡⁰	—	7·7	—	76	81·9	81·9	Fine from 9 h.
18	1013·0	1013·2	82·5	84·7	90	75	9·2	9·5	76	69	—	1	—	1	0≡⁰	9	—	9·2	·073	69	81·9	82·0	Fine throughout.
19	1015·9	1018·3	85·3	83·1	90	77	8·8	8·8	61	73	—	1	18	2	0	0	—	8·4	·076	70	82·8	82·1	Cloudy 13 h.–15 h.
20	1021·7	1024·5	86·7	84·7	*x* 93	77	9·5	9·8	62	72	9	3	—	1	0≡⁰	0≡⁰	—	6·8	·066	70	82·7	82·1	Fine, with warm wind.
21	1026·1	1026·1	86·2	85·4	*x* 93	78	9·5	9·2	62	64	—	1	8	2	0∞	0	—	11·4	—	71	83·0	82·2	Fine. ∞
22	1027·6	1028·5	87·0	86·9	92	77	10·2	8·8	64	57	8	3	6	5	0≡⁰	0∞	—	12·2	·065	70	83·0	82·3	≡⁰ or ∞. Fine.
23	1028·8	1026·8	86·6	84·2	91	81	9·2	7·5	60	57	3	6	3	6	0≡⁰	0	—	13·5	·071	77	83·6	82·4	≡⁰ or ∞. Very fine.
24	1025·9	1024·7	84·7	85·4	91	79	9·2	7·8	67	**54**	4	4	3	4	0	5	—	11·3	·062	75	83·5	82·4	Fine throughout. ⏀ 22 h.
25	1023·9	1020·0	82·5	82·9	89	78	9·2	9·2	77	73	32	5	1	3	0	0	—	13·2	·076	72	83·4	82·4	Fine and clear.
26	1016·8	1011·6	80·4	81·4	89	78	8·2	9·5	79	86	2	5	8	4	10≡⁰	0≡⁰	—	7·4	·040	75	83·6	82·4	Dull, then clear from 10 h.
27	1010·5	1010·1	81·0	82·4	88	79	8·5	8·2	81	69	5	4	4	7	10≡⁰	0	—	6·0	—	76	83·6	82·6	Dull *a*. Fine *p*. ∞
28	1013·3	1015·6	81·3	81·1	86	79	7·1	6·5	64	60	3	6	1	4	3	6	—	9·8	—	76	83·6	82·7	Fine from 8 h. 30 m.
29	1017·2	1022·7	80·9	80·0	84	76	7·1	6·8	67	68	32	5	3	3	9	0	—	1·4	—	70	83·4	82·7	Cloudy.
30	1025·9	1024·7	81·7	79·6	85	76	7·1	7·8	64	80	3	5	—	0	4	?0∞	—	11·5	·075	67	82·7	82·8	≡⁰ or ∞. Fine.
Means	1020·8	1021·0	82·2	82·1	87·3	77·7	8·4	8·3	72	71		4·3		3·1	4·8	3·1	1·3	7·81	—	72·6	82·3	82·0	Monthly **Totals** or **Means**.
Normal 40 years	1012·6	1012·5	81·4	80·8	85·8 (35 years)	77·3 (35 years)	8·2	8·2	75	77 (25 years.)		4·3 (30 years)		3·3 (30 years)	—	—	41·6	5·05 (30 yrs)	—	—	—	—	**Normals, 40 years.**

4. ESKDALEMUIR OBSERVATORY, DUMFRIESSHIRE.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	984·7	992·3	75·9	72·3	79	72	6·8	4·1	91	69	30	13	32	5	1	2	0·5	8·1	—	—	—	—	✻⁰ 14 h. 30 m. ⏀ 23 h.
2	992·8	997·7	76·1	76·5	84	71	7·1	6·5	95	81	20	5	—	1	10●	0	0·5	4·9	—	—	—	—	
3	999·9	997·9	78·2	79·9	83	69	7·1	9·5	80	95	20	6	20	6	9	10≡⁰	—	1·9	—	—	—	—	
4	991·7	982·2	81·0	82·1	82	79	9·2	10·5	88	90	20	12	20	18	10≡⁰	10●	7·4	—	—	—	—	—	Very stormy after 17 h. ▲●²
5	981·5	985·3	82·6	83·1	84	82	11·2	11·2	94	91	24	14	24	13	10●⁰	10●	1·8	—	—	—	—	—	Generally stormy.
6	984·0	992·4	82·8	78·6	85	78	10·5	7·1	87	79	24	18	24	15	10●⁰	2	—	7·1	—	—	—	—	Very high wind till 18 h.
7	993·2	983·7	79·7	81·1	82	77	8·2	9·8	83	93	20	5	20	9	10	10●⁰≡⁰	5·1	—	—	—	—	—	
8	963·7	968·9	80·1	74·6	81	73	9·2	6·1	90	87	20	15	32	12	10●	1	6·1	2·9	—	—	—	—	
9	978·2	972·4	76·9	75·4	80	72	5·4	6·1	67	84	28	10	24	9	7	9	2·5	7·4	—	—	—	—	Frequent ✻ 9 h.–21 h.
10	977·6	981·3	76·7	70·3	80	68	5·1	3·1	65	62	28	2	—	1	4	0	0·3	9·9	—	—	—	—	✻● 14 h.
11	985·4	994·0	75·2	70·9	79	68	4·1	3·7	57	74	28	9	—	1	8	5	—	10·1	·088	—	—	—	✻ showers 5 h. 30 m.
12	1000·6	1000·7	75·2	76·2	80	*n* 65	4·8	6·8	63	88	12	3	—	1	6	8	—	7·0	—	—	—	—	
13	1002·0	1001·6	79·3	79·8	85	74	9·2	7·8	96	80	28	3	—	1	9●≡⁰	1	—	0·4	—	—	—	—	
14	1001·4	1000·8	82·5	80·4	87	72	8·2	8·8	68	86	28	7	—	1	3	8	—	6·0	—	—	—	—	
15	1000·3	998·1	84·4	79·9	87	76	9·5	9·2	72	93	—	1	—	1	9	5	—	0·7	—	—	—	—	
16	996·3	993·4	82·0	78·4	87	75	10·2	8·2	89	90	20	4	—	1	10	9	—	6·4	—	—	—	—	
17	992·3	988·6	81·9	76·4	85	72	7·8	6·8	69	88	—	1	—	1	0∞	6	—	11·5	—	—	—	—	Solar eclipse at noon.
18	985·6	985·3	81·7	79·2	87	72	7·8	8·2	70	84	—	1	—	1	2∞	10	—	10·1	—	—	—	—	Hazy.
19	987·6	988·8	82·6	78·6	87	71	7·8	7·5	65	84	12	2	—	1	0∞	0∞	—	9·5	—	—	—	—	Hazy.
20	991·8	994·8	83·7	81·8	87	73	7·8	8·8	61	79	12	6	—	1	8	9	—	2·3	—	—	—	—	
21	997·4	999·7	84·2	82·9	89	76	9·8	9·8	73	82	*16*	2	—	1	9	10	—	0·5	—	—	—	—	
22	1002·2	1004·0	88·1	82·4	*x* 92	78	8·8	7·5	**50**	62	12	3	32	2	2	1	—	10·5	—	—	—	—	Very fine, but hazy.
23	1006·9	1006·0	87·5	79·8	91	76	8·5	7·1	51	71	8	3	8	2	0	0	—	13·9	·088	—	—	—	Very fine.
24	1004·3	1002·0	86·1	79·8	90	76	8·5	6·8	56	70	8	6	—	1	0	1	—	13·7	·089	—	—	—	Very fine.
25	999·7	995·7	83·8	79·2	89	73	7·8	8·2	62	84	12	2	8	3	0	2	0·5	8·9	—	—	—	—	☇. ● 15 h.–16 h.
26	991·4	986·6	77·0	78·0	86	75	7·5	7·8	91	88	8	4	32	4	10≡⁰	2	—	4·0	—	—	—	—	Misty 5 h.–10 h.
27	986·2	988·2	78·7	75·6	83	73	6·8	6·1	76	82	4	6	4	5	10	1	—	6·6	—	—	—	—	
28	989·4	990·4	80·1	78·9	84	71	6·1	6·5	60	70	4	6	—	1	6	9	—	9·9	—	—	—	—	
29	994·0	998·3	79·8	75·8	81	75	6·5	5·8	65	77	4	8	—	1	9●	8	—	2·4	—	—	—	—	
30	998·8	995·5	80·1	74·6	85	73	6·5	5·4	64	76	—	1	—	1	9	2	1·3	6·6	—	—	—	—	
Means	992·0	992·2	80·8	78·1	84·6	73·5	7·8	7·4	73	81		5·9		4·0	6·4	5·0	26·0	6·10	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. KEW OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 1·69.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air–Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	60	230	x±	190	—	—	—	—	—	—	—	2	0	515	20 37	468	10 33	47	55·3	13 8	43·4	10 28	11·9
2	175	265	115	165	560	610	0·05	0·00	0·05	0·05	0·25	1	1	521	23 55	479	10 30	42	54·8	13 0	44·1	8 28	10·7
3	225	370	140	225	330	270	0·00	0·00	0·00	0·00	0·40	0	1	518	0 0	476	11 0	42	55·4	14 2	44·2	8 40	11·2
4	165	100	165	215	—	—	—	—	—	—	—	1	0	518	16 2	488	10 30	30	55·2	13 25	44·7	7 25	10·5
5	105	105	200	240	—	—	—	—	—	—	—	0	2	521	16 12	460	20 44	61	58·5	14 40	31·5	24 0	27·0
6	105	180	240	345	—	—	—	—	—	—	—	0	2	510	15 43	465	1 43	45	55·4	12 50	31·5	0 0	23·9
7	155	320	155	130	—	—	—	—	—	—	—	0	1	532	19 58	468	9 45	64	55·0	12 42	41·4	19 39	13·6
8	85	75	85	215	—	—	—	—	—	—	—	1	0	509	24 0	464	10 53	45	54·7	12 59	43·8	7 40	10·9
9	115	180	100	265	—	—	—	—	—	—	—	1	0	527	23 58	480	10 24	47	53·5	12 55	43·7	8 53	9·8
10	35	200	65	315	760	420	0·55	—	—	—	0·25	1	1	530	0 6	450	9 35	80	53·8	13 21	42·7	8 7	11·1
11	150	265	140	495	590	580	0·05	0·00	0·05	0·05	0·50	0	0	515	17 3	487	10 22	28	51·7	13 48	44·0	8 24	7·7
12	315	395	140	230	520	340	0·45	0·15	0·30	0·40	0·35	1	0	520	20 43	484	10 12	36	53·5	13 23	43·8	7 43	9·7
13	100	290	125	265	—	—	—	—	—	—	—	0	0	517	5 5	486	10 25	31	53·1	13 3	45·5	7 40	7·6
14	165	190	140	165	—	—	—	—	—	—	—	0	1	537	16 50	483	11 12	54	55·4	12 48	44·3	9 3	11·1
15	215	405	365	430	570	300	0·00	0·00	0·00	0·00	0·90	0	1	537	5 10	434	11 22	103	54·9	13 18	40·7	4 0	14·2
16	290	460	395	470	970	520	0·30	0·00	0·30	1·20	1·00	0	1	527	19 35	441	8 39	86	55·2	11 58	42·3	19 21	12·9
17	200	355	265	535	—	—	—	—	—	—	—	0	1	524	22 33	455	9 43	69	53·1	14 4	42·4	7 47	10·7
18	240	205	130	190	710	520	0·55	0·00	0·40	0·50	0·60	1	1	511	18 47	459	10 21	52	54·5	13 20	43·0	7 48	11·5
19	180	480	165	365	1050	670	0·50	0·40	0·80	1·30	1·20	0	1	534	22 5	474	10 46	60	53·5	13 23	42·7	8 30	10·8
20	215	585	290	240	—	—	—	—	—	—	—	1	1	516	2 55	468	10 12	48	53·4	13 4	43·2	7 46	10·2
21	180	330	130	405	—	—	—	—	—	—	—	0	0	517	18 48	474	11 31	43	53·4	12 33	43·1	8 1	10·3
22	225	530	320	645	1190	930	0·20	0·30	0·50	1·60	1·20	0	0	518	20 18	475	11 51	43	54·5	14 2	44·3	8 58	10·2
23	305	625	200	485	1710	1490	0·15	0·00	0·25	0·45	0·85	0	0	519	18 17	477	11 50	42	52·2	12 50	42·8	8 17	9·4
24	270	530	395	815	1030	1000	0·05	0·00	0·05	0·25	1·35	0	0	519	19 41	481	12 12	38	51·2	12 43	44·7	7 20	6·5
25	270	345	270	460	1300	1030	0·25	0·15	0·50	1·30	1·05	0	0	523	19 5	484	11 12	39	53·2	13 10	45·2	7 45	8·0
26	225	435	460	355	510	300	—	—	—	—	0·75	0	0	524	20 0	498	10 0	26	51·9	12 16	44·0	6 50	7·9
27	165	370	530	430	—	—	—	—	—	—	—	0	0	520	20 53	490	11 39	30	53·4	13 13	44·4	7 45	9·0
28	180	200	180	240	—	—	—	—	—	—	—	0	0	519	19 13	481	11 40	38	53·0	13 23	43·1	7 48	9·9
29	165	225	175	530	—	—	—	—	—	—	—	1	0	516	22 50	496	10 50	20	53·4	13 23	41·4	8 0	12·0
30	265	395	140	215	790	540	0·00	0·25	0·15	0·20	0·80	1	0	528	14 22	491	11 50	37	55·5	12 33	43·5	7 43	12·0
M.	189	324	214	348	—	—	—	—	—	—	—	—	—	521	—	474	—	48	54·1	—	52·6	—	11·4

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3h, 9h, 15h, 21h, are given in the table. A similar note applies to the values in Table 6.

6. ESKDALEMUIR OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air–Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component. §			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.															
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	132	204	144	414	—	—	—	—	—	—		0 *a*	0	18 1	1034	984	10 51	13 51	249	208	9 10	18 0	381	365	12 35
2	114	708	150	336	—	—	—	—	—	—		1 *a*	0	23 44	1036	985	11 16	14 1	266	211	9 15	18 0	392	368	12 30
3	90	156	174	210	—	—	—	—	—	—		1 *a*	1	2 44	1028	984	11 1	14 2	272	210	8 53	17 20	397	368	0 15
4	24	18	—	—	—	—	—	—	—	—		—	1	21 12	1033	997	11 8	13 18	270	218	8 21	16 50	396	373	12 0
5	—	—	66	114	—	—	—	—	—	—		—	2	19 45	1045	984	14 7	**14 41**	**297**	130	24 0	17 20	411	369	12 5
6	60	42	162	192	—	—	—	—	—	—		1 *a*	1	3 20	1031	971	0 29	13 25	274	**125**	**0 2**	19 40	416	**342**	**0 41**
7	216	30	180	120	—	—	—	—	—	—		1 *a*	1	**19 54**	**1070**	974	9 46	12 46	263	194	19 40	18 0	411	382	2 30
8	168	*x*	96	258	—	—	—	—	—	—		1 *b*	0	20 50	1027	979	11 31	13 33	257	210	8 30	18 0	399	388	13 25
9	168	198	*x*	138	—	—	—	—	—	—		1 *b*	0	23 57	1045	986	12 55	13 46	259	213	9 25	18 0	402	386	12 20
10	288	138	*x*	366	—	—	—	—	—	—		1 *b*	1	0 7	1048	954	9 36	13 25	256	210	7 57	17 10	412	389	13 30
11	336	180	168	—	—	—	—	—	—	—		1 *b*	1	16 57	1030	996	11 6	13 48	250	215	8 49	18 30	408	392	11 45
12	—	—	270	102	—	—	—	—	—	—		1 *a*	1	20 35	1035	993	10 13	13 23	260	212	8 40	18 10	410	389	12 20
13	342	300	150	312	—	—	—	—	—	—		0 *a*	1	5 5	1040	994	11 10	13 6	255	225	5 58	19 0	410	395	12 0
14	168	102	132	234	—	—	—	—	—	—		0 *a*	1	16 38	1056	984	11 11	13 46	267	210	8 5	20 30	422	398	12 0
15	156	108	240	468	—	—	—	—	—	—		0 *a*	2	5 19	1063	**940**	**11 23**	15 3	259	188	4 0	18 30	424	373	5 19
16	324	168	174	282	140	70	0·73	1·10	0·18	0·30		0 *a*	1	19 29	1059	950	11 15	13 36	262	202	6 25	16 50	433	404	5 40
17	270	228	186	510	—	—	—	—	—	—		0 *a*	1	22 28	1053	964	9 37	14 4	254	203	8 59	18 20	430	407	3 4
18	270	114	150	222	140	200	0·73	0·94	0·29	0·40		0 *a*	1	18 36	1035	964	10 32	13 20	262	203	8 42	19 40	427	401	12 0
19	246	198	102	192	—	—	—	—	—	—		0 *a*	1	22 3	1047	977	10 45	22 1	255	202	8 30	19 0	423	405	22 35
20	234	312	162	162	—	—	—	—	—	—		0 *a*	0	19 30	1035	972	11 41	2 37	261	208	9 2	19 10	422	393	3 12
21	132	222	126	30	—	—	—	—	—	—		1 *a*	0	18 45	1037	977	11 28	15 22	251	207	8 17	19 30	424	407	10 50
22	66	138	114	306	—	—	—	—	—	—		0 *a*	0	20 16	1038	982	12 51	14 3	258	213	9 1	17 25	431	411	11 20
23	120	186	108	240	—	—	—	—	—	—		0 *a*	0	17 56	1045	984	11 50	13 34	245	206	8 20	21 0	436	411	11 25
24	144	126	144	114	—	—	—	—	—	—		0 *a*	0	19 38	1040	991	12 12	17 9	236	214	6 4	21 0	430	416	11 30
25	120	90	*x*	168	—	—	—	—	—	—		1 *b*	1	19 5	1040	986	11 10	13 11	252	216	9 10	20 0	429	411	12 0
26	444	258	138	114	—	—	—	—	—	—		0 *a*	1	22 18	1044	1004	11 50	13 31	251	217	8 0	22 0	431	413	11 59
27	108	72	114	96	—	—	—	—	—	—		1 *a*	1	20 28	1036	986	11 38	13 13	258	216	7 43	20 0	435	412	11 50
28	72	114	126	24	—	—	—	—	—	—		1 *a*	1	18 30	1040	977	11 59	13 24	255	207	8 31	18 10	436	415	12 0
29	42	84	108	108	—	—	—	—	—	—		1 *a*	1	22 54	1035	997	12 15	13 58	269	201	8 7	24 0	441	419	11 30
30	54	102	108	144	580	140	0·00	0·49	0·07	0·08		0 *a*	1	14 29	1039	991	11 50	**14 29**	262	204	**8 0**	**17 20**	**445**	428	12 20
M.	173	116	145	220	—	—	—	—	—	—		—	—	—	1041	980	—	—	260	203	—	—	419	394	—

x Indeterminate.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument.

An explanation of the Headings of the columns is given in the Preface. The final values adopted will be published in the annual volume.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hrs.	Min.
1	...	14·4	...	...	...	13·9	5·8	...	...	9·4	4·0	...	...	4·9	2·2	...	21·0	8	10
2	0·9	...	2·7	...	5·4	...	4·0	...	4·5	...	4·5	...	...	0·5	0·5	...	13·4	10	0
3	...	0·9	0·9	...	4·9	...	2·2	...	5·4	...	2·2	...	3·1	...	1·3	...	9·8	14	35
4	5·4	...	2·2	...	6·3	...	2·7	...	9·8	...	1·8	...	8·1	...	5·4	...	18·8	21	55
5	5·8	...	5·8	...	6·3	...	9·8	...	5·8	...	5·8	...	2·2	...	2·2	...	18·8	0	55
6	3·6	...	8·1	...	5·8	...	5·8	...	3·6	...	8·5	...	...	1·8	4·0	...	19·2	4	40
7	0·9	...	2·7	...	4·5	...	0·9	...	4·5	...	6·7	...	2·7	...	6·3	...	11·6	14	40
8	4·5	...	6·7	...	9·8	...	6·7	...	...	...	17·0	...	...	4·9	12·1	...	27·7	11	30
9	...	10·3	10·3	...	...	5·8	8·9	...	3·1	...	8·1	...	4·5	...	11·2	...	24·6	23	0
10	...	6·7	9·8	...	...	4·5	6·7	...	...	3·1	3·1	...	...	2·2	1·3	...	17·9	3	25
11	...	3·6	2·7	...	...	7·2	7·2	...	...	9·4	4·0	...	...	7·2	...	...	17·9	13	40
12	...	4·5	...	...	...	...	...	1·3	2·7	...	1·3	...	0·9	...	2·7	..	8·5	1	10
13	1·3	...	2·2	...	1·3	...	1·3	...	...	0·9	2·7	...	0·5	...	6·9	...	4·5	13	45
14	...	0·5	1·3	...	1·3	...	1·3	...	...	...	2·7	...	2·2	...	3·1	...	7·6	22	10
15	0·5	...	1·3	...	...	...	1·8	...	...	...	2·7	...	0·9	...	0·9	...	5·8	5	20
16	0·9	...	...	...	3·1	...	...	0·5	3·1	...	4·5	...	0·5	...	0·5	...	9·8	13	15
17	0·5	...	0·5	...	...	0·5	...	1·3	...	1·8	0·9	...	...	0·9	0·5	...	7·6	9	55
18	...	0·9	0·5	...	3·1	...	1·3	...	2·7	...	2·7	...	2·2	...	0·9	...	6·7	9	40
19	1·8	...	0·5	...	3·6	...	...	1·3	6·7	...	...	...	3·1	...	...	0·5	11·6	12	20
20	5·4	...	...	2·2	7·6	...	...	3·1	7·2	...	...	1·3	4·0	...	...	0·9	14·3	8	50
21	4·9	...	...	2·2	4·9	...	...	2·2	2·7	...	1·8	...	...	2·2	...	1·3	10·3	10	50
22	...	0·5	...	0·9	...	0·5	...	0·5	...	1·8	1·8	...	...	1·3	1·3	...	5·8	23	55
23	1·3	...	...	1·3	...	...	...	6·7	...	3·6	...	5·4	...	2·7	...	6·3	11·2	13	30
24	...	2·7	...	6·3	...	3·1	...	7·6	...	6·7	...	2·7	...	1·3	...	0·9	11·2	8	35
25	...	0·9	...	2·7	...	0·5	...	1·3	...	5·4	...	0·9	...	0·9	...	0·9	7·2	13	30
26	...	...	...	0·9	...	2·7	...	3·6	0·9	...	...	4·5	...	1·3	...	1·8	10·3	12	30
27	...	0·5	...	2·7	...	1·8	...	10·3	...	1·8	...	10·3	...	5·4	...	5·4	14·8	12	20
28	...	3·1	...	7·6	...	1·3	...	1·3	...	6·3	...	2·7	...	4·5	...	0·9	11·2	3	15
29	...	3·1	...	2·2	...	2·7	...	0·9	...	5·4	...	3·6	...	3·6	...	2·7	8·5	15	0
30	...	0·9	...	3·6	...	0·5	...	2·7	3·6	...	1·3	...	3·1	...	1·3	...	8·5	15	45
S+N & W+E		91·2		90·8		112·9		111·0		121·9		119·5		83·6		80·2			
S−N & W−E		−15·8		25·6		22·9		21·8		10·7		56·7		−7·6		37·0			

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hour.
1	...	13·0	...	...	...	9·4	...	1·8	...	5·8	1·3	...	...	1·3	0·5	...	17·4	1
2	2·7	...	2·7	...	4·9	...	4·9	...	...	4·0	9·4	...	...	2·2	4·9	...	12·1	11
3	1·8	...	4·5	...	8·5	...	3·6	...	2·7	...	6·7	...	4·9	...	4·9	...	10·8	17
4	7·2	...	7·2	...	...	...	16·5	...	...	...	10·3	...	...	...	3·6	...	17·7	10
5	0·9	...	2·2	...	...	...	9·4	...	...	3·6	8·5	...	...	...	3·6	...	12·5	24
6	...	...	9·4	...	...	6·3	15·2	...	...	6·3	15·2	...	...	2·2	2·2	...	18·4	11
7	...	2·2	1·3	...	3·1	...	7·2	...	...	...	8·1	...	6·7	...	...	1·3	9·8	11
8	3·6	...	5·4	...	5·8	...	13·9	...	...	21·5	...	...	...	20·1	4·0	...	23·6	14
9	...	13·4	8·9	...	...	10·7	7·2	...	...	4·0	1·8	...	...	4·9	...	2·2	18·0	1
10	...	2·7	2·7	...	...	4·5	...	...	...	7·6	5·4	...	...	6·7	4·5	...	11·8	13
11	...	12·1	4·9	...	...	8·1	8·1	...	...	11·2	4·5	...	...	8·5	3·6	...	13·4	4, 7, 11
12	...	3·1	3·1	...	...	2·2	2·2	...	1·8	...	3·1	...	3·1	...	3·1	...	5·2	11
13	...	...	5·8	...	...	4·0	4·0	...	...	3·1	7·6	...	...	1·3	3·1	...	8·2	15
14	...	...	1·8	...	2·7	...	1·3	...	2·7	...	6·3	...	...	...	4·5	...	6·6	20
15	...	...	4·5	...	0·5	...	3·1	...	5·8	...	...	2·2	4·5	...	0·9	...	7·9	17
16	4·5	...	0·9	...	6·7	...	2·7	...	6·7	...	...	...	...	1·8	0·9	...	7·2	9, 11
17	2·2	...	...	0·5	1·3	...	0·5	...	2·7	...	...	1·3	8·1	...	...	3·6	9·8	24
18	8·5	...	...	3·6	7·6	...	...	...	6·7	...	...	2·7	5·4	...	...	3·6	10·2	7
19	4·9	...	...	3·1	6·7	...	...	2·7	6·3	...	...	2·7	6·3	...	...	0·9	8·5	17
20	9·4	...	...	4·0	3·1	...	...	3·6	8·1	...	...	3·6	5·8	...	...	1·3	10·5	20
21	7·6	...	...	1·3	6·3	...	...	...	2·7	...	...	0·5	1·3	...	...	0·9	7·9	5, 6
22	3·6	...	...	2·7	3·6	...	...	1·3	4·0	...	...	2·7	2·2	...	...	3·1	5·6	14
23	3·6	...	...	3·6	4·5	...	...	3·1	4·0	...	...	1·8	2·7	...	...	0·5	5·9	11, 12
24	...	2·7	2·7	...	...	3·6	2·7	...	...	4·9	0·9	...	...	3·1	0·5	...	6·6	11
25	...	0·9	...	1·3	...	3·1	...	...	...	4·0	...	...	...	2·2	...	2·2	4·3	17
26	...	2·2	...	2·2	...	2·7	...	2·7	...	1·3	...	3·6	...	3·1	...	4·5	5·2	21, 23, 24
27	...	3·1	...	4·5	...	4·9	...	4·9	...	4·0	...	4·0	...	4·9	...	2·2	8·2	11
28	...	4·0	0·9	...	...	4·9	4·9	...	...	5·4	...	0·9	...	2·2	...	3·1	6·9	9, 11
29	...	2·7	...	2·7	...	3·6	...	5·4	...	2·2	...	3·1	...	1·3	...	0·9	6·9	9, 12
30	...	0·9	0·5	...	...	1·3	...	2·7	4·5	...	...	3·1	6·7	...	...	2·7	7·5	24
S+N & W+E		123·5		98·9		139·6		135·6		147·6		121·3		123·5		77·8		
S−N & W−E		−2·5		39·9		1·0		79·2		−30·2		56·9		−8·1		11·8		

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hrs.	Min.
1	...	15·7	6·7	...	...	13·4	...	...	...	10·3	...	1·8	...	6·3	2·7	...	23·7	6	10
2	...	4·9	7·2	...	...	2·2	5·8	...	...	...	8·1	...	...	...	8·9	...	12·5	20	35
3	...	1·3	7·2	...	...	2·2	4·9	...	...	2·2	4·9	...	...	2·2	4·9	...	9·4	0	50
4	...	0·9	5·4	...	...	...	4·0	...	1·8	...	8·1	...	1·8	...	8·5	...	13·9	23	35
5	...	...	10·7	...	...	...	10·3	...	...	...	10·7	...	...	2·2	11·2	...	16·5	18	25
6	...	1·8	10·3	...	...	1·8	8·5	...	...	2·2	10·7	...	...	5·4	8·1	...	16·1	18	35
7	...	3·1	4·5	...	...	1·8	4·5	...	...	2·2	5·8	...	...	...	7·6	...	12·1	24	15
8	...	...	8·9	...	...	...	12·1	...	...	8·5	13·0	...	...	11·2	11·2	...	23·3	17	50
9	...	10·7	7·2	...	...	8·9	...	...	...	4·5	4·5	...	...	4·9	12·1	...	19·2	1	25
10	...	5·8	13·4	...	...	6·7	9·8	...	...	3·6	8·1	...	...	1·3	6·3	...	19·7	2	45
11	...	2·2	2·2	...	...	6·7	...	2·7	...	7·6	...	1·3	...	6·7	...	2·7	10·3	21	10
12	...	1·8	...	3·1	...	...	...	5·8	0·5	...	...	2·2	...	1·3	...	0·9	8·9	1	5
13	0·0	0·0	0·0	0·0	...	2·2	...	...	...	4·0	4·0	...	...	2·7	...	0·9	8·5	12	40
14	...	0·5	...	0·0	...	2·7	...	0·9	...	4·0	0·9	...	...	3·6	0·9	...	6·7	15	50
15	...	2·2	0·9	...	...	3·1	1·3	...	...	4·5	...	...	...	3·1	...	...	6·7	14	20
16	...	3·1	...	...	4·0	...	...	4·0	2·2	...	...	5·8	0·9	...	...	4·9	9·8	13	55
17	1·8	...	...	4·5	2·7	...	...	6·3	2·2	...	...	3·1	1·3	...	...	1·3	8·1	11	45
18	0·0	0·0	0·0	0·0	1·8	...	...	1·8	1·3	...	...	1·3	...	...	0·9	...	3·6	11	30
19	0·5	...	2·7	...	4·5	...	...	0·9	7·2	...	...	3·1	6·7	...	...	2·7	11·6	23	30
20	8·1	...	...	3·1	7·2	...	...	3·1	7·2	...	...	3·1	5·4	...	...	2·2	11·2	2	15
21	4·9	...	...	0·9	4·5	...	...	1·8	3·1	...	...	1·3	2·2	...	...	0·9	7·6	2	5
22	2·2	...	...	0·9	...	0·5	...	1·3	...	3·1	...	2·2	...	2·7	...	2·7	5·8	16	35
23	...	0·9	...	4·0	...	...	...	7·2	...	2·2	...	5·4	...	0·9	...	1·3	10·3	11	40
24	...	1·8	...	4·5	...	4·9	...	4·9	...	3·1	...	4·9	...	4·9	...	2·2	8·9	14	55
25	...	0·9	...	3·6	...	3·6	...	5·4	...	4·0	...	4·0	...	1·8	...	1·8	8·5	8	45
26	...	1·8	...	1·8	...	...	...	4·9	...	...	...	8·1	...	...	...	4·9	10·7	12	55
27	...	...	...	2·7	...	1·3	...	5·8	...	...	...	7·6	...	...	...	3·1	10·3	14	10
28	...	2·2	...	2·2	...	2·7	...	2·7	...	6·3	...	2·7	...	4·9	...	...	9·4	15 5	15 10
29	...	6·3	2·7	...	...	2·7	...	...	...	0·9	2·2	...	...	0·0	...	0·5	10·3	1	25
30	...	2·7	...	1·3	0·5	...	...	2·2	3·1	...	...	3·1	2·7	...	...	...	7·2	10	55
S+N & W+E		88·1		122·6		92·6		122·9		101·8		142·0		87·1		116·3			
S−N & W−E		−53·1		57·4		−42·2		−0·5		−44·6		20·0		−45·1		50·3			

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hrs.	Min.
1	...	8·9	...	...	...	6·2	...	...	...	5·8	4·0	...	...	5·8	2·2	...	18·8	13	5
2	...	2·2	2·2	...	...	2·7	3·6	...	2·7	...	...	1·3	0·9	...	2·2	...	13·9	2	20
3	...	0·9	2·2	...	...	1·6	...	...	3·6	...	...	3·6	4·0	...	0·9	...	9·8	17	20
4	3·1	...	1·8	...	2·2	...	4·9	...	3·1	...	7·2	...	2·7	...	6·7	...	15·2	23	55
5	2·7	...	6·3	...	...	...	7·5	...	...	...	10·2	...	...	...	4·6	...	17·9	14	25
6	...	...	5·2	...	...	...	7·9	...	...	...	10·5	...	...	3·6	8·5	...	17·9	16	35
7	...	1·3	2·7	...	...	1·3	2·7	...	0·9	...	...	4·5	2·7	...	0·9	...	9·4	0	10
8	3·1	...	4·5	...	3·1	...	8·1	...	4·0	...	9·8	...	...	1·8	9·8	...	22·8	15	55
9	...	3·1	7·2	...	...	4·5	6·7	...	...	4·5	4·5	...	...	...	4·0	...	19·7	10	25
10	2·2	...	5·8	...	...	4·9	3·1	...	...	3·6	2·7	...	...	1·3	0·9	...	18·3	10	40
11	...	1·8	1·8	...	0·9	...	4·5	...	...	5·4	3·6	...	...	4·0	2·7	...	17·9	15	40
12	...	1·8	1·8	...	...	4·5	...	...	...	1·8	...	1·8	2·7	...	...	0·5	11·6	1	0
13	2·2	...	2·2	...	...	0·5	3·1	...	...	5·4	...	...	...	1·3	...	...	8·5	13	40
14	...	1·3	0·9	...	...	3·1	1·3	...	...	5·4	...	...	...	4·5	...	...	10·3	14	5
15	...	4·5	...	0·9	...	2·2	...	1·3	...	3·1	...	3·1	...	3·1	...	4·9	9·4	5	30
16	...	1·8	...	3·1	...	1·3	...	3·1	...	2·2	...	4·9	...	3·1	...	8·1	11·2	20	30
17	...	2·7	...	6·7	...	0·9	...	5·4	...	...	...	4·3	...	1·8	...	2·7	7·6	0	30
18	0·0	0·0	0·0	0·0	...	0·5	...	0·9	0·9	...	...	3·6	1·3	...	...	1·8	5·8	15	50
19	2·2	...	2·2	...	0·9	...	...	0·9	3·1	...	...	3·1	1·8	...	...	1·3	8·5	15	15
20	0·9	...	...	0·5	1·8	...	1·8	...	0·5	...	...	2·2	0·5	...	...	1·8	2·7	14	25
21	...	1·6	...	...	...	1·8	...	0·5	...	1·8	...	1·8	...	3·1	...	2·7	7·2	24	15
22	...	3·1	...	3·1	...	2·7	...	6·3	...	2·2	...	5·8	...	5·4	...	8·1	9·8	20	30
23	...	4·9	4·9	...	...	4·9	4·9	...	...	6·7	...	4·5	...	7·2	7·2	...	11·6	16	5
24	...	6·7	6·7	...	...	5·8	5·8	...	...	6·7	...	4·5	...	6·3	...	2·7	10·7	2	40
25	...	2·2	...	0·5	...	4·0	...	1·8	...	5·8	...	2·2	...	4·9	...	2·2	8·9	21	45
26	...	5·6	...	...	...	4·5	...	1·8	...	5·4	...	3·6	...	4·9	4·9	...	9·4	3	35
27	...	4·9	4·9	...	...	4·5	4·5	...	...	6·3	...	2·7	...	5·4	...	2·2	10·3	18	20
28	...	4·3	...	...	...	5·6	...	...	...	7·2	...	...	...	5·9	...	...	14·3	19	40
29	...	5·2	...	...	...	6·9	...	...	...	...	...	...	...	...	...	...	13·4	13	50
30	...	5·8	...	4·0	...	3·6	...	1·3	...	4·9	...	2·2	...	0·5	...	0·0	10·3	4	20
S+N & W+E		91·0		82·1		87·4		93·7		103·0		112·2		90·5		94·9			
S−N & W−E		−57·8		24·5		−69·6		47·1		−65·4		−7·2		−57·3		−16·1			

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time. * No record. † Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.
‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8. § Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

BRIGHTON. **K.** 20. April 6. 10 h. 20 m. to 11 h. 30 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	Little Fr.-Cu., not reached. Very thin scud at about 80 m. above ground, where wind rate increased to 21 m.p.s.
	500	964·8	284	4·2	75	9·7	1·179	320	20	
100 m. above ground	215	998·2	285·2		84	11·9	1·214	300	18	
Ground level	115	1010·1	286·4	14	84	12·8	1·223	270	11	
Computed for M.S.L.	0	1024	...	...	...	...	...	202	14·3	...

BRIGHTON. **K.** 21. April 11. 11 h. 30 m. to 12 h. 30 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.		Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	Quarter overcast. Fr.-Cu. Convection currents very frequent. Kite not sustainable at 100 m. Average wind 11 m.p.s., frequent gusts up to 19 m.p.s.
500	955·5	277·4	...	66	5·4	1·198	310	...	
215	989·2	*282·3*	...	*59*	*6·8*	1·218	...	...	
115	1001·1	284·0	...	56	7·4	1·225	300	8·9	
0	1015	...	...	...	...	...	? 315	?	...

BRIGHTON. **K.** 22. April 11. 14 h. 0 m. to 15 h. 20 m. G.M.T.

Greatest height	1150	883·0	271·3	...	83	4·5	1·132	310	...	Quarter overcast Fr.-Cu. Convection currents very frequent. Kite not sustainable at 100 m. Average wind 11 m.p.s., frequent gusts up to 19 m.p.s.
	1000	899·6	274·6	...	73	4·9	1·139	310	...	
	500	956·6	*279·9*	...	*64*	*6·3*	1·188	...	...	
100 m. above ground	215	990·1	*282·9*	...	*59*	*7·1*	1·216	...	...	
Ground level	115	1002·1	284	...	56	7·4	1·226	310	5·8	
Computed for M.S.L.	0	1016	...	...	...	...	...	350	8·1	...

BRIGHTON. **K.** 23. April 22. 10 h. 20 m. to 11 h. 30 m. G.M.T.

635	953·2	285·8	...	95	13·8	1·156	100	15	Few Fr.-Cu. Convection currents.
1000	...	...	...	...	...	...	...	...	
500	968·5	*286·8*	...	*91*	*14·3*	1·170	...	...	
215	1001·6	289	30	85	15·4	1·201	80	19	
115	1013·4	292		78	16·9	1·202	90	7	
0	1027	...	...	...	...	...	105	8·1	...

BRIGHTON. **K.** 24. April 23. 10 h. 0 m. to 12 h. 0 m. G.M.T.

Greatest height	835	930·2	279·7	...	82	8·0	1·155	60	20	Very little Fr.-Cu. Gusts at all altitudes
	500	968·7	282	13·3	92	10·4	1·192	50	18	
100 m. above ground	215	1002·3	285·8		82	12·0	1·216	50	19	
Ground level	115	1014·2	289	32	82	14·6	1·216	50	12·5	
Computed for M.S.L.	0	1028	...	...	...	...	...	76	10·6	...

BRIGHTON. **K.** 26. April 27. 10 h. 0 m. to 12 h. 15 m. G.M.T.

...	...	...	...	...	...	...	...	...	Very little Fr.-Cu. Kite refused to rise above 500 m.
500	950·4	283·0	1·8	70	8·5	1·166	90	10	
215	983·5	283·5	19	70	8·8	1·205	60	12	
115	995·3	285·4		70	10·0	1·211	40	13 4	
0	1009	...	...	...	...	...	? 90	10·8	...

ABERDEEN. **P.** 13. April 17. 11 h. 25 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	1219	...	...	...	...	...	Balloon disappeared in high haze or mist.
	...	...	...	...	...	...	
	2000	...	...	...	...	...	
	1500	...	...	...	...	...	
	1000	184	7·1	0·5	7·1	2·2	
	750	183	6·6	0·3	6·6	2·2	
	500	179	10·4	0·0	10·4	2·7	
	250	192	7·2	1·5	7·0	2·5	
100 m. above ground	130	187	6·6	0·8	6·6	2·9	
Ground level	30	168	4·8	−1·0	4·7	...	
Computed for M.S.L.	0	210	20·9	10·5	18·4	...	Two theodolites. Lift 54 gr.

P. 14. April 19. 11 h. 45 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
1107	...	...	...	...	...	Balloon disappeared in high haze or mist.
...	...	...	...	...	...	
2000	...	...	...	...	...	
1500	...	...	...	...	...	
1000	158	8·2	−3·1	7·6	2·4	
750	185	5·7	0·5	5·7	2·0	
500	201	8·1	2·9	7·6	3·0	
250	192	4·1	0·9	4·0	1·8	
130	136	4·1	−2·8	2·9	3·3	
30	135	4·8	−3·4	3·4	...	
0	204	?	?	?	?	Two theodolites. Lift 40 gr.

P. 15. April 24. 11 h. 12 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
2460	...	...	...	...	...	
2450	5	15·3	−1·4	−15·2	4·9	
2000	4	8·0	−0·6	− 8·0	2·2	
1500	8	5·3	−0·7	− 5·3	3·2	
1000	3	5·3	−0·3	− 5·3	4·4	
...	...	...	...	...	...	
500	342	2·5	+0·8	− 2·4	1·8	
...	...	...	...	...	...	
130	77	2·8	−2·7	− 0·6	3·1	
30	101	4·4	−4·3	+ 0·8	...	
0	?	?	?	?	?	Lift 50 gr.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

1912. April 11. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	22·6 km.	33 mb.	222° A.
Lowest Temperature	10·5 km.	224 mb.	217° A.
Base of Stratosphere	10·5 km.	224 mb.	217° A.
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	760·2 mm., 1014 mb.	765·8 mm., 1021 mb.
Temperature,	279° A.	280° A.
Vapour Pressure,	...	...
Gradient Wind :—Direction,	344°.	345°.
Velocity,	8·4 m/s.	6·6 m/s.
Correction for Curvature,	0 m/s.	0 m/s.
Final Components, W. to E.	2·4 m/s.	1·7 m/s.
Final Components, S. to N.	−8·1 m/s.	−6·4 m/s.

Sounding No., R. 5.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 37 m.
Place of Fall, Sible Hedingham, Essex.
Distance, ... 248 km.
and
Orientation, . . . 131°

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
22	36	221·5		...	...	
21	43	220·5	−1	...	...	
20	52	220	−0·5	...	...	
19	61	219	−1	...	...	
18	71	219	0	...	...	
17	83	220	1	...	...	
16	96	220·5	0·5	...	...	
15·8	100	220·5	0·5	...	...	
15	112	221		...	...	
14	129	221	0	...	...	
13	150	221	0	...	...	
12	177	219	−2	...	...	
11·2	200	218		...	...	
11	207	217·5	−1·5	...	...	
10	244	218·5	1	...	...	
9	285	222·5	4	...	...	
8·7	300	224·5	6·5	...	...	
8	337	229		...	...	
7	392	236	7	...	...	Temperature Gradient, Ground to 7 km. =0·54° per 100 m.
6·9	400	237	7·5	...	...	
6	454	243·5	...	...	...	
5·3	500	249·5	7·5	...	...	
5	524	251		...	...	
4·0	600 603	255·5	4·5	...	...	
3	689	261	5·5	...	...	
2·9	700	261	4	...	...	
2	784	265	...	...	...	
1·8	800	266	5·5	...	...	
1·0	900 897	270·5	3·5	...	...	
Ground	1009	274	...	...	...	
M.S.L.	1014	...	...	...	...	

1912. April 12. 6 h. 50 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	11·4 km.	203 mb.	214·5° A.
Lowest Temperature	10·6 km.	231 mb.	212° A.
Base of Stratosphere	10·6 km.	231 mb.	212° A.
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	772·6 mm., 1031 mb.	773·2 mm., 1031 mb.
Temperature,	...	...
Vapour Pressure,	...	...
Gradient Wind :—Direction,	?	? 270°.
Velocity,	?	?
Correction for Curvature,	...	...
Final Components, W. to E.	?	?
Final Components, S. to N.	?	?

Sounding No., R. 6.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 37 m.
Place of Fall, Appleby Magna.
Distance, ... 101 km.
and
Orientation, . . . 152°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
11	217	213		...	...	
10	256	213	0	...	...	
9	297	219·5	6·5	...	...	
8·9	300	220·5	7·5	...	...	
8	348	227	...	...	...	
7·1	400	233	6·5	...	...	
7	404	233·5	9	...	...	Average Temperature Gradient, Ground to 7 km. =0·57° per 100 m.
6	467	242·5	6·5	...	...	
5·5	500	246	...	...	...	
5	536	249	7	...	...	
4·1	600	255	5·5	...	...	
4	610	256	2	...	...	
3·0	700	261·5	4	...	...	
2·0	800 797	263·5	...	...	...	Small temperature inversion.
1·1	900	267		...	...	
1·0	908	267·5	...	...	...	
0·2	1000	272	6	...	...	
Ground	1026	273·5	...	...	...	
M.S.L.	1031	...	...	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

1912. April 13. 6 h. 50 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	14·3 km.	133 mb.	221° A.
Lowest Temperature	10·4 km.	245 mb.	215° A.
Base of Stratosphere	10·4 km.	245 mb.	215° A.
Type	No. 1.		

From Observations at Stations	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	774·2 mm., 1033 mb.	774·2 mm., 1033 mb.
Temperature,	279° A.	283° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	?	?
Velocity,	?	?
Correction for Curvature,	...	...
Final Components, W. to E.	?	?
Final Components, N. to S.	?	?

Sounding No., R. 7.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L. . . 37 m.
Place of Fall, Standon, Staffs.
Distance, ... 68 km.
and
Orientation, . . . 180°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
14	138	220·5	−2	...	...	
13	163	218·5	1	...	...	
12	191	219·5		...	...	
11·7	200	218·5	−2·5	...	...	
11	224	217	−1	...	...	
10	263	216		...	...	
9·1	300	221	5·5	...	...	
9	304	221·5		...	...	
8	356	229	7·5	...	...	
7·2	400	235·5	8	...	...	
7	413	237	6	...	...	Average temperature gradient ground to 7 km. = 0·59° per 100 m.
6	476	243		...	...	
5·7	500	245	7	...	...	
5	546	250		...	...	
4·3	600	254·5	6	...	...	
4	626	256		...	...	
3·1	700	262	7	...	...	
3	710	263		...	...	
2·1	800	268	5	...	...	
2	805	268		...	...	
1·1	900	273	5	...	...	
1	915	273		...	...	
0·2	1000	276·5	5	...	...	
Ground M.S.L.	1027	278	..	...	...	
	1033	...	...	...	...	

1912. April 13. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	13 km.	164 mb.	221° A.
Lowest Temperature	10 km.	260 mb.	213° A.
Base of Stratosphere	1st trace 9·9 km.	...	213° A.
	2nd trace 10·2 km.	...	215° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	775·2 mm., 1034 mb.	773·7 mm., 1032 mb.
Temperature,	...	...
Vapour Pressure,	...	...
Gradient Wind:—Direction,	?	?
Velocity,	?	?
Correction for Curvature,	...	...
Final Components, W. to E.	?	?
Final Components, S. to N.	?	?

Sounding No., R. 176.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, ...
Distance, ... 40 km.
and
Orientation, . . . 153°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Velocity.	Components. W. to E.	Components. S to N.	REMARKS.
km.	mb.	°A. 1st trace 2nd trace	°C.	%	mb.	° from N.	m/s.			
13	164	221		...	...	...	...	...	...	
12	191	220 219	−1 −2	...	...	...	...	...	...	
11·7	200	220 218·5	−1 −2	...	...	...	...	...	...	
11	224	219 217		...	...	...	...	...	...	
10	260	214 213	−5 −4	...	...	...	...	...	...	
9	300 301	223 220	9 7	...	...	...	...	...	...	
8	351	231 228	8 8	...	...	...	...	...	...	
7·1	400	235 233	5 4	...	...	...	...	...	...	[cloud came over from 270° at 7 h. 45 m.
7	405	236 234	7 7	...	...	325	8	+4·6	−6·6	Balloon lost behind a little cloud at 7 h. 41 m. Low bank of
6	468	243 241		...	...	320	5	+3·2	−3·8	Clear at 7·0 km. with a little ci. moving from 315°.
5·5	500	247 245	8 8	...	...	335	5	+2·1	−4·5	
5	537	251 249	...	...	...	320	9	+5·8	−6·9	
4·2	600	255	4·5 6·5	...	...	...	...	...	...	
4	616	255·5	...	...	...	340	7	+2·4	−6·6	
3·0	700 704	261	5·5	90	1·7	10	7	−1·2	−6·9	
2·0	800	267	6	90 100	2·6 2·9	350	5	+0·9	−4·9	
1·1	900	270	4	...	...	...	...	...	...	
1	911	271	...	85 95	3·4 3·7	300	4	+3·5	−2·0	
0·1	1000	...	8	...	...	...	...	...	...	
Ground M.S.L.	1012	279	...	70	4·9	...	...	...	...	One theodolite. Micrometer method.
	1034	...	...	...	...	...	...	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

1912. April 17.	10 h. 30 m. G.M.T.		
	Height above M.S.L.	Pressure.	Temp.
Greatest Height	...	...	...
Lowest Temperature	...	...	...
Base of Stratosphere	...	...	...
Type			

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	764·5 mm., 1019 mb.	762·2 mm., 1016 mb.
Temperature,	280° A.	281° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	110°	?
Velocity,	8·5 m/s.	?
Correction for Curvature,	+0·6 m/s.	?
Final Components, W. to E.	−8·6 m/s.	?
Final Components, S. to N.	3·1 m/s.	?

Sounding No., R. 177.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, ...
Distance, ...
and
Orientation, ...

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Velocity.	Components. W. to E.	Components. S. to N.	Remarks.
km.	mb.	°A.	°C.	%	mb.	°	m/s.	W. to E.	S. to N.	
10	...	...	...	...	...	125	5	− 4·1	+2·9	Balloon followed by two theodolites. A good base-line for a S.E. wind is not obtainable, so that the parts above 3 km. are calculations on the supposition of a uniform ascent. The balloon was followed for 40 and 51 minutes.
9	...	...	...	...	...	140	6	− 3·9	4·6	
8	...	...	...	...	...	125	7	− 5·7	4·0	
7	...	...	...	...	...	120	7	− 6·1	3·5	
6	...	...	...	...	...	110	7	− 6·6	2·4	
5	...	...	...	...	...	100	9	− 8·9	1·6	
4·5	...	...	...	...	...	...	...	...	...	
4·0	...	...	...	...	...	110	13	−12·2	4·5	
3·5	...	...	..	...	...	...	..	...	...	
3·0	...	...	...	...	...	125	13	−10·6	7·5	
2·5	...	...	...	...	...	...	...	...	...	
2·0	...	...	...	...	...	105	12	−11·6	2·5	
1·5	...	...	...	...	...	...	...	...	...	
1·0	...	...	...	...	...	95	4	− 4·0	0·4	
0·5	...	...	...	...	...	...	...	...	...	
Ground	...	...	...	...	...	90	2	− 2·0	0	
M.S.L.	...	...	...	...	...	110	9·1	− 8·6	3·1	

1912. April 17.	12 h. 10 m. G.M.T.		
	Height above M.S.L.	Pressure.	Temp.
Greatest Height	14·7 km.	...	225° A.
Lowest Temperature	...	...	...
Base of Stratosphere	9·5 km.	...	220° A.
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	765·3 mm. 1020 mb.	761·7 mm. 1016 mb.
Temperature,	...	...
Vapour Pressure,	...	...
Gradient Wind:—Direction,	110°	?
Velocity,	8·5 m/s.	?
Correction for Curvature,	+0·6 m/s.	...
Final Components, W. to E.	−8·6 m/s.	?
Final Components, S. to N.	3·1 m/s.	?

Sounding No., R. 178.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, Wigginton.
Distance, ... 48 km.
and
Orientation . . . . 22°

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Velocity.	Components. W. to E.	Components. S. to N.	REMARKS.
km.	mb.	°A. 1st trace 2nd trace	°C. 1st trace 2nd trace	%	mb.	° from N.	m/s.	W. to E. m/s.	S. to N. m/s.	
14	142	225	−0·5	...	...	...	...	...	...	Clear solar eclipse.
13	165	224·5	−1·5	...	...	...	..	...	...	Balloon followed by two theodolites for 47 and 56 minutes. A good base line for a S.E. wind is not obtainable so that the parts above 3 km. are calculations on the supposition of uniform ascent.
12	194	223		...	...	...	...	...	...	
11·8	200	222·5	−3	...	...	...	...	...	...	
11	224	220	0	...	...	125	8	− 6·6	4·6	
10	261	220		...	...	140	6	− 3·9	4·6	
9	300 302	222	2	...	...	128	7	− 5·5	4·3	
8	352	230	8	...	...	128	8	− 6·3	4·9	
7·1	400	237 235·5	8 6	...	...	...	...	...	...	
7	408	238 236	8 8	...	...	125	8	− 6·6	4·6	
6	470	246 244		...	...	110	8	− 7·5	2·7	
5·6	500	248·5 246·5	6 6	...	...	...	...	...	...	
5	537	252 250	...	...	...	100	10	− 9·9	1·7	
4·2	600	258 256	7 7	...	...	...	...	...	...	
4	614	259 257	6 8	...	...	105	12	−11·6	3·1	
3	700 701	265		...	...	105	12	−11·6	3·1	
2	800 795	270	5	...	...	110	11	−10·3	3·8	
1	900 901	274·5 275·5	4·5 6·5 8·5 8·5	...	...	90	4	− 4	0	Isothermal at 270°, 1·7 to 2·3 km.
Ground	998	283 285	...	...	...	90	0	0	0	
M.S.L.	1020	...	...	...	...	110	9·1	− 8·6	3·1	

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A. = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—Type 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
Type 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. Type 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

MAY 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 4*d*.

Second Year.—No. 5. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	4	0·5	I, I, I	1st I, Long waves 13 h. 27 m.–13 h. 50 m. I, Feeble waves 20 h. 21 m.–20 h. 24 m. I, Long waves 23h. 51 m.–24 h. 6 m.
2	4-5	0·4		3rd Iu, P?=19 h. 21 m. 47 s., S=19 h. 31 m. 40s.
3	4-5	0·5	Iu.	6th IIIr, P=19 h. 2 m. 43 s., S=19 h. 5 m. 4 s., Δ=1330 kms., α=47° 10′ W. of N. Epicentre 62° 8′ N., 22° 10′ W.
4	4-5	0·5		
5	4	0·5		8th I, Trace of disturbance between 23 h. and 24 h.
6	4	0·3	IIIr.	10th I, Long waves 10 h. 55 m.–11 h. 14 m.
7	4-5	0·5		11th Ir, P=5 h. 23 m. 33 s., S=5 h. 29 m. 33 s., Δ=4220 kms., L=5 h. 36 m. Iu, P=17 h. 39 m. 24 s., S=17 h. 49 m. 52s.,
8	4-5	0·4	I.	Δ=9350 kms., α ambiguous 73° E. of S. or W. of N. I, L=21 h. 9 m. Disturbed till 21 h. 35 m.
9	4-5	0·4		12th I, L=12 h. 18 m.
10	4-5	0·4	I.	13th Iu, S?=19 h. 55 m. 41 s., L=20 h. 5 m. 14th I, Long waves 15 h. 16 m.
11	4	0·3	Ir, Iu, I.	15th Iu, P=0 h. 24 m. 14 s., S=0 h. 34 m. 14 s., Δ=9790 kms. α?
12	4	0·5	I.	16th I, L=15 h. 11 m.
13	4-5	0·4	Iu.	17th I, P? S=16 h. 49 m. 19 s., L=16 h. 53 m.
14	5-6	0·6	I.	18th I, Long waves 5 h. 33 m. I, S=22 h. 5 m. 15 s., L=22 h. 19 m.
15	5-6	0·7	Iu.	19th I, S=2 h. 32m. 52 s. I, S=3 h. 53 m. 37 s., L=4 h. 6 m.
16	4	0·8	I.	20th I, P=8 h. 6 m. 57 s., S?=8 h. 20 m. 13 s.
17	4-5	0·4	I.	21st I, P?=8 h. 50 m. 58 s, S?=9 h. 0 m. 4 s.
18	4-5	0·4	I, I.	22nd I, L=13 h. 33 m. I, P=23 h. 17 m. 8 s., S=23 h. 24 m. 16 s., Δ=6475 kms.
19	4-5	0·2	I, I.	23rd IIIu, P=2 h. 36 m. 8 s., S=2 h. 46 m. 7 s., Δ=8775 kms. α=70° 36′ E. of N. or S. of W. Correct direction is E. of N.
20	4	0·1	I.	Epicentre 21° N. 97° E. I, about 23 h.
21	4	0·1	I	24th I, about 1 h. I, L=4 h. 48 m.
22	4	0·2	I, I.	25th I, L=6 h. 36 m. Iu, P=16 h. 2 m. 28 s., S=16 h. 9 m. 13 s., Δ=5055. kms. α=48° 49′ E. of N. Ir, P=18 h. 6 m. 36 s.,
23	5	0·5	IIIu, I.	S=18 h. 10 m. 30 s., Δ=2360 kms. α=75° 4′ E. of S. or W. of N. I, about 21 h. 22 m.
24	4-5	0·4	I, I.	26th I, 3 h. 30 m. I, Disturbed 7 h. 54 m.–8 h. 53 m.
25	4-5	0·4	I, Iu, Ir, I.	28th I, L=7 h. 53 m. I, S=13 h. 9 m. 36 s., L=13 h. 33 m.
26	4-5	0·4	I, I.	31st I, Long waves about 21 h. 3 m.
27	4-5	0·5		
28	4-5	0·5	I, I.	
29	5	0·5		
30	4-5	0·4		
31	4-5	0·4	I.	

An explanation of the notation used is given in the preface.

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.

Heights above Ground:—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	1020·8	1019·1	85·2	84·9	87	84	13·9	13·2	98	95	20	3	20	3	10 ≡0 ●0	10 ≡0	—	0·2	≡0 *a*. Clear afternoon.	…	…	…
2	1016·2	1015·5	85·9	84·8	88	82	13·2	13·2	90	96	21	6	21	2	10	10 ≡0	—	0·3	Dull.	…	…	…
3	1013·9	1012·4	86·4	85·6	90	84	13·2	10·9	86	75	—	1	9	2	7	8	1·0	6·4	*d*. Fair.	…	…	…
4	1009·7	1009·1	86·7	85·5	90	84	11·2	11·2	70	78	9	6	10	7	7	9∞	1·3	4·6	Fair. ∞ after 16 h.	…	…	…
5	1007·4	1010·8	85·5	85·3	87	84	13·6	12·9	95	91	15	4	18	4	10	*10* ≡0	2·8	0·5	Dull, with ● showers.	…	…	…
6	1009·3	1011·5	85·5	86·3	88	84	13·6	13·9	95	92	16	6	16	5	10 ≡0 ●0	*10* ≡0	3·3	0·2	Generally overcast. ≡0 ●0	…	…	…
7	1009·4	1017·4	86·8	86·3	88	85	15·3	14·6	97	98	16	5	16	4	10 ≡0	*10* ≡0 ●	2·0	—	≡0 ●. Overcast throughout.	17873	20 29·7	68 10·7
8	1021·2	1023·9	86·2	86·0	88	86	14·2	14·2	95	97	16	5	17	2	10 ≡0	*10* ≡0	0·5	—	≡0 all day.	…	…	…
9	1025·1	1022·5	85·6	85·7	88	84	12·6	12·9	87	87	26	2	—	0	10 ≡0	*6*	—	4·3	Dull to fair. ⊕ 14 h.	…	…	…
10	1014·6	1007·4	88·6	86·8	*x* 92	83	14·2	13·9	80	89	8	2	14	7	10	*10* ≡0	0·5	6·3	Fair to fine.	…	…	…
11	1005·5	1008·3	86·6	85·1	90	84	14·9	12·6	96	89	17	4	3	2	10 ≡0	*10* ≡0 ●0	0·5	1·2	Misty and dull, except midday.	…	…	…
12	1011·6	1017·3	84·2	84·9	88	82	9·5	9·8	71	72	2	8	3	6	7	*2*	—	9·2	Fine.	…	…	…
13	1020·5	1018·5	84·9	83·7	88	80	10·2	11·2	72	89	—	1	18	2	4	*2*	—	12·0	*d*. Fine.	…	…	…
14	1012·9	1006·5	86·7	84·5	89	81	11·9	11·9	76	88	15	3	18	3	5	*5*	0·5	11·6	*d*. Fine. [*p*.	…	…	…
15	1003·1	1005·0	84·3	81·7	86	81	9·5	8·2	72	72	26	6	25	9	8	*5*	0·8	7·7	Fair generally. Good visibility.	…	…	…
16	1013·4	1019·2	84·0	84·0	86	80	9·2	10·5	71	80	27	6	26	6	6	*10*	0·8	10·8	▲ early, then fair.	…	…	…
17	1017·9	1014·9	85·6	84·5	88	83	10·9	11·9	74	88	21	5	22	5	10	*9*	0·5	1·3	Cloudy.	…	…	…
18	1015·2	1014·5	85·4	83·4	87	82	10·9	10·2	75	82	24	2	16	2	8	*9*	0·3	2·3	Fair to dull.	…	…	…
19	1010·7	1008·1	85·9	84·0	89	82	13·2	12·6	90	97	15	6	—	1	10	*10* ≡0 ●	18·0	0·3	Heavy mist, and ● *p*.	…	…	…
20	1003·8	1003·4	84·4	84·1	89	81	11·5	11·2	85	84	14	4	6	2	7	*3*	3·1	8·8	Showery 15 h.–16 h.	…	…	…
21	1003·6	1004·4	85·6	85·2	89	79	10·9	12·9	75	92	4	4	—	0	8	*9*	1·3	5·7	Fair. ●0 showers in evening.	17897	20 28·2	68 9·9
22	1003·7	1003·6	85·9	84·9	88	82	11·5	11·2	78	81	2	2	10	5	4∞	*10* ≡0	0·8	4·3	Fine to fair. ▲ 20 h. ∞	…	…	…
23	1008·5	1017·1	86·3	83·5	88	81	9·8	9·5	63	74	1	2	31	2	3	*1*	—	12·4	Fine.	…	…	…
24	1023·8	1026·9	85·6	84·0	90	78	10·9	10·5	75	82	31	2	—	0	2	*1*	—	15·0	*d*. Fine.	…	…	…
25	1027·5	1026·0	85·2	85·0	90	*n* 77	9·5	11·2	68	80	—	1	21	2	0∞	*2*	—	15·1	*d*. Fine. Occasional ∞0.	…	…	…
26	1022·6	1020·8	86·5	84·1	90	81	10·9	9·8	70	74	—	1	—	1	4	1	—	9·5	Fine.	…	…	…
27	1019·5	1018·3	86·2	85·4	90	78	11·5	11·9	75	83	—	1	—	0	1∞	6∞	—	13·3	Very fine.	…	…	…
28	1017·6	1017·0	86·8	86·2	90	81	13·6	11·9	87	79	—	1	26	4	6∞	10	0·3	11·3	Fine. ∞. Dull evening.	…	…	…
29	1014·5	1012·0	86·2	84·4	88	83	12·9	10·9	86	81	25	5	26	4	9	9	2·5	4·5	Fair.	…	…	…
30	1008·2	1006·6	83·8	82·4	87	81	10·2	9·5	79	80	—	1	5	2	4	7	—	7·4	Fair, with good visibility.	…	…	…
31	1005·9	1005·7	85·1	84·2	90	80	10·5	11·2	75	84	5	3	—	0	7	1	1·0	8·2	*d*. ●0 showers *p*.	…	…	…
Means	1013·5	1013·7	85·7	84·7	88·5	81·9	11·9	11·7	81	85		3·5		3·0	7·0	6·9	41·8	6·28	Monthly **Totals** or **Means**.	17885	20 29·0	68 10·3
Normal 40 years	1013·9	1014·3	84·7	83·8	87·5 (35 years)	80·9	10·9	10·8	79	84 (25 years)		5·1 (30 years)		4·4 (30 years)	—	—	79·5	6·67 (30 yrs)	**Normals**, 40 years.			

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

Wt. 39025/327—375—3/13. N. & Co., Ltd. Gp. XV.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity.				Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
							Vapour Pressure.		Percentage.														
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
			200 +	200 +	200 +	200 +									Tenths of Sky covered.					200 +	200 +	200 +	
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		°	°	°	
1	1023·6	1019·7	82·9	84·1	90	78	7·8	9·8	65	74	25	2	24	2	0≡⁰	8	—	8·1	·064	*n* 70	83·1	82·8	Fine till 16 h. 30 m., then cloudy.
2	1017·5	1014·2	86·7	87·0	91	84	11·2	10·2	71	64	24	3	25	2	9	3	—	3·4	·072	78	84·1	82·8	Fair till 13 h. 30 m., then dull.
3	1015·4	1014·4	85·9	86·3	89	81	11·2	12·6	76	82	—	1	—	0	10	10	—	2·3	—	76	84·4	82·8	Bright at sunrise, then dull.
4	1015·0	1016·6	83·0	82·1	85	82	10·5	10·2	87	89	6	7	8	5	10≡⁰	10≡⁰	3·1	—	—	82	84·6	82·9	Overcast and misty. ● *p.*
5	1016·2	1015·3	84·1	84·0	89	82	10·9	11·2	82	86	9	4	9	3	10≡⁰	6	—	1·6	—	81	84·1	82·9	Dull generally. ≡⁰
6	1016·6	1018·9	86·2	85·3	90	81	12·6	11·2	83	79	21	3	19	2	10	10	0·5	0·7	—	76	84·4	82·9	Dull throughout.
7	1020·4	1020·3	87·0	87·6	90	85	13·6	15·3	85	92	19	4	20	5	10●	10	1·3	—	—	81	84·9	83·0	Overcast. [9 h.
8	1025·8	1027·0	89·2	89·6	93	87	14·6	15·9	80	85	24	4	21	4	7	8	—	4·7	—	86	85·7	83·2	Overcast early. Cleared about
9	1025·9	1022·3	90·2	90·8	95	86	13·9	17·0	72	83	24	3	—	1	6	7	—	5·8	·058	83	86·9	83·3	Fine *a.* Dull *p.*
10	1020·5	1016·6	89·7	86·8	94	86	11·2	9·2	58	60	6	3	9	5	8≡⁰	2	—	4·4	·042	81	87·5	83·4	Fine *a.*, but ≡⁰. Dull *p.*
11	1009·4	1009·2	92·0	90·3	*x* 97	85	15·3	15·3	71	78	17	4	20	3	6	6	—	8·7	·058	82	87·4	83·6	Fine till nearly sunset.
12	1007·3	1013·2	90·1	85·7	93	83	13·6	9·8	70	66	32	4	4	3	7	10●	4·3	6·0	—	84	88·2	83·9	Bright intervals. T≺● *p.*
13	1020·7	1020·4	85·6	84·9	91	82	9·8	9·8	70	70	7	3	—	1	2≡⁰	9	—	8·6	·068	80	87·4	84·1	Fine during day.
14	1015·8	1008·1	89·1	88·2	95	82	10·5	9·2	58	52	11	3	8	5	9	8	0·5	6·7	·064	75	87·2	84·1	Bright at intervals.
15	1000·8	997·1	88·7	86·5	93	84	13·2	13·9	75	89	8	4	21	4	7≡⁰	10●	8·4	2·1	—	84	87·4	84·3	Fair most of day. ● *n.*
16	1003·5	1010·9	83·2	81·0	86	81	7·8	8·5	62	80	26	6	21	3	5	3	1·0	8·7	·090	78	86·8	84·4	Mostly fair and clear. T●⁰ *p.*
17	1015·8	1016·6	84·5	85·8	89	80	8·2	10·5	60	73	26	6	21	2	7	1	—	8·8	—	75	85·8	84·6	Fine most of day. ⊕ 18 h.
18	1015·4	1016·1	87·0	86·4	91	82	11·5	12·2	73	80	21	4	—	1	10	10	—	1·4	—	74	86·1	84·6	Dull to fair.
19	1016·8	1014·5	87·1	86·0	92	81	11·5	11·5	71	77	20	3	17	2	7	2	—	5·9	—	75	86·3	84·6	Fine to fair. ⊕ 18 h.
20	1009·0	1007·5	88·4	86·0	92	82	12·2	10·2	71	68	16	3	19	4	10	1	—	7·3	—	76	86·3	84·6	Dull till 10 h., then fine.
21	1007·6	1005·3	87·1	87·7	91	81	10·2	12·6	64	75	23	2	16	2	9	10	0·8	1·9	—	74	86·4	84·6	Fair.
22	1001·8	1001·3	87·0	86·3	91	85	14·2	12·6	88	82	16	3	19	5	9	9	—	4·7	—	83	86·9	84·6	Dull to fine during day.
23	1003·4	1011·5	84·5	82·4	86	82	11·2	10·2	82	86	24	3	32	3	10	10	—	—	—	81	86·7	84·7	Dull all day.
24	1019·2	1025·0	83·6	82·9	87	80	9·5	8·8	74	73	30	5	—	1	10	0	—	3·4	—	81	85·9	84·8	Dull to fair.
25	1027·3	1026·5	84·8	83·9	89	78	8·5	9·5	64	72	32	3	9	2	6	7	—	11·8	·069	*n* 70	85·4	84·8	Fine.
26	1023·1	1020·5	86·3	84·0	90	*n* 77	8·2	9·8	53	77	19	2	9	2	8	0	—	5·1	—	71	85·7	84·8	≡⁰ at first, then fine.
27	1018·2	1015·3	86·1	86·3	92	79	10·5	11·5	69	75	22	3	—	1	2	4	—	10·1	—	73	85·7	84·8	Fine all day.
28	1014·8	1013·1	88·4	88·6	92	82	10·5	10·2	61	59	31	3	27	2	7	0	—	9·7	·083	75	86·4	84·8	Fine generally.
29	1012·4	1009·5	88·1	90·2	95	80	9·8	12·2	59	64	—	1	—	1	0	1	—	11·6	·064	72	86·8	84·8	Fine throughout.
30	1008·4	1008·7	89·1	89·1	95	84	12·2	11·2	68	61	24	2	—	1	1	10	12·4	10·4	·056	77	87·6	84·9	≡⁰ early ; fine during day.
31	1009·7	1007·8	86·9	87·1	93	84	13·9	13·2	87	83	—	1	—	1	10	4	0·5	4·9	—	83	87·9	84·9	Gloomy with ● early.
Means	1014·8	1014·3	86·9	86·2	91·2	82·1	11·3	11·5	71	75		3·3		2·5	7·2	6·1	32·8	5·45	—	78·0	86·1	84·0	Monthly **Totals or Means.**
Normal 40 years	1015·0	1014·9	84·9	84·0	89·1	79·8	10·0	10·1	71	76		4·0		2·9	—	—	43·2	6·46	—	—	—	—	**Normals, 40 years.**
					35 years		25 years.		24 years.		30 years		30 years					30 yrs					

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	991·7	987·6	78·5	81·5	82	73	8·8	10·9	98	98	16	4	20	6	10≡⁰	10≡⁰	4·1	—	—	—	—	—	≡⁰. Occasional ●⁰.
2	983·4	983·8	82·8	80·1	85	79	10·2	7·8	83	77	20	5	—	1	10●⁰	2	—	1·5	—	—	—	—	Variable. Occasional ●⁰.
3	986·3	989·1	83·2	77·9	85	77	7·5	6·8	60	79	32	2	4	2	9	10	—	3·8	—	—	—	—	Fine to fair.
4	990·2	990·5	79·2	78·4	82	76	6·8	6·8	71	75	4	5	—	1	10	10	—	0·1	—	—	—	—	Overcast generally.
5	989·0	985·6	78·8	81·1	82	75	7·8	9·8	85	90	12	4	12	3	10●⁰	10●⁰≡⁰	5·3	—	—	—	—	—	Occasional ●⁰.
6	984·5	985·5	82·8	82·1	85	81	11·2	11·2	94	96	20	*6*	16	7	10	10●	9·7	0·2	—	—	—	—	Overcast, with ≡⁰●.
7	987·3	988·5	83·5	84·0	86	82	12·6	12·2	98	93	16	*6*	—	1	10≡⁰	10≡⁰●⁰	0·5	0·1	—	—	—	—	●² early. Overcast generally.
8	995·1	993·8	85·0	82·7	87	82	12·6	11·9	90	98	20	4	16	10	10≡⁰	10≡⁰●⁰	6·4	0·2	—	—	—	—	Overcast. ⌈●² 22 h.–23 h.
9	994·6	993·8	85·4	79·7	88	77	10·2	7·8	70	80	24	6	24	3	9	3	—	9·1	—	—	—	—	Fine after 9 h.
10	993·0	987·8	82·8	83·8	88	74	9·2	10·9	77	83	—	1	—	0	10	10	4·3	4·2	—	—	—	—	Dull to fine.
11	975·5	977·5	83·5	81·0	85	80	12·6	8·2	100	78	20	12	20	2	10≡⁰	8	2·3	0·3	—	—	—	—	Overcast with ≡⁰. Frequent ●.
12	980·9	987·9	82·2	78·6	86	78	8·2	7·5	69	82	28	5	—	1	6	3	—	5·7	—	—	—	—	Cloudy to fine.
13	991·2	990·5	83·0	77·4	85	73	7·8	6·8	64	82	12	2	—	0	8	0	—	12·0	—	—	—	—	Fine generally. ≡⁰.
14	986·4	980·3	82·4	78·7	86	*n* 71	9·2	7·5	78	81	20	9	—	0	9	1	—	8·7	—	—	—	—	⌴ early. Cloudy to bright.
15	974·0	968·7	86·4	80·1	88	74	9·2	7·8	60	78	16	7	32	3	6	9●⁰	2·3	6·2	—	—	—	—	Fair *a.* ●⁰ *p.* Double ⌒ *p.*
16	970·4	978·1	80·5	80·0	85	77	7·1	6·8	70	68	28	9	28	13	8	3	—	3·3	—	—	—	—	Dull generally.
17	984·5	984·7	84·1	81·2	87	77	7·8	9·8	58	92	24	8	16	4	4	9	2·5	9·0	—	—	—	—	Sharp showers 22 h.–23 h.
18	983·9	987·0	81·7	78·3	86	75	8·8	7·1	78	82	20	6	24	2	9	4	0·5	11·2	—	—	—	—	Fine generally. Calm *n.*
19	988·7	987·2	80·9	81·5	86	73	9·5	8·8	91	82	—	0	16	2	10	10	1·5	0·3	—	—	—	—	Dull. [16 h.
20	983·5	979·3	82·4	79·6	85	79	10·9	9·2	92	96	4	5	4	8	10●⁰	10●	7·1	—	—	—	—	—	Overcast throughout. ● after
21	980·4	982·5	80·7	78·9	82	78	9·2	7·8	87	83	4	10	4	5	10	10	—	0·3	—	—	—	—	Dull generally.
22	980·7	980·0	80·9	77·6	82	77	7·1	7·1	68	84	4	9	4	7	8	2	—	3·1	—	—	—	—	Cloudy ; finer after 19 h.
23	981·2	987·9	81·2	78·1	84	75	7·8	7·1	72	80	4	9	4	2	8	2	—	6·7	—	—	—	—	Generally fine. [15 h.
24	994·2	998·4	83·3	80·4	86	72	8·5	8·2	67	80	—	1	4	4	6	10	—	5·3	—	—	—	—	Fine to cloudy. Distant T
25	999·7	997·2	84·8	81·1	88	73	7·5	8·2	55	75	*4*	2	32	3	2	4	—	11·2	—	—	—	—	Fine generally. [after.
26	995·6	992·8	84·3	80·9	89	76	8·5	7·8	63	73	—	1	32	4	2	10	—	11·6	—	—	—	—	Very fine till 16 h. ; cloudy
27	990·2	987·8	85·3	82·6	86	74	8·2	10·2	58	87	4	5	28	5	6	9	—	4·7	—	—	—	—	Fine early. Cloudy after 9 h.
28	986·6	985·4	84·1	82·4	*x* 90	81	10·2	9·2	77	78	28	3	24	3	9	6	—	5·6	—	—	—	—	Dull to fine. Distant T 15 h.
29	982·9	982·0	85·0	82·9	87	79	9·8	8·5	69	70	24	4	—	1	9	9	—	2·0	—	—	—	—	Dull to fair.
30	982·5	984·4	86·9	82·6	89	77	9·2	10·5	57	88	8	3	4	6	2	10≡⁰	—	6·5	—	—	—	—	Fine generally.
31	985·3	982·8	82·0	80·3	85	80	9·2	9·2	82	91	4	6	4	5	10	10≡⁰	0·3	0·5	—	—	—	—	Variable.
Means	986·2	986·1	82·8	80·5	85·8	76·6	9·1	8·7	76	83		5·1		3·7	8·1	7·2	46·8	4·31	—	—	—	—	Monthly **Totals or Means.**
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·68.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air-Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
	3 h.	9 h.	15 h.	21 h.	+ .	− .	+ .	− .		c_1.	c_2.			Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	65	105	115	215	450	150	0·90	0·00	0·40	0·45	0·55	1	0	515	0 13	491	9 12	24	54·4	12 47	45·3	7 50	9·1
2	40	150	80	215	610	450	0·35	0·80	0·55	0·45	0·40	1	0	521	15 2	484	10 10	37	55·0	12 27	45·2	5 20	9·8
3	130	190	75	165	480	240	0·90	0·00	0·45	0·30	0·30	1	1	530	0 15	485	10 40	45	53·5	13 3	42·9	20 42	10·6
4	205	355	−100	375	—	—	—	—	—	—	—	2	1	527	23 30	481	8 45	46	52·8	12 52	41·9	23 45	10·9
5	170	260	270	305	—	—	—	—	—	—	—	0	1	535	2 27	443	11 40	92	61·7	12 5	41·2	20 3	20·5
6	170	80	100	260	1180	1180	0·35	0·40	0·90	0·85	0·70	0	1	514	23 27	463	12 36	51	51·9	14 4	44·0	7 39	7·9
7	130	195	165	140	—	—	—	—	—	—	—	0	1	529	19 46	458	11 13	71	52·0	12 12	38·9	19 39	13·1
8	115	150	180	230	—	—	—	—	—	—	—	0	1	511	15 22	479	9 19	32	54·3	13 25	43·0	7 30	11·3
9	125	230	155	170	—	—	—	—	—	—	—	0	0	507	16 54	478	10 10	29	51·2	12 45	42·4	7 22	8·8
10	130	450	395	230	—	—	—	—	—	—	—	0	0	514	23 42	486	5 15	28	52·3	12 28	43·5	7 11	8·8
11	230	345	105	$x\pm$	—	—	—	—	—	—	—	2	0	535	22 18	494	14 2	41	52·3	12 26	44·2	6 45	8·1
12	90	195	115	$x\pm$	—	—	—	—	—	—	—	2	2	543	21 58	456	11 22	87	53·9	13 10	35·9	4 15	18·0
13	190	525	190	205	—	—	—	—	—	—	—	1	2	552	19 49	434	8 58	118	52·9	12 37	38·9	0 53	14·0
14	65	360	165	435	—	—	—	—	—	—	—	0	1	524	19 12	461	6 6	63	52·8	12 36	41·8	19 4	11·0
15	$x\pm$	445	80	105	1360	1450	0·40	0·35	1·05	0·85	0·60	2	0	508	17 35	475	10 28	33	51·4	12 40	42·9	7 22	8·5
16	100	75	155	195	1910	1940	0·05	0·05	0·20	0·35	0·85	2	0	508	19 15	473	10 35	35	53·9	12 26	42·9	6 15	11·0
17	150	180	165	255	—	—	—	—	—	—	—	0	0	516	19 9	481	10 40	35	51·7	12 3	44·2	5 5	7·5
18	115	130	155	195	—	—	—	—	—	—	—	1	0	515	14 48	477	10 41	38	54·1	12 9	42·5	7 48	11·6
19	170	165	125	165	—	—	—	—	—	—	—	0	0	518	18 50	475	10 38	43	53·9	13 19	41·8	6 50	12·1
20	150	180	105	195	—	—	—	—	—	—	0·85	0	1	517	18 50	473	10 48	44	52·3	13 34	42·0	8 6	10·3
21	205	195	165	355	—	—	—	—	—	—	—	0	0	524	18 25	473	10 40	51	51·2	13 28	42·2	9 5	9·0
22	−15	150	100	115	790	790	0·65	0·40	0·85	0·80	0·55	2	0	516	19 3	469	9 50	47	52·9	12 55	43·7	7 5	9·2
23	80	75	65	130	610	330	0·25	0·00	0·15	0·10	0·40	1	0	517	19 40	488	11 0	29	51·5	12 45	43·0	6 41	8·5
24	75	150	155	140	820	610	0·50	0·25	0·55	0·85	0·70	1	0	531	20 3	485	9 40	46	51·0	13 13	43·3	6 50	7·7
25	150	190	150	195	—	—	—	—	—	—	—	0	0	516	0 33	486	7 53	30	51·8	13 25	43·8	7 30	8·0
26	130	65	55	80	—	—	—	—	—	—	—	1	0	516	19 47	471	10 23	45	51·7	13 0	42·7	5 28	9·0
27	35	80	55	55	—	—	—	—	—	—	—	1	0	514	19 40	481	9 8	33	52·9	12 49	42·0	7 5	10·9
28	105	130	55	35	450	420	0·00	0·65	0·30	0·15	0·30	0	0	516	14 28	482	10 25	34	53·7	12 48	43·4	6 50	10·3
29	90	240	75	120	760	420	0·65	0·00	0·50	0·35	0·45	0	1	533	15 51	476	12 12	57	54·2	12 40	42·0	7 20	12·2
30	60	90	60	90	450	120	0·25	0·50	0·20	0·10	—	1	1	520	19 5	488	12 5	32	53·0	14 13	41·5	20 13	11·5
31	$x\pm$	150	55	245	510	390	0·25	0·15	0·20	0·10	0·30	2	1	541	21 12	476	14 25	65	53·0	13 27	42·4	7 58	10·6
M.	116	191	127	195	—	—	—	—	—	—	—	—	—	522	—	475	—	47	53·1	—	42·4	—	10·6

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3h, 9h, 15h, 21h, are given in the table. A similar note applies to the values in Table 6.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air-Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	North Component.					West Component.					Vertical Component. §				
	3 h.	9 h.	15 h.	21 h.	+ .	− .	+ .	− .		c_1.	c_2.			Maximum. 15000 γ +.			Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.			Maximum. 45000 γ +.		Minimum. 45000 γ +.		
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ		γ	h m	h m	γ	γ	h m		h m	γ	γ	h m	
1	127	169	333	163	—	—	—	—	—	—	—	1 a	1	21 41	1039		991	12 19	12 52	258	211	8 28		5 20	350	324	11 50	
2	−24	97	67	272	—	—	—	—	—	—	—	1 a	1	18 20	1050		994	11 4	13 18	264	210	5 18		19 10	353	326	12 20	
3	133	91	127	42	—	—	—	—	—	—	—	1 a	1	20 37	1063		993	10 41	13 5	258	199	21 13		20 30	345	324	12 35	
4	85	79	127	290	—	—	—	—	—	—	—	0 a	1	23 49	1055		999	10 23	12 56	251	200	0 13		20 0	338	322	11 40	
5	230	12	61	48	—	—	—	—	—	—	—	1 a	2	20 6	1078		932	11 45	12 5	295	191	8 30		18 5	349	313	10 55	
6	460	218	115	133	—	—	—	—	—	—	—	1 b	1	23 24	1044		972	12 31	14 4	252	204	7 36		16 30	349	318	11 50	
7	242	200	194	103	—	—	—	—	—	—	—	1 b	1	19 44	1076		968	11 12	13 54	249	186	19 36		18 30	340	322	12 0	
8	115	272	224	x	—	—	—	—	—	—	—	1 c	1	15 21	1032		988	10 5	13 57	260	203	6 12		18 45	339	314	11 52	
9	315	97	133	333	—	—	—	—	—	—	—	1 b	0	17 44	1030		995	10 11	12 42	243	198	7 21		18 40	332	320	12 0	
10	157	103	188	79	—	—	—	—	—	—	—	1 a	1	23 41	1038		1002	12 34	12 4	254	207	7 46		21 30	324	307	11 50	
11	x	x	85	145	—	—	—	—	—	—	—	2 c	1	22 12	1065		996	11 0	12 54	255	211	6 45		19 50	326	300	10 55	
12	—	—	115	206	—	—	—	—	—	—	—	1 a	2	21 54	1076		959	11 22	21 33	260	161	4 15		18 50	323	277	3 57	
13	67	139	163	339	—	—	—	—	—	—	—	0 a	2	19 44	1127		941	8 58	11 42	266	181	0 33		19 23	339	230	1 48	
14	303	151	163	284	—	—	—	—	—	—	—	0 a	1	19 7	1068		986	7 43	14 43	255	198	6 20	1 44	20 38	332	293	0 42	
15	115	97	30	514	—	—	—	—	—	—	—	1 b	0	17 36	1031		988	11 26	12 39	247	204	7 20		19 0	327	311	11 46	
16	103	151	73	91	—	—	—	—	—	—	—	0 a	0	19 13	1039		994	10 12	12 38	256	208	7 21		17 15	324	305	12 10	
17	121	133	133	218	—	—	—	—	—	—	—	1 b	1	19 7	1044		997	10 33	12 18	248	215	5 47		17 40	323	306	10 30	
18	79	−133	121	248	—	—	—	—	—	—	—	1 a	1	18 9	1046		988	10 42	13 23	260	203	8 6		17 30	326	303	11 30	
19	115	x	85	67	—	—	—	—	—	—	—	1 b	1	18 50	1048		985	12 44	14 3	255	206	6 2		20 30	329	309	12 0	
20	121	−315	36	x	—	—	—	—	—	—	—	1 b	0	1 2	1042		985	11 50	15 58	251	198	1 39		19 40	325	302	12 10	
21	−103	30	42	67	—	—	—	—	—	—	—	1 b	1	18 16	1048		993	11 37	14 14	252	200	9 13		20 40	323	306	11 25	
22	73	—	67	—	—	—	—	—	—	—	—	1 a	0	18 18	1040		985	11 20	13 58	256	209	9 10		18 0	320	301	12 0	
23	—	—	36	242	—	—	—	—	—	—	—	1 a	0	21 3	1043		999	11 56	14 13	248	212	6 7		22 0	318	302	12 30	
24	97	115	42	67	—	—	—	—	—	—	—	1 b	1	21 23	1052		1000	11 15	19 43	251	211	8 5		22 0	318	301	13 0	
25	182	115	97	248	—	—	—	—	—	—	—	0 a	0	0 33	1042		999	10 42	13 35	250	213	6 44		21 0	321	300	12 0	
26	151	109	127	36	—	—	—	—	—	—	—	0 a	0	20 20	1045		988	11 11	13 47	251	210	7 3		22 30	325	310	12 0	
27	115	103	139	266	—	—	—	—	—	—	—	1 a	0	19 47	1046		996	12 57	13 27	253	202	7 3		20 0	333	312	11 20	
28	200	169	97	206	—	—	—	—	—	—	—	0 a	0	18 13	1039		990	11 1	14 25	257	213	7 26		21 0	337	315	12 0	
29	182	97	127	121	—	—	—	—	—	—	—	1 b	1	15 51	1058		973	12 13	15 50	262	202	7 23		19 50	344	319	11 35	
30	91	127	145	91	—	—	—	—	—	—	—	0 a	1	20 16	1057		997	12 4	14 33	259	199	20 10		20 20	356	330	11 10	
31	48	42	30	12	—	—	—	—	—	—	—	1 a	1	21 6	1070		982	14 23	13 45	256	204	7 57		18 40	345	325	12 47	
M.	145	105	120	178	—	—	—	—	—	—	—	—	—	—	1053		986	—	—	256	203	—		—	333	308	—	

x Indeterminate.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument.

