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METEOROLOGICAL OFFICE.

BRITISH METEOROLOGICAL AND MAGNETIC YEAR BOOK, 1915,

PART III., SECTION 2.

GEOPHYSICAL JOURNAL, 1915,

COMPRISING

DAILY VALUES OF THE METEOROLOGICAL AND GEOPHYSICAL ELEMENTS

AT THREE OBSERVATORIES OF THE METEOROLOGICAL OFFICE;

TOGETHER WITH

DAILY VALUES OF SOLAR RADIATION AT SOUTH KENSINGTON;
WIND COMPONENTS AT FIXED HOURS AT FOUR ANEMOGRAPH STATIONS;
TABULATIONS OF OCCASIONAL SOUNDINGS OF THE UPPER AIR;
AND CLOUD OBSERVATIONS.

PRECEDED BY AN INTRODUCTION AND COMPLETED BY AN ANNUAL SUMMARY.

Published by Authority of the Meteorological Committee.

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TABLE OF CONTENTS.

INDEX TO TABLES OF DATA.

METEOROLOGICAL OFFICE.

BRITISH METEOROLOGICAL AND MAGNETIC YEAR-BOOK: GEOPHYSICAL JOURNAL.

INTRODUCTION TO THE TABLES FOR 1915.

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 Solar Radiation, Meteorology, Atmospheric Electricity, Terrestrial Magnetism, and Seismology. Wind components are given for four additional anemograph stations.

The results of ascents at Upper Air Stations at Aberdeen, Benson (which replaced Pyrton Hill in April 1914), Brighton, Ditcham Park, Eskdalemuir, Falmouth, Mungret College (Limerick), and South Farnborough are also included in the Journal. Corresponding upper air results for years prior to 1912 appeared in the Weekly Weather Report.

Greenwich Mean Time is used in all cases, and the hours are counted from midnight and numbered 0 to 23; the second midnight of the day is referred to as 24 h.

All the units employed are based on the C.G.S. system. Data to which the letters x and n are attached represent the maximum and minimum (highest and lowest) values in the column.

The tables are as follows:—

1. **Duration of Bright Sunshine and Solar Radiation.** The total number of hours of bright sunshine as measured by the Campbell-Stokes Recorder is given for South Kensington, Richmond, Eskdalemuir, and Cahirciveen; also the percentage this represents of the "possible," regarded as the number of hours from sunrise to sunset. The Campbell-Stokes instrument only records bright sunshine, no trace being obtained in thick haze or when the sun is very near the horizon. Thus the total it gives is less than the number of hours during which the position of the sun is visible to the naked eye. While the result is somewhat arbitrary, the records from different instruments of the pattern which have been correctly adjusted show a close agreement. The normal values for Richmond (Kew Observatory) and Cahirciveen (Valencia Observatory) are from the 30 years 1881 to 1910; those for South Kensington and Eskdalemuir from the 4 years 1911 to 1914.

Solar radiation results are given for South Kensington, Richmond (Kew Observatory), and Eskdalemuir. At the two latter stations use is made of the Ångström pyrheliometer, which gives the radiation received from the sun by a unit surface which is normal to the line drawn from the instrument to the sun. This is described as the intensity of radiation at Richmond and Eskdalemuir, to distinguish it from its vertical component, the two being connected by the formula

$$\text{vertical component} = \text{intensity} \times \cos Z,$$

where Z is the zenith distance of the sun. At Richmond the observations are made

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within half an hour of noon, and the vertical component is given as well as the intensity of radiation, to facilitate comparison with South Kensington. The hour of observation at Eskdalemuir being more variable is given explicitly, and the value is also given of $(p/p_0)\sec Z$, where p is the barometric pressure at the observatory in millibars at the time of the observation, while p_0 is 1000 millibars. Thus $(p/p_0)\sec Z$ affords a measure of the mass of atmosphere through which the solar radiation has had to travel before reaching the earth. The entries in the columns headed "sky" at Richmond and Eskdalemuir are intended to show the presence or absence of any visible obstruction, such as haze, mist, or cloud, in the direct path of the solar radiation recorded. Observations are taken so far as possible in the absence of cloud; but upper cloud, when there is a great deal of it, cannot always be avoided. Unless the cloud is very thin the fall in the radiation recorded is conspicuous.

At South Kensington the radiation is measured by the Callendar Radiograph, which records the amount received on a horizontal surface from all sources. In bright sunshine the greater part of the radiation consists of the vertical component of the direct solar radiation, but even then an appreciable part comes from the general atmosphere and from clouds. Thus if a Callendar and an Ångström instrument were simultaneously recording side by side, one would naturally expect the radiation recorded by the former to exceed the vertical component of that recorded by the latter. The intensity of radiation, whether at South Kensington, Richmond, or Eskdalemuir, is expressed in milliwatts per square centimetre. For conversion to the unit more ordinarily employed abroad, we may use

1 mw. per sq. cm. = 0·01435 gramme-calorie per sq. cm. per minute.

At South Kensington two measurements are given for the maximum radiation—the highest value shown on the trace of the Callendar instrument at whatever hour it occurs, and also the highest value recorded between 11 h. 30 m. and 12 h. 30 m. It is the latter that is most appropriate for comparison with Richmond. The daily total radiation at South Kensington, representing the integrated value of the radiation throughout the 24 hours, is also given, being expressed in joules (j) per sq. cm. A watt equals 1 joule per second, and therefore a uniform radiation at the rate of 1 milliwatt amounts in 24 hours to 86·4 joules. The daily total at South Kensington is also expressed as a percentage of the "planetary" radiation, *i.e.* the radiation that would be received if the earth's atmosphere were non-existent, assuming the average intensity of direct solar radiation in space at the earth's mean distance from the sun to be 135 milliwatts per sq. cm. This accepts Dr Abbot's result, 1·93 gramme calories per sq. cm.; but it should be remembered that the scales of the Callendar and Ångström instruments undoubtedly differ from that accepted at Washington.

2. **Daily meteorological data** at 9 h. and 21 h. G.M.T. for **Cahirciveen, Co. Kerry** (Valencia Observatory) in the form customary for entering the corresponding data which are published for eight 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 under standard conditions (273α, lat. 45°). The name is used in the Journal, following the example of Professor Bjerknes of Christiania in his work for

the Carnegie Institution of Washington. The expression of atmospheric pressure in millibars shows that any necessary reduction of the readings of the barometer to standard temperature and latitude has already been made.

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 at or below 273*a* (0° C.) are printed in small type.

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

Wind Velocity is expressed in metres per second. The values are estimated for periods of 60 minutes centering at the hours named.

Wind Direction is given in points of the Compass, from N by E (1) through East (8), to True North (32). The directions refer to the exact hour, and are not mean values. No direction is given when the anemometer shows a smaller velocity than 1·6 metres per second.

Precipitation is given in millimetres of equivalent rainfall. Values of rainfall are for the 24 hours beginning at 9 h.; previous to May 1st, 1914, they were for the 24 hours beginning at 10·30 a.m.

The normals for Pressure, Temperature, and Precipitation are from the 40 years 1871 to 1910; those for Humidity from the 25 years 1886 to 1910; and those for Wind from the 30 years 1881 to 1910.

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.
c. clouds (detached).
o. overcast.
g. gloomy, dull appearance.
u. ugly, threatening appearance.
v. visibility, unusually clear atmosphere.
z. ∞ haze.
m. ≡⁰ mist, light fog.
f. ≡ fog.
fe. ≡: wet fog, *i.e.* fog which deposits water copiously on exposed surfaces.

w. dew.
x. hoar frost.
ice crystals.
V rime.
~ glazed frost.
e. water deposited copiously on exposed surfaces, without rain falling.
p. passing showers.
d. drizzling rain.
r. ● rain.
s. ✻ snow.
snow drift.
snow lying (more than half the surrounding country covered with snow).

h. ▲ hail.
△ soft hail.
t. T thunder.
l. lightning.
thunderstorm.
gale (17·2 m/s and over).
q. squally.
solar corona.
solar halo.
lunar corona.
lunar halo.
rainbow.
aurora.
zodiacal light.

The figure ⁰ attached to a symbol indicates very slight, whilst the figure ² indicates strong or heavy: thus ●⁰ = slight rain, ●² = heavy rain. When economy of room is necessary, morning, afternoon, and night are denoted by *a.*, *p.*, *n.* respectively.

The table also contains results for **Magnetic Horizontal Force, Declination,** and **Inclination** from absolute observations, usually at least two a month. The observations are made at approximately fixed hours, and may be regarded as referring: Horizontal Force to 11 h. 30 m., Declination to 10 h. 30 m., and Inclination to 14 h. 30 m. The unit of force employed, 1γ, represents 0·00001 C.G.S. magnetic unit.

3. A corresponding **meteorological table** for **Richmond** (Kew Observatory).

Information is also supplied as to the readings at 9 h. of thermometers exposed in the ground at depths of 0·3 m. (1 foot) and 1·2 m. (4 feet) below the surface. The last two columns give the mean recorded level of underground water for each day, and the highest and lowest levels recorded during the month. The periods from which the respective normal values are derived are: Pressure and Temperature 1871 to 1910, Humidity 1886 to 1910, Wind 1881 to 1910, Rain 1871 to 1910, and Earth Temperature 1904 to 1914.

4. A corresponding **meteorological table** for **Eskdalemuir.** The normals all refer to the 4 years 1911 to 1914.

5. **Electrical** and **magnetic data** for **Richmond** (Kew Observatory). Values of the potential gradient in the open are given for 3 h., 9 h., 15 h., and 21 h., representing means for the sixty minutes centering at the hour. A factor, whose value is given, is applied to the electrograph curve readings to deduce the corresponding potential gradient in the open, *i.e.* the potential gradient as it would be if unaffected by the presence of buildings or apparatus. The gradient is measured in volts per metre. It is positive when the potential in the atmosphere exceeds that of the earth. A negative value is indicated by a short thick "-" before the number. When the fluctuations of potential are too large or rapid to permit of a satisfactory numerical estimate of the hourly mean, "*z*" is inserted with an appropriate sign to indicate whether the gradient was on the whole positive or negative, or too oscillatory to admit of the dominant sign being determined.

The factor for reduction to the open is usually determined month by month, from a comparison of the absolute values obtained from a standardised electrometer over a flat area with the corresponding readings from the electrograms.

The **electric character of the day** is indicated by the figures 0, 1, or 2 according to the character of the trace of the electrograph as regards negative potential gradient: 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 three hours.

The total charges on the ions, positive and negative, per cubic centimetre of air are derived in the usual way from observations made with Ebert's aspiration apparatus between 14 h. and 16 h. The method, it should be noticed, assumes the ions to have a mobility much in excess of that possessed by the large Langevin ions, only a small percentage of which are caught. The charges are expressed in terms of a unit which represents 1×10^{-20} of the electromagnetic unit.

The Air-Earth Current is based on observations made with the apparatus designed by Mr. C. T. R. Wilson, combined with readings from the electrograms. Observations taken with the Wilson apparatus near 15 h. supply a value for the electrical conductivity, and this is combined with the mean value of the potential gradient in the open for the sixty minutes centering at 15 h., as derived from the electrograms. The observations are taken in a uniform way, and should be strictly comparable amongst themselves, but it is believed that multiplication by a factor exceeding unity would be required to give the true air-earth current.

The **magnetic data** are derived from measurements of the magnetograms, whose base values are determined—usually month by month—by absolute observations with the standard magnetometer. The maximum and minimum represent the extreme ordinates of the day, at whatever hour they occur, a temperature correction being

applied in the case of the horizontal force. The range is the *absolute* range, *i.e.* the excess of the maximum over the minimum. The unit of force employed, 1γ, represents 0·00001 of the C.G.S. magnetic unit.

The magnetic character of the day is given on the scale approved by the International Magnetic Commission, "0" representing quiet, "1" moderately disturbed, and "2" highly disturbed conditions.

6. **Electrical** and **magnetic data** for **Eskdalemuir.** These data are of the same general character as those for Richmond (Kew Observatory) in 5, but with modifications. In the electrical character statistics at Eskdalemuir, 0, 1, and 2 have the same significance as at Richmond, but letters *a*, *b*, *c* are attached according to the range of oscillation of the potential gradient: *a* means that for no hour of the day was there a range as large as 1000 volts; *b* that a range of 1000 volts or more was reached in one hour at least, but in fewer than six hours; *c* that a range of 1000 volts or more was reached in at least six hours. These specifications must not be regarded as absolutely rigid criteria. After longer experience more definite specifications may be found possible.

The Eskdalemuir magnetographs record the three rectangular components North, West, and Vertical. The extreme daily values, and their hours of occurrence, are given for each. Owing to the uniformity of the temperature to which the magnetograph is exposed, no temperature correction has been applied.

7. **Seismological Diary.** This consists in the main of results given by the **Galitzine Seismographs** (two horizontal components and the vertical component) at **Eskdalemuir,** but includes data from a **Milne Seismograph** at **Richmond** (Kew Observatory). The Eskdalemuir data include (i.) particulars of the earthquakes recorded, and (ii.) the amplitude and period of the microseisms shown by the North component Galitzine instrument on each day at 0 h., 6 h., 12 h., and 18 h. Disturbances attributed directly to wind or other purely local circumstance are excluded. The notation employed is as follows :—

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 (surface waves).

PR_1, PR_2 . . . are longitudinal waves reflected once, twice . . . at the earth's surface, prior to their arrival at the station. SR_1, SR_2 . . . similarly denote reflected transverse waves. Any times given for reflected waves refer to the beginning of the disturbance at the observatory.

M_1, M_2 . . . are the times of successive maxima of the displacement of the ground, corrected, if necessary, for the lag of the instrument. c_1, c_2 . . . are secondary maxima following the principal phase; only the periods and approximate times are given.

i is the sudden commencement of a phase. *i*P means a sudden commencement of the P phase. *e* means an indistinct commencement of a phase. F is the end.

T, the period in seconds, is the duration of a double oscillation (to-and-fro movement). μ represents a micron (0·001 mm.).

Δ is the distance in kilometres of the epicentre measured along the arc of the great circle passing through the station. α the azimuth of the epicentre (0° to 360°) measured from North through East.

A_N is the amplitude of the North-South component of the true displacement of the ground measured in microns from the position of rest. If a sign is prefixed the component is considered positive when the displacement is towards the North. A_E is the corresponding symbol for the East-West component. In those cases in which signs are prefixed it is considered positive when the displacement is towards the East. A_z is the corresponding symbol for the vertical component. In those cases in which signs are prefixed it is considered positive when the displacement is upwards.

All the microseisms recorded are believed to arise from other than local causes. Microseisms are practically always in evidence, and their period usually remains at least approximately constant during a good many minutes.

The group of waves of greatest amplitude occurring in the 30 minutes centering at the hour in question is selected and the amplitude tabulated is the mean obtained from two or three waves in that group.

The period is derived from a measurement made on the same group.

The data given for Richmond (Kew Observatory) include the times of commencement of the disturbance shown on the trace, and the time of the largest displacement on the trace. Additional information is given under the heading "Remarks." The boom of the instrument is oriented North-South, and moves when the ground is tilted East to West. It has, however, to be remembered that in reality the boom responds to ground movements of various kinds, and that the amplitude of the movement shown on the trace depends to a considerable extent on whether the oscillatory movement in the ground has a period near to or remote from the natural period of the boom. At the same time, a really large movement on the trace invariably means a large earthquake. Amplitudes, all measured on the trace in mm., are not recorded unless at least 1·0 mm. Those less than 0·1 mm. are characterised as very small, those between 0·1 and 1·0 mm. as small. During the year the period of the boom was approximately 18 seconds, and a movement of 1 mm. on the trace was produced by a tilting of from 0″·43 to 0″·46.

8. A table of **Wind** data for four principal anemograph stations of the Meteorological Office, representing different parts of the country. As in 2, the wind velocities are expressed in metres per second, and represent mean values for the sixty minutes centering at the specified hours 3 h., 9 h., 15 h., and 21 h. The data at these four hours are not the resultant wind velocities, but their rectangular components in the North-South and East-West directions. North and South winds are treated separately, and so are East and West. These hourly values are all derived from Robinson cup anemometers recording direction as well as velocity. These anemometers at Holyhead, Deerness, and Great Yarmouth are of the same large size as at Kew Observatory, the arms being 0·61 m., the diameter of the cups 0·229 m., and the factor 2·2. The Scilly instrument is smaller, the arms being 0·305 m., the diameter of the cups 0·127 m., and the factor 2·8. At Holyhead, Scilly, and Great Yarmouth (or rather Gorleston, a neighbouring station) there are also Dines pressure-tube anemometers, and the entries given under the heading "Maximum in a Gust" represent the highest velocities recorded by these instruments in the course of the day. The time of occurrence of the highest gust is also given. At Deerness, where there is only a Robinson cup anemometer, particulars are given as to the largest of the twenty-four mean hourly velocities, and the hour or hours it occurred at.

9, 10, and 11. Tables giving the results of **exploration of the free atmosphere** over the British Isles by means respectively of kites, pilot balloons, and registering balloons. The times refer to the beginning of the sounding; they are given to the nearest five minutes. Wind directions are given in degrees from True North (through East).

The nomenclature used for clouds is in accordance with the specifications given in "The International Cloud Atlas." Information as to the heights of the several forms is given in the following table:—

Form.	Abbreviation.	Height of base (metres).
Cirrus	Ci.	Mean 9000
Cirro-stratus	Ci. st.	,,
Cirro-cumulus	Ci.-cu.	3000 to 7000
Alto-stratus	A.-st.	,,
Alto-cumulus	A.-cu.	,,
Strato-cumulus	St.-cu.	Below 2000
Nimbus	Nb.	,,
Cumulus	Cu.	Mean 1400
Cumulo-nimbus	Cu.-nb.	,,
Stratus	St.	Below 1000

The proportion of the sky covered by cloud, on the scale 0 to 10, is sometimes given by a figure: *e.g.* Cu. 2 means that cumulus covered two-tenths of the sky.

For brevity the terms "High" and "Low" are sometimes applied to regions of high and low pressure respectively, and the term "Col" to a narrow region of low pressure separating two high-pressure areas. Explanations of the other technical terms used will be found in most modern books on Meteorology.

In the case of soundings with pilot balloons the wind velocity is derived from that of the balloon itself. This may be observed with two theodolites at the ends of a known base, or with one theodolite. As a rule only one theodolite is employed, and the velocities are then deduced in the way explained by Captain C. J. P. Cave (*Structure of the Atmosphere in Clear Weather*, Chapter II.).

The heights to which the observations refer are calculated from the rate of ascent of the balloon. At Aberdeen up to the end of August these vertical velocities were based on mean results of previous observations, under similar conditions, when velocities were actually found with the aid of two theodolites. With this exception the vertical velocities were calculated from the formula

$$V = 81\ L^{\frac{1}{2}}/(W+L)^{\frac{1}{2}}.$$

where

L is the free lift of the balloon, *i.e.* the weight in grammes which the balloon can carry without rising,
W is the weight of the balloon in grammes,
and V is the vertical velocity in metres per minute.

This formula is based on experiments made by Mr J. S. Dines (*Roy. Met. Soc. Quarterly Journal*, vol. xxxix. p. 101).

As regards calculated wind velocities, the fundamental relation between v, the velocity of the wind at any level—assumed to be tangential to the isobar—and γ, the horizontal pressure gradient there, is

$$\gamma = 2\omega v\rho \sin\lambda \pm (v^2/E)\,\rho \cot r \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

where

ω = the earth's angular velocity of rotation,
ρ = density of the air,
λ = latitude of place,
E = radius of the earth,
r = angular radius of the small circle representing the path of the air.

The + or − sign is to be taken in the second term on the right-hand side of (1 according as the motion is cyclonic or anticyclonic. The value of v derived from the complete equation (1) is called the *gradient wind* velocity. When the air is moving along a great circle, cot r is zero, and (1) reduces to

$$\gamma = 2\omega v\rho \sin\lambda \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

As a rule, in temperate and high latitudes the second term in (1) is small compared with the first, and the ordinary tables used at the Office for calculating v are based on (2). The velocity thus determined is called the *geostrophic* velocity, in contra-distinction to the velocity calculated from

$$\gamma = \pm (v^2/E)\,\rho \cot r,$$

which is called the *cyclostrophic* velocity. In practice the gradient wind is deduced by applying to the geostrophic velocity a correction which allows for the curvature, if any, of the isobar, it being assumed that the curvature of the path is the same as that of the isobar.

The pressure gradient is derived from the Working Charts of the Office which

refer to the hours 7, 13, and 18 respectively. If the hour of an ascent differs decidedly from a chart hour, results are usually calculated from each of the two charts which come nearest in time.

The gradient wind velocity is normally in excess of that recorded by an anemometer near the ground—owing, it is believed, mainly to surface friction,—but is usually attained at a height of about 500 metres.

In the deduction of wind components, etc., the calculations are all carried out to 0·1 *m/s* (metre per second), but this degree of accuracy does not appear in the printed results except in the case of observed wind velocities under 5 *m/s*. Observed wind velocities of 5 *m/s* and over are given only to the nearest 0·5 *m/s*. Geostrophic or gradient wind velocities are given only to the nearest 1 *m/s*. Directions are given to the nearest 5° in the case of observed wind velocities, but only to the nearest 10° in the case of geostrophic or gradient wind velocities.

In the case of soundings with registering balloons three different types of conditions are recognised in the way in which the base of the stratosphere is encountered :—

Type 1. The stratosphere commences with an inversion of the temperature gradient.

Type 2. There is no inversion, but an abrupt transition to a temperature gradient of less than 2° per km.

Type 3. There is neither inversion nor abrupt change, but a gradual fall to a temperature gradient of less than 2° per km.

In type 1 the height and temperature of the first point of zero temperature gradient are given; in type 2 the height and temperature where the abrupt transition occurs.

In type 3 the base of the stratosphere is taken to be at the height where the fall of temperature through the kilometre next above is 2° or less, provided no higher kilometre shows a gradient in excess of 2°. If some other position seems more appropriate it is noted in the column for remarks.

12. A table giving the results of observations of **Cloud Motion** at **Aberdeen** taken with Fineman's nephoscope. The observations give what is termed for brevity the "velocity-height ratio," *i.e.* the true cloud velocity divided by the height of the cloud. In accordance with a resolution of the International Commission for Scientific Aeronautics, the values given for the velocity, V, of the clouds are obtained by taking the height of the cloud as 1000 metres, irrespective of its form. The formula connecting V with the velocity-height ratio is thus

$$V = 1000 \times (\text{velocity-height ratio}).$$

If the true cloud height is $1000n$ metres, the true cloud velocity is nV. From the statistics already given for cloud heights, it follows that the true cloud velocity is usually in excess, and often much in excess, of V.

An **Annual Supplement** gives a summary of the Observations of the Upper Air, and of some electrical and magnetic data from Richmond (Kew Observatory) and Eskdalemuir. A discussion of the constants of the seismological instruments at Eskdalemuir is also included; as well as a diagram showing the variation in the level of the underground water at Richmond.

NAPIER SHAW (*Director*).

METEOROLOGICAL OFFICE, LONDON, S.W.
October 16th, 1916.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

DAILY VALUES.—*Solar Radiation, Meteorology, Atmospheric Electricity, Terrestrial Magnetism, and Seismology.*

Fifth Year.—No. 1. JANUARY 1915]. Units based on the C.G.S. System. [*Price* 1*s.*

1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	—	—	97	14	12	10 45	6	—	—	—	—	—	—	—	—	—	—	—	0·4	5
2	*x* 4·8	61	258	38	16	12 10	16	4·9	62	42	11	Ci.	—	—	—	—	—	—	0·4	5
3	—	—	77	11	7	14 5	2	—	—	—	—	—	0·8	11	—	—	—	—	2·3	29
4	—	—	86	12	8	13 35	4	—	—	—	—	—	—	—	—	—	—	—	1·8	23
5	—	—	145	20	14	11 45	13	—	—	—	—	—	—	—	—	—	—	—	1·8	23
6	0·4	5	215	30	14	10 25	14	1·0	13	—	—	—	0·1	1	—	—	—	—	—	—
7	—	—	39	5	3	14 55	1	—	—	—	—	—	—	—	—	—	—	—	1·9	24
8	4·4	55	289	40	*x* 25	12 40	*x* 25	4·2	53	—	—	—	—	—	—	—	—	—	0·2	3
9	2·6	32	215	30	21	11 0	14	2·8	35	—	—	—	1·7	23	—	—	—	—	3·4	43
10	0·1	1	?	?	?	?	?	0·8	10	—	—	—	—	—	—	—	—	—	—	—
11	3·6	44	? 260	35	20	14 45	18	4·3	53	48	14	Ci.	1·4	19	—	—	—	—	3·3	41
12	0·2	2	170	23	19	12 20	19	0·8	10	—	—	—	0·1	1	—	—	—	—	—	—
13	0·1	1	118	15	18	13 30	10	0·2	2	—	—	—	—	—	—	—	—	—	—	—
14	—	—	80	10	6	12 5	6	—	—	—	—	—	—	—	—	—	—	—	0·1	1
15	0·2	2	210	27	24	12 20	24	—	—	—	—	—	1·5	19	—	—	—	—	—	—
16	1·8	22	200	25	20	14 10	14	2·1	25	—	—	—	4·7	61	12 27	Clear	3·92	59	3·7	45
17	4·6	55	292	36	18	12 30	18	*x* 5·9	70	52	16	Clear	*x* 6·5	84	—	—	—	—	4·4	53
18	3·8	45	303	37	*x* 25	11 35	20	5·6	67	48	15	Clear	1·0	13	—	—	—	—	1·3	15
19	—	—	?	?	?	?	9	—	—	—	—	—	—	—	—	—	—	—	2·4	29
20	—	—	90	11	7	10 55	7	—	—	—	—	—	—	—	—	—	—	—	—	—
21	0·2	2	126	15	20	13 50	8	0·1	1	—	—	—	3·1	39	—	—	—	—	0·5	6
22	—	—	*n* 20	2	*n* 1	14 40	1	—	—	—	—	—	5·9	74	11 37	Haze	3·87	50	0·1	1
23	—	—	69	8	9	12 20	9	—	—	—	—	—	5·8	73	11 28	Clear	3·88	66	*x* 5·3	62
24	—	—	69	8	7	13 30	4	—	—	—	—	—	2·8	35	—	—	—	—	0·6	7
25	0·1	1	203	22	18	14 15	13	—	—	—	—	—	—	—	—	—	—	—	0·6	7
26	—	—	109	12	12	12 40	11	—	—	—	—	—	1·4	17	—	—	—	—	—	—
27	—	—	57	6	4	12 5	4	—	—	—	—	—	0·3	4	—	—	—	—	2·0	23
28	—	—	156	16	13	14 50	7	—	—	—	—	—	—	—	—	—	—	—	0·2	2
29	2·8	31	*x* 312	32	22	12 25	22	3·4	38	54	19	Clear	*x* 6·5	77	—	—	—	—	—	—
30	—	—	154	15	10	13 15	8	—	—	—	—	—	—	—	—	—	—	—	0·2	2
31	0·7	8	298	29	23	14 40	18	1·8	20	—	—	—	—	—	—	—	—	—	5·1	57
Means	0·97	12	163	20	14	—	12	1·23	15	—	—	—	1·42	19	—	—	—	—	1·35	17
Normal	0·55	7	—	—	—	—	—	1·39	17	—	—	—	0·84	11	—	—	—	—	1·58	20
	← 4 years →							← 30 years →					← 4 years →						← 30 years →	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long 10° 15′ W.

Heights above M. S. L.:—H = 12·6 m. H_b = 13·7 m. Above Ground:—h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.		γ	° ′	° ′
1	950·5	961·0	81·2	79·4	81	78	10·5	8·1	95	85	19	12	21	15	9	10	6·1	▲● showers. 🌂 11 h.–13 h.	…	…	…
2	970·6	969·2	78·3	77·5	81	76	7·4	7·4	83	89	24	9	18	7	10▲	10≡⁰	6·4	q., with ▲● showers.	…	…	…
3	972·6	980·8	76·0	75·4	80	75	7·1	6·8	94	95	12	2	—	1	8≡⁰	5≡⁰	2·6	▲ showers.	…	…	…
4	992·1	1000·2	81·2	81·1	82	79	8·8	9·5	82	88	24	9	20	7	8	10	13·3	▲ showers.	…	…	…
5	995·9	1002·7	81·4	79·9	83	80	8·5	8·1	78	84	20	11	19	10	4	10	1·3	c.	…	…	…
6	1005·3	1001·5	81·1	80·5	82	79	9·1	9·8	86	96	19	6	18	4	10≡⁰	10≡⁰	11·8	● showers.	…	…	…
7	994·2	994·2	80·0	80·4	81	79	9·5	8·5	94	83	21	7	21	14	10≡⁰	6	5·1	● showers.	17890	20 10·9	68 8·0
8	992·9	995·6	80·4	81·0	81	78	8·1	8·8	80	83	20	14	22	11	10≡⁰	10	1·9	● showers. ▲ *p*.	…	…	…
9	1003·8	1009·8	79·2	79·1	81	79	8·5	8·5	89	90	31	4	—	1	7≡⁰	10	10·6	Fair. ●⁰ showers.	…	…	…
10	1001·8	997·9	82·3	80·2	83	79	11·5	8·5	99	85	20	10	23	13	*10*≡⁰	10≡⁰	5·4	●≡⁰	…	…	…
11	999·3	1008·2	79·4	80·2	81	78	7·4	7·8	78	78	24	13	24	12	8	3	1·4	▲ showers.	…	…	…
12	1015·3	1014·9	79·3	83·3	*x* 84	79	8·5	12·5	88	100	19	2	20	6	10	10≡⁰	4·3	d. and ≡⁰.	…	…	…
13	1018·1	1017·4	82·8	83·3	*x* 83	83	11·9	11·9	100	94	17	3	19	8	10≡⁰	10≡⁰	1·2	d. and ≡⁰.	…	…	…
14	1011·1	1011·0	83·1	81·7	*x* 84	82	11·9	9·1	97	82	16	8	20	11	10≡⁰●	10	3·0	●≡⁰	…	…	…
15	1009·3	999·2	82·4	79·9	83	80	9·8	8·1	83	82	20	11	24	16	10	3	5·7	d. and ≡⁰ to q. 🌂 19 h.	…	…	…
16	1013·9	1022·9	78·2	79·4	82	78	8·5	6·4	95	68	27	11	30	7	9	6	3·6	q., with ●▲ showers.	…	…	…
17	1028·8	1035·6	77·1	78·4	79	77	7·1	6·4	89	71	32	7	32	6	8	4	1·0	● showers. q.	…	…	…
18	1038·2	1038·5	78·3	79·7	80	78	7·1	8·1	81	80	31	3	25	3	8	10	0·6	c.	…	…	…
19	1036·9	1032·4	80·1	81·0	82	80	9·5	10·2	95	95	23	6	20	5	9	10≡⁰●⁰	5·8	c. to ● showers.	…	…	…
20	1020·0	1007·6	82·4	81·6	83	81	11·5	10·5	98	95	19	10	20	11	10≡⁰●	10≡⁰●	6·7	≡⁰●	…	…	…
21	998·6	999·2	80·5	79·1	82	76	7·1	6·1	70	*n* 63	26	12	29	16	9	7	4·3	q., with ▲ showers.	17893	20 8·4	68 8·1
22	1003·6	997·1	78·6	81·3	81	77	6·1	9·8	69	92	30	11	26	11	9	10≡⁰●	2·0	▲ early. c. to showery.	…	…	…
23	1004·3	1010·9	78·2	77·3	81	74	6·4	6·4	74	78	31	6	—	1	8	3	—	🌂 2 h. Stormy to fair. Ⓤ	…	…	…
24	1009·7	1001·7	*72·4*	78·7	79	*n* 72	5·1	8·8	86	96	7	2	15	4	6⌣	10≡⁰●	13·1	⌣ *a*. Fair.	…	…	…
25	1003·7	1000·4	78·0	76·1	80	75	8·1	7·4	92	97	2	2	—	1	10	4	0·6	● to c.	…	…	…
26	989·4	986·6	78·8	80·6	81	77	7·8	8·5	83	83	8	7	13	11	10	8	*x* 18·8	● to c.	…	…	…
27	992·5	997·2	79·4	78·3	81	78	8·5	7·1	86	79	9	11	7	5	10●	10	0·1	c.	…	…	…
28	999·8	1002·9	76·9	77·4	*n* 78	77	6·1	6·1	75	74	7	7	7	7	6 ∞	10 ∞	—	c. ∞	…	…	…
29	1006·0	1010·2	77·6	77·8	*n* 78	77	6·1	6·4	71	77	8	7	10	3	10 ∞	10 ∞	—	o. ∞	…	…	…
30	1011·7	1005·7	77·3	79·3	80	77	6·8	7·4	80	77	12	2	21	9	10 ∞	7	2·8	o. and ∞ to ●.	…	…	…
31	1006·7	1009·5	79·2	79·9	81	78	7·4	8·8	79	8	24	10	18	2	5	10	1·5	Fair to showery.	…	…	…
Means	1003·1	1003·9	79·4	79·6	81·2	77·8	8·3	8·3	86	85		7·6		7·7	8·7	8·3	141·0	Monthly **Totals** or **Means**.	17891	20 9·7	68 8·1
Normal	1012·9	1013·1	79·8	79·9	82·4	77·6	8·5	8·7	87	87		6·5		6·4	—	—	147·3	**Normals**.			
	← 40 years →						← 25 years →				← 30 years →						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—10 16. N. & Co., Ltd. **Gp. XV.**