An explanation of the Headings of the columns is given in the Preface.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	4·0	...	0·9	...	5·4	...	0·9	...	5·4	...	2·2	...	5·4	...	0·9	...	10·3	9	10
2	3·1	...	4·5	...	4·9	...	4·9	...	6·3	...	4·0	...	2·7	...	6·3	...	13·0	14	30
3	0·9	...	3·6	...	...	1·3	...	2·2	...	2·7	...	0·9	...	2·2	...	0·9	5·8	16	55
4	...	2·7	...	2·7	...	2·7	...	6·3	...	0·5	0·5	...	...	0·5	0·5	...	8·9	8	10
5	...	0·5	...	1·8	...	...	...	3·6	5·4	...	...	...	2·7	...	...	1·3	9·4	16	30
6	3·1	...	0·5	...	5·8	...	2·2	...	7·6	...	1·3	...	5·8	...	1·3	...	13·0	15	35
7	6·3	...	2·7	...	5·8	...	...	...	6·3	...	...	1·3	5·8	...	5·8	...	13·0	22	45
8	1·8	...	1·3	...	4·5	...	...	...	7·6	...	1·3	...	8·1	...	3·1	...	14·3	19	35
9	5·4	...	3·6	...	0·5	...	1·8	...	2·7	...	1·3	...	3·1	...	1·3	...	10·3	1	15
10	0·9	...	...	0·9	...	...	...	2·2	...	...	...	0·9	0·5	...	...	2·7	12·5	24	25
11	8·5	...	...	...	8·1	...	1·8	...	8·9	...	3·6	...	1·8	...	1·8	...	16·5	6	10
12	...	0·5	1·8	...	...	4·5	3·1	...	...	3·1	0·5	...	...	8·9	3·6	...	13·0	20	40
13	...	7·6	1·3	...	...	1·8	0·5	...	...	1·8	0·9	...	...	...	...	1·8	11·6	0	35
14	0·9	...	...	0·9	...	0·9	...	1·3	...	1·8	2·7	...	...	1·3	...	0·5	4·5	12	50
15	1·3	...	...	0·5	...	0·5	1·8	...	...	3·6	5·4	...	...	...	8·9	...	14·3	23	40
16	...	6·7	9·8	...	...	2·7	12·5	...	...	1·8	8·1	...	...	...	11·6	...	17·9	22	0
17	...	...	10·3	...	2·2	...	5·4	...	6·7	...	1·3	...	6·7	...	1·3	...	16·5	0	40
18	1·3	...	5·8	...	...	...	5·4	...	4·0	...	1·8	...	3·1	...	1·3	...	12·1	0	35
19	2·2	...	0·9	...	4·9	...	...	...	3·1	...	1·3	...	0·5	...	...	2·7	8·1	11	55
20	...	...	...	4·0	...	...	...	0·9	1·3	...	1·3	...	4·0	...	2·7	...	10·3	24	10
21	2·7	...	2·7	...	1·8	...	2·7	...	...	...	3·6	...	...	3·1	...	3·1	11·6	23	50
22	...	4·5	...	10·3	...	6·3	...	9·8	...	7·6	...	7·6	...	7·2	...	7·2	15·2	10	15
23	...	5·4	...	5·4	...	4·9	...	4·9	...	...	5·4	0·9	...	...	1·3	...	12·5	0	45
24	...	2·7	...	1·3	...	2·7	...	...	...	3·1	1·3	...	...	1·8	0·9	...	7·2	13	15
25	...	1·3	0·5	...	...	1·8	1·8	...	...	1·8	3·1	...	...	0·9	1·3	...	4·5	15	55
26	...	1·3	1·3	...	...	2·2	0·9	...	...	2·7	1·8	...	...	1·3	0·9	...	4·5	14	55
27	...	0·9	0·9	...	...	1·3	0·9	...	...	2·2	3·1	...	...	1·3	1·8	...	5·8	16	15
28	...	0·5	0·9	...	...	0·9	1·3	...	...	1·3	1·8	...	2·2	...	4·9	...	7·2	21	45
29	1·3	...	5·8	...	...	...	5·8	...	1·3	...	2·7	...	3·1	...	1·3	...	9·4	1	10
30	1·8	...	...	...	...	0·5	0·9	...	...	1·3	...	3·1	...	0·9	...	0·9	6·3	14	50
31	0·5	...	...	0·9	...	1·8	...	0·9	...	2·7	...	3·6	...	1·3	...	...	10·3	16	15
S+N & W+E	80·6		87·8		80·7		86·7		109·5		72·3		91·6		83·5				
S−N & W−E	11·4		30·4		7·1		22·5		23·7		37·5		19·4		41·3				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	8·1	...	...	3·1	7·2	...	...	...	3·6	...	1·3	...	1·8	...	0·5	...	8·5	1, 2
2	0·9	...	0·9	...	0·9	...	4·5	...	...	1·8	8·1	...	...	3·1	3·1	...	9·2	12
3	...	5·8	...	1·3	...	7·2	...	1·3	...	9·4	...	...	...	5·4	...	0·9	9·5	16
4	...	3·1	...	...	...	2·2	...	3·1	...	...	...	3·1	2·2	...	...	1·3	5·2	11
5	3·6	...	...	3·6	6·7	...	...	6·7	10·3	...	...	4·5	10·3	...	...	4·5	11·5	16
6	6·3	...	...	2·7	6·3	...	...	2·7	5·4	...	...	3·6	3·6	...	...	2·7	7·5	11
7	2·7	...	...	1·8	4·5	...	...	...	...	3·6	0·9	...	0·5	...	...	0·5	4·6	8, 9, 11
8	0·9	...	0·9	...	1·3	...	...	0·5	4·9	...	...	2·2	5·8	...	...	...	7·5	22
9	1·8	...	8·5	...	...	...	13·0	...	...	...	12·5	...	...	...	8·1	...	14·4	11
10	...	1·3	7·6	...	...	1·8	8·9	...	...	...	9·8	...	1·8	...	0·9	...	10·8	13
11	2·7	...	...	4·0	8·1	...	...	8·1	...	1·8	10·3	...	...	6·7	6·7	...	14·8	18
12	...	5·4	5·4	...	...	11·2	4·5	...	...	8·1	8·1	...	...	6·7	6·7	...	13·4	7
13	...	4·9	4·9	...	...	1·3	7·2	...	1·8	...	9·4	...	3·6	...	1·3	...	10·2	11
14	0·9	...	2·2	...	7·2	...	1·3	...	6·3	...	...	...	3·6	...	...	...	9·2	12
15	5·8	...	1·3	...	7·2	...	1·3	...	...	4·5	3·1	...	...	4·9	2·2	...	7·2	9, 11
16	...	1·8	...	2·7	...	9·4	...	4·0	...	1·3	...	2·7	...	6·7	4·5	...	10·2	9, 10
17	...	5·4	5·4	...	...	1·3	5·8	...	5·8	...	...	...	4·5	...	...	1·8	9·5	1
18	3·6	...	1·3	...	...	...	7·2	...	...	1·8	8·5	...	...	0·9	4·9	...	9·2	13
19	1·8	...	4·5	...	1·3	...	6·3	..	...	3·1	2·2	...	...	1·3	1·3	...	6·2	9
20	...	1·8	1·8	...	...	2·2	...	0·5	...	0·9	...	4·0	...	1·3	...	3·1	5·6	19
21	...	3·6	...	5·4	...	6·3	...	1·3	...	9·4	...	1·8	...	4·0	...	1·8	9·2	15
22	...	2·7	...	1·3	...	5·4	...	...	...	6·3	...	...	...	4·0	...	1·8	7·2	17
23	...	3·6	...	1·3	...	4·0	0·9	...	...	4·9	...	0·9	...	1·3	...	0·5	4·9	12, 15, 17
24	...	2·7	0·9	...	...	4·9	2·2	...	...	6·3	4·0	...	...	4·9	4·9	...	7·5	15, 18, 19
25	...	4·5	4·5	...	...	7·6	3·1	...	...	8·1	3·6	...	...	5·8	4·0	...	9·5	17
26	...	4·9	2·2	...	...	7·6	3·1	...	...	7·6	3·1	...	...	5·8	2·2	...	8·9	11, 12
27	...	6·7	2·7	...	...	6·7	2·7	...	...	8·5	3·6	...	...	8·1	3·1	...	9·2	15, 17
28	...	4·9	4·9	...	...	5·4	3·6	...	...	5·8	2·2	...	...	3·1	...	...	7·9	1, 11
29	...	0·5	...	...	3·1	...	...	1·3	3·1	...	...	1·3	1·8	...	...	0·9	5·2	13
30	...	1·3	...	1·8	...	4·5	...	0·9	...	2·2	...	4·9	...	2·7	...	3·6	5·6	11, 15
31	...	2·7	...	2·7	...	2·7	...	2·7	...	2·7	...	0·5	...	1·3	...	1·3	4·6	11
S+N & W+E	106·7		91·6		145·5		108·7		139·3		120·2		117·5		79·1			
S−N & W−E	−28·5		28·2		−37·9		42·5		−56·9		61·2		−38·5		29·7			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	4·5	...	0·9	...	4·0	...	4·0	...	0·9	...	4·0	...	0·5	...	2·2	...	8·1	6	5
2	0·5	...	2·2	...	0·9	...	2·2	...	...	1·3	3·1	...	...	0·5	1·3	...	4·0	14	35
3	0·0	0·0	0·0	0·0	1·8	...	...	3·1	2·7	...	...	2·7	2·7	...	...	2·7	7·2	23	45
4	3·6	...	...	3·6	2·7	...	...	3·6	1·8	...	...	4·5	4·0	...	...	4·0	8·5	12	45
5	1·8	...	0·5	...	4·0	...	...	2·7	3·1	...	...	0·5	0·9	...	4·9	...	8·9	17	40
6	1·8	...	3·1	...	5·8	...	...	1·3	4·9	...	4·9	...	4·5	...	4·5	...	9·8	11	30
7	3·6	...	1·3	...	5·8	...	8·5	...	5·8	...	5·8	...	4·9	...	4·9	...	13·4	9 40 : 13 25	
8	4·0	...	4·0	...	3·1	...	2·2	...	4·5	...	...	0·9	2·7	...	...	0·5	8·9	1	50
9	2·7	...	...	4·0	0·9	...	...	0·5	0·9	...	...	0·9	...	0·5	...	2·7	7·2	24	25
10	...	...	...	8·5	...	...	...	7·2	3·6	...	...	5·4	2·2	...	...	2·2	10·3	15	15
11	4·9	...	3·1	...	1·8	...	2·7	...	2·2	...	2·2	...	0·9	...	0·9	...	8·1	2	45
12	...	1·8	1·8	...	...	2·2	...	1·3	...	5·4	...	0·9	...	6·3	...	2·7	12·1	16	40
13	...	2·7	...	2·7	...	1·8	...	4·5	1·3	...	...	3·6	0·5	...	...	0·9	6·3	6	50
14	0·9	...	...	2·2	0·5	...	...	1·3	...	2·2	...	0·9	...	2·7	...	1·3	8·1	24	10
15	...	6·7	...	...	...	7·2	3·1	...	...	4·9	7·6	...	...	4·5	10·7	...	21·9	23	50
16	...	7·6	11·2	...	...	6·7	6·7	...	...	7·2	10·3	...	...	5·4	8·1	...	19·2	3	15
17	...	4·0	4·0	...	...	1·3	6·7	...	...	...	5·8	...	0·9	...	4·9	...	13·9	0	55
18	1·3	...	5·8	...	0·0	...	0·9	...	...	...	2·2	...	...	...	0·5	...	6·7	0	45
19	...	...	2·7	...	...	...	2·7	...	2·7	...	...	2·7	0·9	...	...	0·5	4·0	8	0
20	5·4	...	...	...	6·9	...	5·4	...	4·0	...	2·7	...	0·9	...	3·6	...	9·4	8	5
21	0·5	...	0·5	...	0·5	...	...	2·7	...	4·0	1·8	...	...	4·0	4·0	...	7·6	23	35
22	...	2·2	5·4	...	...	1·8	4·0	...	...	0·9	3·6	...	...	0·5	1·3	...	8·1	1	55
23	...	1·8	...	0·5	...	2·7	...	1·3	...	8·9	1·8	...	...	7·6	3·1	...	11·6	15	35
24	...	3·1	...	0·5	...	3·1	...	0·5	...	3·6	...	0·9	...	2·2	...	0·5	5·4	1	50
25	...	1·8	...	0·5	...	0·5	...	0·0	...	2·7	...	0·5	...	0·5	...	0·0	3·6	1555 : 17 10	
26	...	2·7	...	0·5	0·9	...	...	4·0	...	1·3	...	2·2	...	1·8	...	1·8	5·4	19	15
27	...	0·9	...	1·8	...	0·9	...	2·7	0·5	...	...	0·9	...	0·5	0·0	...	3·1	0	50
28	0·0	0·0	0·0	0·0	...	1·8	1·8	...	...	4·0	...	0·9	...	3·1	0·5	...	5·4	24	5
29	...	3·6	3·6	...	...	6·3	2·7	...	...	1·3	2·2	...	...	1·8	4·6	...	8·5	8	30
30	...	2·2	3·1	...	...	0·5	0·5	...	...	0·5	1·3	...	...	1·8	...	...	4·9	6	40
31	2·2	...	...	0·5	0·5	...	...	3·1	3·1	...	...	2·2	2·2	...	...	4·9	11·6	23	30
S+N & W+E	78·8		78·5		70·9		93·9		90·2		89·9		70·6		85·9				
S−N & W−E	−3·4		27·9		−2·7		14·3		−6·2		28·7		−13·2		36·5				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	0·9	0·9	...	...	...	...	3·6	5·8	...	...	5·8	3·1	...	...	0·5	11·6	17	20
2	1·3	...	2·2	...	2·2	...	2·2	...	0·9	...	4·5	...	0·5	...	2·7	...	8·1	14	30
3	0·5	...	3·1	...	...	1·8	3·1	...	...	4·0	...	1·8	...	...	...	1·3	10·7	11	5
4	...	3·1	...	3·1	...	3·6	...	5·4	...	2·2	...	5·8	...	3·1	...	7·6	9·4	24	25
5	...	...	...	7·9	1·8	...	...	9·4	1·8	...	...	8·1	...	...	8·1	...	8·2	10·3	15	20
6	...	...	...	1·3	...	...	1·6	...	...	...	...	4·6	...	1·8	...	1·8	8·5	10	55
7	2·2	...	2·2	...	1·8	...	4·0	...	4·5	...	...	0·9	2·7	...	1·3	...	10·3	16	30
8	...	...	4·6	...	...	2·2	5·4	...	...	4·3	...	...	1·3	...	...	0·9	11·6	10	45
9	1·3	...	2·7	...	...	...	4·3	...	0·9	...	...	2·7	0·5	...	...	0·9	7·6	7	40
10	...	1·3	2·2	...	...	3·6	...	...	...	3·6	...	1·3	...	0·5	...	3·1	8·9	7	30
11	3·1	...	...	4·9	4·0	...	...	4·0	4·0	...	...	1·8	0·9	...	3·6	...	11·6	16	10
12	0·9	...	0·5	...	...	2·7	2·7	...	...	6·2	...	...	...	4·6	...	...	14·3	16	45
13	...	2·3	...	...	...	3·6	...	1·3	2·7	...	...	6·3	2·6	...	...	...	8·5	18	20
14	3·0	...	...	...	5·4	...	...	3·6	2·7	...	...	2·7	1·8	...	...	8·5	9·8	22	15
15	...	...	...	6·9	...	...	...	6·2	5·8	...	5·8	...	4·3	...	...	...	14·8	18	5
16	...	1·3	5·8	...	...	...	6·6	...	1·3	...	6·7	...	0·5	...	2·2	...	13·4	12	15
17	...	...	4·9	...	...	2·7	6·3	...	...	3·1	1·3	...	0·5	...	0·9	...	10·7	12	30
18	0·5	...	3·1	...	1·3	...	3·6	...	...	1·3	2·7	...	0·5	...	0·9	...	7·2	14	10
19	0·5	...	0·9	...	3·1	...	...	2·2	2·7	...	...	2·7	2·2	...	...	2·2	7·6	16	15
20	1·8	...	...	1·8	1·8	...	...	2·7	*	*	*	*	1·3	...	...	1·8	10·7	16	45
21	1·8	...	2·7	...	1·3	...	3·6	...	4·0	...	...	4·0	1·3	...	...	0·9	10·3	13	5
22	3·6	...	...	1·3	4·9	...	...	4·9	3·6	...	...	5·4	3·3	...	...	...	12·1	5	40
23	3·0	...	...	...	2·2	...	2·2	...	...	...	5·9	...	...	3·1	3·1	...	11·6	21	50
24	...	3·1	1·8	...	...	6·3	2·7	...	...	6·3	1·3	...	...	5·6	...	...	15·2	8	35
25	...	1·3	1·3	...	...	6·2	...	...	...	6·2	...	...	...	0·7	...	...	11·2	8	5
26	...	...	2·3	...	...	5·9	...	...	...	4·5	...	0·9	...	1·8	1·8	...	10·7	14	40
27	...	0·9	1·8	...	...	0·9	1·8	..	...	...	...	3·6	...	0·5	...	0·9	6·3	13	20
28	...	0·0	...	0·5	...	2·0	...	...	...	3·1	...	0·5	...	0·5	...	0·0	6·3	15	0
29	0·5	...	2·2	...	...	0·5	2·2	...	...	0·5	...	1·8	0·5	...	...	1·8	5·4	4	50
30	0·9	...	0·9	...	1·3	...	...	2·7	2·7	...	...	2·7	0·9	...	...	5·4	8·5	0·10, 31st.	
31	...	...	...	8·2	...	...	...	4·3	...	1·3	...	3·1	...	3·6	...	9·5	10·7	19	25
S+N & W+E	39·1		82·0		73·1		102·6		90·0		94·7		54·5		71·8				
S−N & W−E	10·7		10·2		−10·9		2·0		−2·2		−29·1		6·5		−35·2				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time. * No record. † Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2
‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8. § Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

BRIGHTON. **K. 28.** May 2. 12 noon to 12·50 p.m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
Greatest height	340	978·0	282	...	88	1·204	270	—	Little Fr.-Cu., clearing off.
	1000	...	...	...	...	...	...	...	
	500	...	...	...	...	...	...	...	Wind decreased with altitude, and kite refused to rise above 340 m.
100 m. above ground	215	992·8	282	40	88	1·222	250	—	
Ground level	115	1004·8	286		88	1·218	260	6·7	
Computed for M.S.L.	0	1018·9	...	...	...	...	280	10·8	...

BRIGHTON. **K. 29.** May 5. 10 h. 30 m. to 12 h. 0 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
...	...	...	...	...	...	...	...	Overcast St.-Cu., no clouds reached.
1000	...	...	...	...	...	...	...	
500	957·9	283	7·0	86	1·174	150	8	
215	991·2	285		86	1·206	120	8	
115	1003·1	285	0	86	1·221	115	6	
0	1016·9	...	...	...	...	170	8·8	...

BRIGHTON. **K. 30.** May 8. 12 h. 0 m. to 13 h. 0 m. G.M.T.

Greatest height	...	...	...	...	...	...	...	...	Thick fog, kite not seen during ascent. Wind direction by wire.
	1000	...	...	...	...	...	...	...	
	500	968·9	285·2	...	93	1·178	270	?	
100 m. above ground	215	1002·3	*286·5*	4·7	*93*	1·212	?	?	
Ground level	115	1014·2	287	...	93	1·224	255	8·9	
Computed for M.S.L.	0	1028·1	...	...	...	...	310	20·8	...

BRIGHTON. **K. 31.** May 8. 14 h. 0 m. to 15 h. 20 m. G.M.T.

	785	936·8	283·5	...	93	1·146	330	10	Fog cleared off, showing high fleecy clouds. At 16 h. 30 m. fog returned.
	1000	...	...	...	...	...	...	...	
	500	969·1	285·8	−2·1	93	1·175	310	10	
	215	1002·5	285·2		100	1·218	260	10	
	115	1014·5	287	18	93	1·225	260	6·7	
	0	1028·4	...	...	...	...	310	20·8	...

BRIGHTON. **K. 32.** May 11. 11 h. 20 m. to 12 h. 30 m. G.M.T.

Greatest height	...	...	...	...	...	...	...	...	Thick fog. Kite not seen during ascent. Wind direction by wire. Strongest gusts 22 m.p.s. The ground was enveloped in cold sea fog, and no doubt at 1000 m. kite was flying in brilliant sunshine.
	1000	900·8	296·8	?	43	1·052	235	18·8	
	500	...	?	?	?	?	?	?	
100 m. above ground	215	...	?	?	?	?	?	?	
Ground level	115	998·6	286		100	1·210	250	11	
Computed for M.S.L.	0	1012·2	...	...	...	...	185	22·4	...

BRIGHTON. **K. 33.** May 16. 11 h. 0 m. to 12 h. 40 m. G.M.T.

	...	...	...	...	...	...	...	...	Clear sky with heavy storm cu., and slight showers at intervals. Wind average 12 m.p.s., gusts up to 17 m.p.s.
	1000	890·9	275·2	4·6	85	1·125	340	...	
	500	947·5	277·5		85	1·186	320	...	
	215	981·0	281·4	13·7	75	1·211	330	12	
	115	992·8	285·4	—	64	1·208	300	9·8	
	0	1006·5	...	...	...	...	280	13·9	...

BRIGHTON. **K. 34.** May 18. 15 h. 30 m. to 17 h. 30 m. G.M.T.

Greatest height	...	...	...	...	...	...	...	...	Overcast alt.-cu. Scud about 150 m. above ground. Kite not sustainable at 100 m.
	1000	901·6	280·2	3·6	75	1·118	260	13	
	500	957·9	282		75	1·180	270	14	
100 m. above ground	215	991·2	*284·1*	5·4	*80*	1·211	?	?	
Ground level	115	1003·1	285·6	...	90	1·218	250	8·9	
Computed for M.S.L.	0	1016·9	...	...	...	...	Pressure distribution irregular.		...

BRIGHTON. **K. 35.** May 24. 10 h. 30 m. to 12 h. 30 m. G.M.T.

	...	...	...	...	...	...	...	...	Overcast St., lowest clouds 500 m. above ground.
	1000	902·4	273	5·6	100	1·149	30	16	
	500	960·2	275·8		100	1·209	15	16	
	215	994·3	279·7	13·7	90	1·234	10	12	
	115	1006·4	284	43	86	1·230	355	8·9	
	0	1020·3	...	...	...	...	20	9·3	...

The computed wind at M.S.L. is the gradient wind at the nearest hour of observation at Telegraphic Reporting Stations, viz. 7 h., 13 h., or 18 h.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level—*continued.*

Soundings by Kites (K.) and Pilot Balloons (P.)

ABERDEEN. **P. 17.** May 1. 11 h. 20 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	1737	...	...	...	...	...	Lost in cloud at 1737 m.
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	1500	212	13·3	+7·0	+11·3	2·1	
	1000	210	13·4	+6·7	+11·6	1·9	
	500	228	13·0	+9·6	+ 8·7	3·4	
100 m. above ground	130	253	7·7	+7·4	+ 2·3	3·1	
Ground level	30	165	6·6	−1·7	+ 6·4	...	
Computed for M.S.L.	0	210	6·8	+3·4	+ 5·9	...	Lift 54 gr.

P. 18. May 3. 11 h. 40 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
1907	...	...	...	...	...	Entered cloud base at 1907 m.
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
1750	322	10·5	+6·4	− 8·3	2·8	
1500	321	10·7	+6·7	− 8·4	2·5	
1000	333	12·4	+5·7	−11·0	3·0	
500	351	9·1	+1·4	− 9·0	3·0	
130	341	8·4	+2·7	− 8·0	2·1	
30	320	8·0	+5·1	− 6·1	...	
0	? 350	Near centre of anticyclone.			...	...

P. 19. May 8. 11 h. 21 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
3734	...	...	...	...	...	
3500	223	19·1	+13·0	+14·0	5·8	?
3000	218	24·2	+15·0	+19·0	8·2	
2500	230	12·4	+ 9·5	+ 7·9	4·5	During the afternoon of the preceding day (7th) there was a thunderstorm to the N. W. of Aberdeen, and at 18 h. on the above day (8th) thunder was heard here. On both days thundershowers fell.
2000	220	6·8	+ 4·4	+ 5·2	2·8	
1500	223	3·5	+ 2·4	+ 2·6	3·1	
1000	199	9·2	+ 3·0	+ 8·7	2·7	
500	164	1·8	− 0·5	+ 1·7	2·5	
130	144	3·9	− 2·3	+ 3·2	3·5	
30	140	5·3	− 3·4	+ 4·1	...	
0	220	7·2	+ 4·6	+ 5·5	...	Two theodolites. Lift 46 gr.

ABERDEEN. **P. 20.** May 10. 11 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	1518	...	...	...	...	...	
	1500	250	3·8	+3·6	+ 1·3	6·2	
	1000	265	3·3	+3·3	+ 0·3	5·2	
	500	259	2·0	+2·0	+ 0·4	5·7	
	250	260	2·8	+2·8	+ 0·5	5·3	
100 m. above ground	130	252	2·1	+2·1	+ 0·7	2·2	
Ground level	30	150	2·0	−1·0*	+ 1·7	...	
Computed M.S.L.	c	? 280	Near centre of anticyclone.			...	Two theodolites. Lift 54 gr.

P. 21. May 15. 11 h. 10 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
1754	...	...	...	...	...	Balloon lost to sight in haze. Cloud sheets of degraded ci.-cu. and a.-cu. Complete change in wind direction, temperature etc., with very gloomy sky and rain at 19 h.
1750	169	18·2	−3·5	+17·9	3·2	
1500	170	17·5	−2·9	+17·2	2·7	
1000	197	16·1	+4·6	+15·4	2·9	
500	201	12·7	+4·5	+11·9	2·5	
130	162	7·1	−2·2	+ 6·8	2·4	
30	155	4·4	−1·9	+ 4·0	...	
0	? 180	? 7·6	? 0·0	? 7·6	...	Two theodolites. Lift 55 gr.

P. 22. May 17. 11 h. 13 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
1682	...	...	...	...	...	Balloon entered cu. cloud. Surface wind changed from W.N.W. to E.S.E. about time of ascent. Balloon recrossed base-line.
...	...	...	...	...	...	
1500	307	6·5	+5·2	− 3·9	3·1	
1000	284	4·4	+4·3	− 1·1	2·6	
500	216	3·2	+1·9	+ 2·6	2·6	
130	159	8·5	−3·0	+ 7·9	3·1	
30	100	4·1	−3·8	+ 1·4	...	
0	240	7·5	+6·5	+ 4·3	...	Two theodolites. Lift 57 gr.

ABERDEEN. **P. 23.** May 22. 11 h. 43 m. G.M.T.

	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	5313	...	...	...	...	...	Balloon seen to burst at 5313 m.
	5000	325	13·6	+7·8	−11·1	2·8	Sky cloudless.
	4500	305	9·0	+7·3	− 5·2	2·8	
	4000	315	8·1	+5·8	− 5·7	2·8	
	3500	330	8·3	+4·2	− 7·2	2·8	
	3000	356	7·5	+0·5	− 7·5	3·0	
	2500	63	5·9	−5·2	− 2·7	3·0	
	2000	61	4·8	−4·2	− 2·3	2·5	
	1500	13	5·5	−1·2	− 5·4	2·5	
	1000	16	7·0	−1·9	− 6·7	2·7	
	500	36	3·9	−2·3	− 3·2	0·8	
100 m. above ground	130	73	5·7	−5·4	− 1·7	4·5	
Ground level	30	75	5·0	−4·8	− 1·3	...	Two theodolites to 3000 m.
Computed M.S.L.	0	60	In centre of wedge.			...	One theodolite to 5300 m. Lift 64 gr.

P. 24. May 24. 11 h. 6 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
972	...	...	...	...	...	Balloon disappeared into base of cu.-ni. cloud. As it did so it was seen by observer to suddenly lift up into the cloud.
...	...	...	...	...	...	
...	..	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
750	353	8·9	+1·1	− 8·8	3·9	
500	350	9·4	+1·6	− 9·3	3·1	
130	346	8·6	+2·1	− 8·3	3·0	
30	340	5·0	+1·7	− 4·7	...	
0	350	7·5	+1·3	− 7·4	...	Two theodolites. Lift 57 gr.

P. 25. May 31. 11 h. 12 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
1085	...	...	...	...	...	Balloon entered sheet of loose degraded cu. gr. cu. above.
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
1000	339	4·8	+1·7	− 4·5	2·5	
500	355	4·2	+0·4	− 4·2	1·6	
130	7	3·1	−0·4	− 3·1	2·3	
30	15	1·6	−0·4	− 1·5	...	
0	In centre of wedge.				...	Two theodolites. Lift 57 gr.

* Surface wind at 11 h. 20 m. was light and very variable alternating between N.W. and S.S.E. At 11 h. 30 m. a definite S.Ely. current set in, the components of which are given. The vertical velocities from 250 m. upwards are quite correct. Cu. clouds had rapidly formed during the morning and moved slowly from W.S.W. It was almost calm during the ascent and as the balloon entered the base of one of the closely packed cu. The upward velocity is probably a confirmation of the opinion expressed by Mr C. J. P. Cave. (*Vide* p. 31, *Structure of the Atmosphere*, Cave).

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

1912. May 2. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	23·2 km.	...	226° A.
Lowest Temperature	11·6 km.	205 mb.	217° A.
Base of Stratosphere	11·4 km.	212 mb.	...
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	762 mm., 1016 mb.	761 mm., 1015 mb.
Temperature,	284° A.	286° A.
Vapour Pressure,	...	...
Gradient Wind :—Direction,	260°.	280°.
Velocity,	11·2 m/s.	8·5 m/s.
Correction for Curvature,	0 m/s.	0 m/s.
Final Components, W. to E.	11·0 m/s.	8·4 m/s.
Final Components, S. to N.	1·9 m/s.	1·5 m/s.

Sounding No., R. 8.
Place, MANCHESTER.
Latitude, . . . 53° 27′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 40 m.
Place of Fall, Swinton, Yorks.
Distance, ... 63 km.
and
Orientation, . . . 90°

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
20·8	50	225·5	...	...	...	
20	...	224	0	...	...	
19	...	224	0·5	...	...	
18	...	224·5	−0·5	...	..	
17	...	224		...	...	
16·3	100	224	−0·5	...	...	
16	...	223·5	−1·5	...	...	
15	...	222	−1·5	...	...	
14	...	220·5	−2·0	...	...	
13	...	218·5	−1·0	...	...	
12	...	217·5		...	...	
11·8	200	...	1·5	...	...	
11	...	219	6	...	...	
10	...	225		...	...	
9·2	300	...	4·5	...	...	
9	...	229·5	8	...	...	
8	...	237·5		...	...	
7·2	400	...	7·5	...	...	
7	...	245	6	...	...	
6	...	251		...	...	
5·6	500	253·5	7	...	...	
5	...	258	...	...	...	
4·2	600	...	4·5	...	...	
4	...	262·5	5·5	...	...	
3·0	700	268	7·5	...	...	
2·0	...	275·5		...	...	
1·95	800	...	3·5	...	...	
1·0	900	279	...	...	...	
0·05	1000	284	5	...	...	
Ground M.S.L.	1012 1016	284 ...	... ...	... ...	... ...	

1912. May 2. 7 h. 5m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	16 km.	...	...
Lowest Temperature	11·4 km.	...	214° A.
Base of Stratosphere	11·0 km.	...	215° A.
	11·4 km.	...	214° A.
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	764 mm., 1019 mb.	763 mm., 1017 mb.
Temperature,	285° A.	286° A.
Vapour Pressure,	...	...
Gradient Wind :—Direction,	270°.	280°.
Velocity,	8·2 m/s.	8·5 m/s.
Correction for Curvature,	−0·5 m/s.	0 m/s.
Final Components, W. to E.	7·7 m/s.	8·4 m/s.
Final Components, S. to N.	0 m/s.	1·5 m/s.

Sounding No., R. 177.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, Shepperton.
Distance, ... 45 km.
and
Orientation, . . . 145°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
16	104	224 221	0	...	...	The differences above 12 kms. are probably due in part to solar influence.
15	123	224 221	0	...	...	
14	142	224 221	−1 −2	...	...	
13	167	223 219	−1 −3	...	...	
12	195	222 216		...	...	
11·8	200	...	−4	...	...	
11	227	215	6	...	...	
10	264	221		...	...	
9·2	300	...	6	...	...	
9	308	227	6	...	...	
8	369	233		...	...	
7·3	400	...	7·5	...	...	
7	411	240·5	8·5	...	...	
6	474	250 248		...	...	
5·6	500	...	7	...	...	
5	541	256	...	50	0·6	
4·2	600	...	6	...	...	
4	618	263 261		40 50	0·9 1·1	
3·0	[700] 701	267	5	90	3·3	
2	[800] 796	272·5	5·5	60 70	2·7 3·1	
1	[900] 901	278	5·5 6	100	6·5	
Ground M.S.L.	999 ...	284 ...	... ...	... ...	... ...	Wind 238°, force 3. Low clouds.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

1912. May 13. 16 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	14·3 km.	...	? 223° A.
Lowest Temperature	10·7 km.	...	216° A.
Base of Stratosphere	10·7 km.	...	216° A.
	11·2 km.	...	217° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	767 mm., 1022 mb.	765 mm., 1020 mb.
Temperature,	285° A.	289° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	Distribution of	
Velocity,	pressure irregular.	
Correction for Curvature,	...	...
Final Components, W. to E.	?	?
Final Components, S. to N.	?	?

Sounding No., R. 178.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L. . . 150 m.
Place of Fall, Halstead.
Distance, ... 114 km.
and
Orientation, . . . 73°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
14	...	221	...	...	...	
13	167	220 218	0	...	...	
12	195	219		...	...	
...	200	...	...	...	...	
11	...	217	...	...	...	
10	264	223 220	...	...	...	
9·2	300	...	5 6	...	...	
9	308	228 226	9 7	...	...	
8	356	237 233	7 8	...	...	
7·2	400	...		...	...	
7	411	244 241	7·5	...	...	
6	471	250		...	...	
5·6	500	...	5	...	...	
5	538	255	...	...	...	
4·2	600	...	7	...	...	
4	616	263 261	6	...	...	
3·0	[700] 698	269 267	3	...	...	
2·0	[800] 795	271	7	...	...	Balloon entered clouds nearly overhead at 2 km. Isothermal at 271° A., 1·8 to 2·2 km.
1·0	[900] 901	280 276	9 5	...	...	
Ground	[1000] 1001	289 281	..	...	...	
M.S.L.	...	...	...	...	...	Detached cu. Calm.

1912. May 25. 9 h. 50 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	13·4 km.	...	...
Lowest Temperature	10·5 km.	...	219° A.
Base of Stratosphere	10·4 km.	...	222° A.
	10·5 km.	...	219° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	772 mm., 1029 mb.	771 mm., 1028 mb.
Temperature,	284° A.	285° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	35	?
Velocity,	?	?
Correction for Curvature,	...	...
Final Components, W. to E.	?	?
Final Components, S. to N.	?	?

Sounding No., R. 179.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, near Bishops Waltham.
Distance, ... 40 km.
and
Orientation, . . . 119°.

Table of Heights, Pressures, Temperatures, and Humidities.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
13	171	229 228	−1 −2	...	...	Balloon could not be picked up by the theodolite owing to proximity of the sun.
12	[200] 199	228 226	−5	...	..	A few clouds from N.
11	245	223 221	1 0	...	...	
10	271	224 221		...	...	
9·3	300	...	7 7·5	...	...	
9	314	231 228·5	7 7·5	...	...	
8	363	238 236		...	...	
7·3	400	...	7	...	...	
7	417	245 243	6	...	...	
6	478	251 249		...	...	
5·7	500	...	8	...	...	
5	544	259 257	...	...	...	
4·3	600	...	6 7	...	...	
4	621	265 264	...	...	...	
3·1	700	...	4	...	...	[other.
3	705	269 268	1 4	...	...	Inversion 265° A. to 269° A. at 2·6 km. to 3·1 km. on one trace, 266° A. to 268° A. at 2·8 km. on the
2	[800] 803	270 272		...	...	
1·1	900	...	8	...	...	
1	907	279	7	...	...	
Ground	1008	286	...	...	...	
M.S.L.	...	...	...	...	...	

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—Type 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
Type 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. Type 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

JUNE 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM.

[*Price* 4*d*.

Second Year.—No. 6. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	4	0·4	Iu, Ir.	1st Iu, P=0 h. 42 m. 1 s., S=0 h. 51 m. 3s., L=1 h. 3 m., Δ=7640 km. I, P=11 h. 39 m. 29 s., S=11 h. 43 m. 1 s., L=11 h.
2	4	0·6	I.	44 m., Δ=2100 km. *a* nearly true W. Epicentre 51° N. 34° W. 2nd I, Phases doubtful 12 h.–14 h. 3rd Iu, P=12 h.
3	4	0·3	Iu.	44 m. 56 s., S=12 h. 54 m. 36s., Δ=8400 km. 4th I, Long waves 6 h. 9 m. 5th I, S ?=11 h. 43 m. Disturbed till 13 h.
4	4	0·4	I.	6th I, Long waves 6 h.–7 h. I*, Trains of long waves at frequent intervals from 16 h. continuing into 7th at 2 h. 7th I*, three
5	3–4	0·3	I.	distinct earthquakes between 4 h. and 9 h., only long waves clearly shown. Iu, S=10 h. 15 m. 2 s., L=10 h. 23 m. Iu, P=12 h.
6	3–4	0·3	I, I*.	34 m. 6 s., S=12 h. 44 m. 2 s., Δ=8750 km. I, S=14 h. 37 m., L=14 h. 49 m. I, Long waves 18 h Iu, P=18 h. 35 m. 3 s.,
7	3	0·1	I*,Iu,Iu,I,I,Iu,I*	S=18 h. 43 m. 45 s., Δ=7250 km. I*, two small earthquakes between 22 h. and 24 h. Total for 7th, ten earthquakes.
8	3	0·1	I*,Iu,I,IIu,I,Iu.	8th I*, three earthquakes 1 h., 2 h., and 3 h. Phases indistinguishable. Iu, P=4 h. 53 m. 22 s., S=5 h. 3 m. 16s., Δ=8670 km.,
9	3	0·1	I, I, I, I, I, I.	I, S=6 h. 30 m., L=6 h. 42 m. IIu, P=7 h. 46 m. 18 s., S=7 h. 54 m. 48 s., Δ=7015 km., I, Phases confused by end of
10	3	0·1	IIu, I.	preceding earthquake. Iu, P=13 h. 10 m. 8 s., S=13 h. 18 m. 40 s., Δ=7050 km. Total for 8th, eight earthquakes.
11	3	0·3	I, I.	9th I, Long waves 3 h. 42 m.–4 h. 12 m. I, Long waves 5 h. 30 m. I, Long waves 7 h. 30 m. to 8 h. I, Long waves 8 h. 44 m.–
12	4–5	0·4	Iu, I, Iu, I.	9 h. 30 m. I, Horizontal records lost. From V record P=17 h. 25 m. 0 s., S ?, L=17 h. 47 m. I, Disturbed 22 h.–24 h.
13	5–6	0·6	I, I, I, I, I.	10th IIu, P=16 h. 16 m. 44 s., S=16 h. 25 m. 29 s., Δ=7310 km. I, Long waves about 23½ h. 11th I, Long waves 2 h. 56 m.
14	5–6	0·4	I, I.	I, Long waves 7 h. 30 m.–8 h. 12th Iu, P=7 h. 15 m. 11 s., S=7 h. 23 m. 37 s., Δ=6940 km. I, Long waves 11 h. 9 m.
15	4–5	0·5	I, I, Ir.	Iu, P=12 h. 55 m. 31 s., S=13 h. 5 m. 9 s., Δ=8360 km. *a* nearly true W. Epicentre 12° N. 84° W. I, Long waves
16	4–5	0·6	Ir, Ir.	18 h. 30 m. 13th I, Long waves 0 h. 37 m.–1 h. 10 m. I, Long waves 5 h. 30 m. I, Disturbance 8 h.–9 h. I, Distur-
17	5	0·6	Iu, I.	bance 11 h.–12 h. I, Long waves 14 h. 30 m. 14th I, P ?=16 h. 5 m. Disturbed till 17 h. 30 m. I, S=23 h. 47 m. 30 s.
18	4–5	0·8	I, II.	Long waves about 24 h. 15th I, S=0 h. 34 m., Long waves about 1 h. I, L=6 h. 29 m., appearance of near earthquake.
19	4–5	0·8		Ir, P=19 h. 3 m. 53 s., S=19 h. 8 m. 3 s., Δ=2560 km. 16th Ir, P=12 h. 56 m. 11 s., S=13 h. 0 m. 3 s., Δ=2340 km.
20	4–5	0·5		I, P=18 h. 31 m. 28 s., S=18 h. 34 m. 51 s., Δ 2000 km., *a*=54° 6′ W. of N. or +180°. Epicentre 62° N., 35½° W.
21	4–5	0·5		17th Iu, P (from V record)=11 h. 27 m. 10 s., S=11 h. 36 m. 16 s., Δ=7720 km. I, Long waves 23 h. 13 m.–23 h. 30 m.
22	4–5	0·5		18th I, L=2 h. 20 m. Iu, P=12 h. 8 m. 0 s., S=12 h. 18 m. 25 s., Δ=9290 km. 26th I, Long waves 15 h. 30 m.
23	5–6	0·4		I, between 17 h.–18 h. cylinder sticking at intervals, times very uncertain. 27th I, Long waves about 2 h.
24	4–5	0·4		I, Feeble waves 15 h. 7 m.–15 h. 30 m. Iu, P (from V record)=21 h. 29 m. 45 s., S ?=21 h. 40 m. 25 s. Δ=9600 km.
25	4	0·4		28th I, Long waves between 19 h.–20 h. 29th I, Long waves 3 h. 30 m.–4 h. 0 m. I, P=8 h. 8 m. 30 s., S ?=8 h. 15 m.
26	4	0·5	I, I.	I, Long waves at 15 h. I, disturbed 20 h. 30 m.–21 h. 30th I, disturbed 8 h. 30 m.–9 h. I, Long waves
27	4	0·3	I, I, Iu.	between 16 h.–17 h. I, Long waves about 18 h. 10 m. I, Long waves 19 h.–19 h. 30 m.
28	4	0·4	I	
29	4	0·4	I, I, I, I.	
30	4	0·3	I, I, I, I.	

An explanation of the notation used is given in the preface.

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H=9·2 m. Barometer Cistern, H_b=13·7 m.

Heights above Ground:—Thermometers, h_t=1·2 m. Rain-gauge, h_r=0·6 m. Sunshine Recorder, h_s=12·8 m. Cups of Anemometer, h_a=13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h. Dir.	9 h. Vel.	21 h. Dir.	21 h. Vel.	Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
			200+	200+	200+	200+																
	mb.	mb.	°	°	°	°	millibar.		%	%		m/sec.		m/sec.	Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	1003·3	1003·6	85·7	85·3	90	79	11·2	11·2	75	79	28	3	30	7	5	9≡0	0·3	13·3	Fine.	…	…	…
2	1003·5	1003·6	84·7	83·4	87	80	8·5	8·8	63	69	31	8	28	3	7	5	2·0	9.6	●0 showers, but fair generally.	…	…	…
3	994·1	992·6	85·3	80·1	86	77	10·2	8·8	72	87	15	7	—	1	10≡0●	2	11·7	6·5	●2 midday; misty.	…	…	…
4	994·0	996·5	83·2	84·8	87	*n*76	9·5	11·9	77	86	26	2	—	1	8	10≡0	0·3	7·5	⌙. Good visibility.	…	…	…
5	1000·2	1004·2	86·9	86·2	90	84	12·2	12·2	78	80	4	4	—	1	10∞	8	—	5·1	Dull to fine; ∞	…	…	…
6	1007·5	1009·7	86·8	86·1	90	84	12·6	12·9	80	85	2	4	31	3	8∞	3∞	—	5·9	∞. Fair.	…	…	…
7	1009·7	1010·2	87·1	86·3	90	81	13·2	12·2	83	80	—	1	—	1	7∞	6	2·0	8·0	Fair; T occasionally.	17902	20 29·0	68 10·6
8	1009·7	1010·6	88·4	85·1	90	81	13·6	12·2	79	87	—	1	—	1	7	2	—	10·3	Fair.	…	…	…
9	1009·8	1009·7	86·8	86·7	*x*91	81	12·9	12·6	82	81	—	1	—	1	4	*2*	—	13·6	Fine.	…	…	…
10	1005·3	1002·2	85·9	85·2	89	80	12·6	12·6	85	89	—	0	—	0	7	*8*	5·8	5·6	∞. Fair to T● showers.	…	…	…
11	1005·5	1010·3	87·6	87·1	*x*91	81	13·2	13·2	80	81	6	2	—	1	2	*2*	—	15·7	Fine.	…	…	…
12	1012·1	1011·6	88·5	86·8	*x*91	82	14·2	13·6	82	87	22	5	22	8	10	*9*	0·5	5·9	Dull, with fair intervals.	…	…	…
13	1012·2	1013·1	86·3	85·0	88	84	11·5	11·9	75	86	22	9	21	2	10	*10*≡0	3·1	—	Dull all day.	…	…	…
14	1011·9	1014·5	87·0	86·2	89	84	14·9	12·2	95	81	21	8	24	6	10≡0	*5*	3·3	8·1	Dull to fine; occasional ●0.	…	…	…
15	1010·5	1009·3	86·1	85·9	89	84	14·6	12·2	96	82	18	7	22	8	10≡0●	*10*	2·3	1·6	Showery to fair.	…	…	…
16	1011·5	1016·8	86·7	86·0	90	85	11·9	12·6	75	84	28	9	—	1	6	*10*	21·1	7·4	Fair; dull *n*.	…	…	…
17	1010·9	1009·4	87·4	87·4	88	84	15·6	15·9	96	97	20	7	18	6	10≡0●	*10*≡0●	29·2	—	Misty and wet.	…	…	…
18	1009·1	1009·0	87·6	87·1	89	87	15·9	15·6	96	98	19	6	16	6	10≡0	*10*≡0●	22·9	—	≡0● most of day.	…	…	…
19	1007·0	1009·8	87·3	86·3	90	85	14·2	13·9	88	92	21	4	21	6	10	*9*	2·5	6·7	● to fair; showery later.	…	…	…
20	1014·6	1013·9	86·8	86·6	90	85	13·9	13·6	88	88	22	6	15	6	10≡0	*10*	11·4	0·9	Dull, with ≡0.	…	…	…
21	1006·8	1003·0	86·8	87·6	88	86	15·3	16·3	98	98	16	8	16	7	10≡0●	*10*≡0●	27·4	—	Gloomy and wet.	17897	20 28·2	68 9·6
22	1000·6	1001·3	86·5	86·5	90	86	14·2	13·9	93	90	21	3	16	5	7	*7*	3·8	6·9	●2 early. [out.	…	…	…
23	1001·4	1004·5	87·1	86·4	89	85	14·6	13·9	90	90	20	4	21	6	9●	*10*	2·0	5·3	Showers and fair intervals through-	…	…	…
24	1010·1	1005·3	86·3	85·9	89	85	13·9	13·6	92	91	22	8	15	8	7	*10*≡0●	17·0	1·1	Dull to fair; ●2 after 20 h.	…	…	…
25	995·1	1003·3	85·6	86·4	89	84	13·2	12·9	90	84	16	6	25	13	10≡0	*10*	2·8	4·2	⍂ 7 h. 30 m.; showery to fair.	…	…	…
26	1014·6	1014·1	86·9	86·1	89	85	12·9	12·9	81	85	24	6	16	4	8	*10*	17·5	0·6	Very cloudy.	…	…	…
27	1004·6	1004·7	87·1	*x*91	85	15·6	12·9	98	89	16	5	20	2	10≡0	*10*●	5·3	4·2	●2, then fair to showery.	…	…	…
28	1003·6	1004·6	86·8	85·7	90	84	13·6	12·6	88	86	21	2	—	1	6	*3*	—	5·7	Fair and clear.	…	…	…
29	1009·3	1010·4	87·1	86·1	90	85	13·2	13·2	82	88	28	3	25	6	7	*10*	0·5	7·0	Fair and clear. Dull evening.	…	…	…
30	1013·1	1017·6	86·9	86·5	88	85	12·9	12·6	82	81	29	8	29	9	8	10	2·5	1·6	Dull to fair, then squally.	…	…	…
Means	1006·7	1007·7	86·6	85·9	89·2	83·1	13·2	12·8	85	86		4·9		4·3	8·1	7·7	197·2	5·61	Monthly **Totals** or **Means**.	17900	20 28·6	68 10·1
Normal 30 years	1014·4	1014·6	87·2	86·3	90·0	83·7	13·2	13·0	80	84		4·7		4·1	—	—	90·4	6·34	**Normals**, 40 years.			
					35 years		25 years				30 years		30 years					30yrs				

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

Wt. 39025/327—375—3/13. N. & Co., Ltd. Gp. XV.

3. KEW OBSERVATORY, SURREY.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity.				Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
							Vapour Pressure.		Percentage.														
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
			200 +	200 +	200 +	200 +									Tenths of Sky covered.					200 +	200 +	200 +	
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		°	°	°	
1	1005·1	998·9	88·7	87·2	92	81	12·9	13·2	73	83	7	3	5	4	?10≡0	10	2·8	1·6	—	76	87·4	85·1	⊕ 8 h.–9 h. Dull most of day.
2	995·9	998·2	86·7	85·9	92	83	14·2	11·2	92	75	—	1	—	1	10●	0	—	4·7	—	84	87·4	85·2	● *a* ; fine later.
3	997·1	1000·1	87·6	85·2	90	*n* 79	12·2	10·5	74	74	19	3	19	6	7	1	3·6	2·3	—	*n* 74	86·8	85·2	Fair till 11 h., then dull.
4	996·0	992·9	85·2	84·1	90	82	12·6	10·9	88	83	18	2	—	1	7	9●	8·4	4·9	·087	76	86·4	85·2	Bright at intervals.
5	999·3	1001·4	84·1	85·1	91	82	11·2	11·9	86	83	20	5	—	1	7	2	—	6·8	·079	78	86·4	85·2	● early ; fine most of day.
6	1005·9	1009·2	88·2	86·8	92	82	11·9	12·6	68	79	19	5	19	2	3	0	3·1	10·7	·064	78	86·9	85·2	● 16 h. ; fine most of day.
7	1009·0	1008·8	85·7	86·3	88	81	12·9	14·2	88	94	—	1	—	1	10≡0	10	19·3	—	—	76	86·9	85·2	≡ before 7 h., then ≡0●.
8	1010·5	1014·4	85·9	86·9	90	85	13·6	13·2	92	85	—	1	21	2	10●	1	2·0	2·6	—	84	86·9	85·3	Dull to fair. [12 h.
9	1014·6	1012·1	89·1	87·0	93	85	13·6	11·9	76	75	18	2	16	2	9	7	3·6	6·0	—	79	87·4	85·3	⊕ 10 h. and 18 h. ⚿● 11 h.–
10	1009·7	1006·8	87·9	85·7	92	83	12·2	11·2	71	76	20	4	16	2	7●	1	0·5	11·4	·086	82	87·9	85·3	Fine most of day.
11	1005·3	1007·1	89·1	89·2	93	82	12·2	13·2	68	73	5	5	4	3	6	10	0·8	7·2	—	75	87·8	85·5	Fine to fair.
12	1009·9	1011·8	87·4	86·4	89	85	13·6	14·2	83	92	1	4	28	2	10	0≡0	3·1	—	—	85	88·0	85·6	Dull throughout.
13	1010·8	1010·7	88·7	86·8	92	83	13·2	10·9	76	70	22	4	23	3	8	1	—	9·6	→	77	87·6	85·7	Fine during day.
14	1011·8	1010·4	88·4	87·9	93	82	11·9	14·2	67	84	24	4	20	5	6	7	—	8·5	—	76	88·0	85·7	Fine most of day.
15	1011·9	1010·6	88·0	86·9	91	85	9·8	13·9	58	87	24	6	20	7	7	10	14·7	8·3	—	82	88·5	85·7	Fine *a.* ; fair to dull *p.*
16	1005·3	1014·0	85·9	87·4	90	84	11·5	11·9	79	72	24	5	—	1	9	10	1·3	6·9	—	83	88·1	85·8	● early. ⚿ 12 h.–13 h.
17	1016·9	1014·8	88·0	87·5	91	83	12·2	15·6	73	95	25	3	18	4	10	10	0·8	0·3	—	78	88·2	85·8	Dull to fair.
18	1015·2	1016·8	90·0	89·0	96	86	14·2	15·3	75	84	21	5	20	3	10	0	—	9·3	—	86	88·6	85·9	Overcast till 10 h., then fine.
19	1011·9	1010·2	95·0	90·3	*x* 99	85	17·6	14·9	67	75	15	4	23	4	1	10	—	7·7	·075	81	89·7	86·0	Fine most of day. ⊕ 17 h.
20	1015·8	1018·4	89·1	88·4	93	85	12·6	12·2	69	70	21	5	22	3	9●	1	—	5·5	—	82	89·8	86·1	Fair to fine.
21	1017·9	1016·2	89·7	88·7	94	84	12·6	13·2	67	75	19	4	18	3	8	0	—	12·4	·070	80	89·4	86·3	Fine.
22	1013·3	1008·9	93·9	94·7	*x* 99	83	16·3	16·6	66	65	15	4	11	3	0	1↙	—	15·0	·083	77	89·7	86·3	Very fine throughout.
23	1010·2	1012·9	91·3	89·3	95	86	13·6	13·9	65	75	22	5	19	5	6	0	2·5	11·1	—	86	90·8	86·4	Fine, with good visibility.
24	1013·4	1015·6	90·3	88·5	93	85	13·2	14·6	66	84	22	5	19	4	9●	9	4·6	7·5	—	81	90·2	86·4	●² occasionally. ⚿ 12 h.
25	1011·7	1006·4	88·4	87·4	91	86	12·6	13·2	73	80	16	7	16	5	10	8	4·6	2·6	—	82	89·7	86·7	Dull till 16 h., then finer.
26	1010·7	1018·7	89·2	88·6	93	86	13·6	12·6	75	72	20	5	22	3	7	1	—	9·5	·066	83	89·1	86·8	Fine.
27	1020·0	1016·9	88·8	88·1	92	85	12·6	13·6	71	79	19	4	15	2	8	9	1·0	3·3	—	81	89·2	86·8	Fair to dull.
28	1011·7	1011·7	88·5	86·9	94	85	15·3	12·2	87	77	15	5	19	2	10●	1	3·8	8·4	·072	81	89·1	86·8	● 8 h., then fine and clear.
29	1008·4	1008·9	88·8	86·3	92	83	16·3	13·9	92	90	16	5	—	1	8	7	0·8	4·0	·064	78	88·7	86·8	Fine at times.
30	1010·5	1009·5	88·7	88·0	91	84	14·2	13·2	81	78	20	3	—	1	9	8	—	2·6	—	81	89·1	86·8	Fair *a.* ; dull *p.*
Means	1009·5	1009·8	88·5	87·6	92·3	83·6	13·2	13·1	76	79		4·0		2·9	7·7	4·8	81·3	6·36	—	80·1	88·3	85·9	Monthly **Totals** or **Means**.
Normal 40 years	1015·4	1015·2	88·2	87·5	92·8 (35 years)	83·4 (35 years)	12·2	12·4	71	75		3·6		2·7	—	—	57·2	6·44 30 yrs	—	—	—	—	**Normals, 40 years.**
							25 years.		24 years.		30 years		30 years										

4. ESKDALEMUIR OBSERVATORY, DUMFRIESSHIRE.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															21 h.	9 h.	9 h.						
1	979·8	977·4	82·3	82·8	*x* 90	80	9·5	10·5	81	88	8	3	4	5	10	9	3·8	4·8	—	—	—	—	Fair till after 17 h. Distant ⚿
2	974·7	972·5	81·2	81·2	82	80	9·5	10·2	89	95	4	5	4	6	10	10●0≡0	12·7	—	—	—	—	—	Dull and wet. [18 h.
3	970·2	968·7	82·3	82·1	85	81	11·2	11·2	94	97	4	6	4	6	10●0	10●0	5·8	—	—	—	—	—	Overcast throughout, with ●.
4	967·7	970·6	82·0	82·7	85	82	10·9	11·2	94	94	4	6	4	6	10≡0●0	10≡0●0	2·5	—	—	—	—	—	Generally overcast ; frequent ●.
5	972·8	975·9	83·0	82·2	84	82	10·9	10·5	89	90	4	9	4	8	10≡0●0	10●0	1·5	—	—	—	—	—	Generally overcast ; ≡0.
6	977·0	980·3	82·4	81·7	85	81	10·5	9·8	88	88	32	6	32	3	9	6	0·8	0·8	—	—	—	—	Cloudy to overcast.
7	982·6	984·5	86·5	84·0	89	80	10·2	10·9	65	83	28	4	4	5	7	9	—	5·2	—	—	—	—	Fair to cloudy.
8	985·1	985·8	82·4	82·6	84	81	9·8	10·2	84	87	4	4	—	1	10	10	—	—	—	—	—	—	Generally overcast.
9	985·8	985·2	86·2	84·2	*x* 90	81	10 9	11·5	71	86	—	1	—	1	8	9	1·8	3·6	—	—	—	—	Cloudy. ⚿ 17 h.–18 h. 30 m.
10	982·9	979·6	83·6	83·0	86	82	11·5	11·2	91	92	4	6	4	7	10	10	2·5	1·3	—	—	—	—	Dull and showery.
11	980·7	984·2	84·5	83·3	89	82	11·2	11·5	84	92	4	5	4	5	9	9≡0	1·5	2·9	—	—	—	—	▲● 11 h. 30 m. ⚿ 13 h.
12	985·8	982·6	84·8	82·9	*x* 90	80	11·2	11·2	81	92	4	3	—	1	8	8⚿	38·6	6·8	—	—	—	—	⚿²▲² 15 h.–16 h. (quite local).
13	978·5	979·9	84·7	83·1	87	79	10·5	9·8	75	81	20	5	24	3	9●0	5	1·3	2·7	—	—	—	—	⚿²▲²●² 2 h.–3 h.
14	982·7	978·6	83·1	82·6	87	82	10·9	10·5	87	90	—	0	20	6	10	10	6·4	1·0	—	—	—	—	Cloudy.
15	978·4	975·2	85·2	82·2	87	81	10·9	10·2	76	88	20	8	28	6	9●0	10●	5·3	2·5	—	—	—	—	Cloudy to overcast.
16	976·9	984·4	81·5	81·4	84	78	8·5	9·5	76	86	4	5	—	1	10	9	—	0·2	—	—	—	—	Fair to dull.
17	987·3	982·9	83·8	82·3	87	*n* 77	7·5	9·2	57	79	24	3	—	1	5	10	8·9	7·0	—	—	—	—	Fair till noon, then cloudy. ⚿ *a.*
18	979·7	983·2	85·7	86·7	89	82	14·2	14·9	98	96	20	5	20	4	10≡0●0	10≡0●0	6·1	0·1	—	—	—	—	Generally overcast. ≡0
19	982·1	977·5	85·0	85·1	89	84	13·6	12·9	96	91	20	6	20	4	10≡0●0	9	3·8	—	—	—	—	—	Generally overcast.
20	980·0	985·0	85·0	83·9	89	82	11·5	10·2	82	78	20	10	24	5	10	3	6·4	6·3	—	—	—	—	Overcast till 10 h. ; fine later.
21	984·6	983·3	85·3	84·8	87	82	11·9	12·6	83	91	20	7	20	9	9	10●	13·5	—	—	—	—	—	Overcast throughout.
22	982·1	980·3	86·3	86·3	*x* 90	84	14·2	13·9	94	90	16	8	—	1	10●	5	4·3	2·3	—	—	—	—	● till noon ; fine later.
23	979·5	979·9	85·1	84·3	89	82	12·2	11·5	88	85	16	5	20	5	10●	4	5·8	8·0	—	—	—	—	Overcast at first ; improving.
24	979·4	982·1	85·3	83·5	88	83	11·2	11·5	79	91	20	9	—	1	10	7	2·5	2·8	—	—	—	—	Dull and showery. [after 10 h.
25	975·1	973·5	83·7	82·8	88	81	11·2	10·9	88	90	12	9	—	0	10	9	2·5	4·4	—	—	—	—	Generally wet and stormy.
26	978·6	986·3	86·5	84·4	*x* 90	80	11·2	10·9	71	82	20	3	—	1	8●	1	3·3	5·6	—	—	—	—	Showery ; ⚿ 16 h. 30 m.
27	987·8	983·4	84·7	84·5	88	78	12·2	12·9	89	94	20	5	20	5	10	10	7·1	0·7	—	—	—	—	Dull and showery generally.
28	979·3	979·4	86·3	82·9	88	82	13·2	10·9	88	88	12	6	—	1	10●0	6	7·1	4·6	—	—	—	—	⚿●² 11 h.–12 h.
29	979·1	979·2	86·3	83·9	*x* 90	80	11·9	11·2	79	86	*20*	2	—	1	9	10≡0	1·3	5·2	—	—	—	—	Fair till 14 h., dull to finer *p.*
30	980·1	979·9	86·4	84·6	89	*n* 77	11·5	11·5	74	85	20	6	24	4	8	9	0·8	3·7	—	—	—	—	⌒ occasionally.
Means	979·9	980·0	84 4	83·4	87·5	80·7	11·2	11·2	83	89		5·3		3·7	9·3	8·2	157·9	2·75	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	•

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·75.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air–Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	255	495	*x*±	375	—	—	—	—	—	—	—	1	1	521	0 3	454	11 30	67	52·5	13 28	40·3	8 30	12·2
2	120	70	145	255	—	—	—	—	—	—	—	1	1	518	15 28	466	7 21	52	54·1	12 59	42·8	9 2	11·3
3	340	275	*x*±	290	—	—	—	—	—	—	—	1	1	512	18 2	406	10 48	46	53·1	12 38	42·3	8 19	10·8
4	130	15	50	85	—	—	—	—	—	—	—	2	0	508	18 52	470	12 53	38	51·2	13 15	41·2	8 10	10·0
5	70	155	170	340	850	910	0·0	0·05	0·05	0·10	0·85	2	0	509	18 53	461	10 43	48	50·2	13 40	41·4	7 46	8·8
6	10	120	145	130	—	—	—	—	—	—	1·15	1	0	513	19 0	471	13 44	42	50·6	13 2	41·8	7 33	8·8
7	130	505	—	400	—	—	—	—	—	—	—	2	1	534	20 46	489	13 2	45	50·0	11 28	41·3	23 35	8·7
8	15	110	110	385	—	—	—	—	—	—	—	2	2	529	20 24	453	13 46	76	52·8	13 56	38·6	20 16	14·2
9	135	120	290	310	—	—	—	—	—	—	—	2	1	519	17 55	462	11 59	57	52·0	14 11	39·8	5 52	12·2
10	205	515	160	360	1370	1030	—	—	—	—	1·15	1	1	527	18 17	471	6 16	56	50·7	14 18	41·0	18 8	9·7
11	340	420	315	485	730	730	0·85	0·30	0·80	2·60	1·05	0	1	509	0 0	462	9 46	47	51·5	12 53	42·3	8 10	9·2
12	130	205	—	265	—	—	—	—	—	—	—	1	0	513	17 39	462	10 38	51	51·8	13 50	41·4	7 55	10·4
13	280	190	60	195	880	600	0·40	0·00	0·35	0·20	0·15	0	0	511	16 28	466	9 23	45	51·1	13 28	40·6	7 20	10·5
14	170	205	130	230	420	390	0·45	0·00	0·20	0·25	0·50	0	0	524	18 32	478	10 22	46	54·0	14 2	41·3	7 42	12·7
15	145	130	70	155	—	—	—	—	—	—	—	1	0	522	18 47	479	7 55	43	53·4	13 33	41·2	7 8	12·2
16	105	190	120	220	—	—	—	—	—	—	—	2	0	526	17 23	477	11 45	49	51·4	14 0	40·1	7 33	11·3
17	240	325	145	—	580	1150	0·80	0·50	1·00	1·45	0·75	0	0	532	19 24	480	10 30	52	52·3	14 25	41·4	8 9	10·9
18	—	170	160	275	1060	760	0·50	0·60	1·00	1·60	0·70	0	0	524	19 50	481	11 39	43	53·4	12 24	40·6	7 32	12·8
19	50	240	105	170	1090	730	0·60	0·40	0·95	1·00	0·80	1	0	519	18 16	482	9 23	37	51·2	13 50	42·3	7 8	8·9
20	95	135	105	205	1120	1030	0·05	0·45	0·55	0·55	0·50	1	0	519	19 25	487	11 45	32	50·2	14 2	43·2	8 13	7·0
21	170	170	120	250	1720	1480	0·40	0·35	1·20	1·45	0·80	0	0	522	21 13	483	10 9	39	53·2	14 20	43·2	8 3	10·0
22	155	240	135	190	—	—	—	—	—	—	—	0	1	527	18 54	482	9 45	45	53·2	15 45	41·5	7 10	11·7
23	85	110	75	155	—	—	—	—	—	—	—	0	1	534	17 53	480	8 4	54	52·4	12 54	43·2	5 2	9·2
24	105	135	*x*±	325	—	—	—	—	—	—	—	2	0	518	19 9	471	8 58	47	54·3	13 10	41·7	7 31	12·6
25	155	160	110	220	—	—	—	—	—	—	—	1	0	522	1 13	479	7 15	43	50·7	12 32	41·0	7 10	9·7
26	160	190	170	180	—	—	—	—	—	—	—	0	0	510	17 35	469	8 49	41	52·2	12 36	42·5	7 5	9·7
27	120	190	120	215	850	760	0·50	0·25	0·65	0·75	0·70	0	1	543	23 36	460	8 49	83	53·2	12 40	41·3	7 8	11·9
28	120	170	160	325	—	—	—	—	—	—	—	1	1	521	18 24	481	8 18	40	52·7	12 58	41·8	6 19	10·9
29	170	*x*±	135	455	—	—	—	—	—	—	—	2	1	527	16 53	477	9 3	50	54·4	13 46	39·0	0 19	15·4
30	460	255	—	—	—	—	—	—	—	—	—	—	0	517	21 36	477	10 5	40	50·4	13 43	40·7	5 58	9·7
M.	125	183	136	241	—	—	—	—	—	—	—	—	—	521	—	473	—	48	52·1	—	41·4	—	10·8

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3h, 9h, 15h, 21h, are given in the table. A similar note applies to the values in Table 6.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air–Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component. §			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.															
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	55	205	130	334	—	—	—	—	—	—	—	1 *b*	1	0 3	1049	969	11 31	14 35	256	200	8 32	20 10	347	336	0 10
2	205	82	*x*	184	—	—	—	—	—	—	—	2 *c*	1	20 25	1052	986	12 8	15 27	260	200	9 4	20 20	348	327	11 25
3	321	34	*x*	−41	—	—	—	—	—	—	—	1 *b*	1	18 0	1046	983	10 47	13 30	264	199	5 39	21 0	341	321	11 45
4	89	171	396	232	—	—	—	—	—	—	—	1 *b*	1	18 47	1046	988	12 54	13 48	247	199	8 10	20 0	343	322	11 30
5	157	184	−123	286	—	—	—	—	—	—	—	1 *a*	0	19 0	1043	986	11 27	14 5	243	197	9 6	19 50	342	329	11 30
6	89	−846	−484	293	—	—	—	—	—	—	—	1 *b*	0	19 0	1043	989	10 57	19 15	242	201	8 0	20 50	338	320	11 40
7	273	205	75	130	—	—	—	—	—	—	—	1 *a*	1	23 8	1061	1005	12 5	19 4	253	203	23 35	23 50	332	315	11 45
8	164	61	102	150	—	—	—	—	—	—	—	0 *a*	2	20 20	1084	968	13 45	13 55	268	185	6 43	20 10	343	302	10 43
9	157	102	102	−82	—	—	—	—	—	—	—	1 *b*	2	21 9	1055	969	11 58	15 36	263	185	6 43	18 50	343	309	2 40
10	211	293	123	95	—	—	—	—	—	—	—	1 *b*	1	18 11	1077	986	11 31	14 58	257	193	0 5	18 37	345	310	1 0
11	171	143	382	130	—	—	—	—	—	—	—	1 *b*	1	0 0	1039	977	11 35	12 57	254	206	8 6	22 0	342	325	0 0
12	171	82	—	293	—	—	—	—	—	—	—	1 *b*	0	17 32	1043	991	10 38	13 56	260	199	7 53	21 0	344	238	1 10
13	*x*	109	*x*	205	—	—	—	—	—	—	—	2 *c*	1	18 4	1044	986	10 34	15 35	252	197	7 18	18 40	345	325	11 10
14	130	68	−280	−614	—	—	—	—	—	—	—	1 *b*	1	18 30	1044	1000	12 19	13 18	264	205	7 44	21 40	345	329	11 5
15	136	164	95	−273	—	—	—	—	—	—	—	1 *c*	0	18 15	1040	991	12 8	13 38	260	200	7 29	19 30	347	328	12 5
16	307	75	—	—	—	—	—	—	—	—	—	1 *b*	0	17 30	1048	988	11 45	15 53	254	192	7 58	21 10	349	327	10 50
17	—	—	157	184	—	—	—	—	—	—	—	1 *a*	1	19 23	1056	989	11 50	14 47	260	200	8 1	18 47	349	334	13 55
18	177	682	171	218	—	—	—	—	—	—	—	1 *a*	1	19 12	1044	985	11 40	13 40	251	194	6 38	21 10	347	331	12 30
19	218	232	211	*x*	—	—	—	—	—	—	—	1 *b*	0	19 57	1035	1003	10 52	14 38	247	201	9 0	21 0	345	321	11 40
20	*x*	130	95	171	—	—	—	—	—	—	—	1 *c*	1	20 10	1040	996	12 10	19 0	243	205	8 49	24 0	345	329	14 0
21	−218	191	116	164	—	—	—	—	—	—	—	1 *a*	1	21 12	1046	993	10 37	14 17	259	207	8 3	21 0	351	329	11 40
22	−136	116	232	95	—	—	—	—	—	—	—	1 *b*	1	18 55	1044	996	11 37	15 30	262	202	7 7	24 0	351	340	12 0
23	136	116	116	157	—	—	—	—	—	—	—	0 *a*	1	17 53	1061	997	9 54	14 44	261	201	7 38	21 0	364	338	11 40
24	*x*	116	143	355	—	—	—	—	—	—	—	1 *b*	1	19 4	1039	987	12 52	13 40	263	194	7 32	23 50	367	347	0 0
25	−34	143	130	143	—	—	—	—	—	—	—	1 *b*	1	1 3	1045	995	11 43	12 50	247	194	7 12	21 20	371	357	1 30
26	136	143	75	314	—	—	—	—	—	—	—	1 *b*	1	20 32	1034	987	10 40	12 45	249	204	7 5	20 0	369	362	4 10
27	157	143	41	102	—	—	—	—	—	—	—	1 *b*	1	23 30	1079	970	8 48	14 3	255	200	7 6	21 0	366	350	11 15
28	177	*x*	109	211	—	—	—	—	—	—	—	1 *b*	1	18 22	1051	985	13 25	12 55	260	198	6 18	19 15	368	342	0 5
29	102	211	102	327	—	—	—	—	—	—	—	1 *b*	1	0 16	1055	990	12 6	13 41	271	186	0 15	20 33	370	342	0 30
30	368	171	89	252	—	—	—	—	—	—	—	1 *b*	1	20 4	1040	989	11 25	13 22	242	198	6 0	22 50	357	342	11 12
M.	116	133	80	123	—	—	—	—	—	—	—	—	—	—	1049	987	—	—	256	198	—	—	350	328	—

x Indeterminate.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument.

An explanation of the Headings of the columns is given in the Preface.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	...	...	0·9	...	...	...	0·9	...	4·5	1·8	...	...	4·5	...	0·9	12·5	21	50
2	...	2·7	...	3·6	...	4·0	...	2·7	...	6·3	...	2·7	...	5·4	3·6	...	10·7	23	55
3	...	5·8	5·8	...	...	2·7	6·7	...	6·3	...	2·7	...	1·8	...	0·5	...	10·3	2	30
4	...	...	...	4·9	4·5	...	3·1	...	1·3	...	1·8	...	0·5	...	0·9	...	9·4	7	30
5	...	...	...	0·9	...	2·2	2·2	...	...	5·4	...	...	...	4·9	...	2·2	8·9	20	20
6	...	4·0	...	0·9	...	4·0	4·0	...	...	1·8	2·7	...	...	...	1·8	...	8·1	1	15
7	0·9	...	...	...	...	0·9	2·2	...	...	4·9	0·9	...	...	0·9	...	...	7·2	14	35
8	...	0·5	0·9	...	2·2	...	...	0·5	2·2	...	0·9	...	1·3	...	...	1·3	4·0	13	35
9	1·8	...	...	1·8	4·5	...	...	...	...	0·9	1·3	...	0·5	...	0·9	..	9·8	12	45
10	0·9	...	...	...	...	0·9	...	0·9	1·3	...	1·3	...	...	1·3	...	1·8	3·6	18	45
11	...	0·5	...	0·9	...	1·8	0·5	...	...	2·2	1·3	...	...	0·9	0·5	...	4·5	15	20
12	...	0·9	0·9	...	0·5	...	...	1·3	1·8	...	2·7	...	4·0	...	...	...	8·5	18	15
13	3·6	...	8·1	...	4·0	...	5·8	...	6·7	...	4·5	...	2·7	...	2·7	...	13·9	14	55
14	...	...	5·4	...	...	...	5·4	...	6·7	...	...	...	1·8	...	8·9	...	14·8	19	30
15	3·1	...	7·6	...	5·8	...	5·8	...	8·1	...	3·1	...	3·1	...	7·6	...	16·1	15	45
16	2·2	...	5·8	...	...	8·1	1·8	...	...	...	3·6	...	...	2·7	2·7	...	17·9	2	25
17	..	0·9	0·9	...	3·6	...	...	...	4·9	...	...	2·2	5·8	...	4·0	...	13·9	22	30
18	6·7	..	4·5	...	8·1	...	3·6	...	9·4	...	4·0	...	8·1	...	3·1	...	16·5	14	35
19	6·7	...	...	...	6·3	...	...	...	6·7	...	1·3	...	2·2	...	4·9	...	13·4	2	15
20	4·0	...	4·0	...	5·8	...	5·8	...	7·2	...	4·9	...	4·0	...	4·0	...	15·2	13	35
21	4·9	...	2·2	...	7·6	...	1·3	...	8·5	...	...	1·3	7·6	...	...	...	16·5	18	45
22	7·6	...	...	1·3	9·4	...	...	1·8	6·7	...	...	...	4·5	...	...	1·8	16·1	4	55
23	5·4	...	0·9	...	6·7	...	...	...	8·1	...	1·8	...	6·7	...	..	...	14·8	14	45
24	6·3	...	2·7	...	8·1	...	1·8	...	9·8	...	1·8	...	6·3	...	2·7	...	14·3	14	40
25	8·1	...	...	3·1	8·1	...	1·8	...	7·6	...	3·1	...	5·4	...	0·9	...	18·8	6	20
26	3·1	...	7·2	...	3·1	...	8·1	...	4·9	...	4·9	...	2·7	...	3·6	...	14·3	11	15
27	3·1	...	2·2	...	7·6	...	...	3·1	9·8	...	...	4·0	8·9	...	...	3·6	17·4	18	55
28	4·0	...	1·8	...	6·3	...	1·3	...	8·5	...	...	1·8	4·9	...	...	...	13·9	13	10
29	1·8	...	0·5	...	...	1·8	1·3	...	...	1·3	2·7	...	2·7	...	3·6	...	10·3	18	25
30	0·9	...	1·3	...	...	...	4·0	...	...	...	4·0	...	1·3	...	6·3	...	10·3	23	40
S+N & W+E	90·4		81·0		128·6		77·7		153·8		69·1		107·4		74·8				
S−N & W−E	59·8		44·4		75·8		55·3		99·2		45·1		66·2		51·6				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hour.	
1	1·3	...	...	0·5	1·8	...	...	4·0	4·9	...	...	4·9	4·9	...	...	4·9	7·5	23	
2	5·4	...	...	3·6	5·8	...	...	5·8	1·8	...	...	4·0	...	...	...	7·2	9·5	11	
3	...	...	...	6·7	...	4·9	...	7·6	...	4·9	...	7·6	...	6·7	...	4·5	9·8	12	
4	...	8·1	...	5·4	...	8·5	...	8·5	...	8·9	...	8·9	...	6·3	...	9·4	12·8	15	
5	...	4·9	...	7·2	...	3·6	...	5·4	...	2·2	...	5·8	...	5·8	...	4·0	9·8	1	
6	...	5·8	...	4·0	...	6·7	...	4·5	...	5·4	...	5·4	...	5·8	...	5·8	8·5	21	
7	...	5·8	...	4·0	...	8·5	...	1·8	...	8·1	1·8	...	...	3·1	2·2	...	8·9	11	
8	...	3·1	...	...	...	4·5	0·9	...	...	4·9	...	...	...	3·1	...	...	5·6	16, 17	
9	...	4·9	...	...	...	3·6	...	0·9	...	3·6	...	...	...	2·2	0·5	...	4·9	3, 7	
10	...	0·9	0·0	...	...	1·3	...	2·7	...	0·9	...	4·5	...	1·8	...	4·0	5·6	17	
11	...	2·2	...	4·9	...	3·6	...	5·4	...	2·2	...	4·9	...	1·3	...	3·1	7·2	7	
12	...	...	...	3·1	...	...	...	4·0	3·1	...	...	4·5	3·1	...	...	4·5	5·9	23, 24	
13	1·8	...	...	4·5	...	...	...	8·1	...	2·7	...	6·3	...	3·6	...	2·7	8·9	11	
14	...	5·4	...	0·9	...	5·4	...	...	...	5·4	0·9	...	...	3·6	...	...	6·2	18	
15	...	3·1	...	...	...	6·7	...	...	...	8·1	1·8	...	...	5·8	...	2·2	7·9	15	
16	...	5·4	...	...	...	12·1	4·9	...	...	7·2	7·2	...	...	4·5	4·5	...	10·2	15	
17	...	1·3	3·6	...	...	...	4·5	...	...	3·1	3·1	...	0·9	...	...	1·8	5·6	12	
18	3·1	...	...	4·9	5·8	...	...	8·5	4·9	...	...	3·1	2·2	...	11·6	...	12·1	21	
19	2·7	...	6·7	...	...	...	8·1	...	2·7	...	...	1·3	...	...	...	4·9	10·5	1	
20	...	...	8·5	...	...	4·5	4·5	...	...	1·8	9·4	...	...	3·1	7·6	...	9·8	17	
21	...	0·5	2·2	...	3·1	...	0·5	...	2·7	...	...	4·0	1·3	...	...	3·1	5·6	16, 17	
22	3·6	...	...	1·3	6·7	...	...	2·7	5·8	...	...	2·2	5·4	...	...	3·6	7·5	16, 20	
23	4·0	...	...	4·0	5·4	...	...	2·2	3·0	...	...	2·7	0·5	...	...	1·3	7·2	16	
24	1·8	...	...	0·5	5·4	...	...	...	4·9	...	...	4·9	1·8	...	...	0·9	7·5	12, 13	
25	1·3	...	...	...	4·5	...	...	3·1	6·7	...	...	6·7	5·8	...	...	8·5	10·5	19, 21	
26	4·0	...	...	4·0	3·6	...	...	5·4	...	...	...	3·1	0·9	...	...	0·5	10·5	1	
27	0·5	...	...	0·5	1·3	...	...	2·7	2·2	...	...	5·4	2·2	...	...	5·8	7·5	23, 24	
28	2·7	...	...	6·3	2·7	...	...	6·3	3·6	...	...	5·4	3·6	...	...	5·4	8·9	5	
29	3·1	...	...	1·8	3·1	...	...	1·8	4·0	...	...	4·0	1·8	...	...	1·8	5·9	15	
30	0·9	...	...	2·7	1·3	...	...	1·3	3·1	...	...	1·3	0·5	...	...	0·5	3·6	14, 15, 16, 17	
S+N & W+E	87·6		91·8		124·4		116·1		122·8		125·1		91·6		116·8				
S−N & W−E	−15·2		−49·8		−23·4		−69·3		−16·0		−76·7		−21·8		−64·0				

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	2·2	...	...	4·9	2·2	...	...	0·9	1·3	...	...	2·2	...	1·3	...	1·8	? 8·5	1	15
2	...	2·2	...	...	...	7·2	1·3	...	...	9·8	9·8	...	...	7·6	11·2	...	10·3	17	20
3	...	3·6	8·1	...	0·9	...	4·9	...	8·9	...	1·8	...	...	1·8	8·9	...	*	*	
4	1·8	...	0·5	...	...	0·5	...	2·7	...	4·0	6·3	...	...	...	6·3	...	*	*	
5	...	...	2·2	...	...	...	1·3	...	...	0·9	3·6	...	...	0·5	2·7	...	4·0	15	40
6	...	...	...	...	...	0·0	0·9	...	...	3·1	...	...	...	0·9	...	0·0	2·7	16	15
7	...	0·5	...	0·0	...	2·7	...	...	...	2·2	1·3	...	...	2·2	1·3	...	4·5	9	20
8	...	2·2	1·3	...	...	0·5	2·7	...	0·9	...	2·7	...	0·5	...	1·3	...	8·1	23	15
9	0·9	...	0·5	...	3·6	...	...	1·3	...	...	4·0	...	...	...	2·7	...	4·9	14	40
10	2·7	...	1·3	...	...	...	...	...	3·1	...	...	...	3·1	...	...	1·3	8·9	8	15
11	...	...	...	5·8	...	4·5	...	4·5	...	6·3	...	1·3	...	4·9	...	...	8·1	10	0
12	...	3·6	0·9	...	...	3·1	1·8	...	...	3·1	4·9	...	...	2·2	5·8	...	8·5	23	45
13	...	1·8	8·1	...	...	3·6	8·1	...	...	3·1	7·6	...	...	2·7	6·7	...	12·1	4	25
14	...	...	1·8	...	...	2·7	6·7	...	...	1·3	6·3	...	...	4·0	9·8	...	13·4	21	55
15	...	1·8	8·9	...	...	...	7·2	...	3·6	...	8·5	...	2·2	...	10·7	...	13·4	19	25
16	7·2	...	15·7	...	...	8·1	12·1	...	...	4·9	12·5	...	...	3·1	8·1	...	19·2	3	55
17	...	0·9	5·4	...	6·3	...	6·3	...	2·7	...	6·7	...	4·0	...	6·3	...	11·6	11	10
18	5·8	...	5·8	...	2·2	...	5·4	...	3·6	...	1·3	...	2·2	...	2·2	...	10·7	5	35
19	1·3	...	...	1·8	...	...	7·2	...	...	1·8	4·5	...	...	...	9·8	...	12·5	20	50
20	1·8	...	8·9	...	1·3	...	7·2	...	...	...	6·3	...	...	...	3·6	...	12·1	1	35
21	4·5	...	1·8	...	4·5	...	1·8	...	6·7	...	...	...	7·2	...	...	...	9·8	23	10
22	4·9	...	...	0·9	6·3	...	...	2·7	8·9	...	...	1·8	3·6	...	3·6	...	10·3	16	5
23	4·9	...	4·9	...	6·7	...	4·5	...	6·3	...	6·3	...	1·8	...	8·1	...	13·4	14	35
24	...	...	8·1	...	...	...	7·6	...	...	...	7·6	...	5·4	...	2·2	...	14·8	5	5
25	12·1	...	...	...	4·9	...	7·6	...	5·4	...	13·0	...	...	...	14·3	...	21·0	18	35
26	...	5·8	13·9	...	4·5	...	10·3	...	...	...	5·4	...	1·3	...	2·7	...	20·1	3	55
27	5·8	...	2·2	...	8·9	...	...	...	9·4	...	...	...	2·2	...	5·4	...	14·3	15	55
28	4·5	...	6·7	...	1·8	...	8·1	...	6·7	...	4·5	...	...	...	8·5	...	12·5	21	20
29	2·7	...	6·7	...	...	6·3	6·3	...	...	3·1	7·2	...	...	2·2	5·8	...	17·9	9	45
30	...	3·6	2·7	...	...	4·9	4·9	...	...	3·6	5·4	...	...	6·3	6·3	...	14·3	24	0
S+N & W+E	89·1		129·8		98·2		136·3		114·7		142·8		73·2		157·4				
S−N & W−E	37·1		103·0		10·0		112·1		20·3		132·2		−6·2		151·2				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	...	...	3·3	...	...	...	3·0	*	*	*	*	*	*	*	*	15·2	17	55
2	*	*	*	*	*	*	*	*	4·0	...	...	2·7	0·9	...	...	0·5	12·5	0	55
3	0·9	...	1·3	...	0·5	...	2·7	...	4·9	...	...	0·9	4·0	...	4·0	...	9·8	13	30
4	2·7	...	1·3	...	9·4	...	...	6·3	8·1	...	...	3·1	6·3	...	...	2·7	16·1	13	5
5	3·6	...	...	1·3	1·8	...	4·0	...	1·3	...	3·6	...	3·0	...	...	...	13·0	11	40
6	1·8	...	1·8	...	3·6	...	3·6	...	0·5	...	3·1	...	...	0·5	...	0·9	13·4	16	35
7	1·8	...	1·8	...	1·3	...	...	2·7	...	...	...	3·6	...	6·7	...	1·3	9·4	20	45
8	...	1·3	1·3	...	...	0·9	3·6	...	...	0·9	2·7	...	1·8	...	..	0·5	7·2	13	0
9	1·8	...	...	0·5	4·0	...	...	1·8	4·5	...	...	3·1	1·3	...	...	1·3	8·9	10	50
10	0·5	...	...	1·3	4·0	...	...	2·7	7·2	...	...	3·1	3·1	...	...	0·5	12·5	13	25
11	1·8	...	...	0·5	...	1·8	...	3·1	...	4·0	...	4·0	...	4·9	...	2·2	8·5	22	25
12	...	4·9	...	3·1	...	3·6	...	1·3	*	*	*	*	*	*	*	*	11·6	19	20
13	*	*	*	*	*	*	*	*	...	2·2	...	2·2	...	0·5	3·1	...	12·1	16	5
14	0·5	...	3·1	...	...	2·2	4·9	...	...	3·1	...	1·3	2·2	...	...	2·2	9·4	8	5
15	...	...	7·2	...	...	...	8·5	...	...	...	7·2	...	2·2	...	4·9	...	13·9	7	45
16	0·9	...	5·4	...	0·9	...	4·5	...	...	4·5	1·8	...	...	0·9	1·8	...	12·5	10	35
17	1·3	...	1·8	...	...	1·3	6·3	...	...	2·7	...	2·7	2·2	...	...	5·4	9·8	10	10
18	2·2	...	2·2	...	...	...	6·9	...	2·2	...	4·9	...	...	...	3·3	...	11·6	11	15
19	0·5	...	1·3	...	5·4	...	...	0·9	4·5	...	...	3·1	1·8	...	2·7	...	13·9	16	10
20	0·9	...	5·4	...	...	...	6·6	...	...	...	5·6	...	1·3	...	2·7	...	11·6	14	25
21	1·3	...	2·7	...	1·3	...	2·7	...	6·3	...	...	2·7	2·7	...	1·3	...	11·2	16	10
22	1·8	...	1·8	...	4·9	...	...	2·2	4·0	...	...	2·7	4·9	...	...	4·9	9·4	11	45
23	2·2	...	...	2·2	0·9	...	4·9	...	...	...	5·2	...	2·7	...	2·7	...	9·8	14	30
24	2·2	...	2·2	...	3·6	...	3·6	...	1·8	...	...	4·0	2·0	...	...	...	17·4	12	45
25	2·2	...	2·2	...	4·9	...	...	0·9	7·2	...	...	...	4·6	...	...	...	18·3	18	50
26	3·6	...	...	...	1·8	...	4·0	...	2·2	...	4·9	...	0·9	...	2·7	...	12·1	13	15
27	1·3	...	2·7	...	1·8	...	1·8	..	6·3	...	...	1·3	3·0	...	...	...	13·9	14	30
28	6·7	...	...	4·5	8·9	...	...	3·6	6·7	...	...	1·3	3·0	...	...	...	13·0	15	10
29	1·3	...	1·3	...	4·c	...	1·8	...	8·9	...	...	...	0·5	...	0·5	...	13·9	13	55
30	1·3	...	2·7	...	0·9	...	4·0	...	...	1·8	...	1·3	0·5	...	0·5	...	10·3	17	50
S+N & W+E	51·3		66·2		73·7		102·9		99·8		82·1		68·4		52·6				
S−N & W−E	38·9		32·8		54·1		45·9		61·4		−4·1		41·4		7·8				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time.

* No record.

† Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.

‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8.

§ Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

BRIGHTON. **K.** 35. June 2. 10 h. 45 m. to 13 h. 5 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	...	...	...	...	...	...	...	...	...	Overcast St., with slight rain at times, to clear with little ci.-st. Lowest clouds 465 m. above sea.
	1000	884·9	276·4	...	100	7·8	1·112	230	14	
	500	940·6	*280·6*	8·4	*96*	*10·0*	1·163	?	?	
100 m. above ground	215	973·4	283·0	38	92	11·2	1·193	240	11	
Ground level	115	985·1	286·8		87	13·6	1·191	240	5·8	
Computed for M.S.L.	0	998·6	...	...	...	...	...	240	In centre of cyclone.	

BRIGHTON. **K.** 36. June 6. 10 h. 15 m. to 12 h. 30 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
968	896·6	279·7	...	90	8·8	1·113	230	12	Overcast St., with rain showers at times. Kite not seen until drawn in to 100 m. Wind direction by wire.
...	...	...	...	...	...	...	...	..	
500	948·8	*281·8*	4·4	*90*	*10·2*	1·168	?	?	
215	981·9	283·0	30	90	11·0	1·204	240	12	
115	993·7	286·0		90	13·3	1·204	220	5·8	
0	1007·4	...	...	...	...	...	245	7·3	...

BRIGHTON. **K.** 37. June 8. 10 h. 30 m. to 12 h. 30 m. G.M.T.

Greatest height	1195	877·9	279·2	...	93	8·8	1·091	270	11	Overcast St., rain showers at times. Kite not seen above 500 m., wind direction by wire. Lowest cloud 300 m. above ground.
	1000	899·0	*280·3*	5·5	*92*	*9·3*	1·113	?	?	
	500	954·8	283	6·0	88	10·7	1·171	270	10	
100 m. above ground	215	988·0	284·7	17	93	12·7	1·203	270	15	
Ground level	115	999·8	286·4	...	88	13·4	1·210	270	6·3	
Computed for M.S.L.	0	1013·5	...	...	...	...	...	260	10·4	...

BRIGHTON. **K.** 38. June 16. 10 h. 0 m. to 12 h. 10 m. G.M.T.

985	896·1	277·4	...	85	7·1	1·122	310	—	Clear air. Sky now and again covered by St.-Cu. and Cu.-Ni. Kite reached fringe of cloud. Wind very gusty at all altitudes varying between 13 and 20 m.p.s.
...	...	...	10·5	...	...	...	...	...	
500	950·5	282·5	9·5	75	8·8	1·168	300	—	
215	983·5	285·2	28	75	10·5	1·197	280	—	
115	995·2	288		62	10·5	1·199	260	9	
0	1008·8	...	...	...	...	...	275	12·6	...

BRIGHTON. **K.** 39. June 22. 14 h. 30 m. to 17 h. 0 m. G.M.T.

Greatest height	895	914·6	291·4	...	55	11·5	1·089	160	14	Clear sky throughout.
	1500	...	...	4·1	...	...	...	...	...	
	1000	...	...		...	...	...	...	...	
	500	955·4	293	...	50	11·6	1·131	160	12	
100 m. above ground	215	987·4	294·5	5·3	50	12·7	1·162	140	11	
Ground level	115	998·8	296·1	16	...	14·5	1·169	120	6·3	
Computed for M.S.L.	0	1012·1	...	...	...	...	...	85	10·8	...

BRIGHTON. **K.** 40. June 23. 10 h. 0 m. to 12 h. 30 m. G.M.T.

...	...	...	...	...	...	...	...	...	Half overcast, Fr.-Cu.
1500	846·7	279	7·0	55	5·1	1·055	270	16	
1000	899·6	282·5		84	9·8	1·105	270	13	
500	955·2	284	3·0	84	11·0	1·167	270	13	
215	988·2	285·7	6·0	84	12·1	1·200	240	13	
115	999·9	289	33	84	15·1	1·199	240	9	
0	1013·5	...	...	...	...	...	260	11·5	...

BRIGHTON. **K.** 41. June 26. 17 h. 30 m. to 18 h. 30 m. G.M.T.

Greatest height	...	...	...	...	...	...	...	...	...	Clear sky.
	1500	...	...	...	...	...	...	...	...	
	1000	...	...	...	...	...	...	...	...	
	500	959·5	288	1·8	78	13·2	1·155	280	13	
100 m. above ground	215	992·3	288·5		88	15·4	1·191	250	15	
Ground level	115	1004·0	289	5	88	15·9	1·203	260	8	
Computed for M.S.L.	0	1017·6	...	...	...	...	...	265	8·4	...

BRIGHTON. **K.** 42. June 29. 10 h. 0 m. to 12 h. 30 m. G.M.T.

...	...	...	...	...	...	...	...	...	Overcast St. and A. St. Lowest clouds 500 m. above sea, top clouds not reached.
1500	842·9	275·8	7·6	82	6·1	1·062	200	15	
1000	896·1	279·6	4·8	85	8·3	1·113	230	14	
500	952·0	282		100	11·5	1·171	230	16	
215	985·2	284	7·0	92	12·0	1·203	220	13	
115	996·9	288·5	45	82	14·2	1·198	220	6·7	
0	1010·5	...	...	...	...	...	240	12·0	...

The computed wind at M.S.L. is the gradient wind at the nearest hour of observation at Telegraphic Reporting Stations, viz. 7 h., 13 h., or 18 h.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level—*continued.*

Soundings by Kites (K.) and Pilot Balloons (P.)

ABERDEEN. **P. 24.** June 7. 11 h. 35 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	1057	...	...	...	...	...	Balloon entered Fr.-Cu. cloud.
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	1000	3	5·0	−0·3	− 5·0	2·5	
	750	348	6·9	+1·4	− 6·8	2·5	
	500	348	11·7	+2·5	−11·4	3·3	
100 m. above ground	130	329	8·4	+4·4	− 7·2	2·1	
Ground level	30	315	6·6	+4·7	− 4·7	...	
Computed for M.S.L.	0	? 10	Near centre of anticyclone.			...	Two theodolites. Lift 56 gr.

P. 25. June 14. 11 h. 20 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
964	...	...	...	...	...	Balloon entered base of low Cu. of a very degraded type.
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
900	324	6·0	+3·5	− 4·9	2·5	
750	329	5·1	+2·6	− 4·4	2·3	
500	333	5·4	+2·4	− 4·8	2·4	
130	337	4·3	+1·7	− 4·0	3·1	
30	315	3·0	+2·1	− 2·1	...	
0	350	...	...	...	...	Two theodolites. Lift 52 gr.

P. 26. June 21. 11 h. 5 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
2883	...	...	...	...	...	Balloon obscured from view by Cu. cloud after 2000 m. (as seen at King's College Station) and then obscured by same cloud at 2883 m. (as seen from Woodside Station). Two theodolites to 2000 m.; one theodolite to 2900 m.
2750	243	8·3	+ 7·4	+ 3·7	2·8	
2500	244	8·0	+ 7·2	+ 3·5	2·8	
2000	235	9·8	+ 8·0	+ 5·6	3·9	
1500	217	7·3	+ 4·4	+ 5·8	3·0	
1000	227	4·5	+ 3·3	+ 3·1	2·8	
500	220	6·3	+ 4·1	+ 4·8	2·3	
130	218	4·6	+ 2·8	+ 3·6	4·1	
30	210	4·4	+ 2·2	+ 3·8	...	
0	210	8·8	+ 4·4	+ 7·6	...	Lift 60 gr.

ABERDEEN. **P. 27.** June 26. 11 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	2886	...	...	...	...	...	Flight of balloon most erratic. Thin sheets of Ci.-Cu. (only partially formed in places) above, from 180°, but scarcely moving. Balloon burst at 2886 m.
	2800	161	2·4	−0·8	+ 2·3	3·1	
	2500	179	1·6	−0·04	+ 1·6	3·3	
	2000	221	2·9	+1·9	+ 2·2	4·2	
	1500	172	1·4	−0·2	+ 1·4	2·5	
	1000	244	1·1	+1·0	+ 0·5	2·9	
	500	207	2·7	+1·2	+ 2·4	2·7	
100 m. above ground	130	130	1·8	−1·4	+ 1·2	2·4	
Ground level	30	125	1·9	−1·6	+ 1·1	...	
Computed M.S.L.	0	Near centre of anticyclone.				...	Two theodolites. Lift 60 gr.

9. The Upper Air: Sounding by Pilot Balloon.

1912. June 4. 19 h. 38 m. G.M.T.

	at 7 h.	at 18 h. G.M.T.
From observations at Station.		
GRADIENT WIND :—Direction,	180	Station in the centre of a cyclone.
Velocity,	11·3	
Correction for Curvature,	−1·4	
Final Components, W. to E.	...	...
Final Components, S. to N.	9·9	...

SOUNDING No., **R 180A.**

PLACE, PYRTON HILL.

Latitude, . . . 51° 38′ N.

Longitude, . . 1° 1′ W.

Height above M.S.L., . 150 m.

TABLE OF HEIGHT AND WINDS.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Remarks.
km.	Degrees from N.	mps.	mps.	mps.	km.	Degrees from N.	mps.	mps.	mps.	
11	160	5	− 2	+ 5	4	135	6	− 4	+ 4	Good observations with one theodolite. Subtense method. Ascensional rate 3·3 mps. Finally lost behind low cloud.
10	160	5	− 2	5	3	155	4	− 2	4	
9	145	5	− 3	4	2	171	6	− 1	6	
8	145	5	− 3	4	1	180	2	0	2	
7	170	5	− 1	5						
6	135	6	− 4	4	Ground		...	...	...	
5	100	5	− 5	1	M.S.L.		...	...	...	

1912. June 6. 7 h. 0 m. G.M.T. Balloon entered low cloud after 1 minute.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

1912. June 4. 18 h. 38 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	16 km.	107 mb.	227° A.
Lowest Temperature	16 km.	107 mb.	227° A.
Base of Stratosphere	7·2 km.	384 mb.	230° A.
	7·5 km.	368 mb.	230° A.
Type	No. 1.		

From Observations at Station	at 8 h.	at 20 h. G.M.T.
Pressure (M.S.L.),	747·3 mm. = 996·2 mb.	746·0 mm. = 994·5 mb.
Temperature,	285° A.	282° A.
Vapour Pressure,	...	...
Gradient Wind :—Direction,	180°.	...
Velocity,	11·3 m/s.	...
Correction for Curvature,	−1·4 m/s.	...
Final Components, W. to E.	...	...
Final Components, S. to N.	9·9 m/s.	...

Sounding No., R. 180.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, Piddington, Thame.
Distance, ... 13 km.
and
Orientation, . . . 335°

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
16	107	227	1	...	...	...	...	...	...	Good trace.
15	123	228	1	...	...	...	...	...	...	
14	142	229	1	...	...	...	...	...	...	Showery day, cold evening.
13	164	230	1	...	...	...	...	...	...	
12	191	231	1	...	...	...	...	...	...	
11·7	200	...	1	...	...	...	...	...	...	
11	221	232	1	...	...	...	...	...	...	
10	256	233	0	...	...	160	5	−2	5	
9	296	233	...	...	...	160	5	−2	5	
8·9	300	...	−3	...	...	...	...	...	...	
8	341	230	2·5	...	...	145	5	−3	4	
7	395	234 231	9·5	...	...	170	5	−1	5	
6·9	400	...	8	...	...	...	...	...	...	
6	457	242	...	...	...	135	6	−4	4	
5·4	500	...	7	...	...	120	6	−5	3	
5	524	251 249	7	...	...	...	...	...	...	
4·0	[600] 598	257	7	...	...	145	5	−3	4	
3	683	264	6·5	...	...	155	4	−2	4	
2·8	700	...	...	...	...	...	...	...	...	
2	774	271 270	6·5	...	...	155	4	−2	4	
1·75	800	...	...	...	...	...	...	...	...	
1	878	278 276	4	...	...	160	3	−1	3	
0·8	900	...	...	...	...	...	...	...	...	
Ground	974	281	...	...	...	...	0	0	0	
M.S.L.	994·5	282	...	...	...	...	...	...	...	

1912. June 11. 19 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	15 km.	123 mb.	223 km.
Lowest Temperature	10 km.	262 mb.	215° A.
Base of Stratosphere	10·0 km.	262 mb.	215° A.
	10·3 km.	...	215° A.
Type	No. 1.		

From Observations at Station	at 8 h.	at 20 h. G.M.T.
Pressure (M.S.L.),	755·4 mm. = 1007·1 mb.	756·4 mm. = 1008·4 mb.
Temperature,	287° A.	290° A.
Vapour Pressure,	...	...
Gradient Wind :—Direction,	? 85°.	70°.
Velocity,	16·6 m/s.	9·0 m/s.
Correction for Curvature,	...	−0·8 m/s.
Final Components, W. to E.	−16·5 m/s.	−7·7 m/s.
Final Components, S. to N.	−1·4 m/s.	−2·8 m/s.

Sounding No., R. 182.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, Bourton, Buckingham.
Distance, ... 41 km.
and
Orientation, . . . 4°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
15	123	223	1	...	...	...	...	...	...	
14	142	224	0·5	...	...	...	...	...	...	Very good trace.
13	165	224·5	−0·5	...	...	...	...	...	...	Ci. and Ci.-cu. clouds coming up from 180°.
12	194	224	−1	...	...	...	...	...	...	
11·8	200	...	−7	...	...	...	...	...	...	
11	224	223	9	...	...	...	...	...	...	
10	262	217 215	9	...	...	...	...	...	...	
9·1	300	...	9	...	...	...	...	...	...	
9	304	226 224	9	...	...	...	...	...	...	
8	355	235 233	7	...	...	...	...	...	...	
7·2	400	...	7	...	...	...	...	...	...	
7	409	242 240	7	...	...	...	...	...	...	
6	468	249 247	8	...	...	...	...	...	...	
5·5	500	...	...	...	...	...	...	...	...	
5	536	256	5	...	...	...	...	...	...	
4·15	600	...	7	...	...	...	...	...	...	
4	611	261	6	...	...	...	...	...	...	
3	694	268	...	...	...	105	4	−4	+1	Wind observations with one theodolite, subtense method.
2·9	700	...	...	...	...	...	...	...	...	
2	791	274	9	...	...	40	8	−5	−6	
1·9	800	...	...	...	...	...	...	...	...	
1	893	283	6	...	...	50	11	−8	−7	
0·9	900	...	...	...	...	...	...	...	...	
Ground	988	289	...	...	...	...	...	...	...	
M.S.L.	1008	290	...	...	...	...	...	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

1912. June 6. 6 h. 40 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT	12·3 km.	186 mb.	232·5° A.
LOWEST TEMPERATURE	9·5 km.	283 mb.	223° A.
BASE OF STRATOSPHERE	9·5 km.	283 mb.	223° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.)	753·4 mm. = 1004·4 mb.	756·1 mm. = 1008·1 mb.
TEMPERATURE,	285° A.	286° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	345°	290°
Velocity,	Station near the centre of a cyclone.	
Correction for Curvature,	...	...
Final Components, W. to E.	...	...
Final Components, S. to N.	...	...

SOUNDING No., R. 9.
PLACE, MANCHESTER.
Latitude, . . . 53° 27′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L. . . 40 m.
PLACE OF FALL, Eyam, Sheffield
Distance, ... 42 km.
and
Orientation, . . . 110°.

TABLE OF HEIGHTS, PRESSURES, TEMPERATURES, AND HUMIDITIES.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
12	192	232	...	...	...	
11	200	...	−2·5	...	...	
11	224	229·5	−4	...	...	
10	262	225·5		...	...	
9·1	300	...	1·5	...	...	
9	305	227	8·5	...	...	
8	355	235·5		...	...	
7·2	400	...	8·5	...	...	
7	409	244	8	...	...	
6	470	252		...	...	
5·5	500	255	6·5	...	...	
5	536	258·5	...	...	...	
4·1	600	...	6·5	...	...	
4	610	265	6	...	...	
3	692	271		...	...	
2·9	700	...	5	...	...	
2	784	276	...	...	...	
1·85	800	...	4	...	...	
1	889	280	...	...	...	
0·9	900	...	5	...	...	
Ground	1000	285	..	...	...	
M.S.L.	1004	285	...	...	...	

1912. June 6. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT	13·6 km.	...	...
LOWEST TEMPERATURE	9·2 km.	...	221° A.
BASE OF STRATOSPHERE	9·2 km.	...	221° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.)	755·9 mm. = 1007·8 mb.	756·9 mm. = 1009·1 mb.
TEMPERATURE,	285° A.	289° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	30°	360°
Velocity,	6·6	8·8
Correction for Curvature,	−0·6	−0·6
Final Components, W. to E.	−3·0	0·0
Final Components, S. to N.	−5·2	−8·2

SOUNDING No., K.C. 42.
PLACE, LIMERICK.
Latitude, . . . 52° 38′ N.
Longitude, . . . 8° 41′ W.
Height above M.S.L., . . 15 m.
PLACE OF FALL, Charleville.
Distance, ... 23 km.
and
Orientation, . . . 190°.

TABLE OF HEIGHTS, PRESSURES, TEMPERATURES, AND HUMIDITIES.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		REMARKS.
km.	mb.	°A.	°C.	%	mb.	
14	152	?	...	...	...	
13	164	?	...	...	..	Top of trace influenced by solar radiation.
12	191	?	...	...	...	
11·7	200	...	...	...	...	
11	222	226		...	...	
10	258	223	−3	...	...	
9	[300] 301	222	−1	...	...	
8	351	228	6	...	...	
7·1	400	...	7	...	...	
7	405	235	10	...	...	
6	465	245		...	...	
5·5	500	...	8	...	...	
5	534	253	...	...	...	
4·15	600	...	9	...	...	
4	611	262		40	1·1	
3	694	267	5	45	1·8	
2·9	700	...	4	...	...	Inversion of 264 to 267 at 2·8 km. on one trace, at 3·0 km. on the other.
2	791	271	...	100	5·3	
1·9	800	...	7	...	...	
1	892	278	...	95	8·2	
0·9	900	...	7	...	...	
Ground	1005	285	...	95	13·2	Cloudy, calm. Balloon rose vertically and then went S. by W.
M.S.L.	1008	285	...	...	...	

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—TYPE 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
TYPE 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. TYPE 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

JULY 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 4*d*.

Second Year.—No. 7. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	4	0·4	Ir, I, I, I, I.	1st Ir, P=1 h. 5 m. 33 s., S=1 h. 8 m. 50 s., Δ=1930 km. α nearly true W. Epicentre 52° N. 32° W. I, S=3 h. 47 m. 34 s., L=3 h. 51 m. I, Disturbed 8 h. 30 m. I, Long waves 15 h. 1 m. I, Long waves 19 h. 28 m. 2nd I, S?=3 h. 54 m. 36 s., L=4 h. 12 m. 3rd I, Long waves 14 h. 6 m. I, Disturbed 18 h. 19 m.–19 h. 4th I, S=1 h. 18 m. 52 s., L=1 h. 28 m. I, Long waves 13 h. 8 m. 6th I, Disturbed 17 h. 19 m.–17 h. 40 m. I, Disturbed about 21 h. 40 m.
2	4	0·3	I.	
3	4	0·2	I, I.	
4	4	0·2	Iu, I.	
5	4–5	0·3		
6	4–5	0·3	I, I.	7th I, S?=4 h. 16 m. 22 s., L=4 h. 27 m. I, Long waves 7 h.–7 h. 47 m. IIIu, P=8 h. 7 m. 35 s., S=8 h. 15 m. 41 s., Δ=6550 km. α=16° 23′ W. of N. Epicentre 63° N. 151° W. I, Disturbed 13 h.–14 h. I, Disturbed 17 h.
7	4–5	0·2	I,I,IIIu,I,I,I,I,Iu.	18 h. 30 m. I, Long waves, 20 h. 16 m. Iu, P=23 h. 0 m. 32 s., S=23 h. 10 m. 46 s., Δ=9060 km. α=66° 2′ W. of S. Epicentre 6° S. 68½° W. 8th I, S?=17 h. 2 m. 7 s., L=17 h. 18 m. Iu, P=23 h. 3 m. 46 s., S=22 h. 11 m. 54 s., Δ=6590 km. α=14° 2′ W. of N. Epicentre 63½° N. 155½° W. 9th Iu, P=8 h. 28 m. 18 s., S=8 h. 36 m. 19 s., Δ=6460 km. α=45° E. of S. Epicentre 5·3° N. 33·9° E. I, Long waves 19 h. 7 m.–19 h. 25 m. I, Long waves 23 h. 27 m.
8	5	0·3	I, Iu.	
9	4–5	0·4	Iu, I, I.	
10	5	0·6	I, I.	
11	5	0·6	I, I.	10th I, Disturbed 3 h. 46 m.–4 h. 10 m. I, Disturbed about 23 h. 15 m. 11th I, Long waves 4 h. 54 m. I, L=7 h. 25 m. (Type South European.) 13th I, Long waves about 6 h. 36 m. I, Long waves about 12 h. 3 m. Iu, S=14 h. 55 m. 59 s., L=15 h. 6 m. I, Disturbed 21 h. 9 m.–21 h. 39 m. 14th Iu, P=9 h. 0 m., S=9 h. 13 m. Not sharply defined. I, Disturbed 20 h.–21 h. 15th I, Long waves about 23 h. 37 m. 16th I, L=1 h. 49 m. I, Long waves about 3 h.
12	5	0·5		
13	4	0·2	I, I, Iu, I.	
14	4–5	0·2	Iu, I.	
15	5	0·6	I	
16	4–5	0·2	I, I.	17th I, S=12 h. 53 m. Disturbed till 14 h. 7 m. I, Disturbed about 14 h. 30 m. Iu, P?=20 h. 58 m., S=21 h. 6 m. I, L=23 h. 50 m. 18th Iu*, Two earthquakes? P_1=21 h. 36 m. 52 s., S_1=21 h. 46 m. 48 s., P_2=21 h. 43 m. 55 s., S_2=21 h. 53 m. 42 s., Δ_1=8710 km., Δ_2=8540 km. 20th I, 14 h.–15 h. P and S obliterated by wind. 22nd I, Long waves about 10 h. 45 m. 23rd I, Disturbed about 0 h. Iu, P=16 h. 7 m., S=16 h. 15·5 m., L=16 h. 28 m.
17	4–5	0·2	I, I, Iu, I.	
18	4	0·1	Iu*.	
19	4	0·2		
20	4	0·2	I.	24th IIu, P=12 h. 11 m. 55 s., S=12 h. 22 m. 13 s., Δ=9140 km. α=64° 35′ W. of S. Epicentre 7° 32′ S., 67° 46′ W. I, Small disturbance 18 h. 16 m.–18 h. 26 m. I, Disturbed 22 h. 30 m.–23 h. Iu, P=23 h. 36 m. 14 s., S=23 h. 46 m. 15 s., Δ=8820 km.
21	4	0·1	I.	
22	4	0·1	I.	25th I, Long waves about 13 h. 15 m. II, Probably multiple earthquake, P=23 h. 23 m. 14 s., L=23 h. 46 m. 26th I, P=2 h. 48 m., S=2 h. 59 m., L=3 h. 22 m. I, Horizontal components lost. Start 8 h. 1 m., end 10 h. I, Disturbed 11 h.–12 h. 30 m. I, Long waves 17 h. 38 m. I, Long waves 18 h. 30 m.–19 h. 10 m. 27th I, Long waves 2 h. 2 m.–2 h. 40 m.
23	4	0·1	I, Iu.	
24	4	0·2	IIu, I, I, Iu.	I, Disturbed 5 h.–6 h. 28th I, Disturbed 1 h. 36 m.–1 h. 43 m. 30th I, S?=5 h. 7 m., L=5 h. 16 m.
25	3–4	0·1	I, II.	
26	4	0·1	I, I, I, I, I.	31st I, Long waves 8 h. 34 m.
27	4–5	0·2	I, I.	3 earthquakes Ir, P=10 h. 39 m. 10 s. S=10 h. 41 m. 43 s. Δ=1460 km. / P=10 h. 49 m. 56 s. S=10 h. 52 m. 5 s. Δ=1210 km. / P=10 h. 59 m. 9 s. S=11 h. 1 m. 27 s. Δ=1300 km. } Vicinity of Iceland.
28	4	0·2	I.	
29	4–5	0·4		
30	4–5	0·7	I.	I, L=17 h. 54 m. I, L=19 h. 16 m. I, L=20 h. 25 m.
31	4–5	0·5	I, Ir, Ir. Ir, I, I, I.	

An explanation of the notation used is given in the preface.

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H=9·2 m. Barometer Cistern, H_b=13·7 m.

Heights above Ground:—Thermometers, h_t=1·2 m. Rain-gauge, h_r=0·6 m. Sunshine Recorder, h_s=12·8 m. Cups of Anemometer, h_a=13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	mb.	mb.	200+°	200+°	200+°	200+°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	1019·8	1021·1	86·2	85·7	88	85	11·9	12·2	77	83	29	8	31	8	8	*10*	1·3	1·3	Fair to dull.	...	...	...
2	1020·6	1020·9	86·8	86·2	88	85	12·2	11·5	78	76	2	6	1	8	8	*7*	—	0·9	Dull; clearing occasionally.	...	...	...
3	1018·9	1020·7	86·2	86·7	87	85	11·5	13·2	75	85	2	6	—	1	10	*6*	—	—	Overcast; clearing after 21 h.	...	...	...
4	1023·3	1024·9	89·5	88·2	93	85	13·9	14·2	75	83	6	5	—	0	0∞	*3∞*	—	12·5	Fine, but ∞.	...	...	...
5	1022·7	1020·2	88·7	87·9	93	84	15·6	15·6	89	94	—	0	16	2	7∞	*10*≡⁰●	2·0	6·9	Fine till 16 h., then ●.	...	...	...
6	1017·1	1015·2	88·4	87·1	90	87	15·6	14·6	90	92	—	0	27	3	10≡⁰	*10*	0·5	0·1	Dull, with ≡⁰.	...	...	...
7	1013·4	1011·0	87·4	84·6	88	84	14·2	12·6	86	92	16	5	26	2	10≡⁰●	*8*	6·9	0·5	Intermittent ● 10 h.–20 h.	...	...	...
8	1014·8	1017·1	86·4	85·1	89	84	11·9	12·2	76	87	22	7	20	3	5	*2*	—	9·5	Fair to clear.	17896	20 26·4	68 10·8
9	1014·8	1009·7	87·8	86·3	90	84	12·6	11·9	75	78	16	5	15	5	8	*8*	2·0	8·2	Fair to dull after 21 h.	...	...	...
10	1002·7	1008·2	87·4	85·7	89	84	15·6	12·6	96	86	16	6	23	2	10≡⁰	*4*	0·5	3·4	Gloomy and misty *a.*; fair *p.*	...	...	...
11	1010·2	1007·9	86·5	86·2	90	83	12·9	12·2	83	80	15	2	—	1	10	*10*	3·8	2·7	Dull, with fair intervals.	...	...	...
12	1007·8	1015·7	85·7	85·7	89	83	11·2	11·5	76	79	30	3	30	4	6	*4*	—	5·4	Fair generally.	...	...	...
13	1020·9	1021·9	86·9	86·5	90	82	11·9	12·2	74	78	31	3	—	1	4	*1*	—	11·3	Fine.	...	...	...
14	1021·2	1022·0	87·6	87·1	91	*n* 80	13·6	13·9	81	86	—	0	26	2	1	*3*	—	13·8	Fine.	...	...	...
15	1022·5	1022·1	88·9	92·0	*x* 97	82	14·2	16·3	79	75	—	0	—	1	0	*0*	—	14·0	☽; nearly cloudless.	...	...	...
16	1020·8	1019·9	93·1	93·2	96	88	15·9	18·0	68	77	7	8	6	3	0	*5∞*	—	13·3	☽; fine and warm.	...	...	...
17	1019·8	1020·6	91·3	89·4	94	87	14·9	14·6	72	79	8	8	3	6	0∞	*3∞*	—	11·6	Fine, but ∞.	...	...	...
18	1021·9	1021·1	88·4	86·2	90	85	11·5	11·9	68	78	3	6	32	11	2∞	*2*	—	12·9	Fine.	...	...	...
19	1020·8	1020·5	87·3	86·2	89	85	11·5	11·9	71	77	32	7	32	7	5∞	*4*	—	12·8	∞, fine.	...	...	...
20	1019·1	1017·7	86·8	86·5	89	85	11·5	12·9	72	84	2	6	31	3	3∞	*3*	—	9·6	∞, fine.	...	...	...
21	1015·7	1013·4	86·9	86·3	89	85	12·2	13·9	76	92	2	3	32	2	10	*10*	4·3	—	Dull.	...	...	...
22	1010·7	1011·2	88·1	87·4	92	86	15·9	15·9	93	98	—	1	—	0	9	*10*≡⁰●	11·2	0·4	Dull generally, with ≡⁰●.	...	...	...
23	1008·5	1006·4	88·5	88·3	90	87	15·3	14·2	87	83	8	4	9	3	10	*10*	5·6	—	Overcast, misty, and showery.	17889	20 26·0	68 10·6
24	1004·0	1003·9	89·3	87·8	92	87	13·9	12·9	75	77	7	4	—	1	8	*8*	9·4	5·2	☈ 14 h. 30 m.–15 h. 30 m.	...	...	...
25	1001·2	1003·6	88·5	87·2	90	86	14·6	14·6	85	90	21	2	16	3	10●≡⁰	*7*	1·3	0·4	●² 9 h. Dull to fair.	...	...	...
26	1004·5	1005·0	89·1	86·2	92	85	14·9	13·9	83	93	16	2	4	2	6	*3*	1·0	6·3	Fair to dull. Frequent ⊤ *p.*	...	...	...
27	1002·0	1000·8	86·7	86·2	90	83	13·9	13·9	90	92	—	0	—	0	10	*2*	8·4	1·3	Dull, with fair intervals.	...	...	...
28	997·3	997·0	86·8	85·4	89	82	14·9	12·2	95	86	27	8	22	7	10●≡⁰	*7*	2·5	0·7	Cloudy and showery.	...	...	...
29	994·5	998·9	86·8	85·6	88	84	11·9	13·2	77	91	22	12	26	6	7	*10*≡⁰●	1·8	3·4	Showery to fair.	...	...	...
30	1006·0	1007·2	86·2	85·4	89	84	11·5	12·2	75	85	26	6	22	2	6	*10*	9·7	6·7	●⁰ occasionally; mostly fair.	...	...	...
31	996·8	1002·8	84·2	85·3	87	84	12·2	11·5	91	81	1	9	31	8	10≡⁰	*9*	4·3	4·2	≡⁰● *a.*; improving in afternoon.	...	...	...
Means	1012·7	1013·2	87·7	86·9	90·1	84·5	13·4	13·4	80	84		4·6		3·5	6·5	6·1	76·5	5·78	Monthly **Totals** or **Means**.	17893	20 26·2	68 10·7
Normal 40 years	1013·9	1014·4	88·3	87·4	90·8	85·2	14·6	14·2	83	86		4·7		4·0	—	—	99·5	5·06	**Normals**, 40 years.			
					35 years		25 years				30 years		30 years					30 yrs				

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

Wt. 39025/327—375—4/13. N. & Co., Ltd. Gp. XV.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity. Vapour Pressure.		Humidity. Percentage.		Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		200+	200+	200+	
1	1010·1	1010·8	88·4	86·4	92	85	12·9	12·6	75	81	27	3	25	2	10	9	7·9	1·0	—	81	89·0	86·8	Dull. ☈●² in afternoon.
2	1012·0	1010·7	86·1	85·8	89	85	12·9	13·6	84	93	29	3	23	2	10	10	7·9	—	—	82	88·6	86·8	Dull throughout. ● *p*.
3	1010·7	1017·1	86·5	88·0	89	85	13·6	13·2	87	78	—	0	6	3	8≡⁰	0≡⁰	—	0·1	—	85	88·4	86·8	≡⁰. Dull all day.
4	1021·8	1023·9	88·0	87·4	92	86	12·9	12·9	76	79	2	5	2	3	10	2	—	3·4	—	82	88·1	86·8	Dull, then fair to fine.
5	1023·7	1019·8	89·0	90·2	93	85	13·9	14·6	77	75	3	4	4	5	10	0	—	1·9	—	80	88·4	86·8	Fair during day.
6	1015·4	1011·7	90·8	90·0	95	87	14·6	15·6	72	81	3	5	—	0	?6≡⁰	10≡⁰	—	5·0	—	86	88·8	86·8	Fine day ; misty later.
7	1012·6	1014·6	88·4	90·1	96	87	14·6	17·0	84	88	24	3	22	2	10	6	4·8	5·0	—	86	89·2	86·8	Fine 12 h.–17 h. ☈●² 18 h.–
8	1017·0	1018·3	91·0	89·2	94	86	15·3	16·6	74	91	19	6	20	2	10	10	0·5	2·9	—	82	89·7	86·8	Fine to dull. [19 h.
9	1019·8	1018·0	89·3	90·8	95	83	12·2	15·6	66	77	22	2	19	2	5	10●	0·3	10·3	—	*n* 76	89·4	86 9	Fine during day.
10	1014·4	1014·4	93·0	90·9	98	88	18·6	16·6	80	82	11	3	19	4	7	8	—	4·5	—	86	90·6	86·9	Fine to dull ; warm.
11	1016·0	1015·4	91·9	91·3	97	89	17·6	18·0	81	86	16	4	—	1	10	0≡⁰	—	4·7	—	86	90·8	87·2	Dull *a*. Finer *p*. ≡⁰ *n*.
12	1012·2	1011·6	97·2	94·3	*x* 103	87	20·3	19·3	68	76	12	3	20	3	1	9	0·3	10·9	·058	81	91·1	87·3	Fine and warm.
13	1014·4	1015·1	95·0	94·3	98	90	18·3	18·3	69	72	1	2	1	3	6	0	0·3	4·8	—	87	92·1	87·4	T ●⁰ 12 h., otherwise fair.
14	1016·4	1017·1	90·3	96·7	102	90	17·3	*17·8*	88	*59*	1	3	6	2	7	0	—	7·4	—	87	92·0	87·4	Very close all day. T 19 h.
15	1019·3	1020·0	97·8	96·0	102	90	18·0	17·0	57	60	4	3	7	4	0∞	0	—	13·6	·047	83	92·6	87·6	Very fine, but close.
16	1018·9	1017·5	96·8	96·5	102	90	18·0	14·9	62	53	6	3	5	5	0∞	0	—	12·6	·045	86	92·6	87·9	Fine. ∞
17	1017·3	1015·9	92·4	90·7	100	88	15·3	15·9	68	79	1	7	1	6	0	0	—	13·1	·048	86	92·4	87·9	Fine throughout.
18	1013·4	1012·6	89·8	86·9	94	84	14·2	10·2	76	64	1	3	1	4	10	1	—	1·3	—	83	91·9	88·0	Sudden squall from N. 17 h.
19	1011·3	1010·1	86·4	85·1	88	*n* 82	10·2	12·9	66	93	29	5	32	2	10	9	4·1	—	—	*n* 76	90·7	88·1	Dull, with ● *p*. [30 m.
20	1010·4	1011·3	87·2	87·5	91	84	12·6	14·2	78	86	1	2	—	1	10	9	—	0·4	—	77	89·4	88·2	Generally dull.
21	1012·2	1014·0	91·3	89·7	95	84	15·3	14·6	73	78	16	3	—	1	9≡⁰	9	—	4·9	—	79	90·1	88·3	Fine to dull.
22	1014·4	1013·4	90·1	88·8	92	85	14·6	14·9	75	84	—	0	9	2	10≡⁰	10≡⁰	1·8	—	—	79	90·2	88·1	Overcast throughout. ≡⁰
23	1012·6	1012·5	91·4	91·2	96	87	17·3	16·6	82	80	8	3	17	2	10≡⁰	10	—	1·2	—	83	90·2	88·1	Mostly overcast. T in N. 13 h.
24	1012·7	1011·6	93·5	92·3	99	88	16·6	16·6	69	74	13	2	—	1	7	10	—	7·1	—	84	90·8	88·1	Generally fine.
25	1009·8	1011·9	92 5	90·4	97	87	15·6	14·6	69	73	16	2	19	2	8	0	—	7·0	—	85	91·3	88·1	Dull midday. [16 h.
26	1013·3	1011·0	92·7	90·9	97	85	15·9	14·9	71	73	16	4	—	1	8	10	2·0	7·3	—	79	91·6	88·1	Fine, but no sunshine after
27	1005·7	1001·9	93·6	91·3	97	88	17·6	16·3	73	78	8	3	10	3	9	10	—	6·9	—	83	91·3	88·2	Dull, then fair to fine.
28	1001·5	1002·6	90·9	88·4	93	87	14·2	13·2	70	75	18	8	16	4	9	10●	5·3	5·5	—	84	91·3	88·3	Unsettled.
29	1002·7	1002·5	87·4	86 7	91	86	14·9	13·6	90	86	17	6	17	5	10	10	5·6	0·5	—	84	90·2	88·3	Dull. ●² 9 h. and 17 h.
30	1003·4	1009·3	89·5	87·0	92	84	12·9	10·9	69	70	19	5	22	2	9	0	—	7·3	—	82	89·5	88·3	Fair to very fine and clear.
31	1007·4	996·9	88·4	89·2	91	83	12·9	15·3	75	84	15	4	17	6	10	10	3·1	0·2	—	*n* 76	89·1	88·3	Dull and squally.
Means	1013·0	1012·7	90·9	90·1	95·1	86·3	15·2	15·1	74	78	3·5		2·7		7·7	5·9	43·9	4·87	—	82·5	90·4	87·6	Monthly **Totals** or **Means**.
Normal 40 years	1014·6	1014·5	90·1	89·5	94·8 (35 years)	85·4 (35 years)	13·6	14·1	71	76 (25 years)	3·4 (30 years)		2·4 (30 years)		—	—	60·9	6·56 (30 yrs)	—	—	—	—	**Normals, 40 years.**

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															21 h.	9 h.	9 h.						
1	981·2	985·5	86·9	84·3	89	81	11·2	11·5	70	88	32	4	4	2	9	10	5·6	1·4	—	—	—	—	Cloudy to overcast. Distant T
2	986·0	988·1	85·3	82·5	87	82	10·2	9·8	72	82	32	7	32	11	10	3	0·5	—	—	—	—	—	Dull. [● 12 h.
3	991·4	995·1	82·8	83·2	86	82	10·9	10·9	91	88	4	8	4	6	9●⁰	10	—	1·3	—	—	—	—	Drizzling ● *a*.
4	997·3	998·1	86·2	86·4	91	83	11·9	13·2	78	87	4	3	—	1	6	4	—	4·9	—	—	—	—	Distant T in W., 15 h.
5	998·5	995·4	84·2	84·9	90	83	11·5	11·9	86	87	4	4	—	1	9	2	—	6·7	—	—	—	—	Cloudy *a*. ; finer *p*.
6	992·6	988·1	86·2	87·7	92	81	12 2	13·2	82	79	16	2	—	1	10	4∞	—	7·8	—	—	—	—	Very fine generally ; ∞.
7	985·9	983·8	90·8	87·1	94	80	11·5	12·6	56	79	—	1	20	3	1∞	9∞	3·8	10·6	—	—	—	—	⊕ 16 h.–17 h.
8	982·4	987·7	85·4	83·8	89	83	10·9	11·2	76	87	24	6	20	5	9	5	—	5·3	—	—	—	—	
9	989·6	987·7	85·6	83·2	89	79	10·5	9·5	73	76	20	8	—	1	7	3	0·5	9·3	—	—	—	—	Fine to dull.
10	980·8	979·8	87·1	86·7	89	83	13·2	14·9	83	95	20	8	16	9	10	10●≡⁰	11·2	—	—	—	—	—	Driving misty rain.
11	984·2	984·8	85·8	85·2	91	84	12·2	12·9	84	92	20	3	—	0	9	10●	5·1	6·4	—	—	—	—	Fine 10 h.–17 h., but ∞.
12	983·4	984·2	89·3	87·8	94	87	15·9	15·6	87	95	12	5	—	0	10	10●⁰≡⁰	1·3	2·4	—	—	—	—	Variably cloudy.
13	990·3	993·8	88·5	87·1	91	85	15·3	13·9	88	87	20	2	4	4	10	9	0·3	0·2	—	—	—	—	T, occasionally 9h.–15 h.
14	992·9	992·7	91·7	93·0	*x* 98	83	16·3	21·0	76	90	4	2	4	4	0∞	5∞	—	11·4	—	—	—	—	∞ ; very fine and warm.
15	995·9	996·9	92·9	88·7	96	86	15·6	15·6	68	88	8	6	32	5	0∞	1∞	—	9·8	—	—	—	—	Fine generally ; ∞. [cast.
16	996·1	996·5	89·3	86·2	94	85	15·3	12·9	84	85	4	4	4	6	1∞	10	—	9·0	—	—	—	—	Very fine till 16 h., then over-
17	995·6	992·8	85·7	84·7	87	82	12·6	11·5	87	85	4	5	—	0	10	7	—	—	—	—	—	—	●⁰ shower 13 h. 30 m.
18	988·6	989·6	85·6	82·6	89	80	10·2	8·5	71	72	4	4	—	1	9	1	—	8·3	—	—	—	—	Fine generally.
19	987·9	988·3	84·7	86·4	88	79	8·8	11·2	66	73	4	8	4	8	8	9	—	5·6	—	—	—	—	Fair, with dull intervals.
20	989·1	989·6	87·0	85·7	91	84	11·9	11·9	75	82	4	8	32	4	3	7	—	5·7	—	—	—	—	Fine generally. [–18 h.
21	989·6	990·9	86·9	83·5	90	82	10·2	10·5	63	85	4	6	4	4	7	9	—	6·4	—	—	—	—	Fine generally. Partial ⊕ 16 h.
22	990·8	990·0	83·8	82·8	86	82	10·9	10·2	83	85	4	6	4	4	10	10	—	0·2	—	—	—	—	Dull till 12 h. ; finer later.
23	988·3	988·1	83·5	82·6	88	81	9·5	10·9	76	91	4	6	4	3	9	10	3·1	4·1	—	—	—	—	∞ *a*.
24	987·5	986·3	84·7	87·4	89	82	12·2	15·3	89	94	4	4	4	3	0	10	2·5	0·1	—	—	—	—	Dull and damp, with ≡⁰.
25	983·1	983·2	87·6	86·7	93	85	15·9	13·6	95	87	12	4	—	1	10	7	0·5	0·2	—	—	—	—	Frequent T throughout.
26	983·3	984·1	88·6	83·8	91	82	13·2	11·5	76	90	*20	4	—	1	9	9	—	6·1	—	—	—	—	∞ ; generally fine.
27	981·2	977·1	87·8	86·8	91	82	13·9	14·6	83	94	4	2	4	2	10●⁰	10	13·0	0·1	—	—	—	—	☈ 11 h.–12 h.
28	966·4	963·1	86·9	84·7	89	84	14·6	12·6	92	92	8	6	16	11	10	10●²	26·2	—	—	—	—	—	Stormy, with ●².
29	964·6	963·9	82·9	83·1	86	83	10 2	11·2	85	91	20	9	20	6	10●	10●	15·5	2·1	—	—	—	—	Stormy, with ●²▲.
30	969·3	975·9	84·2	81·1	87	80	11·5	9·2	86	85	24	5	—	1	10	1	—	1·2	—	—	—	—	Occasional ●⁰ in afternoon.
31	974·4	968·9	83·8	82·7	87	*n* 78	10·2	10·9	79	89	20	7	—	0	9	10●⁰	2·8	1·6	—	—	—	—	Continuous ●⁰ after 16 h.
Means	986·1	986·1	86·5	85 2	90·0	82·3	12·3	12·4	79	87	5·1		3·5		7·9	7·3	91·9	4·14	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·70.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air-Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	—	—	*x*	315	—	—	—	—	—	—	—	2	1	529	19 14	487	11 17	42	55·1	12 20	45·7	8 14	9·4
2	35	190	−400	120	—	—	—	—	—	—	—	2	0	533	16 50	493	11 18	40	52·5	13 9	43·1	6 9	9·4
3	90	230	380	390	—	—	—	—	—	—	—	1	1	**554**	**23 58**	492	11 20	62	53·5	14 23	38·7	23 59	14·8
4	165	430	230	365	—	—	—	—	—	—	—	0	2	**554**	**0 6**	477	11 33	77	**58·1**	**14 55**	36·5	0 23	**21·6**
5	265	330	375	375	330	700	—	—	—	—	2·05	0	2	545	0 24	464	13 48	**81**	53·5	13 39	41·2	7 42	12·3
6	200	365	365	315	600	600	0·00	0·75	0·45	1·65	0·90	0	1	531	20 32	473	11 50	58	50·5	11 59	41·6	8 50	8·9
7	100	85	125	135	—	—	—	—	—	—	—	1	0	536	17 23	476	9 53	60	50·6	12 50	41·3	7 40	9·3
8	85	215	150	255	550	450	1·35	1·05	1·20	1·80	0·75	0	0	529	15 37	484	9 46	45	53·7	13 50	41·4	7 46	12·3
9	160	400	—	355	—	—	—	—	—	—	—	0	0	520	0 2	480	8 52	40	49·5	13 20	40·4	7 21	9·1
10	110	225	165	375	1090	450	0·90	0·95	1·40	2·30	1·35	0	0	517	18 49	476	10 25	41	50·5	13 14	42·9	5 49	**7·6**
11	160	250	135	250	1090	910	0·25	0·70	0·90	1·20	1·00	0	0	517	16 59	476	10 47	41	50·7	12 9	42·4	7 8	8·3
12	240	340	165	175	1090	670	0·35	0·45	0·65	1·10	1·65	1	0	522	15 25	487	10 2	35	50·5	14 20	41·1	7 30	9·4
13	85	380	135	300	—	—	—	—	—	—	—	1	0	514	21 33	487	9 27	**27**	52·5	13 44	42·6	7 8	9·9
14	135	100	200	125	—	—	—	—	—	—	—	0	0	521	14 47	480	10 0	41	55·9	13 49	41·4	8 0	14·5
15	115	350	365	450	1010	970	—	—	—	—	1·15	0	0	515	20 51	478	9 13	37	53·9	12 46	41·7	7 23	12·2
16	265	480	265	480	—	—	—	—	—	—	0·90	0	0	511	21 44	484	11 48	**27**	53·0	14 10	42·4	7 0	10·6
17	255	405	365	350	—	—	—	—	—	—	1·35	0	0	525	18 0	485	13 9	40	54·4	14 14	42·6	8 10	11·8
18	215	250	110	215	670	300	1·05	1·15	1·05	1·10	0·50	1	0	525	18 57	472	12 55	53	52·2	14 0	42·5	5 32	**9·7**
19	175	185	135	*x*±	—	—	—	—	—	—	—	2	0	519	19 3	470	12 28	49	53·3	13 23	42·5	7 50	10·8
20	250	330	165	135	—	—	—	—	—	—	—	0	1	514	0 3	471	10 15	43	52·5	14 49	40·3	6 20	12·2
21	135	190	135	185	—	—	—	—	—	—	—	1	1	513	14 45	**463**	**11 23**	50	51·4	13 13	41·5	6 5	9·9
22	135	210	100	140	560	500	—	—	—	—	—	1	0	510	20 20	472	11 25	38	50·1	13 25	42·4	7 40	7·7
23	110	265	200	250	700	450	0·35	1·20	0·75	1·50	1·30	1	0	507	23 31	477	9 24	30	52·7	13 45	41·5	8 5	11·2
24	210	315	115	250	—	—	—	—	—	—	—	0	0	511	20 6	474	10 40	37	52·4	13 13	42·0	7 40	10·4
25	165	240	115	250	1600	1150	0·35	0·00	0·55	0·65	0·90	0	0	524	17 21	466	10 37	58	52·4	14 8	40·5	**7 48**	11·9
26	150	230	125	175	1180	730	0·65	0·35	1·05	1·30	1·30	0	1	518	0 8	481	10 25	37	52·3	13 0	41·3	5 26	11·0
27	90	315	175	355	—	—	—	—	—	—	—	1	1	511	16 15	465	11 3	46	50·3	13 **22**	41·4	5 19	8·9
28	110	200	*x*±	85	—	—	—	—	—	—	—	2	0	509	22 20	482	8 19	**27**	51·8	12 23	43·5	6 58	8·3
29	150	85	250	315	—	—	—	—	—	—	—	1	0	510	20 8	481	9 19	29	50·4	11 55	41·2	7 5	9·2
30	185	275	160	215	1090	1000	0·75	0·40	1·20	1·90	1·05	0	0	510	11 46	480	8 57	30	52·4	14 0	43·4	6 17	9·0
31	215	340	215	250	—	—	—	—	—	—	—	1	2	537	18 15	479	7 23	58	52·7	13 33	**33·2**	**22 21**	19·5
M.	160	275	181	266	—	—	—	—	—	—	—	—	—	522	—	478	—	44	52·4	—	41·4	—	11·0

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3ʰ, 9ʰ, 15ʰ, 21ʰ, are given in the table. A similar note applies to the values in Table 6.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air-Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component.			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.															
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	265	229	143	129	—	—	—	—	—	—	—	2 *c*	1	19 12	1038	973	12 11	14 0	261	199	9 32				
2	157	150	21	100	—	—	—	—	—	—	—	0 *a*	0	18 7	1039	989	12 3	16 2	253	202	6 45				
3	50	129	100	179	—	—	—	—	—	—	—	0 *a*	1	23 52	1070	988	11 17	15 5	268	185	24 0				
4	114	114	186	279	—	—	—	—	—	—	—	0 *a*	2	0 5	1072	967	13 44	**14 52**	**284**	170	0 22				
5	250	129	150	565	—	—	—	—	—	—	—	0 *a*	2	17 35	1053	**953**	**14 46**	13 12	258	188	8 40				
6	450	—	172	551	—	—	—	—	—	—	—	0 *a*	1	20 30	1047	998	11 48	15 44	250	197	9 17				
7	486	—	179	229	—	—	—	—	—	—	—	0 *a*	1	17 39	1054	988	10 48	17 14	248	195	8 48				
8	—	—	129	172	—	—	—	—	—	—	—	1 *a*	1	15 37	1040	980	11 51	13 47	259	200	7 52				
9	179	—	200	114	—	—	—	—	—	—	—	0 *a*	1	18 25	1038	986	11 53	13 45	237	187	8 40				
10	114	114	107	29	—	—	—	—	—	—	—	1 *a*	0	18 2	1038	986	10 38	14 23	241	200	5 47				
11	79	79	172	21	—	—	—	—	—	—	—	1 *a*	0	16 55	1036	995	10 59	14 55	237	200	7 7				
12	222	179	215	122	—	—	—	—	—	—	—	0 *a*	1	19 58	1037	1001	11 15	15 16	248	195	6 50				
13	486	93	122	200	—	—	—	—	—	—	—	0 *a*	1	21 22	1037	1002	9 30	12 36	256	202	7 9				
14	86	114	122	164	—	—	—	—	—	—	—	0 *a*	1	18 8	1046	992	12 16	13 48	271	197	8 6				
15	136	157	186	300	—	—	—	—	—	—	—	0 *a*	0	20 48	1033	990	11 43	13 44	259	195	7 23	Instrument out of order.			
16	359	143	72	72	—	—	—	—	—	—	—	1 *a*	1	18 24	1039	996	12 23	14 37	250	196	7 0				
17	93	93	107	229	—	—	—	—	—	—	—	1 *a*	1	18 0	1058	994	13 10	14 10	264	203	8 0				
18	436	179	164	193	—	—	—	—	—	—	—	0 *a*	0	20 44	1049	985	12 50	15 20	241	198	5 50				
19	343	293	93	43	—	—	—	—	—	—	—	1 *a*	1	19 0	1046	988	12 38	14 0	260	197	7 50				
20	43	136	164	200	—	—	—	—	—	—	—	0 *a*	1	22 33	1044	987	13 31	14 47	258	193	6 25				
21	129	143	143	222	—	—	—	—	—	—	—	0 *a*	1	14 43	1041	978	11 23	14 41	250	194	8 3				
22	143	86	136	186	—	—	—	—	—	—	—	0 *a*	1	0 0	1034	985	11 25	16 2	244	199	6 10				
23	100	150	150	114	—	—	—	—	—	—	—	0 *a*	1	{5 10 / 22 35}	1031	992	11 0	14 11	254	196	8 42				
24	57	129	122	129	—	—	—	—	—	—	—	1 *b*	0	21 50	1033	991	11 26	14 40	247	198	9 0				
25	379	164	*x*	93	—	—	—	—	—	—	—	2 *b*	1	17 20	1052	990	10 46	14 56	252	193	9 2				
26	315	157	136	172	—	—	—	—	—	—	—	0 *a*	1	18 14	1041	996	15 42	15 20	256	192	5 27				
27	72	114	265	350	—	—	—	—	—	—	—	2 *b*	1	16 8	1040	982	10 57	14 39	244	187	5 18				
28	150	*x*	114	−1080	—	—	—	—	—	—	—	2 *c*	1	18 33	1035	998	10 42	13 17	244	206	9 40				
29	143	*x*	—	43	—	—	—	—	—	—	—	2 *c*	0	20 13	1038	999	10 39	13 3	239	190	5 6				
30	193	107	136	257	—	—	—	—	—	—	—	1 *a*	1	19 10	1032	992	12 36	13 58	250	205	6 27				
31	186	—	186	36	—	—	—	—	—	—	—	1 *a*	2	**19 3**	**1076**	1000	10 17	18 13	261	**136**	**22 18**				
M.	184	140	140	185	—	—	—	—	—	—	—	—	—	—	1044	988	—	—	253	193	—	—	—	—	—

x Indeterminate.