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—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 = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Level of Water in the Ground.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
			200+	200+	200+	200+																
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	°	°	°	cm.	cm.
1	986·2	971·5	77·3	79·4	81	73	6·8	8·8	83	91	13	7	19	6	10	10●	12·8	*n* 67	76·8	79·9	—	—
2	976·9	980·7	78·2	76·3	81	76	7·8	7·1	89	90	20	4	17	3	6	8≡⁰	13·4	70	77·0	80·0	—	—
3	975·7	973·1	78·6	75·8	80	75	8·1	6·8	91	91	12	4	21	3	10	10	9·9	71	76·9	79·9	—	—
4	983·4	994·2	75·1	77·4	79	74	6·8	7·1	94	86	25	4	25	3	10●≡⁰	10	0·7	73	76·7	79·7	—	—
5	1002·7	1004·5	74·9	79·3	81	74	6·8	7·4	96	79	—	0	22	4	10≡	0	0·5	69	76·7	79·6	—	—
6	1011·5	1008·4	78·2	80·0	82	78	8·1	9·1	91	92	21	4	18	2	4∞	10●	8·6	71	76·8	79·7	—	—
7	997·5	992·2	79·3	79·5	84	78	9·5	7·8	100	81	—	0	22	6	*10*●≡	9	7·6	74	77·4	79·6	394	—
8	998·1	993·8	78·9	79·0	81	78	7·8	7·4	85	78	20	4	20	6	7	9	3·0	75	77·9	79·6	401	—
9	992·3	1001·4	77·6	76·4	80	76	7·8	6·4	93	84	23	2	27	4	10●⁰	0	0·1	72	77·5	79·6	409	—
10	1009·0	994·3	73·8	81·0	81	73	6·1	9·8	95	92	—	1	20	8	1≡⁰⌙	10●	4·6	*n* 67	76·7	79·7	399	—
11	995·2	998·4	78·4	77·2	82	77	7·1	6·4	80	76	22	5	23	5	2	0	0·3	70	77·0	79·7	—	—
12	1009·0	1020·0	78·9	77·4	80	77	6·8	7·4	72	91	26	6	25	2	7●⁰	0≡⁰	1·5	78	76·7	79·6	—	—
13	1015·7	1018·0	80·4	82·7	*x*85	78	10·2	10·5	98	89	19	5	23	5	10≡⁰	10	—	71	76·9	79·6	389	—
14	1018·8	1013·3	82·6	82·9	84	*x*82	9·1	10·8	77	90	23	4	20	8	9	10●⁰	—	77	78·0	79·5	387	—
15	1009·4	1000·4	81·2	81·8	84	81	8·5	9·8	80	86	21	6	19	8	10	10	2·7	79	78·9	79·5	388	—
16	996·0	1009·1	79·8	76·8	82	76	7·1	6·1	72	78	24	7	26	5	5	0	—	76	79·0	79·6	383	—
17	1016·2	1022·1	75·1	75·5	78	75	5·4	5·1	76	69	27	4	29	6	0∞⌙	0	—	69	78·0	79·9	376	—
18	1029·2	1032·1	73·8	74·8	77	74	4·4	5·8	67	80	29	3	—	1	1	0	—	70	76·9	79·9	370	—
19	1032·0	1030·3	75·7	78·5	79	73	6·8	8·1	91	90	29	2	25	2	10≡⁰	10≡⁰	—	68	76·0	79·8	368	—
20	1024·0	1008·7	78·9	81·5	82	78	8·1	9·8	89	91	21	3	20	5	10≡⁰	10	8·6	74	76·5	79·7	368	—
21	988·0	982·8	79·5	74·6	82	74	9·1	5·4	94	76	20	3	25	3	10●⁰≡⁰	1	4·2	77	77·7	79·6	371	—
22	984·4	990·4	73·9	74·5	*n* 76	73	6·1	6·4	94	96	—	1	1	2	10✻≡⁰	10≡⁰	*x*26·7	*n* 67	77·0	79·6	—	—
23	995·0	1001·0	72·0	78·1	78	*n* 71	5·4	7·8	94	88	—	1	32	4	*10*≡	10≡⁰	—	69	76·0	79·5	—	—
24	1005·6	1005·8	78·1	77·9	79	77	8·1	7·4	92	88	32	3	3	3	10≡⁰●⁰	10≡⁰	—	72	76·1	79·4	388	—
25	1005·2	1005·1	76·2	77·3	78	76	7·1	6·4	91	76	3	4	3	2	10≡⁰	10≡⁰	—	74	76·6	79·4	385	—
26	1003·2	1002·0	73·4	76·3	78	73	6·1	6·8	97	87	—	0	7	3	10≡⌙	10≡⁰	0·3	70	76·5	79·3	380	—
27	1000·7	1001·9	75·7	75·1	77	75	5·8	4·7	76	66	8	6	4	5	10≡⁰	10≡⁰	—	71	76·1	79·2	374	—
28	1003·7	1005·5	73·9	74·9	*n* 76	74	5·4	4·1	81	*n* 59	5	4	5	3	10≡⁰	10≡⁰	—	73	75·8	79·1	368	—
29	1006·7	1009·5	74·1	74·6	77	74	4·1	6·4	62	91	—	1	—	0	9≡⁰	0≡⁰	—	71	75·4	79·0	363	—
30	1014·3	1011·6	74·4	75·6	77	74	6·1	5·1	91	71	—	1	24	2	10≡	10≡⁰	0·8	68	75·4	79·0	360	—
31	1001·2	1003·0	75·9	77·0	79	76	6·8	6·8	89	84	22	3	21	4	9≡⁰	7	—	72	75·6	79·0	357	—
Means	1002·8	1002·7	76·9	77·7	79·9	75·6	7·1	7·3	87	83		3·3		4·0	8·1	6·9	106·3	71·8	76·9	79·6	—	—
Normal	1016·6	1016·5	76·3	76·8	79·2	74·4	6·8	6·9	86	85		3·5		3·6	—	—	45·0 (40 years)	—	76·8	79·7	—	—
	40 years						25 years				30 years								11 years			

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

Heights above Mean Sea Level:—Station, H = 242·0 m. Barometer, H_b = 237·3 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

1	952·5	938·2	74·8	75·7	76	72	5·8	6·8	82	92	11	10	13	9	10	10●⁰	3·7		REMARKS.
2	937·0	945·7	76·5	74·9	77	74	7·4	6·4	94	90	20	8	15	7	10	10	4·4		o. from 7 h. ✻● from 12 h.
3	948·7	952·7	73·7	73·9	76	73	6·1	6·1	96	92	14	4	3	5	10	10✻●	—		Fine early. ●⁰ 7 h. Dull. ▲ 20 h.
4	958·2	968·5	76·0	76·4	77	75	7·1	7·4	96	94	31	4	5	2	10●	10	0·3		✻7 h. ⊕ 13 h. ✻● 21 h.
5	969·0	969·7	75·3	76·1	77	74	6·4	7·1	91	92	15	4	19	2	10	10	10·5		⊡ 3 h. o. all day. ●⁰ at intervals.
																			o. most of day. ● midday.
6	974·7	973·0	75·9	76·4	77	74	6·8	7·1	89	90	20	8	20	4	10	4	2·7		Mild and o.; q.
7	965·8	959·2	76·7	75·2	77	74	7·4	6·4	94	90	19	5	23	4	10●	5	3·3		● at intervals 3 h.–16 h.; o.
8	958·0	956·2	76·4	76·6	77	74	7·1	6·8	90	87	21	12	24	8	8	10●	3·8		● from noon.
9	963·5	973·8	74·9	71·7	76	72	6·1	5·1	89	90	30	9	26	5	10●✻	2	—		✻● *a.* q. at intervals. Clear *p.*
10	974·5	954·1	67·4	74·2	77	*n* 66	3·7	6·8	94	100	—	0	—	0	9⌙	10●	15·6		✻ from 9 h. ⊠ till evening.
11	956·6	960·7	75·5	75·8	77	75	6·4	7·1	88	96	24	9	26	19	9●	10●	5·8		q. and ● showers. ⫽ 21 h.
12	981·5	986·1	72·0	75·3	77	71	4·7	7·1	80	97	—	0	18	3	4	10	9·9		Fine and mild. ● from 23 h.
13	979·8	978·7	79·7	82·8	*x* 84	75	9·8	9·8	100	83	18	6	23	16	10≡⁰●⁰	10	5·0		●² till 7 h. q. and ● showers.
14	980·6	972·2	81·0	79·3	83	*x* 78	10·2	7·8	96	82	19	12	19	8	10≡⁰●⁰	10	*x* 16·0		o., with ●⁰≡⁰.
15	967·7	958·8	75·7	76·5	78	74	5·8	7·1	78	91	23	10	21	10	9	8	5·0		▲ and ✻● (sleet) showers.
16	965·7	981·1	76·8	74·1	78	73	6·1	4·7	76	74	30	13	28	11	7	0	—		Fine and sunny from 11 h.
17	988·8	998·4	73·5	73·6	75	72	4·4	4·7	68	76	30	12	31	10	1⌙	3	—		⌙ *a.* Clear and sunny.
18	1001·8	1001·9	73·9	76·9	78	72	4·1	6·8	*n* 65	86	28	6	23	4	9	10	0·4		Fine early to c.
19	999·8	996·5	78·6	78·2	79	77	8·5	8·5	93	95	19	2	20	8	10	10●≡⁰	3·8		Frequent ● throughout day.
20	981·3	972·5	79·0	76·6	81	76	8·8	6·8	96	87	20	19	23	5	10●≡⁰	? 7	10·8		⫽ 9 h.–10 h. ●² *a.* and *p.*
21	955·1	954·8	75·4	71·8	77	72	6·4	3·7	88	68	26	8	30	6	10●⁰	0	0·1		● early. Clear and cold *n.*
22	963·1	964·7	75·6	70·9	78	70	5·8	4·7	77	90	31	7	—	1	4⌙	1	—		⌙ *a.* Very fine all day.
23	971·8	979·2	73·7	74·4	77	72	5·1	5·4	81	78	32	5	32	5	7	6	—		Very fine all day.
24	981·7	978·8	69·2	70·9	77	69	4·1	5·1	90	96	—	0	—	0	8	6≡⁰	—		Calm and pleasant.
25	978·0	977·2	71·9	73·2	*n* 74	70	5·4	6·1	95	96	—	0	—	0	9≡⁰⌙	9	—		⌙ *a.* Dull and o. ∞
26	975·3	976·1	67·5	72·1	75	67	4·1	4·7	100	80	—	0	—	0	2≡⁰⌙	10≡⁰	—		Fine *a.* and *p.*
27	977·1	977·4	73·4	73·5	75	73	5·8	6·1	92	98	4	4	5	4	7∞	10	—		o., but calm and pleasant.
28	978·2	978·5	72·3	73·0	*n* 74	70	5·8	4·7	96	77	—	0	—	0	10	10	—		✻⁰ *a.* Dull and o.
29	980·0	984·2	73·1	71·8	77	70	5·4	4·1	86	72	32	3	—	1	4⌙	9	—		Fair all day.
30	984·3	975·7	69·7	73·6	*n* 74	68	3·7	5·4	81	85	—	0	16	4	9	10	2·0		Fine to dull. ✻ midday and *n.*
31	967·9	974·7	73·2	70·2	*n* 74	67	6·1	4·4	96	87	18	4	—	0	10	1	4·2		✻ 3 h. and 11 h.–15 h. ⊠ 12 mm.
Means	971·5	971·6	74·5	74·7	77·1	72·2	6·1	6·2	88	88		5·9		5·2	8·3	7·5	107·3	—	Monthly **Totals** or **Means.**			
Normal 1911-14	986·7	986·1	74·7	75·2	77·3	72·7	6·4	6·5	89	88		5·2		6·0	—	—	111·9	—	**Normals.**			

No record.

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism:—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 26 days; they are computed from the data for those days on which values at each of the four hours, 3^h, 9^h, 15^h, 21^h, are given in the table. A similar note applies to the values in Table 6.

x denotes the maximum and *n* the minimum value in the column. *z* Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·74.				Charge per cc. ×10²⁰.		Air-Earth Current. ×10¹⁶.	Electric Character of Day.	Magnetic Character of Day.	Horizontal Force. Maximum. 18000 γ +.		Horizontal Force. Minimum. 18000 γ +.		Horizontal Force. Range.	West Declination. Maximum. 15° +.		West Declination. Minimum. 15° +.		West Declination. Range.
		3 h.	9 h.	15 h.	21 h.	+.	−.	*c.*			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.	Amp/cm².												
1	Dull and o. all day.	465	390	*z*−	*z*−	—	—	—	2	1	488	8 42	*n* 393	14 8	95	*x* 31·0	13 34	18·9	3 43	12·1
2	● showers. ⋓ *n.*	565	595	605	755	—	—	—	1	0	480	15 5	466	1 8	14	24·5	12 24	20·4	21 39	4·1
3	Dull and o. ● at times. [*n.*	585	230	0	100	—	—	—	2	0	485	13 16	466	10 33	19	24·8	12 13	19·9	22 54	4·9
4	● *a.* ✳ 7 h. 30 m. Fair *p.* and	30	−165	305	565	—	—	—	2	0	490	11 32	469	14 14	21	24·6	13 1	19·6	7 1	5·0
5	≡⌣ *a.* Dull *a.* and *p.* Fine *n.*	300	615	335	435	—	—	—	1	2	504	5 28	410	14 23	94	27·2	14 8	13·8	14 40	13·4
6	Fine *a.* ⊕ 11 h. < ● *n.*	160	465	540	−140	—	—	—	1	1	487	0 28	457	10 12	30	27·8	0 30	17·8	1 31	10·0
7	≡ till 13 h. ● *p.*	325	500	315	260	—	—	—	2	1	493	6 22	452	13 36	41	27·7	13 0	17·9	21 46	9·8
8	Fair or fine during day.	45	300	300	485	—	—	—	1	1	490	6 16	448	13 6	42	27·6	13 20	15·7	19 24	11·9
9	● *a.* ▲ 13 h. Fine *p.* and *n.*	205	290	*z*+	345	—	—	—	1	0	483	6 53	447	16 5	36	25·8	11 32	20·5	16 7	5·3
10	⌣≡⁰ *a.* ● *p.* and *n.*	305	595	−35	45	—	—	—	1	0	478	20 42	450	11 35	28	26·0	12 47	21·6	2 13	4·4
11	Fine *a.* and *n.* ●▲ 15 h.	120	335	*z*+	300	—	—	—	1	0	478	18 3	465	12 52	*n* 13	25·8	12 30	21·3	7 55	4·5
12	Fair *a.* Dull *p.* Fine *n.*	185	260	365	660	400	540	0·15	1?	1	489	19 29	429	22 21	60	26·7	13 28	16·6	22 10	10·1
13	Dull and o., *a.* and *p.* Fair *n.*	35	205	250	195	360	260	0·20	1	1	486	20 1	437	21 44	49	25·3	13 25	16·1	0 23	9·2
14	Dull all day.	75	205	250	100	320	380	0·35	0	1	481	13 4	449	0 24	32	27·1	16 4	16·8	0 40	10·3
15	Dull *a.* Fair *p.* ● *n.*	85	150	315	185	510	440	0·85	1	0	480	13 55	454	3 18	26	27·0	12 28	20·4	5 0	6·6
16	Fair *a* and *p.* Fine *n.*	45	—	240	280	—	—	—	2	0	479	6 54	465	2 3	14	25·7	11 53	21·0	23 10	4·7
17	⌣ *a.* Fine all day.	225	365	195	260	—	—	—	0	0	484	13 25	455	19 26	29	25·7	12 19	18·0	19 35	7·7
18	Fine all day.	195	355	445	630	340	300	0·75	0	0	485	14 49	468	11 49	17	26·0	12 45	21·0	22 46	5·0
19	● 7 h. 30 m. Dull and o.	380	565	465	445	400	460	0·20	0	0	483	6 58	464	10 31	19	25·3	13 9	21·7	22 33	3·6
20	Dull all day.	370	520	240	165	—	—	—	1	0	489	14 41	459	20 20	30	26·4	12 7	22·4	22 57	4·0
21	Dull *a.* and *p.* q. 14 h. Fine *n.*	−35	435	185	485	—	—	—	2	0	484	19 10	471	10 50	*n* 13	25·7	12 55	22·2	7 18	*n* 3·5
22	✳● *a.* ⊠ all day.	215	*z*−	*z*+	435	—	—	—	2	0	496	7 55	467	23 28	29	27·9	12 11	20·7	23 8	7·2
23	≡ *a.* ⊠ all day. Dull and o.	900	895	650	300	—	—	—	0	0	485	19 20	468	0 19	17	25·6	12 50	21·2	20 38	4·4
24	Dull. ≡⁰ all day.	120	195	445	485	—	—	—	0	1	482	19 10	456	15 52	26	28·6	16 1	21·6	21 18	7·0
25	Dull. ≡⁰	560	560	725	1135	530	420	0·95	0	2	*x* 535	20 53	401	16 56	*x* 134	28·4	9 58	*n* 10·7	20 43	*x* 17·7
26	⌣≡ *a.* ≡ *p.* ≡⁰ *n.*	615	485	660	745	670	500	0·45	0	1	482	19 20	440	20 40	42	26·2	16 33	13·1	19 5	13·1
27	Dull. ✳⁰ 14 h.	110	695	690	975	550	500	1·80	1	1	486	2 8	448	11 53	38	28·2	11 52	19·0	21 58	9·2
28	Dull. *a.* Fair *p.* and *n.*	370	910	965	930	510	400	1·65	0	1	476	12 33	452	2 23	24	26·5	14 4	17·7	22 50	8·8
29	Dull *a.* Fine *p.* and *n.*	695	605	435	530	300	500	0·60	0	0	490	21 20	449	15 42	41	25·5	16 26	20·1	21 18	5·4
30	⌣≡ *a.* Dull and o. all day.	430	615	820	670	—	—	—	0	1	485	21 46	452	2 46	33	25·4	12 10	17·8	2 8	7·6
31	● 5 h. 25 m.–6 h. Fair to dull.	150	540	300	500	—	—	—	1	0	478	7 35	462	10 23	16	26·8	12 52	21·7	23 20	5·1
M.		299*	450*	414*	458*	—	—	—	—	—	487	—	451	—	36	26·5	—	18·9	—	7·6

6. Atmospheric Electricity and Terrestrial Magnetism:—Eskdalemuir.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		Air-Earth Current ×10¹⁶.	Electric Character of Day.	Magnetic Character of Day.	North Component. Maximum. 15000 γ +.		North Component. Minimum. 15000 γ +.		West Component. Maximum. 5000 γ +.		West Component. Minimum. 5000 γ +.		Vertical Component. Maximum. 45000 γ +.		Vertical Component. Minimum. 45000 γ +.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	*c.*			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.	Amp/cm².														
1	247	284	−7	97	—	—	—	1 *b*	1	5 14†	≮1031	≯966	11 5†	13 14	*x* 151	82	21 18	14 42	*x* 229	160	{8 46 / 9 10}
2	299	82	172	*z*	—	—	—	2 *c*	0	18 10†	≮1009	≯993	11 23†	1 33	≮107	≯96	8 30	20 30	186	175	11 45
3	−150	337	426	501	—	—	—	2 *b*	0	{21 55 / 22 30}	1020	997	11 25	Instrument drifting.‡				0 1	186	179	11 54
4	120	−898	0	224	—	—	—	2 *b*	1	5 44	1023	990	14 10	13 18	≮113	≯88	24 0	14 58	184	170	10 20
5	501	307	239	509	—	—	—	2 *c*	1	5 4	1040	*n* 929	14 19	6 42	130	*n* 36	14 33	14 34	216	166	6 42
6	172	194	187	299	—	—	—	0 *a*	1	4 56	1014	988	10 14	0 28	139	67	1 32	14 20	189	163	0 45
7	202	−45	−299	389	—	—	—	2 *c*	1	21 10	1035	974	13 37	13 0	133	76	21 47	14 46	194	166	1 58
8	−217	150	*z*	−120	—	—	—	2 *c*	1	19 30	1037	973	13 4	13 20	127	59	19 23	15 12	196	178	2 23
9	−120	262	254	546	650	520	—	1 *b*	1	6 50	≮1012	≯997	8 36	11 22	113	84	16 6	16 19	196	180	2 0
0	224	209	−37	*z*	—	—	—	2 *c*	0	No trace.			§	12 45	117	97	1 19	10 42	191	180	2 9
1	52	*z*	120	−367	—	—	—	2 *c*	0	23 7	≮1015	≯1000	12 51	12 55	114	97	0 55	13 0	190	181	0 22
2	−75	254	651	561	450	520	—	2 *b*	1	19 36	1023	969	22 16	13 20	120	49	22 17	22 25	204	181	13 29
3	−127	*z*	75	67	—	—	—	2 *c*	1	0 30	1036	968	21 42	13 44	112	57	0 25	0 19	201	183	8 57
4	67	127	52	67	—	—	—	2 *b*	1	21 28	1024	984	22 25	21 30	126	56	0 38	19 57	201	183	12 29
5	15	*z*	135	−172	—	—	—	2 *c*	1	4 30	1016	992	0 39	12 30	119	81	4 58	0 1	199	183	6 41
6	75	97	165	277	—	—	—	1 *a*	0	5 58	1017	1002	{19 / 20 23 / 2}	11 39	113	86	23 12	13 50	193	184	9 5
7	202	172	127	165	—	—	—	0 *a*	1	19 52	1023	989	19 26	12 59	115	66	19 36	19 40	197	182	12 45
8	329	97	419	202	650	60	—	0 *a*	0	5 45	1020	1000	11 42	12 40	112	86	22 48	14 3	193	185	8 50
9	60	75	127	180	—	—	—	0 *a*	0	22 36	1021	1004	11 56	13 10	110	93	23 18	10 0	192	186	24 0
0	97	30	−352	172	—	—	—	2 *b*	1	14 36	1024	988	20 18	13 24	118	95	22 59	20 40	199	180	12 28
1	−785	22	180	45	—	—	—	2 *b*	0	1 0	1020	1003	11 46	13 29	109	90	2 3	0 8	192	179	12 55
2	202	209	464	718	450	450	—	0 *a*	1	0 58	1024	993	14 12	13 8	117	79	23 8	16 30	187	175	1 5
3	352	187	292	292	580	190	—	0 *a*	0	0 44	1023	999	13 43	13 33	112	89	20 37	21 0	189	179	1 18
4	187	187	127	269	—	—	—	0 *a*	1	19 7	1020	981	15 51	16 3	126	89	21 21	21 7	194	181	9 49
5	202	165	202	396	—	—	—	0 *a*	2	20 48	*x* 1116	931	16 57	10 3	134	38	20 42	17 3	218	*n* 155	3 17
6	224	479	194	950	910	60	—	0 *a*	2	19 13	1040	973	20 37	14 13	118	39	19 5	20 45	206	180	5 8
7	314	494	456	651	—	—	—	—	1	2 5	1034	969	11 53	12 37	122	70	2 44	20 40	205	174	2 10
8	239	284	374	441	—	—	—	0 *a*	1	1 25	1019	987	15 0	13 17	116	60	22 33	22 50	204	180	4 32
9	441	583	479	531	450	190	—	0 *a*	1	21 1	1030	980	15 33	13 2	112	81	23 50	15 23	198	185	9 34
0	120	232	194	277	—	—	—	0 *a*	1	21 43	1039	989	2 41	12 11	113	65	2 13	18 28	197	181	11 0
1	389	531	314	381	—	—	—	1 *b*	0	7 35	1020	987	13 0	12 53	114	89	0 51	16 50	193	179	11 20
M.	144*	187*	211*	366*	—	—	—	—	—	—	1029‖	982	—	—	120¶	73¶	—	—	197	177	—

* 25 days. *See* note above. † No trace between 1st, 11 h. and 2nd, 11 h. ‡ No reliable trace between 2nd, 10 h. and 4th, 11 h.
§ No trace between 9th, 10 h., and 11th, 12 h. 26 days. ¶ 25 days.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
3	L?	1 31 to	...	...	...	...	...	Masked by microseisms.
		1 51	...	...	...	...	...	
4		0 43 to	...	...	...	...	...	Masked by microseisms.
		1 11	...	...	...	...	...	
4	L	22 53	...	...	...	...	...	
	M	23 2	23	...	12	...	...	
	F	23 25	...	...	...	...	...	
5	iP	14 52 22	...	...	...	...	...	P well marked on vertical trace.
	e	14 55½	...	...	...	...	...	Microseisms masking phases.
	i	14 55 58	...	...	...	...	...	
	e	15 13	...	...	...	...	...	
	F	17	...	...	...	..	...	
5 to 6	P	23 39 12	...	...	...	...	...	Masked by microseisms.
	e	23 40 8	...	...	...	...	...	
	e	23 42 37	...	...	...	...	...	
	e	23 43 54	...	...	...	...	...	
	e	23 47 15	...	...	...	...	...	
	S	23 49 16	...	...	...	...	...	
	i	23 51 36	...	...	...	...	...	
	i	23 56 55	...	...	...	...	...	
	i	24 3	...	...	...	...	...	
	L	24 6	...	...	...	...	...	
7		19 43 to	...	...	...	...	...	
		19 57	...	...	...	...	...	
10	e	1 6	...	...	...	...	...	
	L	1 11	...	...	...	...	...	
	F	1 50	...	...	...	...	...	
11		0 44 to	...	...	...	...	...	Masked by wind.
		1 15	...	...	...	...	...	
13	P	6 56 45	...	...	...	...	...	Great Italian earthquake.
	S	7 0 2	...	...	...	...	1930	$\alpha = 139° 10'$.
	L	7 1	...	...	...	...	...	Computed epicentre 42° N.,
	M	7 3	...	...	...	...	...	14° E.
13		9 54 to	...	...	...	...	...	? Surface waves by the longer
		10 33	...	...	...	...	...	path from Italian earthquake.
14	e	5 24	...	...	...	...	...	
	L	5 27	...	...	...	...	...	
	F	5 50	...	...	...	...	...	
21	L	15 54	...	...	...	...	...	
	F	16 22	...	...	...	...	...	
25	L	8 9	...	...	...	...	...	
	F	8 21	...	...	...	...	...	
27	P	1 14 58	...	...	...	...	...	
	S	1 19 3	...	...	...	...	2400	
	L	1 21½	...	...	...	...	...	
	M	1 23	25	40	36	...	...	
	F	2 12	...	...	...	...	...	
30		9 0 to	...	...	...	...	...	
		10 5	...	...	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	3·7	7	3·5	5·5	3·2	6	4·1	6
2	4·6	6	3·5	6	3·4	6	3·8	6
3	4·9	6·5	3·8	7	3·5	7	3·4	7
4	2·8	7	2·3	7	2·6	7	2·6	7·5
5	2·7	6	2·0	7	2·1	7	2·4	6
6	2·4	7	3·9	7·5	4·9	8·5	5·0	8
7	4·3	7	4·7	7	3·5	7	3·1	6
8	2·3	6·5	2·3	7	2·4	6	2·0	6·5
9	2·0	5	1·6	5	1·2	5	1·6	4·5
10	1·0	5	0·8	5	0·9	5	0·9	5
11	1·9	5	2·0	5	2·5	5	2·3	5
12	2·3	4	1·8	5	1·9	6	1·7	6
13	1·1	6	1·0	5·5	1·0	5	1·6	4
14	1·6	5	2·5	5	1·9	5	2·1	5
15	5·2	6·5	5·8	6	6·5	6	8·0	7
16	7·6	6·5	5·9	6·5		No trace.		
17	3·8	6	3·3	5·5	2·6	6·5	2·2	5·5
18	1·7	6	1·5	6	1·1	5·5	0·9	5
19	0·9	5·5	0·8	5	0·9	5	0·9	6
20	1·6	6	1·7	6	1·8	6	1·9	6
21	1·9	5·5	1·8	6	3·2	6	3·5	6
22	3·5	6	3·1	6	3·1	6	2·4	5·5
23	2·0	5·5	1·9	6	1·5	6	1·3	5·5
24	1·1	5	1·2	5	1·0	5	1·1	6
25	1·1	6	1·1	5·5	1·6	6	2·1	7
26	2·6	8	2·3	7	2·8	7	2·7	7·5
27	3·9	8	2·8	8	2·7	8	3·4	7*
28	2·7	6·5	2·0	7·5	1·6	6	1·7	5·5
29	1·7	5	1·3	6	1·5	5	1·7	5·5
30	1·6	5·5	1·8	5	1·6	6	1·1	6
31	1·2	5	1·1	5	1·2	5·5	1·2	5

* A period of 3 to 4 seconds also present at this time.

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
3	1 32·7	1 40·6	Small.
4	0 52·1	...	Very small.
,,	23 1·1	23 12·5	Series of very small movements for more than 2 hours.
5	...	15 15·3	Prolonged disturbance.
,,	23 38·9	23 52·0	Amplitude on trace 1·4 mm.
10	1 16·0	1 23·4	Very small.
11	0 44·8	1 2·0	Small.
13	6 55·9	7 1·5	Amplitude on trace 10·5 mm.
14	...	5 31·0	Very small.
27	1 18·0	1 25·2	Amplitude on trace 1·3 mm.

8. WIND COMPONENTS; Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	12·6	...	...	2·5	12·0	...	...	8·0	10·0	...	...	2·0	6·5	...	6·5	...	28·3	11	5
2	8·8	...	8·8	...	4·3	...	10·3	...	6·0	...	6·0	...	6·2	...	...	...	22·5	5	10
3	4·2	...	4·2	...	3·6	...	...	...	0·9	...	...	0·9	...	2·9	...	0·6	15·0	0	55
4	...	3·8	0·8	...	...	4·0	4·0	...	...	2·9	4·3	...	...	2·1	2·1	...	9·1	6	45
5	2·6	...	...	0·5	7·4	...	1·5	...	1·9	...	9·6	...	2·0	...	10·0	...	17·6	13	0
6	3·5	...	8·5	...	1·6	...	8·0	...	4·9	...	7·4	...	2·4	...	3·6	...	16·7	15	30
7	3·5	...	3·5	...	2·9	...	4·3	...	1·3	...	6·5	...	3·5	...	8·5	...	16·7	23	15
8	3·8	...	9·1	...	3·8	...	9·1	...	4·0	...	9·7	...	1·7	...	8·7	...	22·8	13	15
9	...	3·8	9·1	...	...	10·0	10·0	...	...	11·1	7·5	...	...	8·8	3·6	...	22·0	6	25
10	...	5·5	2·3	...	3·8	...	5·7	...	6·3	...	6·3	...	...	...	14·8	...	23·0	23	5
11	...	2·9	14·5	...	...	...	13·8	...	...	6·5	15·7	...	...	6·3	15·2	...	25·4	0	20
12	..	8·7	13·0	...	...	7·4	7·4	...	...	2·3	5·5	...	5·7	...	2·4	...	22·7	0	50
13	6·2	...	4·2	...	2·5	...	6·1	...	...	...	9·2	...	3·6	...	8·8	...	17·0	18	10
14	6·0	...	6·0	...	6·3	...	6·3	...	7·8	...	7·8	...	3·5	...	8·5	...	20·0	14	25
15	5·6	...	5·6	...	4·4	...	10·6	...	4·0	...	9·7	...	8·6	...	8·6	...	24·0	21	20
16	...	8·2	12·3	...	...	9·1	13·6	...	...	13·6	9·1	...	...	12·0	8·0	...	23·1	6	5
17	...	11·5	7·7	...	...	11·8	4·9	...	...	13·1	...	...	...	11·6	2·3	...	19·2	16	55
18	...	7·7	1·5	...	...	5·7	...	2·4	...	6·9	2·9	...	...	6·3	6·3	...	15·7	2	20
19	...	3·8	9·1	...	...	3·4	8·2	...	...	1·3	6·5	...	...	...	4·9	...	13·0	10	50
20	2·4	...	5·7	...	6·7	...	6·7	...	4·7	...	7·1	...	1·3	...	6·8	...	16·6	10	15
21	2·9	...	6·9	...	...	9·0	13·4	...	...	11·1	11·1	...	...	13·6	9·1	...	31·5	22	45
22	...	13·5	2·7	...	...	12·6	...	2·5	...	12·3	8·2	...	...	6·9	2·9	...	24·0	1	25
23	...	4·6	...	...	...	7·6	...	5·1	...	7·1	...	4·7	...	7·9	...	3·3	12·5	10	35
24	...	5·5	...	2·3	...	1·1	...	1·1	...	...	...	0·7	...	...	...	1·3	8·0	4	10
25	1·8	...	...	1·8	0·6	...	...	0·3	1·7	...	...	1·1	1·1	...	...	0·7	6·5	6	45
26	1·7	...	...	1·1	3·3	...	...	3·3	3·3	...	...	4·9	1·6	...	...	4·0	8·0	15	15
27	0·6	...	...	1·5	0·8	...	...	4·2	1·4	...	...	7·1	1·1	...	...	1·1	11·2	16	25
28	...	...	...	1·3	2·0	...	...	4·8	1·4	...	...	2·2	0·9	...	0·9	...	7·7	8	20
29	1·4	...	1·4	...	...	3·3	1·4	...	...	4·2	...	0·8	0·6	...	...	0·8	6·1	15	35
30	0·7	...	...	0·7	3·6	...	1·5	...	2·3	...	2·3	...	5·1	...	5·1	...	17·7	23	40
31	...	2·2	11·3	...	...	...	9·2	...	...	...	16·1	...	...	9·2	6·2	...	15·5	9	30
S+N & W+E	150·0		159·9		154·6		187·7		154·3		192·9		143·0		165·6				
S−N & W−E	−13·4		136·5		−15·4		124·3		−30·5		144·1		−32·2		142·0				

SCOTLAND N.:—DEERNESS.

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·8 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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	9·4	...	...	3·9	11·5	...	...	7·7	6·0	...	...	14·5	6·9	...	...	16·6	19·3	23
2	3·6	...	...	18·3	3·3	...	...	16·4	7·0	...	...	10·4	11·3	...	...	2·2	20·0	1
3	8·1	...	...	5·4	8·8	...	...	3·6	8·7	...	...	5·8	5·8	...	...	5·8	11·8	2, 5
4	5·4	...	...	8·1	5·7	...	...	8·5	3·8	...	...	9·1	3·8	...	...	9·1	11·1	6, 11
5	6·4	...	...	9·6	10·0	...	...	10·0	11·1	...	...	11·1	11·2	...	...	4·6	16·1	18
6	6·6	...	...	...	3·8	...	2·6	...	5·1	...	1·0	...	6·4	...	2·6	...	7·5	1
7	5·2	...	...	...	4·8	...	...	1·0	2·6	...	...	...	0·7	...	...	...	6·6	6, 7
8	1·0	...	...	...	3·0	...	...	2·0	1·7	...	...	2·5	...	3·0	...	3·0	4·3	21
9	...	5·1	...	1·0	...	6·9	...	2·9	...	5·2	2·1	...	...	4·2	0·8	...	8·5	6
10	...	1·1	2·8	...	0·4	...	0·9	...	8·7	...	...	5·8	7·3	...	...	10·9	14·1	23
11	2·3	...	...	11·6	2·3	...	...	11·6	...	...	...	9·8	...	1·4	...	7·1	12·8	4, 11
12	...	0·3	...	1·3	2·2	...	1·4	...	0·1	...	0·7	...	1·4	...	1·4	...	2·6	8, 9
13	4·0	...	1·6	...	13·1	...	...	5·4	5·7	...	3·8	...	3·3	...	16·7	...	17·7	20
14	...	...	12·5	...	0·8	...	4·2	...	7·3	...	...	3·0	6·5	...	6·5	...	14·4	2
15	7·6	...	5·1	...	6·0	...	9·0	...	7·3	...	3·0	...	4·4	...	4·4	...	13·1	11
16	...	10·8	...	...	...	12·8	8·6	...	...	12·9	2·6	...	...	11·5	7·7	...	16·1	6
17	...	12·8	8·6	...	...	14·2	5·9	...	...	12·9	2·6	...	...	8·7	5·8	...	16·1	2
18	...	2·1	5·2	...	...	0·9	2·1	...	...	0·7	3·5	...	2·6	...	6·4	...	11·1	24
19	2·0	...	10·3	...	3·6	...	8·8	...	4·9	...	11·8	...	6·3	...	6·3	...	12·8	7, 15
20	8·1	...	5·4	...	12·3	...	2·4	...	...	...	8·9	...	2·3	...	2·3	...	14·4	8
21	7·7	...	1·5	...	3·6	...	2·4	...	...	1·1	1·7	...	...	2·0	...	3·0	9·2	24
22	...	9·5	...	...	...	5·6	...	...	...	5·2	2·1	...	...	1·7	2·5	...	10·8	5
23	...	0·1	0·3	...	...	1·6	...	...	...	1·6	...	0·3	...	0·6	0·4	...	2·3	12
24	0·0	0·0	0·0	0·0	0·4	...	0·9	...	5·8	...	1·2	...	7·2	...	...	...	7·2	18, 21
25	4·5	...	0·9	...	0·7	...	0·1	...	0·7	...	...	0·1	2·4	...	...	3·6	6·2	1, 2
26	0·2	...	...	0·2	0·2	...	...	0·2	3·6	...	...	...	4·9	...	...	...	6·9	24
27	6·1	...	...	1·2	1·6	...	...	0·3	3·0	...	...	...	1·5	...	0·6	...	6·9	1
28	1·9	...	1·3	...	1·0	...	5·1	...	...	1·6	1·6	...	...	7·7	...	1·5	8·9	19
29	...	4·8	...	2·0	...	3·9	...	...	...	6·1	1·2	...	...	2·1	0·9	...	6·9	12
30	...	0·2	0·2	...	1·1	...	1·1	...	1·7	...	1·1	...	3·5	...	...	0·7	5·9	24
31	4·0	...	...	1·6	2·3	...	...	2·3	0·1	...	...	0·3	2·4	...	1·0	...	6·2	1
S+N & W+E	140·9		119·9		148·4		127·4		142·2		121·6		145·0		134·4			
S−N & W−E	47·3		−8·5		56·6		−16·4		47·6		−23·8		59·2		−1·8			

ENGLAND S.W.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	19·6	...	...	8·1	8·0	...	8·0	...	4·8	...	11·6	...	...	2·5	12·7	...	29·9	4	25
2	...	2·8	14·3	...	...	...	12·1	...	...	...	11·3	...	4·4	...	6·6	...	24·4	1	50
3	...	1·8	4·3	...	...	4·5	4·5	...	...	3·2	7·7	...	...	4·1	4·1	...	13·0	6	50
4	...	4·1	10·0	...	...	2·4	11·9	...	...	9·3	13·9	...	...	5·7	13·9	...	21·7	15	25
5	2·6	...	6·2	...	...	2·4	12·3	...	...	...	12·9	...	...	...	10·4	...	18·4	23	5
6	2·3	...	11·5	...	1·5	...	7·4	...	4·9	...	1·0	...	...	...	7·9	...	20·0	19	50
7	6·3	...	9·4	...	1·5	...	7·7	...	...	3·4	17·3	...	...	3·5	17·7	...	26·7	19	50
8	3·3	...	16·4	...	...	...	17·1	...	...	...	17·1	...	...	2·9	14·7	...	30·1	6	25
9	...	5·6	13·5	...	...	10·3	10·3	...	...	7·6	7·6	..	...	8·3	8·3	...	24·0	8	55
10	...	3·2	7·7	...	3·2	...	7·7	...	...	...	13·3	...	...	3·6	18·1	...	27·1	23	20
11	...	7·2	17·4	...	...	3·3	16·8	...	...	6·7	16·3	...	...	6·4	15·4	...	29·0	13	20
12	...	7·9	11·8	...	...	4·9	7·3	...	...	...	2·5	...	1·5	...	7·4	...	20·8	2	0
13	...	...	9·2	...	...	...	9·6	...	...	...	11·7	...	2·1	...	10·6	...	17·3	13	40
14	2·0	...	9·8	...	4·6	...	6·9	...	8·8	...	8·8	...	4·0	...	9·6	...	16·2	16	0
15	...	...	10·0	...	...	...	10·4	...	...	...	10·4	...	3·3	...	16·8	...	28·7	23	0
16	...	7·2	17·4	...	...	13·0	13·0	...	...	10·9	10·9	...	...	10·4	7·0	...	28·4	0	55
17	...	9·7	6·5	...	...	10·2	2·0	...	...	12·3	2·4	...	...	10·0	...	...	21·8	16	35
18	...	7·5	...	...	...	9·6	...	...	...	7·0	1·4	...	...	6·9	2·9	...	15·0	12	45
19	...	5·9	3·9	...	...	5·6	5·6	...	...	4·5	4·5	...	...	3·7	8·9	...	16·0	13	50
20	...	1·7	8·6	...	...	...	11·7	...	2·7	...	13·5	...	...	...	13·3	...	17·6	14	25
21	...	...	15·0	...	...	11·8	11·8	...	...	13·9	9·3	...	...	13·9	13·9	...	31·0	18	30
22	...	15·3	10·2	...	...	19·2	8·0	...	...	16·9	7·0	...	...	11·9	4·9	...	28·1	4	30
23	...	8·0	8·0	...	...	10·0	...	...	...	8·0	...	5·3	...	6·9	...	4·6	27·5	2	50
24	...	7·7	1·5	...	...	5·0	...	...	...	2·7	2·7	...	...	0·0	0·0	...	12·0	4	10
25	...	...	0·8	...	...	0·9	0·9	...	0·1	...	...	0·4	1·6	...	...	3·9	11·8	23	50
26	9·4	...	...	9·4	6·9	...	...	2·9	10·9	...	...	10·9	9·5	...	...	14·2	22·1	17	25
27	6·4	...	...	15·4	3·3	...	...	16·4	*	*	*	*	*	*	*	*	21·1	8	10
28	*	*	*	*	*	*	*	*	2·7	...	...	6·6	1·4	...	...	7·0	14·0	0	35
29	...	...	...	4·6	...	1·0	...	4·9	...	1·0	...	4·9	...	0·9	...	4·5	10·0	1	5
30	...	0·2	...	0·8	3·3	...	...	3·3	3·2	...	2·1	...	3·2	...	7·7	...	15·3	24	0
31	...	...	10·4	...	...	7·0	10·4	...	...	4·8	11·6	...	...	7·0	10·4	...	22·8	9	50
S+N & W+E	147·7		272·1		153·4		240·9		150·3		256·9		139·6		277·4				
S−N & W−E	−43·9		195·5		−88·8		185·9		−74·1		200·7		−77·6		209·0				

ENGLAND E.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	1·3	...	1·9	...	9·3	...	...	1·9	14·2	...	...	5·9	7·5	...	...	...	24·5	17	40
2	3·8	...	2·6	...	4·3	...	1·8	...	2·8	...	2·8	...	3·2	...	2·2	...	13·2	1	25
3	4·3	...	1·8	...	8·5	...	...	...	9·0	...	...	9·0	2·5	...	...	1·7	14·9	17	25
4	0·9	...	0·4	...	0·0	...	0·0	...	0·3	...	1·3	...	...	0·7	3·5	...	9·1	0	40
5	...	0·6	1·5	...	...	0·4	2·3	...	...	...	2·0	...	...	...	5·2	...	9·0	21	40
6	...	...	3·3	...	0·5	...	2·6	...	0·6	...	2·9	...	2·8	...	2·8	...	8·2	0	30
7	1·6	...	1·6	...	0·5	...	0·5	...	1·3	...	0·9	...	...	...	6·6	...	18·6	23	15
8	1·2	...	6·1	...	0·7	...	3·5	...	1·0	...	4·8	...	4·0	...	4·0	...	13·5	12	55
9	4·3	...	1·8	...	0·8	...	4·2	...	...	2·6	3·8	...	...	6·0	6·0	...	14·6	20	50
10	...	3·5	3·5	...	...	2·2	3·2	...	1·7	...	2·5	...	5·5	...	2·3	...	18·5	19	30
11	...	1·6	8·0	...	...	...	7·2	...	...	1·0	4·8	...	...	1·4	7·1	...	15·2	13	10
12	...	1·9	9·3	...	...	5·7	2·4	...	...	3·0	2·0	...	...	1·1	1·7	...	17·6	7	50
13	...	...	2·3	...	3·6	...	1·5	...	...	...	5·2	...	...	...	4·9	...	10·7	24	0
14	...	1·3	6·8	...	...	1·3	6·5	...	1·2	...	6·1	...	4·2	...	6·2	...	14·0	23	30
15	...	...	6·6	...	2·9	...	6·9	...	...	1·7	8·7	...	2·9	...	6·9	...	16·7	13	15
16	1·8	...	9·0	...	...	1·7	8·3	...	...	6·6	4·4	...	...	5·3	5·3	...	18·8	15	15
17	...	5·1	5·1	...	...	4·7	4·7	...	...	6·3	6·3	...	...	6·4	2·6	...	26·0	23	0
18	...	3·6	1·5	...	...	4·2	0·8	...	...	4·8	1·0	..	...	2·5	2·5	...	16·0	8	5
19	...	2·3	2·3	...	...	2·3	2·3	...	...	0·4	2·3	...	...	0·4	2·0	...	6·3	0	50
20	...	...	2·6	...	2·0	...	3·0	...	4·1	...	2·7	...	2·7	...	4·1	...	11·3	20	35
21	2·8	...	2·8	...	0·9	...	2·1	...	...	0·6	2·9	...	...	4·1	2·7	...	10·8	22	45
22	...	2·7	4·1	...	...	0·9	1·3	...	2·2	...	...	3·2	2·2	...	1·4	...	8·4	0	45
23	1·9	...	1·3	...	1·3	...	0·9	...	...	0·9	2·1	...	...	4·9	...	4·9	10·8	21	25
24	...	4·2	...	6·2	...	2·2	...	3·2	...	3·3	...	3·3	...	1·6	...	1·6	10·1	3	35
25	...	3·0	...	3·0	...	3·8	...	2·6	...	1·5	...	3·6	...	3·1	...	4·7	7·5	17	20
26	...	0·4	...	0·6	...	1·4	...	2·2	...	1·3	...	1·9	...	3·4	...	5·2	8·8	23	50
27	1·7	...	...	8·7	...	...	...	9·8	1·8	...	...	9·0	...	...	...	11·5	13·3	21	40
28	...	1·7	...	8·7	...	1·8	...	9·0	...	1·1	...	5·5	...	0·9	...	4·5	11·7	5	40
29	...	2·6	0·5	...	...	3·5	3·5	...	...	3·2	2·2	...	...	2·3	...	...	8·2	12	40
30	...	3·0	2·0	...	...	1·7	1·1	...	...	1·4	1·4	...	...	...	3·3	...	6·6	11	10
31	3·7	...	3·7	...	1·9	...	4·5	...	...	2·5	6·1	...	...	...	3·3	...	12·7	12	5
S+N & W+E	66·8		119·6		75·0		103·8		82·4		120·6		81·6		120·7				
S−N & W−E	−8·2		65·2		−0·6		46·4		−2·0		37·8		−6·6		52·5				

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

South Farnborough. No. 178. January 2, 1915. 10 h. 15 m G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...	2·4	Fairly clear. Ci.4. Balloon lost in smoke and distance.
	...	...	...	...	...		
	2500	250	14·5	+13·5	+5·0		
	2000	250	17·0	+16·0	+6·0		
	1550	255	16·5	+16·0	+4·5		*Pressure Distribution* (7 h.).
	1500	255	15·0	+14·5	+4·0		
	1250	260	16·0	+16·0	+3·0		A deep depression centred about 5 degrees of longitude west of the Shetland Islands.
	1000	250	13·0	+12·0	+4·5		
	750	255	15·0	+14·5	+4·0		
	500	250	16·5	+15·5	+5·5		
100 m. above ground.	170	235	11·0	+ 9·0	+6·5		
Anemometer.	105	225	11·0	+ 8·0	+8·0		
Geostrophic wind.	(at 7 h.)	210	17·0	+ 8·0	+14·0	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 13 h.)	240	18·0	+15·0	+10·0	...	

South Farnborough. No. 179. January 4, 1915. 15 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction.	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	...	...	...	...	...	2·4	Clear. Mainly clear sky, a little cloud on horizon. Balloon lost in distance.
	3000	315	20·0	+14·0	−14·0		
	2500	310	17·5	+13·5	−11·0		
	2000	325	18·5	+10·5	−15·0		
	1750	325	18·0	+10·5	−14·5		*Pressure Distribution* (18 h.).
	1500	320	16·5	+10·5	−12·5		
	1250	320	14·5	+ 9·5	−11·0		A rather shallow depression centred due west of Ireland in Mid-Atlantic.
	1000	315	15·5	+11·0	−11·0		
	750	310	17·0	+13·0	−11·0		The station lay in a secondary, with a minimum over Holland.
	500	305	15·5	+12·5	− 9·0		
	170	285	6·5	+ 6·5	− 1·5		
	105	290	6·5	+ 6·0	− 2·0		
	(at 13 h.)	310	10·0	+ 8·0	− 7·0	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 18 h.)	330	13·0	+ 6·0	−11·0	...	

South Farnborough. No. 180. January 6, 1915. 9 h. 25 m. G.M.T.

Greatest height.	...	...	...	...	...	2·4	Clear. Ci. forming, increasing to 5, a little low scud in places. Balloon lost in distance.
	3500	280	26·0	+25·5	−4·5		
	3000	285	22·0	+21·0	−6·0		
	2500	285	20·0	+19·5	−5·0		
	2000	280	18·0	+17·5	−3·0		*Pressure Distribution* (7 h.).
	1750	275	16·0	+16·0	−1·5		
	1500	275	15·5	+15·5	−1·5		A moderately intense and extensive cyclone centred south of Iceland, and the barometer high over Spain. Westerly type.
	1250	275	17·0	+17·0	−1·5		
	1000	275	17·0	+17·0	−1·5		
	750	275	17·0	+17·0	−1·5		
	500	270	16·0	+16·0	0·0		
100 m. above ground.	170	255	8·0	+ 7·5	+2·0		
Anemometer.	105	245	7·5	+ 7·0	+3·0		
Geostrophic wind.	(at 7 h.)	270	15·0	+18·0	0·0	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 13 h.)	260	13·0	+13·0	+3·0	...	

South Farnborough. No. 181. January 8, 1915. 14 h. 20 m. G.M.T.

	...	...	...	...	...	2·4	Clear. Cu.2 on horizon. Balloon lost in distance.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	270	18·0	+18·0	0·0		*Pressure Distribution.*
	1750	270	20·5	+20·5	0·0		
	1500	265	22·5	+22·5	+2·0		Low pressures in latitudes 55° to 60°. Barometer high over Spain. Westerly type of weather.
	1250	265	25·5	+25·5	+2·0		
	1000	260	25·0	+24·5	+4·5		
	750	255	19·5	+19·0	+5·0		
	500	250	17·0	+16·0	+6·0		
	170	240	7·0	+ 6·0	+3·5		
	105	245	10·5	+ 9·5	+4·5		
	(at 13 h.)	250	28·0	+27·0	+9·0	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 18 h.)	270	18·0	+18·0	+2·0	...	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 182. January 11, 1915. 9 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Clear.
	...	...	...	...	...		Ci. or Ci.-Cu. 3 from about N.W., not particularly quickly.
	2500	280	27·0	+26·5	−4·5		Low clouds of Cu. type formed shortly after.
	2000	280	27·5	+27·0	−5·0		Balloon lost in distance.
	1750	280	26·5	+26·0	−4·5		
	1500	280	24·5	+24·0	−4·5		
	1250	280	21·0	+20·5	−3·5		
	1000	285	23·0	+22·0	−6·0	2·4	
	750	280	23·0	+22·5	−4·0		*Pressure Distribution* (7 h.).
	500	265	19·0	+19·0	+1·5		
100 m. above ground.	170	255	10·5	+10·0	+2·5		Low pressures over Northern Europe; high in South.
Anemometer.	105	235	8·5	+7·0	+5·0		Westerly type of weather.
Geostrophic wind.	(at 7 h.)	290	20·0	+19·0	−6·0	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 13 h.)	280	19·0	+18·0	−5·0	...	

South Farnborough. No. 183. January 18, 1915. 9 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2860	350	26·0	+4·5	−25·5		Hazy.
	2500	350	16·0	+3·0	−16·0		No cloud.
	2000	350	11·0	+2·0	−11·0		Balloon lost in distance and haze.
	1750	355	11·5	+1·0	−11·5		
	1500	355	15·0	+1·5	−15·0		*Pressure Distribution* (7 h.).
	1250	350	15·5	+2·5	−15·5		
	1000	350	15·0	+2·5	−15·0	2·4	All Western Europe dominated by anticyclone centred near Valencia.
	750	345	15·0	+4·0	−14·5		
	500	350	14·0	+2·5	−14·0		
100 m. above ground.	170	325	7·0	+4·0	−5·5		
Anemometer.	105	280	5·0	+5·0	−1·0		
Geostrophic wind.	(at 7 h.)	360	18·0	0·0	−18·0	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 13 h.)	350	11·0	+3·0	−11·0	...	

South Farnborough. No. 185. January 26, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Surface mist forming, too shallow to interfere with observation.
	...	...	...	...	...		St. 2 moving to S.E.
	...	...	...	...	...		Balloon burst while still very plain.
	...	...	...	...	...		
	3000	160	5·5	−2·0	+5·0		
	2500	160	4·5	−1·5	+4·2		
	2000	240	3·0	+2·6	+1·5		
	1750	250	2·0	+1·9	+0·7		*Pressure Distribution* (7 h.).
	1500	270	2·5	+2·5	0·0		
	1250	175	3·0	−0·3	+3·0	2·4	Moderate depression centred S.W. of Ireland.
	1000	110	4·5	−4·2	+1·5		Station in large indefinite col.
	750	105	4·5	−4·2	+1·3		Barometer high over Spain and Spitzbergen, low over Russian Baltic provinces.
	500	105	4·5	−4·2	+1·3		
100 m. above ground.	170	95	4·5	−4·5	+0·4		
Anemometer.	105	90	0·5	−0·5	0·0		
Geostrophic wind.	(at 7 h.)	...	*Inde*	*finite*	...	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 13 h.)	160	8·0	−3·0	+7·0	...	

South Farnborough. No. 186. January 26, 1915. 10 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	5000	160	11·5	−4·0	+11·0		Very hazy.
	4500	150	10·5	−5·5	+ 9·0		Ci.-St. 2 to south, clearing somewhat.
	4000	150	9·0	−4·5	+ 8·0		Balloon lost in distance, and by eye-fatigue.
	3500	160	7·0	−2·5	+ 6·5		
	3000	160	5·5	−2·0	+ 5·0		
	2500	155	4·0	−1·7	+ 3·6		
	2000	320	4·0	+2·6	− 3·1		
	1750	285	4·0	+3·9	− 1·0		*Pressure Distribution* (7 h.).
	1500	270	2·5	+2·5	0·0		
	1250	265	1·5	+1·5	+ 0·1	2·4	See note on previous ascent.
	1000	225	3·0	+2·1	+ 2·1		
	750	150	3·5	−1·7	+ 3·0		
	500	140	3·5	−2·2	+ 2·7		
100 m. above ground.	170	110	3·0	−2·8	+ 1·0		
Anemometer.	105	70	Slight	...	...		
Geostrophic wind.	(at 7 h.)	...	*Inde*	*finite.*	...	...	Approx. weights: balloon 12 gms., free lift 45 gms.
	(at 13 h.)	160	8·0	−3·0	+ 7·0	...	

Falmouth. No. 79. January 12, 1915. 10 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloons.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2565	...	...	...	...		Clouds :—
	2500	310	15·0	+ 9·5	− 12·0		Hrs. Amount. Form. Dirn.
	2000	310	15·5	+11·5	− 10·5		7 h. 5 A.-Cu/St. N.W.
	1750	310	13·5	+10·5	− 8·5		10 h. 30 m. 5 A.-Cu/St. N.W.
	1500	315	11·0	+ 7·5	− 7·5		11 h. 30 m. 7 A.-Cu/St. N.W.
	1250	315	11·5	+ 8·0	− 8·0	2·1	13 h. 10 Ni. ...
	1000	315	9·0	+ 6·0	− 6·5		
	750	310	8·5	+ 6·5	− 5·5		Weather :—
	500	310	7·5	+ 5·5	− 4·5		
100 m. above ground.	151	305	6·0	+ 5·0	− 3·5		Morning fair, slight rain at times during afternoon.
Anemometer.	63	315	4·0	+ 2·8	− 2·8		
Geostrophic wind.	(at 7 h.)	320	12·0	+ 7·0	− 9·0	...	Wt. of balloon 9·1 gms.
	(at 13 h.)	300	9·0	+ 8·0	− 5·0	...	Free lift 24·0 gms.

Note.—In addition to the ascents recorded above, pilot balloons which were lost sight of before reaching a height of 2 kilometres were sent up during the month at the various stations as follows:—Aberdeen, 3; Benson, 3; Eskdalemuir, 2; South Farnborough, 5.

11. Soundings with Registering Balloons.

Benson. No. 302. January 6, 1915. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height.	7·4 km.	379 mb.	240° A.
Lowest Temperature,	7·4 km.	...	240° A.
Base of Stratosphere, Type?	...	...	...

Height above M.S.L., 61 m.

Place of Fall, Colchester.

Distance, and Orientation, 155 km. 80° from N.

Data for Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	...	...
Temperature,	...	...
Vapour Pressure	...	...
Geostrophic Wind—Direction,	270°	...
Geostrophic Wind—Velocity,	15·0 m/s.	...
Correction for curvature of isobars,	+ 3·0 m/s.	...
Gradient Value,	18·0 m/s.	...
Components, W. to E.	+18·0 m/s.	...
Components, S. to N.	0·0 m/s.	...

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Remarks.
km.	mb.	°A.	°A.	
7·01	400	243		*Pressure Distribution* (7 h.).
7·00	401	243		
6·00	462	250	+7	Extensive cyclone centred south of Iceland, with secondary over East Prussia; anticyclone centred over Spain.
5·42	500	253	+5	
5·00	527	255		
4·04	600	261	+6	
4·00	602	261		
3·00	686	265	+4	
2·86	700	266	+3	
2·00	779	268		
1·80	800	269	+4	
1·00	883	272		
0·86	900	272	+6	
0·00	1000	...		
Ground M.S.L.	993 ...	278 ...	... ...	... ...

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90°=E, 180°=S.).	Computed for 1000 m. Velocity. V.	Components. W.–E.	Components. S.–N.	Remarks.
		°	m/s	m/s.	m/s.	
1	Cu.	165	16·0	− 4·2	+15·5	Cu. eddying in places.
6	Ci.	222	2·6	+ 1·7	+ 1·9	Slight "false" Cirrus.
,,	St.-Cu.	230	2·5	+ 1·9	+ 1·6	Diffuse type of St.-Cu.
7	St.-Cu.	225	3·1	+ 2·2	+ 2·2	
9	St.-Cu.	7	8·0	− 1·0	− 7·9	St.-Cu. formed from apices of Cu.-Nb.
11	St.-Cu.	315	8·0	+ 5·7	− 5·7	
12	St.-Cu.	279	5·0	+ 4·9	− 0·8	
15	Ci. to A.-St.	281	3·4	+ 3·3	− 0·7	Sheet of false Ci., becoming A.-St.
20	Fr.-Cu.	271	7·4	+ 7·4	− 0·1	Sheet of fused St.-Cu. above.
22	St.-Cu.	348	12·5	+ 2·6	−12·3	Low St.-Cu. of the type associated with Cu.-Nb.
23	St.-Cu.	25	8·0	− 3·4	− 7·3	
29	St.-Cu.	2	10·0	− 0·3	−10·0	Heavy St.-Cu. Approximate values.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	1·5	16	389	37	26	12 40	26	4·4	48	30	11	Hazy	—	—	—	—	—	—	—	—
2	—	—	*n* 75	7	*n* 6	12 0	6	—	—	—	—	—	—	—	—	—	—	—	0·8	9
3	—	—	201	19	18	12 15	18	—	—	—	—	—	—	—	—	—	—	—	—	—
4	0·1	1	395	36	27	11 55	27	0·1	1	—	—	—	0·1	1	—	—	—	—	1·3	14
5	2·1	23	420	37	35	10 40	22	2·0	21	52	20	Clear	0·5	6	—	—	—	—	1·2	13
6	1·7	18	346	30	26	11 10	22	1·5	16	—	—	—	—	—	—	—	—	—	1·3	14
7	—	—	183	16	17	11 15	10	—	—	—	—	—	—	—	—	—	—	—	0·8	9
8	3·6	38	452	38	31	13 50	29	4·6	48	—	—	—	4·0	44	12 36	Clear	2·90	67	1·5	16
9	3·2	34	456	38	39	12 55	36	3·3	35	60	24	Clear	2·5	27	—	—	—	—	0·3	3
10	5·1	53	527	43	34	12 30	34	6·0	63	68	28	Clear	1·9	21	—	—	—	—	3·0	31
11	3·7	38	483	38	33	10 55	33	3·4	35	—	—	—	—	—	—	—	—	—	5·5	57
12	—	—	151	12	20	12 50	17	—	—	—	—	—	—	—	—	—	—	—	1·5	15
13	0·4	4	208	16	36	13 0	35	0·4	4	—	—	—	0·4	4	—	—	—	—	—	—
14	—	—	84	6	8	9 10	2	—	—	—	—	—	5·4	57	—	—	—	—	3·6	37
15	2·9	29	466	34	39	12 40	38	1·9	19	—	—	—	6·4	67	—	—	—	—	*x* 8·2	83
16	4·7	47	? 545	39	31	13 10	31	4·7	47	64	28	Clear	2·8	29	—	—	—	—	—	—
17	—	—	109	8	*n* 6	13 5	6	—	—	—	—	—	0·1	1	—	—	—	—	3·2	32
18	0·6	6	382	27	38	12 10	38	0·7	7	—	—	—	—	—	—	—	—	—	1·0	10
19	1·7	17	432	30	41	13 15	30	2·4	24	—	—	—	0·9	9	—	—	—	—	1·3	13
20	—	—	398	27	23	12 50	21	0·2	2	—	—	—	5·7	58	—	—	—	—	0·7	7
21	*x* 5·4	52	601	40	35	14 25	33	5·4	52	—	—	—	2·0	20	—	—	—	—	3·9	38
22	—	—	267	17	18	14 30	13	—	—	—	—	—	3·1	31	—	—	—	—	2·0	19
23	4·8	46	560	36	*x* 49	13 0	*x* 44	*x* 6·9	66	—	—	—	2·6	25	—	—	—	—	7·1	68
24	3·0	29	655	41	37	12 30	37	4·4	42	—	—	—	*x* 8·3	81	12 1	Hazy	2·35	79	5·8	55
25	4·5	42	682	42	40	12 55	38	5·1	48	68	33	Clear	0·1	1	—	—	—	—	8·0	76
26	3·9	37	*x* 708	47	40	12 35	40	5·3	50	67	33	Clear	—	—	—	—	—	—	—	—
27	1·3	12	434	26	44	12 55	40	1·6	15	—	—	—	1·5	14	—	—	—	—	4·4	41
28	5·2	49	608	36	42	14 20	31	6·4	60	—	—	—	1·0	10	—	—	—	—	2·1	20
Means	2·11	22	132	27	27	—	24	2·54	26	—	—	—	1·75	19	—	—	—	—	2·46	25
Normal	1·54	16	—	—	—	—	—	2·09	21	—	—	—	1·54	16	—	—	—	—	2·48	25
	← 4 years →							← 30 years →					← 4 years →						← 30 years →	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long 10° 15′ W.