An explanation of the Headings of the columns is given in the Preface.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		Hrs.	Min.
																	V.		
1	...	1·8	9·4	...	...	1·8	9·8	...	...	4·5	3·1	...	...	8·1	5·4	...	13·9	22	30
2	...	9·8	1·8	...	...	6·7	4·5	...	...	5·8	4·0	...	...	8·5	3·6	...	14·8	18	25
3	...	9·4	...	1·8	...	7·6	...	3·1	...	8·9	...	5·8	...	6·7	...	6·7	14·3	18	5
4	...	4·0	...	4·0	...	4·0	...	1·8	...	5·4	...	0·9	...	5·8	...	2·2	?	...	
5	...	2·7	...	1·8	0·5	...	...	0·5	...	...	...	4·0	...	1·8	..	3·1	?	...	
6	...	0·5	...	3·1	...	0·9	...	5·4	...	0·9	...	2·2	...	0·5	...	...	7·6	10	10
7	...	...	...	1·8	...	2·2	2·2	...	...	0·9	2·2	...	5·8	...	4·0	...	13·0	20	45
8	6·7	...	2·7	...	1·3	...	7·2	...	7·6	...	3·1	...	3·1	...	3·1	...	17·0	4	50
9	0·9	..	0·9	...	5·4	...	2·2	...	3·6	...	2·7	...	4·9	...	...	2·2	11·2	11	10
10	6·7	...	...	...	7·6	...	...	...	9·8	...	...	...	6·7	...	1·3	...	15·7	13	5
11	..	1·8	2·7	...	...	0·5	0·5	...	...	3·6	...	2·7	6·3	...	...	1·3	11·6	23	30
12	6·7	...	...	1·3	6·7	...	...	...	4·5	...	...	...	...	...	4·9	...	13·4	6	35
13	...	5·4	3·6	...	...	6·3	2·7	...	...	5·4	0·9	...	...	3·6	0·9	...	11·6	5	55
14	...	4·9	0·9	...	...	4·5	1·8	...	...	3·1	1·3	...	...	3·1	1·3	...	8·1	7	10
15	...	3·1	1·3	...	...	4·5	0·9	...	...	4·5	...	...	...	4·0	0·9	...	7·2	20	5
16	...	4·0	0·9	...	...	0·9	...	2·2	...	2·7	1·3	...	...	2·2	0·9	...	9·8	10	25
17	...	1·8	0·9	...	...	4·0	...	4·0	...	7·2	...	...	...	6·7	...	...	11·2	23	55
18	...	10·3	1·8	...	...	8·1	3·6	...	...	10·7	2·2	...	...	8·1	3·6	...	15·2	18	30
19	...	5·4	...	...	...	8·1	1·8	...	...	6·3	2·7	...	...	8·5	1·8	...	15·2	22	35
20	...	10·3	4·5	...	...	9·8	...	...	...	4·9	0·9	...	...	4·0	...	...	15·2	1	40
21	...	5·4	2·2	...	...	3·1	...	1·8	...	4·0	...	4·0	...	3·6	...	8·5	14·3	21	55
22	...	9·4	...	1·8	...	1·3	...	7·2	...	1·3	...	7·6	...	1·8	...	8·1	13·9	0	25
23	...	...	...	6·7	...	0·9	...	4·9	0·9	...	...	4·5	...	...	...	6·3	10·3	0	45
24	0·9	...	...	4·0	0·9	...	...	3·6	2·2	...	...	1·3	0·9	...	...	1·3	10·3	17	40
25	0·5	...	...	1·8	3·1	...	...	3·1	4·5	...	...	0·9	2·7	...	0·9	...	10·3	11	15
26	3·1	...	0·5	...	5·8	...	...	...	4·0	...	1·8	...	1·3	...	0·9	...	9·8	9	10
27	...	0·9	...	4·5	...	1·3	...	5·8	1·3	...	0·5	...	...	0·9	0·9	...	8·9	8	20
28	...	2·2	5·8	...	6·7	...	4·5	...	9·4	...	4·0	...	4·9	...	4·9	...	17·0	16	30
29	5·4	...	3·6	...	7·2	...	7·2	...	10·3	...	4·5	...	10·7	...	4·5	...	19·7	20	40
30	...	...	12·1	...	...	1·8	10·3	...	4·5	...	6·7	...	1·3	...	5·8	...	16·5	5	0
31	1·8	...	3·1	...	3·1	...	0·5	...	...	0·9	...	3·6	...	12·5	4·9	...	19·2	21	5
S+N & W+E	125·8		91·3		126·6		103·1		143·6		79·4		139·0		94·2				
S−N & W−E	−60·4		26·1		−30·0		16·3		−18·4		4·4		−41·8		14·8				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	...	4·5	...	1·8	...	7·2	...	...	...	8·5	3·6	...	...	11·2	4·5	...	9·5	21
2	...	12·5	4·9	...	...	14·8	6·3	...	...	11·6	4·9	...	...	7·2	3·1	...	12·8	9
3	...	5·4	2·2	...	...	7·2	...	...	...	5·8	2·2	...	...	2·2	2·2	...	5·6	9
4	...	...	2·7	...	...	0·5	2·7	..	1·3	...	...	1·3	...	1·8	4·5	...	4·6	17
5	...	3·1	2·2	...	...	2·7	0·9	...	...	1·3	...	2·7	1·3	...	...	3·1	3·9	2
6	2·7	...	...	0·9	2·7	...	...	2·7	4·5	...	...	1·8	3·1	...	...	2·2	5·6	23, 24
7	4·5	...	...	4·5	1·8	...	...	0·9	4·9	...	...	2·2	1·3	...	...	2·7	5·9	1
8	4·9	...	...	4·9	5·8	...	...	5·8	2·2	...	11·2	...	2·7	...	...	0·9	8·9	15
9	4·5	...	...	...	8·1	...	1·8	...	8·9	...	...	3·6	4·9	...	...	...	7·9	15
10	5·8	...	...	2·2	11·2	...	...	7·6	12·1	...	...	4·9	1·3	...	3·1	...	14·4	11
11	1·8	...	...	...	7·2	...	...	...	4·5	...	...	1·8	6·3	...	...	6·3	7·2	21
12	3·1	...	...	3·1	6·3	...	...	2·7	8·1	...	...	5·4	4·9	...	...	2·2	8·9	17
13	...	3·1	7·2	...	...	4·9	4·9	...	...	4·5	...	...	...	0·9	...	2·2	5·9	3
14	0·5	...	...	1·8	4·0	...	...	1·8	2·7	...	...	0·9	...	1·8	...	...	4·3	11
15	0·9	...	2·2	...	...	...	5·4	...	...	3·6	3·6	...	...	1·3	1·3	...	4·6	10, 11
16	...	0·9	0·9	...	...	0·5	0·5	...	1·3	...	...	1·3	..	3·1	...	...	3·0	22, 23
17	...	2·7	0·9	...	0·9	...	2·2	...	...	1·3	7·2	...	...	1·3	7·2	...	7·2	17
18	...	5·8	2·2	...	...	10·7	2·2	...	...	10·3	...	...	...	8·9	3·6	...	9·5	17, 18
19	...	10·7	4·5	...	...	12·1	...	...	...	10·7	...	...	...	5·8	2·2	...	10·2	10, 11, 12
20	...	4·9	0·9	...	...	5·8	1·3	...	...	4·9	...	...	...	1·3	...	0·9	5·9	8
21	...	3·6	...	...	...	4·5	...	1·8	...	2·2	...	2·2	...	4·9	...	...	3·9	9, 19, 21
22	...	4·0	...	...	...	5·8	...	2·2	...	9·8	...	...	...	5·8	...	1·3	7·9	15
23	...	6·7	...	2·7	...	5·8	...	5·8	...	2·7	...	2·7	...	1·8	...	1·8	6·9	5
24	...	0·5	...	0·5	3·6	...	...	3·6	3·1	...	...	7·2	1·8	...	...	4·5	6·2	13
25	2·2	...	...	5·4	3·1	...	...	7·2	1·8	...	...	9·4	3·1	...	...	8·1	7·9	16
26	1·8	...	...	4·0	2·7	...	...	0·9	1·8	...	0·9	...	0·9	...	2·7	...	4·6	1
27	0·9	...	1·8	...	3·1	...	0·5	...	1·3	...	...	1·8	...	3·1	...	7·6	6·6	24
28	...	2·2	...	4·9	...	4·0	...	4·9	...	4·5	...	10·7	2·7	...	...	6·7	9·5	13
29	7·2	...	...	7·2	10·3	...	...	1·8	10·3	...	1·8	...	6·3	...	...	1·3	9·2	1, 10, 13
30	2·7	...	...	0·5	3·1	...	1·3	...	3·1	...	7·6	...	3·1	...	4·5	...	7·2	14
31	5·4	...	2·2	...	8·1	...	1·8	...	7·2	...	...	3·1	0·9	...	...	0·5	7·5	13
S+N & W+E	119·5		79·2		168·5		86·0		160·8		106·0		107·0		91·2			
S−N & W−E	−21·7		−9·6		−4·5		−22·4		−2·6		−20·0		−17·8		−13·4			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		Hrs.	Min.
																	V.		
1	...	7·2	7·2	...	...	7·2	7·2	...	...	8·1	5·4	...	...	8·5	8·5	...	16·5	17	0
2	...	8·1	5·4	...	...	7·2	3·1	...	...	6·3	...	...	...	5·4	3·6	...	13·9	1	10
3	...	5·4	...	...	...	8·1	1·8	...	...	8·1	...	...	...	5·4	...	2·2	10·7	8	15
4	...	0·9	...	3·6	...	...	...	4·9	...	1·8	...	4·5	...	...	...	3·1	8·5	9	5
5	...	...	...	3·1	...	...	...	6·7	...	0·9	...	4·0	...	3·1	...	3·1	9·4	12	45
6	...	2·7	...	4·0	...	3·1	...	3·1	...	1·8	...	1·8	...	4·9	2·2	...	8·5	23	55
7	...	5·4	5·4	...	...	3·1	4·9	...	2·2	...	4·9	...	3·1	...	4·5	...	10·7	4	5
8	4·9	...	4·9	...	...	1·3	0·5	...	...	1·8	1·8	...	...	...	...	...	11·6	6	40
9	...	0·9	0·9	...	3·1	...	...	4·9	6·7	...	...	...	4·9	...	...	...	10·3	13	35
10	6·3	...	1·3	...	6·7	...	...	...	4·5	...	4·5	...	6·7	...	2·7	...	9·8	10	30
11	4·9	..	3·1	...	4·0	...	...	...	5·8	...	...	...	5·8	...	...	1·3	9·8	17	35
12	8·9	...	...	1·8	5·4	...	...	...	...	3·1	3·1	...	...	3·1	3·1	...	12·1	5	50
13	...	2·7	2·7	...	...	4·9	...	...	...	5·4	...	...	...	5·8	2·2	...	12·1	23	10
14	...	5·8	4·0	...	...	6·3	...	...	...	6·7	...	...	...	6·7	...	...	12·5	10	30
15	...	3·1	...	1·3	...	3·1	...	2·2	...	4·5	...	4·5	...	1·8	...	1·8	8·5	13	50
16	...	0·9	...	2·7	...	3·6	...	3·6	...	2·2	...	3·1	..	3·1	...	3·1	8·1	9	25
17	...	1·8	...	1·8	...	3·6	...	3·6	...	5·4	...	3·6	...	5·8	...	2·2	8·9	14	35
18	...	8·1	...	3·6	...	7·2	...	1·3	...	8·9	...	1·8	...	4·0	...	...	13·4	15	0
19	...	7·2	...	1·3	...	4·0	...	0·9	...	8·1	3·1	...	...	5·4	...	...	10·3	23	10
20	...	7·2	3·1	...	...	8·5	3·6	...	*	*	*	*	...	6·7	2·7	...	15·7	7	0
21	...	5·8	...	...	...	4·9	2·2	...	...	3·6	3·6	...	...	1·3	1·3	...	9·4	10	20
22	...	1·8	1·8	...	...	0·9	0·9	...	...	1·3	0·5	...	...	...	...	...	5·4	1	20
23	...	0·9	1·8	...	3·6	...	...	1·3	5·4	...	...	3·6	7·6	...	...	5·4	15·7	18	5
24	8·5	...	...	5·8	9·4	...	...	4·0	9·4	...	...	6·3	7·6	...	...	5·4	16·1	15	25
25	6·3	...	...	...	4·5	...	1·8	...	5·4	...	2·2	...	4·5	...	1·8	...	12·1	7	50
26	4·5	...	...	...	4·0	...	...	...	5·4	...	...	2·2	2·2	...	...	4·9	10·7	17	5
27	6·7	...	...	6·7	1·3	...	0·9	...	0·0	...	0·5	...	0·5	...	1·3	...	13·9	4	40
28	...	...	5·4	...	2·2	...	4·9	...	5·4	...	5·4	...	...	...	10·3	...	17·0	19	40
29	4·5	...	10·3	...	4·5	...	10·7	...	4·0	...	9·8	...	3·1	...	7·2	...	20·1	12	10
30	...	...	7·6	...	...	4·0	4·0	...	...	2·7	6·7	...	0·5	...	3·1	...	13·0	1	5
31	4·9	...	...	0·9	2·2	...	10·7	...	5·8	...	8·5	...	...	5·4	13·0	...	19·7	17	45
S+N & W+E	136·3		101·5		131·9		93·7		140·7		95·4		122·9		100·0				
S−N & W−E	−15·5		28·3		−30·1		20·7		−20·7		24·6		−29·9		35·0				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		Hrs.	Min.
																	V.		
1	0·5	...	2·2	...	...	...	3·6	...	0·9	...	...	1·3	0·5	...	1·3	...	5·8	12	50
2	...	1·3	1·3	...	...	3·1	3·1	...	0·9	...	4·9	...	2·7	...	1·3	...	8·5	16	35
3	2·7	...	2·7	...	...	...	...	8·2	...	3·1	...	4·5	...	4·9	...	4·9	9·4	7	40
4	...	4·3	...	...	...	1·3	6·7	...	...	5·2	...	...	...	4·9	...	3·1	9·4	10	30
5	...	5·4	...	3·6	...	4·9	...	4·9	...	6·7	...	6·7	...	5·4	...	8·1	11·6	22	35
6	...	3·6	...	8·5	...	3·6	...	8·5	...	5·8	...	5·8	...	2·7	...	2·7	10·7	2	20
7	...	...	...	3·6	1·8	...	1·8	...	...	...	5·6	...	0·9	...	0·9	...	8·1	14	15
8	0·5	...	3·1	...	2·7	...	2·7	...	1·8	...	4·5	...	0·5	...	1·8	...	10·3	13	0
9	...	1·3	...	...	...	2·2	...	0·9	...	...	...	6·2	2·2	...	...	5·8	8·5	23	15
10	1·8	...	...	0·9	3·3	...	...	...	5·4	...	...	2·2	2·7	...	...	0·5	10·3	13	40
11	2·7	...	1·8	...	2·7	...	1·8	..	6·3	...	...	2·7	4·5	...	...	1·8	11·6	14	5
12	2·7	...	...	1·3	1·3	...	...	2·7	1·8	...	...	1·8	3·6	...	...	0·9	7·6	23	25
13	0·9	...	...	0·5	...	5·6	...	...	...	3·1	...	1·3	...	5·2	...	...	10·7	10	45
14	...	0·5	1·8	...	...	2·7	...	0·9	...	0·9	...	1·3	...	2·2	...	1·3	6·3	6	5
15	0·9	...	...	1·8	...	1·8	...	1·8	...	2·7	...	2·7	...	2·7	...	1·3	6·7	0	35
16	...	1·8	...	4·0	...	2·2	...	4·9	...	2·7	...	4·0	...	3·6	...	2·7	8·1	24	20
17	...	4·6	...	...	...	4·9	...	...	...	7·5	...	..	...	4·6	...	...	11·2	5	5
18	...	4·9	...	2·2	...	4·9	...	2·2	...	5·4	...	0·9	...	3·1	2·2	...	12·5	17	30
19	...	2·7	3·6	...	...	3·1	2·2	...	...	3·9	...	...	...	2·3	...	...	10·3	17	50
20	...	1·6	...	...	...	3·0	...	...	...	2·2	...	0·9	...	0·0	...	0·0	6·3	8	15
21	1·0	...	...	...	0·5	...	1·3	..	2·2	...	...	2·2	0·5	...	0·9	...	5·4	14	25
22	...	1·3	...	...	...	4·0	...	4·0	...	2·7	...	3·6	...	2·2	...	4·9	6·7	20	1
23	...	2·2	...	4·9	...	0·5	...	3·1	...	2·2	...	5·8	...	3·1	...	7·2	11·6	22	20
24	0·5	...	...	3·1	1·3	...	...	3·6	1·3	...	...	2·7	...	0·9	...	4·9	13·4	23	15
25	0·5	..	1·8	...	3·6	...	...	5·4	2·7	...	...	1·3	3·1	...	1·8	...	8·5	14	45
26	0·9	...	2·7	...	1·3	...	3·1	...	6·7	...	...	2·7	4·0	..	...	4·0	11·2	14	25
27	...	...	...	9·8	...	2·2	...	5·4	5·4	...	...	6·3	4·5	...	...	3·1	12·5	0	40
28	7·6	...	...	4·9	7·5	...	...	...	8·1	...	1·8	...	5·4	...	0·9	...	17·4	13	45
29	4·0	...	2·7	...	6·7	...	2·7	...	5·8	...	2·2	...	6·3	...	2·7	...	18·3	12	55
30	3·6	...	2·7	...	4·9	...	4·9	...	2·7	...	3·6	...	1·3	...	0·9	...	14·3	8	55
31	0·9	...	2·7	...	4·5	...	1·8	...	7·6	...	...	3·1	4·5	...	1·8	...	16·5	18	0
S+N & W+E	67·2		78·2		92·1		92·2		113·7		92·6		95·0		73·7				
S−N & W−E	−3·8		−20·0		−7·9		−20·8		5·5		−47·4		−0·6		−40·7				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time. * Inspection.

† Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.

‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8.

§ Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
BRIGHTON. K. 43. June 30. 10 h. 0 m. to 11 h. 30 m. G.M.T.										
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	...	...	...	...	...	...	...	...	...	Overcast, St., clouds just reached.
	...	...	...	...	...	...	...	...	...	
	500	953·3	282	11·2	95	10·8	1·173	240	8	
100 m. above ground	215	986·4	285·2	23	90	12·7	1·199	250	8	
Ground level	115	998·1	287·5		85	13·8	1·203	250	6	
Computed for M.S.L.	0	1011·8	...	...	...	...	...	275	5·8	...
BRIGHTON. K. 44. July 28. 9 h. 30 m. to 11 h. 40 m. G.M.T.										
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	1200	870·8	279·6	3·0	95	9·2	1·081	?	16·5	Overcast, Cu.-st., Lowest clouds 500 m. above sea.
	1000	892·2	280·2	5·6	95	9·6	1·105	230	16·5	
	500	947·6	283	15	100	12·2	1·161	235	15	
100 m. above ground	215	980·4	287	26	90	14·2	1·184	230	15	
Ground level	115	992·0	289·6		80	15·0	1·187	230	7·6	
Computed for M.S.L.	0	1005·4	...	...	...	...	...	230	13·3	...

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

1912. July 1. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT	15·7 km.	113 mb.	231° A.
LOWEST TEMPERATURE	9·8 km.	...	224° A.
BASE OF STRATOSPHERE	9·8 km.	274 mb.	224° A.
Type	No. 1.		

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.)	1012 mb.	1013 mb.
TEMPERATURE,	285° A.	287° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	320°	335°
Velocity,	9·5 m/s.	5·6 m/s.
Correction for Curvature,	−0·8 m/s.	−0·2 m/s.
Final Components, W. to E.	5·6 m/s.	2·3 m/s.
Final Components, S. to N.	−6·7 m/s.	−4·9 m/s.

SOUNDING No., R 185.
PLACE, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . 1° 1′ W.
Height above M.S.L., . 150 m.
PLACE OF FALL, Fulmer.
Distance, ... 32 km.
and Orientation, . . . 106°.

TABLE OF HEIGHTS, PRESSURES, TEMPERATURES, HUMIDITIES, AND WINDS.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Humidity.	Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
15	127	231	−0·5	...	...	...	...	...	...	Good trace. Slightly duplicated in places.
14	146	230·5	0	...	...	...	...	...	...	
13	170	230·5	−0·5	...	...	...	...	...	...	Overcast. Lost in clouds going east. Also high layer of clouds.
12	197	230		...	...	...	...	...	...	
11·9	200	...	0	...	...	...	...	...	...	
11	229	230	−6	...	...	...	...	...	...	Isothermal 2·7 to 3·1 km. at 268°, and also 5·3 to 5·6 km. at 253°.
10	266	224		...	...	...	...	...	...	
9·18	300	...	+6	...	...	...	...	...	...	
9	308	230	7	...	...	...	...	...	...	
8	356	237		...	...	...	...	...	...	
7·16	400	...	7	...	...	...	...	...	...	
7	...	244	6	...	...	...	...	...	...	
6	470	250		...	...	...	...	...	...	
5·56	500	...	5	...	...	...	...	...	...	
5	538	255	8	...	...	...	...	...	...	
4·17	600	...		...	...	...	...	...	...	
4	612	263	5	...	...	...	...	...	...	
3	697	268		...	...	...	...	...	...	
2·96	700	...	6	...	...	...	...	...	...	
2	790	274		...	...	...	...	...	...	
1·93	800	...	6	...	...	...	...	...	...	
1	893	280		...	...	...	...	...	...	
·95	900	...	5	...	...	...	...	...	...	
Ground M.S.L.	992	285	...	...	...	...	...	...	...	
	...	...	...	...	...	...	...	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

1912. July 1.	7 h. 0 m. G.M.T.		
	Height above M.S.L.	Pressure.	Temp.
Greatest Height	10·6 km.	? mb.	? ° A.
Lowest Temperature	8·0 km.	352 mb.	233° A.
Base of Stratosphere	...	...	...
Type	No. ?.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	1012 mb.	1015 mb.
Temperature,	285° A.	285° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	355°.	15°.
Velocity,	9·6 m/s.	13·6 m/s.
Correction for Curvature,	−0·5 m/s.	− 1·0 m/s.
Final Components, W. to E.	0·8 m/s.	− 3·3 m/s.
Final Components, S. to N.	−9·1 m/s.	−12·2 m/s.

Sounding No., **R.** 194.
Place, CRINAN, N.B.
Latitude, . . . 56° 5′ N.
Longitude, . . . 5° 31′ W.
Height above M.S.L., . . 5 m.
Place of Fall, In Sea. Found.
Distance, ... 145 km.
and
Orientation, . . . 160°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
10·0	262	?	...	...	...	...	...	...	...	Influenced by solar radiation above 8·0 km.
...	300	...	...	...	...	...	...	...	...	
9·0	305	?	...	...	...	...	...	...	...	Outer case completely corroded away by sea water.
8·0	352	233	...	...	...	...	...	...	...	
...	400	...	+7	...	...	...	...	...	...	At Crinan the observations were made with one theodolite. The instrument hangs 12 metres below the balloon, and the angle subtended between the balloon and the instrument is used to calculate the ascensional velocity, assumed to be uniform.
7·0	407	240	6	...	...	...	...	...	...	
6·0	468	246		...	...	...	...	..	...	
...	500	...	9	...	...	...	...	...	...	
5·0	536	255	6	...	...	...	...	...	...	
...	600	...		...	...	...	...	...	...	Balloon entered clouds after 2 minutes.
4·0	613	261	6	...	...	...	...	...	...	
3·0	697	267		...	...	...	...	...	...	
...	700	...	6	...	...	...	...	...	...	
2·0	790	273	...	...	...	...	...	...	...	
...	800	...	5	...	...	...	...	...	...	
1·0	894	278	...	...	...	...	...	...	...	
...	900	...	6	...	...	...	...	...	...	
Ground M.S.L.	1011 ...	284 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	

1912. July 1.	20 h. 5 m. G.M.T.		
	Height above M.S.L.	Pressure.	Temp.
Greatest Height	11·2 km.	218 mb.	229° A.
Lowest Temperature	9·6 km.	277 mb.	222° A.
Base of Stratosphere	9·6 km.	207 mb.	222° A.
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	1010 mb.	1012 mb.
Temperature,	285° A.	286° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	325°.	335°.
Velocity,	10·6 m/s.	5·9 m/s.
Correction for Curvature,	−0·8 m/s.	−0·3 m/s.
Final Components, W. to E.	5·6 m/s.	2·4 m/s.
Final Components, S. to N.	−8·0 m/s.	−5·1 m/s.

Sounding No., **R.** 10.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 40 m.
Place of Fall, Frodsham, Cheshire.
Distance, ... 39 km.
and
Orientation, . . . 232°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
11·0	224	229	−4	...	...	...	...	...	...	The up and down traces were separate, but differed by less than 4°.
10·0	258	225	3	...	...	...	...	...	...	
9·1	300	227·5	7	...	...	...	...	...	...	
8·0	351	235	6	...	...	...	...	...	...	Average taken.
7·1	400	240	5	...	...	...	...	...	...	
6·0	466	246		...	...	...	...	...	...	
5·5	500	250	9	...	...	...	...	...	...	
5·0	534	255	6	...	...	...	...	...	...	
4·2	600	260	7	...	...	...	...	...	...	
3·0	700	268	4	...	...	...	...	...	...	
1·9	800	273·5	7	...	...	...	...	...	...	
1·0	900	279·5	6·5	...	...	...	...	...	...	
0·1	...	...		...	...	...	...	...	...	
Ground M.S.L.	1007 1010	286 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ..	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

1912. July 2. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	13·9 km.	150 mb.	235° A.
Lowest Temperature	9·7 km.	...	222° A.
Base of Stratosphere	9·7 km.	285 mb.	222° A.
	9·9 km.	276 mb.	224° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	1015 mb.	1013 mb.
Temperature,	285° A.	285° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	350°	320°
Velocity,	7·4 m/s.	12·3 m/s.
Correction for Curvature,	−0·6 m/s.	−1·8 m/s.
Final Components, W. to E.	1·2 m/s.	6·8 m/s.
Final Components, S. to N.	−6·7 m/s.	−8·0 m/s.

Sounding No., R. 187.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L. . . 150 m.
Place of Fall, Andover.
Distance, and Orientation, . . . 56 km. 214°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
13	172	?	...	...	...	...	...	...	...	Lost at once in clouds going S.S.E.
12	197	232 228	...	...	...	...	...	...	...	
11·98	200	...		...	...	...	...	...	...	
11	228	228 226	−4 −2	...	...	...	...	...	...	Upper part influenced probably by solar radiation.
10	266	224 223	−4 −3	...	...	...	...	...	...	
9·21	300	...	6 3	...	...	...	...	...	...	
9	308	230 226		...	...	...	...	...	...	
8	355	237 233	7 7	...	...	...	...	...	...	
7·20	400	...	8 9	...	...	...	...	...	...	
7	411	245 242		...	...	...	...	...	...	
6	482	250 247	5 5	...	...	...	...	...	...	
5·56	500	...	7 6	...	...	...	...	...	...	
5·0	539	257 253	6 8	...	...	...	...	...	...	
4·20	600	...		...	...	...	...	...	...	
4·0	615	263 261	7 6	...	...	...	...	...	...	
3·0	698	270 267	...	...	...	...	...	...	...	
3	700	...	6 6	...	...	...	...	...	...	
2·0	791	276 273	...	...	...	...	...	...	...	
1·93	800	...	3 4	...	...	...	...	...	...	
1·0	895	279 277	...	...	...	...	...	...	...	
·98	900	...	5 7	...	...	...	...	...	...	
Ground M.S.L.	990	284	..	...	...	...	...	...	...	
	...	...	...	...	...	...	...	...	...	

1912. July 2. 20 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	19·1 km.	64 mb.	226° A.
Lowest Temperature	10·2 km.	254 mb.	225° A.
Base of Stratosphere	10·2 km.	254 mb.	225° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	1013 mb.	1014 mb.
Temperature,	286° A.	287° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	360°	5°
Velocity,	9·0 m/s.	15·7 m/s.
Correction for Curvature,	−0·8 m/s.	− 3·0 m/s.
Final Components, W. to E.	0 m/s.	− 1·1 m/s.
Final Components, S. to N.	−8·2 m/s.	−12·7 m/s.

Sounding No., R. 11.
Place, MANCHESTER.
Latitude, . . . 53° 28′ N.
Longitude, . . . 2° 14′ W.
Height above M.S.L., . . 40 m.
Place of Fall, Newbridge on Wye.
Distance, and Orientation, . . . 158 km. 210°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
19·0	65	226		...	...	...	...	...	...	
18·0	76	226	0	...	..	...	...	...	...	Double trace from 3 to 8 km.
17·0	89	226	0	...	..	...	...	...	...	
16·2	100	227	1	...	...	...	...	...	...	
15·0	121	227·5	0·5	...	...	...	...	...	...	From 0 to 4 degrees apart.
14·0	143	228	0·5	...	...	...	...	...	...	
13·0	168	228·5	0·5	...	...	...	...	...	...	
12·0	194	228	−0·5	...	...	...	...	...	...	
11·75	200	228	...	...	...	...	...	...	...	
11·0	224	227	−1	...	...	...	...	...	...	
10·0	263	225·5	−1·5	...	...	...	...	...	...	
9·1	300	232	7	...	...	...	...	...	...	
8·0	355	240	7	...	...	...	...	...	...	
7·2	400	246	5	...	...	...	...	...	...	
6·0	472	254·5	6	...	...	...	...	...	...	
5·6	500	257·5	6·5	...	...	...	...	...	...	
5·0	542	261	6	...	...	...	...	...	...	
4·2	600	265·5	5	...	...	...	...	...	...	
3·0	700	271·5	5	...	...	...	...	...	...	
1·9	800	277	6	...	...	...	...	...	...	
0·9	900	283	3	...	...	...	...	...	...	
Ground M.S.L.	1008	285·5	...	...	...	...	...	...	...	
	1013	...	...	...	...	...	...	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

1912. July 3. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	16·0 km.	110 mb.	225° A.
Lowest Temperature	13–14 km.	170–149 mb.	223° A.
Base of Stratosphere	10·6 km.	244 mb.	224° A.
	...	...	227° A.
Type	No. 2.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	1021 mb.	1024 mb.
Temperature,	284° A.	286° A.
Vapour Pressure,	...	Station in centre of a wedge of high pressure.
Gradient Wind:—Direction,	50°	
Velocity,	6·4 m/s.	
Correction for Curvature,	+0·5 m/s.	
Final Components, W. to E.	−5·3 m/s.	
Final Components, S. to N.	−4·4 m/s.	

Sounding No., R. 198.
Place, CRINAN, N.B.
Latitude, . . . 56° 5′ N.
Longitude, . . . 5° 31′ W.
Height above M.S.L., . . 5 m.
Place of Fall, Knocknacarry.
Distance, ... 110 km.
and
Orientation, . . . 198°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
16·0	109	225		...	...	...	...	...	...	Very clear trace.
15·0	126	224 227	−1 2	...	...	...	...	...	...	
14·0	149	223 228	−1 1	...	...	...	...	...	...	Inversion 275° to 277° at 1·3 km.
13·0	170	223 228	0 0	...	...	...	...	...	...	
12·0	197	224 227	1 −1	...	...	...	...	...	...	
11·91	200	...	0 0	...	...	...	...	...	...	
11·0	229	224 227	3 2	...	...	...	...	...	...	
10·0	268	227 229		...	...	...	...	...	...	
9·22	300	...	5 5	...	...	...	...	...	...	
9·0	310	232 234	5 5	...	...	...	...	...	...	
8·0	368	237 239		...	...	...	...	...	...	
7·20	400	...	6 6	...	...	...	...	...	...	
7·0	412	243 245	7 7	...	...	...	...	...	...	
6·0	473	250 252		...	...	...	...	...	...	
5·58	500	...	5 6	...	...	...	...	...	...	Balloon lost behind clouds.
5·0	541	255 258	8 7	...	...	29	8·6	−5	−9	
4·21	600	...		...	...	...	..	...	...	
4·0	618	263 265		...	...	49	10·6	−8	−7	
3·02	700	...	9 7	...	...	...	...	...	...	
3·0	702	272	4 1	...	...	37	10·0	−6	−8	
2·0	795	276 273		...	...	45	4·3	−3	−3	
1·95	800	...	3 4	...	...	...	...	...	...	
1·02	900	...		...	...	...	...	...	...	
1·0	902	279 277	6 8	...	...	135	1·4	1	−1	
Ground	1019	285	...	...	...	...	...	...	...	
M.S.L.	1019	285	...	...	...	...	...	...	...	

1912. July 3. 19 h. 55 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	14·6 km.	...	222° A.
Lowest Temperature	9·2 km.	129 mb.	221° A.
Base of Stratosphere	9·2 km.	294 mb.	221° A.
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	1012 mb.	1018 mb.
Temperature,	285° A.	288° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	360°	90°
Velocity,	8·1 m/s.	10·3 m/s.
Correction for Curvature,	−2·9 m/s.	−0·7 m/s.
Final Components, W. to E.	0 m/s.	−9·6 m/s.
Final Components, S. to N.	−5·2 m/s.	0 m/s.

Sounding No., R. 191.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . . 150 m.
Place of Fall, Exeter.
Distance, ... 205 km.
and
Orientation . . . . 240°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
14	146	223		...	...	...	...	...	...	
13	168	224	1	...	...	...	..	...	...	
12	196	223	−1	...	...	...	..	...	...	
11·71	200	...		...	...	...	...	...	...	
11·0	227	224	1	...	...	...	...	...	...	
10·0	262	221	−3	...	...	...	...	...	...	
9·04	300	...		...	...	...	...	...	...	
9·0	306	223	2	...	...	...	...	...	...	
8·0	353	230	7	...	...	...	...	...	...	
7·11	400	...	10	...	...	...	...	...	...	
7·0	408	240		...	...	...	...	...	...	
6·0	470	247	7	...	...	...	...	...	...	
5·52	500	...	7	...	...	...	...	...	...	
5·0	538	254		...	...	...	...	...	...	
4·16	600	...	7	...	...	...	...	...	...	
4·0	614	261		...	...	...	...	...	...	
3·0	698	267	6	...	...	...	...	...	...	
2·97	700	...	6	...	...	...	...	...	...	
2·0	790	273		...	...	...	...	...	...	
1·00	800	...	7	...	...	...	...	...	...	
1·0	892	280		...	...	...	...	...	...	
·93	900	...	6	...	...	...	...	...	...	
Ground	997	286		...	...	...	...	...	...	
M.S.L.	1013	...	...	...	...	...	...	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).—*continued.*

1912. July 5. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	15·8 km.	...	225° A.
Lowest Temperature	11·2 km.	...	221° A.
Base of Stratosphere	11·2 km.	...	221° A.
	11·4 km.	...	225° A.
Type	No. 1.		

From Observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	1026 mb.	1026 mb.
Temperature,	287° A.	287° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	85°.	95°.
Velocity,	9·4 m/s.	12·3 m/s.
Correction for curvature,	0 m/s.	0 m/s.
Final Components, W. to E.	−9·4 m/s.	−12·3 m/s.
Final Components, S. to N.	−0·8 m/s.	1·1 m/s.

Sounding No., R. 193.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . . 1° 1′ W.
Height above M.S.L., . 150 m.
Place of Fall, Dursley.
Distance, ... 90 km.
and
Orientation, . . . 273°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
15·0	129	223 226	−1 2	...	...	...	...	...	...	Lost in three minutes in clouds going W.
14·0	149	222 228	0 −2	...	...	...	...	...	...	
13·0	174	222 226		...	...	...	...	...	...	
12·05	200	...	0 1	...	...	...	...	...	...	Inversions:—277 to 280 from 1·1 to 1·5 km. on one trace and from 1·4 to 1·5 on the other.
12·0	202	222 227	−0·5 −1	...	...	...	...	...	...	
11·0	237	221·5 226	3·5 3	...	...	...	...	...	...	
10·0	274	225 229		...	...	...	...	...	...	
9·35	300	...	7 6	...	...	...	...	...	...	
9·0	316	232 235	5 5	...	...	...	...	...	...	
8·0	365	237 240		...	...	...	...	...	...	
7·36	400	...	6 5	...	...	...	...	...	...	
7·0	420	243 245	8 8	...	...	...	...	...	...	
6·0	480	251 253		...	...	...	...	...	...	
5·70	500	...	7 7	...	...	...	...	...	...	
5·0	548	258 260		...	...	...	...	...	...	
4·32	600	...	8 8	...	...	...	...	...	...	
4·0	626	266 268		...	...	...	...	...	...	
3·12	700	...	6 5	...	...	...	...	...	...	
3·0	711	272 273		...	...	...	...	...	...	
2·05	800	...	6 3	...	...	...	...	...	...	
2·0	804	278 276		...	...	...	...	...	...	
10·08	900	...	2 1	...	...	...	...	...	...	
1·0	908	280 277	6 9	...	...	...	...	...	...	
Ground M.S.L.	1005 1021	286 ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	

1912. July 6. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	15 km.	128 mb.	232° A.
Lowest Temperature	10·1 km.	...	221° A.
Base of Stratosphere	10·1 km.	268 mb.	221° A.
Type	No. 1.		

From observations at Station	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	1019 mb.	1016 mb.
Temperature,	286° A.	288° A.
Vapour Pressure,		
Gradient Wind:—Direction,	Station in col between two anticyclones.	Pressure distribution very irregular.
Velocity,		
Correction for Curvature,		
Final Components, W. to E.		
Final Components, S. to N.		

Sounding No., R. 43.
Place, MUNGRET COLLEGE, LIMERICK.
Latitude, . . . 52° 38′ N.
Longitude, . . 8° 41′ W.
Height above M.S.L., . . 15 m.
Place of Fall, Kilfenora.
Distance, ... 55 km.
and
Orientation, ... 320°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
15	128	232	−3	...	...	...	...	...	...	Isothermal 1·7 to 2·2.
14	148	229	1	...	...	...	...	...	...	
13	173	230		...	...	...	...	...	...	
12·03	200	...	−3	...	...	...	...	...	...	
12	201	227	−3	...	...	...	...	...	...	
11	233	224	−3	...	...	...	...	...	...	
10	272	221		...	...	...	...	...	...	
9·32	300	...	8	...	...	...	...	...	...	
9	316	229	10	...	...	...	...	...	...	
8	363	239		...	...	...	...	...	...	
7·31	400	...	8	...	...	...	...	...	...	
7	417	247	8	...	...	...	...	...	...	
6	480	255		...	...	...	...	...	...	
5·69	500	...	6	...	...	...	...	...	...	
5	547	261		...	...	...	...	...	...	
3·29	600	...	6	...	...	...	...	...	...	
4	623	267	6	...	...	...	...	...	...	
3·09	700	...		...	...	...	...	...	...	
3	707	273	6	...	...	...	...	...	...	
2	797	279		...	...	...	...	...	...	
1·99	800	...	3	...	...	...	...	...	...	
1·02	900	...		...	...	...	...	...	...	
1	902	282		...	...	...	...	...	...	
Ground M.S.L.	1016 ...	... ...	... ...	... ...	.. ...	... ...	... ...	... ...	... ...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).—*continued.*

1912 July 6.	20 h. 35 m. G.M.T.		
	Height above M.S.L.	Pressure.	Temp.
Greatest Height	11·6 km.	...	229° A.
Lowest Temperature	11·6 km.	...	224° A.
Base of Stratosphere	10·8 km.	240 mb.	224° A.
Type	No. 2.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L),	1034 mb.	1016 mb.
Temperature,	285° A.	287° A.
Vapour Pressure,	...	
Gradient Wind:—Direction,	160°	Pressure distribution very irregular.
Velocity,	3·4 m/s.	
Correction for Curvature,	+0·2 m/s.	
Final Components, W. to E.	0 m/s.	
Final Components, S. to N.	3·6 m/s.	

Sounding No., **R.** 202.
Place, CRINAN, N.B.
Latitude, . . . 56° 5′ N.
Longitude, . . 5° 31′ W.
Height above M.S.L., . 5 m.
Place of Fall, Fell in Sea. Found.
Distance, ... 150 km.
and
Orientation, . . . 350°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
11·0	233	224	2	...	...	...	...	...	...	The instrument was a long time in the water and the trace not good.
10·0	270	226		...	...	...	...	...	...	
9·24	300	...	5	...	...	...	...	...	...	
9·0	312	231		...	...	140	11·7	− 4	11	
8·0	361	238	7	...	...	136	12·1	− 5	11	Balloon became too faint to see.
7·26	400	...	8	...	...	...	...	...	...	
7·0	417	246		...	...	142	9·5	− 3	9	
6·0	476	253	7	...	...	151	6·1	− 1	6	
5·62	500	...	8	...	...	...	...	...	...	
5·0	545	261		...	...	146	4·1	− 1	4	
4·27	600	...	7	...	...	...	...	...	...	
4·0	623	268	...	...	...	160	4·0	0	4	
3·09	700	...	6	...	...	...	...	...	...	
3·0	708	274	...	...	...	142	3·2	− 1	3	
2·02	800	...	4	...	...	...	...	...	...	
2·0	802	278	...	...	...	142	3·2	− 1	3	
1·05	900	...	6	...	...	...	...	...	...	
1·0	905	284	4	...	...	133	2·2	− 1	2	
Ground	1016	288	...	...	...	...	...	...	...	
M.S.L.	1016	288	...	...	...	...	...	...	...	

1912. July 4.	20 h. 0 m. G.M.T.		
	Height above M.S.L.	Pressure.	Temp.
Greatest Height	15·7 km.	114 mb.	218° A.
Lowest Temperature	15·7 km.	114 mb.	218° A.
Base of Stratosphere	10·2 km.	...	220° A.
Type	No. 1.		

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	1024 mb.	1026 mb.
Temperature,	286° A.	287° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	45°	70°
Velocity,	8·2 m/s.	7·6 m/s.
Correction for Curvature,	+1·4 m/s.	0 m/s.
Final Components, W. to E.	−6·8 m/s.	−7·1 m/s.
Final Components, S. to N.	−6·8 m/s.	−2·6 m/s.

Sounding No., **R.** 192.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude . . . 1° 1′ W.
Height above M.S.L., . 150 m.
Place of Fall, Near Bath.
Distance, ... 96 km.
and
Orientation, . . . 254°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
15	127	219	1	...	...	...	...	...	...	Isothermal.
14	147	220	−1	...	...	...	...	...	...	1·1 to 1·3 km. at 280°.
13	172	219	2	...	...	...	...	...	...	2·6 to 3·1 km. at 271°.
12	198	221		...	...	...	...	...	...	6·4 to 6·6 km. at 245°.
11·96	200	...	−0·5	...	...	...	...	...	...	
11	232	220·5	0·5	...	...	...	...	...	...	
10	269	221		...	...	...	...	...	...	Particularly good trace.
9·27	300	...	6	...	...	...	...	...	...	
9·0	317	227	6	...	...	...	..	...	...	
8·0	362	233		...	...	...	...	...	...	Unusual irregularity in the gradient.
7·32	400	...	9	...	...	...	...	...	...	
7·0	418	242	6	...	...	194	16·5	−16	−4	
6·0	480	248		...	...	191	16·3	−16	−3	Ascensional velocity of 3·3 m/s assumed.
5·67	500	...	9	...	...	...	...	...	...	
5·0	547	257		...	...	191	10·2	−10	−2	
4·28	600	...	7	...	...	...	...	...	...	
4·0	622	264	...	...	...	196	7·3	− 7	−2	
3·08	700	...	7	...	...	...	...	...	...	
3·0	708	271	...	...	...	211	5·8	− 5	−3	
2·02	800	...	3	...	...	...	...	...	...	
2·0	802	274	...	...	...	221	5·0	− 4	−3	
1·05	900	...	6	...	...	...	...	...	...	
1·0	906	280	6	...	...	207	4·5	− 4	−2	
Ground	1008	286	...	...	...	...	...	...	...	
M.S.L.	...	...	...	...	...	...	...	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).—*continued.*

1912. July 9. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	11·0 km.	333 mb.	?230° A.
Lowest Temperature	10·0 km.	268 mb.	226° A.
Base of Stratosphere	9·6 km.	...	226° A.
	...	...	228° A.
Type	No. 1.		

From observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	1024 mb.	1026 mb.
Temperature,	286° A.	287° A.
Vapour Pressure,	.	...
Gradient Wind:—Direction,	45°	70°
Velocity,	8·2 m/s.	7·6 m/s.
Correction for Curvature,	+1·4 m/s.	0 m/s.
Final Components, W. to E.	−6·8 m/s.	−7·1 m/s.
Final Components, S. to N.	−6·8 m/s.	−2·6 m/s.

Sounding No., R. 191.
Place, PYRTON HILL.
Latitude, . . . 51° 38′ N.
Longitude, . . 1° 1′ W.
Height above M.S.L., . 150 m.
Place of Fall, Marlborough.
Distance, ... 55 km.
and
Orientation, . . . 246°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
11·0	233	?230		...	...	...	...	...	...	Overcast.
10·0	268	226 229?	?−4 ?−1	...	...	...	...	...	...	
9·23	300	...		...	...	...	...	...	...	
9·0	310	228 231	2 2	...	...	...	...	...	...	Isothermal ·8 to 1·2 km. at 280° and 4·1 to 4·4 km. at 260°.
8·0	358	233 236	5 5	...	...	...	...	...	...	
7·23	400	...	6 6	...	...	...	...	...	...	
7·0	415	239 242	9 8	...	...	...	...	...	...	Top influenced by solar radiation.
6·0	475	248 250	8 6	...	...	...	...	...	...	
5·63	500	..		...	...	...	...	...	...	
5·0	543	256		...	...	...	...	...	...	
4·27	600	...	3	...	...	...	...	...	...	
4·0	622	259		...	...	...	...	...	...	
3·07	700	...	9	...	...	...	...	...	...	
3·0	706	268		...	...	...	...	...	...	
2·0	800	275	7	...	...	...	...	...	...	
1·04	900	...	5	...	...	...	...	...	...	
1·0	905	280		...	...	...	...	...	...	
			5							
Ground M.S.L.	1002	285	...	...	...	...	...	...	...	
	...	...	...	...	...	...	...	...	...	

1912. July 31. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height	14·8 km.	...	233° A.
Lowest Temperature	9·0 km.	300 mb.	227° A.
Base of Stratosphere	9·0 km.	300 mb.	227° A.
Type	No. 1.		

From observations at Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.)	1001 mb.	1001 mb.
Temperature,	285° A.	285° A.
Vapour Pressure,	...	...
Gradient Wind:—Direction,	155°*	355°
Velocity,	15·5 m/s.	17·7 m/s.
Correction for Curvature,	−3·5 m/s.	0 m/s.
Final Components, W. to E.	−5·0 m/s.	1·5 m/s.
Final Components, S. to N.	10·9 m/s.	17·6 m/s.

* On the edge of a secondary main current westerly.

Sounding No., R. 45.
Place, MUNGRET COLLEGE, LIMERICK.
Latitude, . . . 52° 38′ N.
Longitude, . . . 8° 41′ W.
Height above M.S.L., . . 15 m.
Place of Fall, Cloneygowan.
Distance, ... 107 km.
and
Orientation, ... 56°.

Table of Heights, Pressures, Temperatures, Humidities, and Winds.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	%	mb.	Degrees from N.	m/s.	m/s.	m/s.	
15	123	233		...	...	...	...	...	...	
14	143	233	0	...	...	...	...	...	...	
13	166	233	0	...	...	...	...	...	...	
12	192	232	−1	...	...	...	...	...	...	
11·73	200	...	0	...	...	...	...	...	...	
11·0	223	232	−2	...	...	...	...	...	...	
10·0	258	230	−3	...	...	...	...	...	...	
9·0	300	227	8	...	...	...	...	...	...	
8·0	347	235	7	...	...	...	...	...	...	
7·02	400	...		...	...	...	...	...	...	
7·0	401	242	0	...	...	...	...	...	...	
6·0	462	242		...	...	...	...	...	...	
5·41	500	...	14	...	...	...	...	...	...	
5·0	528	256	6	...	...	...	...	...	...	
4·04	600	...		...	...	...	...	...	...	
4·0	603	262		...	...	...	...	...	...	
3·0	687	266	4	...	...	...	...	...	...	
2·87	700	...		...	...	...	...	...	...	
2·0	781	271	5	...	...	...	...	...	...	
1·81	800	...	3	...	...	...	...	...	...	
1·00	885	274		...	...	...	...	...	...	
·87	900	...	9	...	...	...	...	...	...	
Ground M.S.L.	1001	283	...	...	...	...	...	...	...	
	...	...	...	...	...	...	...	...	...	

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—Type 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
Type 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. Type 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

10. Solar Radiation at South Kensington.

Day.	April. Maximum Rate, Watts per cm².	April. Daily Amount, Calories per cm².	April. Duration of Sunshine.	May. Maximum Rate, Watts per cm².	May. Daily Amount, Calories per cm².	May. Duration of Sunshine.	June. Maximum Rate, Watts per cm².	June. Daily Amount, Calories per cm².	June. Duration of Sunshine.	REMARKS.
	(1)	(2)	(3) hr.	(1)	(2)	(3) hr.	(1)	(2)	(3) hr.	
1	·069	274	7·5	·069	362	8·0	·035	254	1·4	*Note.*—1 watt per cm² = 14·35 gramme-calories per cm² per minute. 1 gramme-calorie per minute = 0·7 watt nearly.
2	·063	296	7·0	·067	268	3·8	·069	243	4·9	
3	·045	240	7·9	·055	189	1·7	·077	337	5·3	
4	·058	178	3·9	·014	53	0·0	·078	300	5·2	
5	·037	182	0·9	·062	236	1·8	·090	378	7·5	If the heat were distributed throughout the atmosphere 1000 gramme-calories per cm² would be sufficient to raise the temperature 4°·1 C. It would take 245 gramme-calories per cm² to raise the temperature of the whole atmosphere 1° C.
6	·064	369	10·6	·066	220	0·7	·081	597	10·2	
7	·067	229	1·9	·043	137	0·0	·022	131	0 0	
8	·039	132	1·7	·075	295	4·4	·068	212	2·0	
9	·074	384	10·9	·069	358	4·5	·064	302	4·9	
10	·074	292	7·9	·064	322	4·5	·092	457	11·3	For values January to March, see p. 20.
11	·073	298	8·4	·076	434	7·6	·074	418	7·6	
12	·064	310	8·0	·064	324	4·6	·054	244	0·0	
13	·060	244	3·8	·072	429	10·5	·078	621	8·5	
14	·050	133	0·5	·078	403	6·6	·085	396	6·2	
15	·059	198	2·5	·064	218	1·5	·086	472	8·0	
16	·067	344	8·6	·097	455	9·0	·087	365	6·3	
17	·057	283	7·8	·086	388	8·3	·066	227	0·3	
18	·065	360	8·7	·073	314	1·4	·088	477	8·7	
19	·071	334	9·0	·081	378	6·4	·083	457	8·3	
20	·053	198	4·7	·083	286	5·2	·083	357	4·8	
21	·064	388	12·5	·068	318	1·9	·086	505	11·8	
22	·066	422	12·5	·090	314	4·8	·082	642	15·0	
23	·067	459	12·9	·042	178	0·0	·088	486	10·6	
24	·068	430	11·1	·074	208	1·7	·087	368	6·5	
25	·067	465	12·5	·078	523	11·8	·050	190	2·1	
26	·060	329	7·2	·078	376	5·6	·086	412	9·1	
27	·068	280	5·7	·080	535	11·4	·069	340	3·3	
28	·067	435	9·7	·082	423	9·3	·088	427	8·1	
29	·074	192	1·5	·072	478	9·7	·084	321	3·5	
30	·080	362	8·1	·073	453	9·5	·069	315	3·3	
31				·078	252	4·5				
Total (For days with values in column 2)		9040	215·9	...	10127	160·7	...	11251	184·7	
Mean (For days with values in column 2)		301	7·20	...	327	5·18	...	375	6·16	
Total (For all days)		...	215·9	...	...	160·7	...	...	184·7	
Mean (For all days)		...	7·20	...	...	5·18	...	...	6·16	
Ratio of Mean Daily Amount to Mean Duration.		42			63			61		

N.B.—The values of Solar Radiation at South Kensington are obtained from the records of a Callendar Instrument which depends upon the difference of temperature between a black and a bright wire exposed horizontally to radiation from the whole of the sky. The values may be taken as representing the total radiation and the maximum rate of radiation per cm² received by a horizontal surface. If it is desired to compare the values published for Kew and Eskdalemuir in Tables 3 and 4 with the simultaneous value recorded by the Callendar Instrument the former must be multiplied by the cosine of the zenith distance of the sun at the time of observation. The duration of sunshine in this table is obtained from a Campbell-Stokes Recorder.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

AUGUST 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 1*s.*

Second Year.—No. 8. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	4-5	0·8	I*, I, I.	1st I*, Three small shocks L=9 h. 13 m., 9 h. 19 m. and 9 h. 31 m. Probably Iceland. I, L=11 h. 53 m. I, S ?=18 h. 28½ m. L=18 h. 50 m. Disturbed till 19 h. 30 m.
2	4-5	0·5	I, I.	2nd I, Feeble waves about 18 h. 6 m. I, Feeble long waves 23 h. 20 m.–23 h. 31 m.
3	4-5	0·4	I, I, I, I, I, I.	3rd I, Disturbed 4 h. 15 m.–4 h. 36 m. I, Disturbed about 7 h. 30 m. I, Disturbed 8 h. 21 m.–8 h. 30m.
4	4	0·3	I, I, Iu.	I, S ?=9 h. 30 m. 11 s. Long waves imperceptible. I, Long waves 13 h. 26 m. I, Disturbed 18 h. 10 m.
5	4	0·6	Iu.	4th I, Disturbed at 2 h. I, Feeble disturbance 19 h. 24 m. Iu, P=21 h. 51 m. 28 s., S=21 h. 59 m. 14s., Δ=6180 km. Azimuth
6	4-5	0·5	Iu, Ir, Iu.	towards S.W. 5th Iu, S=7 h. 37 m. 52 s., L=7 h. 47 m. 6th Iu, P=13 h. 40 m. 15 s., S=13 h. 50 m. 28 s.,
7	4-5	0·4	I.	Δ=9040 km. Ir, P=18 h. 48 m. 6 s., S=18 h. 51 m. 57 s., Δ=2330 km. Iu, P=21 h. 30 m. 20 s., S ?=21 h. 43 m. 15 s.,
8	4	0·3		Δ=12950 km. 7th I, Disturbed 20 h.–21 h. 9th IIIr, P=1 h. 34 m. 14 s., S=1 h. 38 m. 44 s., Δ=2820 km.
9	4	0·4	IIIr.	α=63° 43′ E. of S. Epicentre 39° 26′ N. 26° 27′ E. 10th I, Disturbed 1 h. 29 m.–1 h. 46 m. IIr, P=9 h 29 m. 14 s.,
10	5	0·4	I, IIr, I, I.	S=9 h. 33 m. 34 s., Δ=2690 km., α=63° 26′ E. of S. Epicentre 40° 12′ N. 25° 28′ E. I, S=18 h. 40 m. 2 s., L=18 h. 44 m. I, P=22 h. 30 m. 0 s., S=22 h. 39 m. 18 s., Δ=7960 km. 11th S=7 h. 29 m. 31 s., L=7 h. 32 m.
11	4	0·3	I.	
12	4-5	0·5	I.	12th I, Disturbed about 18 h. 13th I, Disturbed 4h.–4½ h. 14th I, Long waves 4 h. 30 m. ; I, Disturbed
13	4	0·4	I.	17 h. 49 m.–18 h. 10 m. 15th I, I, I, Disturbed 1 h. 43 m., 3 h. 52 m., and 7 h. 10 m. I, Long waves 14 h. 36 m.
14	4	0·5	I, I.	17th I, I, Disturbed 0 h. 54 m.–1 h. 17 m. and 3 h.–3 h. 30 m. IIIu, P=19 h. 26 m. 17 s., S=19 h. 40 m. 22 s., Δ=14900 km., α=
15	4	0·4	I, I, I, I.	56° 19′ E. of N. Note : results almost identical with those for Aug. 16th 1911. In both Δ given by Seismogram appears too great as
16	4	0·3		earthquakes occurred in Yap. 18th I, L=1 h. 25 m. I, S=2 h. 41 m., L=3 h. 3 m. I, Long waves 4 h. 40 m.
17	4-5	0·4	I, I, IIIu.	I, P=7 h. 55 m., S=8 h. 5 m. 40 s. Iu, P ?=13 h. 35 m., S=13 h. 44 m. 43 s., L=13 h. 58 m. ; I, L=16 h. 41 m. I, S=
18	4	0·6	I,I,I,Iu,I,I,I,Iu.	18 h. 51 m. 18 s., L=19 h. 17 m. I, Long waves 21 h. 20 m. Iu, P=21 h. 39 m., S ?, L=22 h. 9 m. Probably with a near earth-
19	4	0·5	I, Ir, Iu.	quake superposed. 19th I, L=2 h. 50 m. Ir, P=15 h. 51 m. 29 s., S=15 h. 57m. 53 s., Δ=4660 km. Iu, P=16 h. 41 m. 6 s.,
20	4	0·4	Ir.	S ?=16 h. 54 m. 20th Ir, P=11 h. 22 m. 48 s., S=11 h. 29 m. 12 s., Δ=4660 km. 21st I, Long waves about
21	4	0·3	I, Iu.	11 h. 30 m. Iu, S=17 h. 53 m. 7 s. Characteristic features of Philippine earthquake. 23rd I, Long waves 8 h. 43 m.
22	4	0·3		IIu*, (Two shocks ?) P_1 ?, P_2=14 h. 10 m. 53 s., S_1=14 h. 15 m. 27 s., S_2=14 h. 19 m. 39 s., Δ=7330 km. Iu, P=
23	4	0·4	I, IIu*, Iu.	21 h. 50 m. 31s., S=21 h. 57 m. 37 s., Δ=5440 km., α nearly true E. Epicentre 33° N. 60° E.
24	4	0·4	I.	24th I, Long waves 2 h.–2 h. 14 m. 25th I, Long waves 1 h. 30 m.–2 h. ; I, Long waves 5 h. 20 m.
25	4-5	0·4	I, I.	27th I, Long waves 1 h. 11 m. 30th Iu, P=18 h. 22 m., S=18 h. 36 m. Time marks failed. 31st I, Disturbed
26	4-5	0·7		14 h.–15 h. Ir, P=20 h. 53 m., S ?, L=21 h. 2 m. I, P=24 h. 34 m. 57 s., S ? change of sheet, α towards N.E.
27	4	0·4	I.	
28	4	0·4		
29	4	0·7		An explanation of the notation used is given in the preface.
30	4	0·7	Iu.	
31	5	0·7	I, Ir, I.	

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level :—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.

Heights above Ground :—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	1005·3	1008·4	85·3	83·9	87	82	10·9	9·2	77	71	30	9	32	5	7	*3*	3·1	5·8	Showery to fair ; clear.	...	...	...
2	1010·5	1011·6	83·8	82·6	88	80	10·5	9·8	82	84	—	0	—	1	2	*2*	—	11·5	Fine.	...	...	...
3	1010·3	1007·7	85·3	84·2	*x* 89	*n* 79	10·9	11·5	75	87	6	2	—	0	4	*4*	2·3	6·4	☾. Fine till 15 h.	...	...	...
4	1005·8	1006·5	85·7	85·2	88	80	10·5	10·5	71	74	32	5	26	6	2	*0*	—	9·9	Fine.	...	...	...
5	1002·6	999·4	86·2	85·0	88	83	11·9	10·9	78	78	24	4	26	7	6	*9*	3·6	6·5	Fair.	...	...	...
6	997·9	1001·2	85·2	85·4	87	84	12·2	12·6	87	88	31	8	31	9	8	*10*	1·5	0·1	Squally, with ● showers.	...	...	...
7	1004·4	1008·0	85·4	84·7	87	84	11·5	12·2	80	89	28	8	27	7	9	*10*	6·6	0·4	Squally and showery.	17893	20 28·6	68 10·0
8	1010·6	1010·8	84·4	83·4	88	81	11·9	10·5	89	83	—	1	—	1	4	*3*	0·8	5·3	Clear, and generally fair.	...	...	...
9	1008·9	1005·0	84·8	85·0	87	80	11·5	12·9	84	92	14	4	14	2	9≡⁰	*8*●	11·2	—	Dull and showery. ☂ *p.*	...	...	...
10	1011·3	1018·5	85·3	85·2	88	84	10·5	10·9	74	78	27	3	28	4	10	*3*	0·3	5·2	Showery to clear and fair.	...	...	...
11	1020·3	1017·8	84·8	85·4	88	81	11·9	11·5	85	80	—	0	5	3	2	*8*	—	1·3	Dull, but finer *p.*	...	...	...
12	1015·0	1017·6	84·8	85·0	88	83	10·5	10·5	77	76	6	8	32	7	8	*2*	0·3	3·8	Fair.	...	...	...
13	1016·4	1013·5	86·2	84·9	87	83	11·9	11·2	78	82	26	4	31	5	7	*9*	2·8	3·4	Fair generally, with good visibility.	...	...	...
14	1009·9	1009·3	85·1	85·6	87	84	11·5	11·5	81	79	26	5	28	6	10	*10*	—	1·4	Dull ; improving midday.	...	...	...
15	1010·7	1010·8	86·5	85·7	*x* 89	85	11·5	13·6	75	93	28	4	16	3	10≡⁰	*8*	2·8	1·9	≡⁰. Fair.	...	...	...
16	1009·5	1005·1	86·2	87·0	*x* 89	85	12·9	14·2	85	88	20	3	14	5	10≡⁰	*10*≡⁰	7·1	1·6	Dull, with ≡⁰ ; clearing midday.	...	...	...
17	1003·0	1002·6	86·8	86·1	*x* 89	84	13·6	13·6	86	90	18	5	16	5	7	*10*	0·5	5·1	● early, then fair to dull.	...	...	...
18	996·6	995·2	86·5	86·3	*x* 89	85	13·9	12·9	89	85	16	3	12	2	8	*8*	—	4·0	Fair.	...	...	...
19	996·0	999·1	86·8	85·7	88	85	12·2	12·9	77	87	3	4	31	6	7	*5*	3·6	2·9	Fair.	...	...	...
20	1004·3	1010·3	84·7	84·9	86	83	10·9	11·2	78	81	27	5	24	6	3	*6*	3·3	7·1	● showers early and late.	...	...	...
21	1012·7	1017·7	84·5	85·3	87	82	12·6	11·5	93	80	14	2	25	6	10≡⁰●	*2*	0·3	0·8	Dull and misty.	17894	20 28·6	68 9·9
22	1020·9	1011·8	86·2	87·4	88	85	12·6	15·6	83	96	22	4	16	7	10≡⁰●	*10*≡⁰●	28·7	—	Gloomy, with ≡⁰●.	...	...	...
23	1004·8	1002·6	87·9	87·3	*x* 89	86	16·6	15·9	99	98	20	8	22	3	10≡⁰●	*10*≡⁰	2·0	—	Heavy mist and ● mostly.	...	...	...
24	1001·7	1003·0	86·8	85·6	*x* 89	83	14·9	13·6	95	94	—	1	—	0	10≡⁰	*5*≡⁰	0·3	—	Overcast. ≡⁰	...	...	...
25	1001·1	996·1	86·2	85·3	88	83	14·2	12·9	95	89	16	2	8	3	10	*10*≡⁰●	12·2	0·1	Gloomy and misty : ● *n.*	...	...	...
26	993·9	1001·2	84·6	85·3	88	84	12·9	12·9	96	90	—	0	—	1	10≡⁰	*2*	—	3·8	≡⁰● at first ; clearing 12 h.	...	...	...
27	1002·2	1005·6	86·1	85·1	*x* 89	83	13·9	13·2	93	94	—	0	—	1	8	*4*	5·8	4·8	Dull to fair.	...	...	...
28	1000·0	993·5	86·1	86·0	88	85	14·2	14·2	96	96	15	7	22	3	10≡⁰●	*10*	10·9	—	≡⁰ and intermittent ●.	...	...	...
29	991·2	996·6	86·8	85·6	*x* 89	85	14·6	13·6	94	94	16	5	—	0	10≡⁰	7	1·3	2·4	Dull to fair.	...	...	...
30	1009·7	1018·7	86·7	85·4	88	85	12·2	12·9	79	89	31	8	—	1	3	*4*	0·3	6·0	Fair, with ∞.	...	...	...
31	1019·8	1017·6	86·8	86·4	88	84	13·2	14·6	84	94	18	3	25	4	10	*10*≡⁰	4·6	—	☾. Dull.	...	...	...
Means	1006·7	1007·2	85·8	85·4	87·9	83·1	12·4	12·4	84	86		4·0		3·8	7·5	6·5	116·2	3·27	Monthly **Totals** or **Means**.	17894	20 28·6	68 10·0
Normal 40 years	1012·7	1013·0	88·3	87·4	91·0	85·3	14·6	14·2	84	87		4·9		4·2	—	—	127·5	4·91	**Normals**, 40 years.			
					35 years		25 years				30 years		30 years					30yrs				

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

Wt. 39025/327—375—5/13. N. & Co., Ltd. Gp. XV.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity. Vapour Pressure.		Humidity. Percentage.		Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	10 h.					0·3m.	1·2m.	
			200+	200+	200+	200+														200+	200+	200+	
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.			°	°	
1	999·4	1002·8	87·8	86·9	92	84	11·2	11·9	67	74	20	5	20	2	7	1	—	9·1	—	81	89·1	88·2	Fine during day.
2	1007·6	1012·2	86·9	85·9	91	82	11·5	11·2	73	76	25	2	—	0	6	0	1·0	7·6	—	77	88·9	88·2	●⁰ in afternoon ; generally fine.
3	1014·0	1009·6	87·3	87·4	93	80	10·9	13·6	67	82	7	2	8	4	10	10	7·4	2·3	—	*n* 74	88·6	88·1	Fair to dull.
4	1000·4	1001·9	88·7	87·4	*x* 94	86	16·6	11·9	94	73	11	4	18	7	10≡⁰	10	0·3	3·3	—	85	88·8	88·0	●≡⁰ early ; improving after
5	1006·8	1005·5	88·4	87·5	92	85	11·2	12·9	64	77	18	8	14	3	7	10	9·7	8·2	—	82	88·7	87·9	Fine most of day. [10 h.
6	994·4	994·4	87·6	86·7	90	85	12·2	13·2	74	84	13	9	17	6	10●	10	3·6	2·4	—	84	88·6	87·9	Dull most of day ; ●.
7	996·2	1002·2	88·0	86·9	92	85	13·9	14·6	82	93	19	5	20	3	10	0	10·7	3·5	—	82	88·2	87·9	Fine to dull ; ϟ● in afternoon.
8	1006·9	1008·9	87·6	86·6	91	85	13·2	14·6	80	94	19	4	—	1	9	1	4·6	3·3	—	82	88·1	87·9	Fair to dull.
9	1009·5	1010·8	87·1	86·5	91	84	12·6	12·9	78	83	21	2	—	1	7	8	1·8	3·8	—	81	88·6	87·8	Fine *a* ; fair *p*.
10	1008·8	1011·8	86·2	84·2	90	82	13·6	12·2	89	93	16	2	22	3	10	*10*	10·2	3·1	—	77	88·5	87·7	Fair intervals ; ●² occasionally.
11	1018·4	1019·0	86·6	85·3	91	82	11·9	12·6	76	89	22	3	—	0	9	8	1·0	3·8	—	76	88·4	87·7	Fine to fair.
12	1014·5	1007·1	85·7	86·3	88	81	11·9	11·5	82	76	—	0	2	5	6≡⁰	10	—	0·6	—	75	88·1	87·6	⊵≡⁰ early ; fair to dull.
13	1007·6	1008·1	85·8	84·7	89	82	9·8	11·2	67	81	31	6	22	3	8	1	0·5	3·0	—	80	87·6	87·4	Bright intervals ; ϟ● 18 h.
14	1005·7	1005·3	85·7	84·8	89	81	11·2	11·9	75	86	19	3	19	4	8	9	3·8	4·1	—	76	87·2	87·5	Fine to dull.
15	1006·3	1011·4	86·5	87·0	89	84	12·6	12·9	80	80	19	5	22	4	10●	10	—	—	—	81	87·3	87·4	Dull throughout.
16	1015·9	1016·4	88·2	88·1	92	84	11·9	15·3	69	91	19	5	18	4	9	10	1·3	1·1	—	80	87·4	87·4	Dull to fair.
17	1015·1	1010·8	89·2	89·1	92	88	15·3	15·3	84	84	18	6	16	4	10	10⁰	2·0	0·1	—	86	88·1	87·4	Dull.
18	1005·4	1004·0	89·1	87·0	93	86	13·6	12·9	76	82	18	5	17	3	7	9	3·3	2·1	—	86	88·6	87·4	Fair to dull ; clear atmosphere.
19	1003·1	1000·3	89·2	85·5	92	85	15·6	13·2	85	93	15	5	16	4	8	10●	14·7	4·1	—	82	88·4	87·4	Fine intervals ; ϟ●² *p*.
20	1001·0	1007·4	88·4	85·2	91	83	13·6	12·2	78	88	19	6	21	3	10	10	2·5	4·0	·056	83	88·3	87·4	Dull to fine. T 13 h.
21	1015·2	1014·9	86·3	86·3	88	82	10·2	13·9	66	90	22	5	17	3	8	10●	2·0	3·8	—	79	87·8	87·4	Fair till 11 h.. then overcast.
22	1018·1	1019·3	86·2	85·9	90	83	11·2	11·2	73	76	26	5	21	3	7	10	5·1	7·5	·060	80	87·8	87·4	Fine most of day. ⊕ 15 h.
23	1009·2	1004·4	87·1	89·2	92	84	15·3	17·0	97	92	17	5	19	6	10	10	10·4	—	—	83	88·0	87·3	● *a*. Dull all day.
24	1001·9	1002·9	88·7	88·0	90	88	16·3	16·3	93	96	18	6	—	1	10●	10≡⁰	5·3	0·2	—	87	88·2	87·3	● till 14 h. Dull.
25	1005·3	1000·0	88·6	87·1	92	86	14·6	13·9	83	87	20	2	—	0	8	10	15·2	3·8	—	82	88·5	87·3	Fair till 14 h., then cloudy.
26	990·9	993·7	86·0	84·2	88	84	14·2	11·9	95	89	23	3	31	4	10●⁰	10	10·9	—	—	83	88·6	87·3	Dull throughout, with ●.
27	1001·1	1005·5	85·4	84·0	89	82	10·5	10·9	72	85	24	4	—	1	7	0≡⁰	—	3·6	—	81	87·8	87·3	Fair generally. ⊕ 9 h. 20 m.
28	1011·2	1008·1	84·3	87·4	91	80	11·2	14·2	84	87	—	1	13	3	0≡⁰	10	4·8	4·7	—	*n* 74	87·4	87·3	⊵≡⁰ early ; fine to dull.
29	999·1	1002·3	88·8	87·2	93	86	17·0	13·9	96	86	15	6	18	3	10≡⁰	7	2·5	4·6	—	86	87·9	87·3	● to fine.
30	1004·1	1012·6	89·1	86·9	92	85	14·2	11·9	79	76	20	3	—	1	9	2	—	3·2	—	83	88·1	87·3	Generally fair.
31	1018·9	1018·9	87·0	87·1	90	81	11·2	11·9	71	74	27	3	22	2	5	10	2·5	7·7	—	75	88·0	87·3	Fine most of day.
Means	1006·8	1007·5	87·3	86·5	90·8	83·8	12·9	13·1	79	84		4·2		2·9	8·2	7·6	137·1	3·50	—	80·7	88·2	87·6	Monthly **Totals** or **Means**.
Normal 40 years	1014·1	1014·0	89·6	88·7	94·0	85·0	13·8	14·0	74	80		3·5 (30 years)		2·5 (30 years)	—	—	55·9	6·16 (30 yrs)	—	—	—	—	**Normals, 40 years.**
					35 years				25 years														

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	967·3	972·8	85·3	82·1	87	81	10·5	10·2	75	89	24	4	—	1	6	9	6·1	—	—	—	—	—	Overcast generally; occasional●.
2	979·5	984·2	79·8	78·1	83	75	9·2	7·8	94	91	32	5	32	2	10●	1	3·6	0·5	—	—	—	—	Overcast ; ● ; T 13 h.–16 h.
3	986·4	987·0	83·0	82·3	87	*n* 72	9·2	9·5	76	81	—	1	20	3	2	8	3·3	6·7	—	—	—	—	Fine during day.
4	979·8	969·4	82·0	85·6	86	79	10·9	13·9	94	96	4	10	4	6	10●	10	14·7	—	—	—	—	—	● most of day.
5	965·0	973·4	85·4	83·4	86	81	12·6	11·2	88	90	12	3	20	8	10	10	13·7	0·1	—	—	—	—	●² midday.
6	973·0	971·0	86·9	84·9	88	77	11·9	12·6	75	90	12	5	4	5	5	8	5·8	0·8	—	—	—	—	Fair to dull. T *a*.
7	970·0	973·2	84·9	83·5	86	83	12·9	10·5	94	84	4	6	32	6	8	7	5·8	—	—	—	—	—	Dull.
8	976·4	979·0	86·3	82·0	*x* 89	81	10·5	9·5	69	84	28	3	—	1	6	9	0·3	5·8	—	—	—	—	Fine generally.
9	977·9	979·2	84·3	83·0	87	79	10·5	10·2	79	84	20	5	20	4	8	7	11·9	1·0	—	—	—	—	Very heavy ●▲ 18 h.–19 h.
10	980·1	984·9	84·9	80·5	88	77	10·2	8·8	74	84	28	2	—	1	2	5	—	3·3	—	—	—	—	Very heavy storm to S.E. T∞.
11	989·1	990·0	82·9	81·5	88	76	10·9	10·2	88	92	—	0	—	1	9	7	3·1	1·8	—	—	—	—	Cloudy.
12	989·1	986·1	85·3	82·8	88	78	10·5	10·5	75	87	4	4	4	2	3	9	—	2·7	—	—	—	—	Fair. [looking.
13	982·0	976·0	84·0	82·2	87	78	8·8	9·2	67	78	28	6	24	9	6	10	0·8	1·3	—	—	—	—	Fair midday, but threatening-
14	971·7	972·5	83·8	84·8	88	81	9·5	12·2	73	89	24	3	—	1	9	10	0·3	0·3	—	—	—	—	Dull.
15	974·5	979·6	85·0	83·9	87	84	11·9	11·5	85	89	24	3	24	6	10●⁰	10●⁰	—	0·1	—	—	—	—	Dull.
16	983·3	984·2	85·0	85·9	89	83	10·9	13·9	78	95	20	6	16	4	7	10●	1·5	2·0	—	—	—	—	Cloudy.
17	981·5	978·7	86·4	86·1	88	84	13·2	13·9	87	92	12	5	16	4	10●⁰	10	16·0	—	—	—	—	—	Nearly continuous ● after 11 h.
18	974·3	973·0	86·3	81·1	89	80	12·6	10·2	83	95	20	4	—	0	8●	3	1·8	3·1	—	—	—	—	Dull to fair ; ∞ in afternoon.
19	972·9	971·6	84·1	83·1	87	80	11·2	11·5	84	93	—	1	—	1	10●	9	7·6	0·7	—	—	—	—	ϟ●² 13 h.–14 h.
20	968·2	974·3	84·6	80·5	86	80	11·9	8·5	88	83	—	0	24	5	10	6	6·1	—	—	—	—	—	Frequent showers till 15 h.
21	979·7	984·9	82·5	80·8	87	79	8·8	8·8	74	85	24	9	24	3	9	6	—	4·3	—	—	—	—	Dull to fair.
22	987·0	987·4	84·3	80·9	87	79	9·5	9·2	72	86	24	9	—	1	5	6	2·5	4·5	—	—	—	—	Generally fair.
23	977·7	974·4	83·3	82·6	84	79	10·5	11·5	84	96	4	5	4	7	10●	10●	7·4	—	—	—	—	—	Overcast, with ● till 16 h.
24	976·3	978·5	82·5	82·3	84	81	10·5	10·9	88	94	4	6	4	3	10	10≡⁰	0·3	—	—	—	—	—	Overcast. [*p*.
25	978·2	975·8	82·6	82·2	85	81	11·2	10·9	92	93	4	5	4	5	10●	10●	3·1	—	—	—	—	—	Overcast, with frequent showers
26	970·7	971·6	82·8	81·0	84	80	9·2	8·5	76	81	4	11	4	5	10	3	—	—	—	—	—	—	Overcast till 16 h., then fine.
27	975·2	979·1	82·5	80·9	85	79	8·2	9·2	69	88	32	6	—	0	5	9	—	0·1	—	—	—	—	Cloudy.
28	980·9	976·6	82·4	82·1	86	75	9·5	9·8	80	85	—	1	—	1	9	10	13·5	0·6	—	—	—	—	Fine to dull.
29	964·0	966·5	84·3	84·9	87	83	12·9	12·9	96	93	16	10	20	9	10●	10	3·3	1·6	—	—	—	—	Overcast with ● ; finer midday.
30	971·0	983·2	84·3	80·4	87	80	11·2	8·5	82	83	24	5	28	4	10●	2	—	0·8	—	—	—	—	Dull till 15 h., finer later.
31	989·4	986·8	81·7	81·5	86	74	8·2	10·5	73	95	—	0	—	1	2	10●	8·6	1·8	—	—	—	—	Fine early ; ● after 21 h.
Means	977·2	978·2	84·0	82·5	86·6	79·2	10·6	10·5	81	89		4·6		3·5	7·7	7·9	141·1	1·42	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·70.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	110	265	165	160	600	600	0·35	0·10	0·25	0·45	0·95	0	1	521	1 35	470	9 43	51	50·2	14 38	37·9	3 25	12·3
2	175	265	*x*+	165	990	770	—	—	—	—	—	1	0	514	18 20	485	10 56	**29**	54·2	13 38	43·0	7 14	11·2
3	315	550	215	240	—	—	—	—	—	—	—	1	0	513	18 40	471	9 33	42	50·7	12 10	42·1	7 15	8·6
4	*x*±	65	200	175	—	—	—	—	—	—	—	2	0	510	19 12	480	7 53	30	53·5	13 10	42·9	7 56	10·6
5	135	215	210	330	—	—	—	—	—	—	—	1	1	532	21 18	475	11 18	57	52·3	12 16	38·3	23 8	14·0
6	65	280	*x*±	*x*±	—	—	—	—	—	—	—	2	2	**553**	**2 0**	**391**	**7 7**	**162**	**54·9**	**12 54**	**34·2**	**0 56**	**20·7**
7	160	210	—	35	—	—	—	—	—	—	—	2	0	514	16 28	473	10 5	41	48·1	12 19	39·8	6 20	8·3
8	75	165	*x*±	65	—	—	—	—	—	—	—	2	0	508	21 35	468	10 30	40	51·7	13 23	42·5	5 20	9·2
9	135	300	165	35	—	—	—	—	—	—	1·55	1	0	516	20 45	474	9 38	42	49·5	12 11	41·5	7 35	**8·0**
10	250	300	*x*±	250	—	—	—	—	—	—	—	2	0	522	0 16	463	10 4	59	51·7	12 58	40·5	20 15	11·2
11	200	280	*x*±	400	—	—	—	—	—	—	—	1	0	509	21 10	468	8 3	41	51·8	12 36	40·7	5 18	11·1
12	165	405	365	475	—	—	—	—	—	—	0·40	0	0	508	20 51	463	9 5	45	51·9	12 53	41·4	7 35	10·5
13	215	300	150	380	—	—	—	—	—	—	—	1	0	514	19 12	473	9 50	41	51·9	13 18	40·6	6 55	11·3
14	200	215	*x*±	290	—	—	—	—	—	—	—	2	0	512	4 20	477	10 38	35	54·0	12 22	40·0	7 58	14·0
15	125	185	185	65	—	—	—	—	—	—	0·85	1	1	512	0 53	469	9 50	43	53·3	13 3	40·4	7 22	12·9
16	165	225	135	240	—	—	—	—	—	—	0·70	0	0	520	22 30	465	9 25	55	53·9	13 20	40·8	7 50	13·1
17	75	225	190	265	—	—	—	—	—	—	—	0	1	521	0 43	460	10 13	61	54·5	12 22	40·7	1 5	13·8
18	75	190	165	280	—	—	—	—	—	—	—	0	1	535	20 13	470	10 13	65	51·6	14 50	36·6	23 58	15·0
19	125	215	250	*x*±	—	—	—	—	—	—	—	2	1	511	15 27	455	9 24	56	51·1	14 13	36·8	0 0	14·3
20	65	200	*x*±	50	—	—	—	—	—	—	—	2	0	509	20 55	463	9 28	46	50·0	12 30	40·8	7 10	9·2
21	165	365	85	425	—	—	—	—	—	—	—	1	1	524	22 2	475	10 44	49	51·8	13 5	42·3	23 53	9·5
22	200	280	150	315	—	—	—	—	—	—	—	0	2	529	20 15	465	9 48	64	50·9	12 32	35·4	22 35	15·5
23	290	185	100	110	—	—	—	—	—	—	—	1	1	527	21 43	455	10 8	72	51·5	13 45	39·1	22 0	12·4
24	50	0	250	200	—	—	—	—	—	—	—	1	0	518	23 13	464	8 24	54	52·4	13 22	42·0	6 53	10·4
25	85	265	230	380	—	—	—	—	—	—	—	0	0	506	13 29	468	9 48	38	50·6	13 36	42·2	8 26	8·4
26	0	−15	*x*±	*x*−	—	—	—	—	—	—	—	2	1	518	21 54	468	9 41	50	51·9	12 32	42·8	22 22	9·1
27	305	415	175	305	—	—	—	—	—	—	0·50	0	1	525	18 23	460	10 12	65	53·8	12 8	41·5	7 50	12·3
28	210	380	200	350	—	—	—	—	—	—	—	0	1	516	23 58	470	8 36	46	50·9	13 21	39·7	7 19	11·2
29	165	85	230	380	—	—	—	—	—	—	1·20	1	0	517	0 3	467	9 21	50	52·6	12 10	41·3	7 40	11·3
30	215	215	215	305	—	—	—	—	—	—	0·50	1	0	522	21 49	470	11 5	52	52·0	12 35	41·2	22 53	10·8
31	200	230	190	200	—	—	—	—	—	—	—	0	0	521	23 53	472	10 8	49	50·9	12 53	41·2	3 34	8·8
M.	170	264	189	272	—	—	—	—	—	—	—	—	—	519	—	466	—	53	51·9	—	40·3	—	11·6