Heights above M. S. L.:—H = 12·6 m. H_b = 13·7 m. H_a = 26·5 m. Above Ground:—h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.	21 h.	9 h.	21 h.					
			200+	200+	200+	200+							Tenths of Sky covered.						
	mb.	mb.					millibar.		%	%	m/sec.	m/sec.			mm.		γ	° ′	° ′
1	1005·1	999·2	81·8	83·7	*x* 84	*x* 80	11·2	12·5	100	97	15 6	17 9	10≡⁰●⁰	10≡⁰●⁰	5·7	≡⁰ and d.	…	…	…
2	994·5	998·8	81·1	78·9	*x* 84	77	9·1	8·1	87	87	17 5	17 7	10≡⁰	9	13·8	● showers. ⧋ squalls.	…	…	…
3	984·2	979·4	82·9	80·9	*x* 84	*x* 80	11·5	8·5	95	81	15 12	16 9	10≡⁰	10≡⁰	11·7	≡⁰●	…	…	…
4	992·5	996·8	80·4	78·8	82	78	8·8	8·1	87	87	15 4	15 5	7	5	13·3	● showers.	…	…	…
5	983·2	979·0	79·8	79·1	82	78	9·1	7·8	93	85	11 17	14 10	10≡⁰●	1	16·0	≡⁰● to clearing.	…	…	…
6	993·7	1005·0	80·8	79·2	82	78	8·5	8·1	80	87	26 7	18 2	7	5	16·6	● showers. ≡⁰	…	…	…
7	991·4	998·2	81·6	76·6	83	76	10·8	6·8	97	86	20 8	20 10	*10*	6	3·9	⧋ showers.	…	…	…
8	997·9	985·1	77·3	76·5	80	74	6·4	7·8	77	98	20 9	— 1	6	10≡⁰●	16·3	Fair to ≡⁰●.	17877	20 9·9	68 8·7
9	989·4	989·3	78·0	78·5	79	75	6·8	8·1	77	92	28 8	22 9	10	5	8·4	⧋ showers. ↖ *p*.	…	…	…
10	992·5	997·1	75·9	78·8	80	76	7·4	7·8	97	85	— 1	26 5	3	10	3·6	● showers.	…	…	…
11	999·7	997·0	78·6	76·3	81	75	7·4	7·1	81	94	31 5	— 0	8	4	1·6	Fair.	…	…	…
12	992·8	983·8	76·8	77·7	79	75	7·8	7·8	99	92	— 1	11 4	10≡⁰●	10≡⁰●	*x* 26·2	● showers.	…	…	…
13	968·3	980·6	76·6	77·0	*n* 77	76	7·4	7·4	95	91	31 13	32 4	10≡⁰●	10●	7·5	≡⁰●	…	…	…
14	990·7	1002·9	76·7	76·6	79	76	7·1	7·1	91	91	5 3	— 1	10≡⁰	9	9·3	Fair.	…	…	…
15	1009·4	1015·0	77·0	74·6	80	74	7·8	6·4	96	93	— 1	4 3	3	2	1·6	Fine. v.	…	…	…
16	1004·8	991·7	79·6	82·5	83	77	8·8	11·5	91	98	13 12	14 5	10≡⁰●	10≡⁰	19·3	≡⁰●	…	…	…
17	984·8	983·3	79·2	78·6	82	77	7·8	8·1	82	89	18 10	18 6	5	10●	4·8	● showers. ↖ 12 h.	…	…	…
18	978·8	979·2	78·8	80·0	81	77	8·1	8·8	90	87	15 4	25 9	6	8	8·5	● showers.	…	…	…
19	985·7	984·8	78·2	76·5	81	76	7·4	7·4	84	94	28 6	11 2	9	3	7·9	Fair. ⋃	…	…	…
20	978·6	991·3	77·4	78·2	80	75	7·8	7·8	94	88	15 3	1 4	7	8	10·5	● to q., and showers.	…	…	…
21	992·5	989·4	78·3	76·8	79	74	8·1	6·4	90	80	22 3	31 3	8	3	3·4	● showers to fair.	…	…	…
22	992·8	1003·4	79·1	75·2	79	74	5·8	6·8	*n* 62	96	29 16	23 2	10	10	4·5	↖a. q., with ⧋● showers.	…	…	…
23	1009·8	1018·0	76·0	76·0	78	73	5·8	6·1	76	80	31 3	32 6	5	2	0·5	Fair.	17862	20 6·7	68 8·4
24	1024·3	1025·9	72·7	75·6	79	*n* 72	5·8	6·8	95	93	— 1	— 1	3	5	0·7	Fair.	…	…	…
25	1026·6	1023·1	77·0	79·3	80	75	5·8	6·8	74	72	11 4	15 8	0	9	14·7	Fine to c.	…	…	…
26	1014·0	1011·8	80·4	80·6	82	79	9·8	8·8	96	83	15 11	26 7	10≡⁰●	7	23·8	≡⁰● to fair.	…	…	…
27	1013·9	1014·7	79·3	79·7	81	78	7·4	6·1	80	63	20 10	24 12	10	10≡⁰	2·2	Fair to showery.	…	…	…
28	1015·3	1011·4	78·7	80·8	81	78	7·1	8·5	80	80	24 12	25 14	7	10≡⁰	2·0	q. and ● showers.	…	…	…
Means	996·7	997·7	78·6	78·3	80·8	76·1	8·0	7·8	87	88	6·8	5·5	7·6	7·2	258·3	Monthly **Totals** or **Means.**	17870	20 8·3	68 8·6
Normal	1012·2	1012·2	79·6	79·8	82·6	77·5	8·4	8·5	87	86	6·0	6·1	—	—	125·7	**Normals.**			
	← 40 years →						← 25 years →				← 30 years →				40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—12/16. N. & Co., Ltd. **Gp. XV.**

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19 W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	200+ °	200+ °	200+ °	cm.	cm.
1	1013·9	1014·8	76·3	78·8	80	76	6·4	8·1	85	88	26	2	17	4	6≡0	10●	3·1	70	76·0	79·0	359	—
2	1008·9	1004·6	82·1	81·3	83	78	11·2	8·8	96	83	18	7	21	10	10	10●	3·9	75	76·8	78·9	349	—
3	1012·1	1008·9	80·2	82·0	x84	77	8·1	9·5	81	83	16	5	16	6	10	0	—	74	77·4	78·9	345	—
4	1007·6	1008·2	81·9	79·7	83	x79	9·1	8·5	80	84	16	6	14	4	10	1	—	78	78·0	78·9	344	—
5	1010·0	1003·8	80·8	81·6	x84	78	8·8	8·5	85	77	16	5	15	7	7	0	9·1	73	78·0	79·0	344	—
6	997·2	1001·0	80·3	79·6	82	x79	9·5	8·5	92	88	17	4	29	3	8≡0●	10	0·5	78	78·5	79·0	344	—
7	1010·2	997·2	79·5	82·4	83	x79	8·8	11·2	91	97	27	2	16	7	10≡0	10●	5·0	76	78·7	79·1	344	—
8	1007·0	1003·2	77·6	79·3	81	77	6·8	8·5	80	91	20	5	17	7	0	10	x11·5	74	78·9	79·3	343	342
9	993·4	996·2	77·7	75·8	81	75	7·4	6·4	90	88	17	4	17	2	10≡0	0	3·1	77	78·6	79·4	351	—
10	999·4	1001·8	76·8	76·3	82	73	7·1	7·1	89	94	17	3	—	1	4	0≡0	0·4	71	77·8	79·5	359	—
11	1002·2	999·2	71·7	75·5	80	71	5·4	5·8	97	80	—	0	16	2	10≡⌙	10≡0	0·1	69	77·1	79·4	362	—
12	996·0	996·2	74·1	72·9	n77	n70	6·1	5·8	90	96	—	1	—	1	10≡⌙	10≡⌙	0·9	68	76·5	79·3	364	—
13	979·5	967·8	76·3	79·6	81	n70	7·1	8·5	92	86	9	9	17	9	10≡0●	10	11·0	69	75·9	79·4	368	—
14	973·8	991·1	77·5	77·2	80	76	7·8	6·1	91	74	26	4	28	7	10	10	0·7	76	76·8	79·3	369	—
15	1003·0	1013·4	74·9	75·6	80	74	5·8	6·1	82	82	25	4	31	2	4	0	1·0	72	76·6	79·1	370	—
16	1020·6	1017·1	72·4	78·0	80	72	5·4	6·8	90	76	—	1	15	5	0≡0⌙	10	6·7	67	76·0	79·1	376	—
17	1002·0	998·1	79·7	80·6	82	x79	8·8	8·8	91	86	16	10	17	7	10●	5	9·5	73	76·4	79·0	384	—
18	993·1	984·9	81·2	78·4	83	78	9·5	8·1	88	91	17	6	17	4	10●	7	6·7	77	77·4	79·0	397	—
19	984·6	984·4	79·9	77·6	82	77	9·1	8·1	91	96	19	6	25	2	10●	7≡0	2·4	76	77·9	79·0	403	406
20	986·7	989·5	77·0	75·5	81	74	7·4	6·4	91	89	—	1	—	0	9≡0	0≡	0·1	72	77·7	79·0	404	—
21	993·7	991·3	73·8	76·9	81	72	5·1	7·1	80	87	—	1	19	2	3≡0⌙	7	0·1	67	77·0	79·0	400	—
22	988·3	992·5	75·7	75·8	80	74	7·1	6·4	95	88	—	1	32	4	10≡	10●0	1·4	69	76·7	79·0	400	—
23	1001·3	1005·6	74·6	73·7	78	73	5·4	6·4	76	98	27	3	32	2	1	10≡0✻	4·7	72	76·9	79·1	390	—
24	1015·7	1024·5	73·7	73·6	n77	72	4·7	4·1	75	n66	31	5	32	2	3	0	—	71	76·9	79·0	383	—
25	1028·0	1030·4	72·8	74·0	79	71	4·7	6·1	76	90	—	1	—	1	10≡0⌙	0≡0	0·1	n66	76·0	79·0	380	—
26	1030·4	1022·6	73·0	77·4	80	n70	5·4	6·4	88	76	—	1	17	6	2≡0⌙	10	1·2	n66	75·6	79·0	378	—
27	1014·0	1009·9	78·3	79·0	82	77	8·1	7·8	93	83	17	6	20	6	10●0	7	—	75	76·0	79·0	377	—
28	1010·0	1004·1	77·9	78·5	81	76	6·1	6·8	70	74	24	7	21	7	3	8	1·1	72	76·8	79·0	374	—
Means	1003·0	1002·2	77·1	77·7	80·9	74·8	7·2	7·4	87	85		3·9		4·3	7·1	6·1	84·3	72·3	77·1	79·1	370	—
Normal	1015·0	1015·0	76·7	77·1	80·1	74·8	6·6	6·7	84	83		3·8		3·6	—	—	38·9 (40 years)	—	—	—	*Note.*—The values printed for January should be raised by 4 c.m.	
	40 years						25 years				30 years											

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

1	980·8	974·1	73·0	76·7	79	n67	5·8	7·1	94	91	16	2	15	9	10≡0	10●	31·1	No record.	⊠. c. and o. all day. ● from 11 h.
2	967·4	965·6	79·8	76·2	80	74	9·8	6·1	100	80	18	13	22	7	10●≡0	10	22·2		●2 all day. Sudden squall 13 h 20 m.
3	971·1	966·0	77·6	81·9	x82	74	7·4	9·1	90	83	17	16	16	20	10●	10	11·0		● 9 h.–12 h. and from 20 h. ⁄ 18 h.–23 h.
4	970·1	976·1	79·4	77·9	81	x77	8·5	7·8	89	89	18	13	14	5	10	10●	2·0		● early. ●0 in evening. Mild.
5	977·5	970·2	76·8	79·7	80	76	7·4	7·8	95	77	—	1	12	9	10	10●	10·2		Close and o. ● from 21 h.
6	969·8	978·3	78·6	74·7	79	74	7·8	6·1	85	89	11	12	8	7	10●	10	5·2		● till 15 h., then o.
7	978·2	964·0	74·5	76·0	76	74	6·1	7·1	90	96	12	10	16	5	10	10●	13·2		✻● (sleet) from 11 h.
8	966·7	968·4	73·2	72·6	75	72	5·1	5·1	80	87	21	9	15	3	8	6	8·6		● 4 h. ✻ showers 13 h.–14 h.
9	959·6	959·5	75·3	74·4	77	72	6·8	6·1	95	91	14	5	13	11	10	10	3·6		✻ 3 h. ⊠. ◬ midday.
10	966·6	972·5	74·1	75·5	77	74	6·1	6·4	90	88	13	3	12	3	9	4	—		Dull and o. early to fair.
11	974·7	971·0	74·3	74·4	77	73	5·8	6·1	87	87	25	2	—	0	10≡0⌙	3	0·4		⌙≡0 *a.* Sun-pillar at sunset.
12	965·1	964·9	73·6	73·4	n74	72	5·8	6·1	90	95	—	1	15	3	10✻	10✻	5·5		✻0 most of day. ⊠
13	958·0	952·8	71·3	74·3	75	69	4·4	5·1	84	77	5	4	4	13	6	7	—		⊠. ✻0 shower 14 h.
14	959·1	968·9	73·9	71·8	76	72	5·4	4·7	83	83	2	13	1	3	8	0	—		✻ showers *a.* and *p.*
15	976·2	985·3	74·7	73·1	77	72	5·1	5·1	73	84	1	5	—	0	3	10	—		Mostly fine and sunny.
16	988·8	981·7	72·7	75·0	77	71	5·1	5·8	85	79	—	0	12	8	3	10	24·3		Mostly o. ✻●2 after 22 h.
17	960·4	959·2	77·4	76·2	79	73	8·1	7·1	99	91	13	9	16	7	10●	9	15·5		✻● early. ◹ 15 h. and 17 h. ◬2 17 h.
18	955·4	950·7	74·4	76·9	78	73	6·4	7·4	93	91	15	4	16	4	10	9	10·8		✻0 early. ● at frequent intervals.
19	947·8	951·9	76·2	75·6	78	75	7·1	6·1	95	85	17	5	24	8	9	4	0·8		● early. o. and c. to clear.
20	956·0	958·5	74·0	74·3	78	70	5·4	6·4	81	95	18	3	20	5	2⌙	8	1·0		Fine and bright *a.* ●0 showers *n.*
21	961·1	959·2	73·1	71·7	76	70	5·1	5·8	84	100	15	4	19	2	9	? 10≡0	1·2		Fine early. ✻ from noon. ≡0
22	958·7	965·2	72·4	71·6	78	71	5·8	3·7	97	67	16	3	26	6	10≡0	1	—		≡0 early to fine.
23	971·0	983·1	71·3	70·6	76	69	4·4	3·4	83	n63	—	1	2	4	10⌙	3	1·5		Fine till 9 h. ✻2 13 h.–14 h. ⊠
24	991·9	994·7	70·6	73·2	75	n67	3·4	5·1	n63	82	31	5	20	4	0⌙	8	—		Cloudless till 14 h.
25	997·2	999·1	73·4	74·8	78	73	5·8	6·8	92	95	14	3	18	3	7	10	—		c. to o.
26	993·1	979·8	73·7	74·6	76	73	4·4	6·4	70	94	17	8	19	17	10	10●	x49·0		✻2 14 h. to ✻● (sleet). ⊠⁄ 22 h.
27	977·7	970·9	74·1	71·9	77	71	5·4	4·7	79	82	22	11	23	9	4	4	7·6		⊠. q. and ● showers.
28	972·1	967·0	71·6	72·1	75	70	5·4	5·1	100	89	23	8	23	6	10✻	10✻	17·7		Frequent ✻. ⊠→
Means	970·4	970·0	74·5	74·7	77·4	272·0	6·1	6·1	87	86		6·2		6·5	8·1	7·7	242·4	—	Monthly **Totals** or **Means.**
Normal 1911-14	980·8	980·6	75·6	76·0	78·9	73·1	6·8	7·0	89	89		6·1		5·9	—	—	169·9	—	**Normals.**

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism:—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 23 days; they 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.

x denotes the maximum and *n* the minimum value in the column. *z* Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·64.				Charge per cc. ×10²⁰.		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.*												
		v/m.	v/m.	v/m.	v/m.	E.-m.U.	E.-m.U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	≡⁰ *a.* Fair *a* and *p.* ● *n.*	80	550	405	325	700	600	0·60	0	1	497	9 19	449	21 5	48	24·8	10 45	10·2	21 18	14·6
2	Dull. ● till 5 h. and after 15 h.	35	50	95	*z*±	—	—	—	1	1	*x* 516	7 8	462	12 45	54	25·3	6 33	19·7	20 27	5·6
3	Mostly dull.	280	395	120	395	—	—	—	0	0	483	13 56	469	21 8	*n* 14	24·3	10 57	19·9	23 42	4·4
4	Dull *a.* and *p.* Fine *n.*	150	365	430	455	570	440	2·75	0	0	491	6 43	463	11 22	28	25·3	12 43	19·6	23 59	5·7
5	Fair *a.* Dull *p.* Fine *n.*	225	420	260	375	610	620	0·65	1	1	496	0 48	448	11 56	48	28·3	12 17	16·2	2 18	12·1
6	Showery and misty.	*z* −	—	395	550	—	—	—	2	0	482	13 1	455	18 8	27	27·4	11 41	18·3	18 12	9·1
7	Dull and g. ● *p.* [−21 h.	155	360	385	−50	—	—	—	1	0	489	19 42	463	12 14	26	25·4	11 48	20·5	21 47	4·9
8	Fine *a.* and *p.* ● 13 h. and 18 h.	95	505	435	−235	—	—	—	2	2	484	8 25	439	19 59	45	31·2	12 8	18·4	20 59	12·8
9	Dull *a.* ●² 11 h. Fine *p.*	70	260	430	750	—	—	—	2	1	478	22 10	443	17 48	35	30·3	14 3	14·9	2 16	15·4
10	Mostly fine. ● 18 h.	260	540	330	645	760	560	1·45	1	0	475	21 55	451	10 20	24	25·2	11 45	21·0	5 2	4·2
11	≡⌙ *a.* Fine *p.*	225	1120	455	550	460	300	1·10	0	0	483	23 5	455	9 58	28	24·5	13 4	20·3	9 10	4·2
12	≡⌙ *a.* Fine *p.* ≡² *n.*	535	490	735	255	670	540	0·80	1	0	488	9 1	463	11 6	25	24·7	10 38	18·5	6 19	6·2
13	≡⌙ *a.* ● 8 h.–10 h. ✲ 10 h.–	865	*z* −	185	85	—	—	—	2	0	485	8 32	454	17 38	31	25·0	11 44	20·2	18 3	4·8
14	● *a.* and 14 h. Dull. [11 h.	−155	35	−25	140	—	—	—	2	0	481	22 30	465	17 43	16	24·7	11 23	20·8	6 50	3·9
15	Dull to fine. ● 16 h.	280	515	280	455	400	400	0·55	1	0	489	6 55	457	16 15	32	25·3	14 22	20·7	22 58	4·6
16	≡⁰⌙ *a.* Mostly fine.	560	595	260	410	230	160	0·50	1	0	483	0 10	459	11 40	24	24·1	12 14	20·5	22 55	*n* 3·6
17	Dull, with ●	−655	−295	−645	210	—	—	—	2	0	482	8 31	454	20 8	28	25·2	12 12	18·3	23 51	6·9
18	● showers; bright intervals.	105	−525	15	330	—	—	—	2	0	481	18 33	458	22 30	23	24·9	12 49	17·6	23 34	7·3
19	Fine at intervals. ●² 14 h.	70	*z* −	−105	710	—	—	—	2	2	479	14 3	*n* 411	17 3	68	*x* 31·7	22 53	*n* 8·9	23 53	*x* 22·8
20	Dull to fair. ≡ *n.*	500	630	190	295	—	—	—	1	1	498	21 35	434	3 57	64	30·1	13 23	9·3	0 0	20·8
21	≡⌙ early. Fine to fair.	270	375	210	505	—	—	—	1	1	485	18 23	442	6 19	43	29·9	12 21	14·3	18 7	15·6
22	≡7 h.–11 h. Dull to fair.	325	80	400	200	530	280	0·30	2	2	503	23 23	435	22 20	68	27·7	13 16	9·2	21 29	18·5
23	Mostly fine. ✲⁰ 17 h. ✲² 19 h.–	85	480	200	*z*±	840	500	0·40	1	2	494	22 40	424	16 40	70	28·3	11 23	11·9	17 48	16·4
24	⊠. ✲⁰ early. Fair to fine. [23 h.	0	715	340	505	530	460	0·55	1	1	497	21 3	420	10 20	77	29·5	12 1	13·3	20 51	16·2
25	≡⁰⌙ early. Fine from 10 h.	420	715	280	640	440	140	0·70	0	1	501	20 16	422	10 21	*x* 79	30·2	13 0	17·3	20 40	12·9
26	≡²⌙ early. Mostly fine.	385	690	280	280	320	340	0·60	0	1	481	22 2	428	16 43	53	29·3	12 2	12·8	17 1	16·5
27	● early. Fair to fine.	80	−210	190	120	—	—	—	2	1	481	21 35	449	3 25	32	26·4	12 15	15·9	0 6	10·5
28	Fine to fair. ●⁰ ◬⁰ 13 h.	115	245	210	245	—	—	—	1	0	487	22 48	457	18 44	30	25·7	12 46	17·4	21 58	8·3
M.		187*	37 *	260*	339*	—	—	—	—	—	488	—	447	—	41	27·0	—	16·6	—	10·3

6. Atmospheric Electricity and Terrestrial Magnetism:—Eskdalemuir.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		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.*			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.	Amp/cm².														
1	525	422	259	−829	—	—	—	2 *b*	1	18 57	1022	976	21 54	12 26	110	24	21 17	21 25	211	178	9 22
2	−969	266	−1665	−52	—	—	—	2 *c*	1	7 7	1047	993	12 46	6 33	136	86	20 25	16 48	192	161	7 9
3	215	−651	274	37	—	—	—	2 *b*	0	23 47	1021	998	16 32	10 55	110	89	22 32	12 30	191	181	23 47
4	−163	185	311	0	—	—	—	2 *b*	1	6 42	1027	995	11 21	10 51	118	84	24 0	17 5	186	178	8 5
5	67	496	385	200	580	710	—	2 *b*	1	4 37	1037	977	11 51	12 23	129	61	2 18	16 59	195	168	2 14
6	−163	−562	−836	281	—	—	—	2 *c*	1	5 48	1019	983	17 29	11 44	121	67	18 9	18 27	201	179	12 32
7	200	155	−163	†	—	—	—	†	0	20 8	1020	996	12 13	11 47	108	86	21 48	12 32	187	181	24 0
8	†	†	207	681	—	—	—	†	2	18 38	1025	956	10 55	13 53	147	66	20 53	18 35	232	156	23 48
9	289	104	229	30	—	—	—	2 *c*	2	0 49	1025	966	21 52	14 6	141	46	2 35	15 46	225	158	0 1
10	170	348	318	570	—	—	—	2 *b*	1	21 50	1015	985	10 20	11 45	107	84	17 22	17 20	194	182	7 44
11	281	511	289	252	520	580	—	0 *a*	0	23 5	1020	990	12 28	13 44	101	83	10 8	16 20	190	182	12 50
12	518	163	622	*z*	—	—	—	1 *b*	1	17 58	1024	991	11 7	10 36	112	74	6 21	17 7	190	174	10 37
13	466	466	163	229	—	—	—	0 *a*	1	5 5	1017	987	17 30	11 42	112	77	17 39	17 49	193	179	8 17
14	96	163	96	488	—	—	—	1 *b*	0	20 27	1014	996	10 54	11 24	109	90	17 48	17 54	187	178	9 9
15	533	437	326	303	—	—	—	0 *a*	1	6 57	1019	988	16 14	14 24	118	91	0 8	15 40	190	174	9 27
16	126	207	289	570	—	—	—	1 *b*	0	0 11	1022	993	11 39	13 48	104	92	22 53	15 40	187	180	7 46
17	−755	−1613	*z*	229	—	—	—	2 *c*	1	5 3	1016	985	17 26	13 15	113	73	23 51	20 10	192	174	10 52
18	37	7	−44	252	—	—	—	2 *c*	1	23 19	1021	988	10 37	13 0	107	68	23 35	22 32	186	178	9 28
19	*z*	−148	333	170	580	260	—	2 *c*	2	24 0	1036	*n* 916	23 1	22 50	*x* 156	13	23 57	17 17	*x* 254	160	23 15
20	133	222	133	215	—	—	—	0 *a*	2	21 32	*x* 1066	964	11 7	13 56	145	15	0 0	15 22	196	*n* 149	2 47
21	178	170	−259	666	—	—	—	1 *b*	2	18 9	1047	967	12 15	11 22	129	41	18 0	15 32	202	178	11 21
22	340	488	281	266	780	710	—	0 *b*	2	23 17	1063	955	22 20	13 11	127	*n* 0	21 31	21 1	207	170	23 58
23	126	133	281	318	—	—	—	1 *b*	2	17 3	1036	955	16 37	15 7	130	21	17 42	17 45	234	164	2 42
24	303	333	266	244	840	450	—	0 *a*	2	19 15	1054	948	10 32	12 3	125	42	20 47	{17 / 18 9 / 52}	215	163	3 31
25	118	422	170	577	1360	910	—	1 *a*	1	20 13	1054	950	10 21	12 56	138	68	20 40	16 21	215	175	2 45
26	185	192	*z*	−1576	—	—	—	2 *c*	1	22 2	1036	956	16 42	13 35	131	38	16 59	17 0	222	172	3 8
27	81	170	*z*	266	—	—	—	2 *c*	1	21 30	1025	986	11 52	12 13	116	51	0 8	16 32	190	174	11 31
28	*z*	*z*	*z*	*z*	—	—	—	2 *c*	1	22 37	1030	992	12 0	13 10	115	69	21 56	19 3	190	170	11 29
M.	135*	203*	*	231*	—	—	—	—	—	—	1031	976	—	—	122	61	—	—	202	172	—

* 20 days. *See* note above. † Water failed.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. $A_{N.}$	Amplitudes. $A_{E.}$	Amplitudes. $A_{Z.}$	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
8		11 27 to	...	...	...	...	...	Disturbance obscured by microseisms.
		11 43	...	...	...	...	...	
10		4 33 to	...	...	...	...	...	Small disturbance.
		4 56	...	...	...	...	...	
11		8 40 to	...	...	...	...	...	Small disturbance.
		9 36	...	...	...	...	...	
14		8 42 to	...	...	...	...	...	Small disturbance much obscured by wind effects.
		8 49	...	...	...	...	...	
20	Pi	8 21 45	...	...	...	...	...	Slight earthquake.
	L	8 24½	...	...	...	...	...	
	F	8 34	..	...	...	...	...	
21	L	15 25	...	...	...	...	...	Small disturbance.
	F	15 52	...	...	...	...	...	
25	Pe	9 27 36	...	...	...	...	...	Slight earthquake.
	L	9 37	...	...	...	...	...	
	F	10 18	...	...	...	...	...	
25	Pe	14 3 9	...	...	...	...	...	Slight earthquake.
	L	14 22	...	...	...	...	...	
	F	14 46	...	...	...	...	...	
25	P_1	20 54 39	...	...	...	...	8000	$\alpha = 0°$.
	P_2	20 56 55	...	...	...	...	...	First epicentre about 53° N. lat., 177° E. long.
	S_1	21 3 59	...	...	...	...	...	
	L	21 21	...	...	...	...	...	
	F	23 11	...	...	...	..	...	
26	L	3 48	...	...	...	...	...	Small disturbance.
	F	4 38	...	...	...	...	...	
28	S_1	19 22 36	...	...	...	...	About	P confused with microseisms and wind effects.
	S_2(?)	19 23 54	...	...	...	...	10000	
	L	19 39	...	...	...	...	...	
	M_1	19 47 54	28	15	...	...	...	
	M_2	19 53 6	26	19	...	...	...	
	F	21 18	...	...	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. $A_{N.}$	0 h. T.	6 h. $A_{N.}$	6 h. T.	12 h. $A_{N.}$	12 h. T.	18 h. $A_{N.}$	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	1·6	5	0·9	5	1·1	6	1·6	6
2	1·8	6	2·3	6	5·5	6·5	4·2	7
3	5·0	7	6·3	6·5	5·5	7·5	5·7	8
4	5·0	8·5	5·8	7	6·0	8	5·7	7
5	4·0	7·5	3·4	7	3·8	6	3·0	6·5
6	3·6	6	3·4	6·5	3·9	6·5	4·0	6·5
7	3·8	6	2·8	5·5	3·2	5·5	3·4	5·5
8	5·4	6·5	6·9	6	6·3	6	6·2	6
9	4·8	6·5	3·7	6	3·0	6	2·3	6·5
10	2·0	6·5	2·2	6·5	1·5	6	1·8	6
11	1·9	5	1·3	5	0·9	5	0·8	4·5
12	0·7	4	0·7	4	0·8	4·5	1·0	4·5
13	1·0	4	1·1	5	1·8	4	1·6	5
14	1·7	4·5	1·3	5	1·7	4·5	1·4	4·5
15	1·4	5	1·4	5·5	1·0	5	1·0	5
16	1·6	5·5	1·3	5·5	1·5	5	2·3	5
17	2·6	5	2·8	5·5	4·6	5·5	3·8	5
18	4·2	5·5	4·9	6	4·6	6·5	4·7	6
19	4·6	5·5	3·9	6	3·2	5·5	3·6	5
20	3·3	5·5	2·8	5	3·0	5·5	2·4	6
21	2·5	6	2·8	6	2·5	6·5	2·3	5
22	2·0	5·5	1·8	6	1·9	6	2·6	5·5
23	2·3	5·5	2·0	6	1·8	5·5	1·6	6
24	1·8	5	1·2	5	1·0	5	0·8	5
25	0·9	5·5	0·8	4·5	0·9	4·5	0·9	5
26	1·3	5	1·5	5	2·2	6	2·4	6
27	3·1	5·5	3·6	5	3·3	5·5	3·0	5
28	3·5	6·5	4·2	7	4·1	7	3·2	7·5

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement. h m	Times, G.M.T. of Max. Phase. h m	Remarks.
8	11 30·0	11 34·5	Small.
10	4 41·4	4 44·5	Very small.
20	...	8 28·0	Very small.
21	15 29·6	15 36·6	Small.
25	...	21 16·5	Succession of small movements.
28	19 22·0	19 52·6	Amplitude on trace 2·5 mm.

8. WIND COMPONENTS; Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	...	2·0	4·8	...	4·3	...	1·8	...	7·5	...	...	...	10·8	...	...	...	18·5	21	25
2	9·6	...	1·9	...	8·8	...	3·6	...	3·0	...	2·0	...	4·0	...	9·7	...	18·8	17	50
3	8·0	...	1·6	...	12·1	...	...	...	12·8	...	...	...	15·7	...	...	...	27·5	21	55
4	9·7	...	4·0	...	7·6	...	3·1	...	6·2	...	...	...	6·1	...	...	1·2	26·5	1	50
5	4·5	...	...	0·9	6·4	...	...	2·6	11·8	...	...	4·9	12·1	...	...	5·0	26·5	18	35
6	6·1	...	...	2·5	0·5	...	...	0·5	0·5	...	2·6	...	...	...	2·0	...	10·7	2	55
7	2·6	...	...	...	9·6	...	...	1·9	13·1	...	...	2·6	1·9	...	9·3	...	22·5	13	35
8	1·7	...	8·7	...	3·0	...	7·3	...	4·9	...	7·4	...	8·3	...	...	1·7	15·7	4	50
																		13	50
9	10·3	...	...	4·3	11·1	...	...	...	4·4	...	6·6	...	2·6	...	6·4	...	20·6	9	30
10	1·7	...	2·5	...	3·5	...	0·7	...	6·1	...	1·2	...	5·1	...	...	1·0	12·7	13	55
11	3·3	...	...	...	0·8	...	...	4·2	4·3	...	...	...	1·0	...	...	...	9·7	0	30
12	2·3	...	...	...	3·6	...	2·4	...	4·5	...	1·9	...	5·2	...	...	...	12·3	23	20
13	6·3	...	...	6·3	3·1	...	...	15·4	...	...	...	18·7	...	5·7	...	13·7	27·3	15	25
14	...	7·8	...	11·7	...	10·6	...	7·1	...	10·9	...	7·3	...	9·3	...	1·9	20·6	3	50
15	...	7·5	...	...	...	7·9	3·3	...	...	4·5	0·9	...	...	0·7	...	0·1	13·0	10	10
16	...	1·1	1·1	...	4·6	...	...	...	8·8	...	...	3·6	14·5	...	...	6·0	26·2	21	10
17	15·1	...	...	...	5·8	...	5·8	...	8·1	...	8·1	...	8·7	...	...	1·7	22·3	0	35
18	5·3	...	5·3	...	5·8	...	1·2	...	6·4	...	2·6	...	5·6	...	5·6	...	14·2	12	25
19	2·8	...	6 7	...	...	4·0	9·7	...	...	3·6	8·8	...	...	2·9	6·9	...	15·8	10	45
20	...	1·6	4·0	...	...	0·6	1·5	...	4·1	...	2·7	...	1·1	...	2·8	...	8·9	0	40
21	...	4·7	3·1	...	...	1·5	3·6	...	3·3	...	7·9	...	...	1·9	1·3	...	13·5	13	45
22	0·9	...	1·3	...	...	1·8	2·7	...	...	2·2	3·2	...	...	12·4	5·1	...	19·6	18	10
23	...	8·8	8·8	...	...	12·3	8·2	...	...	14·1	...	2·8	...	10·9	...	7·3	20·1	7	50
24	..	9·7	...	4·0	...	9·1	...	3·8	...	3·3	...	...	...	0·6	3·2	...	13·3	4	45
25	...	...	4·3	...	...	...	3·3	...	...	0·3	1·6	...	2·7	...	4·1	...	8·6	22	15
26	6·1	...	2·5	...	11·6	...	2·3	...	11·6	...	4·8	...	13·0	...	8·7	...	24·2	20	55
27	...	3·5	8·5	...	1·9	...	9·6	...	4·6	...	11·2	...	...	2·8	14·1	...	23·4	24	0
28	..	3·1	15·4	...	...	2·6	12·9	...	...	...	13·8	...	...	6·2	14·9	...	24·3	21	5
S+N & W+E		146·1		114·2		154·5		118·5		164·9		127·2		171·8		133·7			
S−N & W−E		46·5		54·8		53·7		47·5		87·1		47·4		65·0		54·5			

SCOTLAND N.:—DEERNESS.