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3ʰ, 9ʰ, 15ʰ, 21ʰ, are given in the table. A similar note applies to the values in Table 6.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component. §			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.															
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	−196	369	75	196	—	—	—	—	—	—	—	2 *c*	1	3 40	1047	978	4 31	14 40	241	163	4 18	20 40	339	292	5 33
2	*x*	*x*	*x*	181	—	—	—	—	—	—	—	2 *c*	1	18 19	1032	990	10 55	13 38	259	198	7 10	18 50	342	321	11 50
3	211	271	189	*x*	—	—	—	—	—	—	—	1 *b*	0	18 40	1033	987	11 6	12 22	234	195	5 33	18 10	340	328	12 30
4	354	*x*	*x*	317	—	—	—	—	—	—	—	2 *c*	0	18 34	1031	981	11 30	13 22	250	195	8 23	17 40	341	313	12 20
5	294	181	23	249	—	—	—	—	—	—	—	1 *b*	1	21 13	1069	981	11 5	15 10	244	163	23 6	17 10	345	325	12 0
6	302	339	294	324	—	—	—	—	—	—	—	1 *b*	2	**1 55**	**1087**	**853**	**7 3**	**6 0**	**277**	**146**	**1 25**	18 28	364	**223**	**4 51**
7	294	*x*	8	75	—	—	—	—	—	—	—	2 *c*	1	0 27	1039	987	10 3	16 24	238	186	6 19	20 0	343	326	11 30
8	143	302	166	317	—	—	—	—	—	—	—	1 *a*	0	21 33	1028	983	10 30	14 5	246	200	5 40	18 30	339	323	12 40
9	407	143	121	249	—	—	—	—	—	—	—	2 *c*	0	24 0	1036	991	11 15	12 5	235	193	8 24	17 40	340	322	12 0
10	181	226	505	347	—	—	—	—	—	—	—	0 *a*	1	0 17	1048	986	12 5	13 33	252	194	8 15	20 20	339	319	11 53
11	256	211	362	226	—	—	—	—	—	—	—	2 *b*	0	21 5	1033	987	9 0	12 51	246	193	5 47	16 30	338	321	11 30
12	143	204	136	226	—	—	—	—	—	—	—	1 *b*	1	16 40	1034	984	9 7	12 50	248	193	7 32	16 34	345	316	11 52
13	362	256	*x*	211	—	—	—	—	—	—	—	1 *b*	0	19 9	1034	984	11 3	13 40	244	191	6 54	16 10	343	320	12 13
14	113	166	158	324	—	—	—	—	—	—	—	0 *a*	1	5 1	1034	978	11 21	12 15	262	185	7 54	17 20	335	311	12 0
15	128	136	83	106	—	—	—	—	—	—	—	0 *a*	0	21 52	1035	987	11 0	13 29	246	193	7 22	17 10	340	323	12 0
16	143	189	143	234	—	—	—	—	—	—	—	0 *a*	1	22 27	1053	978	10 37	13 20	251	182	7 49	16 30	342	313	12 13
17	15	211	362	211	—	—	—	—	—	—	—	1 *a*	1	3 47	1048	969	10 15	13 40	258	170	1 18	17 43	340	308	1 10
18	−196	219	83	385	—	—	—	—	—	—	—	1 *a*	1	20 11	1073	980	23 47	14 50	243	150	23 58	15 58	345	302	24 0
19	211	−166	45	8	—	—	—	—	—	—	—	2 *c*	1	15 28	1038	976	12 28	14 10	242	151	0 0	17 40	352	287	0 40
20	106	151	−158	294	—	—	—	—	—	—	—	2 *b*	0	18 50	1034	985	10 15	13 23	240	193	7 12	17 10	343	322	11 50
21	83	121	196	317	—	—	—	—	—	—	—	1 *a*	1	20 58	1059	988	11 36	13 4	255	200	5 58	18 22	345	320	12 23
22	287	143	53	369	—	—	—	—	—	—	—	1 *a*	2	20 14	1078	979	9 48	15 1	259	156	22 30	18 40	357	296	1 40
23	279	173	407	128	—	—	—	—	—	—	—	1 *a*	1	21 42	1067	973	10 3	13 45	249	180	22 1	19 0	348	309	2 40
24	68	38	128	106	—	—	—	—	—	—	—	0 *a*	1	23 7	1050	982	11 24	13 40	251	194	6 51	17 43	351	323	12 50
25	211	83	−8	189	—	—	—	—	—	—	—	1 *a*	0	18 56	1027	981	9 49	13 27	244	187	9 1	16 56	342	320	12 0
26	23	68	143	264	—	—	—	—	—	—	—	1 *a*	0	21 52	1048	984	10 6	13 35	254	203	8 44	18 10	341	320	12 30
27	271	173	196	422	—	—	—	—	—	—	—	1 *a*	1	18 23	1061	962	11 33	14 40	259	191	8 48	**19 20**	**365**	326	11 55
28	279	256	60	—	—	—	—	—	—	—	—	1 *a*	1	15 52	1036	986	10 50	15 11	249	178	7 18	16 10	349	326	10 40
29	—	—	143	181	—	—	—	—	—	—	—	1 *b*	1	19 41	1033	983	9 57	14 44	254	194	8 0	18 10	347	326	12 14
30	158	136	234	460	—	—	—	—	—	—	—	0 *a*	0	21 46	1051	973	11 6	13 2	252	?	?	16 0	345	328	12 20
31	158	181	60	234	—	—	—	—	—	—	—	1 *b*	0	23 46	1051	990	10 10	13 16	239	194	3 30	20 0	353	329	12 30
M.	150	167	159	258	—	—	—	—	—	—	—	—	—	—	1046	978	—	—	249	184	—	—	345	314	—

x Indeterminate. An explanation of the Headings of the columns is given in the Preface.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·3 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	4·5	10·3	...	...	4·5	10·3	...	...	1·3	7·6	...	...	7·6	5·4	...	16·5	5	15
2	...	5·4	5·4	...	...	2·7	6·3	...	...	0·5	3·1	...	1·8	...	1·8	...	11·2	0	10
3	2·7	...	0·5	...	3·1	...	...	...	...	3·1	1·3	...	...	...	...	4·0	11·2	18	35
4	...	4·0	...	9·8	...	2·2	...	11·2	...	...	...	6·7	...	...	6·7	...	?19·2	7	5
5	6·3	...	14·8	...	6·3	...	9·8	...	9·8	...	4·0	...	4·9	...	2·2	...	?17·0	15	35
6	0·9	...	...	4·5	...	3·6	...	8·5	...	1·8	...	4·5	...	5·8	...	1·3	?	?	
7	...	4·0	...	0·9	...	7·6	3·1	...	...	3·6	5·4	...	...	2·7	6·7	...	?	?	
8	...	4·0	2·7	...	...	4·0	4·0	...	...	2·7	4·0	...	...	...	4·5	...	?	?	
9	...	2·7	6·3	...	...	...	7·6	...	4·0	...	4·0	...	2·7	...	3·6	...	10·7	11	30
10	0·5	...	0·9	...	...	2·7	...	1·3	...	4·9	2·2	...	...	...	3·6	...	9·8	23	10
11	...	3·1	7·6	...	...	3·1	7·6	...	...	...	4·5	...	1·3	...	2·7	...	10·7	5	35
12	...	0·5	1·8	...	...	4·9	...	...	...	6·3	...	2·7	...	6·7	...	2·7	11·2	17	55
13	...	7·6	3·1	...	...	7·2	7·2	...	...	4·9	4·9	...	...	3·1	7·6	...	13·0	6	25
14	...	4·5	10·3	...	...	2·2	11·2	...	...	...	12·1	...	...	1·8	9·4	...	15·7	14	30
15	...	3·6	8·5	...	...	4·9	7·6	...	...	...	11·6	...	...	...	3·1	...	14·8	15	25
16	1·3	...	3·6	...	4·9	...	2·2	...	6·3	...	2·7	...	6·3	...	2·7	...	13·9	18	45
17	6·3	...	...	...	8·9	...	...	...	6·3	...	2·7	...	4·5	...	3·1	...	14·8	7	20
18	3·6	...	2·7	...	3·1	...	2·2	...	5·4	...	0·9	...	2·2	...	...	0·5	11·2	14	15
19	2·2	...	...	...	5·4	...	...	3·6	3·6	...	...	2·7	...	0·9	..	4·0	?11·2	9	45
20	...	4·0	4·0	...	...	4·0	9·4	...	...	1·8	8·1	...	...	...	11·2	...	?16·1	21	5
21	...	...	10·3	...	...	...	8·9	...	2·2	...	3·1	...	1·3	...	5·8	...	14·8	1	35
22	...	5·8	5·8	...	...	1·8	9·4	...	6·3	...	4·0	...	4·5	...	4·5	...	12·1	8	40
23	6·3	...	2·7	...	6·7	...	4·5	...	4·5	...	6·7	...	2·2	...	4·9	...	14·3	5	0
24	...	3·6	...	1·3	...	4·5	1·8	...	...	2·7	...	0·5	...	1·8	...	...	7·6	9	10
25	0·9	...	4·9	...	2·7	...	4·0	...	1·3	...	2·2	...	0·5	...	...	3·1	9·4	3	20
26	...	0·9	...	4·0	...	3·6	...	8·1	...	7·2	...	4·9	...	8·1	...	3·1	13·9	9	50
27	...	4·0	...	1·8	...	4·0	...	0·9	...	2·2	...	0·5	...	0·5	0·5	...	10·3	0	25
28	2·2	...	0·9	...	5·8	...	...	1·3	4·0	...	...	1·8	6·3	...	...	1·3	15·2	22	5
29	9·4	...	...	4·0	...	...	7·2	7·2	8·9	...	3·6	...	5·8	...	5·8	...	17·9	3	40
30	0·9	...	5·4	...	...	1·8	9·4	...	...	2·7	6·7	...	...	4·0	5·8	...	12·5	9	30
31	...	3·6	5·4	...	...	2·2	4·9	...	3·6	...	2·7	...	5·8	...	4·0	...	13·9	23	40
S+N & W+E	109·3		144·2		118·4		180·7		111·9		132·4		93·1		125·6				
S−N & W−E	−22·3		91·6		−24·6		96·5		20·5		83·8		7·1		85·6				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	...	5·7	...	2·4	...	7·6	3·1	...	...	10·9	4·5	...	...	10·9	4·5	...	13·1	17
2	...	6·2	4·2	...	...	...	3·9	...	1·9	...	4·5	...	1·0	...	2·4	...	8·5	1
3	1·1	...	1·1	...	5·2	...	...	2·1	4·0	...	...	1·6	3·3	...	...	1·4	5·9	13
4	3·3	...	...	1·4	4·3	...	...	2·9	...	...	...	6·2	...	3·4	...	8·2	10·2	24
5	...	6·7	...	0·1	...	...	...	11·1	3·1	...	...	7·6	1·4	...	...	3·3	13·1	5
6	8·2	...	...	...	6·9	...	...	2·9	5·5	...	...	3·7	3·7	...	...	3·7	8·2	3
7	1·8	...	...	1·8	...	...	...	3·6	...	1·9	...	4·5	...	3·6	...	1·5	5·6	17
8	...	3·5	...	0·7	...	1·5	...	3·6	...	1·0	...	4·8	...	3·5	...	3·5	6·6	13
9	...	4·9	...	...	...	2·2	3·2	...	...	4·3	1·8	...	...	1·8	0·8	...	5·6	1, 13
10	...	0·5	...	1·2	...	0·8	...	1·8	...	...	...	3·0	...	...	...	2·0	3·0	12,13,14,15,17
11	...	...	...	2·3	...	0·5	...	2·6	...	1·3	...	3·0	...	1·1	...	1·1	3·3	8, 14, 15
12	...	2·4	...	1·0	...	5·5	1·1	...	...	6·0	4·0	...	...	6·0	4·0	...	8·2	23
13	...	6·3	6·3	...	...	8·8	8·8	...	...	8·1	8·1	...	...	4·3	2·9	...	12·8	7, 8
14	...	0·7	...	...	...	1·0	...	...	...	2·5	2·5	...	...	2·5	1·7	...	3·9	22
15	...	1·1	1·1	...	...	1·1	1·1	...	...	2·0	...	...	...	1·2	0·5	...	2·3	7, 17
16	...	0·9	2·1	...	...	0·6	2·9	...	...	1·1	1·1	...	...	0·5	...	0·5	3·3	10, 11, 12
17	...	1·0	...	2·4	2·3	...	...	5·5	2·1	...	...	5·2	2·0	...	...	4·8	6·6	11
18	1·6	...	...	4·0	0·9	...	2·1	...	1·8	...	4·3	...	0·7	...	0·1	...	4·9	16
19	...	9·1	3·8	...	...	2·6	6·4	...	...	2·1	2·1	...	...	0·3	...	0·6	9·8	3, 4
20	...	1·9	...	4·5	...	1·6	...	4·0	...	...	...	3·9	...	...	...	2·0	4·9	3, 5, 14
21	...	0·9	...	0·4	1·1	...	2·8	...	3·3	...	7·9	...	4·0	...	6·0	...	8·5	15
22	...	2·5	6·1	...	...	3·5	8·5	...	...	2·5	6·1	...	...	1·8	4·3	...	9·8	11
23	...	0·3	1·6	...	...	0·5	0·5	...	...	0·6	0·3	...	...	...	...	0·3	2·6	1
24	...	...	...	1·0	...	0·4	0·9	...	...	1·3	0·3	...	...	1·0	...	...	2·3	12, 17, 18
25	...	0·4	2·0	...	...	1·4	3·3	...	...	4·0	1·6	...	...	5·7	...	3·8	7·5	17, 19
26	...	5·5	...	3·7	...	6·9	2·9	...	...	7·6	3·1	...	...	6·9	2·9	...	9·5	11
27	...	6·9	...	...	...	5·9	...	...	...	5·2	2·1	...	...	2·4	1·0	...	6·9	1, 3
28	...	1·2	0·5	...	...	0·9	0·4	...	0·9	...	...	2·1	1·3	...	...	3·0	5·6	24
29	2·8	...	...	6·7	...	...	...	9·2	...	...	...	12·5	...	6·7	...	10·1	13·8	17
30	...	1·4	...	1·4	...	10·9	...	4·5	...	11·6	4·8	...	...	6·9	6·9	...	12·5	11, 15
31	...	1·0	2·4	...	...	2·3	5·5	...	...	1·7	2·5	...	4·2	...	...	4·2	8·5	1, 3
S+N & W+E	89·8		76·2		87·2		111·2		98·3		119·7		92·1		92·0			
S−N & W−E	−52·2		−13·8		−45·8		3·6		−53·1		3·5		−48·9		−16·0			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	1·8	9·0	...	...	2·6	6·2	...	...	3·2	7·7	...	...	4·7	4·7	...	9·8	3	50
2	...	4·7	4·7	...	...	4·5	3·0	...	...	1·2	1·2	...	0·0	0·0	0·0	0·0	10·7	2	15
3	1·1	...	...	5·3	2·7	...	...	6·6	...	...	...	12·1	...	1·1	...	2·7	17·9	16	45
4	...	1·0	4·9	...	...	8·8	13·2	...	...	5·6	13·5	...	...	2·7	13·5	...	20·6	5	55
5	2·6	..	6·2	...	1·9	...	4·6	...	3·3	...	...	...	...	8·8	...	...	28·6	23	35
6	...	10·5	15·6	...	...	...	14·6	...	...	5·9	14·2	...	...	2·5	12·7	...	29·5	1	10
7	...	5·3	8·0	...	...	3·4	8·1	...	...	4·6	11·2	...	...	2·6	13·1	...	16·1	12	50
8	...	2·4	11·9	...	...	...	9·2	...	...	...	5·0	...	...	0·4	2·1	...	14·3	5	0
9	...	0·7	1·6	...	...	0·6	2·8	...	3·5	...	3·5	...	1·1	...	5·7	...	12·1	22	15
10	1·6	...	8·1	...	...	8·3	8·3	...	...	6·0	9·0	...	...	5·1	7·6	...	13·9	7	15
11	...	2·6	6·2	...	...	1·0	2·3	...	1·2	...	0·5	...	1·6	...	...	8·1	15·7	24	10
12	...	...	...	10·4	...	...	...	11·7	...	8·0	...	8·0	...	11·2	...	4·6	17·4	15	55
13	...	9·4	...	1·9	...	9·6	1·9	...	...	5·9	5·9	...	...	2·7	6·6	...	17·4	16	45
14	...	3·8	3·8	...	...	4·7	4·7	...	...	3·8	9·2	...	...	3·2	7·7	...	13·9	10	5
15	...	3·2	7·7	...	...	3·8	9·2	...	...	2·7	6·6	...	..	...	6·3	...	12·1	9	20
16	4·5	...	3·0	...	5·6	...	5·6	...	4·8	...	3·2	...	6·9	...	2·9	...	12·5	24	15
17	*	*	*	*	7·0	...	1·4	...	...	1·1	2·7	...	1·0	...	2·3	...	13·4	2	45
18	1·0	...	2·3	...	5·0	...	...	...	3·0	...	4·5	...	4·8	...	3·2	...	11·2	16	55
19	5·8	...	...	...	6·9	...	...	2·9	...	...	10·8	...	...	...	7·9	...	17·9	13	45
20	...	...	8·8	...	...	...	8·8	...	...	4·0	9·6	...	...	4·0	9·6	...	15·2	17	50
21	...	...	9·2	...	...	...	10·0	...	3·2	...	7·7	...	...	6·5	9·7	...	17·0	24	5
22	...	6·5	6·5	...	...	1·9	4·6	...	1·1	...	5·3	...	2·6	...	6·2	...	16·1	0	50
23	4·3	...	10·4	...	2·3	...	11·5	...	2·2	...	11·1	...	3·7	...	8·9	...	15·2	4	40
24	6·7	...	...	...	...	4·6	6·9	...	...	1·2	6·2	...	...	0·6	2·8	...	11·6	7	30
25	0·8	...	1·9	...	0·9	...	1·4	...	1·4	...	...	2·1	2·1	...	...	...	5·4	22	45
26	...	...	2·9	...	...	1·1	5·3	...	...	6·0	9·0	...	...	5·6	8·3	...	17·9	17	50
27	...	2·2	5·4	...	...	0·6	3·2	...	...	2·3	3·5	...	...	1·4	2·1	...	9·4	1	15
28	...	0·3	0·7	...	4·2	...	...	...	8·8	...	...	...	9·8	...	2·0	...	13·4	17	15
29	...	...	5·4	...	5·0	...	5·0	...	5·0	...	5·0	...	4·7	...	4·7	...	11·2	15	30
30	0·6	...	3·2	...	...	5·2	3·5	...	...	5·9	3·9	...	...	5·3	5·3	...	10·3	14	45
31	...	2·1	2·1	...	...	1·2	1·2	...	...	...	5·0	...	0·8	...	4·1	...	8·9	24	25
S+N & W+E	85·5		167·1		103·4		177·7		104·9		197·2		107·5		175·4				
S−N & W−E	−27·5		131·9		−20·4		135·3		−29·9		152·8		−29·3		144·6				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	6·3	...	1·3	...	3·1	...	8·1	...	0·9	...	5·4	...	0·5	...	1·8	...	16·1	8	30
2	0·9	...	2·7	...	0·9	...	4·0	...	...	1·8	...	0·9	...	0·5	2·2	...	8·1	14	25
3	...	0·9	2·2	...	*	*	*	*	...	3·1	...	8·1	...	...	...	8·2	11·2	24	20
4	...	...	...	12·1	4·5	...	...	10·7	5·4	...	...	5·4	5·8	...	1·3	...	15·2	16	45
5	4·9	...	2·2	...	6·3	...	2·7	...	5·9	...	...	...	11·6	...	...	...	15·2	15	15
6	8·1	...	...	8·1	9·8	...	...	6·7	*	*	*	*	*	*	*	*	22·8	20	0
7	*	*	*	*	*	*	*	*	4·3	...	...	...	2·7	...	1·3	..	15·7	13	50
8	1·3	...	2·7	...	1·8	...	4·0	..	...	1·8	1·8	...	1·8	...	1·8	...	9·8	13	5
9	0·9	...	2·7	...	...	...	3·9	...	...	...	3·9	...	0·5	...	1·8	...	8·5	14	50
10	0·9	...	1·8	...	2·7	...	1·3	...	0·5	...	0·5	...	0·5	...	2·7	...	11·2	12	20
11	...	2·7	2·7	...	...	1·8	4·5	...	...	...	4·6	...	1·3	...	2·7	...	10·3	15	45
12	...	...	2·6	...	...	0·9	1·8	...	...	3·6	...	2·7	...	4·9	...	2·2	10·3	24	5
13	...	4·9	0·9	...	...	4·9	2·2	...	...	3·1	3·1	...	1·3	...	3·6	...	13·0	10	5
14	1·8	...	4·0	...	3·1	...	3·1	...	...	...	5·2	...	3·6	...	1·3	...	11·2	12	35
15	...	...	4·3	...	...	1·8	4·5	...	1·8	...	4·0	...	0·9	...	4·9	...	9·8	14	0
16	...	...	4·9	...	...	...	4·9	...	...	...	4·9	...	2·2	...	2·2	...	9·4	8	30
17	1·8	...	1·8	...	4·5	...	1·8	...	4·0	...	1·8	...	2·7	...	1·3	...	11·6	14	30
18	3·0	...	...	...	4·9	...	...	...	6·3	...	...	2·7	2·2	...	2·2	...	13·0	15	50
19	3·6	...	1·3	...	5·8	...	1·3	...	8·5	...	...	3·6	3·9	...	...	...	16·1	22	30
20	4·3	...	...	...	5·8	...	4·0	...	4·5	...	4·5	...	1·3	...	2·7	...	15·7	8	0
21	0·9	...	3·6	...	...	...	6·6	...	...	...	6·9	...	1·3	...	1·8	...	13·0	13	30
22	...	2·7	1·3	...	...	5·4	3·6	...	...	1·3	2·7	...	0·5	...	2·2	...	12·5	11	15
23	0·5	...	2·7	...	4·3	...	...	...	2·7	...	3·6	...	...	...	5·2	...	10·3	12	20
24	0·5	...	3·1	...	0·5	...	3·1	...	1·3	...	2·7	...	...	1·3	1·3	...	7·6	0	35
25	...	0·9	1·3	...	1·3	...	0·5	...	2·2	...	2·2	...	1·6	...	...	...	8·5	23	55
26	...	...	...	8·5	...	11·6	...	11·6	...	3·1	15·7	...	...	7·2	10·7	...	28·2	14	35
27	...	5·8	5·8	...	...	4·5	3·1	...	...	2·7	2·7	...	...	1·8	1·8	...	22·4	0	50
28	...	1·3	2·7	..	...	1·8	1·8	...	3·1	...	...	3·1	2·3	...	...	...	11·2	24	20
29	4·3	...	...	...	6·9	...	...	...	3·1	...	3·1	...	0·9	...	0·9	...	17·4	6	5
30	2·7	...	2·7	...	3·1	...	2·2	...	...	...	2·6	...	...	1·3	2·7	...	10·3	11	10
31	...	0·5	2·2	...	...	0·5	1·8	...	...	0·9	...	1·8	1·8	...	...	1·8	6·3	20	45
S+N & W+E	66·4		92·2		102·5		103·8		75·9		96·2		68·2		72·6				
S−N & W−E	27·0		34·8		36·1		45·8		33·1		39·6		34·2		48·2				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time.

* No Record.

† Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.

‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8.

§ Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. August 29. 18 h. 15 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	13·1 km.	161 mb.	221° A.
LOWEST TEMPERATURE,	12·6 km.	174 mb.	220° A.
BASE OF STRATOSPHERE,	9·7 km.	270 mb.	223° A.
Type	No. 2.		

SOUNDING No., R. 203.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 1′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Boston.
Distance, and Orientation, 184 km. 56°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.), 750·8 mm., . .	999·3 mb.	1001·0 mb.
TEMPERATURE, ...	289° A.	290° A.
VAPOUR PRESSURE, ...	...	...
GRADIENT WIND:—Direction, . .	225°	230°
Velocity, . .	16·9 m/s.	12·7 m/s.
Correction for Curvature, . .	2·4 m/s.	0·7 m/s.
Final Components, W. to E. .	10·3 m/s.	9·2 m/s.
Final Components, S. to N. .	10·3 m/s.	7·7 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
13·0	164	221		
12·0	190	221	0	
11·67	200	...		
11·0	223	223	2	
10·0	260	223	0	
9·06	300	...		
9·0	303	228	5	
8·0	341	236	8	Temperature 220° at 12·6 km.
7·08	400	...	6	
7·0	405	242		
6·0	467	248	6	
5·49	500	...	9	
5·0	533	257		
4·09	600	...	6	
4·0	607	263	6	
3·0	690	269	6	
2·92	700	...	6	
2·0	783	275		
1·84	800	...	6	
1·0	886	281		
0·88	900	...	6·5	
Ground M.S.L.	982	287·5	...	
	...	...	...	

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. May 13. 15 h. 30 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15·5 km.	114 mb.	222° A.
LOWEST TEMPERATURE,	11·0 km.	227 mb.	220° A.
BASE OF STRATOSPHERE,	10·9, 11·1 km.	227 mb.	220° A.
Type	No. 1.		

SOUNDING No., R.K.C. 41.
PLACE, SOUTHPORT.
Latitude, 53° 39′ N.
Longitude, 2° 59′ W.
Height above M.S.L., ...
PLACE OF FALL, Southport.
Distance, and Orientation, 1·6 km. 45°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.), 765·3 mm., . .	1021·0 mb.	1020·3 mb.
TEMPERATURE, ...	282° A.	284° A.
VAPOUR PRESSURE, ...	...	...
GRADIENT WIND:—Direction, . .	?	?
Velocity, . .	?	?
Correction for Curvature, . .	Station in centre of an anticyclone.	
Final Components, W. to E. .	...	...
Final Components, S. to N. .	...	...

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
15·0	123	222		Travelled to the eastward. When last seen after 16 minutes about 8 km. east-north-east.
14·0	144	221·5	−0·5	
13·0	168	221	−0·5	
12·0	195	220·5	−0·5	
11·8	200	...		
11·0	227	220	−0·5	This ascent was made at the same time as one from Pyrton Hill, published in the May issue of the Geophysical Journal.
10·0	264	224 222	4 2	
9·2	300	...	6 7	
9·0	307	230 229		
8·0	356	236 234	6 5	
7·2	400	...	8 8	
7·0	409	244 242		
6·0	471	251 248	7 6	
5·5	500	...	6 9	
5·0	538	257		
4·2	600	...	5	
4·0	616	262		
3·0	700	269 267	7 5	
2·0	800 796	274 273	5 6	
1·0	900	278·5	4·5 5·5	
0·2	1000	...	5·5	
Ground M.S.L.	1020	284	...	
	1020·3	284	...	

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

BRIGHTON. K. 45. August 1. 14 h. 30 m. to 16 h. 30 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
Greatest height	...	...	...	...	...	...	...	...	Light Cu.-St. No clouds reached.
	1000	890·7	281·4	8·6	83	1·099	300	10	
	500	945·7	285·7	13	83	1·148	260	13	
100 m. above ground	215	978·0	289·5	0	75	1·171	240	14	
Ground level	115	989·6	289·5		73	1·185	250	12	
Computed for M.S.L.	0	...	...	...	...	...	280	9·1	...

BRIGHTON. K. 46. August 4. 10 h. 0 m. to 12 h. 0 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
865	904·1	283	...	95	1·108	200	20	Overcast, St. No clouds reached.
...	...	...	6·0	...	...	...	...	
500	944·4	285·2	9·8	90	1·148	170	20	
215	976·8	288	30	90	1·175	180	17	
115	988·4	291		85	1·176	165	8·9	
0	...	...	...	...	...	155	12·0	...

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level—*continued.*

Soundings by Kites (K.) and Pilot Balloons (P.)

BRIGHTON. **K.** 47. August 11. 10 h. 0 m. to 12 h. 0 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	1000	903·9	280·2	5·6	80	8·1	1·120	300	11	Overcast, Cu.-Ni.
	500	961·7	283		87	10·5	1·179	250	11	
100 m. above ground	215	995·0	285·8	9·8	87	12·7	1·207	260	13	
Ground level	115	1006·8	287·5	17	87	14·3	1·214	250	6	
Computed for M.S.L.	0	...	...	...	...	...	...	295	9·3	...

BRIGHTON. **K.** 48. August 14. 12 h. 45 m. to 13 h. 45 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
1000	892·9	277·4	10·2	100	8·3	1·118	240	15	Overcast Cu.-Ni. and Ci. Lowest clouds 820 m. above ground. Thunder in distance.
500	948·8	282·5		95	11·2	1·165	250	11	
215	981·8	283·5	3·5	80	10·1	1·202	250	15	
115	993·5	288	45	70	11·7	1·197	240	4·5	
0	...	...	...	...	...	...	265	9·1	...

BRIGHTON. **K.** 49. August 22. 11 h. 0 m. to 12 h. 0 m. G.M.T.

Greatest height	730	935·1	280·3		65	6·5	1·159	320	8	Clear to partly overcast Cu.-Ni. Erratic wind, very variable at all altitudes. Kite not sustainable at any definite heights.
	500	961·4	*283·2*	12	*64*	*7·8*	1·179	?	?	
100 m. above ground	215	994·7	*286·8*		*61*	*9·5*	1·204	?	?	
Ground level	115	1006·5	288		60	10·1	1·213	295	5·4	
Computed for M.S.L.	0	...	...	...	...	...	...	325	16·3	...

Values of Wind Direction and Velocity shown by Registering Balloons which have not yet been Recovered.

PYRTON HILL. No. **R.** 184. July 1, 1912. 20 h. 0 m. G.M.T.

Height.	Direction.	Velocity.	Components. W.-E.	Components. S.-N.
km.	Degrees from N.	m/s.	W.-E. m/s.	S.-N. m/s.
6·5	...	...	...	...
6·0	...	...	...	...
5·5	270	2	2	0
5·0	290	3	3	− 1
4·5	305	4	3	− 2
4·0	295	4	4	− 2
3·5	315	4	3	− 3
3·0	325	5	3	− 4
2·5	320	6	4	− 5
2·0	300	8	7	− 4
1·5	300	9	8	− 5
1·0	315	10	7	− 7
0·5	320	8	5	− 6

CRINAN. No. **R.** 197. July 2, 1912. 7 h. 4 m. G.M.T.

Direction.	Velocity.	Components. W.-E.	Components. S.-N.
Degrees from N.	m/s.	W.-E. m/s.	S.-N. m/s.
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
Lost behind building.			
60	10	− 9	− 5
65	8	− 7	− 3
55	12	− 10	− 7
55	10	− 8	− 6

CRINAN. No. **R.** 198. July 2, 1912. 20 h. 36 m. G.M.T.

Direction.	Velocity.	Components. W.-E.	Components. S.-N.
Degrees from N.	m/s.	W.-E. m/s.	S.-N. m/s.
...	...	...	...
...	...	...	...
25	9	− 4	− 8
15	13	− 3	− 13
10	14	− 3	− 14
20	16	− 5	− 15
15	10	− 3	− 10
5	14	− 1	− 14
360	11	0	− 11
20	12	− 4	− 11
20	9	− 3	− 8
35	10	− 6	− 8
15	16	− 4	− 15

CRINAN. No. **R.** 200. July 4, 1912. 7 h. 0 m. G.M.T.

Direction.	Velocity.	Components. W.-E.	Components. S.-N.
Degrees from N.	m/s.	W.-E. m/s.	S.-N. m/s.
Lost in cirrus cloud.			
50	18	− 14	− 11
60	15	− 13	− 8
55	14	− 11	− 8
55	14	− 11	− 8
50	13	− 10	− 9
50	11	− 9	− 7
45	8	− 6	− 6
40	8	− 5	− 6
10	6	− 1	− 6
360	5	0	− 5
345	4	1	− 4
335	4	2	− 4
315	4	3	− 3

PYRTON HILL. No. **R.** 192. July 4, 1912. 20 h. 0 m. G.M.T.

7·0	75	16	− 16	− 4
6·5	85	16	− 16	− 2
6·0	80	16	− 16	− 3
5·5	80	11	− 11	− 2
5·0	80	10	− 10	− 2
4·5	85	8	− 8	− 1
4·0	75	7	− 7	− 2
3·5	75	7	− 7	− 2
3·0	60	6	− 5	− 3
2·5	65	4	− 4	− 2
2·0	55	5	− 4	− 3
1·5	50	6	− 5	− 4
1·0	65	4	− 4	− 2
0·5	50	8	− 6	− 5

CRINAN. No. **R.** 201. July 5, 1912. 7 h. 0 m. G.M.T.

...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
Lost at once in fog.			
...	...	...	...

CRINAN. No. **R.** 202. July 5, 1912. 20 h. 30 m. G.M.T.

...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
Entered clouds.			
90	4	− 4	0
95	8	− 8	1
110	9	− 8	3

CRINAN. No. **R.** 203. July 6, 1912. 7 h. 3 m. G.M.T.

...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
...	...	...	...
Cloudy.			
200	3	1	3

At Pyrton Hill an ascensional velocity of 3·3 m/s. was assumed.

At Crinan the observations were made with one theodolite. The instruments hang 12 m. below the balloon, and the angle subtended between the balloon and instrument is used to calculate the ascensional velocity, assumed to be uniform.

Time is expressed in the hours 1 to 24 of civil reckoning.

Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).

Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.

Temperatures are expressed in degrees absolute (273° A = 0° C.).

Heights are given in kilometers (km.).

***Base of Stratosphere.**—TYPE 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.

TYPE 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. TYPE 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

SEPTEMBER 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 1*s.*

Second Year.—No. 9. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	4	1·1	I, I, I.	1st I, Several shocks? P's doubtful. S=4 h. 31 m. 37 s., 4 h. 36 m. 31 s., 4 h. 41 m. 11 s., L about 4 h. 50 m. I, Long waves 14½ h. I, Long waves 23 h. 50 m.
2	4-5	0·6		
3	5	1·0		4th I, Traces of long waves 0 h.–1 h. Much confused by wind.
4	5-6	2·0	I.	6th I, Disturbed 23 h.–24 h.
5	6	1·7		9th I, Disturbed about 19 h. 40 m.
6	5	1·0	I.	10th I, Disturbed 14 h. 40 m.–15 h. I, P ? S=16 h. 7 m., L=16 h. 29 m.
7	5	0·8		11th Iu, P=1 h. 0 m. 52 s., S=1 h. 11 m. 51 s., Δ=10020 km.
8	6	0·8		12th I, L=6 h. 25 m.
9	5	0·8	I.	13th I, Long waves 8 h.–8 h. 40 m. IIIr, P=23 h. 36 m. 45 s., S=23 h. 41 m. 10 s., Δ=2760 km. α=65° 33′ E. of S. Epicentre 40° 21′ N. 26° 55′ E.
10	6	0·8	I, I.	
11	5	1·1	Iu.	15th Iv, P=2 h. 5 m 47 s., S=2 h. 6 m. 45 s., L=2 h. 6 m. 54 s., Δ=530 km., α probably N.E., but P is so small that S.W. is possible. The vertical Seismogram gives indications of disturbance during the minute preceding P in the horizontal Seismogram. Epicentre 58° 32′ N. 3° 16′ E.
12	5	0·6	I.	
13	4-5	0·2	I, IIIr.	
14	4-5	0·2		16th I, L=15 h. 36 m. I, P? S=20 h. 13 m. 44 s., L=20 h. 20 m. I, P?, S=21 h. 13 m. 4 s., L=21 h. 16 m.
15	5	0·2	Iv.	19th I, P=4 h. 17 m. 38 s., S and L imperceptible, α=45° N.E. I, Small disturbance 15 h. 38 m.–15 h. 43 m.
16	5	0·1	I, I, I.	20th I, Start 21h 40 m., maximum at 22 h. 1 m.
17	5	0·2		21st I, Long waves 4 h. 42 m.–4 h. 57 m. I, Long waves 6 h. 59 m.–7h. 11 m. I, Disturbed 12 h. 11 m.–12 h. 24 m.
18	5	0·2		22nd I, Phases very doubtful, sharp impulse (S?) 5 h. 12 m. 0 s., (L?) 5 h. 28 m. Long waves not fully developed till 5 h. 50 m.
19	5-6	0·2	I, I.	
20	5	0·3	I.	24th I, Disturbed 21 h. 53 m.–22h. 7 m.
21	4-5	0·2	I, I, I.	25th I, Disturbed 0 h. 52 m.–1 h. 12 m. I, Disturbed 18 h. 30 m.–19 h. 0 m. I, Long waves 21 h. 20 m.
22	5-6	0·3	I.	26th I, Disturbed 18 h. 24 m. Iu, P?, S=19 h. 40 m., L=20 h. 6 m.
23	5	0·6		28th I, P confused by wind, S=13 h. 3 m. 6 s., L=13 h. 7 m.
24	5-6	0·4	I.	29th IIIu, P=21 h. 5 m. 45 s., S=21 h. 19 m. 43 s., α=39° 48′ N.E. Note: Earthquake similar to Aug. 16th 1911 and Aug. 17th 1912. In each S–P gives Δ too great, as PR_1–P indicates Δ circa 12,000 km.
25	5	0·6	I, I, I.	
26	4	0·7	I, Iu.	30th I, P=5 h. 44 m. 14 s., S?=5 h. 51 m. 42 s. or 5 h. 55 m. 56 s., L=6 h. 1 m., Δ ? =5850 km.
27	4	0·5		
28	4	0·7	I.	
29	4	0·6	IIIu.	
30	4	0·7	I.	

An explanation of the notation used is given in the preface.

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.
Heights above Ground:—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	mb.	mb.	200+°	200+°	200+°	200+°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	1015·6	1013·9	86·4	85·7	88	85	14·9	13·2	96	92	20	2	30	3	10≡0●	*5*	2·3	1·3	Intermittent ● 7 h. to 14 h.	…	…	…
2	1016·7	1017·9	86·9	86·8	89	86	13·9	15·3	88	98	29	2	16	4	9	*10*	3·1	—	Dull to misty with ●0.	…	…	…
3	1017·7	1014·0	88·7	88·2	90	87	17·0	16·6	95	97	20	5	19	9	10≡0	*10*≡0●	1·3	—	Heavy mist; gloomy.	…	…	…
4	1018·8	1021·6	86·7	85·6	88	85	11·5	10·5	74	73	23	9	24	10	8≡0	*6*	—	1·7	≡0, clearing in afternoon.	…	…	…
5	1022·0	1021·5	85·3	85·3	87	84	9·8	10·9	70	77	24	7	26	5	10	*9*	—	—	Dull, but clear.	…	…	…
6	1022·7	1025·1	85·1	84·2	87	83	11·5	10·9	83	81	26	5	—	0	8	*2*	—	2·3	Dull to fair.	…	…	…
7	1026·2	1026·8	86·9	87·2	89	83	13·6	15·3	86	94	23	3	20	5	8	*10*≡0●0	1·3	—	Dull. ≡0 *p.*	17868	20 27·7	68 10·4
8	1026·1	1025·7	86·9	87·0	89	87	15·6	14·9	99	93	23	4	26	2	9≡0	*10*≡0	—	0·2	≡0.	…	…	…
9	1025·2	1026·2	*86·2*	83·9	89	82	*13·2*	9·8	*88*	75	5	5	6	4	7	*0*	—	8·0	Fair to fine.	…	…	…
10	1027·0	1026·9	82·9	84·0	86	81	9·2	10·2	75	78	4	4	32	3	9	*6*	—	5·2	Dull *a.* Fine *p.*	…	…	…
11	1027·2	1027·6	83·0	83·7	86	79	10·2	11·2	83	87	—	1	4	2	2	*2*	—	10·2	Fine throughout.	…	…	…
12	1029·6	1030·6	82·6	82·1	88	79	10·5	10·5	88	90	4	2	—	1	0∞	*0*	—	10·1	☂; fine but ∞.	…	…	…
13	1031·3	1031·9	82·5	85·1	87	*n*78	10·9	11·9	93	84	—	0	28	2	2∞	*10*	—	9·7	☂; fine but ∞.	…	…	…
14	1030·6	1028·3	85·1	86·3	88	84	11·9	14·9	85	98	31	3	—	1	10	*10*≡0	0·5	0·1	Overcast most of day.	…	…	…
15	1026·1	1023·9	87·3	86·0	89	84	15·3	13·9	93	93	31	3	—	1	7	*1*	—	8·4	Fine.	…	…	…
16	1024·1	1024·7	85·1	86·2	88	81	12·6	14·2	89	94	—	0	—	0	3∞	*10*∞	—	7·9	☂; fine but ∞.	…	…	…
17	1026·0	1026·9	86·4	86·7	90	84	14·6	13·9	94	89	—	0	—	0	10∞	*10*≡0	—	2·0	Hazy.	…	…	…
18	1028·0	1028·1	87·9	85·1	*x*91	83	15·6	12·9	92	92	—	1	—	0	6∞	*0*	—	7·9	☂∞. Fine.	…	…	…
19	1027·8	1026·8	86·3	84·3	89	81	13·2	9·5	88	72	8	4	9	4	3∞	*2*	—	7·3	☂∞. Fine.	…	…	…
20	1025·9	1024·9	85·6	85·3	88	84	10·5	9·8	73	68	9	4	8	4	7∞	*2*	—	2·0	Cloudy and hazy.	…	…	…
21	1023·6	1023·0	86·3	85·6	89	85	11·5	10·9	74	75	9	5	10	4	6∞	*2*∞	—	7·3	∞. Fair.	17887	20 29·2	68 9·8
22	1022·1	1023·4	86·5	86·0	89	85	10·5	10·5	68	71	10	6	11	4	5∞	*7*	—	7·0	∞; fine to fair.	…	…	…
23	1024·5	1026·6	86·8	85·9	89	84	*11·9*	11·2	74	76	9	5	8	2	3∞	*8*	—	7·5	∞; fine to dull in evening.	…	…	…
24	1024·3	1019·7	86·8	86·4	89	85	10·5	10·9	66	70	9	5	11	7	3∞	*5*	—	5·9	∞; fine to fair.	…	…	…
25	1012·3	1008·0	86·8	85·8	88	84	10·2	12·9	66	88	12	10	13	11	6∞	*10*●	62·7	3·5	∞; squally; ●2 *n.*	…	…	…
26	1006·2	1006·6	85·6	84·8	86	84	12·6	12·2	87	88	11	9	8	10	10≡0●	*10*≡0	10·4	—	Overcast throughout. ≡0●	…	…	…
27	1007·7	1006·3	86·1	84·8	88	85	12·9	10·2	85	75	8	4	9	8	2	*10*	0·8	3·0	Fair to dull.	…	…	…
28	1003·4	1002·5	85·1	84·9	87	85	10·5	11·2	75	82	7	3	3	4	10	*10*	4·6	0·1	Misty; ● showers *p.*	…	…	…
29	996·7	996·9	85·1	84·5	87	84	11·9	10·2	86	75	5	6	9	6	9	*2*	0·8	0·6	Cloudy with ≡0.	…	…	…
30	994·9	992·6	82·6	84·8	86	78	9·8	12·2	83	90	5	3	—	0	3	*10*	—	7·8	☂; fair.	…	…	…
Means	1020·3	1020·0	85·7	85·4	88·0	83·2	12·3	12·1	83	84		4·0		3·9	6·5	*6·3*	87·8	4·23	Monthly **Totals** or **Means.**	17878	20 28·5	68 10·1
Normal 40 years	1014·1	1014·2	86·6	86·1	89·6	83·8	13·3	13·1	85	86		4·8		4·3	—	—	112·2	4·42	**Normals**, 40 years.			
					35 years		25 years				30 years		30 years					30 yrs				

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

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3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity. Vapour Pressure.		Humidity. Percentage.		Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	10 h.					0·3m.	1·2m.	
			200+	200+	200+	200+									Tenths of Sky covered.					200+	200+	200+	
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.				mm.	hrs.		°	°	°	
1	1014·1	1011·4	86·3	87·0	91	85	14·2	13·6	94	86	18	2	26	2	10	10	2·0	0·3	—	81	88·0	87·3	Dull with ● early.
2	1010·8	1016·0	85·9	84·7	89	82	13·6	10·9	91	79	24	3	29	2	10	0	—	4·2	—	81	88·1	87·3	Dull to fine.
3	1021·8	1019·2	85·8	86·9	89	80	11·5	13·2	77	84	—	1	17	5	8≡0	10	—	1·0	—	72	87·4	87·3	◡. Fine early ; dull from 9 h.
4	1013·8	1015·3	89·9	86·7	91	84	16·3	11·5	86	74	21	6	21	3	9	0	—	4·7	·067	86	87·9	87·3	Fair to fine.
5	1016·5	1014·4	85·7	84·4	88	82	9·5	9·8	64	74	23	6	23	3	8	7	0·3	6·4	—	77	87·6	87·2	Generally fine.
6	1013·3	1016·8	84·9	85·2	88	81	9·5	9·8	69	69	23	5	26	4	7	1	0·8	6·0	—	76	86·9	87·2	● midday, otherwise fine.
7	1021·5	1023·3	84·8	86·0	89	81	9·5	11·9	70	80	28	5	25	2	8	10	—	6·6	—	76	86·4	87·2	Fine, to fair in afternoon.
8	1019·9	1018·1	89·7	88·6	*x* 92	85	13·6	14·2	72	82	23	6	24	3	9	8	—	0·9	—	82	86·9	87·1	Dull most of day.
9	1022·1	1022·1	82·8	81·0	88	79	7·8	8·2	65	76	31	5	—	1	4	0	—	8·2	·049	81	87·4	87·0	Fine most of day.
10	1018·8	1019·7	83·0	82·0	85	79	9·2	9·5	74	84	27	4	29	2	9	0	—	0·6	—	73	86·3	86·9	Dull after 10 h.
11	1018·0	1020·0	82·1	82·9	84	80	7·8	10·9	67	90	26	4	29	3	10	10●	0·3	0·1	—	74	85·6	86·9	≡0 early ; dull.
12	1025·0	1029·6	85·8	85·2	89	84	11·9	12·6	81	87	32	7	2	3	10	9	—	4·2	—	82	85·6	86·8	Overcast at first, then fine.
13	1030·8	1028·1	84·9	83·5	88	80	11·5	11·9	84	94	—	0	—	1	7≡0	0≡0	0·3	1·4	—	75	85·8	86·8	Overcast to fair. ≡0.
14	1025·4	1023·3	85·8	87·5	90	81	12·9	13·9	87	85	24	2	28	3	10≡0	8	—	0·5	—	75	85·7	86·7	Gloomy and misty.
15	1022·6	1022·5	86·9	86·3	90	86	12·2	13·6	76	90	28	3	—	0	10≡0	10≡0	—	0·6	—	81	86·4	86·5	Overcast or misty ; fine in-
16	1023·7	1023·9	87·1	84·7	90	84	14·2	13·2	90	97	—	1	—	0	10≡0	9≡0	—	—	—	81	86·8	86·4	Dull throughout. [tervals.
17	1024·9	1026·0	86·9	83·9	88	82	13·6	12·2	86	94	25	2	—	0	10	0≡0	—	—	—	78	86·8	86·4	Dull, with ≡0.
18	1028·7	1030·6	82·4	84·5	89	79	11·2	10·5	95	78	—	1	3	4	5≡0	2	—	4·3	·021	75	86·1	86·4	≡ early ; clearing after 9 h.
19	1031·0	1029·6	84·5	84·5	86	83	9·8	9·5	74	72	2	5	3	4	10	10	—	—	—	80	85·9	86·4	Dull throughout.
20	1029·1	1028·4	84·9	84·4	89	83	11·2	9·2	80	69	3	2	4	4	9≡0	10	—	4·7	—	82	85·7	86·4	Dull till 11 h., finer after.
21	1029·5	1029·0	84·6	83·2	87	80	9·5	9·5	70	77	4	5	4	3	6	0≡0	—	9·0	·053	71	85·2	86·4	Fine during day.
22	1029·2	1028·6	84·8	84·8	89	79	8·5	10·9	**62**	80	7	8	4	5	0≡0	1≡0	—	9·5	—	*n* 70	84·7	86·4	Fine throughout.
23	1029·8	1029·4	84·8	84·8	90	80	11·9	11·5	86	83	3	3	5	4	5≡0	0≡0	—	6·2	—	72	84·6	86·3	≡0 ; fine most of day.
24	1027·6	1025·5	84·9	83·1	88	80	11·5	8·2	84	66	1	4	3	5	7	2≡0	—	3·2	—	71	84·6	86·2	Dull to fine.
25	1022·6	1020·8	84·7	82·5	87	81	8·8	8·5	64	71	8	6	8	3	8	10	—	2·7	—	75	84·3	85·9	Fair most of day.
26	1020·9	1020·2	83·7	81·8	88	80	7·8	8·5	63	77	8	7	8	3	0	*0*≡0	—	8·7	—	71	84·1	85·8	Fine throughout.
27	1020·5	1017·2	83·1	84·1	88	*n* 78	8·8	9·5	72	73	7	5	8	6	1	*0*	—	8·6	·059	*n* 70	83·6	85·7	≡0 early ; cloudless all day.
28	1012·8	1009·3	84·5	84·9	86	82	9·5	11·9	71	86	7	9	7	4	3	*10*≡0	1·3	5·4	·032	78	83·8	85·7	Fine.
29	1008·8	1005·8	86·5	85·6	90	85	13·2	13·6	86	94	14	6	12	4	9	*9*	**25·1**	2·5	—	83	84·6	85·7	Fair most of day.
30	995·0	987·3	86·0	85·9	90	85	14·2	14·2	97	97	12	5	7	4	10●0	*10*≡0●0	23·6	1·1	—	83	84·8	85·6	Dull, with ●2.
Means	1021·0	1020·4	85·3	84·7	88·5	81·6	11·2	11·2	78	82		4·3		3·0	7·4	5·2	53·7	3·72	—	77·1	85·9	86·6	Monthly **Totals** or **Means**.
Normal 40 years	1015·8	1015·6	86·7	86·1	91·2	82·7	12·6	12·7	80	83		3·1		2·3	—	—	51·8	4·70	—	—	—	—	**Normals, 40 years.**
					35 years		25 years.				30 years		30 years					30 yrs					

Note.—The cloud amounts in italic type at Kew were taken at 18 h.

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	983·1	981·6	84·8	80·4	87	80	11·9	9·5	85	92	24	5	—	0	9	5	0·8	2·1	—	—	—	—	
2	982·5	990·1	81·5	79·8	86	78	9·5	8·5	87	85	20	5	—	1	9●	2	2·5	6·0	—	—	—	—	◡ about 23 h.
3	990·1	978·6	80·3	87·4	88	77	9·5	15·6	93	96	12	3	20	11	10●	10●	**24·1**	—	—	—	—	—	≡0 midday.
4	976·7	979·0	83·5	82·0	87	81	10·5	8·8	85	78	20	14	24	12	9●	5	6·1	3·3	—	—	—	—	
5	978·5	981·1	82·2	81·6	85	81	8·5	8·8	74	81	24	13	24	9	5∞	7	0·3	4·5	—	—	—	—	∞ morning.
6	982·7	988·6	82·8	80·0	87	79	9·2	7·8	74	78	28	4	28	5	9	3	—	6·3	—	—	—	—	
7	992·3	989·3	81·8	83·7	85	79	8·2	12·9	72	100	4	3	20	2	9	10●0≡0	8·9	—	—	—	—	—	≡0 evening.
8	988·9	994·2	82·8	78·1	85	76	11·5	7·8	97	89	4	3	4	3	10●0	3	1·c	—	—	—	—	—	Generally overcast.
9	997·2	995·4	79·8	79·9	83	*n* 74	6·5	7·1	**66**	70	32	5	32	5	1	5	—	8·0	—	—	—	—	◡ early *a*. < 23 h.
10	995·0	994·6	81·2	76·4	83	75	7·1	5·4	67	**66**	32	8	32	1	6	0	—	2·9	—	—	—	—	Air rather dry.
11	993·9	998·6	80·4	79·1	84	75	7·1	7·8	71	82	4	7	4	4	9	3	—	3·1	—	—	—	—	
12	1002·1	1002·2	82·1	77·6	86	76	8·8	7·1	76	85	4	2	—	1	10	0≡0	—	2·8	—	—	—	—	Overcast at times, with ≡0.
13	1001·0	998·4	84·1	83·4	89	75	10·5	10·5	80	85	20	4	24	7	6	10	—	8·5	—	—	—	—	
14	996·8	994·7	85·9	83·6	*x* 90	81	13·2	10·5	89	84	20	5	28	7	8●0	1	—	1·4	—	—	—	—	≡0 morning.
15	994·9	995·0	84·3	83·5	88	77	9·5	11·9	72	95	—	1	*28*	2	7	5	—	3·1	—	—	—	—	
16	995·4	995·1	81·5	83·8	89	79	10·5	10·2	94	80	—	1	*24*	3	10	8	—	5·1	—	—	—	—	≡ early.
17	996·7	998·9	84·0	82·3	*x* 90	75	10·2	9·5	77	81	12	3	—	1	1∞	2	—	8·1	—	—	—	—	∞ morning.
18	1002·9	1005·1	84·0	82·0	87	75	10·9	9·8	84	86	—	1	*4*	2	0∞	10	—	8·5	—	—	—	—	∞ morning.
19	1005·9	1004·8	82·0	78·4	87	75	8·8	8·2	78	92	—	1	—	1	8	1≡0	—	6·7	—	—	—	—	
20	1004·6	1003·8	79·3	81·7	84	75	8·5	9·8	88	90	—	0	—	1	10≡0	10≡0	—	—	—	—	—	—	Overcast throughout, with ≡0.
21	1004·6	1003·5	82·4	79·3	87	*n* 74	9·8	7·8	84	81	—	1	—	1	2≡0	0≡0	—	8·3	—	—	—	—	≡0 at times.
22	1004·2	1004·2	82·6	79·8	88	*n* 74	9·5	8·2	80	83	—	1	—	1	2≡0	0≡0	—	10·2	—	—	—	—	≡0 at times.
23	1004·7	1004·2	81·6	78·0	86	75	9·2	7·8	82	90	4	3	—	1	5≡0	0	—	7·5	—	—	—	—	∞
24	1004·0	1000·8	80·8	77·3	84	76	10·5	7·1	99	88	—	1	28	2	10≡0	0≡0	—	—	—	—	—	—	Overcast throughout, with ≡0.
25	997·2	994·6	81·7	80·7	84	76	8·5	7·8	76	74	12	2	12	4	8	10≡0	—	2·4	—	—	—	—	∞
26	993·9	993·2	81·0	77·6	83	*n* 74	7·1	7·1	68	84	12	4	—	0	10	0≡0	—	0·2	—	—	—	—	∞
27	994·1	992·0	81·4	80·5	86	*n* 74	7·8	8·5	73	81	12	2	12	6	8≡0	2≡0	—	8·5	—	—	—	—	≡0 morning and late evening.
28	991·5	990·5	82·3	81·5	84	79	8·8	8·8	76	81	8	9	8	6	6	10	—	0·5	—	—	—	—	Generally cloudy.
29	985·0	981·0	82·7	83·5	84	82	10·5	11·9	89	93	8	9	8	6	10●0	10	3·6	—	—	—	—	—	≡0 evening. [times.
30	970·2	963·0	82·9	82·9	85	82	10·9	11·9	88	98	8	8	4	6	10●≡0	7●≡0	15·0	—	—	—	—	—	Overcast throughout ; ≡0 at
Means	993·7	993·2	82·3	80·9	85·9	76·8	9·4	9·1	81	85		4·3		3·7	7·2	4·6	62·3	3·94	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·69.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air-Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	165	200	200	345	—	—	—	—	—	—	—	1	1	518	0 59	471	10 23	47	51·4	13 0	39·3	2 16	12·1
2	90	105	225	265	—	—	—	—	—	—	—	1	0	512	20 54	480	11 15	32	51·3	13 9	41·5	7 42	9·8
3	280	445	295	225	—	—	—	—	—	—	0·85	0	1	547	21 19	479	10 51	68	50·6	12 46	40·7	7 45	9·9
4	105	165	155	240	—	—	—	—	—	—	—	0	1	536	0 38	460	10 33	76	49·7	12 9	39·3	0 43	10·4
5	250	270	190	315	—	—	—	—	—	—	1·05	1	0	520	22 19	467	10 58	53	49·8	12 19	40·4	7 22	9·4
6	175	280	200	240	—	—	—	—	—	—	—	1	1	512	23 59	470	9 36	42	49·9	11 44	41·4	7 11	8·5
7	130	280	155	390	—	—	—	—	—	—	—	0	0	513	0 5	474	9 45	39	50·7	13 0	41·3	7 11	9·4
8	130	190	150	205	—	—	—	—	—	—	—	0	0	526	23 59	471	8 0	55	50·2	12 36	40·3	6 54	9·9
9	55	305	200	200	—	—	—	—	—	—	1·25	1	0	528	0 4	468	10 18	60	52·6	11 54	39·7	7 0	12·9
10	330	370	165	365	—	—	—	—	—	—	0·80	1	0	510	0 20	467	9 33	43	49·9	11 29	41·4	6 46	8·5
11	330	315	150	225	—	—	—	—	—	—	—	0	0	514	23 59	475	9 15	39	50·5	12 44	42·2	7 40	8·3
12	100	230	470	365	—	—	—	—	—	—	1·25	0	1	515	0 18	470	10 55	45	51·7	11 46	40·3	20 28	11·4
13	240	395	200	200	—	—	—	—	—	—	0·65	0	0	511	0 20	464	9 39	47	51·2	12 23	40·6	22 10	10·6
14	215	180	125	200	—	—	—	—	—	—	—	0	0	508	18 30	471	9 56	37	50·4	11 15	41·9	7 21	8·5
15	130	140	175	90	—	—	—	—	—	—	—	1	0	506	16 21	466	10 32	40	50·7	13 0	40·7	7 10	10·0
16	125	115	125	155	—	—	—	—	—	—	—	1	0	508	20 42	475	9 18	33	49·5	12 46	40·6	8 0	8·9
17	105	150	100	155	—	—	—	—	—	—	0·45	1	2	**602**	**20 32**	455	18 21	**147**	55·9	13 56	**10·5**	**20 20**	**45·4**
18	305	280	435	390	970	510	0·90	0·00	0·85	3·80	1·55	0	1	509	20 49	447	11 43	62	52·8	12 36	39·7	20 29	13·1
19	240	495	535	530	600	480	0·45	0·00	0·30	1·50	0·70	0	0	513	22 0	472	9 30	41	49·7	12 35	41·5	8 10	8·2
20	330	315	355	585	970	570	0·40	0·00	0·40	1·40	1·05	0	1	509	1 41	473	10 30	36	51·2	13 9	37·7	3 20	13·5
21	215	420	410	365	—	—	—	—	—	—	—	0	0	500	21 40	474	12 21	**26**	49·5	13 33	41·4	**7 46**	**8·1**
22	270	320	365	340	—	—	—	—	—	—	—	0	1	538	22 53	474	11 3	64	50·5	13 50	38·3	23 14	12·2
23	230	230	410	365	—	—	—	—	—	—	1·20	0	1	513	13 46	474	17 47	39	51·9	13 49	41·7	7 50	10·2
24	305	530	545	625	—	—	—	—	—	—	1·65	0	2	542	23 3	**422**	**9 59**	120	**57·4**	**10 25**	30·7	20 49	26·7
25	395	460	395	595	—	—	—	—	—	—	0·90	0	0	**496**	23 3	466	10 49	30	48·0	12 43	37·6	0 5	10·4
26	105	435	245	390	—	—	—	—	—	—	—	0	1	530	19 49	468	8 54	62	49·7	13 20	38·3	20 19	11·4
27	230	570	495	390	570	540	—	—	—	—	1·15	0	0	505	21 30	460	11 31	45	50·7	13 25	40·2	8 18	10·5
28	270	330	460	−100	—	—	—	—	—	—	—	1	0	507	19 9	466	10 45	41	50·7	13 46	40·9	8 19	9·8
29	80	50	225	−35	—	—	—	—	—	—	—	**2**	0	507	0 3	468	10 4	39	50·2	13 30	41·5	9 0	8·7
30	−265	40	165	0	570	700	0·50	0·60	0·70	1·15	0·65	2	0	519	21 43	478	11 28	41	49·6	14 0	40·5	9 13	9·1
M.	191	287	277	287	—	—	—	—	—	—	—	—	—	519	—	468	—	52	50·9	—	39·1	—	11·9

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3ʰ, 9ʰ, 15ʰ, 21ʰ, are given in the table. A similar note applies to the values in Table 6.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air-Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component. §			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.															
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	187	130	122	382	—	—	—	—	—	—	—	1 *b*	0	0 40	1038	984	10 31	13 40	247	184	2 17	24 0	304	285	1 20
2	223	—	194	360	—	—	—	—	—	—	—	1 *a*	0	20 32	1033	991	11 56	13 46	244	194	8 40	18 0	313	291	12 43
3	137	50	295	−878	—	—	—	—	—	—	—	2 *b*	1	21 17	1081	989	11 39	12 45	240	200	9 0	18 0	313	292	13 0
4	86	65	140	137	—	—	—	—	—	—	—	1 *b*	1	0 36	1072	974	11 17	13 36	239	199	1 14	18 0	318	289	3 10
5	115	115	173	223	—	—	—	—	—	—	—	1 *b*	1	22 14	1052	978	11 58	12 25	238	193	7 20	19 20	311	298	12 16
6	101	86	202	273	—	—	—	—	—	—	—	0 *a*	1	1 28	1038	981	9 40	1 3	241	198	7 16	19 20	312	295	1 30
7	—	—	216	288	—	—	—	—	—	—	—	1 *a*	0	0 0	1037	992	9 43	12 59	246	201	7 35	18 0	315	296	13 0
8	7	166	86	273	—	—	—	—	—	—	—	1 *b*	1	24 0	1055	987	9 47	12 33	246	194	7 41	19 40	315	298	12 0
9	295	216	187	281	—	—	—	—	—	—	—	0 *a*	1	0 0	1055	980	10 18	11 53	252	194	6 56	15 0	323	300	11 53
10	166	—	216	310	—	—	—	—	—	—	—	1 *a*	0	3 20	1030	991	9 35	12 10	235	190	6 45	15 10	317	299	11 50
11	281	266	166	202	—	—	—	—	—	—	—	0 *a*	0	23 58	1034	993	9 10 / 10 53	12 40	245	205	7 36	16 0	318	303	11 0
12	—	—	202	439	—	—	—	—	—	—	—	0 *a*	1	4 6	1035	981	10 57	13 20	250	187	20 27	17 20	322	301	11 50
13	540	331	238	346	—	—	—	—	—	—	—	0 *a*	1	17 24	1037	983	11 0	12 56	239	189	22 9	20 20	323	301	12 10
14	—	—	166	331	—	—	—	—	—	—	—	0 *a*	1	20 20	1032	983	9 51	13 13	244	200	7 21	16 30	321	306	11 30
15	130	144	252	—	—	—	—	—	—	—	—	0 *a*	0	18 20	1030	981	10 40	13 0	237	192	8 50	17 50	331	310	12 10
16	—	—	209	324	440	240	1·03	0·50	0·57	—	—	0 *a*	0	4 30	1031	994	9 55	12 43	243	192	7 50	16 10	333	315	11 40
17	—	—	180	576	—	—	—	—	—	—	—	0 *a*	2	**20 23**	**1202**	957	14 25	**14 53**	**293**	121	20 16	18 10	385	308	11 25
18	569	288	137	194	—	—	—	—	—	—	—	0 *a*	1	20 17	1038	946	11 43	12 33	252	188	20 26	15 5	350	315	1 59
19	180	151	202	454	—	—	—	—	—	—	—	0 *a*	1	21 58	1048	986	9 35	13 2	235	197	8 8	18 0	354	326	12 0
20	245	317	173	475	—	—	—	—	—	—	—	0 *a*	1	20 58	1039	982	12 27	13 10	242	170	3 30	17 30	352	323	2 40
21	511	281	252	439	—	—	—	—	—	—	—	0 *a*	0	23 47	1024	984	12 20	13 26	233	190	23 28	17 30	359	345	11 58
22	338	173	223	785	—	—	—	—	—	—	—	0 *a*	1	22 49	1073	989	11 40	13 49	241	169	22 36	19 13	363	344	23 20
23	490	590	202	720	—	—	—	—	—	—	—	0 *a*	2	23 50	1038	991	10 25	13 43	256	178	0 0	18 10	365	333	11 53
24	713	—	230	353	—	—	—	—	—	—	—	0 *a*	**2**	22 57	1109	**913**	**9 59**	5 38	283	**117**	**20 46**	20 14	371	**281**	**5 0**
25	497	245	238	389	—	—	—	—	—	—	—	0 *a*	0	0 27	1024	988	10 49	13 14	223	154	0 3	16 50	360	327	0 0
26	151	108	144	259	—	—	—	—	—	—	—	0 *a*	1	19 45	1081	996	11 7	14 10	231	172	20 25	19 30	378	?	?
27	266	187	223	360	—	—	—	—	—	—	—	0 *a*	0	22 12	1030	974	11 30	13 55	234	184	8 33	15 30	380	366	11 20
28	331	223	158	194	—	—	—	—	—	—	—	0 *a*	0	24 0	1032	984	11 27	13 45	237	188	8 44	**22 30**	**389**	378	13 0
29	122	158	−634	288	—	—	—	—	—	—	—	1 *b*	0	0 3 / 23 54	1033	922	11 36	14 14	235	189	9 0	19 58	386	368	13 20
30	101	−374	36	173	—	—	—	—	—	—	—	1 *c*	0	21 42	1046	989	11 26	14 10	233	190	8 51	**16 50**	**389**	373	12 10
M.	264	180	141	284	—	—	—	—	—	—	—	—	—	—	1050	979	—	—	244	184	—	—	342	316	—

An explanation of the Headings of the columns is given in the Preface.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	...	11·1	...	...	1·6	8·0	...	4·3	...	2·9	...	2·4	...	5·7	..	14·3	3	10
2	...	7·9	5·3	...	...	5·4	9·1	...	...	5·4	8·1	...	...	2·8	1·1	...	13·0	1	40
3	...	1·2	0·5	...	8·5	...	...	...	6·6	...	4·4	...	7·9	...	5·3	...	17·0	23	30
4	2·5	...	12·6	...	4·4	...	10·6	...	4·6	...	11·2	...	...	2·6	13·1	...	20·6	18	50
5	...	...	13·4	...	...	...	14·1	...	...	5·1	12·4	...	...	6·6	9·8	...	20·6	18	50
6	...	7·3	10·9	...	...	6·6	9·8	...	...	5·7	8·5	...	...	7·3	7·8	...	19·2	11	50
7	...	5·3	7·9	...	...	2·4	5·7	...	3·4	...	5·2	...	2·5	...	6·1	...	17·0	21	45
8	2·5	...	12·6	...	...	...	10·5	...	...	...	7·5	...	...	7·2	...	...	17·9	3	25
9	..	2·8	...	2·8	...	0·6	...	3·2	...	6·1	1·2	...	...	7·3	3·0	...	10·7	22	35
10	...	7·9	...	...	...	7·7	...	1·5	...	6·1	2·5	...	...	5·7	2·4	...	12·5	4	45
11	...	6·1	2·5	...	...	8·3	...	1·7	...	7·3	...	3·0	...	6·4	...	2·6	13·0	7	50
12	...	1·1	...	2·8	...	0·8	...	4·2	...	1·9	...	1·3	...	0·3	...	1·3	8·9	0	30
13	0·9	...	...	0·8	1·3	...	1·9	...	...	...	3·0	...	...	1·1	2·8	...	6·7	22	40
14	...	3·7	5·5	...	...	4·0	6·0	...	...	3·3	4·9	...	...	1·3	6·5	...	9·8	6	5
15	...	4·8	2·0	...	...	4·3	1·8	...	...	3·3	1·4	...	...	1·9	1·3	...	8·5	6	45
16	...	3·2	0·6	...	...	2·1	0·9	...	...	2·3	...	...	...	2·4	1·0	...	6·7	2	10
17	...	4·2	...	0·8	...	4·2	0·8	...	...	3·6	1·5	...	...	4·5	0·9	...	8·1	22	30
18	...	4·9	...	...	0·6	...	...	1·5	...	1·0	...	4·8	...	1·1	...	5·5	9·4	16	15
19	...	...	...	7·2	...	1·6	...	8·0	...	1·4	...	7·1	...	...	...	5·6	13·4	10	5
20	0·3	..	...	1·6	...	...	...	6·6	...	...	...	6·9	...	...	...	4·9	9·8	8	20
21	...	...	...	3·6	0·5	...	...	2·6	...	2·1	2·1	...	...	...	...	3·3	6·7	0	50
22	0·7	...	...	1·1	1·6	...	...	4·0	...	3·2	2·2	...	0·6	...	...	2·9	9·4	10	30
23	0·4	...	...	2·3	0·4	...	...	2·3	...	2·7	1·8	...	...	...	...	1·3	7·2	7	10
24	...	...	...	0·7	...	...	...	4·3	1·6	...	1·6	...	...	...	...	3·3	9·8	10	30
25	1·6	...	...	1·6	1·5	...	...	3·6	4·9	...	...	3·3	2·9	...	...	4·3	8·9	12	25
26	2·8	...	...	6·7	1·5	...	...	7·4	6·1	...	...	2·5	1·9	...	...	4·5	12·1	10	40
27	4·2	...	...	6·2	2·1	...	...	5·2	3·5	...	...	3·5	...	1·1	...	5·5	13·0	22	55
28	2·4	...	...	5·7	...	...	...	9·8	...	...	...	12·1	...	2·6	...	12·9	17·0	22	35
29	...	...	...	12·1	...	7·3	...	10·9	4·5	...	...	1·9	...	1·8	...	9·0	17·0	8	25
30	...	...	...	5·0	1·2	...	...	0·5	3·5	...	3·5	...	0·8	...	0·6	...	11·6	0	35
S+N & W+E	78·7		146·9		80·5		155·5		103·5		132·3		83·5		134·3				
S−N & W−E	−42·1		22·9		−33·3		0·9		−17·5		39·5		−45·5		0·5				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	4·8	...	...	2·0	2·2	...	3·2	...	...	...	7·5	...	...	...	1·6	...	7·5	11, 15
2	...	0·9	1·3	...	...	3·9	...	...	...	6·7	...	2·8	...	2·8	...	1·1	8·9	13
3	...	1·1	...	1·1	4·4	...	...	4·4	9·3	...	...	9·3	7·5	...	...	...	14·1	17
4	3·8	...	2·6	...	6·7	...	2·8	...	6·4	...	15·4	...	...	...	10·8	...	16·7	15, 17
5	...	...	9·8	...	...	3·9	9·4	...	...	4·8	11·6	...	...	4·6	11·2	...	14·8	11
6	...	6·9	6·9	...	...	8·6	8·6	...	...	9·0	9·0	...	..	7·6	7·6	...	13·8	12, 13
7	...	6·3	6·3	...	...	2·8	6·7	...	...	5·2	3·4	...	...	2·1	0·9	...	9·5	1
8	...	3·6	1·5	...	...	5·5	2·3	...	...	6·9	2·9	...	...	6·9	2·9	...	8·5	19, 20
9	...	6·7	2·8	...	...	7·9	5·3	...	...	9·4	3·9	...	...	9·1	3·8	...	11·5	13
10	...	9·7	4·0	...	...	9·4	3·9	...	...	9·1	3·8	...	...	9·1	3·8	...	10·5	3, 5, 23
11	...	11·5	...	...	...	9·8	...	...	...	6·6	...	...	...	3·0	1·3	...	11·5	3
12	...	0·8	1·8	...	...	2·0	3·0	...	...	...	3·6	...	...	...	2·3	...	3·9	24
13	2·0	...	4·8	...	3·3	...	4·9	...	3·6	...	8·8	...	...	2·8	6·7	...	11·1	17
14	...	1·4	3·3	...	...	2·4	5·7	...	...	3·3	7·9	...	...	2·6	6·4	...	8·9	16
15	...	3·0	7·3	...	...	3·7	3·7	...	...	2·7	4·1	...	...	1·5	3·6	...	8·2	1
16	1·2	...	5·8	...	...	...	9·2	...	...	...	10·5	...	...	1·9	9·3	...	12·1	12
17	...	3·1	7·6	...	...	4·6	6·8	...	...	4·4	4·4	...	...	2·8	1·1	...	9·2	1
18	...	1·8	0·8	...	...	2·1	0·9	...	...	1·6	4·0	...	...	0·9	1·3	...	4·6	16
19	0·0	0·0	0·0	0·0	...	0·6	0·8	...	3·0	...	...	...	2·6	...	...	...	3·6	24
20	2·4	...	...	1·0	0·9	...	...	0·4	0·9	...	...	0·4	0·6	...	...	0·3	3·0	1
21	2·8	...	...	1·1	4·3	...	...	1·8	2·6	...	...	0·9	...	0·4	...	4·9	8	
22	3·0	...	...	...	3·3	...	...	...	4·9	...	...	...	3·3	...	...	...	5·2	13
23	1·3	...	...	...	2·6	...	...	...	4·0	...	...	1·6	5·2	...	...	2·1	7·9	23
24	3·9	...	...	...	3·0	...	...	...	4·8	...	...	2·0	5·5	...	...	2·3	6·6	23
25	5·2	...	...	...	6·9	...	...	...	6·1	...	...	2·5	6·8	...	...	1·3	7·9	7
26	6·1	...	...	2·5	5·2	...	...	2·1	4·4	...	...	4·4	7·6	...	...	3·1	8·2	21
27	6·7	...	...	2·8	7·3	...	...	3·0	5·7	...	...	3·8	7·1	...	...	4·7	9·8	12
28	5·3	...	...	5·3	4·2	...	...	6·2	2·6	...	...	6·4	2·8	...	...	6·7	7·9	1, 6, 7, 24
29	2·9	...	...	6·9	3·6	...	...	8·8	3·5	...	...	8·5	3·3	...	...	7·9	9·5	9, 11
30	1·7	...	...	8·7	...	1·9	...	9·3	...	...	...	7·9	...	4·0	...	9·7	10·8	23
S+N & W+E	109·9		98·0		127·0		113·2		131·5		150·4		114·9		114·2			
S−N & W−E	−3·7		35·2		−11·2		41·2		−7·9		51·2		−8·5		35·8			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	4·4	6·6	...	...	3·5	5·2	...	...	...	4·6	...	1·8	...	...	4·3	11·6	5	40
2	...	2·5	0·5	...	...	4·9	1·0	...	...	2·3	2·3	...	...	1·5	1·5	...	6·3	8	25
3	0·3	...	1·3	...	0·7	...	3·7	...	...	...	5·8	...	1·6	...	8·1	...	13·0	23	55
4	2·4	...	12·3	...	...	3·4	8·1	...	...	3·0	7·3	...	...	3·8	9·2	...	15·2	3	30
5	...	6·2	6·2	...	...	2·7	6·6	...	...	4·2	6·2	...	...	4·9	7·3	...	15·7	9	30
6	...	4·7	4·7	...	...	6·2	6·2	...	...	5·9	3·9	...	...	4·5	4·5	...	13·4	13	5
7	...	5·4	2·2	...	...	3·5	1·5	...	...	2·8	4·2	...	...	1·9	4·6	...	10·7	1	20
8	...	1·8	4·3	...	...	2·6	6·2	...	...	2·7	6·6	...	...	3·9	5·9	...	10·7	18	50
9	...	4·2	6·2	...	...	3·2	0·6	...	...	3·0	...	1·3	...	2·3	...	2·3	9·4	1	20
10	...	3·0	...	1·3	...	7·1	...	...	...	7·1	...	...	...	6·6	...	2·7	11·6	14	50
11	...	2·5	...	0·5	...	7·1	...	...	...	5·7	...	1·1	...	6·2	...	2·6	11·2	9	55
12	...	1·5	...	3·5	...	1·8	...	4·3	...	3·8	...	2·6	...	2·1	...	2·1	8·1	2	10
13	...	1·0	...	2·3	...	0·3	...	1·3	...	1·5	...	1·5	...	2·8	...	0·6	4·5	0	35
14	...	1·3	...	...	...	3·3	...	...	...	4·3	1·8	...	...	3·9	1·6	...	8·1	15	30
15	...	1·9	0·8	...	...	2·8	0·6	...	...	1·9	...	0·8	...	1·5	...	1·5	5·4	10	45
16	...	0·3	...	0·3	0·0	0·0	0·0	0·0	...	1·6	...	0·7	...	0·3	...	0·3	1·3	14	50
17	...	0·3	...	0·3	...	0·6	...	2·8	...	3·5	...	1·5	...	1·6	...	3·9	6·3	22	30
18	...	0·7	...	5·7	...	...	...	6·3	...	...	...	6·7	...	...	...	6·7	13·0	24	15
19	...	...	...	10·8	...	...	...	10·0	...	...	...	11·7	...	...	...	12·5	18·3	19	30
20	2·3	...	...	11·5	...	...	...	9·6	...	...	2·5	12·7	...	...	...	12·9	18·3	2	40
21	...	...	...	9·2	...	...	...	11·3	...	...	...	9·6	...	...	...	10·8	16·1	19	10
22	1·4	...	...	7·0	2·0	...	...	10·2	2·1	...	...	10·6	2·6	...	...	13·1	18·3	20	40
23	3·4	...	...	8·1	*	*	*	*	3·5	...	...	8·5	1·4	...	...	7·0	14·8	11	25
24	1·0	...	...	4·9	1·3	...	...	6·6	...	...	...	8·8	...	...	...	6·7	12·5	13	10
25	3·2	...	...	7·7	6·2	...	...	6·2	5·3	...	...	8·0	6·3	...	...	9·4	15·2	20	55
26	5·6	...	...	8·3	7·0	...	...	10·4	5·1	...	...	12·4	4·6	...	...	11·2	20·6	12	40
27	6·0	...	...	9·0	4·6	...	...	11·2	7·0	...	...	10·4	6·5	...	...	9·7	17·4	12	30
28	3·5	...	...	8·5	3·5	...	...	8·5	...	...	...	14·2	...	1·0	...	4·9	17·9	14	45
29	...	...	14·6	...	4·5	...	3·0	...	1·8	...	...	2·7	0·0	0·0	0·0	0·0	17·9	2	35
30	...	...	...	1·7	...	0·4	...	...	1·4	...	...	7·0	...	5·6	3·7	...	10·7	12	45
S+N & W+E	70·8		158·3		83·2		141·4		79·5		178·0		79·2		171·6				
S−N & W−E	−12·6		−38·9		−23·6		−56·0		−27·1		−87·6		−29·6		−78·8				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	1·8	...	1·8	...	3·6	...	2·7	...	...	3·9	...	...	0·5	...	2·2	...	9·8	10	5
2	...	...	2·3	...	...	...	3·9	...	...	4·5	3·1	...	...	2·7	2·7	...	14·3	13	15
3	...	1·8	1·8	...	...	1·3	2·2	...	1·3	...	...	2·7	4·0	...	2·7	...	12·1	21	10
4	4·9	...	3·1	...	1·3	...	6·3	...	...	...	7·2	...	1·3	...	...	2·7	13·9	14	30
5	0·9	...	4·0	...	...	...	8·5	...	...	...	8·5	...	...	...	5·6	...	16·1	12	20
6	...	...	5·2	...	...	1·3	7·6	...	...	2·2	4·9	...	...	0·9	4·5	...	12·5	10	55
7	...	1·8	3·1	...	...	2·7	6·3	...	...	2·7	2·7	...	...	...	3·0	...	12·1	11	0
8	...	...	4·9	...	...	2·2	4·9	...	...	2·0	...	...	...	4·0	...	2·7	9·8	24	0
9	...	3·1	1·8	...	...	3·1	3·1	...	...	4·0	4·0	...	...	2·2	5·8	...	16·5	13	10
10	...	2·2	5·4	...	...	3·6	2·7	...	...	4·0	1·8	...	...	4·0	2·7	...	13·0	16	30
11	...	2·2	4·9	...	...	4·0	4·0	...	...	4·9	2·2	...	...	6·7	1·3	...	17·9	14	50
12	...	8·9	...	3·6	...	6·7	...	6·7	...	3·6	...	1·3	...	4·0	...	0·9	16·1	2	30
13	...	1·3	...	...	...	1·3	1·3	...	...	...	1·0	...	2·2	...	0·9	...	5·4	23	45
14	1·3	...	2·7	...	...	1·8	1·8	...	...	2·7	0·9	...	...	0·9	0·5	...	6·7	13	10
15	...	0·9	2·2	...	...	1·3	0·9	...	...	4·0	2·7	...	...	2·2	0·9	...	10·7	14	55
16	...	2·2	2·2	...	...	0·9	1·3	...	1·3	...	...	3·1	2·2	...	0·9	...	5·8	14	45
17	0·5	...	1·8	...	...	0·5	3·1	...	...	3·0	...	...	...	0·5	0·5	...	8·1	10	30
18	...	0·9	0·9	...	...	3·9	...	...	...	5·2	...	...	...	5·2	...	...	10·7	?	
19	...	4·0	...	2·7	...	4·0	...	4·0	...	4·5	...	3·1	...	4·0	...	4·0	10·7	1	0
20	...	4·9	4·9	...	...	2·2	...	4·9	...	2·2	...	4·9	...	4·0	...	9·8	13·0	16	55
21	...	...	...	8·2	...	1·8	...	9·4	...	...	...	7·9	...	...	...	10·8	12·5	20	25
22	1·8	...	...	9·4	...	...	...	9·5	...	1·8	...	9·4	...	3·1	...	8·1	11·2	17	20
23	...	2·2	...	4·9	...	2·2	...	5·8	...	2·2	...	4·9	...	5·8	...	5·8	9·8	20	40
24	...	2·2	...	2·2	...	2·7	...	6·3	...	1·8	...	8·9	...	3·1	...	7·6	14·3	3	5
25	...	...	...	6·6	...	...	...	7·2	...	...	...	4·9	1·3	...	...	7·6	10·3	21	20
26	1·8	...	...	8·9	...	...	...	5·9	3·1	...	...	7·6	3·6	...	...	8·1	12·1	23	40
27	5·8	...	...	5·8	3·1	...	...	8·1	...	...	...	10·5	...	...	...	13·1	15·2	22	10
28	2·2	...	...	11·2	...	2·7	...	13·9	...	...	...	15·7	...	...	...	14·4	17·9	12	35
29	4·9	...	...	11·6	4·9	...	...	7·6	4·9	...	...	4·9	5·8	...	...	5·8	16·5	23	15
30	8·9	...	...	8·9	8·1	...	...	12·1	...	6·2	...	...	1·3	...	0·5	...	21·5	10	50
S+N & W+E	73·4		137·0		71·2		162·0		76·0		128·8		75·5		136·1				
S−N & W−E	−3·8		−31·0		−29·2		−40·8		−54·8		−50·8		−31·1		−61·3				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time. * No Record. † Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.
‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8. § Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.).