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·8 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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	3·0	...	3·0	...	6·8	...	1·3	...	7·7	...	1·5	...	10·0	...	...	2·0	13·8	24
2	10·6	...	...	2·1	7·1	...	1·4	...	10·3	...	2·0	...	10·6	...	2·1	...	14·1	1
3	11·9	...	2·4	...	12·4	...	...	5·1	15·2	...	...	6·3	15·3	...	...	10·2	18·4	21, 22
4	14·5	...	...	9·7	13·1	...	...	2·6	9·7	...	...	4·0	9·3	...	...	1·9	18·0	4
5	8·8	...	...	3·6	9·0	...	...	1·8	6·5	...	...	6·5	9·3	...	...	13·9	18·4	24
6	10·6	...	...	15·8	11·8	...	...	17·7	11·1	...	...	16·6	12·3	...	...	12·3	21·6	8
7	11·6	...	...	11·6	10·2	...	...	15·3	14·0	...	...	14·0	8·0	...	...	19·4	22·0	18
8	9·3	...	...	13·9	4·9	...	...	11·8	1·5	...	7·4	...	10·3	...	2·0	...	20·0	1
9	8·5	...	...	...	4·6	...	...	6·8	5·0	...	...	12·1	8·8	...	...	8·8	14·8	20
10	5·7	...	...	8·5	3·9	...	...	9·4	4·6	...	...	6·8	4·9	...	...	7·4	12·1	5
11	5·3	...	...	5·3	3·0	...	...	7·3	1·3	...	...	6·6	1·0	...	...	4·8	8·5	10
12	2·3	...	...	5·5	1·7	...	...	8·3	4·0	...	...	9·7	6·6	...	...	9·8	13·8	18
13	9·6	...	...	1·9	6·0	...	...	6·0	3·5	...	...	8·5	1·5	...	...	7·4	10·8	13
14	...	3·4	...	5·2	...	6·2	...	...	...	3·5	...	0·7	...	3·9	...	0·8	6·6	1
15	...	2·8	...	2·8	...	5·5	1·1	...	...	6·7	...	2·8	...	5·5	2·3	...	8·2	13
16	...	3·5	...	0·7	...	2·3	...	0·4	2·0	...	...	4·8	8·1	...	...	5·4	13·4	24
17	8·6	...	...	12·8	11·1	...	...	16·6	8·2	...	...	12·3	8·7	...	1·7	...	20·0	9, 10
18	11·9	...	...	2·4	7·2	...	...	...	8·2	...	...	3·4	3·7	...	...	5·5	12·1	3
19	0·6	...	...	3·2	1·3	...	...	0·9	0·7	...	...	0·7	1·4	...	2·2	...	4·3	2
20	0·6	...	1·5	...	...	...	1·6	...	2·3	...	...	...	2·3	...	0·4	...	5·2	24
21	5·5	...	1·1	...	...	...	...	7·2	5·5	...	1·1	...	2·9	...	0·6	...	7·2	8
22	...	0·7	1·1	...	...	1·1	1·7	...	...	5·5	1·1	...	...	3·6	2·4	...	14·1	24
23	...	16·1	...	...	...	11·9	2·4	...	...	10·9	4·5	...	...	8·0	1·6	...	16·7	2
24	...	3·3	4·9	...	...	0·2	1·0	...	5·7	...	2·4	...	1·5	...	0·6	...	6·9	2
25	...	...	2·3	...	2·1	...	5·2	...	2·9	...	6·9	...	3·0	...	2·0	...	8·5	12
26	4·5	...	1·9	...	12·3	...	...	2·4	14·1	...	...	...	7·9	...	3·3	...	16·4	12
27	5·2	...	3·4	...	5·8	...	5·8	...	6·9	...	2·9	...	...	...	4·6	...	10·5	10
28	4·2	...	6·2	...	...	...	4·6	...	5·8	...	5·8	...	4·9	...	4·9	...	10·2	12
S+N & W+E	182·6		132·8		161·5		145·7		183·3		151·4		173·3		140·3			
S−N & W−E	123·0		−77·2		107·1		−93·5		130·1		−80·2		131·3		−78·9			

ENGLAND S.W.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	...	1·4	7·0	...	3·9	...	1·6	...	10·0	...	...	...	5·1	...	7·6	...	12·9	15	30
2	6·8	...	6·8	...	10·8	...	4·5	...	10·0	...	10·0	...	2·0	...	10·2	...	31·2	15	40
3	11·1	...	2·2	...	14·2	...	...	...	17·3	...	...	3·4	17·3	...	...	3·4	25·0	22	15
4	9·2	...	3·8	...	3·9	...	1·6	...	4·7	...	...	4·7	3·7	...	...	0·7	16·8	0	40
5	5·4	...	...	...	16·6	...	...	6·9	12·7	...	...	2·5	8·1	...	...	1·6	27·0	12	30
6	11·1	...	2·2	...	...	4·6	23·3	...	...	6·4	15·4	...	...	2·4	12·3	...	30·8	7	30
7	7·0	...	...	1·4	8·5	...	3·5	...	...	4·8	11·6	...	..	3·3	16·4	...	26·0	20	10
8	3·0	...	15·1	...	...	...	13·8	...	0·9	...	4·5	...	13·5	...	2·7	...	23·7	21	50
9	2·4	...	12·3	...	...	...	7·9	...	...	2·4	12·3	...	...	...	12·9	...	24·0	2	0
10	3·8	...	9·2	...	4·2	...	2·8	...	3·5	...	3·5	...	3·8	...	2·6	...	14·5	2	30
11	...	6·2	6·2	...	...	3·2	0·6	...	...	6·6	2·7	...	..	4·2	2·8	...	17·8	10	55
12	...	2·7	2·7	...	...	1·2	1·7	...	2·8	...	0·6	...	3·0	...	1·3	...	10·8	23	50
13	13·3	...	...	13·3	12·5	...	18·7	...	...	11·2	27·0	...	...	8·0	19·2	...	35·0	14	25
14	...	9·7	14·5	...	...	7·6	11·4	...	...	7·9	7·9	...	...	5·8	2·4	...	26·1	1	30
15	...	6·6	4·4	...	...	3·0	3·0	...	...	3·5	1·5	...	...	1·9	0·8	...	12·9	5	10
16	3·5	...	...	2·3	8·9	...	...	3·7	16·3	...	...	6·7	12·5	...	...	...	21·0	15	50
17	12·5	...	...	...	7·1	...	7·1	...	9·0	...	6·0	...	6·4	...	15·4	...	23·0	19	10
18	10·7	...	4·4	...	9·4	...	1·9	...	...	2·2	11·0	...	...	4·8	11·6	...	20·0	16	50
19	...	...	10·4	...	...	4·4	10·7	...	...	0·9	0·9	...	...	0·7	0·3	...	16·6	7	40
20	...	1·8	4·3	...	...	...	4·6	...	5·0	...	...	...	1·3	...	...	3·0	11·0	7	20
21	...	2·9	...	...	...	...	2·5	...	...	...	5·4	...	0·3	...	1·3	...	8·1	14	20
22	...	2·5	0·5	...	...	6·7	10·1	...	...	13·0	13·0	...	...	11·1	7·4	...	32·1	13	15
23	...	4·6	1·9	...	...	8·1	3·4	...	...	7·4	7·4	...	...	10·0	4·1	...	18·9	17	20
24	...	8·9	3·7	...	...	8·8	...	...	...	6·3	...	...	...	4·2	...	2·8	15·3	2	15
25	1·1	...	...	5·3	2·1	...	...	3·2	3·8	...	...	3·8	4·6	...	...	1·9	10·3	23	50
26	9·4	...	...	1·9	11·9	...	...	2·4	14·7	...	...	2·9	13·4	...	...	2·7	20·7	18	25
27	...	3·4	8·1	...	...	3·2	7·7	...	...	...	13·3	...	...	5·7	13·9	...	21·8	21	15
28	...	5·7	13·9	...	...	5·2	12·7	...	...	2·8	14·3	...	...	...	16·7	...	23·9	21	50
S+N & W+E	166·7		157·8		170·0		171·3		186·1		192·3		157·1		178·0				
S−N & W−E	53·9		109·4		58·0		138·9		35·3		144·3		32·9		145·8				

ENGLAND E.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	...	0·4	2·0	...	...	0·8	4·2	...	0·4	...	2·0	...	3·5	...	0·7	...	14·6	24	0
2	7·4	...	1·5	...	5·2	...	2·1	...	4·9	...	3·3	...	3·8	...	5·7	...	20·1	19	55
3	1·2	...	5·8	...	4·3	...	2·9	...	5·5	...	2·3	...	6·5	...	1·3	...	17·7	19	35
4	6·9	...	...	...	6·9	...	...	...	5·2	...	...	...	4·9	...	...	...	15·7	4	35
5	4·2	...	0·8	...	4·8	...	1·0	...	6·6	...	...	4·4	6·8	...	...	1·3	12·6	17	35
6	8·5	...	...	3·5	8·8	...	...	3·6	7·6	...	...	5·1	2·6	...	...	12·9	13·2	6	10
7	...	...	...	10·2	...	...	...	8·2	4·9	...	...	4·9	10·3	...	...	2·0	17·3	20	15
8	...	1·0	5·1	...	3·3	...	4·9	...	7·3	...	3·0	...	4·3	...	1·8	...	18·8	0	50
9	10·2	...	...	...	11·8	...	...	...	7·9	...	...	...	3·3	...	...	...	22·4	10	0
10	3·0	...	1·3	...	2·1	...	0·9	...	2·9	...	0·6	...	0·7	...	0·1	...	?	...	
11	2·0	...	0·4	...	0·4	...	2·0	...	...	...	2·6	...	...	...	2·0	...	?	...	
12	...	...	2·3	...	...	...	3·0	...	2·1	...	...	2·1	0·9	...	...	0·9	8·4	10	55
13	1·3	...	...	0·9	9·5	...	...	9·5	10·5	...	...	10·5	9·5	...	...	...	21·3	13	20
14	5·7	...	2·4	...	2·9	...	0·6	...	...	1·7	2·5	...	...	5·7	2·4	...	17·6	23	45
15	...	5·5	2·3	...	...	4·1	2·7	...	...	4·5	1·9	...	...	3·2	0·6	...	18·4	2	55
16	...	3·2	2·2	...	...	2·1	2·1	...	0·4	...	2·0	...	3·5	...	0·7	...	13·8	23	40
17	8·2	...	...	...	11·5	...	...	...	8·5	...	3·5	...	5·5	...	2·3	...	25·0	10	45
18	4·9	...	3·3	...	6·5	...	1·3	...	7·1	...	1·4	...	6·1	...	1·2	...	21·6	18	10
19	2·9	...	4·3	...	7·6	...	3·1	...	6·4	...	2·6	...	1·9	...	1·3	...	18·8	13	10
20	1·9	...	1·3	...	1·1	...	0·7	...	...	1·5	...	0·6	...	1·2	...	0·5	2·9	1	45
21	...	2·1	...	0·9	...	1·4	2·2	...	...	0·4	2·3	...	...	0·5	2·6	...	6·7	12	20
22	2·0	...	3·0	...	2·5	...	2·5	...	...	0·4	2·0	...	...	0·6	1·5	...	8·2	11	45
23	...	1·4	2·2	...	...	2·2	3·2	...	...	1·7	2·5	...	...	1·5	0·6	...	7·2	10	40
24	...	4·2	...	0·8	...	5·1	1·0	...	...	6·2	...	...	...	2·3	0·4	...	17·4	11	30
25	...	3·2	2·2	...	...	1·7	2·5	...	...	2·5	1·7	...	...	1·9	1·3	...	7·3	12	55
26	...	2·5	1·7	...	...	1·4	1·4	...	4·1	...	2·7	...	4·5	...	1·9	...	13·0	23	40
27	5·5	...	3·7	...	7·1	...	4·7	...	...	...	4·9	...	3·4	...	5·2	...	19·6	5	35
28	...	1·3	6·5	...	...	1·7	8·7	...	...	1·7	8·7	...	1·0	...	5·1	...	16·7	10	20
S+N & W+E	100·6		70·6		116·8		79·0		112·9		80·1		99·9		56·3				
S−N & W−E	51·0		38·0		75·8		36·4		71·7		24·9		66·1		21·1				

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 168. February 24, 1915. 11 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2330	...	...	...	...	2·7 *assumed*	Balloon lost to out-station after 2 minutes. One theodolite to 2330 m., when balloon entered sheet of thin St.-Cu. cloud. At 13h the velocity of this cloud was measured with the nephoscope. The components (assuming 2·3 km. as height of cloud) were :— W.-E. +5·0 m/s. S.-N. −7·8 m/s.
	...	...	...	...	...		
	2000	325	18·0	+11·0	−14·5		
	1750	...	...	...	...		
	1500	335	14·5	+ 6·5	−13·0		
	1250	...	...	...	...		
	1000	350	11·0	+ 2·0	−11·0		
	750	...	...	...	...		
	500	325	11·5	+ 7·0	− 9·5		
100 m. above ground.	114	300	7·0	+ 6·0	− 3·5	2·6	*Pressure Distribution.*
Anemometer.	46	300	7·0	+ 6·0	− 3·5	...	See remarks under Eskdalemuir, 7 h., Feb. 24.
Geostrophic wind.	(at 13 h.)	310	10	+ 8	− 7	...	Weight of balloon 12 gm., free lift 53 gm.

Benson. February 10, 1915. 13 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...	2·4	Sky clear.
	2500	175	8·0	0·0	+8·0		
	2000	205	5·0	+2·0	+5·0		*Pressure Distribution* (18 h.).
	1750	215	6·0	+3·0	+5·0		
	1500	225	7·0	+5·0	+5·0		Under the influence of a depression over Ireland.
	1250	240	7·0	+6·0	+4·0		
	1000	230	9·0	+7·0	+6·0		
	750	230	8·0	+6·0	+5·0		
	500	230	7·0	+5·0	+5·0		
100 m. above ground.	157	200	6·0	+2·0	+6·0		
Anemometer.	82	210	6·0	+3·0	+5·0		
Geostrophic wind.	(at 13 h.)	210	9	+5	+8	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. February 11, 1915. 14 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...	2·4	Strato-cumulus.
	...	...	...	...	...		
	...	...	...	...	...		
	2500	180	3·0	0·0	+ 3·0		*Pressure Distribution* (18 h.).
	2000	160	6·0	− 2·0	+ 6·0		
	1750	170	7·0	− 2·0	+ 7·0		Station in an irregular low-pressure region extending from Iceland to Italy. High over the Azores and Eastern Europe.
	1500	170	8·0	− 2·0	+ 8·0		
	1250	180	8·0	0·0	+ 8·0		
	1000	220	20·0	+13·0	+15·0		
	750	135	8·0	− 6·0	+ 6·0		
	500	150	5·0	− 3·0	+ 4·0		
100 m. above ground.	157	145	7·0	− 4·0	+ 6·0		
Anemometer.	82	135	5·0	− 4·0	+ 4·0		
Geostrophic wind.	...	...	*Indefinite*		...	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. February 12, 1915. 14 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...	2·4	*Pressure Distribution* (18 h.).
	3500	350	4·0	+1·0	−4·0		
	3000	345	4·0	+1·0	−4·0		Depression to west of British Isles, with a secondary over Scotland.
	2500	345	3·0	+1·0	−3·0		
	2000	30	1·0	−1·0	−1·0		
	1750	10	2·0	0·0	−2·0		
	1500	80	1·0	−1·0	0·0		
	1250	185	2·0	0·0	+2·0		
	1000	165	2·0	−1·0	+2·0		
	750	20	1·0	0·0	+1·0		
	500	25	0·0	0·0	0·0		
100 m. above ground.	157	25	1·0	0·0	−1·0		
Anemometer.	82	...	0·0	0·0	0·0		
Geostrophic wind.	(at 13 h.) (at 18 h.)	... 190	*Indefinite* 6	+1	+6	... ...	Approx. weights: balloon 12 gm., free lift 45 gm.

Eskdalemuir. No. 4. February 24, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2046	...	...	...	...	2·2	No clouds visible. Atmosphere clear. Barometer rising quickly. Final Elevation = 11°·8.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	10	15·0	− 3·0	−15·0		
	1750	5	16·0	− 2·0	−16·0		
	1500	355	14·0	+ 1·5	−14·0		
	1250	350	8·5	+ 1·0	− 8·5		
	1000	10	5·5	− 1·0	− 5·5		*Pressure Distribution* (7 h.).
	750	10	6·5	− 1·0	− 6·5		
	500	350	9·0	+ 1·5	− 9·0		Station in a large anticyclonic wedge, axis N.E. and S.W., with small centres over and to the south-west of Ireland.
100 m. above ground.	340	340	9·0	+ 3·0	− 9·0		
Anemometer.	250	315	3·6	+ 2·5	− 2·5		
Geostrophic wind.	(7 h.)	...	*Indefinite*		...	...	Weight of balloon 19·8 gm., free lift 38 gm.

Eskdalemuir. No. 5. February 24, 1915. 12 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2720	...	...	...	...	2·1	No clouds visible. Atmosphere slightly hazy to southward, clear to northward. Barometer rising moderately fast. Final Elevation = 15°·0.
	2680	345	10·0	+ 3·0	− 9·5		
	2500	350	9·5	+ 2·0	− 9·0		
	2000	340	8·5	+ 3·0	− 8·0		
	1750	335	11·0	+ 4·5	−10·0		
	1500	330	11·5	+ 6·0	−10·0		
	1250	340	9·0	+ 3·0	− 8·0		
	1000	345	6·0	+ 1·5	− 5·5		
	750	30	3·6	− 1·7	− 3·2		*Pressure distribution.*
	500	345	2·1	+ 0·6	− 2·0		
	340	315	5·5	+ 4·0	− 4·0		See remarks for 7 h.
	250	295	5·0	+ 4·6	− 1·9		
	(13 h.)	330	7	+ 4	− 6	...	Weight of balloon 18·7 gm., free lift 32 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 191. February 1, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3070	...	...	...	...	2·0	Fairly clear, but a good deal of factory smoke.
	3000	320	15·0	+9·5	−11·5		Ci.5 from N.W.
	2500	320	11·0	+7·0	− 8·5		Balloon lost in smoke and distance.
	2000	330	9·0	+4·5	− 8·0		
	1750	335	9·5	+4·0	− 8·5		
	1500	345	10·0	+2·5	− 9·5		
	1250	345	11·5	+3·0	−11·0		
	1000	345	9·5	+2·5	− 9·0		*Pressure Distribution* (7 h.).
	750	345	10·0	+2·5	− 9·5		
	500	340	9·5	+3·0	− 9·0		Under the influence of an irregular high-pressure system over Southern Europe.
100 m. above ground.	170	340	5·0	+1·5	− 5·0		Low over Iceland.
Anemometer.	105	*	...	...	...		* No record.
Geostrophic wind.	(at 7 h.)	290	8	+7	− 3	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 193. February 4, 1915. 16 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2640	...	...	...	...	2·4	Hazy.
	...	...	...	...	...		Ci.-St., from S.
	2500	190	18·0	+3·0	+17·5		Lost in distance, balloon appeared misty.
	2000	180	17·0	0·0	+17·0		
	1750	180	17·0	0·0	+17·0		
	1500	180	20·5	0·0	+20·5		*Pressure Distribution* (18 h.).
	1250	180	17·0	0·0	+17·0		
	1000	180	13·0	0·0	+13·0		Station between high-pressure region over Russia and Central Europe, and deep depression over Iceland, and another to the west of Ireland.
	750	185	12·0	+1·0	+12·0		
	500	175	14·5	−1·5	+14·5		
100 m. above ground.	170	155	5·5	−2·5	+ 5·0		
Anemometer.	105	170	3·0	−0·5	+ 3·0		
Geostrophic wind.	(at 13 h.)	200	15	+4	+14	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 18 h.)	190	11	+2	+10	...	

South Farnborough. No. 194. February 5, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3210	...	...	...	...	2·4	Hazy.
	...	...	...	...	...		Much Ci.-St. 10 to shortly before ascent, clearing very quickly, but beginning to re-form during ascent.
	3000	185	19·0	+1·5	+19·0		Balloon lost in distance.
	2500	185	16·5	+1·5	+16·5		
	2000	190	18·5	+3·0	+18·0		
	1750	190	18·0	+3·0	+17·5		
	1500	190	17·5	+3·0	+17·0		
	1250	185	16·5	+1·5	+16·5		*Pressure Distribution* (7 h.).
	1000	190	12·5	+2·0	+12·5		
	750	200	11·5	+4·0	+11·0		
	500	205	10·5	+4·5	+ 9·5		Conditions similar to those at 18 h. on Feb. 4.
100 m. above ground.	170	170	6·5	−1·0	+ 6·5		
Anemometer.	105	160	? 2·0	−0·7	+ 1·9		
Geostrophic wind.	(at 7 h.)	200	12	+4	+12	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 195. February 8, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3640	...	...	...	...	2·4	Clear, high visibility.
	3500	255	31·5	+30·5	+ 8·0		Cu. 1 or 2 on horizon.
	3000	250	20·5	+19·5	+ 7·0		Balloon lost in distance.
	2500	255	20·0	+19·5	+ 5·0		
	2000	250	18·0	+17·0	+ 6·0		
	1750	250	19·5	+18·5	+ 6·5		*Pressure Distribution* (7 h.).
	1500	250	23·5	+22·0	+ 8·0		
	1250	250	23·0	+21·5	+ 8·0		Under the influence of a depression south of Iceland, with a secondary over North Scotland. High over N.E. Russia and the Azores.
	1000	250	25·0	+23·5	+ 8·5		
	750	250	23·5	+22·0	+ 8·0		
	500	245	18·0	+16·5	+ 7·5		
100 m. above ground.	170	230	7·0	+ 5·5	+ 4·5		
Anemometer.	105	225	6·5	+ 4·5	+ 4·5		
Geostrophic wind.	(at 7 h.)	250	17	+ 5	+ 17	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 198. February 16, 1915. 10 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4250	315	8·5	+6·0	−6·0	2·4	Decidedly hazy.
	4000	280	6·5	+6·5	−1·0		Clear sky.
	3500	280	6·0	+6·0	−1·0		Lost by looking away while balloon moving rapidly and very faint.
	3000	295	6·5	+6·0	−3·0		
	2500	250	5·0	+5·0	+1·5		
	2000	240	5·5	+5·0	+2·5		
	1750	215	5·5	+3·0	+4·5		
	1500	205	6·0	+2·5	+5·5		*Pressure Distribution* (7 h.).
	1250	210	6·5	+3·0	+5·5		
	1000	210	6·0	+3·0	+5·0		Station in an anticyclonic wedge between a low over the Gulf of Bothnia and another to the west of Ireland.
	750	215	7·0	+4·0	+5·5		
	500	210	6·0	+3·0	+5·0		
100 m. above ground.	170	195	5·0	+1·5	+5·0		High over Spain and north-west of Africa.
Anemometer.	105	180	1·5	0·0	+1·5		
Geostrophic wind.	...	...	*Indefinite*		...	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 199. February 20, 1915. 10 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2220	...	...	...	...	2·4	
	...	...	...	...	...		Fairly clear.
	...	...	...	...	...		A.-Cu. 10.
	...	...	...	...	...		Wind changed just as balloon entered cloud sheet. Balloon visible in a misty way for last half minute.
	...	...	...	...	...		
	2000	230	7·5	+ 5·5	+ 5·0		
	1750	235	7·5	+ 6·0	+ 4·5		
	1500	250	5·5	+ 5·0	+ 2·0		*Pressure distribution* (7 h.)
	1250	255	4·5	+ 4·3	+ 1·2		
	1000	290	3·5	+ 3·3	− 1·2		
	750	315	2·5	+ 1·8	− 1·8		Near the centre of an irregular low-pressure system affecting the whole of Europe.
	500	330	4·0	+ 2·0	− 3·5		
100 m. above ground.	170	340	2·0	+ 0·7	− 1·9		
Anemometer.	105	315	1·0	+ 0·7	− 0·7		
Geostrophic wind.	(at 7 h.)	280	5	+ 5	− 1	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	240	6	+ 5	+ 3		

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 200. February 23, 1915. 7h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E. 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	7190	...	...	...	...		Clear, high visibility. Little St. on horizon, small portions forming nearer and all disappearing again.
	7000	315	15·0	+10·5	−10·5		
	6500	330	6·0	+ 3·0	− 5·0		
	6000	260	9·0	+ 9·0	+ 1·5		
	5500	240	8·0	+ 7·0	+ 4·0		*Pressure Distribution* (7 h.).
	5000	230	7·0	+ 5·5	+ 4·5		
	4500	205	5·0	+ 2·0	+ 4·5		Under the influence of depressions centred over Gulf of Bothnia and Italy. Highs over Azores and to west of Ireland.
	4000	230	6·0	+ 4·5	+ 4·0		
	3500	255	5·5	+ 5·5	+ 1·5		
	3000	270	7·0	+ 7·0	0·0		
	2500	280	9·5	+ 9·5	− 1·5	2·4	
	2000	295	11·0	+10·0	− 4·5		
	1750	290	8·5	+ 8·0	− 3·0		
	1500	305	10·5	+ 8·5	− 6·0		
	1250	315	11·0	+ 8·0	− 8·0		
	1000	325	9·0	+ 5·0	− 7·5		
	750	335	11·5	+ 5·0	−10·5		
	500	325	14·5	+ 8·5	−12·0		
100 m. above ground.	170	305	6·0	+ 5·0	− 3·5		
Anemometer.	105	290	3·0	+ 2·8	− 1·0		
Geostrophic wind.	(at 7 h.)	330	13	+ 7	−11	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 202. February 25, 1915. 10 h. 45. m G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	4200	...	...	...	...		Ci.-St., 1, no motion detected. Balloon lost in distance.
	4000	355	16·5	+1·5	−16·5		
	3500	0	13·0	0·0	−13·0		
	3000	5	13·0	−1·0	−13·0		*Pressure Distribution* (7 h.).
	2500	0	12·5	0·0	−12·5		
	2000	0	11·5	0·0	−11·5		Near the centre of an anticyclone over England.
	1750	345	10·0	+2·5	− 9·5		
	1500	335	7·5	+3·0	− 7·0	2·4	
	1250	340	7·5	+2·5	− 7·0		
	1000	345	9·0	+2·5	− 8·5		
	750	340	10·0	+3·5	− 9·5		
	500	345	9·0	+2·5	− 8·5		
100 m. above ground.	170	320	5·5	+3·5	− 4·0		
Anemometer.	105	315	2·0	+1·4	− 1·4		
Geostrophic wind.	(at 7 h.) (at 13 h.)	... 320	*Indefinite.* 7	*finite.* +5	... −5	... ...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 203. February 26, 1915. 10 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	4000	275	6·0	+6·0	−0·5		Hazy near ground. Ci.-St. 2, some Cu. afterwards. Ci.-St. from a westerly point. Balloon lost in distance and haze.
	...	...	...	...	...		
	3500	250	7·5	+7·0	+2·5		
	3000	230	4·5	+3·4	+2·9		
	2500	230	6·0	+4·5	+4·0		
	2000	230	4·5	+3·4	+2·9		*Pressure Distribution* (7 h.).
	1750	220	6·5	+4·0	+5·0		
	1500	215	7·0	+4·0	+5·5	2·4	Under the influence of an anticyclone centred over France; depression to the west of Iceland.
	1250	225	6·5	+4·5	+4·5		
	1000	230	9·5	+7·5	+6·0		
	750	225	10·5	+7·5	+7·5		
	500	210	10·0	+5·0	+8·5		
	170	195	5·5	+1·5	+5·5		
	105	190	2·0	+0·3	+2·0		
	(at 7 h.) (at 13 h.)	*Indefinite.* 230	*finite.* 16	... +12	... +10	... ...	Approx. weights: balloon 12 gm., free lift 45 gm.

Note.—In addition to the ascents recorded above, 1 pilot balloon, which was lost sight of before reaching a height of 2 kilometres, was sent up from Aberdeen and 4 from South Farnborough.

For 11. Soundings with Registering Balloons, and 12. Nephoscope Observations for February, *see* last page of March.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	4·8	44	595	34	45	12 35	45	5·8	54	—	—	—	7·2	68	—	—	—	—	6·1	56
2	3·0	28	595	39	34	12 45	34	6·8	62	—	—	—	4·8	45	—	—	—	—	—	—
3	—	—	240	13	23	13 30	11	—	—	—	—	—	—	—	—	—	—	—	0·2	2
4	—	—	296	16	34	13 20	11	—	—	—	—	—	—	—	—	—	—	—	—	—
5	1·0	10	384	21	36	13 25	27	0·9	8	—	—	—	—	—	—	—	—	—	2·5	23
6	1·1	10	398	21	34	13 30	14	0·6	5	—	—	—	1·4	13	—	—	—	—	0·3	3
7	1·4	13	468	25	55	13 5	42	1·2	11	—	—	—	2·2	20	—	—	—	—	1·1	10
8	3·6	32	642	33	48	13 25	47	4·5	40	68	37	Clear	1·0	9	—	—	—	—	9·0	80
9	1·1	10	667	34	47	12 25	47	1·8	16	—	—	—	0·3	3	—	—	—	—	7·8	69
10	—	—	341	17	35	11 45	35	0·1	1	—	—	—	0·2	2	—	—	—	—	—	—
11	—	—	291	14	21	13 40	19	—	—	—	—	—	1·7	15	—	—	—	—	7·0	61
12	—	—	350	17	23	12 30	23	0·1	1	—	—	—	7·1	62	11 22	Ci.	1·99	73	9·1	79
13	0·8	7	466	22	39	9 30	25	1·2	10	—	—	—	5·0	43	—	—	—	—	x 9·9	85
14	5·0	43	730	35	40	11 20	36	5·2	44	—	—	—	9·3	80	—	—	—	—	—	—
15	—	—	244	11	n 15	13 0	11	—	—	—	—	—	8·1	69	—	—	—	—	—	—
16	—	—	373	17	20	11 5	15	—	—	—	—	—	9·8	83	11 55	Clear	1·56	83	1·4	12
17	—	—	258	12	n 15	14 15	15	—	—	—	—	—	—	—	—	—	—	—	1·8	15
18	0·7	6	240	11	28	15 50	n 5	1·0	8	—	—	—	0·8	7	—	—	—	—	7·9	66
19	5·4	45	981	43	64	12 55	62	6·0	50	73	45	Clear	9·6	80	12 21	Hazy	1·76	70	x 9·9	83
20	2·0	17	644	28	55	11 50	55	2·7	22	80	49	Clear	0·4	3	—	—	—	—	6·4	53
21	x 9·3	77	x 1237	53	54	11 10	52	x 9·8	81	64	39	Hazy	4·6	38	—	—	—	—	9·0	74
22	—	—	495	21	35	12 35	35	—	—	—	—	—	6·2	51	12 42	Ci.	1·74	73	0·1	1
23	0·9	7	443	19	42	14 45	24	2·1	17	—	—	—	—	—	—	—	—	—	0·9	7
24	0·1	1	414	17	27	11 15	19	—	—	—	—	—	—	—	—	—	—	—	—	—
25	0·1	1	n 238	10	35	15 5	16	0·1	1	—	—	—	5·1	41	9 20	Haze	2·35	80	2·3	19
26	0·4	3	590	24	43	15 10	41	1·1	9	—	—	—	7·6	61	11 44	Clear	1·67	86	5·6	45
27	6·7	54	1039	41	61	12 50	60	7·4	59	65	42	Ci.	x 10·1	80	12 22	Clear	1·64	84	4·4	35
28	6·6	52	949	37	x 66	11 40	x 66	6·4	51	—	—	—	6·9	54	—	—	—	—	9·7	77
29	1·7	13	576	22	58	13 0	46	0·9	7	—	—	—	6·5	51	12 18	Ci.	1·61	70	8·4	66
30	7·6	60	1133	44	58	12 35	58	7·7	61	—	—	—	6·4	50	—	—	—	—	8·5	67
31	8·0	62	1012	40	50	10 50	48	8·2	64	—	—	—	3·0	23	—	—	—	—	x 9·9	77
Means	2·29	19	559	26	40	—	34	2·65	22	—	—	—	4·03	34	—	—	—	—	4·48	38
Normal	2·35	20	—	—	—	—	—	3·48	30	—	—	—	2·84	24	—	—	—	—	4·00	34
	← 4 years →							← 30 years →					← 4 years →						← 30 years →	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground:—h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.		γ	° ′	° ′
1	1013·9	1015·9	79·1	77·4	80	77	6·4	7·1	68	86	27	9	—	1	7	7	1·0	Fair.	…	…	…
2	1011·7	1004·1	78·6	82·4	83	76	7·8	11·9	86	100	14	5	16	5	10	10≡⁰●	7·1	≡⁰●	…	…	…
3	1001·2	1007·3	82·8	81·9	84	x 82	11·5	10·8	96	96	16	7	20	3	10≡⁰●	10	4·8	≡⁰●	…	…	…
4	1013·7	1017·1	82·7	83·0	84	81	11·9	11·2	97	93	15	4	15	5	10≡⁰	10	1·0	o. ≡⁰	…	…	…
5	1017·6	1025·2	83·3	82·8	85	x 82	12·2	11·9	97	96	19	8	21	5	10≡⁰●	10≡⁰	—	o. to fair.	…	…	…
6	1025·8	1027·0	82·8	81·5	83	81	11·5	10·8	95	99	24	8	26	3	8≡⁰	10≡⁰	0·2	Fair to ≡⁰ and d.	…	…	…
7	1024·3	1022·1	79·9	81·4	83	79	9·8	9·8	98	91	27	2	5	5	10≡⁰	10	—	≡⁰	…	…	…
8	1027·9	1031·7	76·9	77·0	81	76	7·1	6·4	86	80	—	0	—	1	0	7	—	Fine to c.	17849	20 11·2	68 8·8
9	1033·0	1032·7	74·2	76·0	81	73	5·8	6·4	85	87	8	2	20	2	2	3	—	Fair.	…	…	…
10	1029·9	1024·4	80·2	81·8	82	77	8·5	11·2	85	99	17	3	21	4	10≡⁰	10≡⁰	2·3	≡⁰●	…	…	…
11	1017·7	1020·1	81·3	81·1	83	81	9·8	9·5	91	89	29	9	1	3	10	6	0·4	Fair.	…	…	…
12	1025·0	1026·4	80·0	79·3	83	77	8·1	8·8	80	94	4	4	—	0	6	2	—	Fair.	…	…	…
13	1025·5	1025·5	78·4	79·4	84	75	8·8	9·1	99	94	—	0	—	1	1	0	—	Fine.	…	…	…
14	1026·6	1026·7	80·9	80·8	83	76	9·8	8·5	92	82	—	1	4	3	10	10	—	o.	…	…	…
15	1026·4	1025·6	80·4	80·1	82	80	8·1	7·8	78	78	5	2	—	1	10	10	—	o.	…	…	…
16	1023·1	1019·4	80·1	80·8	83	79	8·5	9·8	85	92	—	0	—	0	9	10	—	c. ∞	…	…	…
17	1014·1	1009·5	78·3	80·1	82	75	8·5	7·8	94	78	—	1	1	2	7	10	1·4	∞	…	…	…
18	1008·8	1010·0	76·3	76·5	80	75	5·4	4·7	69	n 61	2	5	2	6	7	1	0·1	Fine ▲ showers.	…	…	…
19	1012·1	1014·1	74·8	74·7	80	n 72	5·8	5·8	81	83	—	0	2	2	2	0	—	Fine.	…	…	…
20	1016·2	1018·3	75·7	75·3	82	n 72	6·1	6·4	82	87	—	0	—	1	9	5	—	Fair.	…	…	…
21	1017·4	1013·5	79·6	79·3	82	75	6·8	6·4	69	68	9	4	10	6	6	2	—	Fine. q.	…	…	…
22	1006·7	1001·6	80·4	81·2	82	79	7·4	9·8	73	92	9	7	7	6	10	10●	x 14·1	Dull, with ● showers.	17861	20 6·3	68 9·3
23	1001·3	1006·8	83·2	83·0	x 86	x 82	11·9	11·9	97	98	14	6	15	3	10≡⁰●	10≡⁰	1·2	≡⁰ and ● showers.	…	…	…
24	1012·1	1016·0	81·9	82·6	85	81	11·2	11·2	98	95	—	1	—	0	10≡⁰●	10	—	o. ≡⁰	…	…	…
25	1017·2	1014·9	81·9	80·2	85	80	9·8	8·1	88	82	7	3	6	9	10	3	—	Fine.	…	…	…
26	1010·8	1008·4	78·2	76·5	80	75	6·1	5·1	71	65	7	9	9	5	7	3	—	Fair.	…	…	…
27	1007·5	1006·0	75·7	75·9	n 79	74	5·1	5·1	67	68	6	6	8	5	7∞	3	—	Fair.	…	…	…
28	1007·5	1011·0	75·8	75·3	80	74	4·7	5·8	65	79	6	6	8	5	10∞	6	—	Fine. ∞	…	…	…
29	1012·0	1012·0	76·5	77·6	n 79	73	5·8	6·1	70	69	7	6	1	4	1	7	—	Fair.	…	…	…
30	1011·7	1013·5	77·4	77·8	81	73	6·4	7·1	78	84	—	0	4	2	4	6	0·8	Fair.	…	…	…
31	1017·9	1022·7	78·4	78·6	82	74	8·8	7·8	100	88	—	0	—	0	5	3	—	Fair.	…	…	…
Means	1016·7	1017·1	79·2	79·4	82·2	76·9	8·2	8·4	85	86		3·8		3·2	7·1	6·6	34·4	Monthly **Totals** or **Means.**	17855	20 8·8	68 9·0
Normal	1011·8	1012·1	80·0	80·1	83·3	77·5	8·5	8·5	85	85		5·6		5·6	—	—	108·2	**Normals.**			
	← 40 years →						← 25 years →				← 30 years →						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

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3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19 W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
																					Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
			200+	200+	200+	200+												200+	200+	200+		
	mb.	mb.	°	°	°	°	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	°	°	°	cm.	cm.
1	999·9	1007·7	77·0	76·2	80	75	5·4	6·1	66	80	25	9	26	5	3	1	2·1	73	76·9	79·0	370	374
2	1013·3	1014·7	75·9	77·9	81	74	6·1	6·4	82	76	23	3	21	3	2	10≡0	x 6·6	71	76·4	78·9	365	—
3	1010·8	1012·3	80·9	81·3	83	77	10·2	9·8	96	92	19	5	19	6	10≡0●0	10	1·8	74	77·0	78·9	363	—
4	1015·8	1019·4	81·5	81·8	85	x 81	10·5	10·2	95	90	20	2	22	3	10≡0	2	—	80	77·3	78·9	362	—
5	1020·0	1018·5	82·5	82·7	85	x 81	10·2	10·2	84	87	24	6	23	5	10	0	—	80	79·0	78·9	361	—
6	1017·4	1017·2	81·6	82·3	86	80	9·8	8·8	87	76	21	4	29	4	10	10	0·3	76	79·4	79·0	360	—
7	1014·3	1015·2	80·0	76·9	82	76	7·1	6·1	71	76	29	6	32	6	10	2	0·6	78	79·7	79·1	359	—
8	1020·0	1027·4	76·0	74·6	78	75	6·1	4·7	79	69	1	7	3	5	10	8	0·2	74	78·9	79·2	356	—
9	1030·1	1029·5	75·2	76·5	79	74	5·8	6·1	77	79	1	4	—	1	6	7≡0	—	73	78·0	79·4	352	—
10	1027·4	1022·3	76·3	78·4	80	74	6·8	7·4	87	86	30	2	—	1	8≡0	10	0·4	69	77·9	79·5	349	—
11	1015·1	1015·4	79·1	80·7	83	78	8·8	9·8	95	95	22	3	—	0	10●0≡0	10≡0	0·5	76	78·0	79·5	344	—
12	1022·1	1023·1	80·0	80·2	83	77	9·5	8·5	95	85	26	2	—	1	10≡0	10≡0	—	74	78·7	79·4	339	—
13	1021·5	1021·7	78·8	79·6	83	76	8·1	8·5	88	88	25	3	—	1	2	0≡0	—	71	78·9	79·5	335	—
14	1022·6	1023·6	79·8	81·3	87	78	8·8	9·5	91	87	30	2	—	1	10≡0	0≡0	—	72	78·8	79·5	332	—
15	1023·8	1022·5	80·7	80·7	83	78	8·5	8·5	81	82	26	2	24	2	10	0	—	72	79·6	79·5	329	—
16	1020·8	1018·2	79·6	80·7	82	78	7·8	8·5	81	80	30	3	—	1	10	10	—	72	79·5	79·6	328	—
17	1013·1	1005·6	79·5	79·9	82	79	8·5	8·1	87	83	—	1	—	1	10≡0	10≡0	—	78	79·6	79·7	327	—
18	999·5	992·5	77·3	73·5	79	73	6·1	5·8	73	90	29	4	29	2	10	5	0·8	76	79·5	79·7	326	—
19	1000·6	1010·0	74·1	73·6	n 77	72	4·1	5·1	n 61	80	31	8	—	1	9	?0≡0	—	70	78·4	79·9	323	—
20	1014·2	1018·2	75·4	77·7	81	71	5·4	6·4	75	75	22	4	23	3	10✻0	0	—	n 65	77·4	79·9	320	—
21	1021·9	1021·2	76·2	77·4	85	72	6·4	6·1	85	72	—	1	—	0	6≡0	0	—	n 65	77·1	79·9	317	—
22	1016·7	1012·5	78·5	79·9	83	73	6·4	9·1	70	91	9	4	8	3	?5≡0	10≡●0	4·9	66	77·5	79·8	315	—
23	1011·5	1013·4	83·2	80·7	87	80	11·9	10·2	96	96	14	2	—	1	10≡0	?0≡	1·2	78	78·3	79·7	313	—
24	1012·6	1013·6	83·7	84·6	x 88	80	11·5	11·9	91	87	13	2	—	1	10≡0	10≡0	—	73	79·2	79·6	310	—
25	1016·4	1020·3	79·3	76·0	83	74	9·1	6·1	95	81	2	5	5	2	10●≡0	0≡0	0·8	77	80·4	79·7	308	—
26	1014·8	1008·4	76·2	74·6	78	73	5·8	5·1	76	72	3	3	5	4	9	8≡0	—	66	78·9	79·7	305	—
27	1007·0	1005·8	74·9	74·8	79	71	5·1	4·4	70	64	4	5	3	4	2	0≡0	—	69	77·9	79·9	302	—
28	1006·1	1008·1	75·3	73·0	78	72	4·4	5·1	n 61	79	2	7	—	1	3	?0≡	—	70	77·4	79·9	300	—
29	1010·0	1009·3	73·9	73·4	n 77	71	4·7	5·4	75	87	1	2	—	1	3≡0⌐	1≡0	—	n 65	76·7	79·8	298	—
30	1008·9	1010·8	74·5	74·8	80	n 70	4·4	6·1	67	85	3	3	—	0	5	?10≡0	—	66	75·1	79·7	297	—
31	1016·8	1021·2	77·5	76·2	82	73	5·4	6·1	63	78	2	3	17	3	1≡0	0≡0	—	68	76·2	79·8	295	294
Means	1015·0	1015·5	78·2	78·1	81·8	75·3	7·4	7·4	81	82		3·8		2·3	7·5	4·9	20·2	72·2	78·2	79·5	331	—
Normal	1013·3	1013·1	78·1	78·4	82·4	75·2	7·2	7·3	81	81		4·3		3·5	—	—	39·1 (40 years)	—	78·4	79·5	—	—
	40 years						25 years				30 years								11 years			

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	966·8	974·9	73·6	74·1	76	71	4·7	5·1	76	76	29	10	27	13	7	3	0·7		✻2 *n*. ⊠↭. Fine from 7 h.
2	981·1	980·4	74·6	73·3	76	71	5·1	6·1	73	97	22	3	14	5	4	10✻	11·5		⊠. Clear and frosty early. ● 18 h. to ✻.
3	976·1	976·0	74·2	77·2	77	73	6·4	8·1	98	97	—	1	18	6	10●0≡0	10●≡0	10·6		Mostly dull and o, with ≡.
4	982·3	982·5	77·7	80·4	81	76	8·5	9·8	98	95	19	5	20	10	10≡0	10	x 13·9		o. and ≡ early. ● from 9 h.
5	983·1	981·7	80·8	80·8	82	x 80	9·8	9·1	95	89	20	11	25	12	10≡0●0	8	4·3		d. and o. all day. ⌒ 13 h.
6	982·9	988·8	80·3	77·9	83	76	8·8	7·4	85	86	26	11	—	1	9●	10	1·7		o., with frequent ● showers. ⌒ 14 h.
7	988·2	993·3	75·6	74·0	79	73	5·4	4·1	73	64	28	6	1	8	4	0	1·7		Fine to fair. Ш0 22 h. 30 m.
8	999·2	1003·5	73·8	73·8	77	73	5·4	5·4	85	85	2	7	—	0	10	10	—		✻ 7 h. ⊠. Rapid thaw.
9	1002·9	1000·7	72·0	74·0	78	70	4·4	5·4	75	81	—	0	30	3	9	0	—		c. and o. to clear.
10	996·6	990·7	78·8	78·6	81	74	8·1	8·8	89	97	24	4	19	6	10	10●0≡0	2·0		o. to ≡0●0. q.
11	983·2	990·8	80·0	76·1	81	75	8·1	7·1	81	94	—	1	—	2	4	2	1·1		o. to d.
12	994·8	993·6	75·7	77·8	85	73	6·8	7·4	92	87	—	0	—	1	3∞	2	—		Warm and sunny midday.
13	991·9	992·6	80·9	80·5	84	74	9·5	8·8	91	86	27	9	13	3	6	1	—		Mostly fair. ⊕ 16 h. q.
14	994·5	995·0	77·2	74·6	x 86	72	7·4	6·4	91	93	—	0	—	0	4	0	—		Fine, sunny, and warm. Zodiacal light 20 h.
15	994·5	993·3	79·2	78·3	83	68	7·8	7·4	83	83	28	7	26	7	3	3	—		Fine till 15 h.
16	991·8	990·1	79·9	77·6	x 86	77	7·4	7·4	75	90	28	6	4	3	1	10	—		Clear 7 h.–12 h. to c.
17	985·4	976·3	74·6	74·1	77	72	6·1	5·4	90	79	4	7	26	4	10	5	16·0	No record.	✻ showers 12 h. and 14 h. ⊠. ● 17 h.
18	970·8	978·6	71·2	71·0	n 72	68	5·4	3·7	100	71	2	17	2	10	?10✻	4			✻2 from 6 h. ⊠↭. Cold wind.
19	978·8	979·2	72·3	73·1	76	69	3·7	4·7	63	78	32	4	27	4	0	8	—		✻0 3 h. ⊠. Very fine all day.
20	981·5	983·9	72·3	76·8	78	71	5·4	6·4	93	79	16	3	22	9	10≡0	5	1·8		✻ 3 h. ⊠ ●0 midday.
21	986·8	989·8	76·9	75·7	81	74	7·1	6·1	89	84	20	8	21	5	10	3	—		⊠. o. to c. Fine *n*.
22	990·1	986·2	73·8	77·7	83	72	5·8	5·4	87	64	—	1	11	6	10≡0	8	—		≡0 early. Fine. Much ci. ⊕ 16 h.
23	982·5	981·9	77·4	80·6	82	76	7·4	9·8	91	96	10	2	—	0	10●0	10●≡0	5·7		d. 9 h. ● after 18 h.
24	983·6	989·2	80·0	75·0	82	74	9·8	6·4	97	90	15	2	2	9	10≡⋮	10●	3·2		●2 1 h.–4 h. ≡⋮2 7 h. o. all day.
25	995·0	995·7	74·5	73·3	78	73	5·1	4·4	74	72	1	7	—	1	3	9	—		✻0 early. Frequent bright intervals.
26	989·2	984·8	74·0	70·7	76	70	4·1	3·7	64	72	31	7	2	5	5	0	0·1		Generally fine. ✻0 in afternoon.
27	983·2	982·5	73·8	69·3	77	68	5·4	3·7	81	78	2	7	4	2	2	1	0·2		Afternoon q., with occasional ✻ showers.
28	982·7	984·7	74·9	71·3	76	68	5·1	4·1	73	73	1	7	2	5	5	2	0·7		Frequent squalls and ✻ showers.
29	984·9	981·9	73·9	71·2	78	n 67	4·4	3·7	68	70	—	1	—	1	5	1	—		Mostly c. ⊕ 10 h. ⊔ *n*.
30	982·4	983·2	75·1	73·0	80	68	4·7	4·7	67	77	4	2	—	1	6	0	—		c. to o. Clear evening.
31	985·7	987·9	76·0	76·9	81	n 67	4·7	7·1	n 62	87	19	3	21	6	6	9	—		c. to o. ●0 at times in afternoon.
Means	986·2	986·9	76·0	75·4	79·7	71·9	6·4	6·2	83	83		5·1		4·8	6·6	5·3	75·2	—	Monthly **Totals** or **Means**.
Normal 1911-14	976·5	976·6	76·2	75·9	79·4	73·3	6·7	6·7	86	87		7·0		5·8	—	—	153·1	—	**Normals.**

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism:—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 28 days; they 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.

x denotes the maximum and *n* the minimum value in the column. *z* Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·71.				Charge per cc. ×10²⁰.		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.			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.	Amp/cm².												
1	●△²14 h. ●✲ϟ 16 h. ● 18 h.	85	220	*z*±	280	—	—	—	2	0	475	21 30	442	10 21	33	24·1	13 13	18·5	8 8	*n* 5·6
2	Fine day. ≡⁰ to ● 22 h.	190	420	195	425	550	580	0·40	1	0	477	14 10	456	10 29	*n* 21	27·1	13 15	18·9	8 20	8·2
3	● *a*. ≡⁰ to ● 22 h.	−110	135	180	215	—	—	—	2	0	482	19 26	453	9 52	29	25·7	12 48	18·7	8 43	7·0
4	● till 1 h. Dull to fair.	145	290	300	445	160	190	0·55	0	0	484	23 52	459	11 41	25	25·4	13 15	17·4	8 48	8·0
5	Fair, with bright intervals.	105	85	195	265	440	230	0·70	0	1	480	2 15	452	10 43	28	25·3	12 30	15·2	2 30	10·1
6	Dull *a*.; finer later. < 22 h.	205	280	−35	110	—	—	—	1	1	485	6 1	435	10 30	50	26·3	15 26	18·2	8 47	8·1
7	●⁰ early and 11 h. ● 18 h.	70	135	120	95	—	—	—	1	2	490	19 12	429	21 34	61	26·8	14 39	*n* 4·2	23 30	22·6
8	● 3 h. ✲⁰ *a*. and *p*. Bright	−350	455	*z*+	785	—	—	—	1	2	480	22 19	*n* 401	9 30	79	29·8	15 33	9·6	0 0	20·2
9	Fair to fine. [intervals.	265	455	240	410	600	230	0·80	0	1	479	20 30	404	11 35	75	31·1	12 15	13·2	21 32	17·9
10	Mostly dull. ●⁰ 16 h.	395	375	170	255	340	230	0·35	0	1	506	21 56	428	10 20	78	27·8	13 28	16·2	0 0	11·6
11	● at times *a*. Dull throughout.	145	385	315	300	300	170	0·50	1	0	482	19 21	424	11 13	58	28·1	11 51	18·9	7 48	9·2
12	≡ early. ● *p*. ⌒ 15 h.	555	460	205	460	—	—	—	0	0	480	21 23	447	10 55	33	26·8	13 40	18·3	18 56	8·5
13	Fine to c. Fine *n*.	240	395	310	265	—	—	—	0	0	493	0 42	445	10 30	48	27·2	12 33	17·8	8 40	9·4
14	Dull till 10 h., fine later.	265	255	280	230	—	—	—	1	0	491	22 35	430	10 42	61	27·2	12 55	17·4	8 10	9·8
15	Dull throughout. Fine *n*.	50	190	205	265	600	250	0·30	1	0	486	22 49	454	12 5	32	27·7	13 30	16·5	8 39	11·2
16	≡⁰ early. Dull all day.	145	275	240	220	600	190	0·70	0	1	512	23 51	444	10 23	68	27·6	14 15	11·9	23 59	15·7
17	≡⁰ early. Dull and o.	135	255	195	310	400	270	0·40	0	1	534	0 13	439	11 53	95	29·1	12 19	10·6	0 50	18·5
18	≡⁰ early. ●⁰ ✲⁰ *a*. ✲⁰ 19 h.–	170	275	340	70	680	400	0·60	1	1	489	20 30	448	10 58	41	29·3	12 43	16·5	8 47	12·8
19	Fair to fine. [21 h.	180	315	265	255	700	420	0·85	0	1	495	22 4	430	11 28	65	29·4	13 0	9·3	22 23	20·1
20	✲⁰ 9 h. Bright intervals *a*.	375	340	220	340	—	—	—	0	2	524	20 31	421	18 25	103	31·0	12 33	5·1	20 20	*x* 25·9
21	⌣ early. Very fine. ≡⁰. [≡ *n*.	350	505	220	840	—	—	—	0	2	*x* 543	20 40	426	18 28	117	29·6	12 53	6·8	21 51	22·8
22	≡⁰⌣ early. Fair to c. and ●.	540	840	*z*−	15	—	—	—	2	2	495	23 50	419	10 50	76	31·1	0 45	13·1	18 47	18·0
23	Dull with ≡⁰ to fair. ≡ *n*.	265	275	280	485	400	100	0·70	0	1	528	21 48	409	10 4	*x* 119	29·2	13 13	14·0	22 13	15·2
24	≡⁰●⁰ early. o. to dull.	0	310	395	240	270	180	0·70	1	1	487	0 28	439	11 30	48	28·1	12 55	14·7	20 7	13·4
25	Dull and d. ≡⁰ *n*.	180	300	540	780	—	—	—	1	1	489	15 14	425	12 2	64	28·9	13 20	13·4	2 50	15·5
26	≡⁰⌣ early. Dull *a*. ≡⁰ *n*.	530	605	590	700	—	—	—	0	1	508	1 2	438	11 13	70	28·7	13 45	15·0	2 0	13·7
27	≡⁰⌣ early. Fine to fair. ✲15 h.	520	665	555	735	—	—	—	0	1	485	20 58	438	10 8	47	27·2	13 20	16·9	1 59	10·3
28	⌣ *a*. Fair *a*. ✲16 h. 30 m. ≡ *n*.	555	445	350	485	—	—	—	0	0	484	22 40	438	9 37	46	29·1	12 50	16·0	8 27	13·1
29	≡⁰⌣ early. ✲⁰ *a*. ✲ *p*.	565	710	960	555	360	420	0·35	1	1	512	23 17	442	10 19	70	28·2	13 25	14·7	23 38	13·5
30	≡⁰⌣ early. Fair to fine.	575	770	515	780	590	420	1·05	0	1	502	0 0	424	9 29	78	*x* 31·8	14 5	13·8	21 30	18·0
31	≡⁰⌣ early. Fine. ∞²*p*. ≡⁰ *n*.	540	745	695	180	—	—	—	0	0	488	20 24	445	9 44	43	28·1	14 1	17·0	7 3	11·1
M.		272*	380*	323*	383*	—	—	—	—	—	495	—	435	—	60	28·2	—	14·4	—	13·7

6. Atmospheric Electricity and Terrestrial Magnetism:—Eskdalemuir.

Day.	Potential Gradient, Volts per metre. Factor 5·5.				Charge per cc. ×10²⁰.		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.			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.	Amp/cm².														
1	520	1003	769	1877	—	—	—	0 *b*	0	23 53	1016	990	11 11	13 12	110	81	4 8	2 6	184	175	12 35
2	302	158	166	385	—	—	—	1 *b*	0	21 2	1016	984	11 40	13 54	122	81	9 26	16 51	191	173	12 45
3	−483	60	−151	−1191	—	—	—	2 *c*	0	18 47	1016	989	10 39	12 46	114	81	8 40	0 10	186	171	12 30
4	249	219	−1312	75	—	—	—	2 *b*	0	23 49	1028	986	11 41	13 16	120	76	8 50	23 37	181	167	11 50
5	106	204	83	128	—	—	—	1 *b*	1	2 13	1031	982	11 28	13 56	108	59	2 40	17 30	183	165	2 20
6	83	15	60	392	—	—	—	1 *b*	1	15 28	1040	987	10 34	15 30	138	76	9 15	20 53	188	171	12 7
7	271	143	98	211	—	—	—	0 *a*	2	22 58	1056	967	22 40	6 43	126	*n* − 22	23 30	21 36	209	143	24 0
8	75	90	151	234	780	450	—	1 *b*	2	22 4	1029	928	10 48	15 4	144	4	0 0	16 40	224	113	2 27
9	294	445	151	264	—	—	—	0 *a*	2	3 40	1026	927	11 35	12 18	127	40	21 32	21 32	190	138	5 12
10	68	83	68	219	—	—	—	0 *a*	1	21 41	1053	963	10 33	13 19	122	58	0 0	17 40	194	151	4 32
11	−136	106	−173	377	—	—	—	2 *b*	1	19 21	1024	943	11 12	11 54	122	81	8 16	16 31	186	176	11 40
12	143	385	332	596	520	—	—	0 *a*	1	24 0	1024	976	11 38	13 42	121	75	4 35	19 0	183	164	3 32
13	241	241	173	400	—	—	—	0 *a*	0	0 40	1041	980	10 29	12 35	119	73	8 14	17 7	180	166	12 0
14	158	309	302	271	—	—	—	0 *a*	0	22 32	1030	962	10 56	13 37	115	73	8 49	16 18	182	173	22 54
15	151	196	226	181	—	—	—	0 *a*	0	21 5	1025	978	12 8	13 30	121	68	8 39	18 29	184	169	12 25
16	90	98	166	75	580	260	—	0 *a*	2	24 0	1062	974	11 10	14 46	119	38	24 0	22 12	185	122	24 0
17	30	45	98	309	—	—	—	1 *a*	2	0 7	1086	959	11 52	12 20	127	6	0 53	17 0	192	112	0 19
18	15	*z*	*z*	158	—	—	—	2 *c*	1	20 29	1029	975	17 58	14 30	137	68	8 46	17 45	200	159	12 47
19	302	467	302	362	—	—	—	1 *b*	1	21 58	1058	953	11 50	15 0	129	19	22 27	17 39	199	142	4 0
20	392	701	−30	113	—	—	—	2 *b*	2	20 28	*x* 1112	958	13 9	15 44	*x* 147	−16	20 19	18 28	252	144	6 57
21	75	136	158	234	—	—	—	1 *b*	2	20 24	1095	945	21 14	16 4	142	− 8	21 51	18 7	*x* 275	127	21 0
22	407	588	249	505	—	—	—	0 *a*	2	16 33	1060	932	0 48	0 43	137	39	18 43	16 35	218	*n* 108	1 3
23	581	23	302	204	—	—	—	1 *a*	2	21 42	1071	*n* 915	10 4	13 43	127	52	22 13	17 16	189	137	0 1
24	98	520	83	−158	—	—	—	2 *b*	1	18 32 / 19 6	1025	965	13 10	13 46	120	45	20 16	20 17	192	143	0 33
25	113	181	166	204	—	—	—	0 *a*	2	18 10	1029	947	12 1	13 17	131	40	3 0	17 52	200	136	4 0
26	279	279	211	249	—	—	—	1 *b*	1	1 2	1045	963	11 8	13 53	122	43	2 30	18 28	186	129	1 7
27	256	143	166	294	—	—	—	1 *b*	1	20 56	1024	972	10 7	14 7	120	55	2 8	22 10	180	155	12 32
28	189	143	143	113	—	—	—	1 *b*	0	19 16	1016	965	11 24	13 0	124	59	8 30	0 1	177	161	12 15
29	83	121	143	422	1040	520	—	0 *a*	1	23 13	1056	970	10 19	13 41	125	51	23 38	8 26	177	156	12 40
30	347	211	151	400	—	—	—	0 *a*	1	20 58	1040	958	9 27	14 6	146	45	21 30	17 5	191	151	4 21
31	158	452	271	332	320	320	—	1 *a*	0	20 20	1029	972	12 0	15 8	126	66	8 10	17 51	179	156	12 48
M.	181*	259*	117*	269*	—	—	—	—	—	—	1042	963	—	—	126	49	—	—	195	150	—

* 30 days. *See* note above.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
3	P	2 12	...	...	...	...	...	Slight disturbance.
	F	2 30	...	...	...	...	...	
5	P	4 53	...	...	...	...	...	Slight earthquake.
	L	4 59	20	8	...	...	...	
	F	5 23	...	...	...	...	..	
6	P	7 55	...	...	...	...	...	Disturbance, obscured by wind effects.
	F	8 1	...	...	...	...	...	
6	P	9 57	...	...	...	...	...	Disturbance, obscured by wind effects.
	F	10 5	...	...	...	...	...	
8	P	4 52	...	...	...	...	...	Disturbance, obscured by wind effects.
	F	5 10	...	...	...	...	...	
8	Pi	15 42 10	...	...	...	...	9020	α uncertain. Epicentre probably in Japan.
	PR_1	15 45 30	...	...	...	...	...	
	S	15 52 22	...	...	...	...	...	
	SR_1	15 58 (?)	...	...	...	...	...	
	L	16 8	...	...	...	..	...	
	M_1	16 13 56	25	10	12	...	...	
	M_2	16 22 14	19	9	...	...	...	
	F	17 2	...	...	...	...	...	
10	Pe	1 5 40	...	...	...	...	...	Long continued disturbance; probably remote earthquake.
	F	3 24	...	...	...	...	...	
10	P	16 37	...	...	...	...	...	Slight disturbance.
	F	17 24	...	...	...	...	...	
11	P	16 45	...	...	...	...	...	Slight disturbance.
	F	17 21	...	...	...	...	...	
11	P	18 48	...	...	...	...	...	Slight disturbance.
	F	20 14	...	...	...	...	...	
12	P	0 30	...	...	...	...	...	Slight disturbance.
	F	1 0	...	...	...	...	...	
12	P	6 37	...	...	...	...	...	Very slight disturbance.
	F	7 17	...	...	...	...	...	
12	Pe	15 3 36	...	...	...	...	12000?	
	S	15 13 2	...	...	...	...	...	
	L	15 35	...	...	...	...	...	
	Max.	15 43	21	46	...	...	...	
	F	17 44	...	...	...	...	...	
13	P	19 17	...	...	...	...	...	Slight disturbance.
	F	19 34	...	...	...	...	...	
17	Pi	18 56 44	...	...	...	...	8450	Epicentre 40° N. lat., 129° E. long.
	PR_1	19 0 3	...	...	...	...	...	
	S	19 6 25	...	...	...	...	...	
	SR_1	19 12 13	...	...	...	...	...	
	L	19 21	...	...	...	...	...	
	F	20 38	...	...	...	...	...	
18	P	2 11	...	...	...	...	...	Slight disturbance.
	F	2 45	...	...	...	...	...	
18	P	21 9 44	...	...	...	...	About 6500	S lost during change of sheet.
	SR_1	21 21	...	...	...	...		
	L	21 29	...	...	...	...	...	
	F	22 11	...	...	...	...	...	
26	Pe	5 49 59	...	...	...	...	...	Slight disturbance.
	L	6 10	...	...	...	...	...	
	F	6 50	...	...	...	...	...	
30	Pi	9 46 55	...	...	...	...	...	Slight disturbance.
	F	11 0	...	...	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	2·8	6·5	2·3	7	2·8	6	2·4	6
2	2·5	6	2·5	6	1·7	6	1·5	7
3	1·5	6·5	1·8	5·5	1·9	5	2·0	5·5
4	2·4	6	2·5	5·5	2·1	6	2·0	5
5	2·1	5	2·2	4·5	2·1	5	2·1	5
6	2·3	4·5	2·2	5	2·3	5	2·0	5
7	1·8	5·5	1·7	5·5	1·9	5	1·4	5·5
8	1·7	5·5	1·7	5·5	1·8	5	1·5	5·5
9	1·1	5	1·0	5	0·7	6	0·9	6
10	0·9	5·5	0·8	6	0·9	5	1·0	4·5
11	0·9	5	1·0	4·5	1·0	5	0·9	5
12	1·0	5	1·1	5	0·9	5·5	0·9	5
13	0·8	6	1·3	7	1·1	8	1·5	7
14	1·5	7	1·2	6	1·1	6	1·2	7
15	1·5	5·5	1·3	6	1·0	5·5	1·1	6
16	1·0	6	1·5	5	1·1	5	1·1	5
17	1·2	5	1·0	5	1·1	4·5	0·9	5
18	1·0	4	1·2	4	2·1	4·5	2·4	5
19	1·9	5	2·0	5	1·4	5·5	1·0	5·5
20	2·3	4·5	2·0	4·5	1·0	5	1·5	5
21	1·1	5	1·4	5	1·5	5	1·8	5
22	1·8	5	1·7	5·5	1·9	5	1·6	6
23	1·6	5	1·9	5	1·7	5·5	1·7	5
24	1·2	5·5	1·8	5	1·7	6	1·9	6
25	1·6	7	1·9	6	1·7	7	2·4	6
26	2·6	6	3·2	6	3·2	6	3·4	6
27	3·8	6	4·1	6	2·7	5·5	2·0	5·5
28	1·9	5	1·8	5	1·1	6	1·2	5
29	0·8	5·5	0·9	5	0·9	5	0·8	4·5
30	0·8	5	0·8	5	1·0	5·5	1·1	6
31	1·3	6	1·7	5·5	1·3	5·5	1·2	6

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
5	5 2·6	5 7·0	
8	4 52·0	4 54·0	Very small.
,,	15 54·0	16 27·1	
11	...	17 3·0	Very small.
12	15 16·0	15 53·0	Lasted more than an hour.
13	...	18 58·3	Very small.
17	19 3·8	19 37·0	Lasted nearly an hour.
18	...	2 20·1	Series of very small movements.
,,	21 28·1	21 38·0	
26	...	6 23·0	Very small.

8. WIND COMPONENTS; Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	...	6·3	15·2	...	...	7·2	17·3	...	...	10·5	10·5	...	...	8·3	8·3	...	27·7	4	35
2	...	6·2	9·2	...	...	2·5	6·1	...	4·0	...	4·0	...	8·5	...	...	...	14·4	1	30
3	4·7	...	4·7	...	7·4	...	4·9	...	5·7	...	3·8	...	4·9	...	4·9	...	14·6	10	15
4	1·5	...	3·6	...	2·8	...	2·8	...	4·0	...	6·0	...	3·7	...	3·7	...	13·5	13	55
5	4·3	...	2·9	...	4·6	...	6·8	...	4·2	...	6·2	...	1·4	...	7·1	...	18·2	18	15
6	3·5	...	8·5	...	...	2·4	12·3	...	...	5·7	8·5	...	...	4·4	6·6	...	21·3	7	15
7	...	7·6	5·1	...	...	8·2	3·4	...	...	9·8	...	...	...	6·8	...	4·6	14·8	10	55
8	...	10·1	...	6·7	...	6·7	...	6·7	...	3·4	...	5·2	...	1·8	...	2·7	17·1	1	55
9	...	...	...	1·0	...	0·1	...	0·7	...	3·5	0·7	...	...	2·0	0·4	...	4·9	11	35
10	...	1·8	4·3	...	...	1·9	4·5	...	1·8	...	4·3	...	3·3	...	3·3	...	9·2	11	5
11	2·1	...	5·2	...	...	1·2	5·8	...	...	4·2	...	0·8	...	3·8	...	0·8	12·1	5	20
12	...	4·3	...	1·8	...	1·1	...	0·7	...	3·6	1·5	...	...	1·7	2·5	...	6·6	10	45
13	...	3·1	4·7	...	...	4·7	3·1	...	...	3·1	4·7	...	...	4·6	6·8	...	10·6	21	0
14	...	3·9	...	...	...	2·6	...	...	...	3·0	3·0	...	...	4·9	...	...	10·4	1	55
15	...	4·5	0·9	...	...	3·6	1·5	...	...	2·6	...	...	...	0·6	1·5	...	8·3	2	15
16	...	4·5	0·9	...	...	4·2	0·8	...	...	3·5	3·5	...	...	2·1	2·1	...	7·3	3	25
17	...	1·4	1·4	...	...	2·3	2·3	...	...	2·3	2·3	...	...	2·1	5·2	...	15·5	24	15
18	...	10·9	2·2	...	...	13·4	9·0	...	...	18·4	...	...	...	15·3	...	10·2	28·0	17	55
19	...	10·9	...	10·9	...	7·3	...	3·0	...	6·1	1·2	...	...	4·6	6·8	...	19·9	2	45
20	...	4·5	10·9	...	...	3·8	9·1	...	2·4	...	5·7	...	...	...	8·2	...	15·8	5	10
..	..	...	3·3	...	1·0	...	5·1	...	4·7	...	4·7	...	1·1	...	1·1	...	11·2	13	45
22	1·7	...	...	1·1	1·3	...	...	3·0	2·4	...	...	1·0	0·7	...	...	0·7	9·1	12	40
23	1·1	...	...	1·1	1·1	...	...	1·1	6·2	...	...	...	5·2	...	2·1	...	12·2	14	35
24	1·8	...	1·8	...	4·5	...	1·9	...	4·2	...	4·2	...	3·0	...	2·0	...	10·2	14	30
25	0·9	...	0·9	...	...	...	...	14·4	...	...	...	11·8	...	...	...	5·6	20·5	8	45
26	...	...	...	4·3	...	...	...	5·2	...	2·6	...	6·4	...	2·0	...	4·8	11·3	16	40
27	..	...	...	6·6	...	1·7	...	8·3	...	2·9	...	6·9	...	3·1	...	7·6	18·2	19	10
28	1·2	...	...	5·8	...	...	...	5·2	...	4·7	...	4·7	...	3·4	...	5·2	15·6	17	50
29	...	1·1	...	5·5	0·9	...	...	4·5	...	3·7	...	3·7	...	1·4	...	1·4	10·7	8	45
30	...	1·7	...	1·1	0·8	...	...	1·8	...	3·0	...	...	...	0·6	0·3	...	4·1	16	10
31	..	1·8	0·8	...	1·4	...	3·3	...	2·1	...	5·2	...	3·1	...	4·7	...	10·1	16	35
S+N & W+E	107·4		132·4		100·7		154·6		138·3		120·5		108·4		121·2				
S−N & W−E	−61·8		40·6		−49·1		45·4		−54·9		39·5		−38·6		34·0				

SCOTLAND N.:—DEERNESS.