PYRTON HILL. **K.** 2. September 7. 10 h. 20 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
Greatest height	1300	876·2	277·5	8·3	100	1·096	330	14	Clouds at and above 1000 m.
	1000	908·8	280		100	1·126	320	14	
	500	965·3	283·5	7	90	1·181	310	14	
100 m. above ground	250	994·5	286·5	12	75	1·204	300	9	
Ground level	150	1006·3	288	15	70	1·212	290	8	
Computed for M.S.L.	0	1024·3	...	...	...	...	320	14	...

BRIGHTON. **K.** 50. September 7. 10 h. 50 m. to 12 h. 0 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mgm/cc.	Degrees from N.	m/s.	
...	...	...	...	...	...	...	...	
1000	906·8	277	7·6	100	1·134	340	15	Overcast, Cu.-St
500	963·8	280·8	10·0	95	1·191	340·5	15	
215	997·5	283·5	9·5	90	1·221	340	14	
115	1009·5	286	25	86	1·224	320	6 to 8	
0	1023·3	...	...	...	...	335	7	...

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

TABLE OF HEIGHTS, PRESSURES, TEMPERATURES, AND WINDS.

1912. September 20. 17 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	14·5 km.	133 mb.	212° A.
LOWEST TEMPERATURE,	12·2 km.	194 mb.	205° A.
BASE OF STRATOSPHERE,	12·2 km.	194 mb.	205° A.
Type	No. 1.		

SOUNDING No., **R.** 205.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 0′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Lambourn.
Distance, and Orientation, 37 km. 248°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.), 77·3 mm.,	1030 mb.	1029 mb.
TEMPERATURE,	284° A.	286° A.
VAPOUR PRESSURE,	..	...
GRADIENT WIND:—Direction,	100°	120°
Velocity,	7·1 m/s.	9·5 m/s.
Correction for Curvature,	+0·6 m/s.	+0·5 m/s.
Final Components, W. to E.	6·9 m/s.	8·2 m/s.
Final Components, S. to N.	1·2 m/s.	4·8 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Wind. Direction.	Wind. Velocity.	Wind. Components.		REMARKS.
				Degrees from N.		W. to E.	S. to N.	
km.	mb.	°A.	°C.		m/s.	m/s.	m/s.	
14·0	143	211		...	...	...	...	Double trace but not much difference, the mean taken.
13·0	167	210	−1	...	...	...	...	
12·0	197	206	−4	105	4	− 4	+1	
11·9	200	...		...	...	...	...	
11·0	232	212	6	90	3	− 3	0	Inversion 274° at 1·1 km. to 276° at 2·0.
10·0	271	221	9	90	4	− 4	0	
9·4	300	...	8	...	...	...	...	
9·0	316	229	9	70	5	− 5	−2	
8·0	365	238		45	7	− 5	−5	Unusually steep gradient from 7 to 11 km.
7·4	400	..	10	...	...	...	...	
7·0	420	248	8	25	9	− 4	−8	
6·0	486	256		15	9	− 2	−9	
5·7	500	...	5	...	...	...	...	
5·0	550	261		40	8	− 5	−6	
4·3	600	...	5	...	...	...	...	
4·0	625	266		65	10	− 9	−4	
3·1	700	...	6	...	...	...	...	
3·0	709	272		75	12	−12	−3	
2·0	800	...	4	...	...	...	...	
2·0	803	276		85	11	−11	−1	
1·1	900	...	−1	...	...	...	...	
1·0	908	275		90	11	−11	0	
...	1000	...		...	..	...	..	
Ground M.S.L.	1010 1026	284 ...	...	...	...	...	...	

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. September 5. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	17·3 km.	87 mb.	228·5° A.
LOWEST TEMPERATURE,	10·2 km.	254 mb.	220·5° A.
BASE OF STRATOSPHERE,	10·2 km.	254 mb.	220·5° A.
Type	No. 1.		

SOUNDING No., **R.** 17.
PLACE, MANCHESTER.
Latitude, 53° 28′ N.
Longitude, 2° 14′ W.
Height above M.S.L., 40 m.
PLACE OF FALL, Norwich.
Distance, and Orientation, 253 km. 110°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.), 766 mm.,	1022 mb.	1022 mb.
TEMPERATURE,	284° A.	285° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	325°	290°
Velocity,	10·6 m/s.	6·9 m/s.
Correction for Curvature,	0 m/s.	+0·2 m/s.
Final Components, W. to E.	6·2 m/s.	6·7 m/s.
Final Components, S. to N.	8·7 m/s.	2·4 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
17·0	87	228·5	0	
16·1	100 101	228·5	−0·5	
15·0	119	228	−0·5	
14·0	142	227·5	0·5	
13·0	168	228	0·5	
12·0	196	228·5	−1	
11·9	200	228·5		
11·0	228	227·5	−3	
10·0	263	224·5		
9·2	300	230·5	9 7	
9·0	307	233·5 231·5		
8·0	355	242·5 239	9 7·5	
7·2	400	245 242		
7·0	407	246·5 243	4 4	
6·0	468	254 250·5	7·5 7·5	
5·5	500	258 254	8 7	
5·0	534	262 257·5		
4·1	600	266 260·5	4 3·5	
4·0	605	266 261	−0·5 4·5	
3·0	689	265·5		
2·9	700	266	5	
2·0	789	270·5		
1·9	800	271	5·5	
1·0	896	276		
0·95	900	277	11·5	
0·1	1000	282·5		
Ground M.S.L.	1008 1012	283 ...	... ...	

See page 68 for notes.

10. Solar Radiation at South Kensington.

Day.	JULY. Maximum Rate, Watts per cm².	JULY. Daily Amount, Calories per cm².	JULY. Duration of Sunshine.	AUGUST. Maximum Rate, Watts per cm².	AUGUST. Daily Amount, Calories per cm².	AUGUST. Duration of Sunshine.	SEPTEMBER. Maximum Rate, Watts per cm².	SEPTEMBER. Daily Amount, Calories per cm².	SEPTEMBER. Duration of Sunshine.	REMARKS.
	(1)	(2)	(3) hr.	(1)	(2)	(3) hr.	(1)	(2)	(3) hr.	
1	·069	212	0·4	·074	405	7·2	·055	188	0·5	*Note.*—1 watt per cm² = 14·35 gramme-calories per cm² per minute. 1 gramme-calorie per minute = 0·7 watt nearly.
2	·052	174	0·0	·076	370	7·5	·068	254	3·7	
3	·052	134	0·1	·073	306	2·0	·061	196	0·9	
4	·052	220	1·3	·077	248	2·4	·069	290	5·9	
5	·048	228	1·4	·080	453	8·2	·064	308	6·9	If the heat were distributed throughout the atmosphere 1000 gramme-calories per cm² would be sufficient to raise the temperature 4°·1 C. It would take 245 gramme-calories per cm² to raise the temperature of the whole atmosphere 1° C.
6	·069	399	5·3	·059	261	1·3	·069	306	6·6	
7	·069	309	4·9	·073	264	2·9	·063	280	7·1	
8	·066	318	3·0	·070	307	3·0	·057	173	0·7	
9	·072	448	9·6	·071	318	3·4	·066	346	6·7	
10	·069	385	4·4	·067	288	2·4	·041	130	0·5	For values January to March, see p. 20, and April to June p. 56.
11	·079	359	5·4	·065	358	3·5	·034	135	3·5	
12	·076	502	10·3	·057	164	0·2	·055	218	2·9	
13	·058	304	4·1	·069	298	2·9	·034	143	0·7	
14	·059	401	8·4	·066	293	2·3	·048	135	0·3	
15	·066	492	13·5	·038	133	0·0	·042	162	0·3	
16	·066	481	12·0	·069	281	1·6	·027	95	0·1	
17	·066	500	12·4	·057	227	0·1	Cylinder slipping.		0·0	
18	·057	261	1·1	·065	272	2·3	·049	210	4·1	
19	·030	167	0·0	·068	326	4·1	·024	97	0·0	
20	·048	222	0·1	·068	273	2·4	·055	186	4·3	
21	·066	367	3·8	·050	271	2·9	·054	239	7·4	
22	·034	194	0·0	·070	373	7·4	·047	287	8·9	
23	·067	220	1·2	·017	71	0·0	·048	290	5·8	
24	·076	368	4·8	·030	124	0·0	·037	165	3·3	
25	·072	411	7·7	·062	278	2·6	·051	170	2·9	
26	·073	398	6·8	·030	63	0·0	·046	258	7·6	
27	·074	382	5·6	·062	314	2·8	·046	246	7·3	
28	·071	380	5·5	·060	282	4·2	·049	223	4·4	
29	·069	216	0·4	·070	243	4·2	·050	155	2·0	
30	·075	371	6·8	·061	237	2·2	·043	84	0·5	
31	·041	146	0·2	·066	352	7·5				
Total (For days with values in column 2)		9969	140·5	..	8453	93·5	...	5969	105·8	
Mean (For days with values in column 2)		322	4·53	...	273	3·02	...	206	3·65	
Total (For all days)		...	140·5	...	...	93·5	...	...	105·8	
Mean (For all days)		...	4·53	...	...	3·02	...	...	3·53	
Ratio of Mean Daily Amount to Mean Duration.		71			90			56		

N.B.—The values of Solar Radiation at South Kensington are obtained from the records of a Callendar Instrument which depends upon the difference of temperature between a black and a bright wire exposed horizontally to radiation from the whole of the sky. The values may be taken as representing the total radiation and the maximum rate of radiation per cm² received by a horizontal surface. If it is desired to compare the values published for Kew and Eskdalemuir in Tables 3 and 4 with the simultaneous value recorded by the Callendar Instrument the former must be multiplied by the cosine of the zenith distance of the sun at the time of observation. The duration of sunshine in this table is obtained from a Campbell-Stokes Recorder.

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—TYPE 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given. TYPE 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. TYPE 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

OCTOBER 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 1*s*.

Second Year.—No. 10. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	5	1·0	I.	1st I, Long waves 6 h. 36 m.
2	5	1·2		3rd I, Disturbed 17 h. 7 m.–17 h. 30 m., L=17 h. 20 m.
3	5-6	0·9	I.	10th I, Disturbed 19 h. 10 m.–19 h. 32 m.
4	5	0·6		11th I, Disturbed 2 h. 4 m.–3 h., L=2 h. 10 m.
5	6	1·0		12th Iu, P=15 h. 32 m. 55 s., S=15 h. 42 m. 29 s., Δ=8280 km., α=true north. Epicentre 50°·2 N. 176°·8 E. I, P and S imperceptible, L=20 h. 4 m.
6	6	1·0		13th I, Long waves 2 h. 44 m.
7	6	1·5		17th Iu, P=10 h. 4 m. 53 s., S=10 h. 19 m. 18 s., Δ>14,000 km.
8	6	1·0		18th Iu, P=12 h. 6 m. 13 s., S=12 h. 15 m. 31 s., Δ=7960 km., α=nearly true north. Epicentre 53° N. 177° E.
9	5-6	9·0		20th I, Trace of long waves 11 h. 6 m.
10	6	0·7	I.	21st I, L=23 h. 54 m.
11	7-8	1·8	I.	22nd I, Disturbed 9 h.–9 h. 30 m.; I, Long waves 10 h. 48 m.; L=20 h. 24 m.
12	7	1·3	Iu, I.	25th I, P ?=12 h. 58 m. 33 s., L=13 h. 2 m.
13	6	0·8	I.	26th I, Sharp impulses 9 h. 19 m. 2 s. and 9 h. 25 m. 8 s. Max. phase lost during change of sheet.
14	4	1·5		31st IIr, P=12 h. 23 m. 52 s., S=12 h. 28 m. 45 s., Δ=3140 km. α=towards S.W., but confused by microseisms. IIu, P=17 h. 38 m. 26 s., PR_1=17 h. 42 m. 50 s., S ?=17 h. 50 m. 13 s., PR_n=17 h. 52 m. 8 s., Δ=11,150 km.
15	5	1·0		
16	6-7	1·6		
17	4-6	0·8	Iu.	
18	6	1·0	Iu.	
19	7	2·4		This seismogram is similar to those for 17th Aug. and 29th Sept. Comparison with copies of Pulkowa records suggests that the pronounced change of phase at 14 m. is a multiplex-reflected longitudinal wave, and that the true second phase S is almost obliterated by Wiechert's Wechsel-wellen.
20	7	2·4	I.	
21	7	1·7	I.	
22	5	1·2	I, I, I.	
23	5	1·3		
24	6	2·0		
25	6	1·1	I.	
26	4	1·4	I.	
27	4	1·4		
28	5	1·5		An explanation of the notation used is given in the preface.
29	5	1·5		
30	5-6	2·0		
31	4-5	1·5	IIr, IIu.	

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.

Heights above Ground:—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	991·9	993·2	85·0	84·9	*x* 88	81	11·5	11·2	82	80	6	4	4	11	3	*10*	0·3	7·6	⌓; fair.	…	…	…
2	1004·0	1015·5	80·7	79·7	84	79	8·2	7·5	77	74	4	13	4	4	7	*0*	—	6·9	Fair, but squally; fine evening.	…	…	…
3	1024·9	1032·0	80·0	77·5	83	*n* 75	7·1	6·8	70	81	5	4	—	1	0	*0*	—	9·4	Fine.	…	…	…
4	1035·4	1031·4	79·3	83·2	85	*n* 75	7·5	8·5	77	68	—	1	15	5	1	*5*	—	5·9	⌓; fine to fair.	…	…	…
5	1023·9	1021·3	84·8	83·4	86	82	9·8	12·2	71	96	15	8	18	3	10	*4*	2·8	—	Gloomy, with ● *p.*; clearing *n.*	…	…	…
6	1023·0	1022·7	81·2	82·9	87	79	10·5	11·2	98	92	—	0	18	3	2	*1*	—	8·7	Fine.	…	…	…
7	1021·1	1017·0	84·5	83·8	87	82	11·5	10·5	87	82	15	3	13	6	3	*2*	—	7·8	Fair; good visibility.	17898	20 26·5	68 10·7
8	1011·3	1012·7	85·2	85·1	87	84	10·9	13·6	77	97	13	11	14	5	5	*10*●	9·1	2·7	Fair to gloomy, with ≡⁰●.	…	20 27·2	…
9	1017·9	1021·6	85·0	84·9	87	84	12·9	13·2	93	94	—	0	—	1	8	*10*≡⁰	0·3	0·2	≡⁰; dull.	…	…	…
10	1020·6	1018·3	84·3	85·4	*x* 88	81	11·9	12·9	89	91	13	5	14	5	3∞	*10*	7·9	3·8	∞; fair to dull.	…	…	…
11	1020·2	1021·1	84·2	85·5	86	84	12·6	13·2	94	91	5	5	11	3	10≡⁰	*10*≡⁰	0·5	—	Overcast. ●≡⁰.	…	…	…
12	1018·0	1011·9	85·5	86·5	*x* 88	84	12·2	14·6	84	95	12	5	14	9	6∞	*10*≡⁰	4·6	2·9	Hazy till after 14 h.; ●⁰ later.	…	…	…
13	1014·1	1008·8	86·3	87·0	*x* 88	86	14·6	15·6	97	98	15	2	15	5	10≡⁰	*10*≡⁰●	16·0	—	Overcast; ●² in evening.	…	…	…
14	1021·4	1027·7	84·0	80·0	87	79	10·2	9·2	77	94	27	7	32	2	2	*3*	—	6·3	Fair; clear atmosphere.	…	…	…
15	1023·3	1017·6	84·8	85·7	86	80	10·9	12·6	78	88	17	6	15	6	10≡⁰	*10*	3·1	1·0	Cloudy to dull.	…	…	…
16	1009·8	1015·1	85·5	85·1	87	84	13·9	10·5	96	75	16	5	24	8	10≡⁰●	*8*	3·1	2·1	Misty and overcast; clearing after-	…	…	…
17	1022·6	1025·4	84·8	84·4	86	84	10·9	11·2	78	82	26	5	16	3	8	*10*	1·8	3·5	Dull to fair. [noon.	…	…	…
18	1021·7	1023·4	86·6	85·0	*x* 88	85	15·3	11·9	97	85	16	5	24	7	10≡⁰	*5*	1·0	—	Gloomy. ≡⁰●⁰; improving in even-	…	…	…
19	1022·9	1017·2	84·8	84·5	86	84	11·5	11·5	85	87	22	7	20	9	5	*10*	2·8	1·7	Dull; clearing in afternoon. [ing.	…	…	…
20	1004·9	996·1	85·2	81·4	86	79	11·5	8·5	82	76	20	13	24	14	7≡⁰	*10*	12·2	0·2	Dull; ≺ 18 h. 40 m.	…	…	…
21	1001·2	1004·5	82·7	83·7	85	79	7·8	10·5	66	81	29	8	27	10	7	*10*	1·8	1·1	Showery and squally.	17906	20 27·2	68 10·4
22	1001·8	994·2	83·6	81·5	84	81	10·2	10·9	79	97	28	4	14	6	10	*10*≡⁰●	13·5	—	Dull, with ≡⁰● *p.*	…	…	…
23	994·7	993·7	82·7	79·8	84	79	9·5	8·8	80	88	24	7	20	2	6	*4*	1·8	4·4	▲● squalls to fair.	…	…	…
24	991·2	993·2	79·0	77·9	83	77	8·8	8·2	93	94	—	1	20	2	6	*3*	7·4	3·8	Showers of ▲ or ●.	…	…	…
25	995·7	997·3	79·8	82·1	84	78	9·8	9·5	100	83	6	2	12	5	7≡⁰	*9*	7·1	4·2	Showery to clear.	…	…	…
26	985·5	990·6	84·0	83·0	86	81	11·2	11·5	85	95	8	13	20	2	10≡⁰	*5*	6·6	—	Overcast and ●; improving in	…	…	…
27	989·5	991·3	81·5	82·8	85	80	9·8	11·2	88	94	25	12	14	5	8	*2*	3·3	1·0	Unsettled appearance. [evening.	…	…	…
28	984·7	980·3	83·5	84·0	86	82	11·5	11·5	91	88	14	7	14	8	10≡⁰	*10*	3·6	3·6	Gloomy; clearing after 10 h.	…	…	…
29	988·4	983·8	82·8	81·2	85	80	10·2	9·8	85	92	16	4	14	4	7	*6*	15·7	2·0	Showery; ⍂ 19 h.	…	…	…
30	980·9	995·7	81·2	84·0	84	80	10·2	11·2	94	85	28	4	28	12	7≡⁰	*10*●	3·8	0·2	⍂●² *n.*; misty and showery.	…	…	…
31	1011·2	1023·3	83·2	80·0	84	77	9·8	8·8	80	87	29	7	2	2	7	*8*	1·0	5·2	Generally fair.	…	…	…
Means	1009·0	1009·6	83·4	83·1	85·7	80·8	10·8	10·9	85	88		5·7		5·4	6·6	*6·9*	131·1	3·10	Monthly **Totals** or **Means**.	17902	20 27·0	68 10·5
Normal 40 years	1010·7	1011·0	83·7	83·5	86·5 (35 years)	80·9	11·1	11·0 (25 years)	86	85	30 years	5·3	30 years	5·1	—	—	140·2	3·25 (30 yrs)	**Normals**, 40 years.			

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

Wt. 39025/327—375—8/13. N. & Co., Ltd. Gp. XV.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity.				Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
							Vapour Pressure.		Percentage.														
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	10 h.					0·3m.	1·2m.	
			200 +	200 +	200 +	200 +														200 +	200 +	200 +	
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		°	°	°	
1	994·0	994·0	84·6	84·7	89	82	11·9	13·2	87	97	19	5	29	3	8	*10*≡⁰	8·9	3·9	—	79	85·2	85·6	≡⁰● early and late.
2	1002·7	1010·8	81·9	79·3	84	78	9·2	7·1	81	77	1	4	32	4	10●≡⁰	*7*	0·3	—	—	81	85·3	85·5	Dull throughout.
3	1019·8	1029·4	79·0	78·2	83	76	7·1	7·5	76	83	32	5	32	2	1	*2*≡⁰	—	8·7	·061	71	83·9	85·5	⌣ ; fine.
4	1036·8	1036·6	78·0	76·8	84	74	7·5	7·5	84	95	—	1	—	1	0≡⁰	*5*≡⁰	—	9·2	·051	*n* 67	82·9	85·5	⌣ ; fine throughout.
5	1034·3	1029·1	74·2	77·9	85	*n* 72	6·5	7·8	97	90	—	0	—	0	0≡	*?1*≡⁰	—	6·0	·046	69	82·4	85·4	≡ till 10 h. 30 m. and evening.
6	1027·7	1025·5	74·2	76·3	85	*n* 72	6·1	7·5	90	97	—	0	—	0	?5≡⁰	*1*≡⁰	—	4·1	—	69	82·0	85·2	≡ early ; fair to fine.
7	1025·2	1024·5	77·0	78·2	87	73	7·5	8·5	91	96	—	1	—	0	0≡⁰	*1*≡⁰	—	8·0	·052	70	81·6	85·2	≡ ; fine during day.
8	1024·7	1023·2	78·8	81·8	88	75	8·8	10·2	97	89	—	1	6	3	?0≡	*?0*≡⁰	—	3·5	—	71	81·9	85·0	≡ *a*. Fine *p*.
9	1024·1	1024·8	78·7	83·0	88	78	8·8	10·2	96	83	—	1	5	3	?0≡	*0*≡⁰	0·3	4·6	—	71	81·9	84·8	≡ ; clearing after 10 h. 30 m.
10	1026·0	1024·7	79·1	80·8	*x* 90	76	9·2	9·8	98	93	—	1	—	1	?0≡	*?0*≡⁰	0·3	6·2	—	72	81·9	84·7	≡ ; cleared about 11 h.
11	1024·7	1024·6	77·7	77·3	84	76	8·2	7·8	96	94	—	0	—	1	*10*≡	*10*≡	0·3	2·3	—	70	81·9	84·6	≡ most of day.
12	1026·1	1023·9	76·3	78·8	86	75	7·5	8·8	95	97	—	0	—	0	*10*≡	*0*≡⁰	0·3	4·4	—	73	81·8	84·6	≡ ; clearing about 11 h.
13	1024·3	1023·7	81·5	84·2	*x* 90	75	10·9	12·9	98	97	—	1	—	1	?10≡⁰	*7*	—	2·9	—	70	81·7	84·4	Dull and damp to fair.
14	1020·8	1025·1	86·3	84·3	89	80	13·2	10·5	88	79	18	4	—	1	10≡⁰	*10*●	0·5	—	—	76	82·4	84·2	Dull.
15	1028·7	1024·4	76·9	80·2	86	75	7·5	9·5	94	93	—	1	—	1	?0≡	*?7*≡⁰	—	1·7	—	69	82·3	84·2	⌣ ; ≡ till 11 h. ⊕ 13 h.–14 h.
16	1019·9	1013·0	76·2	84·3	86	74	7·1	12·9	93	97	—	0	19	3	0≡⁰	*10*	0·8	3·6	—	70	81·6	84·2	≡ early ; fine to fair.
17	1019·1	1025·3	82·4	80·6	86	79	9·5	9·5	82	90	23	2	24	2	1	*6*	—	7·5	·053	76	82·4	84·2	Fine throughout.
18	1027·0	1020·3	79·5	84·7	87	76	8·8	11·9	91	86	24	2	18	5	5≡⁰	*10*	0·5	4·8	·058	69	81·9	84·1	⌣ ; fine to dull in afternoon.
19	1020·2	1017·2	83·2	82·0	86	81	9·8	9·2	80	81	24	3	21	2	1	*?9*≡⁰	—	7·7	·057	75	82·6	84·1	Fine generally ; ≡⁰ at times.
20	1009·4	995·5	82·9	84·7	87	81	10·5	11·2	87	82	19	5	18	8	6	*4*	9·4	3·8	—	74	82·4	84·1	Fine to fair ; ● *n*.
21	992·3	990·1	79·7	79·8	82	78	8·5	8·5	85	84	18	3	15	5	3	*7*	1·8	2·5	—	72	82·4	84·0	Fair most of day ; ●⁰ in evening.
22	993·8	998·3	80·3	79·3	83	77	8·8	8·5	85	87	1	4	3	2	10≡⁰	*7*≡⁰	—	0·5	—	71	81·9	83·9	Gloomy or overcast ; ≡⁰
23	996·9	992·7	76·4	81·2	82	75	7·5	8·8	96	81	—	1	—	1	*10*≡	*10*≡⁰	1·5	—	—	70	81·3	83·9	≡² *a*. Dull throughout.
24	993·9	994·7	80·4	77·6	83	77	9·2	8·2	91	97	19	2	—	0	10≡⁰	*?6*≡⁰	0·3	4·7	—	74	81·5	83·9	Overcast to fine ; ≡⁰
25	999·2	1003·0	75·0	79·2	83	74	6·8	8·8	95	93	—	1	—	1	*10*≡	*5*≡⁰	0·5	3·7	·035	71	81·3	83·7	≡ to 11 h., then fine.
26	1005·8	1003·8	77·8	86·3	87	73	8·2	14·2	94	94	—	1	18	6	*10*≡	*10*●≡⁰	9·1	—	—	71	80·8	83·6	≡², clearing gradually ; ● *p*.
27	1006·8	1004·1	86·1	87·1	88	86	13·9	12·6	93	79	17	8	15	6	10	*10*	5·3	—	—	83	82·0	83·6	Overcast all day.
28	998·2	997·1	86·4	86·2	88	85	14·2	13·9	93	92	16	8	15	8	10●⁰	*10*●	6·9	—	—	84	83·0	83·6	Dull. ● and strong wind *n*.
29	997·6	1001·7	85·6	84·5	88	84	10·2	11·9	**71**	87	19	9	17	3	1	*8*	6·4	5·2	—	82	83·6	83·5	Fine.
30	994·1	992·7	83·6	82·4	86	82	11·2	10·2	87	86	17	4	17	6	7	*8*	3·1	2·8	—	77	83·4	83·5	●² 7 h. ; fair during day.
31	998·7	1015·1	82·2	78·9	84	77	9·2	6·8	79	74	26	5	29	4	10≡⁰	*2*	0·3	0·8	—	79	83·0	83·5	Dull ; improving midday.
Means	1013·3	1013·2	80·1	81·3	85·9	77·2	9·1	9·9	89	89		2·7		2·7	5·4	5·9	56·8	3·65	—	73·4	82·4	84·4	Monthly **Totals** or **Means**.
Normal 40 years	1012·7	1012·8	82·5	82·3	86·1 (35 years)	79·0 (35 years)	10·4	10·5	86	88		3·2 (30 years)		2·6 (30 years)	—	—	70·1	2·96 (30 yrs)	—	—	—	—	**Normals, 40 years.**

25 years.

Note.—The cloud amounts in italic type at Kew were taken at 18 h.

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	965·4	973·3	81·1	77·6	83	77	10·2	6·8	95	81	4	13	4	9	10●²	2	4·8	0·9	—	—	—	—	Dull ; clearing midday.
2	980·4	988·2	77·9	73·1	81	73	6·5	4·8	73	74	4	9	4	4	1	2≡⁰	—	8·9	—	—	—	—	Fine day. ⌣ *n*.
3	996·0	1003·0	77·3	70·8	81	69	5·8	4·8	69	91	4	7	—	0	0	2	—	9·1	—	—	—	—	⌣² early ; fine.
4	1006·2	1004·8	73·6	76·1	81	*n* 67	5·4	6·5	86	86	—	1	20	3	1	3	—	1·4	—	—	—	—	⌣² early ; bright to cloudy.
5	998·9	992·8	80·6	82·4	83	75	8·8	9·2	84	79	20	7	20	11	4	10●⁰	4·6	0·3	—	—	—	—	Cloudy to overcast ; ● after 21 h.
6	993·4	990·9	81·7	82·2	85	80	9·8	10·5	88	93	20	6	20	6	7	9	1·c	3·8	—	—	—	—	Fair.
7	991·9	995·1	82·9	82·2	86	81	11·2	11·5	91	99	20	7	—	1	10	10	—	0·3	—	—	—	—	Dull.
8	994·9	994·0	79·9	76·0	86	75	9·5	6·5	93	86	—	1	—	1	1≡⁰	0∞	—	7·5	—	—	—	—	Fine, ∞ ; ⌣ in evening.
9	996·4	998·3	77·6	76·9	87	74	7·1	6·5	83	81	—	1	—	1	2∞	0∞	—	6·4	—	—	—	—	Fine, ∞.
10	997·8	993·8	77·6	78·8	*x* 88	72	7·1	8·5	85	91	—	0	—	1	0∞	0∞	—	8·3	—	—	—	—	⌣ : fine, with ∞.
11	992·2	996·1	83·2	80·9	84	80	11·9	9·2	95	86	20	8	—	1	10≡⁰	10	2·0	—	—	—	—	—	Dull.
12	996·1	993·4	81·8	81·5	86	81	10·9	10·9	95	97	—	1	12	2	10●⁰≡⁰	9	0·3	0·5	—	—	—	—	≡⁰ ; clearing midday.
13	990·5	989·3	81·8	83·3	84	79	10·5	11·9	95	96	20	7	20	4	10●⁰	10●	**22·1**	—	—	—	—	—	Dull, with ●. [19 h.–21 h.
14	980·3	996·2	86·1	*76·5*	*86*	*76*	13·2	6·8	89	85	20	15	24	4	10●⁰	1	0·8	3·5	—	—	—	—	Dull, with ● *a*. Finer *p*.
15	994·8	988·5	*79·3*	82·0	*82*	77	8·8	10·5	91	93	16	5	20	9	10	10●	14·7	0·1	—	—	—	—	Dull generally ; ● *p*.
16	981·9	978·2	82·6	80·0	83	78	11·2	8·2	93	82	16	11	28	5	10●⁰	5	17·0	—	—	—	—	—	● most of day.
17	987·5	994·8	80·1	77·3	85	75	8·8	7·5	87	89	20	3	28	2	3	1	—	5·1	—	—	—	—	Fair generally ; ⌒ about 12 h.
18	992·0	986·5	81·2	81·7	84	73	9·5	9·2	88	81	16	6	24	6	10≡⁰	5	6·6	—	—	—	—	—	Dull, with ≡⁰ ; ● in afternoon.
19	988·1	982·2	79·2	79·8	82	76	8·5	8·8	89	91	20	4	20	5	10	10●⁰	2·0	—	—	—	—	—	Overcast.
20	969·1	961·1	81·1	75·2	81	73	9·5	6·1	89	87	20	10	20	4	10●⁰	2	6·1	—	—	—	—	—	Dull ; ●² about 11 h. [19 h.
21	961·9	968·0	75·7	73·6	78	72	5·8	6·1	80	94	16	2	—	1	9	7	—	—	—	—	—	—	Cloudy ; reflected < 18 h. 30 m.
22	974·0	973·4	77·4	73·5	81	73	7·8	6·1	92	97	4	6	—	1	1	2≡⁰	—	3·8	—	—	—	—	Fair ; ≡⁰ *p*.
23	968·7	966·0	75·8	73·0	81	72	6·8	4·8	89	77	32	3	—	1	3	4≡⁰	1·8	2·2	—	—	—	—	Fair to cloudy ; ⊕ 13 h.–15 h.
24	961·4	968·4	76·7	74·9	79	72	7·1	6·1	89	87	20	4	—	1	10●⁰	7	2·8	—	—	—	—	—	Dull, with ●⁰.
25	970·1	974·1	77·2	74·2	80	73	8·2	6·1	97	91	—	1	—	1	9≡⁰	1	—	0·9	—	—	—	—	Cloudy and ≡⁰ to fair.
26	977·7	971·6	76·2	78·2	80	72	6·5	7·8	85	88	—	1	8	11	1≡⁰	10●²	20·3	—	—	—	—	—	Misty ; some sleet after 21 h.
27	968·2	970·0	81·6	79·3	85	79	11·2	8·5	99	89	—	1	20	4	10●	9	5·6	—	—	—	—	—	●² *a*. *p*.
28	965·6	963·4	79·3	81·8	82	78	8·8	10·5	91	93	16	2	16	9	10●	9	16·0	—	—	—	—	—	Dull.
29	957·1	966·6	81·2	81·2	82	80	10·2	9·5	96	89	20	8	20	8	10●⁰	3	9·4	0·3	—	—	—	—	●² early.
30	961·2	961·5	80·1	79·2	83	79	9·5	9·2	96	96	12	3	—	1	10	10	8·4	0·6	—	—	—	—	Dull ; improving midday.
31	974·9	989·9	77·4	73·7	79	72	6·1	4·4	70	**68**	32	11	32	6	6	0	—	3·1	—	—	—	—	● at first, then fair.
Means	981·8	983·0	79·5	78·0	82·9	75·3	8·8	7·9	89	88		5·3		4·0	6·7	5·3	146·3	2·16	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·73.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air-Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	160	285	230	40	—	—	—	—	—	—	0·90	2	1	525	6 18	443	11 11	82	56·5	12 37	41·1	3 23	15·4
2	95	425	725	340	—	—	—	—	—	—	1·20	1	0	503	19 6	473	11 54	30	48·4	13 19	41·0	8 43	7·4
3	160	505	430	560	910	570	—	—	—	—	0·85	0	1	512	21 14	479	10 43	33	49·7	12 44	40·8	8 18	8·9
4	415	565	255	220	—	—	—	—	—	—	0·75	1	0	510	6 54	475	9 56	35	49·8	13 20	40·9	7 48	8·9
5	230	610	255	340	—	—	—	—	—	—	—	1	0	512	15 18	469	10 27	43	49·9	12 33	39·7	8 17	10·2
6	175	425	285	220	—	—	—	—	—	—	—	0	0	511	22 16	470	10 30	41	50·8	13 4	39·8	8 21	11·0
7	125	380	205	175	—	—	—	—	—	—	0·60	1	1	519	21 4	479	10 56	40	51·3	13 43	39·8	9 13	11·5
8	685	355	490	380	—	—	—	—	—	—	—	1	0	513	5 13	473	10 22	40	50·8	13 5	39·8	9 4	11·0
9	315	440	635	355	450	300	0·00	0·00	—	0·00	—	0	0	513	21 29	484	11 11	29	48·7	13 3	40·8	8 20	7·9
10	255	600	305	390	—	—	—	—	—	—	0·80	0	0	510	6 48	479	10 18	31	51·2	13 13	40·1	8 47	11·1
11	805	575	—	435	270	210	0·00	0·00	—	0·00	—	0	2	536	19 49	466	11 15	70	53·1	13 31	33·3	20 46	19·8
12	490	575	435	475	—	—	—	—	—	—	—	0	1	546	23 49	473	10 9	73	50·9	23 47	38·8	0 53	12·1
13	865	335	400	335	—	—	—	—	—	—	—	1	1	533	0 0	465	10 39	68	48·9	13 6	39·6	20 13	9·3
14	165	245	155	420	360	360	0·00	0·00	—	0·00	0·20	0	2	530	17 46	420	20 37	110	51·5	13 20	17·0	20 43	34·5
15	365	855	280	300	—	—	—	—	—	—	—	0	2	525	20 28	446	12 42	79	49·0	14 53	35·8	16 12	13·2
16	245	280	220	375	420	210	0·30	0·95	0·35	0·95	0·40	0	1	510	17 25	460	10 31	50	47·9	14 8	34·8	17 3	13·1
17	100	510	210	355	700	270	0·40	0·00	0·30	0·80	0·65	0	1	521	0 55	455	11 8	66	45·7	13 43	39·2	1 57	6·5
18	355	400	180	265	450	240	1·25	0·00	0·55	1·30	0·75	0	0	501	20 31	470	10 8	31	46·5	12 50	39·8	8 13	6·7
19	20	310	190	300	—	—	—	—	—	—	—	1	0	510	19 37	478	10 50	32	47·3	12 42	39·7	8 51	7·6
20	135	245	190	−45	—	—	—	—	—	—	—	2	1	521	17 27	487	10 23	34	46·8	12 30	40·1	9 17	6·7
21	90	880	195	x	—	—	—	—	—	—	0·45	2	0	509	19 22	473	10 50	36	48·0	13 10	39·8	8 40	8·2
22	480	525	540	615	—	—	—	—	—	—	—	0	0	512	6 1	485	10 13	27	47·1	11 25	39·7	22 12	7·4
23	270	600	420	360	—	—	—	—	—	—	0·40	0	0	513	22 55	478	10 48	35	45·5	12 20	38·8	23 6	6·7
24	270	360	345	0	—	—	—	—	—	—	—	2	0	515	21 35	480	10 44	35	46·6	13 3	37·1	8 26	9·5
25	540	705	360	480	—	—	—	—	—	—	—	1	0	511	18 30	482	11 26	29	45·0	12 39	37·8	7 34	7·2
26	300	435	135	60	—	—	—	—	—	—	—	1	0	516	0 13	485	10 43	31	44·5	12 32	37·8	7 40	6·7
27	45	120	105	255	—	—	—	—	—	—	—	0	0	519	0 24	486	15 55	33	45·4	12 53	37·1	19 43	8·3
28	75	120	345	−300	—	—	—	—	—	—	—	2	1	512	0 20	479	10 28	33	44·8	13 25	37·0	18 29	7·8
29	75	210	285	105	—	—	—	—	—	—	—	1	0	516	21 0	490	10 42	26	44·3	13 32	38·1	8 16	6·2
30	120	375	285	330	—	—	—	—	—	—	—	2	0	510	17 7	482	13 20	28	44·8	12 40	37·9	8 47	6·9
31	105	285	75	375	—	—	—	—	—	—	—	1	0	509	20 53	488	10 37	21	43·9	11 55	39·3	8 15	4·6
M.	275	417	309	279	—	—	—	—	—	—	—	—	—	516	—	473	—	44	48·2	—	38·1	—	10·1

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3h, 9h, 15h, 21h, are given in the table. A similar note applies to the values in Table 6.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air-Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component. §			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.															
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	116	x	134	153	—	—	—	—	—	—	—	2 b	2	6 16	1042	938	11 11	15 50	265	196	3 23	16 10	346	291	7 0
2	73	183	226	372	—	—	—	—	—	—	—	1 a	0	6 55	1023	986	12 46	13 14	229	195	9 8	—	—	—	—
3	195	201	183	73	—	—	—	—	—	—	—	0 a	0	0 12	1041	989	11 38	13 12	236	194	21 0	20 30	320	308	1 30
4	146	378	134	293	—	—	—	—	—	—	—	0 a	0	6 48	1032	987	10 53	13 28	237	190	9 9	19 26	318	306	11 50
5	—	—	153	49	—	—	—	—	—	—	—	0 a	0	21 23	1026	984	10 43	13 24	240	188	8 31	8 30	323	310	12 0
6	134	207	146	183	—	—	—	—	—	—	—	1 b	0	22 15	1027	978	11 10	13 31	242	187	8 54	20 0	323	313	0 10
7	12	79	146	293	—	—	—	—	—	—	—	0 a	1	19 47	1033	988	12 6	13 40	254	193	8 33	15 0	333	311	13 10
8	287	244	250	299	—	—	—	—	—	—	—	0 a	0	22 40	1037	978	11 47	13 6	237	193	9 5	22 50	328	316	2 0
9	317	488	336	226	—	—	—	—	—	—	—	0 a	1	20 44	1032	990	11 23	13 54	230	195	20 39	21 10	328	320	12 0
10	305	348	281	427	—	—	—	—	—	—	—	0 a	1	—	—	984	11 52	13 19	240	190	8 46	—	—	320	12 30
11	—	—	128	214	—	—	—	—	—	—	—	0 a	—	—	—	—	—	—	—	—	—	—	—	—	—
12	92	31	140	305	—	—	—	—	—	—	—	1 a	—	23 36?	1046?	—	—	23 47	263	—	—	—	—	298	24 0
13	329	177	177	128	—	—	—	—	—	—	—	1 a	1	20 15	1037	969	10 36	0 0	239	187	1 32	16 0	346	289	0 8
14	x	67	159	189	—	—	—	—	—	—	—	1 b	2	17 43	1112	927	23 58	14 8	255	36	20 39	17 27	384	293	24 0
15	195	189	x	−952	—	—	—	—	—	—	—	2 b	2	20 25	1062	930	0 0	1 0	238	158	16 10	17 40	362	282	0 21
16	−323	79	−1043	250	—	—	—	—	—	—	—	2 b	1	17 5	1044	974	10 30	14 3	237	157	17 1	17 0	352	319	2 20
17	98	348	177	372	—	—	—	—	—	—	—	1 a	1	0 51	1042	981	11 5	0 34	228	182	1 55	18 10	351	310	1 18
18	268	85	67	177	—	—	—	—	—	—	—	1 b	0	6 52	1017	989	10 42	12 57	220	192	8 57	23 0	348	341	3 38
19	116	140	92	−463	—	—	—	—	—	—	—	1 c	0	19 37	1023	988	12 27	13 15	225	193	8 49	15 40	346	339	11 30
20	165	116	128	220	—	—	—	—	—	—	—	1 b	1	17 25	1044	998	11 22	18 1	227	189	23 54	22 33	355	340	11 10
21	—	—	140	323	—	—	—	—	—	—	—	1 a	1	23 0	1026	988	11 5	13 0	236	190	0 4	18 0	356	351	1 10
22	x	128	122	305	—	—	—	—	—	—	—	1 b	1	14 47	1024	994	11 41	13 13	231	189	23 42	22 45	356	344	12 30
23	372	567	214	580	—	—	—	—	—	—	—	0 a	1	22 51	1032	981	10 45	12 18	226	192	8 48	21 30	355	350	11 30
24	256	787	348	427	—	—	—	—	—	—	—	1 b	1	17 26	1026	985	11 20	12 35	234	192	8 23	20 30	355	352	0 30
25	—	—	232	323	—	—	—	—	—	—	—	1 a	1	24 0	1030	989	11 20	12 29	228	192	8 30	15 10	358	349	4 0
26	262	458	824	−2806	—	—	—	—	—	—	—	2 b	0	0 7	1031	988	12 23	12 46	224	199	7 54	15 0	358	349	1 40
27	116	−195	153	366	—	—	—	—	—	—	—	1 b	0	0 24	1033	992	12 28	12 50	228	187	19 39	19 33	366	351	0 45
28	232	287	x	372	—	—	—	—	—	—	—	1 b	1	0 19	1025	985	10 45	12 18	224	183	18 21	18 33	366	354	12 40
29	−37	220	x	244	—	—	—	—	—	—	—	2 c	0	21 42	1030	994	11 18	13 20	223	197	9 1	17 40	362	356	0 40
30	214	—	177	232	—	—	—	—	—	—	—	1 b	1	19 31	1021	988	11 51	12 38	225	196	9 0	20 35	366	358	0 0
31	−79	—	189	244	—	—	—	—	—	—	—	1 b	0	0 15	1021	993	11 23	0 15	224	203	23 21	15 0	366	358	0 50
M.	169	248	157	91	—	—	—	—	—	—	—	—	—	—	1035	981	—	—	235	184	—	—	349	327	—

x Indeterminate.

An explanation of the Headings of the columns is given in the Preface.

§ The values for the vertical component are not completely corrected for variations in the zero of the instrument.

7. **Tables of Wind Components in metres per second at fixed hours,** together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hrs.	Min.
1	...	2·5	2·5	...	...	2·3	2·3	...	...	0·3	...	0·3	...	4·0	..	9·7	17·4	16	15
2	...	5·8	...	8·7	...	6·0	...	9·0	...	6·3	...	6·3	...	8·1	...	8·1	15·2	5	30
3	...	5·6	...	5·6	...	5·8	...	5·8	...	5·5	...	2·3	...	1·3	...	0·9	13·4	1	0
4	...	1·3	...	0·9	...	1·6	4·0	...	1·3	...	3·0	...	1·7	...	2·5	...	7·6	12	20
5	4·9	...	3·3	...	6·2	...	4·2	...	9·4	...	3·9	...	9·4	...	3·9	...	17·9	14	55
6	6·8	..	4·6	...	1·8	...	4·3	...	5·2	...	3·4	...	4·4	...	4·4	...	15·2	0	40
7	1·4	...	3·3	...	3·3	...	3·3	...	5·2	...	2·1	...	2·2	...	1·4	...	8·5	10	45
8	1·8	...	...	1·8	3·5	...	...	3·5	4·9	...	...	...	1·8	...	...	1·8	13·4	11	15
9	1·9	...	...	1·3	2·3	...	...	0·4	2·0	...	...	0·4	1·3	...	...	...	6·3	12	55
10	1·0	...	...	0·2	0·7	...	...	0·1	3·6	...	1·5	...	3·3	...	..	...	8·9	24	30
11	5·1	...	1·0	...	5·2	...	...	...	2·3	...	2·3	...	0·8	...	0·6	...	10·3	2	40
12	1·1	...	0·7	...	3·6	...	...	...	4·6	...	...	...	5·5	...	1·1	...	7·2	24	25
13	6·6	...	...	...	8·2	...	...	...	6·9	...	...	...	10·0	...	...	4·1	17·4	22	30
14	10·9	...	2·2	...	4·3	...	10·3	...	...	4·2	6·2	...	...	0·8	3·8	...	19·2	3	0
15	...	...	3·3	...	4·4	...	4·4	...	8·2	...	3·4	...	5·8	...	5·8	...	18·3	15	40
16	5·3	...	5·3	...	9·7	...	4·c	...	6·6	...	...	...	...	3·8	9·1	...	19·2	11	25
17	...	1·8	9·0	...	...	3·3	7·9	...	...	1·3	6·8	...	...	1·0	4·8	...	13·0	3	15
18	0·6	...	2·9	...	7·1	...	4·7	...	7·6	...	5·1	...	...	3·8	9·1	...	17·4	{12 / 18}	{45 / 35}
19	...	3·9	9·4	...	...	1·9	9·6	...	2·8	...	6·7	...	3·6	...	8·8	...	16·1	22	35
20	3·6	...	8·8	...	6·6	...	9·8	...	...	...	11·5	...	...	...	6·2	...	22·4	11	25
21	...	...	4·3	...	...	5·7	3·8	...	...	2·8	14·1	...	...	12·9	...	2·6	26·4	15	40
22	...	4·2	...	4·2	...	5·3	...	5·3	...	2·8	...	2·8	1·0	...	...	2·4	9·8	10	15
23	3·3	...	...	3·3	4·6	...	...	...	2·2	...	1·4	...	...	2·0	...	...	7·2	3	55
24	...	...	...	2·0	...	...	3·6	...	...	0·4	0·6	...	0·7	...	...	3·5	8·1	6	10
25	0·4	...	...	0·9	2·0	...	...	...	...	...	2·0	...	1·1	...	...	2·8	6·3	14	30
26	2·7	...	...	1·8	1·9	...	...	4·5	...	...	...	10·8	7·6	...	3·1	...	16·1	19	10
27	6·1	...	2·5	...	9·0	...	1·8	...	6·9	...	6·9	..	4·8	...	1·0	...	25·0	11	40
28	1·8	...	...	2·7	4·9	...	...	...	7·4	...	4·9	...	6·1	...	1·2	...	18·8	14	0
29	6·8	...	1·3	...	7·4	...	7·4	...	6·3	...	6·3	...	7·7	...	...	1·5	20·6	4	35
30	7·9	...	...	3·3	7·6	...	...	3·1	8·0	...	...	1·6	1·3	...	...	3·0	17·0	14	5
31	...	8·1	5·4	...	...	14·8	...	...	...	10·3	...	2·0	...	7·2	...	...	19·2	8	0
S+N & W+E	113·2		106·5		151·0		117·1		135·3		118·6		125·0		107·2				
S−N & W−E	46·8		33·1		57·6		53·7		67·5		65·6		35·2		26·4				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hour.
1	...	6·2	...	9·2	...	9·7	...	4·0	...	10·3	...	4·3	...	9·1	...	3·8	12·8	12
2	...	8·2	...	...	...	10·5	...	...	...	11·1	...	...	...	7·9	3·3	...	11·8	11
3	...	6·9	...	...	...	4·0	4·0	..	...	0·7	3·5	...	0·8	...	4·2	...	7·5	1, 2
4	...	2·8	6·7	...	2·6	...	6·4	...	4·0	...	9·7	...	3·1	...	7·6	...	10·5	11, 15
5	4·8	...	2·0	...	7·9	...	3·3	...	10·3	...	2·0	...	10·9	...	2·2	...	12·1	19
6	3·5	...	3·5	...	8·1	...	5·4	...	4·9	...	4·9	...	10·2	...	10·2	...	14·4	21
7	4·8	...	2·0	...	3·6	...	8·8	...	...	...	7·2	...	...	...	3·6	...	9·5	9, 10
8	0·9	...	0·9	...	5·1	...	...	1·0	6·7	...	...	2·8	9·3	...	...	1·9	9·8	19, 20
9	8·2	...	...	...	7·2	...	...	...	7·2	...	...	...	2·3	...	0·4	...	8·2	2, 13
10	4·2	...	0·8	...	5·2	...	...	...	6·6	...	...	...	6·9	...	...	...	6·9	16, 21
11	3·0	...	1·3	...	5·2	...	2·1	...	...	1·9	4·5	...	1·1	..	0·7	...	7·9	12
12	...	0·6	0·8	...	2·4	...	...	1·0	6·7	...	...	2·8	9·4	...	...	3·9	10·2	21, 24
13	8·2	...	...	3·4	8·2	...	...	3·4	4·9	...	...	...	5·6	...	...	...	12·1	1
14	3·0	...	...	1·3	10·8	...	...	...	...	2·2	11·3	...	...	...	6·9	...	18·0	11
15	5·2	...	3·4	...	9·1	...	3·8	...	11·3	...	2·2	...	10·9	...	2·2	...	11·8	14
16	3·8	...	5·7	...	1·8	...	0·8	...	7·7	...	...	1·5	...	2·4	11·9	...	16·7	19
17	...	1·5	7·4	...	...	3·1	7·6	...	...	3·6	8·8	...	...	1·1	1·7	...	10·8	11
18	1·9	...	1·3	...	10·6	...	...	2·1	4·4	...	6·6	...	...	...	8·9	...	11·1	10
19	2·5	...	6·1	...	6·7	...	2·8	...	3·6	...	8·8	...	5·7	...	2·4	...	9·8	10, 11
20	8·0	...	1·6	...	8·7	...	...	1·7	6·9	...	2·9	...	2·8	...	2·8	...	9·8	11
21	1·4	...	1·4	...	0·6	...	0·8	...	1·0	...	...	...	...	...	1·7	...	3·3	24
22	...	2·8	1·1	...	...	1·8	...	1·8	1·7	...	...	8·3	3·6	...	...	8·8	10·8	20
23	4·9	...	...	4·9	7·2	...	...	7·2	2·0	...	...	10·3	3·5	...	...	8·5	13·4	11
24	4·8	...	...	11·6	2·4	...	...	12·3	8·7	...	...	13·0	4·0	...	...	9·7	16·7	14
25	2·5	...	...	6·1	1·4	...	...	7·1	3·2	...	...	7·8	...	...	...	8·9	9·5	20
26	4·0	...	...	6·0	4·4	...	...	10·6	4·1	...	...	10·0	4·5	...	...	10·9	12·8	23, 24
27	5·0	...	...	12·1	5·4	...	...	13·0	2·8	...	...	14·1	4·0	...	1·6	...	15·7	17
28	7·8	...	7·8	...	2·6	...	6·4	...	2·5	...	1·7	...	1·5	...	...	0·6	14·4	1
29	1·1	...	...	1·1	1·0	...	...	2·4	...	0·4	...	0·9	...	1·2	0·5	...	3·6	11
30	...	4·9	...	4·9	...	6·4	...	9·6	...	9·8	...	6·6	...	11·2	...	4·6	13·8	18, 19
31	...	10·c	...	4·1	...	9·4	3·9	...	...	11·8	4·9	...	...	10·6	4·4	...	13·8	14
S+N & W+E	137·4		118·5		173·1		133·3		163·0		161·4		145·3		137·2			
S−N & W−E	49·6		−10·9		83·3		−21·1		59·4		−3·4		54·9		12·8			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hrs.	Min.
1	...	0·7	3·7	...	4·1	...	...	4·1	5·4	...	...	...	5·0	...	2·1	...	11·2	15	4
2	2·7	...	...	1·8	1·3	...	...	3·0	...	...	...	11·3	...	...	...	9·2	15·7	14	25
3	...	4·1	...	10·0	...	3·8	...	9·2	...	4·0	...	6·0	...	1·6	...	8·1	15·2	4	10
4	...	...	...	4·6	...	...	...	2·5	0·6	...	...	3·2	1·4	...	...	2·1	7·6	23	50
5	4·9	...	...	1·0	7·7	...	...	1·5	5·7	...	...	1·1	1·7	...	1·2	...	10·7	10	15
6	2·5	...	0·5	...	1·3	...	0·3	...	1·1	...	0·7	...	0·7	...	0·4	...	3·6	3	25
7	1·2	...	0·5	...	3·5	...	...	2·3	3·0	...	...	3·0	4·2	...	...	6·2	10·7	23	10
8	5·6	...	...	5·6	8·3	...	...	5·6	6·8	...	...	6·8	6·2	...	...	6·2	13·4	23	35
9	4·8	...	...	3·2	3·0	...	...	4·5	1·8	...	...	4·3	...	...	...	5·0	11·6	0	35
10	...	...	...	3·8	1·6	...	...	3·9	1·2	...	...	1·7	0·4	...	...	0·7	5·8	10	15
11	0·7	...	...	1·1	...	0·7	...	0·4	1·8	...	..	1·8	2·1	...	...	2·1	4·9	12	55
12	2·3	...	...	3·5	3·2	...	...	4·8	3·8	...	...	3·8	4·1	...	...	0·8	7·6	8	55
13	4·2	...	...	...	6·2	...	..	1·2	7·5	...	...	...	8·3	...	...	...	12·5	23	45
14	9·8	...	2·0	...	*	*	*	*	...	5·8	...	...	...	2·7	...	1·1	14·3	1	25
15	...	0·3	...	0·3	1·3	...	...	0·3	0·6	0·6	2·8	...	2·7	...	2·7	...	6·3	23	50
16	3·5	...	3·5	...	9·6	...	...	...	1·5	...	7·7	...	1·8	...	9·0	...	13·0	21	25
17	...	4·9	7·3	...	...	3·0	4·5	...	...	3·2	4·8	...	1·8	...	2·7	...	12·1	1	15
18	...	0·6	3·2	...	2·1	...	5·0	...	2·9	...	6·9	...	...	...	9·6	...	11·6	21	0
19	...	4·5	0·9	...	...	3·5	3·5	...	...	4·1	4·1	...	...	1·5	7·7	...	15·2	22	35
20	2·0	...	9·8	...	4·5	...	10·8	...	2·9	...	14·7	...	...	2·4	12·3	...	24·1	23	40
21	...	2·6	13·1	...	...	10·1	6·7	...	...	6·7	16·2	...	...	12·4	12·4	...	29·5	4	50
22	...	13·0	13·0	...	...	12·4	12·4	...	...	5·3	1·1	...	1·6	...	...	2·4	24·6	5	10
23	7·0	...	...	1·4	...	5·1	12·4	...	...	4·3	10·4	...	...	...	6·7	...	21·9	4	25
24	...	2·7	6·6	...	...	1·1	5·7	...	...	2·4	5·8	...	...	1·6	8·1	...	15·2	5	45
25	...	...	7·9	...	...	...	8·8	...	...	...	7·1	...	2·7	...	...	2·7	16·1	7	15
26	2·7	...	...	2·7	8·0	...	5·3	...	9·8	...	9·8	...	11·9	...	2·4	...	19·2	19	15
27	13·5	...	2·7	...	10·2	...	2·0	...	3·8	...	...	...	5·0	...	2·1	...	18·3	2	15
28	8·6	...	1·7	...	*	*	*	*	10·8	...	...	...	11·3	...	...	...	15·2	14	55
29	6·2	...	15·1	...	6·0	...	9·0	...	9·2	...	...	...	9·2	...	...	...	21·0	4	10
30	11·1	...	2·2	...	5·3	...	12·8	...	5·9	...	14·2	...	...	3·4	17·2	...	25·5	24	15
31	...	6·5	15·8	...	...	8·8	8·8	...	...	7·6	5·1	...	...	7·0	1·4	...	23·3	0	35
S+N & W+E	133·2		148·5		135·7		151·3		129·5		114·4		114·7		144·6				
S−N & W−E	53·4		70·5		38·7		64·7		42·7		68·4		49·5		51·4				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	V.	Hrs.	Min.
1	...	2·5	2·5	...	...	...	6·9	...	1·2	...	6·1	...	...	4·3	...	...	18·3	12	20
2	...	3·2	0·6	...	...	4·8	1·0	...	...	4·9	...	...	...	3·3	1·4	...	19·2	7	55
3	...	4·9	...	...	...	6·6	...	...	*	*	*	*	*	*	*	*	18·3	10	35
4	*	*	*	*	*	*	*	*	...	0·9	0·9	...	...	0·5	1·2	...	9·8	0	45
5	0·3	...	1·6	...	0·3	...	1·6	...	2·5	...	1·7	...	3·3	...	1·4	...	5·8	13	20
6	1·4	...	1·4	...	0·7	...	1·1	...	3·5	...	...	0·7	3·0	...	1·3	...	6·7	12	45
7	1·1	...	1·7	...	0·9	...	2·1	...	0·9	...	2·1	...	0·1	...	0·3	...	5·4	2	30
8	0·3	...	1·6	...	0·2	...	1·0	...	1·6	...	...	...	1·6	...	...	4·6	3·6	11	40
9	...	...	...	6·6	...	...	...	5·9	...	...	...	5·2	...	...	...	7·9	10·3	17	25
10	..	...	...	3·0	...	...	...	6·2	1·3	...	...	3·0	1·9	...	...	4·5	6·7	6	45
11	1·1	...	...	1·1	0·6	...	1·5	...	2·3	...	...	...	1·7	...	1·1	...	5·4	23	45
12	1·1	...	1·7	...	0·4	...	0·6	...	3·0	...	...	...	1·6	...	0·3	...	5·4	13	30
13	1·6	...	1·6	...	2·3	...	0·4	...	2·5	...	1·7	...	4·0	...	1·6	...	9·4	24	25
14	3·8	...	0·8	...	5·7	...	2·4	...	1·9	...	4·5	...	...	1·8	1·8	...	12·5	8	10
15	...	1·1	1·1	...	...	0·9	2·1	...	0·6	...	1·5	...	3·3	...	1·4	...	5·8	22	30
16	2·1	...	0·9	...	3·6	...	1·5	...	2·8	...	2·8	...	3·5	...	3·5	...	11·6	20	15
17	0·9	...	4·5	...	...	2·3	5·5	...	...	1·8	2·7	...	...	1·3	3·0	...	10·3	11	45
18	...	0·7	3·5	...	...	...	...	...	1·5	...	3·6	...	3·3	...	3·3	...	10·7	22	40
19	...	3·7	3·7	...	...	1·9	4·5	...	...	1·6	1·6	...	0·4	...	2·3	...	13·0	2	10
20	1·5	...	3·6	...	1·5	...	3·6	...	4·5	...	1·9	...	6·4	...	2·6	...	15·2	21	30
21	1·6	...	1·6	...	1·4	...	1·4	...	1·7	...	1·1	...	0·9	...	0·4	...	8·5	18	25
22	0·9	...	0·4	...	2·4	...	...	5·7	1·6	...	...	8·0	...	2·6	...	6·4	9·8	14	40
23	...	1·9	1·3	...	...	1·4	3·3	...	...	0·9	2·1	...	...	...	1·6	...	6·3	14	30
24	0·6	...	1·5	...	0·0	0·0	0·0	0·0	0·7	...	...	0·1	0·7	...	...	0·1	4·0	1	25
25	0·5	...	1·2	...	...	...	2·3	...	...	...	2·0	...	...	...	1·0	..	3·6	6 50,	17 35
26	0·0	0·0	0·0	0·0	1·1	..	...	2·8	6·7	...	...	2·8	9·6	...	...	6·4	16·1	21	55
27	5·2	...	2·1	...	5·5	...	3·7	...	4·6	...	...	...	4·5	...	0·9	...	13·9	12	0
28	6·9	...	...	...	5·5	...	2·3	...	3·7	...	3·7	...	3·2	...	0·6	...	18·3	23	45
29	7·6	...	3·1	...	5·3	...	5·3	...	4·c	...	6·0	...	4·3	...	1·8	...	20·1	1	35
30	3·2	...	0·6	...	7·2	...	...	...	4·7	...	4·7	...	5·9	...	...	...	18·3	10	10
31	2·3	...	0·4	...	...	...	3·9	...	...	7·1	1·4	...	...	4·8	2·0	...	19·2	20	5
S+N & W+E	62·0		53·7		62·5		80·9		75·0		73·5		80·2		64·7				
S−N & W−E	26·0		32·3		26·7		39·7		40·6		30·7		43·0		4·9				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time. * No Record. † Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.
‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8. § Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.).

BRIGHTON. **K.** 51. October 10. 11 h. 0 m. to 12 h. 30 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	900	922·2	284	...	46	6·0	1·129	150	6·7	Cloudless sky, hazy.
	500	967·3	*285·6*	4·1	*61*	*8·8*	1·176	?	?	
100 m. above ground	215	1000·6	*286·8*	...	*72*	*11·2*	1·210	95	?	
Ground level	115	1012·5	287·2	...	76	12·1	1·223	110	6·7	
Computed for M.S.L.	0	1026·4	...	...	...	...	...	110	6·3	...

BRIGHTON. **K.** 52. October 20. 10 h. 30 m. to 12 h. 0 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.		Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
1000	895·0	277	6·4	90	7·4	1·122	260	20	Overcast Cu.-St, to clear overhead with Ni. North horizon. Clouds reached.
500	951·3	280·2		90	9·1	1·179	260	20	
215	984·5	284	13	80	10·4	1·203	260	17	
115	996·3	284·9	9	80	11·1	1·213	250	12	
0	1010·1	...	...	...	...	...	245	27	...

BRIGHTON. **K.** 53. October 27. 11 h. 30 m. G.M.T.

Greatest height.	255	979·0	284·8	...	86	11·9	1·192	220	25	Overcast St. Kite drawn in on account of wind rate.
	...	...	...	...	...	...	...	...	...	
100 m. above ground	215	983·7	*285·4*	16	*86*	*12·3*	1·195	?	?	
Ground level.	115	995·5	287	...	86	13·6	1·202	220	6	
Computed for M.S.L.	0	1009·1	...	...	...	...	...	240	14	...

BRIGHTON. **K.** 54. October 31. 10 h. 40 m. to 12 h. 40 m. G.M.T.

	1000	888·8	277	6·4	90	7·4	1·115	310	16	Cu.-ni. ¾ overcast. Kite in and out of cloud at 700 m. above sea.
	500	944·7	280·2		80	8·1	1·171	300	14	
	215	977·8	*283·0*	10·0	*80*	*9·7*	1·199	?	?	
	115	989·6	284	...	80	10·4	1·209	300	6	
	0	1003·3	...	...	...	...	...	335	16	...

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. October 2. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	19·6 km.	56 mb.	219·5° A.
LOWEST TEMPERATURE,	15·5–18 km.	108–72 mb.	218° A.
BASE OF STRATOSPHERE,	9·6 km.	268 mb.	223·5° A.
Type	No. 1.		

SOUNDING No., **R.** 18.
PLACE, MANCHESTER.
Latitude, 53° 28′ N.
Longitude, 2° 14′ W.
Height above M.S.L., 40 m.
PLACE OF FALL, Eastwood, Notts.
Distance, 86 km.
Orientation, 129°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1004 mb.	1014 mb.
TEMPERATURE,	278° A.	279° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	55°	55°
Velocity,	10·0 m/s.	7·1 m/s.
Correction for Curvature,	+3·9 m/s.	+1·0 m/s.
Final Components, W. to E.	−11·4 m/s.	−6·6 m/s.
Final Components, S. to N.	−8·0 m/s.	−4·6 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
19·0	61	219	−0·5	Balloon seen falling at 9.25 a.m. on October 2nd.
18·0	72	218·5	−0·5	
17·0	84	218	0·0	
16·0	100 99	218	0·5	
15·0	116	218·5	1·0	
14·0	136	219·5	2·5	
13·0	159	222	3·0	
12·0	186	225	2·0	
11·5	200	226	−1·5	
11·0	217	227	0·5	
10·0	253	225·5		
9·0	292	226	6	
8·8	300	227·5	8	
8·0	342	232		
7·0	397	240	6	
6·9	400	241		
6·0	457	246	7	
5·3	500	251		
5·0	523	253	5·5	
4·0	600 599	258·5	5·5	
3·0	684	264	4	
2·8	700	265		
2·0	781	268	2	
1·8	800	268·5		
1·0	887	270	9·5	
0·9	900	270·5		
...	1000	279·5		
Ground M.S.L.	1000 1004	279·5 ...	... ...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. October 3. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	21·6 km.	44 mb.	230° A.
LOWEST TEMPERATURE,	14·5 km.	152 mb.	222° A.
BASE OF STRATOSPHERE,	10·0 km.	260 mb.	226° A.
Type	No. 1.		

SOUNDING No., R. 19.
PLACE, MANCHESTER.
Latitude, 53° 28′ N.
Longitude, 2° 14′ W.
Height above M.S.L., 40 m.
PLACE OF FALL, Knowle, Warwickshire.
Distance, 129 km.
and Orientation 165°.

From Observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.)	1022 mb.	1031 mb.
TEMPERATURE,	276° A.	282° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	25°	Station in the centre of an anticyclone.
Velocity,	7·2 m/s.	
Correction for Curvature,	+0·7 m/s	
Final Components, W. to E.	−3·3 m/s.	
Final Components, S. to N.	−7·2 m/s.	

1912. October 4. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	21·5 km.	45 mb.	227·5° A.
LOWEST TEMPERATURE,	15·4 km.	116 mb.	220·5° A.
BASE OF STRATOSPHERE,	10·9 km.	232 mb.	221° A.
Type	No. 1.		

SOUNDING No., R. 20.
PLACE, MANCHESTER
Latitude, 53° 28′ N.
Longitude, 2° 14′ W.
Height above M.S.L., 40 m.
PLACE OF FALL, Ellistown, near Leicester.
Distance, 109 km.
and Orientation, 136°.

From Observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.)	1036mb.	1036 mb.
TEMPERATURE,	278° A.	281° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,		Station in the centre of an anticyclone.
Velocity,		
Correction for Curvature,		
Final Components, W. to E.		
Final Components, S. to N.		

1912. October 4. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15·7 km.	109 mb.	213° A.
LOWEST TEMPERATURE,	15·7 km.	109 mb.	213° A.
BASE OF STRATOSPHERE,	See "Remarks."		
Type	No. ?		

SOUNDING No., R.K.C. 45.
PLACE, MUNGRET COLLEGE, LIMERICK.
Latitude, 52° 38′ N.
Longitude, 8° 41′ W.
Height above M.S.L., 15 m.
PLACE OF FALL, Midleton, Co. Cork.
Distance, 88 km.
and Orientation, 160°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1036 mb.	1035 mb.
TEMPERATURE,	274° A.	282° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,		225°
Velocity,		11·9 m/s.
Correction for Curvature,	Station near the centre of an anticyclone.	+1·4 m/s.
Final Components, W. to E.		9·4 m/s.
Final Components, S. to N.		9·4 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
21·0	48	229		
20·8	50	228·5	−0·5 −2·5	
20·0	56	228·5 226·5	−1 −1·5	
19·0	65	227·5 225	−0·5 −1·5	
18·0	76	227 223·5	−0·5 −1	
17·0	88	226·5 222·5	−0·5 0	
16·2	100	226 222·5	−0·5 −0·5	
16·0	103	226 222·5	−0·5 1	
15·0	120	225·5 222	0 2	
14·0	141	225 223	3	
13·0	164	225	1·5	
12·0	191	228	−3·5	
11·7	200	229·5	2	
11·0	223	229·5	5	
10·0	257	226	6·5	
9·0	297	228	5·5	
8·9	300	228·5	7	
8·0	344	233	4·5	
7·0	400 399	239·5	2·5	
6·0	460	245	4	
5·4	500	248·5	2	
5·0	530	252	7	
4·1	600	256	4·5	
4·0	609	256·5	2·5	
3·0	694	259	4	
2·9	700	259·5	7	
2·0	791	263		
1·9	800	263·5		
1·0	900 903	270		
0·2	1000	275		
Ground	1017	277	...	
M.S.L.	1022	...	...	
21·0	48	223·5		
20·9	50	223·5	−0·5	
20·0	57	223	0	
19·0	67	223	−0·5	
18·0	77	222·5	−1·5	
17·0	89	221		
16·3	100	221·5	0	
16·0	104	221	0	
15·0	123	221	2	
14·0	144	223	1	
13·0	169	224	−0·5	
12·0	197	223·5		
11·9	200	223·5	−1·5	
11·0	230	222	1	
10·0	267	223	8·5	
9·2	300	230		
9·0	311	231·5	7·5	
8·0	361	239	6	
7·3	400	243	4·5	
7·0	417	245	7	
6·0	476	249·5	8	
5·6	500	252		
5·0	543	256·5		
4·3	600	262·5		
4·0	623	264·5	4·5	
3·1	700	269	3	
3·0	712	269	2	
2·0	800 805	272		
1·1	900	273·5		
1·0	915	274		
0·3	1000	275·5		
Ground	1032	276	...	
M.S.L.	1036	...	...	
15·0	123	213	0	Inversion of 2° from 1·2 to 2·1 km.
14·0	143	213	1	
13·0	167	214	2	
12·0	196	216		The temperature gradient above 9 km. is so irregular that no definite value can be assigned to H_c.
11·9	200	...	0	
11·0	228	216	1	
10·0	268	217		
9·3	300	...	5	
9·0	311	222	7	
8·0	361	229		Temperature 218° at 10·2 km.
7·3	400	...	9	
7·0	416	238	8	
6·0	477	246		Calm. E. Cirrus moving slowly from W.S.W.
5·7	500	...	7	
5·0	547	253	8	
4·2	600	...		
4·0	616	261	6	
3·1	700	...		
3·0	710	267	4	
2·1	800	...		
2·0	806	271	0	
1·1	900	...		
1·0	911	271		
0·3	1000	...		
Ground	1034	270	...	
M.S.L.	1036	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).—*continued.*

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. October 2. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	13 km.	165 mb.	224° A.
LOWEST TEMPERATURE,	9·2 and 13 km.	...	224° A.
BASE OF STRATOSPHERE,	9·2 km.	291 mb.	224° A.
Type	No. 1.		

SOUNDING No., R. 206.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 0′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Wealdstone.
Distance, 56 km.
and Orientation, 91°.

From Observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1017 mb.	1013 mb.
TEMPERATURE,	280° A.	279° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	40°.	85°.
Velocity,	9·7 m/s.	10·0 m/s.
Correction for curvature,	+ 3·5 m/s.	+3·9 m/s.
Final Components, W. to E.	− 8·5 m/s.	−13·8 m/s.
Final Components, S. to N.	−10·1 m/s.	− 1·1 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
13·0	165	224	1	Noticeable fall of temperature above 11 km., as on the 3rd and 4th.
12·0	192	225		
11·7	200	...	2·5	
11·0	223	227·5	−2·5	
10·0	257	225	0	
9·0	300	225	7	Light N.N.E. wind. Overcast. Clouds at 7 km.
8·0	347	232	7	
7·0	400 402	239	7	
6·0	463	246	8	
5·4	500	...	7	
5·0	531	254	6	
4·1	600	...	4	
4·0	605	261	2	
3·0	688	267	4	
2·9	700	...	4	
2·0	785	271		
1·8	800	...		
1·0	886	275		
0·9	900	...		
Ground	1000	280	...	
M.S.L.	1017	...	...	

TABLE OF HEIGHTS, PRESSURES, TEMPERATURES, AND WINDS.