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·8 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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	0·8	...	0·6	...	...	2·3	...	...	...	1·8	4·3	...	...	...	1·0	...	6·6	12
2	...	0·3	1·6	...	...	0·4	2·3	...	2·0	...	3·0	...	2·8	...	1·1	...	8·2	24
3	11·5	...	...	7·7	12·5	...	...	8·4	11·7	...	...	7·8	10·3	...	...	4·3	16·4	11
4	6·7	...	10·1	...	7·1	...	1·4	...	8·7	...	1·7	...	2·0	...	3·0	...	12·1	3
5	0·7	...	1·1	...	1·5	...	0·6	...	...	...	3·6	...	...	2·2	3·2	...	6·9	24
6	...	1·1	5·5	...	...	5·1	5·1	...	...	5·3	7·9	...	...	4	10·6	...	11·5	21
7	...	7·2	7·2	...	...	15·1	...	3·0	...	9·3	...	1·9	...	11·6	...	2·3	13·1	1, 2
8	...	9·6	...	1·9	...	4·9	...	3·3	...	2·0	0·4	...	...	0·7	1·1	...	11·1	1
9	...	1·2	6·1	...	...	1·6	8·0	...	1·9	...	9·6	...	2·9	...	4·3	...	9·8	15
10	1·9	...	9·3	...	1·7	...	8·7	...	1·4	...	7·1	...	2·3	...	2·3	...	9·8	4
11	1·7	...	2·5	...	...	...	5·2	...	...	2·4	3·6	...	...	1·7	2·5	...	5·2	9, 12, 13, 14
12	...	1·8	2·7	...	...	4·0	6·0	...	...	...	11·5	...	...	...	11·8	...	13·8	22, 24
13	...	...	9·5	...	...	...	9·8	...	2·4	...	12·3	...	...	5·8	14·0	...	16·4	19, 20
14	...	...	8·9	...	2·2	...	11·3	...	...	2·2	11·3	...	...	...	10·5	...	12·8	10
15	...	...	8·9	...	...	...	9·8	...	...	...	12·5	...	...	...	10·8	...	13·8	14
16	...	3·3	7·9	...	...	6·8	1·3	...	...	6·8	...	1·3	...	6·6	4·4	...	10·2	1, 23
17	...	10·3	4·3	...	...	6·1	2·5	...	...	2·3	...	...	...	3·2	...	0·6	11·1	3
18	...	5·1	...	5·1	...	1·3	...	3·0	...	3·9	...	...	...	6·7	2·8	...	7·2	3, 6, 21
19	...	1·1	1·1	...	4·9	...	3·3	...	...	5·3	7·9	...	...	8·5	3·5	...	19·0	17
20	...	0·6	...	0·3	8·7	...	...	1·7	...	...	7·9	...	6·6	...	9·8	...	11·8	21
21	0·4	...	2·3	...	...	...	8·5	...	...	...	13·1	...	...	4·8	11·6	...	13·1	15
22	...	2·3	5·5	...	...	2·3	...	...	4·2	...	...	4·2	8·2	...	...	3·4	11·5	22
23	9·1	...	...	3·8	11·9	...	...	2·4	6·9	...	...	2·9	1·3	...	...	0·3	12·8	8
24	...	3·0	3·0	...	...	8·7	...	5·8	...	9·0	...	1·8	...	7·2	...	...	10·5	9
25	...	6·6	...	...	...	8·2	3·4	...	...	7·5	5·0	...	...	7·1	4·7	...	13·4	24
26	...	9·5	...	...	...	8·7	1·7	...	...	10·9	...	2·2	...	7·3	...	3·0	12·5	1
27	...	6·1	...	2·5	...	6·1	...	2·5	...	7·1	...	1·4	...	3·9	...	...	7·9	10
28	...	5·2	...	...	...	2·1	...	2·1	...	1·1	...	2·8	...	0·4	...	0·9	6·2	11
29	...	1·4	3·3	...	...	1·7	8·3	...	...	7·6	3·1	...	...	9·1	3·8	...	12·1	11
30	...	5·7	2·4	...	...	3·3	1·4	...	...	5·7	2·4	...	...	4·1	2·7	...	6·9	1
31	...	0·8	0·6	...	6·8	...	...	4·6	3·8	...	9·1	...	1·9	...	9·3	...	12·8	22, 24
S+N & W+E	115·0		125·7		146·0		135·4		133·2		163·6		133·6		143·6			
S−N & W−E	−49·4		83·1		−31·4		61·8		−47·2		111·0		−57·0		114·0			

ENGLAND S.W.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	...	7·5	18·1	...	...	9·4	6·3	...	...	8·3	8·3	...	...	4·4	6·6	...	29·0	2	10
2	...	2·7	2·7	...	0·4	...	2·1	...	7·4	...	1·5	...	6·2	...	6·2	...	12·7	1	15
3	4·4	...	6·6	...	6·2	...	4·2	...	7·4	...	1·5	...	...	8·3	...	...	12·0	11	15
4	...	...	6·7	...	...	0·9	4·5	...	1·9	...	4·6	...	1·5	...	7·7	...	11·1	20	0
5	3·0	...	3·0	...	2·7	...	6·6	...	...	...	9·2	...	...	3·4	8·1	...	16·0	18	50
6	...	4·1	10·0	...	...	4·0	9·6	...	...	2·4	11·9	...	...	7·0	10·4	...	18·0	19	5
7	...	5·3	5·3	...	...	6·9	4·6	...	...	5·9	5·9	...	...	4·8	...	3·2	15·4	11	40
8	...	5·8	...	2·4	...	5·3	...	5·3	...	4·7	...	4·7	..	2·8	...	4·2	15·0	5	50
9	...	0·6	...	3·2	...	...	...	4·6	...	1·9	...	0·8	...	2·8	...	0·6	6·8	10	40
10	...	4·1	0·8	...	...	4·5	4·5	...	...	3·7	5·6	...	...	3·2	7·7	...	11·0	14	25
11	...	3·5	8·5	...	...	4·1	10·0	...	...	6·2	4·2	...	...	7·7	...	3·2	15·2	16	15
12	...	2·2	...	5·4	...	0·8	...	4·1	...	0·5	...	2·5	...	3·5	...	1·5	11·0	1	20
13	...	2·7	...	1·1	...	2·5	...	...	...	3·5	1·5	...	...	4·6	...	...	6·5	21	20
14	...	2·9	...	...	...	5·0	...	2·1	...	3·0	...	3·0	...	3·2	...	2·1	8·5	12	55
15	...	2·1	...	1·4	...	...	...	2·1	...	3·5	...	1·5	...	2·3	...	2·3	5·7	16	45
16	...	2·3	...	2·3	...	0·7	...	3·7	...	1·0	...	2·3	...	1·8	...	4·3	7·5	21	45
17	...	...	...	3·8	...	...	...	3·3	...	0·7	...	3·7	...	0·8	...	1·9	6·9	6	45
18	...	2·4	...	1·6	...	7·6	...	5·1	...	10·4	...	...	...	10·8	...	...	16·1	23	45
19	...	11·1	...	2·2	...	8·9	...	3·7	...	7·3	...	3·0	...	3·5	...	2·3	16·4	5	30
20	...	0·7	...	1·1	...	0·7	...	1·1	1·4	...	...	0·9	0·3	...	0·3	...	4·0	0	5
21	1·8	...	...	4·3	5·9	...	...	5·9	5·6	...	...	8·3	4·9	...	...	11·9	17·0	21	0
22	4·8	...	...	11·6	4·0	...	...	9·6	4·3	...	...	10·4	5·2	...	...	3·5	16·2	3	20
23	5·8	...	...	2·4	5·7	...	...	1·1	6·6	...	...	2·7	1·4	...	...	2·1	10·0	1	30
24	...	3·9	1·6	...	...	1·2	0·5	...	...	1·9	4·6	...	...	0·8	1·9	...	6·6	15	15
25	...	0·4	0·7	...	...	1·4	0·9	...	...	2·1	...	3·2	5·7	...	...	13·9	19·2	21	5
26	6·1	...	...	14·6	3·2	...	...	16·0	...	...	...	15·0	...	2·4	...	12·3	21·0	11	30
27	...	3·4	...	8·1	...	2·4	...	12·3	2·4	...	...	12·3	...	...	...	9·2	17·7	17	25
28	...	...	...	10·8	...	...	...	9·6	...	...	...	9·6	...	1·5	...	7·4	16·0	11	50
29	...	1·5	...	7·7	...	2·2	...	5·4	...	2·1	...	5·0	...	1·0	...	4·9	11·9	1	45
30	...	1·5	...	3·5	...	1·1	...	5·7	...	3·2	...	0·6	...	3·9	...	1·6	8·1	18	30
31	...	...	...	2·1	...	2·1	...	1·4	...	3·8	...	...	...	2·5	...	...	6·3	17	20
S+N & V+E	96·6		153·6		99·8		155·9		113·1		148·3		103·9		149·6				
S−N & V−E	−44·8		−25·6		−43·6		−48·3		−39·1		−30·7		−53·5		−35·2				

ENGLAND E.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	...	2·9	6·9	...	1·5	...	7·4	...	...	4·2	4·2	...	...	2·5	2·5	...	22·2	13	5
2	...	2·6	3·8	...	...	2·9	4·3	...	...	2·7	4·1	...	...	1·3	1·9	...	11·4	10	50
3	0·9	...	2·1	...	4·6	...	...	...	1·0	...	2·4	...	1·8	...	2·7	...	14·0	7	5
4	2·2	...	1·4	...	2·5	...	1·7	...	0·7	...	3·5	...	0·8	...	3·8	...	9·2	23	55
5	...	...	6·9	...	...	...	7·9	...	...	...	8·9	...	...	1·3	6·8	...	15·0	11	10
6	...	5·1	7·6	...	...	2·7	4·1	...	...	4·4	4·4	...	...	3·6	2·4	...	15·4	14	20
7	...	2·7	1·8	...	...	3·3	1·4	...	...	6·0	4·0	...	...	4·8	...	2·0	19·4	15	25
8	...	5·7	...	8·5	...	6·6	...	9·8	...	7·7	...	11·5	...	6·7	...	10·1	18·2	10	30
9	*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12·5	14	40
10	...	...	...	...	...	...	...	...	...	2·7	1·8	...	...	1·1	0·7	...	7·6	12	40
11	...	2·5	2·5	...	...	1·4	2·2	...	2·8	...	1·1	...	0·3	...	0·1	...	6·3	13	25
12	1·2	...	0·5	...	...	0·9	2·1	...	...	2·6	0·5	...	...	2·0	0·4	...	6·5	12	40
13	...	2·0	3·0	...	*	...	...	...	...	2·2	1·4	...	...	1·1	0·7	...	8·0	8	5
14	...	2·0	3·0	...	...	2·5	1·7	...	...	3·0	...	1·3	...	1·5	...	0·6	11·3	11	40
15	0·3	...	0·6	...	0·8	...	1·8	...	0·4	...	2·0	...	0·6	...	3·2	...	7·5	11	45
16	...	...	3·3	...	...	1·0	2·4	...	...	1·6	1·6	...	...	1·0	...	...	6·1	11	30
17	...	0·1	0·7	...	...	...	4·3	...	0·6	...	3·2	...	0·3	...	1·3	...	7·5	10	10
18	0·3	...	1·6	...	...	1·7	1·1	...	...	2·5	2·5	...	...	1·7	2·5	...	7·2	9	20
19	*	...	...	...	...	...	...	...	...	6·6	...	...	...	2·2	1·4	...	?	?	
20	...	1·7	2·5	...	...	1·0	4·8	...	...	2·8	2·8	...	...	0·5	2·6	...	?	?	
21	...	0·6	3·2	...	...	0·8	4·2	...	0·8	...	4·2	...	0·9	...	2·1	...	?	?	
22	0·5	...	1·2	...	3·2	...	...	2·2	3·3	...	...	4·9	1·8	...	...	1·8	?	?	
23	0·8	...	...	4·2	0·3	...	...	1·6	2·5	...	2·5	...	2·9	...	0·6	...	7·1	15	50
24	1·3	...	0·3	...	1·6	...	0·3	...	3·6	...	...	...	2·0	...	...	...	7·3	15	15
25	...	3·0	...	...	...	7·1	...	4·7	...	6·8	...	1·3	...	5·2	...	3·4	16·0	8	45
26	...	2·4	1·0	...	...	4·6	...	...	...	6·2	...	...	...	5·2	...	2·1	11·9	9	15
27	...	4·0	...	1·6	...	5·3	...	5·3	*	...	...	...	...	...	...	...	15·0	19	35
28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10·6	1	55
29	1·3	...	...	1·9	...	1·4	...	7·1	...	3·0	...	3·0	...	2·0	...	2·6	9·5	9	10
30	...	1·1	...	1·7	...	1·7	...	2·5	...	1·7	...	2·5	...	3·8	...	5·7	12·7	18	15
31	...	1·3	...	3·0	...	1·1	...	2·8	4·3	...	...	2·9	3·2	...	2·2	...	8·8	0	55
S+N & W+E	48·5		74·8		60·5		87·7		88·7		85·5		63·3		70·3				
S−N & W−E	−30·9		33·0		−31·5		15·7		−48·7		24·7		−34·1		5·5				

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

ABERDEEN. No. 169. March 12, 1915. 11 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3330	...	...	...	..	...	Faint Ci. was present at time of ascent, and a solar halo was visible. Ci.-St. along the horizon; Fr.-Cu. in places overhead.
	3250	350	15·0	+ 3·0	− 14·5	2·2 *assumed*	
	3000	355	10·5	+ 0·5	− 10·5		
	2500	5	12·5	− 0·5	− 12·5		At 12 h. some fine Ci.-Cu. became visible moving from 346°.
	2000	5	10·5	− 1·0	− 10·5		Assuming 3 km. as altitude of this cloud, the components of its velocity were:—
	1750	...	...	...	...	...	
	1500	345	9·0	+ 2·0	− 8·5	2·5	W.-E. + 3·0 m/s. S.-N. − 12·5 m/s.
	1250	...	...	...	...	...	Balloon lost in distance.
	1000	340	11·5	+ 3·5	− 10·5	2·1	
	750	...	...	...	...	...	*Pressure Distribution* (7 h.).
	500	295	8·0	+ 7·5	− 3·5	2·3	Anticyclone west of Ireland.
100 m. above ground.	114	305	6·5	+ 5·5	− 3·5	2·6	
Anemometer.	46	310	5·0	+ 4·0	− 3·0	...	
Geostrophic wind.	(at 7 h.)	310	6	+ 5	− 4	...	Weight of balloon 12 gm., free lift 38 gm.
	(at 13 h.)	210	8	+ 6	− 5	...	

BENSON. No. 1510. March 30, 1915. 12 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Atmosphere clear. Detached cumulus. Balloon lost in cumulus.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	2000	75	13	− 13	− 4		Station in a col. Depressions over Norway and France.
	1750	70	17	− 15	− 6		
	1500	75	13	− 13	− 3		
	1250	80	6	− 6	− 2	2·4	
	1000	55	3	− 3	− 2		
	750	40	5	− 3	− 4		
	500	35	3	− 2	− 3		
100 m. above ground.	157	50	9	− 7	− 6		
Anemometer.	82	35	5	− 3	− 4		
	(at 13 h.)	70	5	− 5	− 2	...	Approx. weights: balloon 12 gm., free lift 45 gm.

BENSON. No. 1511. March 31, 1915. 10 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3340	...	...	...	...		Sky quite clear. Balloon burst.
	3000	50	7·5	− 5·5	− 4·5		Final elevation, 25°.
	2500	30	8·5	− 4·0	− 7·5		
	2000	15	5·5	− 1·5	− 5·5		*Pressure Distribution* (7 h.).
	1750	20	5·5	− 2·0	− 5·5		
	1500	40	5·5	− 3·5	− 4·0		Irregular high-pressure region over Iceland, British Isles, and Southern Europe.
	1250	60	4·4	− 3·8	− 2·3	2·4	
	1000	75	5·5	− 5·5	− 1·5		
	750	60	5·5	− 5·0	− 2·5		
	500	50	2·2	− 1·7	− 1·4		
100 m. above ground.	157	355	1·9	+ 0·2	− 1·9		
Anemometer.	82	20	2·3	− 0·8	− 2·2		
Geostrophic wind.	(at 7 h.)	50	7	− 5	− 5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	*Inde*	*termin*	*ate*	...	...	

ESKDALEMUIR. No. 1506. March 1, 1915. 12 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3300	...	...	...	...		Ci.; Ci.-St. ; Cu. (4) at finish. All moving from N.N.W. Snow on ground. Barometer rising quickly.
	3000	330	14·5	+ 7·0	− 13·0		
	2500	340	17·0	+ 6·5	− 15·5		
	2000	335	16·0	+ 7·0	− 14·5		*Pressure Distribution* (7 h.).
	1750	335	14·0	+ 6·0	− 12·5		
	1500	335	12·5	+ 5·5	− 11·5		Deep depression over North Sea. Anticyclone, Spain to Azores.
	1250	340	11·5	+ 4·0	− 11·0	2·5	
	1000	340	9·5	+ 3·5	− 9·0		
	750	330	7·5	+ 4·0	− 6·5		
	500	320	7·5	+ 5·0	− 5·5		
100 m. above ground.	340	318	8·5	+ 4·5	− 5·0		
Anemometer.	250	310	5·5	+ 4·0	− 3·5		
	(at 13 h.)	340	15	+ 5	− 14	...	Weight of balloon 19·3 gm., free lift 62 gm.

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 150 March 13, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3230	...	...	...	...		Sky four-tenths clouded. A.-Cu.; Cu.; Str.-Cu. N.W. Balloon lost in distance.
	...	...	...	...	...		
	...	...	...	...	...		
	3000	325	13·0	+8·0	−10·0		
	2500	320	11·0	+7·5	− 8·0		*Pressure Distribution* (7 h.).
	2000	325	13·0	+7·5	−10·5		
	1750	325	11·5	+6·5	− 9·5		Anticyclonic belt from S.W. of
	1500	335	9·5	+4·0	− 8·5		Ireland south-eastwards.
	1250	355	10·0	+1·0	−10·0	2·3	
	1000	20	7·0	−2·0	− 6·5		
	750	20	3·1	−1·0	− 2·9		
	500	315	3·4	+2·4	− 2·4		
100 m. above ground.	340	305	1·6	+1·3	− 0·9		
Anemometer.	250	270	0·5	+0·5	0·0		
Geostrophic wind.	(at 7 h.)	330	12	+6	−10	...	Weight of balloon 18·3 gm., free lift 44 gm.

Eskdalemuir. No. 1510. March 29, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4400	...	...	...	...		Cirrus (1) from E. Balloon lost on account of dimness.
	4000	30	10·0	− 5·0	− 8·5		
	3500	20	9·5	− 3·5	− 9·0		
	3000	25	12·0	− 4·5	−11·0		
	2500	10	8·0	− 1·5	− 8·0		*Pressure Distribution* (7 h.).
	2000	20	6·5	− 2·0	− 6·0		
	1750	30	4·5	− 2·3	− 3·9		Station in an irregular high
	1500	40	7·0	− 4·5	− 5·5		pressure centred N. of Ice-
	1250	30	6·5	− 3·0	− 6·0	2·4	land.
	1000	45	5·5	− 4·0	− 3·5		Conditions unsuitable for de-
	750	45	3·7	− 2·7	− 2·5		termination of geostrophic
	500	45	2·1	− 1·5	− 1·5		wind.
100 m. above ground.	340	40	1·1	− 0·7	− 0·9		
Anemometer.	250	20	0·5	− 0·2	− 0·5		
Geostrophic wind.	(at 7 h.)	45 ?	6 ?	− 4 ?	− 4 ?	...	Weight of balloon 19 gm., free lift 60 gm.

South Farnborough. No. 205. March 2, 1915. 8 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2070	...	...	...	...		Atmosphere clear. Some Ci.-St., no low cloud. Balloon lost in sun-glare.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	295	12·5	+11·5	− 5·5		
	1750	300	12·0	+10·5	− 6·0		
	1500	305	11·0	+ 9·0	− 6·5		*Pressure Distribution* (7 h.).
	1250	310	9·5	+ 7·5	− 6·0		
	1000	310	10·0	+ 7·5	− 6·5	2·4	Depression, Southern Baltic.
	750	315	11·5	+ 8·0	− 8·0		Anticyclonic belt stretching
	500	310	11·0	+ 8·5	− 7·0		S.W. from Bay of Biscay.
100 m. above ground.	170	270	5·0	+ 5·0	0·0		
Anemometer.	105	270	3·5	+ 3·5	0·0		
Geostrophic wind.	(at 7 h.)	310	13	+10	− 8	...	Approx. weights: balloon 12 gm.,
	(at 13 h.)	310	9	+ 7	− 6		free lift 45 gm.

South Farnborough. No. 206. March 4, 1915. 8 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3250	265	6·0	+6·0	+0·5		Atmosphere clear, high visibility. Ci. Ascent made in brief interval between periods of low St. Balloon lost behind low cloud.
	3000	250	7·5	+7·0	+2·5		
	2500	270	8·0	+8·0	0·0		
	2000	270	9·0	+9·0	0·0		
	1750	270	9·0	+9·0	0·0		
	1500	270	8·5	+8·5	0·0		
	1250	275	8·0	+8·0	−0·5		
	1000	295	9·0	+8·0	−4·0	2·4	*Pressure Distribution* (7 h.).
	750	300	11·0	+9·5	−5·5		
	500	280	8·5	+8·5	−1·5		Deep depression between Ice-
100 m. above ground.	170	240	5·5	+5·0	+3·0		land and Scotland. Secondary over Eastern Counties and France which rendered determination of Geostrophic wind difficult.
Anemometer.	105	215	2·4	+1·4	+2·0		
Geostrophic wind.	(at 7 h.)	290	6	+6	−2	...	Approx. weights: balloon 12 gm.,
	(at 13 h.)	270	8	+8	0		free lift 45 gm.

South Farnborough. No. 208. March 10, 1915. 8 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Atmosphere not very clear. A.-Cu. and St. 9.
	3000	10	13·5	−2·5	−13·5		
	2500	360	14·5	0·0	−14·5		
	2000	245	12·0	+5·0	−11·0		
	1750	350	9·5	+1·5	− 9·5		*Pressure Distribution* (7 h.).
	1500	325	5·5	+3·0	− 4·5		
	1250	305	6·0	+5·0	− 3·5		High-pressure belt Azores to
	1000	315	7·0	+5·0	− 5·0	2·4	Russia.
	750	340	7·0	+2·5	− 6·5		Depressions, Iceland and Italy.
	500	340	7·0	+2·5	− 6·5		
100 m. above ground.	170	310	3·0	+2·3	− 1·9		
Anemometer.	105	280	light	...	...		
Geostrophic wind.	(at 7 h.)	330	7	+4	− 6	...	Approx. weights: balloon 12 gm.,
	(at 13 h.)	320	8	+5	− 6	...	free lift 45 gm.

South Farnborough. No. 210. March 13, 1915. 8 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E. 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2850	20	10·0	− 3·5	− 9·5		Surface mist made balloon indistinct. Ci. 2 to 3. Some Cu. forming. Balloon lost behind piece of Cu.
	...	...	...	...	...		
	2500	10	10·0	− 1·5	−10·0		
	2000	360	8·5	0·0	− 8·5		
	1750	360	8·5	0·0	− 8·5		
	1500	350	5·0	+ 1·0	− 5·0		
	1250	330	6·5	+ 3·0	− 5·5		*Pressure distribution* (7 h.).
	1000	320	9·0	+ 6·0	− 7·0	2·4	
	750	290	10·5	+10·0	− 3·5		Anticyclonic belt stretching from
	500	290	9·0	+ 8·5	− 3·0		S.W. Ireland south-eastwards.
100 m. above ground.	170	300	8·0	+ 7·0	− 4·0		
Anemometer.	105	290	light	...	...		
Geostrophic wind.	(at 7 h.)	320	10	+ 6	− 8	...	Approx. weights: balloon 12 gm.,
	(at 13 h.)	320	8	+ 5	− 6	...	free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 216. March 27, 1915. 8 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	4000	295	14·5	+13·0	−6·0		Atmosphere fairly clear. Ci. from W. Cu. formed during and after ascent. Balloon lost through observer looking away.
	3500	305	11·5	+ 9·5	−6·5		
	3000	320	8·0	+ 5·0	−6·0		
	2500	45	9·5	− 6·5	−6·5		
	2000	55	11·0	− 9·0	−6·5		*Pressure Distribution* (7 h.).
	1750	50	12·0	− 9·0	−7·5		
	1500	60	13·5	−11·5	−6·5		Anticyclone over Iceland; depression to N. of Azores.
	1250	60	13·0	−11·5	−6·5	2·4	
	1000	60	13·0	−11·5	−6·5		
	750	55	12·5	−10·0	−7·0		
	500	50	10·0	− 7·5	−6·5		
100 m. above ground.	170	45	8·5	− 6·0	−6·0		
Anemometer.	105	45	4·5	− 3·2	−3·2		
Geostrophic wind.	(at 7 h.)	60	10	− 9	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	70	11	−10	−4	...	

South Farnborough. No. 217. March 29, 1915. 8 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	...	...	...	...	...		Hazy. A little Fr.-St. Cu. forming at end of ascent. Balloon lost in haze and through transparency of the rubber.
	...	...	...	...	...		
	3000	75	9·5	−9·0	−2·5		
	2500	95	5·0	−5·0	−0·5		
	2000	90	6·0	−6·0	0·0		*Pressure Distribution* (7 h.).
	1750	70	6·0	−5·5	−2·0		
	1500	65	6·0	−5·5	−2·5		Station in irregular high pressure region centred N. of Iceland.
	1250	75	5·0	−5·0	−1·5	2·0	
	1000	70	5·5	−5·0	−2·0		
	750	70	6·5	−6·0	−2·0		
	500	75	6·0	−6·0	−1·5		
100 m. above ground.	170	45	2·0	−1·4	−1·4		
Anemometer.	105	360	light	...	...		
Geostrophic wind.	(at 7 h.)	90	6	−6	0	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	90	7	−7	0	...	

South Farnborough. No. 219. March 31, 1915. 8 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E. 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3450	20	7·0	−2·5	−6·5		Atmosphere clear. Almost cloudless, a few small flecks of Cu. Balloon lost behind small piece of Cu.
	3000	50	8·0	−6·0	−5·0		
	2500	50	8·5	−6·5	−5·5		
	2000	45	9·5	−6·5	−6·5		*Pressure Distribution* (7 h.).
	1750	55	11·0	−9·0	−7·0		Irregular high pressure region over Iceland, British Isles, and Southern Europe.
	1500	60	8·0	−5·0	−4·0		
	1250	35	9·0	−5·0	−7·5	2·4	
	1000	40	12·0	−7·5	−9·0		
	750	40	8·0	−5·0	−6·0		
	500	30	4·0	−2·0	−3·5		
100 m. above ground.	170	30	6·5	−3·0	−5·5		
Anemometer.	105	25	2·5	−1·1	−2·3		
Geostrophic wind.	(at 7 h.)	50	7	−5	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	...	*Indeterminate.*		...	...	

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:—Benson, 3; Eskdalemuir, 4; South Farnborough, 9.

11. Soundings with Registering Balloons.

Benson. No. 304. March 3, 1915. 16 h. 40 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height,	12·0 km.	185 mb.	208 a.
Lowest Temperature,	11·7 km.	194 mb.	205 a.
Base of Stratosphere,	11·7 km.	194 mb.	205 a.
Type I.			

Height above M.S.L., 57 m.

Place of Fall, Ware.

Distance, 78 km.

and

Orientation, 75° from N.

Data for Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	...	...
Temperature,	...	...
Vapour Pressure	...	...
Geostrophic Wind: Direction,	240°	240°
Geostrophic Wind: Velocity,	13 m/s.	13 m/s.
Correction for curvature of isobars,	0 m/s.	0 m/s.
Gradient Wind,	13 m/s.	13 m/s.
Components: W. to E.	+11 m/s.	+11 m/s.
Components: S. to N.	+ 7 m/s.	+ 7 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Remarks.
km.	mb.	a.	a.	
12·00	185	208		Isothermal on one trace at 273 a. from 1·6 to 2·1 km.
11·52	200	206	0	
11·00	218	208	+6	On the other inversion from 274 a. to 275 a. at 1·5 km.
10·00	257	214	+ 6 + 8	
9·01	300	221		
9·00	301	220, 222	+10 +10	
8·00	350	230, 232	+ 8 + 6	*Pressure Distribution* (18 h.).
7·09	400	237		
7·00	406	238	+6	A deep and extensive depression centred in Mid-Atlantic with a secondary S. of Iceland. Small secondary over the Scilly Islands.
6·00	468	244		
5·51	500	248	+8	
5·00	536	252	+7	
4·13	600	258		
4·00	610	259	+7	
3·00	695	266		
2·96	700	266	+7	
2·00	789	273		
1·90	800	273	+3	
1·00	894	276		
·95	900	276		
·10	1000	281		
Ground	1005	282	...	...
M.S.L.	1012	...	...	...

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E, 180° = S.).	Computed for 1000 m. Velocity. V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
1	Cu.	325	16·0	+9·1	−13·1	[⊕ and parhelia.
2	St.-Cu.	325	6·3	+3·6	− 5·2	At 15 h. fine rays of Ci. from 317°, Rel. Vel. 4·8 m/s.;
5	St.-Cu.	282	8·0	+7·8	− 1·7	Fused lenticular sheets.
6	Cu.	333	17·0	+7·7	−15·1	At 11 h. Ci.-Cu. from 332°. Rel. Vel. 4·0 m/s.
8	Cu.	359	8·3	+0·2	− 8·3	Cu. of degraded type.
9	A.-Cu.	2	4·5	−0·1	− 4·5	A.-Cu. only partially formed. *Observation at 12 h.*
10	Ci. to Ci.-Cu.	300	2·4	+2·1	− 1·2	Ci. to Ci.-Cu. in patches; became denser in afternoon.
10	St.-Cu. (lent.).	306	4·2	+3·4	− 2·5	St.-Cu. in lenticular sheets.
11	Cu.	333	6·0	+2·7	− 5·3	
12	A.-Cu. (lent.).	346	4·0	+1·0	− 3·9	A.-Cu. in fine small lenticular patches.
13	A.-Cu. (lent.).	309	4·0	+3·1	− 2·5	A.-Cu. inclined to lenticular form.
15	Cu. to St.-Cu.	294	6·9	+6·3	− 2·8	Cloud of transition type between Cu. and St.-Cu.
18	Cu.	45	10·0	−7·1	− 7·1	
19	A.-Cu.	318	3·5	+2·3	− 2·6	A.-Cu. formed from masses of "false" Ci.
25	St.-Cu.	351	5·0	+0·8	− 4·9	St.-Cu. of heavy type.
26	Cu.-Nb.	15	8·9	−2·3	− 8·6	
27	Cu.-Nb.	2	5·0	−0·2	− 5·0	Cu.-Nb. chiefly of "screen" type.
29	Ci.-Cu.	3	2·4	−0·1	− 2·4	Ci.-St. changing to Ci.-Cu.; fused later into A.-St.
30	Cu.	322	3·0	+1·9	− 2·4	Degraded Cu.; sheet of St.-Cu. above.
31	Ci. to Ci.-St.	283	2·0	+1·9	− 0·4	Diffuse Ci. to Ci.-St.
31	St.-Cu.	276	4·2	+4·2	− 0·4	

Note.—For convenience in printing, the following February observations are given on this page. The corresponding March observations are on the preceding page.

11. Soundings with Registering Balloons.

Benson. No. 303. February 4, 1915. 15 h. 50 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height,	8·2 km.	347 mb.	228 a.
Lowest Temperature,	...	...	...
Base of Stratosphere,	Stratosphere not reached.		
Type?			

Height above M.S.L., 57 m.

Place of Fall, Claxby.

Distance, 209 km.

and Orientation, 15° from N.

Data for Station.	at 13 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	...	...
Temperature,	...	...
Vapour Pressure	...	...
Geostrophic Wind—Direction,	200°	190°
Geostrophic Wind—Velocity,	15 m/s.	11 m/s.
Correction for curvature of isobars,	+2 m/s.	0 m/s.
Gradient Value,	17 m/s.	11 m/s.
Components, W. to E.	+5 m/s.	+2 m/s.
Components, S. to N.	+16 m/s.	+11 m/s.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	...	...	...	...	..	...	
	...	...	...	...	...	...	*Pressure Distribution* (18 h.).
	...	...	...	...	...	...	
	2500	185	20·5	+1·5	+20·5	...	Station between irregular high pressure regions over Russia and Central Europe and deep depressions over Iceland and west of Ireland.
	2000	175	15·5	−1·0	+15·5	...	
	1750	165	21·0	−6·0	+20·0	...	
	1500	160	21·0	−6·5	+20·0	...	
	1250	165	17·0	−4·0	+16·5	...	
	1000	170	11·0	−2·0	+11·0	...	
	750	215	7·5	+4·0	+ 6·5	...	
	500	180	13·0	0·0	+13·0	...	
100 m. above ground.	157	160	8·0	−3·0	+ 7·5	...	
Anemometer.	82	160	7·0	−2·5	+ 6·5	...	
Geostrophic wind.	...	...	...	...	...	...	Wt. of balloon 255 gm. Free lift 283 gm.
	...	...	...	...	...	...	

Benson. No. 303—*continued.*

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Remarks.
km.	mb.	a.	a.	
8·00	356	230	+8	
7·00	400	238	+6	
6·00	461	244	+8	
5·42	500	250		
5·00	530	252	+7	
4·07	600	259		Isothermal at 270° from 2·1 to 2·7 km.
4·00	607	259	+9	
3·00	690	268		
2·88	700	269	+3	
2·00	785	271		
1·84	800	272	+5	
1·00	890	276		
·90	900	277	+6	
0	1000	282		
Ground M.S.L.	1000	282	...	
	1007	...	...	