1912. October 3. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15 km.	127 mb.	221° A.
LOWEST TEMPERATURE,	15 km.	...	221° A.
BASE OF STRATOSPHERE,	8·8 km.	316 mb.	229° A.
Type	No. 2.		

SOUNDING No., R. 207.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 0′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Pulborough.
Distance, 80 km.
and Orientation, 155°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1033 mb.	1032 mb.
TEMPERATURE,	276° A.	277° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	40°	50°
Velocity,	9·8 m/s.	8·7 m/s.
Correction for Curvature,	+2·4 m/s.	+1·1 m/s.
Final Components, W. to E.	−7·8 m/s.	−7·5 m/s.
Final Components, S. to N.	−9·3 m/s.	−6·3 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Wind. Direction.	Wind. Velocity.	Wind. Components. W. to E.	Wind. Components. S. to N.	REMARKS.
km.	mb.	°A.	°C.	Degrees from N.	m/s.	m/s.	m/s.	
15·0	127	221		...	...	...	...	The lower part of the trace too faint to be decipherable. A temperature midway between those of the 2nd and 4th up to 8 km. is assumed in calculating the heights.
14·0	147	223	2	...	...	...	...	
13·0	171	225	2	...	...	...	...	
12·0	197	227		...	...	...	...	
11·9	200	...	3	...	...	...	...	
11·0	229	230	−1	...	...	...	...	
10·0	267	229	0	...	...	...	...	
9·2	300	...		...	...	...	...	
9·0	307	229	6	...	...	...	...	
8·0	356	235		...	...	...	..	Remarkable fall of temperature from 11 to 15 km.
...	400	...		...	...	...	...	
1·5	...	...		32	12	−6	−10	
1·0	...	..		32	12	−6	−10	
0·5	...	...		30	15	−7·5	−13	
Ground	1016	273·5	...	...	...	...	...	
M.S.L.	1033	...	...	...	...	...	...	

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. October 4. 7 h. 6 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	17 km.	91 mb.	221° A.
LOWEST TEMPERATURE,	10·7 and 16·0 km.	...	217° A.
BASE OF STRATOSPHERE,	10·7 km.	243 mb.	217° A.
Type	No. 1.		

SOUNDING No., R. 208.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 0′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Bognor.
Distance, 95 km.
and Orientation, 169°

From observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1034 mb.	1036 mb.
TEMPERATURE,	274° A.	277° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	Station in the centre of an anticyclone.	...
Velocity,		...
Correction for Curvature,		...
Final Components, W. to E.		...
Final Components, S. to N.		...

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
17·0	91	221		Inversion at the surface 271° to 277°.
16·4	100	...	−4	
16·0	107	217	1	
15·0	127	218	2	
14·0	148	220	1	Isothermal 2·1 to 3·1 km.
13·0	172	221	1	
12·0	200 198	222	−4	
11·0	232	218	3	Unusual fall of temperature above the isothermal, as on the 3rd.
10·0	297	221		
9·3	300	...	5	
9·0	312	226	8	
8·0	363	234		Calm. Light fog.
7·3	400	...	7	
7·0	418	241	8	
6·0	480	249		
5·7	500	...	7	
5·0	550	256	6	
4·3	600	...		
4·0	628	262		
3·2	700	...	5	
3·0	718	267		
2·0	800	...	1	
2·0	813	268		
1·2	900	...	5	
1·0	917	273		
Ground	1017	271	...	
M.S.L.	1034	...	...	

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. October 10. 16 h. 30 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	14 km.	157 mb.	218° A.
LOWEST TEMPERATURE,	...	...	...
BASE OF STRATOSPHERE,	11·0 km.	233 mb.	14° A.
Type	No. 2.		

SOUNDING No., R. 209.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 0′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Abingdon.
Distance, and Orientation, 20 km. 280°.

From Observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1024 mb.	1026 mb.
TEMPERATURE,	270° A.	272° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	125°.	Secondary.
Velocity,	7·0 m/s.	Gradient
Correction for Curvature,	+1·4 m/s.	irregular.
Final Components, W. to E.	−6·9 m/s.	...
Final Components, S. to N.	4·8 m/s.	...

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
14·0	157	216	−1	Inversion 281° to 283° from 1·5 to 1·9 km.
13·0	170	215	−1	
12·0	200 198	214	0	
11·0	233	214	6	
10·0	273	220		
9·4	300	...	7	Clear. E.S.E$_2$.
9·0	317	227	8	
8·0	366	235		
7·4	400	...	9	
7·0	419	244	9	
6·0	482	253		
5·7	500	...	8	
5·0	550	261		
4·3	600	...	9	
4·0	625	270		
3·1	700	...	6	
3·0	710	276		
2·0	800 803	283	7	
1·0	900	...	−0·5	
1·0	906	282·5		
Ground	1007	285	...	
M.S.L.	1024	...	...	

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. October 23. 15 h. 54 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	13·2 km.	157 mb.	229° A.
LOWEST TEMPERATURE,	above 10·0 km.	...	224° A.
BASE OF STRATOSPHERE,	9·4 km.	277 mb.	224° A.
Type	No. 2.		

SOUNDING No., R. 210.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 0′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Quainton.
Distance, and Orientation, 24 km. 11°.

From Observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	922 mb.	994 mb.
TEMPERATURE,	274° A.	280° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	Pressure	...
Velocity,	Distribution	...
Correction for Curvature,	irregular.	...
Final Components, W. to E.	...	...
Final Components, S. to N.	...	...

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
13·0	162	224	0	Overcast, E.S.E. wind, force 2.
12·0	197	224		
11·6	200	...	0	
11·0	218	224	0	
10·0	254	224	2	Lost in clouds in 7 minutes. Clouds from S.W. by S.
9·0	295	226		
8·9	300	...	5	
8·0	343	231	6	
7·0	396	237		
6·9	400	...	5	
6·0	456	242		
5·3	500	...	7	
5·0	523	249	6	
4·0	600 598	255	8	
3·0	683	263		
2·8	700	...	7	
2·0	776	270		
1·8	800	...	4	
1·0	878	274		
0·8	900	...	6	
Ground	975	280	...	
M.S.L.	992	...	...	

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A = 0° C.).
Heights are given in kilometers (km.).
***Base of Stratosphere.**—TYPE 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given. TYPE 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. TYPE 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

NOVEMBER 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 1*s.*

Second Year.—No. 11. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	6	1·2	I, I.	1st I, Long waves 6 h. 22 m.–6 h. 33 m. I, Long waves 19 h. 37 m.–19 h. 47 m.
2	6-7	2·5	Iu, Iu, I, I.	2nd Iu, P=3 h. 10 m. 50 s., S=3 h. 18 m. 8 s., L=3 h. 24 m, Δ=5660 km. Iu, P=4 h. 16 m. 17 s., S=4 h. 24 m., L=4 h. 29 m. I, Trace of long waves 14 h. 45 m. I, S=21 h. 48 m., L=21 h. 54 m.
3	6	2·5	I.	
4	5-6	1·6		
5	5	1·0		3rd I, L=6 h. 48 m.
6	5-6	0·4	I.	
7	6	1·5	IIIu, Iu, II.	6th I, Long waves 15 h. 17 m.–15 h. 35 m.
8	5-6	0·5	I.	
9	5	1·0		7th IIIu, P=7 h. 50 m. 56 s., S=7 h. 59 m. 48 s., Δ=7445 km., α=26° 34′ W of N. Epicentre 52° 12′ N. 141° 1′ W. Iu, P=16 h. 56 m. 32 s., S=17 h. 7 m. 18 s., Δ=9730 km. II, P confused by end of preceding earthquake, S=17 h. 49 m., L=18 h. 7 m.
10	7	2·7	I.	
11	7	3·1		
12	7	2·5		8th I, S?=8 h. 18 m., L=8 h. 42 m.
13	5	1·0		
14	5	0·8	I.	10th I, Long waves 3 h. 20 m.
15	4	0·6		
16	6	0·5		14th I, L=17 h. 45 m. 20 s.
17	7-8	1·4	I.	17th I, S?=11 h. 55 m. 37 s., L=12 h. 10 m.
18	7-8	1·4		
19	7	3·1	II.	19th II, P confused by wind disturbance. S=14 h. 16 m. 54 s.
20	7	2·7		
21	6	1·2		22nd I, Trace of long waves 1 h. 32 m.
22	7-8	2·4	I.	
23	7	1·5		25th I, L=9 h. 44 m.
24	6	1·0		
25	6	1·5	I.	28th I, Phases lost during change of sheet. Long wave max 21 h. 16 m.
26	6	4·2		
27	6	7·2		30th I, L=3 h. 19 m.
28	6	2·3	I.	
29	4	1·9		Records much confused by microseismic movements.
30	6	1·7	I.	

An explanation of the notation used is given in the preface.

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.

Heights above Ground:—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h. Dir.	9 h. Vel.	21 h. Dir.	21 h. Vel.	Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%		m/sec.		m/sec.	Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	1028·9	1027·7	74·9	80·3	81	74	6·5	7·8	93	76	—	1	8	4	1∞	*4*	0·5	5·1	Fine to fair; hazy early.	…	…	…
2	1023·4	1022·1	82·5	83·1	84	80	10·2	10·5	85	84	10	5	9	4	10≡0	*9*	1·0	—	Dull, with ≡0. ●0 *a*.	…	…	…
3	1020·9	1019·6	84·2	84·9	*x* 86	83	11·2	12·2	83	90	10	4	12	9	7	*10*	5·1	—	Gloomy.	…	…	…
4	1017·6	1013·0	85·4	85·7	*x* 86	84	14·2	14·6	99	99	15	7	19	5	10≡0●	*10*≡0	8·4	—	Overcast, with ≡0. Frequent ●.	…	…	…
5	1015·9	1019·2	83·9	83·2	85	83	12·9	12·6	98	100	25	6	—	1	10≡0	*10*≡0	0·8	—	Dull and misty.	…	…	…
6	1021·8	1024·1	83·5	84·3	*x* 86	83	12·6	13·2	100	99	11	3	16	3	10≡0	*10*≡0	0·3	—	≡0 and overcast all day.	…	…	…
7	1024·0	1025·8	84·4	84·5	*x* 86	84	13·2	13·6	98	100	14	6	15	4	10≡0	*10*≡0●0	0·5	1·6	Heavy mist; clearing midday.	17908	20 25·5	68 11·4
8	1026·5	1024·0	84·4	84·6	85	84	13·2	12·9	99	95	16	3	15	5	10≡0	*10*≡0	0·3	—	Dull throughout, with ≡0.	…	…	…
9	1018·2	1017·4	84·3	82·8	85	82	12·2	9·2	91	75	15	5	24	9	10≡0	*10*≡0	0·5	0·5	Gloomy and misty.	…	…	…
10	1014·0	1011·7	83·3	83·0	85	82	10·5	9·5	84	78	21	12	28	11	10≡0	*7*	1·0	—	Gloomy. [*p.*	…	…	…
11	1012·8	1015·3	79·7	78·3	82	77	8·2	7·5	84	83	28	10	30	13	6	*5*	5·1	4·6	Fair at first. Frequent ▲● squalls	…	…	…
12	1017·3	1017·3	80·1	78·9	81	77	7·8	6·5	77	70	32	9	1	11	7	*5*	5·3	3·0	▲ or ● squalls throughout.	…	…	…
13	1018·1	1020·7	81·1	81·5	82	77	7·5	7·8	71	72	32	14	32	9	4	*10*	1·0	5·0	Fair during day; squally later.	…	…	…
14	1021·2	1023·9	83·0	82·6	84	81	11·2	9·5	91	78	32	8	32	4	10	*8*	0·3	1·3	Gloomy to fair.	…	…	…
15	1024·4	1025·2	82·3	82·1	83	82	10·9	10·5	92	92	32	4	—	1	9	*10*	—	0·4	Dull.	…	…	…
16	1023·7	1021·7	81·2	82·8	83	81	10·5	10·5	96	88	—	1	24	7	10	*6*	0·5	0·1	Dull day; improving in evening.	…	…	…
17	1021·7	1018·4	81·3	82·3	84	81	9·5	11·5	88	100	18	3	—	1	6	*10*≡0●	2·3	0·1	Fair, then dull with ●0.	…	…	…
18	1021·5	1025·4	82·5	84·3	85	81	10·9	12·6	91	93	30	7	26	5	9	*10*≡0	0·5	1·8	Fair to misty.	…	…	…
19	1025·5	1025·9	83·3	83·2	84	83	8·8	9·2	72	76	28	8	24	7	8	*10*	—	0·1	≡0 and overcast most of day.	…	…	…
20	1025·7	1025·1	83·3	84·3	84	83	11·9	13·2	96	99	21	6	22	7	10≡0●0	*10*≡0●0	0·3	—	Heavy mist throughout.	…	…	…
21	1026·9	1026·4	84·6	84·2	*x* 86	84	13·2	12·2	96	93	21	5	16	4	10≡0	*9*	0·3	0·8	Dull generally.	…	…	…
22	1024·8	1022·1	84·4	84·6	85	84	11·2	12·9	83	95	15	5	14	7	10	*10*●	3·6	—	Overcast all day. ●0 *n*.	…	…	…
23	1019·3	1021·4	84·2	82·3	85	82	12·9	8·8	96	74	16	4	25	8	10	*5*	0·8	0·2	Dull to fair in evening; squally.	…	…	…
24	1024·9	1021·8	82·9	84·1	85	82	9·8	11·2	81	85	20	8	19	6	10	*10*≡0	3·3	0·1	Dull.	…	…	…
25	1010·3	1007·8	83·1	82·9	85	82	11·5	10·9	93	89	21	13	17	6	10≡0	*10*	5·8	0·2	Showery and dull.	17906	20 26·6	68 10·6
26	985·1	991·2	83·1	77·2	85	77	10·2	6·8	83	83	20	17	24	9	5	*6*	6·9	1·0	8 h. ▲● squalls. < *n*.	…	…	…
27	990·4	1006·5	75·7	79·0	81	75	6·8	7·8	91	84	1	11	30	2	5	*8*	4·1	3·9	5 h. 45 m., with ▲✻ showers.	…	…	…
28	1004·1	997·5	77·3	78·7	80	75	8·2	7·5	97	83	—	1	31	8	10≡0	*10*●	9·1	—	Frequent ● throughout.	…	…	…
29	995·3	994·7	75·1	75·1	79	75	6·8	6·1	93	84	7	2	5	5	4	*2*	0·5	0·2	Very cloudy; good visibility.	…	…	…
30	1008·5	1010·4	73·7	73·1	79	*n* 72	5·8	5·4	87	87	4	2	2	2	3	*1*	10·2	3·5	✻ showers 10 h.–12 h., then fine.	…	…	…
Means	1017·1	1017·4	81·8	81·9	83·6	80·2	10·3	10·2	90	87		6·3		5·9	8·1	*8·2*	78·3	1·12	Monthly **Totals** or **Means**.	17907	20 26·0	68 11·0
Normal 40 years	1011·4	1011·5	81·3	81·4	84·3 (35 years)	79·0 (35 years)	9·6 (25 years)	9·6 (25 years)	87 (25 years)	86 (25 years)		5·7 (30 years)		5·8 (30 years)	—	—	137·9	2·21 (30 yrs)	**Normals**, 40 years.			

Wt. 39025/327—375—9/13. N. & Co., Ltd. **Gp. XV.**

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity. Vapour Pressure.		Humidity. Percentage.		Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
	mb.	mb.	200+°	200+°	200+°	200+°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		200+°	200+°	200+°	
1	1026·6	1029·4	75·7	75·2	80	74	5·4	5·8	71	79	28	4	—	1	0	*0*≡⁰	—	6·9	·050	67	81·8	83·6	⌙ ; fine throughout.
2	1028·3	1026·4	75·2	76·3	82	73	6·1	6·1	83	77	27	2	26	2	1≡⁰	*1*≡⁰	—	5·3	·045	66	80·4	83·6	⌙ ; ≡⁰, but mostly fine.
3	1027·0	1027·8	73·2	73·8	80	*n* 71	5·1	6·1	84	92	—	1	—	1	5≡⁰	*?0*≡⁰	0·3	3·3	—	65	79·6	83·5	⌙ ; misty to fine.
4	1026·5	1021·1	77·0	80·8	84	*n* 71	6·8	9·2	85	86	—	1	19	5	10≡⁰	*10*	4·8	0·5	—	66	79·0	83·4	≡ ; dull.
5	1010·6	1015·6	81·3	82·8	84	80	10·2	10·5	95	88	18	3	32	3	10●⁰≡⁰	*10*	0·3	—	—	76	79·8	83·2	● early ; mostly dull.
6	1022·0	1025·4	82·8	82·4	84	82	11·2	10·9	93	93	—	1	—	1	10≡⁰	*10*≡⁰	—	—	—	81	80·8	82·9	≡⁰ and overcast throughout.
7	1028·7	1027·7	82·9	84·6	*x* 86	82	11·2	11·9	91	87	15	2	19	4	10≡⁰	*10*	—	1·8	—	80	81·3	82·9	Dull and misty to fine.
8	1027·6	1027·8	85·0	84·2	*x* 86	84	12·2	11·9	89	89	22	4	24	2	10	*10*	—	—	—	82	81·9	82·9	Overcast all day.
9	1024·0	1015·0	84·0	81·3	*x* 86	81	11·5	9·5	88	88	19	3	17	2	10≡⁰	*10*	—	0·1	—	82	82·4	82·9	Dull.
10	1014·3	1000·0	80·3	83·4	84	79	8·2	8·8	81	71	23	3	24	7	10≡⁰	*7*	3·1	0·2	—	73	82·0	82·9	Fair, then dull ; ● 19 h.–20 h.
11	994·9	994·8	79·0	78·0	82	77	6·5	5·8	70	66	24	7	27	8	10	*4*	0·3	0·4	—	75	81·4	82·9	Dull ; improving in afternoon.
12	996·3	998·8	77·5	77·5	79	76	6·5	6·1	77	71	28	5	29	8	10	*7*	0·8	—	—	71	80·3	82·9	Dull all day.
13	1000·7	1006·6	77·9	77·4	79	76	6·5	7·1	73	83	29	6	30	3	9	*0*	1·0	—	—	73	79·7	82·9	Very cloudy.
14	1011·0	1018·0	78·4	78·6	80	78	6·8	7·1	78	78	28	6	28	2	9	*10*	—	—	—	73	79·7	82·9	Dull during day.
15	1019·5	1021·4	77·6	80·2	82	77	7·5	8·8	88	88	—	1	28	2	9≡⁰	*?10*≡⁰●⁰	0·3	—	—	74	79·7	82·8	≡⁰ ; dull.
16	1021·9	1021·4	80·8	81·6	83	80	9·8	10·2	94	92	—	1	—	0	?10≡⁰	*10*●⁰	1·5	—	—	78	80·2	82·6	≡⁰ ; overcast throughout.
17	1020·7	1020·2	81·0	80·4	83	79	10·2	8·5	96	84	23	2	—	1	10≡⁰	*10*≡⁰	—	0·1	—	78	80·6	82·4	●⁰ early ; dull and misty.
18	1018·7	1020·0	75·6	77·9	81	74	7·1	8·2	95	92	—	0	—	1	?10≡	?0≡	0·3	0·2	—	67	80·2	82·4	⌙ ; ≡ most of day.
19	1020·7	1018·3	76·8	80·4	81	75	7·5	7·8	93	76	23	2	22	4	9≡⁰	2	0·3	0·1	—	68	79·7	82·4	≡ early ; cloudy ; clear evening.
20	1019·5	1018·4	79·8	81·3	82	79	7·1	10·2	71	94	22	4	22	3	10	8	0·3	—	—	74	79·7	82·4	Dull throughout.
21	1021·8	1024·9	81·4	81·9	83	80	9·2	10·9	85	96	25	2	—	1	10≡⁰	?10≡	1·8	—	—	73	79·7	82·3	Dull ; ≡● *p*.
22	1028·1	1028·0	78·9	82·4	85	77	9·2	10·2	97	87	25	2	21	2	6≡⁰	10	—	3·3	·042	71	80·1	82·3	≡ till 10 h., then fine till 14 h.
23	1027·2	1022·5	82·5	83·1	84	82	10·2	10·9	85	88	19	4	17	6	10	10	· 3·8	—	—	80	80·6	82·3	Overcast all day.
24	1021·9	1022·8	79·5	79·5	83	79	7·8	8·2	82	84	26	3	19	4	0≡⁰	7	—	6·6	—	74	80·9	82·3	● early, then fine.
25	1015·7	1011·7	83·1	79·0	84	78	9·5	8·5	76	92	19	8	19	2	9	9≡⁰	6·1	—	—	74	80·5	82·2	●² 16 h. ⊔ 23 h. 30 m.
26	1001·6	988·6	83·7	81·3	84	78	11·9	9·8	92	90	17	11	18	7	10●⁰	*10*●	8·1	—	—	72	80·4	82·2	Dull, with strong wind. ●² 18 h.
27	992·1	1000·4	76·3	74·3	80	73	6·5	5·8	84	86	19	3	—	1	6	*0*≡⁰⌙	—	1·3	—	71	80·3	82·2	Fair to fine.
28	1009·3	1001·9	72·8	76·6	78	72	5·1	6·5	85	82	24	2	14	5	?8≡⁰⌙	*8*	9·1	0·4	—	*n* 64	79·1	82·1	⌙ ; mostly fair, but ≡⁰.
29	986·3	996·2	78·7	74·5	80	73	8·2	5·4	91	77	—	1	27	2	10≡⁰	*8*	0·5	—	—	72	78·7	81·9	● *a*. Dull all day.
30	998·5	1004·9	73·9	72·1	75	*n* 71	4·4	3·1	68	**50**	32	6	30	2	10	*0*	—	0·2	—	65	78·1	81·9	Dull, with cold wind.
Means	1015·4	1015·2	79·1	79·4	82·0	77·1	8·2	8·3	85	84		3·3		3·1	8·4	6·5	42·7	1·02	—	72·8	80·3	82·7	Monthly **Totals** or **Means**.
Normal 40 years	1013·4	1013·3	79·0	79·2	82·2 (35 years)	76·5 (35 years)	8·4	8·5	88	88 (25 years.)		3·3 (30 years)		3·2 (30 years)	—	—	55·6	1·70 (30 yrs)	—	—	—	—	**Normals, 40 years.**

Note.—The cloud amounts in italic type at Kew were taken at 18 h.

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	998·4	998·3	72·0	72·8	77	69	3·1	4·8	55	76	—	1	28	2	3	1	—	6·2	—	—	—	—	⌙ ; fine.
2	996·7	997·6	77·4	75·4	80	74	6·1	6·5	73	89	28	8	—	1	5	9	—	0·7	—	—	—	—	Threatening appearance in west [15 h.
3	997·9	997·3	74·5	73·0	77	73	5·8	4·8	84	76	—	0	—	0	10	9	0·5	—	—	—	—	—	
4	992·4	983·7	76·8	82·4	83	74	7·8	11·2	97	96	—	1	20	6	10≡⁰	10●≡⁰	17·3	—	—	—	—	—	≡⁰ throughout ; ● *p*.
5	982·9	988·7	78·2	82·4	*x* 85	77	8·5	11·5	96	98	—	0	—	1	4≡⁰	10≡⁰	—	—	—	—	—	—	
6	992·2	994·2	81·4	80·9	83	80	9·8	9·5	89	91	20	4	20	3	10	10	0·5	—	—	—	—	—	
7	993·7	990·5	82·1	84·0	*x* 85	81	11·5	12·6	99	96	20	8	20	12	10●⁰	10●≡⁰	6·9	—	—	—	—	—	≡⁰●⁰ showers most of day.
8	995·2	996·6	82·5	78·7	*x* 85	79	10·9	7·8	91	86	20	2	—	1	10	10	3·3	0·1	—	—	—	—	
9	987·3	979·7	82·0	78·4	82	77	10·5	7·1	93	82	20	12	20	12	10●⁰≡⁰	3	15·0	—	—	—	—	—	≡⁰● most of day.
10	976·8	964·0	77·2	*75·8*	81	*75*	7·1	6·1	85	81	20	9	24	11	9	2	13·5	—	—	—	—	—	Sleet 7 h. 30 m. ; ●² in afternoon
11	966·4	969·7	75·8	74·6	78	*75*	5·1	5·1	69	72	28	7	28	11	4	0	1·0	3·0	—	—	—	—	
12	974·4	977·1	75·9	74·7	77	74	5·8	4·8	76	69	32	15	32	*11*	8	0	—	2·2	—	—	—	—	✲⁰ early *a*.
13	979·7	984·5	76·2	75·7	79	75	6·5	5·8	84	77	32	12	28	7	10●⁰	1	2·0	1·5	—	—	—	—	●⁰ and sleet 8 h.–12 h.
14	987·1	990·0	74·5	77·0	80	73	5·4	7·1	78	88	—	1	—	1	4	10	—	2·8	—	—	—	—	
15	991·6	993·5	77·3	78·6	84	77	7·5	8·2	92	91	—	0	—	0	7	5≡	0·3	3·6	—	—	—	—	Fine during day. ≡ *n*.
16	993·1	990·7	79·1	78·0	80	77	8·8	7·5	94	85	28	4	24	6	9	10	1·0	—	—	—	—	—	
17	988·6	988·5	78·2	74·3	80	72	7·5	6·5	84	96	24	4	20	1	4	9	—	3·9	—	—	—	—	
18	990·0	991·8	73·0	71·2	80	71	6·1	5·1	97	93	—	0	28	1	5≡⁰	0	3·3	1·9	—	—	—	—	
19	985·0	981·7	79·0	77·9	80	71	7·8	6·8	83	78	24	*9*	28	19	8	1	2·0	2·0	—	—	—	—	⸗ from N.W., *n*.
20	982·9	988·0	78·5	78·1	80	78	6·8	7·1	75	81	28	17	28	5	2	9	—	—	—	—	—	—	⸗ from N.W., *a*.
21	991·0	994·4	79·2	82·6	83	78	9·2	10·9	96	92	16	6	20	4	10●⁰≡⁰	10	0·5	—	—	—	—	—	≡⁰
22	994·7	993·2	81·8	81·0	82	80	9·8	10·2	88	97	20	8	16	5	10●⁰≡⁰	10●≡⁰	10·4	—	—	—	—	—	≡⁰
23	991·1	984·2	81·8	82·2	83	79	10·9	10·2	97	89	16	*4*	20	10	10≡⁰	10	10·4	—	—	—	—	—	≡⁰ ; ●² 22 h.
24	984·7	983·4	78·4	80·7	82	77	6·8	9·5	77	93	24	15	20	13	2	10●⁰	**19·8**	0·1	—	—	—	—	
25	969·2	975·6	76·9	76·2	82	75	7·5	7·1	94	85	24	7	24	4	10●⁰	10●⁰	14·7	0·6	—	—	—	—	●² *a*.
26	951·9	949·4	81·1	75·2	*82*	74	10·9	6·1	100	83	16	19	20	13	10●²	4	13·0	—	—	—	—	—	⸗ from S.W. ; ●² *a*.
27	957·9	972·0	74·0	72·3	75	70	6·1	4·4	90	74	24	6	24	1	10✲⁰	10	1·3	0·2	—	—	—	—	✲⁰early ; ⊠.
28	977·3	971·3	66·7	70·1	71	66	2·7	4·4	71	90	—	0	—	*0*	8	10✲⁰	2·5	—	—	—	—	—	✲ *p*. ⊠
29	969·0	972·6	68·8	63·1	70	62	4·1	3·7	95	80	—	*0*	—	1	1	0∞	—	6·3	—	—	—	—	∞ ; fine ; ⊠.
30	975·2	976·0	59·3	68·9	71	*n* 59	1·7	3·4	100	74	—	0	32	2	1	0	—	3·1	—	—	—	—	⌙ ; ⊠.
Means	983·8	983·9	76·7	76·5	79·8	74·0	7·3	7·2	87	85		6·0		6·5	7·1	6·4	139·2	1·27	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified.

5. KEW OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 1·90.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	330	450	—	420	—	—	—	—	—	—	—	0	0	506	5 35	471	10 33	35	48·4	11 39	41·1	2 20	7·3
2	385	525	410	520	—	—	—	—	—	—	—	0	1	505	6 41	465	9 48	40	48·6	13 53	42·1	6 3	6·5
3	340	560	410	240							—	1	0	497	18 21	473	10 55	24	47·8	12 50	41·3	8 53	6·5
4	345	550	300	430							0·75	1	0	506	21 54	467	10 29	39	47·9	12 33	41·3	8 52	6·6
5	160	45	175	225							—	1	1	508	23 33	461	18 9	47	48·0	18 3	41·4	8 23	**6·6**
6	130	240	110	235							—	0	1	502	21 45	479	14 36	23	48·5	12 3	39·6	21 38	8·9
7	175	280	345	335							0·55	0	0	497	6 52	483	13 22	14	49·3	13 8	41·7	7 8	7·6
8	140	185	250	280							—	0	1	507	6 7	488	12 53	19	49·5	23 59	41·4	7 7	8·1
9	175	335	410	390							—	0	1	**531**	**22 59**	496	11 19	35	49·7	0 1	40·8	23 29	8·9
10	95	400	175	195							—	1	1	513	6 23	448	13 30	65	54·6	13 50	34·6	19 43	20·0
11	110	290	260	435							0·50	1	1	513	5 45	459	12 9	54	50·4	11 47	33·2	17 21	17·2
12	335	140	−185	280							—	2	0	498	20 31	482	1 10	16	45·6	11 51	41·7	22 30	3·9
13	260	205	175	560							—	2	0	509	21 53	479	10 40	30	45·5	12 7	39·6	19 54	5·9
14	−10	240	445	595							0·50	2	2	513	7 37	**408**	**15 13**	**105**	**59·4**	**15 6**	36·5	23 3	**22·9**
15	445	475	560	290							0·65	1	1	511	18 52	470	1 57	41	48·0	2 40	39·8	0 49	8·2
16	215	280	260	235			No observations.				—	0	1	523	21 43	480	22 35	43	46·7	12 45	35·7	21 35	11·0
17	150	235	495	520							—	1	1	502	12 56	481	0 13	21	46·4	12 17	37·0	21 0	9·4
18	355	495	390	390							—	0	1	521	21 1	476	18 21	45	45·9	12 30	40·2	20 33	5·7
19	280	505	335	400							—	1	0	511	11 8	485	1 32	26	45·7	11 7	42·3	23 45	**3·4**
20	185	325	260	205							0·30	0	0	506	7 16	486	1 20	20	46·7	10 46	41·9	3 40	4·8
21	280	465	280	250							0·25	0	0	503	23 17	490	10 39	13	44·9	12 4	41·4	20 50	3·5
22	345	445	315	280							0·45	0	1	511	7 39	464	15 10	47	50·0	15 13	40·7	3 40	9·3
23	130	370	270	305							—	0	0	506	6 17	477	9 6	29	44·9	11 58	40·9	18 7	4·0
24	−195	400	325	445							—	1	0	501	11 55	489	1 13	**12**	44·5	12 0	40·4	23 47	4·1
25	185	215	−35	640							—	2	0	505	23 51	488	1 11	17	44·8	11 58	40·5	20 34	4·3
26	370	160	75	75							—	2	1	510	3 53	468	20 34	42	44·3	13 32	**31·3**	**19 28**	13·0
27	175	530	345	540							—	0	0	501	18 57	479	20 56	22	44·7	16 19	38·7	21 2	6·0
28	465	560	625	240							0·45	1	0	499	18 36	480	10 39	19	44·7	12 0	40·9	8 48	3·8
29	*x*	20	55	380							—	2	0	501	18 28	487	10 19	14	44·9	12 33	40·6	20 13	4·3
30	240	485	455	540							—	0	0	504	16 51	487	2 2	17	44·6	11 55	40·7	7 47	3·9
M.	224	357	294	360	—	—	—	—	—	—	—	—	—	507	—	475	—	32	47·5	—	39·6	—	7·9

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3ʰ, 9ʰ, 15ʰ, 21ʰ, are given in the table. A similar note applies to the values in Table 6.

6. ESKDALEMUIR OBSERVATORY.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		Velocities of Ions for 1 volt per centimetre.		Conductivity ×10²⁵.	Air–Earth Current ×10¹⁶.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component.			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.														
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	165	349	236	591	—	—	—	—	—	—	—	0 *a*	0	5 33	1032	988	10 40	11 22	231	196	2 22				
2	183	89	136	160	—	—	—	—	—	—	—	1 *a*	1	6 2	1031	983	10 15	13 45	234	202	6 0				
3	106	361	142	242	—	—	—	—	—	—	—	0 *a*	0	23 51	1023	994	10 53	12 48	229	198	9 10				
4	254	59	355	−875	—	—	—	—	—	—	—	2 *a*	0	21 51	1036	990	10 26	13 6	224	197	8 56				
5	—	—	165	461	—	—	—	—	—	—	—	1 *b*	1	23 28	1050	977	18 7	13 45	233	197	23 42				
6	—	—	171	414	—	—	—	—	—	—	—	0 *a*	1	21 39	1035	996	11 9	12 2	234	188	21 41				
7	89	249	230	83	—	—	—	—	—	—	—	1 *b*	0	5 40	1023	995	13 20	13 7	236	202	24 0				
8	165	142	225	249	—	—	—	—	—	—	—	1 *a*	0	5 20	1025	994	12 35	24 0	242	186	22 45				
9	207	83	47	130	—	—	—	—	—	—	—	2 *b*	1	22 46	1052	1004	11 14	0 0	242	180	23 27				
10	*x*	83	*x*	290	—	—	—	—	—	—	—	2 *c*	2	19 7	1040	951	13 6	13 47	251	137	19 42				
11	124	443	266	396	—	—	—	—	—	—	—	0 *a*	1	17 26	1067	965	12 11	13 16	234	**135**	**17 20**				
12	136	112	165	296	—	—	—	—	—	—	—	1 *a*	0	23 27	1021	1004	10 35	11 5	212	196	0 4				
13	148	325	183	349	—	—	—	—	—	—	—	1 *b*	0	21 47	1037	1000	10 58	12 17	212	186	19 52				
14	254	248	331	697	—	—	—	—	—	—	—	0 *a*	2	4 26	1038	**924**	**15 10**	**15 6**	**297**	157	9 14				
15	236	343	248	756	—	—	—	—	—	—	—	0 *a*	1	16 47	1029	979	2 44	2 41	229	177	0 54	Instrument out of order.			
16	514	136	177	219	—	—	—	—	—	—	—	0 *a*	1	**21 39**	**1068**	996	12 3	11 57	219	173	21 32				
17	71	118	183	337	—	—	—	—	—	—	—	1 *a*	0	21 3	1029	992	0 33	12 16	221	165	21 0				
18	467	242	207	567	—	—	—	—	—	—	—	1 *a*	1	20 57	1058	995	18 20	11 44	218	185	20 29				
19	520	165	−18	171	—	—	—	—	—	—	—	1 *b*	0	22 58	1032	1004	16 0	11 5	218	197	23 40				
20	83	71	171	189	—	—	—	—	—	—	—	1 *a*	0	7 10	1032	1011	9 44	12 12	217	191	1 18				
21	183	118	165	290	—	—	—	—	—	—	—	1 *a*	0	17 43	1027	1012	10 38	23 19	215	198	24 0				
22	136	171	130	65	—	—	—	—	—	—	—	1 *a*	1	7 39	1041	973	15 6	—	—	—	—				
23	−100	177	225	142	—	—	—	—	—	—	—	1 *b*	1	6 23	1032	994	9 3	11 54	217	197	18 7				
24	47	83	47	12	—	—	—	—	—	—	—	2 *b*	0	3 50	1029	1009	10 47	11 58	211	187	23 46				
25	−71	*x*	130	*x*	—	—	—	—	—	—	—	2 *c*	0	23 51	1030	1010	12 52	12 6	213	189	0 0				
26	183	*x*	83	*x*	—	—	—	—	—	—	—	2 *c*	1	—	—	—	—	—	—	—	—				
27	*x*	686	325	479	—	—	—	—	—	—	—	1 *c*	0	6 33	1025	1003	20 53	16 36	213	179	21 2				
28	189	236	307	355	—	—	—	—	—	—	—	1 *a*	0	18 34	1027	1009	10 36	12 50	213	194	21 53				
29	136	207	366	420	—	—	—	—	—	—	—	0 *a*	0	20 15	1030	1012	11 4	12 32	213	195	20 19				
30	112	325	839	485	—	—	—	—	—	—	—	0 *a*	0	18 7	1030	1013	11 58	12 5	212	197	4 30				
M.	184	202	223	264	—	—	—	—	—	—	—	—	—	—	1035	992	—	—	226	185	—				

x Indeterminate.

An explanation of the Headings of the columns is given in the Preface.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, **or** the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	7·4	1·5	...	...	4·2	4·2	...	...	2·6	...	0·5	...	3·0	1·3	...	11·6	8	30
2	...	2·2	1·4	...	...	1·1	2·8	...	...	0·9	2·1	...	1·9	...	...	1·3	7·2	5	5
3	1·1	...	...	0·7	1·3	...	...	0·9	0·8	...	...	0·6	3·6	...	...	2·4	8·1	24	20
4	4·8	...	2·0	...	3·2	...	3·4	...	8·8	...	3·6	...	9·1	...	3·8	...	19·7	19	30
5	2·8	...	6·7	...	...	4·8	2·c	...	...	4·5	1·9	...	...	1·6	1·6	...	17·0	0	35
6	...	1·0	2·4	...	1·1	...	2·8	...	...	1·9	4·5	...	1·0	...	2·4	...	8·5	14	50
7	2·8	...	1·1	...	6·1	...	2·5	...	9·1	...	3·8	...	9·1	...	3·8	...	17·9	13	0
8	5·3	...	5·3	...	4·4	...	4·4	...	1·4	...	3·3	...	3·3	...	1·4	...	13·0	3	55
9	4·4	...	4·4	...	5·6	...	5·6	...	5·3	...	5·3	...	4·8	...	11·6	...	17·9	10	40
10	...	...	11·8	...	3·5	...	8·5	...	9·5	...	9·5	...	...	7·3	17·6	...	33·5	16	20
11	...	7·4	17·8	...	...	7·8	18·8	...	...	11·6	11·6	...	...	11·8	11·8	...	28·6	4	20
12	...	12·3	12·3	...	...	15·7	6·5	...	...	15·8	3·1	...	...	14·1	...	...	25·0	7	5
13	...	13·8	...	...	...	16·1	...	...	...	15·7	...	...	...	12·8	...	...	22·8	11	10
14	...	10·0	...	2·0	...	4·3	...	1·8	...	1·8	0·8	...	0·6	...	...	1·5	14·3	0	50
15	...	6·7	2·3	...	...	6·0	4·0	...	...	7·4	1·5	...	...	5·8	1·2	...	11·6	13	30
16	...	5·7	2·4	...	...	2·3	0·4	...	...	1·1	1·1	...	0·3	...	1·6	...	8·9	1	5
17	1·5	...	3·6	...	...	1·3	6·8	...	2·3	...	5·5	...	2·9	...	4·3	...	12·5	4	40
18	...	3·7	5·5	...	...	3·0	3·0	...	...	4·2	4·2	...	...	4·2	4·2	...	13·0	15	15
19	...	...	3·9	...	...	5·7	8·5	...	...	...	13·4	...	...	5·1	12·4	...	22·8	16	15
20	...	4·4	10·6	...	...	...	9·5	...	...	...	7·9	...	...	2·6	6·4	...	18·8	5	50
21	...	...	5·9	...	...	1·4	7·1	...	...	...	8·2	...	...	...	6·9	...	13·0	19	25
22	2·2	...	3·2	...	2·6	...	3·8	...	3·5	...	3·5	...	5·2	...	3·4	...	13·4	23	40
23	5·1	...	5·1	...	6·6	...	4·4	...	7·6	...	5·1	...	6·3	...	6·3	...	21·0	21	50
24	...	5·1	12·4	...	3·5	...	8·5	...	4·0	...	9·7	...	3·8	...	9·1	...	18·8	{0 3	45 25}
25	7·4	...	7·4	...	10·0	...	10·0	...	...	...	12·8	...	2·3	...	5·5	...	26·4	6	40
26	9·1	...	3·8	...	7·4	...	3·1	...	5·4	...	13·0	...	2·3	...	11·6	...	31·3	10	50
27	...	...	11·1	...	...	1·9	9·6	...	...	3·5	8·5	...	...	8·2	...	...	16·1	{3 19	30 5}
28	...	2·5	2·5	...	1·3	...	3·0	...	2·3	...	5·5	...	2·4	...	...	3·6	12·1	14	0
29	...	9·0	...	6·0	...	2·4	...	3·6	...	...	...	3·6	...	...	...	4·6	14·3	2	25
30	...	2·4	...	5·7	...	4·8	...	1·0	...	8·8	3·6	...	...	7·4	7·4	...	16·1	19	35
S+N & W+E	140·1		161·3		144·4		150·5		139·8		157·7		142·8		149·0				
S−N & W−E	−47·1		132·5		−21·2		135·9		−19·8		148·3		−25·0		122·2				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	...	7·4	7·4	...	...	3·5	8·5	...	...	6·7	6·7	...	...	9·1	3·8	...	10·5	3, 11
2	...	6·9	2·9	...	...	7·6	3·1	...	...	6·6	4·4	...	...	7·9	3·3	...	8·9	7, 11–13,.
3	...	3·6	1·5	...	...	0·9	1·3	...	...	0·4	0·9	...	1·1	...	2·8	...	5·2	7
4	1·0	...	2·4	...	4·5	...	0·9	...	4·6	...	...	...	1·0	...	0·2	...	5·6	11, 12
5	0·9	...	0·4	...	0·0	...	0·0	...	1·3	...	...	...	4·6	...	...	...	4·9	23
6	3·6	...	1·5	...	3·1	...	4·7	...	1·0	...	2·4	...	2·6	...	3·8	...	6·9	10
7	3·6	...	2·4	...	3·9	...	...	...	4·2	...	0·8	...	...	0·8	3·8	...	5·6	19
8	...	...	3·9	...	1·6	...	4·0	...	1·6	...	4·0	...	2·5	...	2·5	...	6·2	14
9	6·9	...	...	...	12·8	...	...	5·3	...	...	8·2	...	6·5	...	6·5	...	13·8	9
10	5·3	...	7·9	...	3·1	...	7·6	...	...	1·9	4·5	...	0·6	...	1·5	...	10·2	11
11	...	4·7	4·7	...	...	3·5	8·5	...	...	4·0	9·7	...	...	11·8	...	...	11·8	21
12	...	16·1	6·7	...	...	15·4	6·4	...	...	12·8	5·3	...	...	12·1	...	...	17·4	3
13	...	15·1	...	...	...	13·4	...	...	...	11·8	...	...	...	8·2	3·4	...	15·4	1
14	...	7·3	3·0	...	...	4·5	1·9	...	...	2·9	4·8	...	...	3·3	4·9	...	8·2	1
15	...	2·0	4·8	...	...	4·7	4·7	...	...	3·1	7·6	...	...	2·5	6·1	...	8·2	15, 16
16	...	0·8	1·8	...	...	...	2·6	...	3·0	...	1·3	...	4·8	...	2·0	...	6·2	20
17	3·3	...	1·4	...	2·5	...	6·1	...	4·7	...	3·1	...	4·0	...	1·6	...	6·2	13
18	3·0	...	3·0	...	...	...	2·6	...	...	1·4	1·4	...	2·3	...	2·3	...	5·9	2, 5
19	10·c	...	4·1	...	...	...	9·2	...	...	...	11·8	...	...	4·9	11·8	...	14·4	22
20	...	6·0	14·5	...	...	7·0	10·4	...	...	5·0	12·1	...	..	6·6	9·8	...	15·7	3, 5, 6
21	...	1·5	3·6	...	5·5	...	2·3	...	3·4	...	8·2	...	6·2	...	4·2	...	9·8	13
22	6·7	...	2·8	...	4·7	...	3·1	...	4·2	...	4·2	...	2·4	...	5·7	...	9·5	1
23	5·7	...	3·8	...	5·2	...	2·1	...	4·9	...	...	...	6·9	...	...	2·9	10·2	24
24	12·1	...	...	...	...	4·6	11·2	...	2·7	...	1·8	...	8·2	...	3·4	...	14·4	8
25	7·4	...	7·4	...	6·0	...	14·5	...	4·6	...	11·2	...	7·6	...	3·1	...	16·1	11
26	6·1	...	2·5	...	8·8	...	...	3·6	8·9	...	...	8·9	...	...	3·3	...	18·0	12
27	...	24·6	10·2	...	...	16·6	11·1	...	...	10·9	10·9	...	...	9·3	9·3	...	26·6	3
28	...	4·0	9·7	...	...	5·8	5·8	...	...	1·9	4·5	...	...	0·8	4·2	...	11·8	1, 5
29	...	1·9	1·3	...	...	1·2	0·5	...	...	1·0	2·4	...	...	1·0	5·1	...	6·6	24
30	...	4·1	10·0	...	...	13·1	...	...	...	10·0	4·1	...	...	5·8	5·8	...	15·1	12, 13
S+N & W+E	181·6		125·6		163·5		142·0		118·6		145·2		145·4		117·1			
S−N & W−E	−30·4		125·6		−40·1		124·2		−20·4		127·4		−22·8		111·3			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	1·1	...	2·7	...	0·7	...	0·3	...	0·7	...	0·4	...	0·9	...	0·9	8·1	2	40
2	3·8	...	...	2·6	4·2	...	...	2·8	5·2	...	...	3·5	5·0	...	...	...	8·5	15	30
3	6·2	...	...	1·2	7·0	...	...	1·4	5·7	...	...	1·1	6·2	...	...	2·6	10·7	24	15
4	9·2	...	...	1·8	10·4	...	...	...	7·0	...	1·4	...	8·1	...	3·4	...	12·1	21	15
5	4·9	...	7·3	...	...	7·4	7·4	...	...	6·2	4·2	...	...	4·6	1·9	...	14·3	13	40
6	...	2·3	2·3	...	0·0	0·0	0·0	0·0	...	1·1	2·7	...	...	0·5	1·2	...	4·5	1	0
7	2·7	...	2·7	...	0·6	...	3·2	...	2·1	...	3·2	...	1·4	...	2·1	...	5·8	17	25
8	1·5	...	1·5	...	2·8	...	0·6	...	0·9	...	1·4	...	2·8	...	...	0·6	4·9	24	15
9	3·9	...	...	1·6	4·5	...	...	0·9	...	...	7·1	...	...	...	8·8	...	15·7	24	15
10	...	6·5	9·7	...	...	2·2	11·1	...	3·1	...	15·6	...	...	3·6	18·1	...	26·8	21	35
11	...	10·9	16·3	...	*	*	*	*	...	13·9	13·9	...	...	16·6	11·1	...	27·3	4	25
12	...	13·5	9·1	...	...	19·2	3·8	...	...	17·2	3·4	...	...	16·0	3·2	...	25·0	6	20
13	...	14·3	2·8	...	...	12·5	...	...	...	13·1	2·6	...	...	10·4	...	4·3	22·8	16	40
14	...	10·6	2·1	...	...	6·2	1·2	...	...	4·9	1·0	...	...	3·7	...	0·7	15·7	2	5
15	...	1·2	...	1·7	...	5·8	...	...	...	5·8	...	...	...	3·2	...	0·6	8·5	8	35
16	...	3·7	...	0·7	...	1·7	...	...	...	2·4	1·6	...	...	2·8	4·2	...	9·4	24	5
17	...	4·4	6·6	...	...	5·0	5·0	...	...	2·2	5·4	...	2·4	...	1·6	...	11·2	6	55
18	...	3·2	4·8	...	*	*	*	*	...	5·8	...	...	...	5·8	...	...	12·1	6	40
19	...	4·7	4·7	...	...	5·1	7·6	...	*	*	*	*	*	*	*	*	13·4	11	15
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	21·9	22	40
21	*	*	*	*	*	*	*	*	...	5·3	8·0	...	...	3·0	4·5	...	22·4	4	0
22	...	0·9	4·5	...	...	...	2·9	...	1·0	...	4·9	...	2·1	...	5·0	...	8·1	14	0
23	4·5	...	4·5	...	5·6	...	5·6	...	3·9	...	5·9	...	6·8	...	6·8	...	17·0	23	10
24	...	7·6	7·6	...	...	5·9	5·9	...	...	3·5	8·5	...	...	...	8·8	...	15·2	0	55
25	2·0	...	9·8	...	*	*	*	*	3·4	...	17·2	...	...	1·4	7·0	...	19·7	14	50
26	8·3	...	12·5	...	13·3	...	13·3	...	...	...	14·6	...	...	3·0	15·1	...	27·7	19	45
27	...	...	12·1	...	...	...	10·8	...	...	12·7	...	2·5	...	10·0	10·0	...	25·5	11	5
28	...	2·3	3·5	...	...	...	2·9	...	4·7	...	4·7	...	...	...	13·4	...	26·4	24	20
29	4·0	...	20·0	...	1·6	...	8·1	...	3·0	...	...	4·5	...	3·7	...	18·4	27·7	0	50
30	...	2·8	...	13·9	...	11·2	...	4·6	...	7·3	...	3·0	...	4·2	2·8	...	19·7	0	35
S+N & W+E	141·0		170·6		132·9		99·4		142·1		142·3		128·2		157·1				
S−N & W−E	−39·0		118·2		−32·9		79·4		−62·1		112·3		−58·6		100·9				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
																	V.	Hrs.	Min.
1	...	3·6	2·4	...	...	2·0	4·8	...	...	1·0	2·4	...	...	1·8	4·3	...	13·4	11	25
2	...	0·8	3·8	...	...	0·9	4·5	...	...	1·6	4·c	...	...	2·2	3·2	...	9·4	12	40
3	...	1·9	4·5	...	...	1·4	3·3	...	...	2·5	2·5	...	...	1·0	2·4	...	12·1	3	20
4	...	0·6	3·2	...	1·3	...	3·0	...	1·4	...	3·3	...	1·9	...	4·5	...	11·2	22	40
5	2·1	...	5·2	...	2·8	..	2·8	...	...	0·9	0·9	...	...	1·6	...	...	11·6	1	50
6	...	3·5	...	3·5	...	1·4	...	1·4	3·6	...	...	1·5	3·0	...	...	...	8·5	16	0
7	3·3	...	1·4	...	2·3	...	2·3	...	1·7	...	2·5	...	3·3	...	3·3	...	7·6	4	15
8	0·9	...	4·5	...	...	...	5·2	...	...	1·3	3·0	...	...	0·6	1·5	...	10·3	12	20
9	...	...	1·6	...	2·1	...	2·1	...	3·0	...	2·0	...	3·0	...	2·0	...	9·4	12	40
10	0·9	...	4·5	...	...	...	3·3	...	2·0	...	4·8	...	6·0	...	6·0	...	18·8	22	15
11	...	...	8·2	...	...	1·9	9·3	...	...	3·4	13·0	...	...	9·4	3·9	...	25·0	17	30
12	...	3·7	5·5	...	...	2·7	4·1	...	...	1·8	2·7	...	...	3·8	0·8	...	19·7	0	30
13	...	5·8	1·2	...	...	1·7	1·1	...	...	6·9	...	...	...	1·9	4·5	...	14·8	12	30
14	...	4·0	1·6	...	...	4·0	1·6	...	...	4·5	0·9	...	...	1·8	2·7	...	13·0	13	10
15	...	2·2	3·2	...	...	1·8	2·7	...	...	1·3	1·9	...	...	1·1	1·7	...	6·7	1	50
16	...	1·1	1·1	...	...	1·6	0·3	...	...	1·6	0·3	...	...	1·6	0·3	...	5·8	7	30
17	...	0·9	0·9	...	0·8	...	1·8	...	0·9	...	2·1	...	...	...	2·0	...	4·5	12	10
18	...	...	2·3	...	...	...	1·3	...	...	0·9	2·1	...	...	1·1	2·8	...	4·9	20	25
19	...	1·0	2·4	...	0·6	...	2·9	...	1·0	...	4·8	...	...	...	5·9	...	9·8	24	5
20	...	1·1	5·5	...	...	1·2	5·8	...	...	1·1	5·5	...	...	1·9	4·5	...	13·0	11	35
21	...	1·8	4·3	...	...	1·5	3·6	...	...	0·9	2·1	...	...	...	2·0	...	6·7	0	25
22	...	1·4	3·3	...	...	1·0	2·4	...	...	2·4	1·0	...	1·3	...	1·9	...	5·4	17	20
23	1·6	...	1·6	...	2·8	...	2·8	...	3·2	...	2·2	...	3·8	...	2·6	...	9·8	24	10
24	3·6	...	2·4	...	...	1·5	3·6	...	...	...	4·3	...	1·4	...	3·3	...	11·6	3	5
25	1·6	...	4·0	...	4·7	...	4·7	...	4·6	...	6·8	...	c·7	...	3·5	...	18·3	13	30
26	0·6	...	2·9	...	6·4	...	2·6	...	10·0	...	4·1	...	6·4	...	2·6	...	23·7	14	50
27	0·8	...	4·2	...	1·0	...	2·4	...	...	...	2·3	...	...	...	3·3	...	12·1	1	15
28	...	...	3·6	...	...	2·2	3·2	...	...	0·3	1·3	...	3·6	...	2·4	...	13·9	24	5
29	9·2	...	...	...	12·4	...	...	5·1	2·7	...	...	1·8	2·3	...	2·3	...	23·3	7	55
30	...	5·9	...	...	...	6·6	...	...	...	3·2	0·6	...	...	2·0	3·0	...	15·2	6	45
S+N & W+E	63·9		92·8		70·6		94·0		71·7		86·7		68·5		83·2				
S−N & W−E	−14·7		76·8		3·8		81·0		−3·5		80·1		4·9		83·2				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time.

* No Record.

† Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.

‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8.

§ Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level.

Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

ABERDEEN. **P. 28.** Nov. 1. 11 h. 35 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	2429	...	...	...	...	...	Balloon lost to one station at 1000 m. in town haze brightly illuminated by Sun. Finally entered sheet of thin high St. Cu. Two theodolites to 1000 m. One theodolite to 2429 m.
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	2250	337	19·8	7·7	−18·2		
	2000	334	24·0	11·7	−20·9	2·6	
	1500	328	19·5	10·2	−16·6		
	1000	323	14·9	8·9	−12·0	2·4	
	500	311	12·9	9·8	− 8·4	2·9	
	100	288	9·2	8·7	− 2·9	3·9	
Ground level	30	280	6·6	6·5	− 1·1	...	
Computed for M.S.L.	0	310	12·1	9·3	− 7·8	...	Lift 42 gr.

ABERDEEN. **P. 29.** Nov. 6. 11 h. 48 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
3460	...	...	...	...	...	Balloon lost to out-station by passing overhead and out of field of view when direction changed from + to − in S.-N. component, could not be picked up again. Two theodolites to 1000 m.; one theodolite to 3460 m.
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
3250	281	10·7	10·5	−2·0	Assumed at 2·8	
3000	294	13·4	12·2	−5·5		
2500	294	12·5	11·4	−5·1		
2000	285	7·9	7·6	−2·1		
1500	313	2·6	1·9	−1·8		
1000	307	9·1	7·3	−5·5	2·8	
500	228	5·0	3·7	3·3	3·2	
100	237	2·4	2·0	1·3	3·1	
30	246	1·0	0·9	0·4	...	
0	235	12·8	10·5	+7·3	...	Lift 40 gr. Base 830 m.

ABERDEEN. **P. 30.** Nov. 8. 11 h. 40 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
4910	...	...	...	...	...	Balloon lost to out-station between 500 and 1000 m.; lost to home station in high haze at 4910 m. * At 2000 m. This reversal in the S.-N. component is quite accurate. It is noteworthy that the St.-Cu. cloud (2000 m.) measured on this day by nephoscope showed a very variable direction. Two theodolites to above 500 m., one theodolite to 4910 m.
4750	283	20·2	19·6	−4·7	Assumed at 2·9	
4500	283	20·5	19·9	−4·7		
4000	283	21·6	21·0	−5·0		
3500	282	16·3	16·0	−3·3		
3000	275	21·2	21·1	−1·8		
2500	283	12·5	12·2	−2·8		
2000	256	3·7	3·6	0·9*		
1500	295	11·5	10·4	−4·9		
1000	292	10·8	10·0	−4·1	2·9	
500	302	4·9	4·1	−2·6	2·9	
100	264	6·5	6·5	0·7	2·9	
30	241	2·5	2·2	1·2	...	
0	270	5·0	5·0	0·0	...	Lift 46 gr. Base 830 m.

ABERDEEN **P. 31.** Nov. 15. 11 h. 35 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	795	...	...	...	...	...	Two theodolites to 795 m. Balloon entered a layer of Fr.-Cu. This belt of cloud had a direction of N.N.W. at 10 h. and N.W. at 12 h. while a high stratum of St.-Cu. was W.N.W. throughout, thus agreeing with the surface wind.
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	750	325	15·8	9·1	−12·9	3·7	
	500	327	14·3	7·8	−12·0	2·9	
	100	302	9·9	8·4	− 5·3	3·2	
Ground level	30	295	8·0	7·2	− 3·4	...	
Computed for M.S.L.	0	325	10·7	6·1	− 8·7	...	Lift 48 gr. Base 820 m.

ABERDEEN **P. 32.** Nov. 20. 11 h. 35 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
2047	...	...	...	...	...	Two theodolites. Very squally, practically cloudless. Balloon disappeared in high whitish haze.
...	...	...	...	...	...	
2000	313	25·1	18·4	−17·1	3·2	
1500	310	21·3	16·3	−13·7	2·3	
1000	303	28·7	24·2	−15·5	2·2	
500	293	23·3	21·4	− 9·1	4·5	
100	286	15·2	14·6	− 4·2	3·8	
30	290	15·0	14·1	− 5·1	...	
0	310	15·9	12·2	−10·2	...	Lift 52 gr. Base 820 m.

ABERDEEN. **P. 33.** Nov. 22. 11 h. 25. m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
2434	...	...	...	...	...	Two theodolites. Balloon appeared to burst.
2300	255	14·1	13·6	3·7	2·0	
2000	251	11·9	11·2	3·9	2·5	
1500	252	11·2	10·6	3·5	2·5	
1000	251	18·0	17·0	5·8	3·0	
500	231	8·5	6·6	5·4	3·0	
100	225	12·0	8·5	8·4	2·6	
30	210	8·8	4·4	7·6	...	
0	250	16·0	15·0	5·5	...	Lift 53 gr. Base 940 m.

ABERDEEN. **P. 34.** Nov. 29. 11 h. 35 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height	6100	...	...	...	...	...	
	6000	259	14·6	14·3	2·8	...	Vertical velocity of 3·0 assumed from average between 2000 and 4000 m.
	5500	275	12·5	12·5	−1·0	...	
	5000	283	11·9	11·6	−2·6	...	
	4500	286	12·7	12·2	−3·5	...	
	4000	298	11·9	10·5	−5·6	3·3	
	3500	298	7·6	6·7	−3·5	2·2	
	3000	295	15·2	13·8	−6·3	3·5	
	2500	306	13·5	10·9	−7·9	2·9	
	2000	310	13·3	10·1	−8·6	2·7	Balloon vanished as if burst. Two theodolites to 4500 m. then lost to home station in smoke from an intervening chimney. No cloud overhead all day but Cu.-nb. bank low in N.E. and E. Temp. very low—about 27° F.
	1500	334	8·9	3·9	−8·0	2·3	
	1000	359	6·2	0·1	−6·2	2·3	
	500	344	6·5	1·8	−6·2	2·7	
	100	299	6·2	5·4	−3·0	2·4	
Ground level	30	279	4·4	4·3	−0·7	...	
Computed for M.S.L.	0	Pressure distribution irregular				...	Lift 52 gr. Base 820 m.

PYRTON HILL. **R. 212.** Nov. 19. 16 h. 5 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
...	...	...	...	...	...	Balloon lost in clouds. Recording instrument has not yet been recovered.
2000	305	18	15	−10	...	
1500	300	13	12	− 7	...	
1000	300	19	16	−10	...	
500	295	7	6	− 3	...	
0	300	15	13	−7·5	...	...

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A = 0° C.).
Heights are given in kilometers (km.).

*Base of Stratosphere.—TYPE 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given. TYPE 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. TYPE 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level—*continued.* Soundings by Kites (K.) and Pilot Balloons (P.).

PYRTON HILL. **K.** 3. November 8. 12 h. 10 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	...	...	...	...	...	...	...	...	...	Clouds at 400 m. and sharp inversion at their upper surface about 500 m.
	1500	860·0	285	4	70	9·7	1·047	295	14	
	1000	912·6	287		50	7·9	1·104	295	14	
	500	968·9	281	−12	100	10·7	1·196	260	14	
100 m. above ground	250	998·5	284	12	90	11·8	1·220	250	12	
Ground level	150	1010·5	285	10	80	11·1	1·230	240	6	
Computed for M.S.L.	0	1028·7	...	...	...	...	...	275	13	...

BRIGHTON. **K.** 55. November 9. 10 h. 0 m. to 12 h. 20 m. G.M.T.

Height above M.S.L.	Pressure.	Temperature. Reading	Temperature. Fall per km.	Humidity.	Humidity.	Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
1200	888·2	284	...	30	3·9	1·088	270	17	Overcast St. Kite went out of sight 375 m. above sea.
...	...	...	−7	...	...	...	...	...	
1000	*909·8*	*282·5*		*44*	*5·2*	*1·120*	?	?	
500	966·6	279	...	93	8·7	1·203	215	11	
215	1000·6	282	10·5	93	10·5	1·231	200·5	14	
115	1012·7	284	20	93	12·1	1·237	225	4·5	
0	1026·7	...	...	...	...	...	245	11	...

BRIGHTON. **K.** 56. November 10. 11 h. 10 m. to 13 h. G.M.T.

Greatest height.	895	909·1	277	6·6	75	6·0	1·141	290	17	Overcast, then nearly clear with Ci. and A. St. and overcast again.
	500	954·1	279·6		82	8·0	1·185	280	16	
100 m. above ground	215	987·6	281·6	7	87	9·6	1·217	265	13	
Ground level.	115	999·6	282·5	9	82	9·6	1·228	270	5 to 9 gusty.	
Computed for M.S.L.	0	1013·5	...	...	...	...	...	250	18	...

BRIGHTON. **K.** 57. November 14. 10 h. 15 m. to 12 h. 20 m. G.M.T.

	850	912·2	275·2	3·7	...	...	1·152	30	16	Overcast St. and A. Cu. No clouds reached. Humidity between 80% and 90%.
	500	953·0	276·5		...	...	1·198	360	17	
	215	986·9	278	5·3	...	...	1·234	335	14	
	115	999·1	278·5	5	...	...	1·246	340	9 to 13 gusty.	
	0	1013·2	...	...	...	...	...	350	13	...

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. November 7. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15·3 km.	116 mb.	212° A.
LOWEST TEMPERATURE,	15·3 km.	116 mb.	212° A.
BASE OF STRATOSPHERE,	12·0 km.	195 mb.	217·5° A.
Type	No. 1.		

SOUNDING No., R. 21.
PLACE, MANCHESTER.
Latitude, 53° 28′ N.
Longitude, 2° 14′ W.
Height above M.S.L., 40 m.
PLACE OF FALL, Spalding.
Distance, and Orientation, 353 km. 117°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.), 769 mm.,	1026 mb.	1025 mb.
TEMPERATURE,	283° A.	285° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	250°	265°
Velocity,	10·5 m/s.	16·6 m/s.
Correction for Curvature,	0·0 m/s.	0·0 m/s.
Final Components, W. to E.	9·9 m/s.	16·5 m/s.
Final Components, S. to N.	3·6 m/s.	1·4 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
15	121	212		The type is not well-defined. The temperature decreases again after a slight inversion.
14	143	213·5	1·5	
13	168	218	4·5	
12	197	217·5	−0·5	
11·9	200	217·5		
11	231	220·5	3	
10	270	226·5	6	
9·3	300	232·5	8	
9	313	234·5		
8	363	241·5	7	
7·3	400	246·5	7	
7	417	248·5		
6	476	255	6·5	
5·6	500	257·5	6	
5	545	261		
4·3	600	264	5	
4	621	266	...	
3·1	700	272·5	7·5	
3	704	273·5		
2·0	800	278	4·5	
1·0	900 906	279·5	1·5	
0·2	1000	281·5	...	
Ground	1021	28·3	...	
M.S.L.	1026	...	...	

1912. November 7. 7 h. 3 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	16·5 km.	98 mb.	207° A.
LOWEST TEMPERATURE,	14 km.	146 mb.	206° A.
BASE OF STRATOSPHERE,	14·0 km.	146 mb.	206° A.
Type	No. 1.		

SOUNDING No., R. 211.
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 0′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Polegate.
Distance, and Orientation, 123 km. 136°.

From Observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1026 mb.	1030 mb.
TEMPERATURE,	282° A.	285° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	Pressure Distribution irregular.	265°
Velocity,		16·1 m/s.
Correction for Curvature,		0·0 m/s.
Final Components, W. to E.	...	16·0 m/s.
Final Components, S. to N.	...	1·4 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
16·4	100	...	...	Inversion of 4° 1·5 to 2·0 km. Trace somewhat indistinct.
16	107	207	−1	
15	126	206	0	
14	146	206	4	Calm, overcast. Entered clouds going N.E. after 2 minutes.
13	172	210	5	
12·0	200 201	215	4	
11	236	219	6	
10	274	225		
9·3	300	...	8	
9	317	233	7	
8	366	240		
7·3	400	...	5	
7	420	245		
6	483	254	9	
5·7	500	...	8	
5	549	262		
4·3	600	...	6	
4	626	268		
3·1	700	...	5	
3	711	273		
2·0	800 803	279	6	
1·05	900	...	−1	
1·0	906	278		
Ground	1009	282	...	
M.S.L.	1026	...	...	

For particulars of an additional ascent on Nov. 7th, *see* the Journal for December.

DECEMBER 1912.—DAILY VALUES REFERRED TO GREENWICH MEAN TIME AND UNITS, BASED ON THE C.G.S. SYSTEM. [*Price* 1*s*.

Second Year.—No. 12. *Meteorology, Solar Radiation, Seismology, Atmospheric Electricity, and Terrestrial Magnetism.*

1. SEISMOLOGICAL JOURNAL:—ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.

Date.	Microseisms. Period.	Microseisms. Amp.	Earthquakes.	Remarks.
	s	μ		
1	6	2·0	II.	1st II, P ? S=8 h. 49 m., L=9 h. 7 m., Max. at 9 h. 22 m.
2	8	3·5		
3	4	1·6		5th Iu, P=12 h. 37 m. 45 s., S=12 h. 46 m. 45 s., Δ=7600 km. I, Long waves 18 h. 27 m.
4	6-7	0·8		
5	5	0·9	Iu, I.	6th I, Long waves 15 h. 40 m.
6	9*	0·8	I.	
7	6	1·0	Iu.	7th, P=22 h. 59 m. 27 s., S ? 23 h. 13 m. 43 s. Sharp impulses at 23 h. 3 m. 30 s., 23 h. 9 m. 12 s., and 23 h. 13 m. 2 s., Δ about 15000 km. α=40° W. of South. Long waves very weak.
8	6-7	1·4		
9	6	1·7	Iu, IIu.	
10	6-7	1·7		9th Iu, P=0 h. 1 m. 31 s., S=0 h. 11 m. 35 s., L=0 h. 26 m. 30 s., Δ=8870 km. IIu, P=8 h. 44 m. 24 s., S=8 h. 54 m. 13 s., L=9 h. 5 m., Δ=8570 km.
11	8	3·8		
12	8	3·4		
13	7	2·8		23rd Iu, Long waves 0 h. 3 m.
14	7	2·8		
15	8	3·4		24th II, S ? =0 h. 25 m. 2 s., L=?. Long waves about 18 h. 56 m.
16	8	2·6		
17	6	3·1		
18	5	1·0		26th I, Long waves about 0 h. 39 m. and 8 h. 18 m.
19	5	1·5		
20	6	3·0		28th I, Long waves about 8 h. 48 m.
21	5	1·1		
22	5-6	1·0		
23	5	2·0	Iu.	
24	5	2·1	II.	*9 and harmonic 4½.
25	5	2·0		
26	6	2·0	I, I.	
27	5	1·3		
28	6	1·7	I.	An explanation of the notation used is given in the preface.
29	6	2·2		
30	7	2·6		
31	7	2·4		

2. VALENCIA OBSERVATORY, CAHIRCIVEEN (KERRY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above Mean Sea Level:—Station, H = 9·2 m. Barometer Cistern, H_b = 13·7 m.
Heights above Ground:—Thermometers, h_t = 1·2 m. Rain-gauge, h_r = 0·6 m. Sunshine Recorder, h_s = 12·8 m. Cups of Anemometer, h_a = 13·7 m.

Day.	Pressure at Station Level. 9 h.	21 h.	Air Temperature in Degrees Absolute. 9 h.	21 h.	Max.	Min.	Humidity. Vapour Pressure. 9 h.	21 h.	Percentage. 9 h.	21 h.	Wind Direction in points (8=E, 16=S) and Velocity (*metres per second*). 9 h.		21 h.		Cloud Amount and Weather. 10 h.	22 h.	Rain 24 hours beginning 10 h.	Sunshine.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
			200+	200+	200+	200+																
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		γ.	° ′	° ′
1	996·6	1004·3	81·4	80·1	82	*n* 74	10·5	8·8	97	87	16	8	21	10	3	*10*	2·8	2·0	Gloomy and wet.	...	...	...
2	1015·6	1019·7	80·9	81·8	83	80	9·5	10·2	90	91	24	8	14	5	7≡0	*10*	5·3	2·4	≡0; clearing 10 h.–12 h.	...	...	...
3	1018·2	1017·5	84·8	84·6	*x* 86	83	13·6	12·9	98	94	16	7	15	6	10≡0	*10*	0·8	—	Heavy mist *a*. Dull.	...	...	...
4	1011·1	1006·6	84·8	84·0	85	84	13·2	12·6	97	96	15	9	14	9	10≡0	*10*≡0●	10·2	—	Gloomy and showery.	...	...	...
5	1000·9	996·1	82·4	80·6	84	80	11·5	9·5	98	90	—	1	14	6	10≡0	*2*	5·1	—	Overcast most of day; ≡0●.	...	...	...
6	1001·0	999·4	80·3	82·5	83	80	8·8	10·9	86	93	20	6	14	11	4	*10*≡0●	10·2	3·5	Fair to dull.	...	...	...
7	996·3	1004·0	84·1	81·0	85	80	11·5	10·2	89	96	15	8	—	1	7≡0	*9*	2·3	1·6	● early, then misty to dull.	17917	20 29·0	68 11·3
8	1011·6	1012·3	79·9	82·1	83	80	9·5	9·5	96	83	15	2	15	7	9	*10*	**22·6**	3·8	Unsettled-looking.	...	...	...
9	1002·5	1013·8	84·6	81·3	85	80	12·9	7·8	95	73	16	9	24	5	10≡0	*2*	0·5	—	●2≡0 during day; fine *n*.	...	...	...
10	1016·5	1007·8	75·1	82·8	83	75	6·8	11·2	94	92	3	2	15	8	10	*10*	4·6	—	⌣; dull and gloomy.	...	...	...
11	993·7	994·1	85·3	80·3	*x* 86	79	13·9	7·8	97	76	16	11	19	7	10≡0●	*8*	6·9	—	≡0 or ● showers throughout.	...	...	...
12	1008·5	1011·0	79·7	83·0	83	79	8·2	11·5	81	94	22	11	20	10	3	*10*≡0	7·1	1·9	Showery to fair *a*; gloomy *p*.	...	...	...
13	1007·0	1007·0	83·8	84·9	85	83	12·2	13·6	96	97	19	12	20	11	10≡0●	*10*≡0●0	1·8	—	Gloomy, with ≡0●.	...	...	...
14	1011·3	1014·7	84·8	83·1	85	83	13·2	11·5	97	93	19	8	22	9	10≡0	*2*	4·3	—	Overcast and misty; ● *p*.	...	...	...
15	1017·3	1014·1	83·2	81·0	84	81	11·5	8·2	91	78	16	6	24	10	10≡0	*10*≡0	2·3	—	Unsettled-looking to dull.	...	...	...
16	1015·7	1014·0	79·9	77·9	81	78	6·8	7·5	**69**	85	24	11	21	9	3	*8*	3·8	2·6	▲ or ●0 showers.	...	...	...
17	1010·1	1002·0	79·5	79·8	82	78	7·5	9·5	76	96	20	7	21	9	10	*10*	9·1	—	Gloomy; ●2 19 h.	...	...	...
18	1002·5	1002·0	79·5	81·7	82	78	7·1	10·5	74	94	24	8	16	6	6	*10*●	3·1	0·1	Cloudy, with ● showers.	...	...	...
19	994·4	993·0	83·5	83·8	84	83	10·9	12·6	86	96	15	10	15	10	10≡0	*10*≡0●	9·9	—	Overcast and ≡0.	...	...	...
20	995·2	1003·1	84·3	82·9	84	83	12·9	11·9	97	99	15	9	—	1	10≡0	*10*≡0	4·1	—	● *a*. Gloomy and misty.	...	...	...
21	1007·5	1008·7	81·3	80·3	83	80	10·2	9·5	93	94	15	4	15	3	10≡9	*8*	1·0	—	Dull, but clear atmosphere.	17910	20 26·8	68 9·0
22	1007·6	1003·4	80·3	82·1	82	80	10·2	10·5	98	92	—	1	15	6	10	*10*	5·3	2·1	Dull; clearing midday.	...	...	...
23	1002·6	1005·5	81·2	80·7	83	80	9·5	9·8	88	93	17	5	19	4	7	*5*	11·2	0·3	Gloomy and showery.	...	...	...
24	988·1	1007·4	82·9	81·5	84	80	9·2	8·8	76	81	17	14	20	9	10≡0	*10*≡0	3·3	—	K● *a*; squally.	...	...	...
25	1002·4	1002·7	80·9	80·1	83	79	8·8	8·8	84	88	18	7	21	4	9	*10*≡0	9·9	1·9	Unsettled-looking.	...	...	...
26	977·2	1000·8	80·7	81·1	82	80	9·5	9·8	93	90	*24*	4	—	1	10	*10*	8·9	0·8	Dull and squally; ●2 2 h.	...	...	...
27	991·6	986·6	85·0	84·7	85	81	13·2	12·2	95	90	16	8	16	10	10≡0	*10*≡0	4·3	—	Overcast most of day; ≡0.	...	...	...
28	998·1	1001·5	80·6	79·3	83	78	8·2	7·5	80	79	23	7	22	4	8	*9*	4·1	2·5	Fair generally.	...	...	...
29	1005·2	1018·0	81·1	79·7	82	79	9·2	7·8	84	78	23	11	21	10	7	3	1·8	1·9	Showery to fair.	...	...	...
30	1020·0	1013·5	82·1	83·3	84	79	9·8	11·2	88	89	16	6	15	9	8≡0	10●	7·1	—	Gloomy; ≡0. [ing.	...	...	...
31	1010·5	1010·2	82·2	80·4	84	79	10·2	9·2	87	90	20	7	18	2	4	10●	2·0	3·3	● early, then fair to unsettled-look-	...	..	...
Means	1004·4	1006·3	81·9	81·7	83·6	79·7	10·3	10·1	89	89	7·3		6·8		8·2	8·4	175·7	0·99	Monthly **Totals** or **Means**.	17914	20 27·9	68 10·2
Normal 40 years	1010·3	1010·4	80·2	80·4	83·0	77·8	9·1	9·3	88	88	6·3		6·5		—	—	160·5	1·32 30yrs	**Normals**, 40 years.			
					35 years		25 years				30 years		30 years									

Note.—The cloud amounts in italic type at Valencia were taken at 21 h.

3. Kew Observatory, Surrey.—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Station, H = 5·5 m. Barometer, H_b = 10·4 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·5 m. Sunshine Recorder, h_s = 14·3 m. Cups of Anemometer, h_a = 21·3 m.

Day.	Pressure at Station Level.		Air Temperature in Degrees Absolute.				Humidity. Vapour Pressure.		Humidity. Percentage.		Wind Direction in Points (8 = E, 16 = S) and Velocity (*metres per second*).				Cloud Amount and Weather.		Rain 24 hours beginning 10 h.	Sunshine.	Solar Radiation, Watts per cm².	Min. Temp. on Grass.	Earth Temperature at 10 h.		Remarks.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		10 h.	22 h.					0·3m.	1·2m.	
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	hrs.		200+ °	200+ °	200+ °	
1	1010·1	1001·9	71·7	79·6	80	*n* 70	4·1	8·5	74	87	22	3	19	7	9≡⁰⌴	7●	4·6	—	—	*n* 62	76·9	81·8	⌴ ; dull most of day.
2	1008·6	1018·3	77·5	79·6	81	76	6·8	7·8	81	79	22	5	23	3	0	*9*	—	5·2	—	73	76·9	81·8	Fine.
3	1029·0	1028·2	74·1	80·3	81	74	6·1	9·5	90	93	—	1	15	3	8≡⁰	*10*	2·0	0·2	—	67	77·4	81·4	Fair to dull.
4	1025·9	1022·6	82·8	78·9	84	78	11·5	8·5	95	92	18	4	—	1	10≡⁰	*3*≡⁰	0·3	—	—	78	78 2	81·3	Dull ; improving in evening.
5	1014·6	1008·0	76·0	79·1	80	75	6·5	8·2	83	86	12	2	12	3	?3≡⁰	*10*	—	—	—	68	78·2	81·2	Fair to dull. ≡⁰.
6	1009·3	1014·5	82·4	79·3	84	77	11·2	9·2	94	95	15	5	17	3	9	*9*≡⁰	0·5	0·1	—	75	78·5	81·2	Dull to fair during day.
7	1016·3	1016·1	81·1	83·3	84	76	10·2	11·2	94	90	15	4	16	5	10	*10*	0·3	—	—	68	78·4	81·1	Overcast.
8	1020·0	1022·6	83·3	82·0	84	81	11·5	10·5	91	91	15	4	16	3	10≡⁰	*6*	—	—	—	81	79·4	81·1	Dull to fair.
9	1020·7	1016·3	81·9	83·2	84	80	10·9	10·9	96	88	16	2	17	5	9	*10*	4·6	0·1	—	72	79·7	81·1	Dull most of day.
10	1015·7	1015·8	82·9	81·1	83	80	11·9	10·5	96	97	19	2	—	1	10≡⁰	*10*≡⁰	5·8	--	—	82	80·2	81·1	Overcast. ≡⁰●. [*p.*
11	1011·7	1000·8	81·3	83·5	84	81	9·5	11·2	89	88	17	5	17	9	10	*10*	4·1	—	—	75	80·4	81·1	Dull, with increasing Sly. wind
12	1003·8	1015·6	78·5	78·0	83	78	7·8	7·1	88	82	19	3	20	5	9≡⁰	*0*	—	2·0	—	71	80·6	81·2	Fine to fair.
13	1017·3	1012·3	82·3	83·5	84	78	9·8	11·9	84	94	18	8	18	10	10	*10*⁰	0·5	—	—	74	79·8	81·3	Fair early, then dull.
14	1012·1	1014·8	85·4	85·2	*x* 87	84	11·9	12·6	82	89	20	9	19	8	10	*10*	0·3	—	—	82	80·8	81·3	Dull and squally.
15	1021·4	1013·5	82·4	84·2	86	82	9·5	12·2	79	92	20	4	23	5	8	*10*●	6·1	0·8	—	78	81·4	81·3	Fine to dull. ● after 16 h.
16	1013·7	1013·3	80·0	76·0	84	75	7·8	6·5	77	87	23	5	21	3	9	*?0*⌴	0·3	2·8	—	77	81·3	81·3	Dull to fine.
17	1012·1	1008·3	75·4	78·8	80	74	6·5	7·5	88	82	20	3	19	7	5≡⁰	*1*	—	4·9	·039	66	79·8	81·4	⌴ ; fine throughout.
18	999·5	1007·4	80·1	75·5	81	75	8·5	6·5	85	87	18	7	20	3	10	*0*≡⁰	2·3	1·7	—	74	79·6	81·4	Dull *a.* Fine *p.*
19	1010·5	1009·8	81·3	82·6	83	77	9·2	9·2	85	75	17	5	18	6	10	*10*	—	0·1	—	71	79·1	81·4	Dull most of day.
20	1013·2	1016·9	82·6	78·7	84	78	10·5	8·5	89	92	16	5	16	2	10	*2*	—	0·2	—	80	79·8	81·4	Overcast; clearing in afternoon.
21	1017·5	1014·6	79·3	81·3	82	77	8 8	9·2	92	85	—	1	17	5	10≡⁰	*10*	—	—	—	70	79·7	81·3	Dull all day.
22	1012·9	1011·4	80·4	82·0	83	79	9·2	9·8	91	87	18	3	17	4	10	*10*	1·0	0·4	—	71	79·9	81·3	Generally fair.
23	1011·3	1010·9	82·7	82·4	84	82	11·2	11·2	92	94	18	4	16	5	8	*10*	3·8	1·9	—	80	80·2	81·3	●⁰ early ; ⏀ 23 h. 15 m.
24	1013·4	1012·1	80·4	81·9	84	80	9·5	8·5	92	74	16	4	18	8	10	*9*	3·6	—	—	73	80·4	81·3	Dull. ⏀ 20 h. 30 m.–23 h.
25	1013·4	1010·7	82·0	80·8	84	79	9·8	9·2	86	86	16	5	20	3	10●	*9*	13·7	—	—	77	80·4	81·3	Dull throughout.
26	993·9	996·2	81·2	81·6	83	77	9·5	7·8	89	72	13	10	23	6	10	*7*	6·6	—	—	71	80·1	81·3	Squally.
27	1006·6	1002·1	77·5	85·1	86	77	7·5	13·2	90	93	—	0	18	9	10≡⁰	*10*●	5·8	—	—	71	79·8	81·3	⏀ 6 h. 50 m. Dull all day.
28	1003·0	1003·9	85·2	84·2	86	84	11·9	12·2	84	92	18	8	16	5	10	*7*	2·3	—	—	83	80·8	81·4	Dull throughout.
29	1007·2	1014·8	79·3	80·2	84	79	8·2	7·8	84	78	23	3	19	7	9≡⁰	*0*	—	3·7	·033	78	81·3	81·3	●⁰ early, then fine.
30	1024·6	1026·4	78·1	78·9	81	78	7·1	8·2	83	87	20	3	19	4	4≡⁰	*0*	—	5·4	—	74	80·4	81·3	Fine, but ≡⁰.
31	1021·8	1018·4	81·7	80·6	83	79	8·2	8·5	74	82	18	8	17	6	9	*7*	0·5	0·1	—	73	80·0	81·4	Dull most of day.
Means	1013·3	1012·9	80·3	81·0	83·2	78·1	9·1	9·5	87	87		4·4		5·0	8·7	7·0	69·0	0·95	—	74·0	79·7	81·3	Monthly **Totals** or **Means**.
Normal 40 years	1013·4	1013·4	76·9	77·2	79·5 (35 years)	74·6 (35 years)	7·2	7·3	87	87 (25 years)		3·6 (30 years)		3·6 (30 years)	—	—	51·3	1·18 (30 yrs)	—	—	—	—	**Normals, 40 years.**

Note.—The cloud amounts in italic type at Kew were taken at 18 h.

4. Eskdalemuir Observatory, Dumfriesshire.—Lat. 55° 19′ N. Long. 3° 12′ W.

Heights above Mean Sea Level :—Station, H = 243·2 m. Barometer, H_b = 237·1 m.
Heights above Ground :—Thermometers, h_t = 0·8 m. Rain-gauge, h_r = 0·3 m. Sunshine Recorder, h_s = 1·5 m. Vane of Anemometer, h_a = 15·2 m.

															9 h.	21 h.	9 h.						
1	976·4	970·5	61·0	69·3	70	*n* 60	2·1	3·7	85	80	4	*2*	32	4	7	10✲⁰	1·1c	—	—	—	—	—	✲ in afternoon.
2	978·0	990·7	71·4	64·7	74	61	5·1	3·1	88	97	—	1	—	1	10	0	0·5	—	—	—	—	—	⊠; cold.
3	995·8	990·7	68·7	76·0	*78*	61	4·4	7·5	97	98	—	0	20	2	10✲	10●⁰≡⁰	9·7	—	—	—	—	—	⊠✲ ; also ▲ 9 h.–10 h.
4	987·2	985·8	80·9	81·0	*82*	*77*	10·5	10·5	99	97	20	12	20	13	10●⁰≡⁰	10●⁰≡⁰	8·6	—	—	—	—	—	≡⁰
5	982·3	975·7	78·5	70·4	80	70	8·5	3·4	93	69	16	*	—	1	9	2	—	0·2	—	—	—	—	
6	973·6	978·6	74·6	79·0	80	71	6·5	8·2	94	87	—	1	20	9	10	5	2·8	—	—	—	—	—	
7	980·6	980·0	77·4	81·2	81	76	7·8	10·2	93	94	16	7	20	9	10	10	5·8	—	—	—	—	—	
8	985·3	988·3	80·9	79·2	81	77	10·5	8·8	98	93	16	9	20	7	10●⁰	4	10·2	—	—	—	—	—	Very heavy ● showers 15 h.–
9	981·4	980·3	79·1	78·5	*81*	77	8·5	7·8	90	88	16	14	24	6	10	1	14·2	—	—	—	—	—	midday. [16 h.
10	986·7	983·7	72·1	75·8	77	72	4·4	6·8	79	91	—	1	*16*	*5*	3	9	12·7	—	—	—	—	—	⌴
11	966·7	963·0	81·1	79·2	83	76	10·5	8·2	97	85	20	17	20	4	10●	10	13·5	—	—	—	—	—	9 h.–14 h.
12	966·1	970·0	76·0	78·5	79	75	6·8	8·5	88	93	20	13	20	12	9	10	19·3	0·6	—	—	—	—	✲⁰ and sleet in forenoon.
13	970·1	966·0	80·2	82·9	83	77	9·5	11·9	93	98	20	17	20	15	10●	10●	37·1	—	—	—	—	—	9 h.–14 h. ; ●².
14	970·6	974·0	81·1	78·3	*x* 84	78	6·8	7·8	64	88	20	13	20	9	8	10●	7·1	—	—	—	—	—	early *a.*
15	979·0	975·0	77·7	74·0	*80*	73	6·8	6·5	79	95	20	15	20	3	9	10	15·7	—	—	—	—	—	●, turned to ✲ 14 h.
16	978·0	975·7	74·0	73·8	75	73	5·8	5·8	87	89	20	10	20	10	7	10●✲⁰	8·1	—	—	—	—	—	✲
17	974·0	968·6	73·7	74·1	75	73	5·8	5·8	88	88	20	15	20	8	8	10●✲⁰	5·1	—	—	—	—	—	✲
18	965·1	972·2	74·0	72·3	75	70	5·4	5·4	82	91	24	8	20	6	7	2	10·7	0·7	—	—	—	—	✲
19	968·6	968·3	78·2	80·0	80	72	8·5	9·5	95	94	20	15	20	17	10●⁰≡⁰	10●⁰	15·7	—	—	—	—	—	≡⁰
20	974·6	979·6	80·7	81·6	82	80	10·2	10·9	98	97	20	13	20	13	10≡⁰	10≡⁰	4·3	—	—	—	—	—	≡⁰
21	980·2	978·9	80·4	76·7	82	77	10·2	7·5	98	94	20	13	20	6	10≡⁰	4	5·6	—	—	—	—	—	≡⁰
22	979·3	978·8	77·6	77·6	79	76	8·2	8·2	94	94	20	5	20	2	10	9	2·0	—	—	—	—	—	
23	974·9	975·8	77·0	78·9	80	75	7·8	8·2	96	88	20	4	20	9	9	9	2·5	0·2	—	—	—	—	
24	973·1	961·2	79·0	78·5	80	77	8·8	7·1	94	79	16	10	20	22	10●⁰	10●⁰	10·2	—	—	—	—	—	*p.*
25	976·2	972·2	76·8	76·7	79	76	6·1	6·8	78	85	20	6	20	12	10	9	6·1	—	—	—	—	—	early.
26	966·5	969·2	75·0	75·6	77	74	5·8	6·5	81	90	4	6	4	4	10	1	0·5	—	—	—	—	—	⌴ late *p.*
27	975·6	961·8	70·9	81·5	82	70	4·8	10·9	93	97	—	*1*	20	11	6	10●	23·4	—	—	—	—	—	●² in evening.
28	962·5	970·9	79·9	74·3	82	73	8·2	6·1	83	92	20	13	20	*5*	10●⁰	0	1·5	1·1	—	—	—	—	
29	969·7	969·7	74·5	78·2	79	73	6·1	7·5	91	83	16	8	24	17	6	8	10·7	—	—	—	—	—	21 h.–22 h.
30	988·3	985·8	76·0	79·3	80	76	6·8	9·2	89	96	24	6	20	13	6	10●	25·4	—	—	—	—	—	●² at night.
31	978·6	980·1	79·8	78·9	81	77	9·5	8·8	98	93	20	15	20	8	10●	10	3·8	—	—	—	—	—	●² 4 h.
Means	976·3	975·5	76·4	77·0	79·3	73·3	7·3	7·6	90	90		9·0		8·5	8·8	7·5	293·8	0·09	—	—	—	—	Monthly **Totals** or **Means**.
Normal years	—	—	—	—	—	—	—	—	—	—	—		—		—	—	—	—	—	—	—	—	

The solar radiation is the mean of the readings within the nominal hour of observation (11 h. 30 m.–12 h. 30 m.) unless some other hour is specified. * No record.

5. Kew Observatory.

Day.	Potential Gradient, Volts per metre. Factor 1·71.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air–Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	Horizontal Force.					West Declination.				
														Maximum. 18000 γ +.		Minimum. 18000 γ +.		Range.	Maximum. 15° +.		Minimum. 15° +.		Range.
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.												
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				γ	h m	γ	h m	γ	′	h m	′	h m	′
1	215	—	425	175	—	—	—	—	—	—	—	2	0	517	18 28	497	23 31	20	45·1	11 25	40·0	23 27	5·1
2	65	250	250	190	—	—	—	—	—	—	0·25	0	2	**537**	**19 53**	460	20 31	77	**48·3**	**12 10**	31·2	23 2	17·1
3	185	435	360	215	—	—	—	—	—	—	0·20	0	1	511	15 21	481	1 33	30	44·1	11 22	36·4	0 39	7·7
4	140	175	360	510							0·35	0	0	508	13 23	493	10 59	15	45·1	12 30	40·9	8 12	4·2
5	300	710	420	240							0·50	0	0	508	12 52	495	1 22	13	44·2	11 32	40·1	19 50	4·1
6	160	250	420	500							0·40	1	1	516	7 5	468	23 32	48	46·7	13 0	**28·1**	**22 45**	**18·6**
7	485	390	200	150							—	0	2	519	6 16	**431**	**15 13**	**88**	46·4	5 15	29·9	0 31	16·5
8	50	285	210	460							—	0	1	509	17 20	483	8 43	26	45·1	11 53	40·3	22 54	4·8
9	315	340	285	335							—	0	1	512	7 28	489	19 29	23	45·5	13 10	35·1	19 38	10·4
10	125	285	215	520							—	1	0	513	6 18	493	10 35	20	44·5	12 38	38·1	19 15	6·4
11	225	520	300	200							—	1	0	513	8 26	484	18 2	29	44·8	12 33	38·8	23 25	6·0
12	160	760	360	545							—	1	0	512	8 39	490	1 7	22	43·4	15 12	38·9	0 18	4·5
13	165	350	265	165							—	0	1	518	14 0	495	23 5	23	45·9	12 46	35·6	21 33	10·3
14	40	115	225	125							—	0	0	512	6 59	497	20 46	15	44·2	12 45	37·6	21 18	6·6
15	90	265	340	—							—	1	0	513	16 55	500	3 13	13	43·0	12 40	40·1	21 30	2·9
16	—	—	—	570	No observations.						—	1	0	517	13 23	501	1 9	16	43·9	11 45	39·2	20 12	4·7
17	190	620	300	225							—	0	0	518	17 42	499	1 13	19	44·5	12 5	40·4	7 50	4·1
18	65	210	260	385							—	2	0	516	14 35	493	19 20	23	44·3	11 16	39·7	20 36	4·6
19	125	210	275	290							—	0	0	514	6 13	498	15 37	16	43·2	13 3	39·9	20 47	3·3
20	140	225	485	525							—	0	0	509	19 4	494	11 24	15	43·4	12 56	40·2	8 58	3·2
21	235	—	325	265							—	0	0	513	14 27	496	1 12	17	43·7	12 20	40·7	7 33	3·0
22	135	390	310	325							—	0	2	529	23 37	459	23 5	70	47·3	17 0	29·1	23 28	18·2
23	10	390	335	$x\pm$							—	2	2	**537**	**21 52**	461	14 45	76	48·1	11 52	32·1	21 36	16·0
24	300	535	$x-$	290							—	1	1	535	23 55	483	19 11	52	46·1	1 4	37·2	23 30	8·9
25	135	235	$x\pm$	260							—	1	1	532	0 0	487	17 52	45	43·2	12 28	36·6	0 15	6·6
26	335	$x\pm$	−40	190							—	2	0	503	19 10	482	23 57	21	44·0	13 22	36·3	21 18	7·7
27	165	725	365	165							—	1	0	506	18 46	482	0 0	24	43·6	12 40	38·2	0 2	5·4
28	65	265	350	265							—	1	0	508	6 13	500	22 50	8	41·8	13 9	39·6	21 48	2·2
29	$x\pm$	—	400	310							—	1	0	509	17 11	495	1 6	14	43·0	14 5	38·7	21 31	4·3
30	140	485	460	645							—	0	1	516	7 49	494	13 16	22	44·5	12 9	35·9	2 30	8·6
31	290	400	460	445							—	0	0	517	7 22	496	1 16	21	44·0	13 20	39·9	8 46	4·1
M.	160	382	324	338	—	—	—	—	—	—	—	—	—	516	—	486	—	30	44·7	—	37·3	—	7·4

Note.—The mean values of the Potential gradient in Table 5 are computed from the data for those days on which values at each of the four hours, 3h, 9h, 15h, 21h, are given in the table. A similar note applies to the values in Table 6.

6. Eskdalemuir Observatory.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. $\times 10^{20}$.		Velocities of Ions for 1 volt per centimetre.		Conductivity $\times 10^{25}$.	Air–Earth Current $\times 10^{16}$.		Electric Character of Day.	Magnetic Character of Day.	North Component.				West Component.				Vertical Component.			
														Maximum. 15000 γ +.		Minimum. 15000 γ +.		Maximum. 5000 γ +.		Minimum. 5000 γ +.		Maximum. 45000 γ +.		Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	+.	−.		c_1.	c_2.														
	v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	cm/sec.	cm/sec.	E.-m.U.	Amp/cm².				h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	445	345	291	184	—	—	—	—	—	—	—	1 *a*	0	18 25	1029	1007	10 23	11 21	217	188	23 31				
2	42	148	487	481	—	—	—	—	—	—	—	1 *a*	1	19 50	1003	962	20 28	**12 18**	**240**	141	23 3				
3	220	279	−89	778	—	—	—	—	—	—	—	1 *a*	1	16 17	1021	998	1 30	11 10	212	166	0 37				
4	−131	196	143	83	—	—	—	—	—	—	—	1 *a*	0	6 25	1017	1000	11 1	13 20	213	194	8 39				
5	89	220	463	362	—	—	—	—	—	—	—	0 *a*	0	20 40	1021	1006	10 42	12 52	210	193	19 47				
6	315	261	137	190	—	—	—	—	—	—	—	1 *a*	1	22 41	1040	983	23 32	13 0	225	**110**	**23 0**				
7	214	267	226	380	—	—	—	—	—	—	—	1 *a*	2	21 8	1038	**942**	**15 9**	10 2	229	118	0 29				
8	166	*x*	*x*	226	—	—	—	—	—	—	—	2 *c*	1	22 38	1023	989	8 40	12 45	211	192	23 47				
9	131	95	−1260	172	—	—	—	—	—	—	—	2 *b*	1	7 35	1025	994	11 50	13 9	219	158	19 37				
10	184	380	867	796	—	—	—	—	—	—	—	0 *a*	0	19 30	1026	1003	11 11	12 37	209	176	19 16				
11	119	119	—	273	—	—	—	—	—	—	—	2 *b*	1	7 12	1022	989	17 58	16 43	214	181	23 24				
12	184	−77	214	−125	—	—	—	—	—	—	—	2 *c*	0	7 53	1023	1007	0 30	6 24	207	176	0 46				
13	160	—	137	−208	—	—	—	—	—	—	—	2 *b*	1	21 44	1045	1006	14 30	13 56	226	162	21 13				
14	—	89	59	24	—	—	—	—	—	—	—	2 *b*	1	6 55	1027	1009	20 37	12 48	214	180	21 17				
15	95	−18	—	107	—	—	—	—	—	—	—	2 *c*	0	4 55	1027	1012	3 10	12 40	208	193	21 27				
16	178	—	36	101	—	—	—	—	—	—	—	2 *c*	0	20 16	1030	1016	19 22	12 44	215	190	20 12	Instrument out of order.			
17	—	440	—	166	—	—	—	—	—	—	—	2 *c*	0	17 41	1035	1016	18 52	13 22	214	198	22 19				
18	124	189	444	266	—	—	—	—	—	—	—	1 *b*	1	20 34	1039	1006	19 19	13 17	215	196	20 23				
19	71	−41	12	124	—	—	—	—	—	—	—	2 *b*	0	5 53	1029	1014	15 37	13 4	206	189	20 45				
20	106	130	225	41	—	—	—	—	—	—	—	1 *b*	0	4 11	1030	1009	11 40	3 41	215	197	23 10				
21	18	53	41	237	—	—	—	—	—	—	—	2 *a*	0	20 53	1034	1020	11 0	16 53	213	197	19 55				
22	118	195	331	106	—	—	—	—	—	—	—	1 *b*	1	**23 35**	**1084**	978	17 1	16 56	231	127	23 25				
23	172	479	183	178	—	—	—	—	—	—	—	0 *a*	2	**21 46**	**1084**	985	11 34	11 50	233	140	21 33				
24	183	71	−59	−6	—	—	—	—	—	—	—	2 *b*	1	23 37	1065	1002	19 10	1 0	227	175	23 29				
25	65	166	124	−53	—	—	—	—	—	—	—	1 *b*	1	0 0	1058	1007	17 50	12 25	208	177	0 15				
26	201	183	41	290	—	—	—	—	—	—	—	0 *a*	1	1 0	1033	1006	23 58	13 25	214	172	21 20				
27	154	349	260	—	—	—	—	—	—	—	—	2 *b*	0	5 38	1030	1007	0 0	2 36	214	181	0 0				
28	100	−201	118	373	—	—	—	—	—	—	—	1 *b*	0	19 30	1032	1020	8 20	13 50	209	194	21 50				
29	491	249	−124	95	—	—	—	—	—	—	—	2 *b*	0	21 9	1036	1018	19 35	14 4	212	191	21 31				
30	124	148	237	−1000	—	—	—	—	—	—	—	2 *a*	1	1 56	1042	1012	13 14	1 38	224	168	2 34				
31	−178	−83	219	213	—	—	—	—	—	—	—	2 *a*	0	5 53	1039	1020	13 55	13 30	215	194	9 30				
M.	143	159	142	181	—	—	—	—	—	—	—	—	—	—	1035	1001	—	—	217	175	—				

x Indeterminate.

An explanation of the Headings of the columns is given in the Preface.

7. Tables of Wind Components in metres per second at fixed hours, together with the mean velocity (horizontal movement) in metres per second for the hour with the maximum hourly run for each day, or the greatest velocity attained in a gust and the time of its occurrence.

HOLYHEAD.†§

Height of Head above—Roof 8·8 m., Ground 13·7 m., M.S.L. 19·2 m.
Height of Cups above—Roof 4·6 m., Ground 7·6 m., M.S.L. 15·2 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		Hrs.	Min.
																	V.		
1	...	4·2	6·2	...	0·4	...	2·0	...	9·6	...	...	6·4	...	...	14·4	...	21·5	21	5
2	...	...	14·1	...	...	2·6	13·1	...	...	10·9	10·9	...	...	4·4	4·4	...	23·7	12	45
3	2·4	...	...	1·0	5·7	...	...	2·4	7·1	...	1·4	...	5·1	...	2·5	...	15·7	{16 19	45 15}
4	7·4	...	4·9	...	7·6	...	3·1	...	9·7	...	4·0	...	9·5	...	...	...	20·1	18	35
5	7·4	...	...	1·5	2·3	...	...	0·4	5·9	...	...	...	6·6	...	...	...	13·4	3	10
6	6·1	...	...	2·5	10·0	...	2·6	...	2·6	...	6·4	...	4·4	...	4·4	...	16·5	{6 9	45 10}
7	8·7	...	...	1·7	11·3	...	...	2·2	6·6	...	...	...	4·8	...	1·0	...	19·2	8	55
8	4·5	...	0·9	...	5·6	...	...	...	4·7	...	4·7	...	4·7	...	4·7	...	14·8	7	15
9	7·4	...	1·5	...	11·9	...	2·4	...	9·4	...	3·9	...	...	2·9	6·9	...	21·9	8	35
10	...	2·5	2·5	...	1·1	...	0·7	...	3·0	...	...	1·3	5·2	...	2·1	...	17·9	23	55
11	11·2	...	4·6	...	11·8	...	4·9	...	7·4	...	7·4	...	2·0	...	4·8	...	23·3	11	5
12	2·8	...	6·7	...	...	4·9	11·8	...	4·3	...	10·3	...	7·1	...	10·6	...	23·3	19	40
13	5·6	...	8·3	...	10·6	...	7·1	...	8·1	...	8·1	...	8·6	...	8·6	...	27·3	11	10
14	8·8	...	8·8	...	3·1	...	7·6	...	3·8	...	5·7	...	7·8	...	7·8	...	22·8	23	55
15	...	...	12·0	...	4·5	...	10·9	...	7·2	...	7·2	...	2·2	...	10·9	...	24·1	2	5
16	..	...	11·8	...	...	...	11·8	...	1·9	...	9·3	...	2·0	...	10·0	...	19·2	1	10
17	3·9	...	9·4	...	2·5	...	6·1	...	10·2	...	10·2	...	...	...	7·2	...	27·3	15	20
18	...	2·2	11·3	...	...	...	12·1	...	...	4·4	10·6	...	2·3	...	5·5	...	21·0	1	20
19	7·1	...	4·7	...	12·1	...	5·0	...	13·3	...	5·5	...	10·9	...	2·2	...	*	...	
20	9·4	...	3·9	...	6·5	...	1·3	...	6·9	...	2·9	...	8·3	...	1·7	...	*	...	
21	8·2	...	3·4	...	8·0	...	1·6	...	8·8	...	3·6	...	3·0	...	...	...	*	...	
22	2·5	...	2·5	...	1·1	...	1·1	...	2·2	...	1·4	...	2·7	...	1·8	..	*	...	
23	6·2	...	...	...	7·9	...	3·3	...	3·7	...	3·7	...	5·5	...	3·7	...	*	...	
24	3·8	...	2·6	...	13·8	...	...	2·7	11·4	...	11·4	...	9·1	...	13·6	...	34·0	17	35
25	3·5	...	8·5	...	5·5	...	2·3	...	3·9	...	9·4	...	2·8	...	6·7	...	22·8	1	35
26	6·8	...	...	1·3	6·2	...	...	9·2	...	7·1	4·7	...	...	7·3	3·0	...	17·9	8	20
27	...	0·9	...	0·9	4·7	...	...	3·1	9·0	...	...	1·8	7·9	...	5·3	...	18·8	24	0
28	9·8	...	6·6	...	4·9	...	7·4	...	3·4	...	5·2	...	2·4	...	3·6	...	19·2	1	25
29	2·6	...	3·8	...	7·6	...	7·6	...	7·3	...	10·9	...	3·2	...	16·0	...	28·2	22	45
30	2·4	...	12·3	...	2·5	...	6·1	...	6·3	...	6·3	...	9·2	...	6·2	...	22·8	24	15
31	12·8	...	5·3	...	11·6	...	4·8	...	6·3	...	6·3	...	4·4	...	4·4	...	24·1	5	35
S+N & W+E	161·1		165·6		188·3		156·1		206·4		180·9		157·3		174·0				
S−N & W−E	141·5		147·8		173·3		116·1		161·6		161·9		128·1		174·0				

DEERNESS.†

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Vel. in Max. Hourly Run.	Time of Max.
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		
																	V.	Hour.
1	...	6·0	6·0	...	...	4·6	6·8	...	...	2·0	4·8	...	...	1·8	4·3	...	10·8	5, 6
2	...	2·9	4·3	...	...	1·8	4·3	...	...	7·6	3·1	...	...	4·7	3·1	...	9·2	17
3	...	0·9	0·9	...	7·3	...	...	3·0	7·7	...	...	1·5	4·8	...	1·0	...	11·5	11
4	5·2	...	...	...	7·7	...	1·5	...	4·3	...	1·8	...	2·1	...	2·1	...	8·5	7, 11
5	0·7	...	0·7	...	4·2	...	0·8	...	6·6	...	...	...	7·2	...	...	...	7·5	16, 17, 18
6	4·9	...	...	...	3·0	...	...	...	*	*	*	*	*	*	*	*	?	?
7	*	*	*	*	*	*	*	*	12·5	...	...	...	9·2	...	...	...	?12·5	15
8	6·1	...	1·2	...	6·5	...	1·3	...	5·5	...	1·1	...	2·5	...	2·5	...	7·2	7, 11
9	9·3	...	1·9	...	12·3	...	...	2·4	11·9	...	2·4	...	3·3	...	7·9	...	14·1	11
10	5·1	...	5·1	...	5·6	...	5·6	...	6·4	...	2·6	...	10·6	...	2·0	...	13·1	24
11	17·3	...	...	7·2	14·9	...	...	6·2	5·5	...	...	2·3	5·3	...	5·3	...	18·4	6, 8
12	2·9	...	4·3	...	5·1	...	5·1	...	7·4	...	4·9	...	6·6	...	4·4	...	9·5	17
13	5·7	...	2·4	...	14·1	...	...	...	5·5	...	13·3	...	7·9	...	3·3	...	16·1	13
14	6·4	...	15·4	...	...	3·6	8·8	...	...	...	7·2	...	3·6	...	8·8	...	21·6	5
15	5·0	...	12·1	...	...	...	14·4	...	5·1	...	12·4	...	2·6	...	6·4	...	18·0	12
16	2·2	...	3·2	...	2·0	..	10·0	...	4·4	...	10·6	...	4·4	...	10·6	...	13·4	16
17	...	...	9·2	...	3·5	...	3·5	...	4·3	...	10·3	...	...	...	4·9	...	11·8	11
18	...	2·0	4·8	...	1·5	...	3·6	...	...	...	4·6	...	...	...	5·2	...	8·2	23
19	4·2	...	4·2	...	10·6	...	...	4·4	8·2	...	3·4	...	8·1	...	5·4	...	13·1	11
20	5·6	...	5·6	...	6·1	...	2·5	...	5·2	...	2·1	...	4·8	...	2·0	...	8·2	1, 2
21	2·1	...	2·1	...	6·1	...	2·5	...	3·6	...	1·5	...	4·8	...	2·0	...	10·8	22
22	5·1	...	5·1	...	1·6	...	8·0	...	...	...	4·3	...	...	...	1·0	...	9·8	5
23	...	...	0·3	...	5·2	...	...	2·1	7·9	...	...	...	4·1	...	2·7	...	8·9	13, 14
24	5·2	...	2·1	...	6·7	...	2·8	...	7·7	...	...	11·5	6·0	...	...	4·0	15·1	16, 17
25	...	...	5·9	...	...	3·1	15·4	...	1·9	...	4·5	...	1·1	...	1·1	...	17·0	8
26	...	0·8	4·2	...	1·7	...	1·1	...	3·0	...	...	2·0	4·3	...	...	...	4·9	1
27	1·3	...	0·9	...	3·3	...	1·4	...	11·8	...	...	4·9	13·4	...	...	9·0	16·7	19, 20
28	3·9	...	...	...	4·3	...	...	...	4·9	...	11·8	...	5·5	...	3·7	...	12·8	15
29	7·3	...	3·0	...	8·3	...	...	1·7	5·7	...	...	2·4	...	6·5	1·3	...	11·1	14
30	...	...	2·3	...	2·0	...	4·8	...	6·4	...	2·6	...	10·2	...	...	...	13·8	24
31	11·1	...	...	...	4·8	...	1·0	...	8·1	...	5·4	...	4·5	...	10·9	...	15·1	12
S+N & W+E	129·2		114·4		161·5		125·0		171·1		139·3		149·3		114·9			
S−N & W−E	104·0		100·0		135·3		85·4		151·9		90·1		123·3		88·9			

SCILLY.‡§

Height of Head above—Ground 9·8 m., M.S.L. 49·7 m.
Height of Cups above—Ground 5·8 m., M.S.L. 45·7 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust.	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		Hrs.	Min.
																	V.		
1	...	...	4·6	...	8·8	...	8·8	...	...	...	15·4	...	...	2·6	13·1	...	20·6	12	55
2	...	8·3	12·5	...	*	*	*	*	...	4·1	10·0	...	1·0	...	4·9	...	26·0	1	40
3	3·5	...	2·3	...	5·8	...	2·4	...	7·0	...	1·4	...	6·2	...	1·2	...	10·7	14	50
4	7·9	...	...	...	7·7	...	...	1·5	10·4	...	...	...	11·9	...	...	4·9	15·2	20	15
5	8·5	...	...	5·6	8·1	...	...	3·4	7·7	...	...	3·2	6·8	...	6·8	...	16·1	19	15
6	8·3	...	5·6	...	...	...	6·7	...	3·7	...	5·6	...	9·2	...	...	...	17·0	1	15
7	11·9	...	...	2·4	12·7	...	...	2·5	6·6	...	1·3	...	6·2	...	2·6	...	16·1	9	35
8	7·1	...	...	...	4·3	...	1·8	...	2·2	...	5·4	...	3·5	...	1·5	...	?	?	
9	8·1	...	3·4	...	9·6	...	4·0	...	11·5	...	2·3	...	...	4·1	0·8	...	15·2	11	45
10	...	0·4	0·7	...	...	...	...	7·5	...	2·8	4·2	...	...	...	8·3	...	14·8	10	10
11	8·3	...	8·8	...	11·6	...	4·8	...	11·9	...	4·9	...	*	*	*	*	22·4	18	0
12	*	*	*	*	...	11·3	17·1	...	...	4·1	10·0	...	...	...	13·8	...	26·0	6	10
13	...	...	10·8	...	5·3	...	12·8	...	5·1	...	12·4	...	2·9	...	14·7	...	19·7	24	10
14	2·9	...	14·7	...	2·7	...	13·5	...	2·4	...	11·9	...	2·9	...	14·7	...	20·6	2	50
15	...	...	10·8	...	3·2	...	4·8	...	4·8	...	11·6	...	2·7	...	13·5	...	17·4	17	35
16	...	8·3	5·6	...	*	*	*	*	...	1·4	7·0	...	...	6·3	9·4	...	17·9	21	55
17	...	2·3	11·5	...	...	1·9	9·4	...	2·1	...	10·6	...	3·7	...	8·9	..	24·6	5	35
18	3·4	...	8·1	...	...	5·6	8·3	...	...	3·8	9·2	...	...	3·0	7·3	...	14·3	4	45
19	7·6	...	5·1	...	8·6	...	8·6	...	10·4	...	4·3	...	9·2	...	3·8	...	17·4	11	5
20	11·3	...	...	...	12·1	...	...	...	10·0	...	...	...	13·5	...	...	2·7	?	?	
21	7·5	...	...	...	7·0	...	...	1·4	5·7	...	...	1·1	6·7	...	...	...	11·2	11	10
22	5·0	...	2·1	...	6·2	...	1·2	...	...	2·3	1·0	...	3·8	...	...	...	9·4	23	35
23	6·2	...	4·2	...	*	*	*	*	1·1	...	5·7	...	...	...	10·8	...	15·2	20	5
24	5·4	...	2·2	...	15·6	...	3·1	...	...	...	15·9	...	4·0	...	9·6	...	22·8	10	30
25	5·6	...	3·7	...	4·2	...	...	...	...	...	15·0	...	3·8	...	3·8	...	28·2	14	25
26	18·8	...	...	7·8	5·1	...	25·4	...	...	4·9	24·5	...	...	...	11·7	...	39·3	9	55
27	5·3	...	...	5·3	6·8	...	6·8	...	10·4	...	7·0	...	8·8	...	8·8	...	18·3	19	35
28	8·8	...	8·8	...	5·9	...	5·9	...	0·4	...	0·7	...	...	5·8	2·4	...	16·5	1	20
29	...	2·2	11·1	...	...	...	13·8	...	...	2·5	12·7	...	...	...	12·9	...	22·8	11	45
30	...	...	9·6	...	1·7	...	8·6	...	4·9	...	7·3	...	6·0	...	9·0	...	16·5	?	
31	8·6	...	8·6	...	7·4	...	7·4	...	5·3	...	8·0	...	4·5	...	4·5	...	?	?	
S+N & W+E	181·8		175·9		179·2		191·5		149·5		229·6		139·1		206·4				
S−N & W−E	138·8		133·7		141·6		158·9		97·7		221·0		95·5		191·2				

GREAT YARMOUTH.†§

Height of Head above—Roof 10·7 m., Ground 12·8 m., M.S.L. 15·9 m.
Height of Cups above—Roof 3·7 m., Ground 18·3 m., M.S.L. 22·3 m.

Date.	3 h.				9 h.				15 h.				21 h.				Max. in a Gust (Gorleston).	Time of Gust.	
	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.		Hrs.	Min.
																	V.		
1	...	2·4	3·6	...	...	0·8	4·2	...	1·3	...	3·0	...	6·2	...	...	...	16·5	20	30
2	...	...	6·9	...	...	1·1	5·5	...	...	2·0	3·0	...	...	...	0·7	...	12·5	0	50
3	...	1·0	2·4	...	...	1·0	2·4	...	0·3	...	1·3	...	3·6	...	1·5	...	9·8	23	30
4	2·3	...	2·3	...	2·5	...	2·5	...	2·5	...	2·5	...	4·2	...	0·8	...	10·3	0	35
5	3·2	...	0·6	...	6·1	...	...	1·2	8·1	...	...	5·4	3·0	...	1·3	...	14·8	17	5
6	2·8	...	1·1	...	3·0	...	1·3	...	5·5	...	1·1	...	3·6	...	2·4	...	16·1	14	20
7	1·6	...	1·6	...	3·8	...	0·8	...	5·2	...	...	...	4·6	...	...	...	13·0	14	40
8	3·3	...	1·4	...	3·6	...	1·5	...	2·3	...	...	0·4	2·3	...	2·3	...	8·1	1	25
9	1·1	...	1·1	...	3·2	...	0·6	...	4·1	...	2·7	...	5·7	...	2·4	...	12·1	20	25
10	2·5	...	2·5	...	...	1·4	1·4	...	...	1·5	0·6	...	...	1·5	0·6	...	8·5	0	55
11	3·2	...	...	0·6	3·8	...	2·6	...	7·6	...	3·1	...	6·1	...	2·5	...	16·5	15	45
12	...	1·6	4·0	...	1·6	...	4·0	...	1·3	...	3·0	...	1·8	...	4·3	...	14·8	0	40
13	3·8	...	5·7	...	4·7	...	4·7	...	5·3	...	5·3	...	5·7	...	8·5	...	19·2	22	5
14	6·4	...	9·6	...	4·1	...	10·0	...	3·3	...	4·9	...	4·0	...	4·0	...	19·2	7	35
15	1·9	...	9·6	...	...	...	6·6	...	2·1	...	5·2	...	2·5	...	6·1	...	17·4	1	45
16	...	...	7·2	...	...	1·2	5·8	...	...	0·9	4·5	...	...	0·7	3·5	...	12·1	3	40
17	0·9	...	4·5	...	0·9	...	4·5	...	0·8	...	4·2	...	4·7	...	4·7	...	13·4	21	15
18	5·2	...	3·4	...	5·7	...	3·8	...	*	...	...	...	*	...	...	...	13·9	6	40
19	*	...	...	...	*	...	...	...	5·5	...	3·7	...	5·5	...	2·3	...	13·9	14	50
20	3·2	...	0·6	...	4·9	...	...	...	4·5	...	0·9	...	3·0	...	1·3	...	14·3	4	40
21	3·6	...	1·5	...	2·3	...	2·3	...	2·5	...	2·5	...	2·5	...	2·5	...	10·7	?	
22	2·9	...	4·3	...	1·4	...	2·2	...	2·3	...	2·3	...	2·7	...	1·8	...	9·4	14	15
23	3·6	...	2·4	...	3·0	...	2·0	...	2·6	...	3·8	...	3·6	...	1·5	...	11·6	14	15
24	2·8	...	1·1	...	1·8	..	2·7	...	8·7	...	1·7	...	3·4	...	8·2	...	19·7	14	55
25	3·4	...	8·2	...	2·7	...	1·8	...	4·5	...	0·9	...	...	...	5·9	...	15·7	0	55
26	1·3	...	3·0	...	9·2	...	...	6·2	6·6	...	...	...	...	2·1	5·2	...	21·0	11	10
27	...	1·8	4·3	...	...	0·9	2·1	...	4·9	...	...	...	3·3	...	...	...	13·9	18	35
28	4·0	...	4·0	...	4·9	...	4·9	...	2·7	...	4·1	...	1·8	...	1·8	...	15·2	9	20
29	5·1	...	1·0	...	...	3·0	2·0	...	2·0	...	3·0	...	3·3	...	4·9	...	15·2	5	25
30	1·9	...	9·3	...	...	...	7·5	...	...	...	4·3	...	2·5	...	2·5	...	17·4	2	0
31	3·5	...	3·5	...	5·5	...	2·3	...	4·0	...	4·0	...	4·4	...	4·4	..	14·3	12	30
S+N & W+E	80·3		111·3		88·1		99·4		104·9		81·4		98·3		87·9				
S−N & W−E	66·7		110·1		69·3		84·6		96·1		66·9		89·7		87·9				

The velocities at fixed hours are means for the interval from 30 minutes before to 30 minutes after the hour. The hours are numbered 1 h. to 24 h. Time is referred to Greenwich Mean Time. * No Record.
† Robinson Cup Anemometer; Arms 0·61 m.; Diameter of Cups, 0·229 m.; Factor 2·2.
‡ Robinson Cup Anemometer; Arms 0·305 m.; Diameter of Cups 0·127 m.; Factor 2·8.
§ Dines Pressure Tube Anemometer. At Great Yarmouth, Holyhead, and Scilly the readings at fixed hours are taken from the Robinson Anemometer, the maxima quoted are the greatest winds in a gust as recorded by the Dines Pressure Tube.

8. The Lower Layers of the Atmosphere from the Surface to 3000 metres (10,000 ft.) above Mean Sea Level. Soundings by Kites (K.) and Pilot Balloons (P.).

PYRTON HILL. **K. 4.** December 17. 10 h. 30 m. G.M.T.

Soundings with Kites.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	Humidity.		Density.	Wind. Direction.	Wind. Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	°C.	%	mb.	mgm/cc.	Degrees from N.	m/s.	
Greatest height	...	...	...	...	...	...	...	...	...	Clouds at 500 m. Sky cleared during ascent.
	...	...	...	...	...	...	...	...	...	
	850	910·3	271·5	5·7	70	3·9	1·166	281	22	
	500	951·0	273·5		100	6·2	1·208	270	20	
100 m. above ground	250	980·9	276	10	90	6·8	1·235	248	18	
Ground level	150	993·0	277	10	90	7·4	1·246	225	8	
Computed for M.S.L.	0	1011·5	...	...	...	...	...	255	16	...

PYRTON HILL. **R. 215.** December 5. 15 h. 7 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.-E.	Components. S.-N.	Notes.
metres.	Degrees from N.	m/s.	m/s.	m/s.	
3000	225	17	12	12	Balloon not recovered.
2500	227	16	12	11	
2000	218	16	10	13	
1500	227	18	13	12	
1000	230	16	12	10	
500	230	16	12	10	
0	185	10·9	+1·0	+10·9	...

ABERDEEN. **P. 35.** Dec. 4. 11 h. 35 m. G.M.T.

Soundings with Pilot Balloons.	Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	Balloon lost in mist. Note great variation in vertical velocity with height. In afternoon at 15h., when lower St. cleared off, the upper St.-Cu. was seen to have a lenticular form.
Greatest height	900	...	...	...	...	...	
	...	...	...	...	...	...	
	...	...	...	...	...	...	
	750	227	23·3	16·9	16·0	3·3	
	500	222	20·0	13·3	15·0	2·4	
	250	213	15·5	8·4	13·0	3·6	
	100	214	7·6	4·3	6·3	3·0	
Ground level	30	220	4·4	2·8	3·4	...	
Computed for M.S.L.	0	225	20·4	14·4	14·4	...	Lift 49 gr. Base 940 m.

ABERDEEN. **P. 36.** Dec. 6. 11 h. 43 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	Balloon lost in high haze and town smoke.
1560	...	...	...	...	...	
1500	200	14·8	5·1	13·9	2·9	
1000	197	14·4	4·3	13·7	2·3	
750	215	14·5	8·2	11·9	2·1	
500	203	13·8	5·4	12·7	3·1	
250	193	11·2	2·6	10·9	3·8	
100	193	9·6	2·2	9·3	3·9	
30	220	3·0	1·9	2·3	...	
0	215	11·3	6·5	9·3	...	Lift 46 gr. Base 940 m.

ABERDEEN. **P. 37.** Dec. 13. 11 h. 30 m. G.M.T.

Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Components. W.-E.	Components. S.-N.	Vertical Velocity.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	See note below.* Two theodolites. Balloon lost in small cloud fragments and great distance.
2240	...	...	...	...	...	
? 7000*	288	53·0	50·0	−16	...	
2000	261	43·0	42·5	+ 6·8	4·0	
1500	255	34·2	33·0	9·0	3·9	
1000	239	39·3	33·5	20·6	4·5	
500	232	31·8	25·0	19·7	3·4	
100	217	14·7	8·8	11·8	2·1	
30	210	11·0	5·5	9·5	...	
0	250	21·8	20·5	7·5	...	Lift 52 gr. Base 940 m.

ABERDEEN **P. 38.** Dec. 20. 11 h. 40 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.	Wind. Direction.	Wind. Velocity.	Vertical Velocity.	Cloud Observations and Remarks.
	metres.	mb.	°A.	Degrees from N.	m/s.	m/s.	
Greatest height	620	...	...	...	...	...	Two theodolites to 100 m.: then lost to out-station. Lost to home station at 620 m. in bank of St. and mist.
	500	223	15·4	10·5	11·3	2·6 (Assumed)	
	250	220	11·2	7·2	8·6	2·6 (Assumed)	
	100	210	12·1	6·1	10·4	2·1 (Assumed)	
Ground level	30	190	6·6	1·1	6·5	...	
Computed for M.S.L.	0	220	22·7	14·6	17·4	...	Lift 39 gr. Base 940 m.

* Note attached to Ascent No. P. 37:—The above velocities after 500 m. are high for the W.-E. component, but are the results from two theodolites' observations. (It is specially noteworthy that the altitude of the balloon remained throughout between 60° and 70° at both stations; the lowest altitude readings on record.)

Just at 12 h., soon after the balloon flight, a band of Ci. made its appearance, and its apparent velocity was so great that a nephoscope observation of it was made. The direction of motion was found to be 288°, and the value of $\frac{1000\,V}{H}$ was 7·6 m.p.s.

The Ci. itself was of a very coarse type, the fibres showing in several places an inclination towards the Ci.-Cu. form, and the band gave no optical phenomena round the sun. If we assume that the height of the cloud was 7000 m., which is intermediate between the mean heights of Ci. and of Ci.-Cu., its velocity would be 53 m.p.s. Resolving this into components, we obtain for the W.-E. component +50 m.p.s., and for the S.-N. component −16 m.p.s.

The Ci. band showed a radiant point in 295°. At 12 h. 15 m. the surface wind components had fallen to W.-E., +6·9; S.-N., +6·9.

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. December 5. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	12·6 km.	197 mb.	206° A.
LOWEST TEMPERATURE,	11·6 km.	207 mb.	205° A.
BASE OF STRATOSPHERE,	11·6 km.	207 mb.	205° A.
Type	No. II.		

SOUNDING No., **R.M.O. 214.**
PLACE, PYRTON HILL.
Latitude, 51° 38′ N.
Longitude, 1° 1′ W.
Height above M.S.L., 150 m.
PLACE OF FALL, Wellingbro'.
Distance, 72 km.
and Orientation, 22°.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1015 mb.	1009 mb.
TEMPERATURE,	275° A.	278° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	165°	185°
Velocity,	13·2 m/s.	10·9 m/s.
Correction for Curvature,	+ 7·7 m/s.	0·0 m/s.
Final Components, W. to E.	− 5·4 m/s.	+ 1·0 m/s.
Final Components, S. to N.	+20·2 m/s.	+10·9 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per km.	REMARKS.
km.	mb.	°A.	°C.	
12	199	205		Trace somewhat indistinct.
11·8	200	...	6	
11·0	228	211	8	Isothermal from 5·0 to 5·3 at 256°.
10·0	267	219		
9·2	300	...	7	Temperature 282° at ·5 km.
9·0	308	226	8	
8·0	357	234		
7·2	400	...	8	
7·0	413	242	8	
6·0	473	250		
5·6	500	...	6	
5·0	542	256		
4·2	600	...	7	
4·0	618	263	8	
3·0	700 703	271		
2·0	800 796	276	4	
1·0	900 898	280		
·013	1000	...		
Ground	996	275	...	
M.S.L.	1015	...	...	

Time is expressed in the hours 1 to 24 of civil reckoning.
Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).
Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin\phi$.
Temperatures are expressed in degrees absolute (273° A = 0° C.).
Heights are given in kilometers (km.).

***Base of Stratosphere.**—TYPE 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.
TYPE 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given. TYPE 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

9. The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)—*continued.*

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. November 7. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	14·1 km.	140 mb.	208° A.
LOWEST TEMPERATURE,	12 to 14·1 km.	...	208° A.
BASE OF STRATOSPHERE,	11·9 km.	196 mb.	208° A.
Type	No. 1.		

SOUNDING No., R.K.C. 49.

PLACE, MUNGRET COLLEGE.

Latitude, 52° 38′ N.

Longitude, 8° 41′ W.

Height above M.S.L., 15 m.

PLACE OF FALL, Tullow.

Distance, 131 km.

and Orientation, 82°.

From Observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1022 mb.	1025 mb.
TEMPERATURE,	283° A.	286° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	225°	260°
Velocity,	16·1 m/s.	+16·3 m/s.
Correction for Curvature,	0·0 m/s.	+ 2·2 m/s.
Final Components, W. to E.	+11·4 m/s.	+18·2 m/s.
Final Components, S. to N.	+11·4 m/s.	+ 3·2 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
14	143	208		Clear morning. Light Ci. moving slowly from 270°.
13	167	208	0	
12	196	208	0	
11·9	200	...		
11	229	212	4	
10	268	219	7	
9·3	300	...		
9	312	226	7	
8	361	233	7	
7·3	400	...		
7	416	241	8	
6	477	249	8	
5·7	500	...		
5	546	256	7	
4·3	600	...		
4·0	623	263	7	
3·1	700	...		
3·0	708	270	7	
2·0	800 802	278	8	
1·0	900 906	284	6	
0·2	1000	...	−2	
Ground	1021	282	...	
M.S.L.	1022	...	...	

10. Solar Radiation at South Kensington.

Day.	OCTOBER. Maximum Rate, Watts per cm².	Daily Amount, Calories per cm².	Duration of Sunshine.	NOVEMBER. Maximum Rate, Watts per cm².	Daily Amount, Calories per cm².	Duration of Sunshine.	DECEMBER. Maximum Rate, Watts per cm².	Daily Amount, Calories per cm².	Duration of Sunshine.	REMARKS.
	(1)	(2)	(3) hr.	(1)	(2)	(3) hr.	(1)	(2)	(3) hr.	
1	·056	182	3·4	·027	117	4·0	·011	38	0·0	*Note.*—1 watt per cm² = 14·35 gramme-calories per cm² per minute. 1 gramme-calorie per minute = 0·7 watt nearly.
2	·022	78	0·0	·029	115	4·0	·014	62	3·9	
3	·049	220	7·4	·022	72	0·4	·011	34	0·0	
4	·037	180	4·1	·024	67	0·2	·013	25	0·0	
5	·041	182	4·7	·006	16	0·0	·012	43	0·0	
6	·028	94	0·0	·006	22	0·0	·009	25	0·0	If the heat were distributed throughout the atmosphere 1000 gramme-calories per cm² would be sufficient to raise the temperature 4°·1 C. It would take 245 gramme-calories per cm² to raise the temperature of the whole atmosphere 1° C.
7	·037	175	5·6	·025	68	1·2	·008	24	0·0	
8	·025	120	0·4	·014	31	0·0	·010	24	0·0	
9	·032	151	5·5	·020	53	0·1	·012	25	0·0	
10	·034	151	4·6	·030	55	0·1	·002	6	0·0	
11	·013	53	0·0	·023	53	1·2	·008	23	0·0	
12	·023	85	0·7	·017	27	0·1	·017	40	1·1	For values January to March, see p. 20; April to June, p. 56; and July to September, p. 68.
13	·034	127	1·9	·014	40	0·0	·008	26	0·0	
14	·013	45	0·0	·024	48	0·0	·003	12	0·0	
15	·029	89	0·5	·015	56	0·0	·020	43	0·4	
16	·040	142	3·2	·006	18	0·0	·015	50	2·2	N.B.—The values of Solar Radiation at South Kensington are obtained from the records of a Callendar Instrument which depends upon the difference of temperature between a black and a bright wire exposed horizontally to radiation from the whole of the sky. The values may be taken as representing the total radiation and the maximum rate of radiation per cm² received by a horizontal surface. If it is desired to compare the values published for Kew and Eskdalemuir in Tables 3 and 4 with the simultaneous value recorded by the Callendar Instrument the former must be multiplied by the cosine of the zenith distance of the sun at the time of observation. The duration of sunshine in this table is obtained from a Campbell-Stokes Recorder.
17	·042	165	6·2	·008	22	0·0	·017	60	4·2	
18	·038	151	4·2	·014	45	0·0	·012	27	0·0	
19	·045	165	6·6	·024	41	0·1	·017	34	0·0	
20	·037	132	2·7	·024	44	0·0	·021	47	1·3	
21	·030	126	2·9	·009	20	0·0	·008	15	0·0	
22	·030	54	0·2	·020	50	1·0	·017	75	0·2	
23	·020	54	0·0	·011	30	0·0	·018	42	1·0	
24	·036	123	2·7	·022	75	5·0	·007	17	0·0	
25	·029	100	3·2	·014	31	0·0	·005	10	0·0	
26	·007	36	0·0	·007	12	0·0	·007	18	0·0	
27	·034	43	0·1	·018	56	1·1	·015	24	0·0	
28	·015	43	0·0	·014	47	0·0	·012	30	0·0	
29	·038	133	5·0	·006	25	0·0	·018	61	2·4	
30	·038	105	2·1	·016	44	0·0	·015	57	3·3	
31	·030	48	0·0	...	...	...	·021	38	0·2	
Total (For days with values in column 2)		3552	77·9	...	1400	18·5	...	1055	20·2	
Mean (For days with values in column 2)		115	2·51	...	47	0·62	...	34	0·65	
Total (For all days)		...	77·9	...	...	18·5	...	...	20·2	
Mean (For all days)		...	2·51	...	...	0·62	...	...	0·65	
Ratio of Mean Daily Amount to Mean Duration.		46			76			52		

ERRATA FOR 1912.

Pages 2 and 8:—Owing to a subsequent correction the Temperature and Humidity values for Eskdalemuir for January and February need modification. For corrected readings *see* "Hourly Values, 1912," pp. 12 and 24.

Page 27:—Pyrton Hill, *for* "R 176," *read* "R 174."

,, 28:— ,, ,, "R 177," ,, "R 175."

Page 28:—Pyrton Hill, *for* "R 178," *read* "R 176."

,, ,, , Orientation, *for* "22," *read* "322."

,, 35:— ,, ,, "R 177" ,, "145," ,, "215."

,, 36:— ,, ,, "R 179" ,, "119," ,, "219."

METEOROLOGICAL OFFICE OBSERVATORIES.

GEOPHYSICAL JOURNAL, 1912.

ANNUAL SUPPLEMENT.

Summary of the Records of Registering Balloon Ascents and Data for Additional Ascents not included in the Monthly Issues.

THE positions and heights of the different stations from which results have been published are shown in the following table :—

Place.	Latitude.	Longitude.	Height above M.S.L.
	° ′	° ′	metres.
Pyrton Hill . . .	51 38 N.	1 0 W.	150
Manchester . . .	53 27 „	2 14 „	40
Mungret College . .	52 38 „	8 41 „	15
Crinan	56 5 „	5 31 „	5
Ditcham Park . . .	50 57 „	0 56 „	160
Southport . . .	53 39 „	2 59 „	10

In all, during the year the results of fifty-two successful ascents of registering balloons have been published. The total is fairly satisfactory, inasmuch as there was hardly a single failure in obtaining a reliable record up to at least 10 km., but the year was an unfortunate one in the matter of finding the balloons. Forty were sent up at Pyrton Hill, and only twenty-three found; whereas, if the average conditions had held, at least thirty should have been found. At Crinan also and at Limerick during the international week in July the unfound balloons reached two-thirds of the total, an unusually high percentage.

The more salient features of each ascent are brought together in Table I., p. 90.

It will be seen that a large preponderance of the ascents occurred in the summer, and since some of the quantities show a distinct seasonal variation, this fact vitiates the values of the crude annual mean. We have not yet a record sufficiently long to give us

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TABLE I.

	Date.		Type.	H_c.	T_c.	H_t.	T_t.	P_s.	P_9.	T_m.	D.	B.
		h. m.		km.	°A.	km.	°A.	mb.	mb.	°A.	km.	
Manchester . .	Jan. 4	7 0	1	10·7	216	11·8	219	1009	307	252	216	124
Pyrton Hill . .	Jan. 30	15 5	1	9·6	15	13·6	15	1005	293	47	98	168
Manchester . .	Feb. 1	7 0	1	11·5	13	16·6	20	1008	?	?	232	140
Manchester . .	Mar. 7	7 0	1	8·5	16	19·6	20	1010	285	39	89	98
Ditcham Park .	„ „	15 36	?	9·5	12	10·6	14	1009	291	44	300	135
Manchester . .	Apr. 11	6 55	1	10·5	17	22·6	22	1014	285	49	248	131
Manchester . .	„ 12	6 50	1	10·6	12	11·4	15	1031	297	48	101	152
Pyrton Hill . .	„ 13	7 0	1	10·1	14	13·0	21	1034	301	49	40	153
Manchester . .	„ „	6 50	1	10·4	15	14·3	21	1033	304	50	68	180
Pyrton Hill . .	„ 17	12 10	1	9·5	20	14·7	25	1020	301	51	48	322
Manchester . .	May 2	6 55	1	11·4	18	23·2	26	1016	309	57	63	90
Pyrton Hill . .	„ „	7 5	1	11·2	15	16·0	22	1016	308	51	45	215
Southport . .	„ 13	15 30	1	11·0	20	15·5	22	1020	307	55	2	45
Pyrton Hill . .	„ „	16 0	1	10·7 / 11·2	17	14·3	?	1017	308	55	114	73
Pyrton Hill . .	„ 25	9 50	1	10·5	19	13·4	29	1027	314	56	40	219
Pyrton Hill . .	June 4	18 38	1	7·4	30	16·0	27	995	296	52	13	335
Manchester . .	„ 6	6 40	1	9·5	23	12·3	33	1004	305	57	42	110
Limerick . .	„ „	7 0	1	9·2	21	13·6	?	1008	301	50	23	190
Pyrton Hill . .	„ 11	19 0	1	10·2	15	15·0	23	1008	304	55	41	4
Pyrton Hill . .	July 1	6 55	1	9·8	24	15·7	31	1009	308	55	32	106
Ditcham Park .	„ „	7 5	1	9·2	24	15·2	27	1009	306	52	35	120
Crinan . .	„ „	7 0	?	?	?	10·6	?	1012	305	50	145	160
Manchester . .	„ „	20 5	1	9·6	22	11·2	29	1010	303	54	39	232
Pyrton Hill . .	„ 2	7 0	1	9·8	23	13·9	35?	1011	308	54	56	214
Manchester . .	„ „	20 0	1	10·2	25	19·1	26	1013	315	60	158	210
Crinan . .	„ 3	7 0	2	10·6	26	16·0	25	1019	310	57	110	198
Pyrton Hill . .	„ „	19 55	1	9·2	21	14·6	22	1013	306	53	205	240
Ditcham Park .	„ 4	7 5	1	9·3	28	15·2	?	1020	314	56	67	247
Pyrton Hill . .	„ „	20 0	1	10·2	20	15·7	18	1025	313	56	96	254
Pyrton Hill . .	„ 5	7 0	1	11·3	23	15·8	25	1021	316	58	90	273
Ditcham Park .	„ „	7 0	?	9·5	29	15·5	25	1024	315	59	92	278
Ditcham Park .	„ „	19 40	1	10·1	21	15·0	22	1019	318	59	72	304
Limerick . .	„ 6	7 15	1	10·1	21	15·0	32?	1017	316	60	55	320
Crinan . .	„ „	20 35	2	10·8	24	11·6	29	1016	312	60	150	350
Pyrton Hill . .	„ 9	7 0	1	9·6	27	11·0	?	1020	310	55	55	246
Limerick . .	„ 31	7 15	1	9·0	27	14·8	33	1001	300	53	107	56
Pyrton Hill . .	Aug. 29	18 15	2	9·7	23	13·1	21	1000	303	56	184	56
Manchester . .	Sept. 5	7 0	1	10·2	21	17·3	29	1012	307	57	253	110
Pyrton Hill . .	„ 20	17 0	1	12·2	05	14·5	12	1026	316	60	37	248
Manchester . .	Oct. 2	7 0	1	9·6	24	19·6	20	1004	292	48	86	129
Pyrton Hill . .	„ „	7 0	1	9·2	24	13·0	24	1017	300	53	56	91
Manchester . .	„ 3	6 55	1	10·0	26	21·6	30	1022	297	49	129	165
Pyrton Hill . .	„ „	7 5	2	8·8	29	15·0	21	1033	307	54	80	155
Limerick . .	„ 4	7 0	3?	10·6	17	15·7	13	1036	311	53	88	160
Manchester . .	„ „	6 55	1	10·9	21	21·5	28	1036	311	56	109	136
Pyrton Hill . .	„ „	7 6	1	10·7	17	17·0	21	1034	312	53	95	169
Pyrton Hill . .	„ 10	16 30	2	11·0	14	14·0	18	1024	317	60	20	280
Pyrton Hill . .	„ 23	15 54	2	9·4	24	13·2	29	992	295	50	24	11
Manchester . .	Nov. 7	7 0	1	12·0	18	15·3	12	1026	313	61	353	117
Pyrton Hill . .	„ „	7 3	1	14·0	06	16·5	07	1026	317	60	123	136
Limerick . .	„ „	7 15	1	11·9	08	14·1	08	1022	312	56	131	82
Pyrton Hill . .	Dec. 5	7 5	2	11·6	05	12·6	06	1015	308	56	72	22
Means . .	...	...	...	10·2	19·6	14·7	22·1	1015	307	54·0	92	...
Corrected Means .	...	...	...	10·0	18·5	...	21·0	...	304	51·8	...	...

H_c denotes the height in kilometers of the base of the stratosphere.
T_c „ the corresponding temperature in degrees absolute (273° A. = 0° C.).
H_t „ the maximum height (height of the top).
T_t „ the corresponding temperature.
P_s „ the pressure at mean sea-level in millibars.
P_9 denotes the pressure at 9 km.
T_m „ the mean temperature of the air column between 1 and 9 km.
D „ the distance the balloon travelled in km.
B „ the bearing in degrees from north of the falling place.

accurate details about these variations, but we may accept the following as estimates approximately correct :—

The variation of H_c —amplitude of ·6 km. with minimum at the beginning of March.
,, T_m—amplitude 6° C. and minimum in February.
,, T_c ,, 3° C. ,, ,,

The seasonal variation of P_s is unimportant, and that of P_9 follows the temperature variation of the underlying air.

Assuming these variations to be correct, the preponderance of observations in the summer can be allowed for, and the second row gives the corrected mean values for 1912. Excepting in the case of H_c, these values are in good agreement with the means of previous years. Although, in the majority of cases, there is no doubt about the point at which the stratosphere begins owing to the very definite inversion of temperature gradient, there are cases in which it is not possible to fix on any definite point unless some convention is adopted.

In order to secure uniformity of method at the different stations contributing results for publication in the Reports of the Office, an arrangement was made at the beginning of 1912 for the division of curves into three types according to the character of the temperature height curve in its upper portion. The three types are specified as follows :—

Type 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.

Type 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given.

Type 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."

In the monthly issues of the *Geophysical Journal* for 1912, there were published thirty-seven ascents of Type 1, seven ascents of Type 2, and one doubtful ascent probably of Type 3. This one possible case of Type 3 is the ascent at Limerick on October 4th. The station was then near the centre of an anticyclone, and the balloon fell about 90 km. distant towards S.S.E. The seven cases of Type 2 occurred two in July, one in August, three in October, and one in December. In the two cases in July, and again in two of those in October, the pressure distribution was irregular; in August and in December there was a cyclonic depression to the West with a steep gradient for S.W. and S. winds; the balloons both fell in the N.E. quadrant. In the remaining case in October the value of H_c was exceptionally low, 8·8 km., and there was a moderate gradient for N.E. winds. Temperature again diminished above 11 km. in this case. It will be seen that we are not yet able to associate each type of passage from troposphere to stratosphere with a particular type of pressure distribution. There may be no such association, but the results suggest that Type 2 is most likely to occur with an irregular pressure distribution.

For Type 1 we can form Monthly Means (except for December) of H_c, T_c, and pressure at Mean Sea-Level. These are as follows :—

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
P (millibar) .	1013	1016	1010	1026	1019	1009	1018	1001	1026	1023	1025	*1015*	1017
H_c (km.) .	10·7	10·6	8·5	10·2	11·2	9·4	9·9	9·0	11·2	10·1	12·6	*10·0*	10·41
T_c (°A.) .	216	214	216	216	217	222	223	227	213	222	211	*215*	217·7
Number .	1	2	1	5	4	5	9	1	2	5	3	...	...
Mean date .	Jan. 4	Jan. 31	Mar. 7	Apr. 13	May 8	June4	July 4	July 31	Sept. 13	Oct. 3	Nov. 7	...	...

In order to form an annual mean, we have inserted for December the average value for that month for normal pressure and taken the annual mean as the mean of the twelve Monthly Means.

As the mean pressure is about 2 mm. above the normal value, the value of H_c reduced to normal pressure would be—

10·23 km.

and of T_c.

218°·3 A.

The value of H_c for England is given as 11·0 km. in *Geophysical Memoirs*, No. 2, in which the convention for the determination of the base in cases of Type 3 differed from that given above, and was as follows :—The point was taken where a gradient of 1° instead of 2° per kilometer commenced.

The corresponding value of H_c for England is given as 10·60 km. in *Geophysical Memoirs*, No. 5, in which the same conventions for the determination of the base of the stratosphere as those given above were used so far as they could be applied to the published tables; and the mean value for Europe between Latitudes 48 and 52 and West of Longitude 15° E. is 10·55 km. The value for England for 1912 appears therefore to be decidedly low, whichever "normal" is used.

The standard deviation of H_c is about 1·5 km., so that the probable error of a mean from fifty-two observations is $\frac{2}{3} \cdot \frac{1{\cdot}5}{\sqrt{52}} = {\cdot}14$. A casual variation of six times the probable error gives ·84 km., and is about the utmost that could be expected; but it must be remembered that the formula for the probable error is based on the supposition that the values are independent in the statistical sense, whereas results from stations close together made on the same day cannot be counted as independent. It is probable, too, that the mean of about 11·0 km. for the earlier period is too high.

However this may be, the low value of H_c commenced in September 1911, and it is noteworthy that almost every ascent made in the British Isles since then till now (October 1913) has a lower value than might have been expected from the date and prevailing barometric conditions.

The falling points of the balloons are arranged thus: In the N.E. quadrant there were 8, in the S.E. 22, in the S.W. 14, and in the N.W. 8. Owing to the proximity of the sea too much reliance must not be placed on the figures, but the preponderance of falls in the S.E. quadrant agrees fully with the Continental observations. There cannot be any doubt that for Europe, or at least that part of Europe covered by the observations, the general drift of the atmosphere as a whole is on the average from the N.W. or W.N.W., while for the individual case the balloon may travel in any direction whatever.

The mean temperatures at each kilometer have also been obtained and are given below, and the values of the mean for 1908–1910 inclusive are given for comparison.

	Ground.	1 km.	2 km.	3 km.	4 km.	5 km.	6 km.	7 km.	8 km.	9 km.	10 km.	11 km.	12 km.	13 km.	14 km.
	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.	°A.
1912	280·1	275·6	270·9	265·8	260·0	253·9	246·2	239 8	232·1	226·1	221·2	221·4	221·6	221·8	222·0
1908–1911	282·6	277·0	272·6	267·7	261·7	255·5	248·9	241·8	235·0	228·9	223·1	219·6	219·5	219·8	220·0

In both sets the values are corrected to allow for the excess of summer observations. Up to 10 km. it will be seen that the temperatures for 1912 were below the previous three years' average, but that beyond 10 km. they were above. The departures from the mean of all the quantities are thus associated in the usual way. The thickness of the troposphere, the pressure at 9 km., and the temperature of the lower air column, 0 to 9 km., were all low, while the temperature of the upper air column was above the average.

The number of observations begins to fall off rapidly after 14 km., and the means at greater heights have not been formed, but there is ample evidence to show that there is no systematic change of temperature between 14 and 20 km., so that the mean given for 14 km. is equally applicable to any other height between 14 and 20 km. The general tendency is towards uniformity of temperature at great heights, cases of a fall of temperature with height occur with high temperatures and conversely.

In a previous publication (*Geophysical Memoirs*, No. 2) the correlation coefficients between sundry variables of the upper were given, and the standard deviations and the primary correlation coefficients for the 1912 observations are given below :—

	P_s.	T_m.	P_9.	H_c.	T_c.
Standard deviation . .	10·4 mb.	4°·6 C.	8·5 mb.	1·10 km.	6°·0 C.

The correlation coefficients for the observations in 1912 are :—

	P_s.	T_m.	P_9.	H_c.	T_c.
P_s . . .	...	·29	·55	·55	−·33
T_m . . .	·29	...	·86	·47	·03
P_9 . . .	·55	·86	...	·56	−·11
H_c . . .	·55	·47	·56	...	−·71
T_c . . .	−·33	·03	−·11	−·71	...

The whole series of values, both deviations, and correlation coefficients are unusually low, and this set of observations affords the first instance in which the correlation between the temperatures of the under and upper air column, viz. T_m and T_c, has been found to have a positive value. The formula for the probable error of a correlation coefficient is $\frac{2}{3}\frac{\sqrt{1-n^2}}{\sqrt{n}}$; and even if we take $n = 52$, the probable error for the correlation coefficients that have values under ·60 is more than ·07. In view of the crowding of sixteen observations into one week in July and the frequent occurrence of simultaneous ascents at Ditcham Park, Pyrton Hill, and Manchester, the set of observations can hardly be considered as equivalent to much more than twenty independent observations, a number insufficient to form reliable correlation coefficients or standard deviations. Also the low values of the standard deviations intensify the effect of the observational errors upon the correlation.

A number of results obtained from ascents at Ditcham Park, Petersfield, which were not included in the current issues of the Journal are given here.

The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.).

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. July 1. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15·2 km.	...	...
LOWEST TEMPERATURE,	9·2 km.	...	224° A.
BASE OF STRATOSPHERE,	...	...	...

Type No. 1

SOUNDING No., R. D.P. 45.

PLACE, DITCHAM PARK PETERSFIELD.

Latitude, 50° 57′ N.

Longitude, 0° 56′ W.

Height above M.S.L., 160 m.

PLACE OF FALL, Coombe Lee Farm, Angmering near Worthing.

Distance, and Orientation, 35 km. 120° from N.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1012 mb.	1013 mb.
TEMPERATURE,	285° A.	287° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	320°	335°
Velocity,	9·5 m/s.	5·6 m/s.
Correction for Curvature,	−0·8 m/s.	−0·2 m/s.
Final Components, W. to E.	5·6 m/s.	2·3 m/s.
Final Components, S. to N.	−6·7 m/s.	−4·9 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
15·0	126	227	1	Overcast, cumulus and some low clouds. Balloon went S.E. Isothermal 2·4 to 2·6 km. at 268°; 5·2 to 5·6 km. at 250°.
14·0	146	228	1	
13·0	168	229	−1	
12·0	197	228	0	
11·0	228	228	−4	
10·0	263	224	1	
9·0	306	225	7	
8·0	353	232	8	
7·0	406	240	8	
6·0	468	248	4	
5·0	536	252	7	
4·0	613	259	6	
3·0	696	265	6	
2·5	742	268		
2·0	790	271	7	
1·5	841	274		
1·0	895	278	8	
0·5	950	282		
0·15	991	287		
Ground M.S.L.	... ...	... ...	... ...	

1912. July 4 7 h. 5 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15·2 km.	...	...
LOWEST TEMPERATURE,	9·5 km.	...	226° A.
BASE OF STRATOSPHERE,	...	...	...

Type No. 1

SOUNDING No., R. D.P. 46.

PLACE, DITCHAM PARK, PETERSFIELD.

Latitude, 50° 57′ N.

Longitude, 0° 56′ W.

Height above M.S.L., 160 m.

PLACE OF FALL, Crescent Road, Bournemouth.

Distance, and Orientation, 67 km. 247° from N.

From observations at Station.	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1024 mb.	1026 mb.
TEMPERATURE,	286° A.	287° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND:—Direction,	45°	70°
Velocity,	8·2 m/s.	7·6 m/s.
Correction for Curvature,	+1·4 m/s.	0 m/s.
Final Components, W. to E.	−6·8 m/s.	−7·1 m/s.
Final Components, S. to N.	−6·8 m/s.	−2·6 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
15·0	?	?		Overcast. Balloon went S.W. Lost in clouds in three minutes. Isothermal at 0·7 to 1·1 km. at 282°.
14·0	152	229 231	−2 −1	
13·0	176	227 230		
12·0	203	229 231	2 1	
11·0	235	228 232	−1 1	
10·0	272	227 232	−1 0 1 −2	
9·0	314	228 230	6 6	
8·0	362	234 236	8 6	
7·0	417	242	8	
6·0	478	250		
5·0	548	257	7	
4·0	625	263	6	
3·0	709	269	6	
2·5	755	272	7	
2·0	803	276		
1·5	853	280	6	
1·0	906	282		
0·5	962	284	4	
0·15	1001	286		
Ground M.S.L.	... ...	... ...	... ...	

The Upper Air: Soundings by Registering Balloons (R.) and Pilot Balloons (P.)

TABLE OF HEIGHTS, PRESSURES, AND TEMPERATURES.

1912. July 5. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15·5 km.	...	...
LOWEST TEMPERATURE,	...	...	...
BASE OF STRATOSPHERE,	...	...	...
Type	?		

SOUNDING No., R. D.P. 47.

PLACE, DITCHAM PARK, PETERSFIELD.

Latitude, 50° 57′ N.

Longitude, 0° 56′ W.

Height above M.S.L., 160 m.

PLACE OF FALL, West Knoyle, Mere, Wiltshire.

Distance, and Orientation, 92 km. 278° from N.

From observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1026 mb.	1026 mb.
TEMPERATURE,	287° A.	287° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	85°	95°
Velocity,	9·4 m/s.	12·3 m/s.
Correction for Curvature,	0·0 m/s.	0·0 m/s.
Final Components, W. to E.	− 9·4 m/s.	− 12·3 m/s.
Final Components, S. to N.	− 0·8 m/s.	− 1·1 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
15·0	132	225	1	Balloon went W.S.W. ; entered thin scud one minute after start. Inversion 284° to 285° at 0·7–1·2 km. Beginning of stratosphere badly defined.
14·0	152	226	1	
13·0	175	227	1	
12·0	203	228	1	
11·0	236	229	0	
10·0	272	229	3	
9·0	315	232	5	
8·0	363	237	7	
7·0	417	244	8	
6·0	478	252	7	
5·0	548	259	8	
4·0	623	267	7	
3·0	707	274	6	
2·5	754	277		
2·0	803	280	5	
1·5	853	283		
1·0	906	285	0	
0·5	962	285		
0·15	1004	286		
Ground M.S.L.	...	...	...	
	...	...	...	

1912. July 5. 19 h. 40 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
GREATEST HEIGHT,	15·0 km.	...	...
LOWEST TEMPERATURE,	10·1 km.	...	221° A.
BASE OF STRATOSPHERE,	...	...	...
Type	No. 1		

SOUNDING No., R. D.P. 48.

PLACE, DITCHAM PARK, PETERSFIELD.

Latitude, 50° 57′ N.

Longitude, 0° 56′ W.

Height above M.S.L., 160 m.

PLACE OF FALL, Collingbourne Kingston, Marlborough, Wilts.

Distance, and Orientation, 72 km. 304° from N.

From observations at Station	at 7 h.	at 18 h. G.M.T.
PRESSURE (M.S.L.),	1026 mb.	1026 mb.
TEMPERATURE,	287° A.	287° A.
VAPOUR PRESSURE,	...	...
GRADIENT WIND :—Direction,	85°	95°
Velocity,	9·4 m/s.	12·3 m/s.
Correction for Curvature,	0·0 m/s.	0·0 m/s.
Final Components, W. to E.	− 9·4 m/s.	− 12·3 m/s.
Final Components, S. to N.	− 0·8 m/s.	1·1 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	°A.	°C.	
15·0	128	222	1	Sky nearly clear, a little cirrus. Balloon went S.W. at first, then W.
14·0	150	223	1	
13·0	175	224	− 1	
12·0	203	223	− 1	
11·0	236	222		
10·0	276	222	0	
9·0	318	229	7	
8·0	367	238	9	
7·0	422	247	9	
6·0	482	253	6	
5·0	551	259	6	
4·0	626	267	8	
3·0	710	273	6	
2·5	756	276		
2·0	803	279	6	
1·5	852	283		
1·0	905	285	6	
0·5	961	287	4	
0·15	1000	289		
Ground M.S.L.	...	...	...	
	...	...	...	

Notes on the Tables of Upper Air Results, pp. 94 and 95.

Time is expressed in the hours 1 to 24 of civil reckoning.

Temperatures are expressed in degrees absolute (273° A. = 0° C.).

Pressure is given in millibars (1000 mb. = 1 C.G.S. atmosphere = 750 mm. approximately).

Heights are given in kilometers (km.).

Gradient Wind is taken to be tangential to the isobar and is computed by the formula $\gamma = 2\omega\rho V \sin \phi$.

Base of Stratosphere.—TYPE 1.—When the stratosphere commences with an inversion, the height and temperature of the first point of zero temperature gradient are given.

TYPE 2.—When the stratosphere begins with an abrupt transition to a temperature gradient below 2° per km. without inversion, the height and temperature of the abrupt transition are given.

TYPE 3.—When there is no such abrupt change of temperature gradient, the base is taken to be where the mean fall of temperature for the kilometer next above is 2° or less, provided that it does not exceed 2° for any subsequent kilometer. If some other position for the base seems to the tabulator to be more suitable, it is noted in the column for "Remarks."