12. Nephoscope Observations.—February 1915.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90°=E, 180°=S.).	Computed for 1000 m. Velocity.	Components. W.–E.	Components. S.–N.	Remarks.
		°	V. m/s	m/s.	m/s.	
1	A.-St.	292	4·0	+ 3·7	− 1·5	Ci.-St. to A.-St.
2	St.-Cu.	206	6·9	+ 3·0	+ 6·2	Thin diffuse St.-Cu. A.-St. above.
4	Fr.-Cu.	220	15·0	+ 9·6	+11·6	
12	Nb.-Cuf.	78	10·0	− 9·8	− 2·1	Cu.-Nb. of low elevation, probably Nb.-Cuf.
13	Cu.-Nb.	135	8·0	− 5·7	+ 5·7	Apical parts measured.
15	Cu.-Nb.	335	4·0	+ 1·7	− 3·6	Apical part measured.
18	Ci.	240	3·5	+ 3·0	+ 1·8	Coarse Ci. to Ci.-St. *Observation at 12 h.*
22	St.-Cu.	321	3·4	+ 2·1	− 2·7	
23	St.-Cu.	353	7·4	+ 0·9	− 7·3	
24	St.-Cu.	328	4·0	+ 2·1	− 3·4	
27	Fr.-Cu.	225	23·0	+16·0	+16·0	Very rapid motion. Measurement approximate.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec. Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	3·1	24	1002	38	53	13 55	30	3·9	30	—	—	—	6·6	51	12 46	Clear	1·59	84	8·6	67
2	3·1	24	933	35	52	10 40	38	3·1	24	—	—	—	2·9	22	—	—	—	—	5·2	40
3	—	—	287	11	20	13 50	18	—	—	—	—	—	—	—	—	—	—	—	1·3	10
4	7·7	59	1282	46	71	12 35	69	7·6	58	—	—	—	4·4	33	—	—	—	—	7·0	53
5	—	—	768	28	37	14 0	35	—	—	—	—	—	4·4	33	—	—	—	—	8·8	67
6	1·8	14	588	21	36	8 17	24	2·1	16	—	—	—	—	—	—	—	—	—	1·1	8
7	8·8	66	1381	48	67	10 15	66	8·9	67	—	—	—	4·8	36	—	—	—	—	6·5	49
8	7·2	54	1121	39	66	13 30	66	7·5	56	80	57	Clear	4·3	32	—	—	—	—	6·7	50
9	9·0	67	1476	51	*x* 77	11 35	?	9·5	71	83	60	Clear	8·8	65	12 37	Clear	1·47	82	0·6	4
10	9·7	72	1643	56	69	11 20	67	10·6	79	81	58	Clear	8·5	62	—	—	—	—	—	—
11	—	—	725	24	36	10 55	35	0·5	4	43	32	A.-Cu.	0·7	5	—	—	—	—	0·6	4
12	—	—	*n* 174	6	*n* 8	9 30	6	—	—	—	—	—	4·0	29	—	—	—	—	4·6	34
13	0·1	1	506	17	39	8 35	12	0·1	1	—	—	—	6·8	49	—	—	—	—	2·2	16
14	9·3	68	1724	56	67	12 50	67	9·9	72	76	56	Clear	1·6	12	—	—	—	—	—	—
15	2·6	19	872	28	56	9 35	19	2·7	20	—	—	—	4·1	29	—	—	—	—	4·8	35
16	6·5	47	1381	45	70	11 45	70	5·2	38	77	57	Clear	8·8	62	11 56	Clear	1·41	84	4·0	29
17	9·7	70	1602	51	71	12 5	71	11·0	79	65	49	Clear	6·3	44	11 10	Hazy	1·46	65	4·8	35
18	4·0	29	900	29	57	10 35	38	5·3	38	—	—	—	2·3	16	—	—	—	—	—	—
19	11·4	81	1910	60	72	11 10	71	11·5	82	78	60	Clear	0·2	1	—	—	—	—	—	—
20	0·1	1	658	21	45	9 45	28	0·1	1	—	—	—	8·9	62	—	—	—	—	8·7	62
21	11·9	84	1865	58	72	11 35	72	12·4	88	71	54	Clear	4·3	30	—	—	—	—	0·2	1
22	2·9	20	1114	34	66	11 20	38	3·6	25	—	—	—	10·0	69	14 45	Clear	1·64	81	2·7	19
23	2·0	14	892	27	58	11 10	36	2·0	14	—	—	—	1·4	10	—	—	—	—	2·0	14
24	3·6	25	1171	35	70	11 40	70	3·8	27	—	—	—	—	—	—	—	—	—	2·9	20
25	0·2	1	393	12	27	7 10	7	—	—	—	—	—	10·5	71	—	—	—	—	7·0	49
26	1·7	12	1028	31	67	14 20	45	2·8	19	—	—	—	0·7	5	—	—	—	—	7·1	49
27	5·7	39	1307	39	73	12 0	*x* 73	7·5	52	—	—	—	9·2	62	12 0	Clear	1·35	92	11·1	76
28	12·4	85	1936	57	68	13 35	62	12·8	88	50	40	Hazy	12·4	83	12 22	Clear	1·34	89	*x*12·4	85
29	*x*12·9	*x* 88	*x* 2075	60	71	11 50	71	*x*13·5	92	54	43	Hazy	*x*14·0	93	12 24	Clear	1·32	93	2·9	20
30	7·8	53	1426	41	61	13 45	56	8·2	56	55	44	Hazy	2·4	16	—	—	—	—	0·1	1
Means	5·17	38	1138	37	57	—	47	5·53	40	—	—	—	5·10	37	—	—	—	—	4·13	30
Normal	5·63	41	—	—	—	—	—	5·07	37	—	—	—	4·63	33	—	—	—	—	5·30	39
	←4 years→							←30 years→					←4 years→						←30 years→	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.		γ	° ′	° ′
1	1026·4	1026·8	78°·9	79°·8	83°	*n* 74°	8·5	8·1	92	82	—	0	16	3	5∞	3	4·1	Fair. v.	…	…	…
2	1019·0	1021·4	83·3	81·7	85	81	11·9	10·5	95	94	21	10	17	4	10≡⁰	5∞	0·4	≡⁰ to fair.	…	…	…
3	1012·2	1011·0	84·1	82·7	85	82	12·9	10·8	99	90	19	10	20	7	10≡⁰●	8≡⁰	1·2	≡⁰ and d.	…	…	…
4	1010·1	1010·3	81·6	80·9	84	80	8·8	8·1	80	78	21	8	21	5	5	7	1·0	≡⁰ to fair.	…	…	…
5	1009·3	1004·9	80·6	79·3	83	79	8·5	8·5	82	87	22	7	18	4	4	10	*x* 14·2	Fair to showery.	…	…	…
6	989·2	988·1	82·2	80·7	84	78	9·5	8·8	81	86	23	8	24	8	10≡⁰	4	4·7	≡⁰. Showery.	…	…	…
7	989·8	991·3	80·2	80·1	*n* 82	77	7·8	7·8	77	79	22	9	21	14	9	10≡⁰	3·2	q. ●▲ showers.	…	…	…
8	1005·3	1017·3	80·6	80·3	*n* 82	79	7·8	7·8	74	76	25	13	25	11	5	2	2·5	q. ●▲ showers.	…	…	…
9	1022·9	1023·7	81·2	82·2	83	79	8·5	9·8	80	86	25	10	24	10	10≡⁰	10≡⁰	3·2	≡⁰. ●▲ showers.	17888	20 2·4	68 8·7
10	1021·8	1027·3	82·8	82·3	83	82	11·9	11·5	98	97	23	10	26	5	10≡⁰●	10	0·4	≡⁰	…	…	…
11	1029·4	1030·0	82·9	83·2	86	82	11·5	11·5	94	92	26	5	26	2	8	10	—	≡⁰ to dull.	…	…	…
12	1028·3	1031·2	81·9	80·3	83	80	10·5	7·8	93	75	29	8	31	7	10≡⁰	5	—	≡⁰ to fair.	…	…	…
13	1029·5	1025·6	81·3	81·2	*n* 82	80	8·5	8·8	77	81	28	6	27	5	10	10	1·0	c. ●⁰ showers.	…	…	…
14	1022·9	1023·0	81·7	81·6	83	80	9·8	10·2	87	92	27	4	25	2	10≡⁰	10	0·5	≡⁰● showers.	…	…	…
15	1023·8	1026·2	82·7	81·2	84	81	11·9	9·5	97	89	26	3	—	1	10≡⁰	4	—	≡⁰ to fair.	…	…	…
16	1024·9	1028·0	82·6	81·2	84	80	11·5	7·4	96	71	24	4	31	4	10≡⁰	5	—	≡⁰ to fair.	…	…	…
17	1028·6	1026·9	81·2	80·7	84	78	8·8	8·5	82	81	—	0	—	1	7	10	0·3	Fair.	…	…	…
18	1023·0	1021·9	81·8	82·3	84	79	10·2	11·2	92	94	15	3	22	3	10	10≡⁰	1·0	o. ≡⁰.	…	…	…
19	1018·0	1012·6	83·7	84·1	85	82	11·5	11·9	89	92	20	7	19	9	10	10	3·0	o. ≡⁰.	17864	20 3·9	68 8·6
20	1018·8	1024·7	80·9	80·4	84	80	7·4	7·8	70	75	29	11	27	3	7	10	1·0	Fair.	…	…	…
21	1022·3	1020·7	81·2	82·3	85	80	9·8	11·2	92	96	20	2	17	2	10≡⁰●	10≡⁰	0·5	≡⁰	…	…	…
22	1020·6	1021·8	82·9	81·8	85	80	11·5	10·5	95	93	29	7	30	2	9	3	—	Fair.	…	…	…
23	1022·1	1023·4	82·5	83·4	86	78	10·8	11·5	93	91	—	0	28	2	9	10	—	Dull.	…	…	…
24	1024·5	1024·0	84·3	83·2	86	82	11·2	11·2	82	90	1	4	32	6	10	10	—	c.	…	…	…
25	1024·1	1023·4	83·1	84·4	86	82	9·8	10·5	81	78	4	7	3	5	6	3∞	—	Fair. ∞	…	…	…
26	1024·2	1026·6	82·9	83·2	87	80	8·5	9·5	70	76	5	6	7	2	2∞	1∞	—	∞. Fine.	…	…	…
27	1026·2	1024·5	85·6	86·1	91	77	10·2	10·2	71	68	6	3	8	4	10∞	3∞	—	∞. Fine.	…	…	…
28	1022·5	1019·5	86·1	89·2	*x* 92	81	10·2	10·2	67	*n* 56	6	3	9	7	0∞	6∞	—	∞. Fine.	…	…	…
29	1018·4	1018·0	87·5	83·8	89	*x* 83	10·8	11·5	66	90	8	4	15	2	8∞	10	—	Fair.	…	…	…
30	1014·3	1008·1	85·2	83·7	87	*x* 83	10·5	12·5	74	99	13	3	15	5	10	10	5·6	Dull to ≡⁰●.	…	…	…
Means	1019·1	1019·4	82·6	82·2	84·9	79·9	10·0	9·8	84	85	5·8		4·8		8·1	7·3	47·8	Monthly **Totals** or **Means.**	17876	20 3·2	68 8·7
Normal	1011·1	1011·3	82·0	81·6	85·0	79·0	9·4	9·4	82	85	5·5		5·0		—	—	99·8 (40 yrs.)	**Normals.**			
	←40 years→						←25 years→				←30 years→										

n denotes the maximum and *x* the minimum value in the column.

Wt. 43708/421—400—2/17. N. & Co., Ltd. **Gp. XV.**

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
																					Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	m/sec.		m/sec.		Tenths of Sky covered.		mm.	200+ °	200+ °	200+ °	cm.	cm.
1	1024·8	1027·1	77·4	79·7	84	*n* 72	6·8	7·1	82	71	—	1	—	1	2≡0	10≡0	—	*n* 67	76·5	79·4	293	294
2	1027·2	1018·9	79·9	80·7	84	74	7·1	9·8	73	94	21	2	21	4	8≡0	10	4·0	69	77·5	79·5	293	—
3	1018·4	1011·3	79·7	82·5	83	78	9·5	11·5	95	96	23	2	20	4	10●≡0	10	2·7	73	78·0	79·3	293	—
4	1010·2	1010·2	83·5	81·7	87	*x* 80	9·5	7·1	76	64	23	5	24	3	7	4	—	82	79·1	79·2	293	—
5	1008·7	1007·5	81·1	80·3	85	77	8·8	7·8	83	78	24	2	24	2	10	9	1·1	76	80·0	79·2	292	—
6	1003·4	990·2	81·1	81·9	82	75	8·1	10·2	76	89	18	7	20	6	10	10	6·0	69	79·8	79·5	293	—
7	989·0	993·5	81·9	78·5	85	78	7·1	7·4	64	82	25	6	23	3	5	0	—	79	80·0	79·6	291	—
8	997·6	1007·1	81·1	79·2	85	77	7·8	6·8	72	71	23	6	24	5	7	0	1·8	74	80·0	79·7	288	—
9	1011·7	1015·2	80·6	79·3	84	77	6·4	7·1	63	75	26	8	26	4	7	10	2·6	75	79·9	79·9	285	—
10	1016·5	1020·8	79·5	80·9	85	77	6·8	7·4	68	71	31	4	29	2	5	1	—	72	80·0	80·0	281	—
11	1024·7	1026·0	81·2	83·3	86	79	8·1	9·8	76	80	29	2	—	1	10≡0	10	—	75	80·8	80·0	278	—
12	1025·0	1019·1	82·0	80·1	82	78	8·5	9·5	73	93	19	2	26	3	10	10●0	*x* 8·3	79	81·5	80·0	276	—
13	1019·3	1018·9	79·7	78·8	*n* 81	76	6·8	6·8	69	75	32	8	2	4	9	9	—	77	80·9	80·1	275	—
14	1019·3	1020·2	78·1	79·8	85	75	6·8	7·4	77	76	1	4	7	2	2	0	—	70	80·2	80·3	274	—
15	1021·9	1022·6	80·8	83·1	86	74	8·1	10·5	79	86	17	2	—	1	2≡0	0	—	69	80·5	80·5	273	—
16	1022·9	1022·6	82·3	83·0	89	79	10·2	9·1	87	75	27	2	32	4	0≡0	10	—	74	81·2	80·6	272	—
17	1024·5	1025·6	80·3	79·6	85	77	6·1	6·4	59	66	32	5	9	2	0	0	—	73	82·0	80·6	271	—
18	1024·2	1021·7	80·0	78·9	84	73	7·4	8·1	74	87	—	1	—	1	0≡0	0≡0	—	68	81·5	80·7	270	—
19	1020·8	1017·6	81·7	83·7	88	75	8·1	9·5	72	74	24	2	25	4	0	7	—	68	80·7	80·8	270	—
20	1012·9	1016·6	84·2	80·8	87	77	9·8	6·4	73	61	20	5	30	6	9	10	0·4	81	82·2	80·9	268	—
21	1021·1	1021·4	79·0	79·9	84	75	5·8	6·1	62	60	32	4	31	2	0	0	—	72	81·3	81·0	266	—
22	1020·9	1019·1	81·9	82·0	86	77	7·1	7·4	64	66	23	3	26	2	4	10●	2·0	71	81·7	81·0	264	—
23	1020·9	1021·6	80·6	79·4	84	77	7·8	6·1	73	65	5	3	—	1	9≡0	0≡0	0·3	74	82·0	81·0	261	—
24	1020·4	1018·4	80·6	78·9	84	74	7·1	6·4	68	70	6	3	—	1	8	0≡0	—	68	81·1	81·0	259	—
25	1017·8	1021·5	80·3	80·0	*n* 81	76	7·1	7·8	69	77	2	7	5	6	10●0	10	2·9	71	81·0	81·1	256	—
26	1024·5	1025·3	81·5	80·5	88	79	9·1	8·5	85	83	5	3	2	4	10≡0	3	—	79	80·7	81·0	254	—
27	1026·0	1024·6	80·2	83·0	87	79	8·1	9·5	81	78	3	7	2	5	10	0	—	77	81·4	81·2	.252	—
28	1023·7	1022·8	85·7	85·2	92	79	9·5	8·1	66	*n* 57	4	5	5	6	0≡0	0∞	—	77	81·9	81·2	251	—
29	1022·8	1021·0	85·4	83·7	90	79	8·5	8·5	60	67	8	6	9	3	0∞	0≡0	—	75	82·5	81·2	250	—
30	1018·6	1014·1	83·6	87·0	*x* 94	78	10·2	11·2	79	71	—	1	20	3	0∞	0	—	71	82·6	81·3	250	250
Means	1018·0	1017·4	81·2	81·2	85·5	76·7	7·9	8·2	73	75		3·9		3·2	5·5	4·8	32·1	73·5	80·6	80·4	273	—
Normal	1012·6	1012·5	81·4	80·8	85·7	77·3	8·2	8·2	75	77		4·3		3·3	—	—	41·7 (40 years)	—	81·2	80·8	—	—
			40 years				25 years				30 years								11 years			

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	992·4	996·1	79·4	76·7	83	73	6·8	6·8	69	85	24	6	22	3	10●	4	1·3		●0 showers 9 h.–12 h. ⊕ 18 h.
2	988·4	986·1	77·6	79·0	82	71	7·4	7·8	88	83	18	14	20	5	10●	9	15·3		●2 *a*. Fair afternoon.
3	982·0	975·9	78·3	78·9	82	78	8·1	7·1	90	78	19	9	22	9	10●	1	10·2		Dull, with ●. Clear from 18 h.
4	974·8	974·9	78·8	76·8	81	75	7·4	6·1	83	76	20	10	21	11	10	1	2·9		● showers *n*. ◬2●2 and q. in afternoon.
5	976·0	975·4	77·5	75·2	82	73	6·8	6·8	82	93	20	6	20	5	9	2	0·4		o. to c. Very fine evening.
6	964·0	954·9	76·9	76·6	79	74	6·8	6·8	83	87	14	9	23	6	10●0	10●	8·8		≡0 early. d. all day.
7	954·3	955·2	76·3	74·4	*n* 78	74	6·1	6·1	79	88	20	8	19	7	8	8	10·4		q. with ◬ showers. ⏄0.
8	955·8	969·3	78·3	74·8	81	73	7·4	5·4	84	75	22	15	25	14	10●	5	5·9		● 3 h.–11 h. ● showers *p*. ✳*n*.
9	977·3	983·2	78·1	75·9	81	74	6·1	6·4	69	86	27	15	27	7	3	6	—		1 h.
10	987·9	992·0	80·0	79·3	85	72	5·4	7·4	54	79	32	4	—	1	6	10	2·7		⊕ 13 h and 16 h. ● from 23 h. Wet mist *n*.
11	994·7	997·2	81·3	81·0	86	77	10·5	9·1	97	87	25	2	—	1	10	8	0·2		d. and ≡0 till 8 h. ⊕ 16 h. Damp and close.
12	993·0	994·6	81·6	75·0	82	74	10·8	5·8	97	82	19	6	28	5	10≡0	0	1·4		o. and mild early. Clear from noon.
13	995·2	992·0	79·7	77·8	82	72	5·8	7·4	59	87	30	3	28	3	5	9	—		⏄0 early. Very fine *a*. o. *p*.
14	991·5	989·5	77·7	78·6	82	*n* 69	7·4	8·8	88	98	15	3	17	4	10	10●0≡0	1·2		⏄0 *a*. Fine and clear early to o.
15	989·8	992·2	80·4	78·7	85	78	8·1	7·4	78	80	24	3	24	4	8	4	1·5		Frequent sunny intervals. ● showers *p*.
16	987·0	994·1	79·6	75·2	83	73	8·1	5·1	85	70	25	13	25	3	9●	3	—		● shower 9 h. Fair to fine *p*.
17	996·3	995·8	78·6	76·9	83	71	5·8	6·8	65	84	26	5	22	5	5	2	—		Fair to fine.
18	992·1	988·0	78·6	78·7	82	75	6·8	8·8	76	97	21	8	17	7	10	10●0≡0	3·0		Fair to c. ● in evening.
19	981·6	979·0	80·4	81·4	82	*x* 80	9·5	10·5	93	95	20	16	19	11	10●0	10●	*x* 17·4		7 h.–8 h. and 12 h.–14 h. ≡0● *p*.
20	978·4	989·0	79·5	72·9	82	72	7·4	4·4	76	70	26	9	27	4	6	1	—		≡0 3 h. Clear afternoon with v.
21	991·8	991·1	77·7	77·0	81	70	5·4	7·4	62	92	22	4	20	7	9	10●	2·8		Fine 7 h. to c. ≡0 and d. ● *p*. in evening
22	992·4	995·1	77·8	73·5	82	71	7·1	4·7	86	76	3	6	32	2	9	0	—		o. to clear and fine.
23	995·8	994·0	77·9	79·3	84	72	6·1	7·1	71	74	16	2	20	4	9	10●0	1·8		Dull and o. all day.
24	991·7	994·9	81·0	79·7	87	78	9·8	8·8	92	91	—	1	2	11	10≡0●0	10●0	—		o. and ≡0, with ●0 showers *a*.
25	997·8	998·9	81·0	79·7	85	76	7·8	7·8	73	79	3	7	3	3	8	10	—		Fair to fine. o. from 18 h.
26	1001·5	1004·4	79·1	77·6	81	77	9·1	8·1	97	95	3	8	2	6	10≡0	10≡0	—		Damp and o. all day.
27	1005·1	1003·8	79·7	77·4	86	75	7·8	6·4	80	77	1	5	3	11	9●	0	—		Damp and o. to clear.
28	1003·3	999·3	83·4	78·0	*x* 91	74	8·8	6·4	69	73	5	4	—	2	1	0∞	—		o. 7 h. to clear.
29	996·7	991·5	85·0	79·6	*x* 91	73	7·4	6·1	*n* 53	64	—	1	—	0	0∞	0	—		Very fine and clear.
30	988·0	982·9	82·0	79·9	82	72	9·8	9·8	86	99	20	5	20	5	9∞	10≡⋮	6·4		Very fine till 8 h. ≡0 to ≡ later.
Means	987·2	987·7	79·4	77·5	82·9	73·8	7·6	7·1	79	83		6·9		5·5	8·1	5·8	93·6	—	Monthly **Totals** or **Means**.
Normal 1911-14	986·5	986·7	80·1	77·9	83·4	74·3	7·9	7·5	78	85		6·3		5·0	—	—	110·6	—	**Normals**.

No record.

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism :—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 29 days ; they are computed from the data for those days on which values at each of the four hours, 3^h, 9^h, 15^h, 21^h, are given in the table. A similar note applies to the values in Table 6.

x denotes the maximum and *n* the minimum value in the column. *z* Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·61.				Charge per cc. $\times 10^{20}$.		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.*												
		v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	⌣ early. Fine to dull.	205	490	155	420	390	240	0·50	0	0	501	16 24	445	10 50	56	27·4	14 42	14·7	8 23	12·7
2	Fine till 11 h. ● late *p.*	240	385	180	180	—	—	—	1	1	502	23 58	443	10 19	59	30·3	12 28	14·6	9 20	15·7
3	● *a.* Dull throughout.	230	−380	230	255	—	—	—	2	1	507	23 18	436	11 59	71	28·6	12 16	13·0	18 5	15·6
4	Fair to fine. v. *p.*	50	245	85	170	—	—	—	0?	0	488	1 0	443	11 4	45	28·0	13 2	15·0	8 0	13·0
5	Dull throughout. ● 19 h. 30 m.	105	225	110	85	—	—	—	1	0	495	23 58	441	10 42	54	28·9	13 28	14·2	8 45	14·7
6	Dull from 9 h. ● at times *p.*	120	140	−190	180	—	—	—	2	0	499	19 39	444	10 47	55	26·0	13 35	14·6	8 38	11·4
7	● early. Fair to fine. v. *p.*	85	190	140	300	—	—	—	1	2	*x* 572	19 50	451	11 43	*x*121	25·5	13 44	13·5	20 33	12·0
8	Mostly fine *a.* ⌇⌒ 17 h. 30 m.	140	215	*z*±	360	—	—	—	1	2	527	15 20	413	13 3	114	*x* 31·8	13 25	10·6	0 53	21·2
9	Mostly fine.	155	145	105	260	770	710	0·80	1	0	476	19 13	449	12 30	*n* 27	24·9	12 34	14·7	7 55	10·2
10	● 0 h.–3 h. Fine.	−10	320	190	290	—	—	—	1	0	476	22 44	449	11 35	*n* 27	25·0	13 35	15·1	8 56	9·9
11	Mostly dull.	240	180	120	240	—	—	—	0	0	483	16 39	446	11 24	37	23·7	13 57	16·1	9 18	*n* 7·6
12	Dull. ● at times *a.* and *p.*	145	205	275	−85	—	—	—	1	0	479	22 44	450	11 11	29	25·6	13 33	15·1	7 55	10·5
13	● till 2 h. Mostly dull.	75	310	230	465	620	340	0·90	1	0	482	21 15	455	10 53	*n* 27	25·7	13 34	16·5	7 59	9·2
14	Fine from 9 h.	230	440	265	600	620	1030	1·00	0	1	493	15 53	445	10 55	48	27·5	13 21	14·6	8 26	12·9
15	⌣≡ early. Fine to dull.	310	405	230	385	340	60	0·45	1	2	512	16 48	442	22 43	70	28·4	14 43	5·2	22 58	23·2
16	≡ early. Fine *a.* ; fair later.	165	320	155	285	410	160	0·60	0	1	509	17 19	436	10 23	73	28·1	12 53	10·5	21 13	17·6
17	Fine throughout.	325	370	275	695	—	—	—	0	1	492	18 23	430	11 29	62	25·0	13 20	13·1	0 0	11·9
18	⌣ early. Fine till 13 h.	165	310	335	180	—	—	—	0	1	501	1 22	436	11 55	65	26·4	13 50	14·0	1 53	12·4
19	≡⁰⌣ early. Fine. ≺ 23 h.	215	380	145	200	420	240	0·55	0	1	510	17 49	426	13 28	84	28·8	13 7	11·7	23 59	17·1
20	Mostly dull. ●⁰ 14 h.–18 h.	75	230	−335	230	—	—	—	1	1	483	0 13	431	9 10	52	26·6	11 57	9·6	1 15	17·0
21	Fine throughout. v. *p.*	260	345	180	140	540	190	0·45	0	1	492	17 50	436	23 59	56	24·8	14 3	7·8	19 3	17·0
22	Fair to fine *a.* ● 21 h.–23 h.	170	405	110	230	—	—	—	1	2	500	22 48	426	0 10	74	27·9	14 48	*n* 2·8	20 50	*x*25·1
23	Fair to dull *a.* ; finer later.	275	620	430	850	—	—	—	0	1	494	0 13	432	1 48	62	26·9	12 58	4·7	0 53	22·2
24	⌣ early. Fine 9 h.–noon.	465	475	360	810	—	—	—	0	0	487	17 58	448	10 53	39	25·9	13 18	16·2	6 25	9·7
25	●⁰ 9 h. and 11 h.–15 h.	275	−140	215	120	—	—	—	2	0	483	16 18	451	11 3	32	25·7	13 15	15·1	19 40	10·6
26	Dull till 11 h. ; fair to fine later.	−50	505	475	550	320	520	1·25	1	2	502	16 8	*n* 402	10 28	100	31·0	16 6	12·6	6 43	18·4
27	c. till 11 h. ; bright later.	260	440	415	600	1070	710	0·85	0	0	478	17 1	450	10 43	28	25·9	13 25	15·4	7 53	10·5
28	Fine throughout. ∞ *p.*	260	500	480	720	600	410	0·55	0	0	482	17 5	443	10 8	39	25·8	13 29	13·8	8 16	12·0
29	Fine and cloudless. ∞.	415	660	500	715	620	580	0·75	0	0	486	18 46	445	10 57	41	27·8	13 40	14·3	7 18	13·5
30	≡ early. Fine after 8 h. ∞.	145	240	155	385	360	150	0·70	0	0	504	18 36	461	8 55	43	27·8	13 42	12·8	7 53	15·0
M.		193*	309*	208*	361*	—	—	—	—	—	496	—	440	—	56	27·1	—	12·7	—	14·3

6. Atmospheric Electricity and Terrestrial Magnetism :—Eskdalemuir.

Day.	Potential Gradient, Volts per metre.* Factor 5·59.				Charge per cc. $\times 10^{20}$.		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.*			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.	Amp/cm².														
1	68	8	241	827	—	—	—	1 *a*	1	16 25	1036	971	11 52	14 40	132	59	9 0	17 57	193	155	12 9
2	256	−684	135	135	—	—	—	2 *b*	1	23 27	1043	947	12 41	16 22	155	51	9 24	18 0	216	149	12 9
3	68	−75	−1090	173	—	—	—	2 *b*	1	23 17	1045	950	11 56	13 33	128	45	23 41	18 15	191	149	23 35
4	120	98	*z*	135	—	—	—	1 *b*	1	17 37	1033	968	11 28	13 12	125	61	8 2	17 52	193	147	12 35
5	173	128	135	353	—	—	—	1 *b*	0	23 12	1030	964	12 3	13 50	126	60	8 53	17 15	178	152	12 55
6	346	263	68	−654	—	—	—	2 *c*	0	19 38	1035	969	12 9	13 35	123	62	9 5	18 44	172	151	12 37
7	143	105	*z*	331	—	—	—	1 *c*	1	19 49	*x* 1152	976	11 45	19 48	143	49	20 31	20 48	188	143	24 0
8	8	−83	98	165	—	—	—	2 *c*	2	14 34	1075	936	12 22	14 50	166	23	0 54	19 9	174	119	0 52
9	113	158	181	181	—	—	—	0 *a*	0	17 2	1024	973	12 30	13 21	113	56	7 57	17 0	176	157	12 10
10	286	241	376	564	—	—	—	1 *a*	0	18 53	1019	978	11 32	13 46	107	63	9 1	6 32	173	155	12 51
11	293	143	369	143	—	—	—	0 *a*	1	16 41	1027	980	11 24	14 20	110	68	9 38	17 53	178	158	13 41
12	436	105	218	293	—	—	—	2 *b*	0	18 52	1025	980	11 10	13 38	118	66	7 56	19 27	180	154	12 46
13	767	226	120	128	—	—	—	0 *a*	0	17 56	1027	988	12 8	13 31	120	73	8 55	17 40	173	155	12 19
14	135	143	75	128	—	—	—	1 *b*	1	15 35	1038	981	10 52	13 19	129	64	9 26	17 10	182	153	12 42
15	120	113	135	128	—	—	—	1 *b*	2	16 47	1056	971	12 12	14 43	144	1	22 57	20 14	201	151	12 0
16	176	−241	128	293	—	—	—	1 *b*	2	17 13	1093	961	13 5	13 46	134	36	22 40	18 28	218	152	22 0
17	293	150	98	301	390	520	—	0 *a*	0	18 21	1046	966	12 24	13 47	108	41	0 2	15 45	179	152	2 30
18	218	105	83	135	—	—	—	1 *b*	1	1 21	1051	966	11 51	13 53	120	55	{1 55 / 6 58}	17 10	184	132	4 19
19	75	15	105	−241	—	—	—	2 *b*	2	17 48	1078	950	13 27	13 7	136	43	24 0	19 55	200	133	5 43
20	8	135	128	323	—	—	—	2 *b*	2	0 12	1050	957	9 7	14 2	126	15	1 17	19 22	210	132	1 54
21	120	165	165	*z*	—	—	—	2 *c*	2	19 2	1076	976	12 2	17 46	112	14	23 37	18 57	204	157	7 42
22	346	143	165	376	1690	590	—	0 *a*	2	17 36	1061	957	12 13	14 48	149	*n*−18	20 50	20 3	214	*n* 105	23 23
23	83	60	256	308	590	390	—	0 *a*	2	0 4	1063	960	13 14	13 49	123	−13	0 54	19 50	185	109	0 57
24	143	361	83	143	—	—	—	1 *a*	0	22 58	1029	975	13 52	14 8	122	63	6 24	19 48	184	156	12 29
25	135	120	188	173	—	—	—	0 *a*	1	19 37	1035	972	11 53	14 30	120	63	7 4	19 20	185	148	12 17
26	90	188	271	466	—	—	—	0 *a*	2	16 8	1077	*n* 925	10 9	16 8	*x* 184	42	9 23	18 15	*x* 310	144	8 7
27	286	150	233	248	—	—	—	0 *a*	0	19 33	1021	971	11 51	13 27	117	62	9 21	0 4	184	157	12 29
28	301	218	188	587	590	260	—	0 *a*	0	19 7	1026	968	12 4	13 38	111	55	8 39	19 32	181	159	12 20
29	587	316	256	775	—	—	—	0 *a*	0	18 37	1030	970	10 58	13 40	126	56	9 22	20 26	179	148	12 22
30	301	286	308	23	—	—	—	—	1	18 36	1054	982	12 9	15 25	127	49	7 55	20 47	182	142	12 31
M.	226*	100*	132*	240*	—	—	—	—	—	—	1048	966	—	—	128	45	—	—	192	146	—

* 27 days. *See* note above.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
1	L	5 58	...	...	...	...	...	
	M	6 3 36	18	− 4	...	...	...	Amplitude 3 μ on E. about this time.
	F	6¼	...	...	...	...	...	
6	i	6	15 (?)	...	...	2 (?)	...	Obscured by microseisms.
22	i	19 17 6	...	...	...	...	...	
	e	19 23¼	...	...	...	...	...	
	M	19 52 49	22	− 3	...	...	...	
	F	20½	...	...	...	...	...	
23	P	15 40 40	...	...	...	...	8360	α = 236°. If S is taken as 15h 50m 18s, then Δ = 8360 km. and the epicentre is located in lat. 6° S., long. 56° W.
	i	15 42 56	...	...	...	...	...	
	PR_1 (?)	15 43 56	...	...	...	...	...	
	i	15 47 4	...	...	...	...	...	
	S (?)	15 50 18	...	...	...	...	...	
	i	15 51 22	13	...	...	...	...	
	i	15 54 17	12	+ 6	...	...	...	
	i	15 55 5	15	...	...	...	...	
	SR_1 (?)	15 56½	20	...	...	...	...	
	e	15 59½	15	...	...	...	...	
	e	16 3½	...	...	...	...	...	
24		17 50 to 18 52	16 to 35	... ...	... ...	... ...	... ...	Waves.
26		3 27 to 3 32	20 to ...	... ...	... ...	... ...	... ...	
28	M	3 58 52	17	+ 6	...	...	...	Small waves 3h 56m to 4½ h.
29		20h to 20½h	...	< 2	< 2	...	...	Faint disturbance.
30	P (?)	1 55 20	...	...	...	...	7010	First movement +S, +W, and up.
	S (?)	2 3 50	...	...	...	...	...	α = 50° to 60°.
	L (?)	2 16	...	...	...	...	...	
	M	2 25 1	15	+12	...	...	...	
	F	3¼	...	...	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	1·6	6	1·3	6	2·1	5	1·9	5·5
2	1·9	5·5	2·4	6	3·8	5	4·4	5·5
3	3·5	5·5	2·9	6	2·5	6·5	3·6	6
4	2·8	6	4·8	6·5	4·4	7	4·7	7
5	4·0	7·5	3·1	7	2·6	7·5	2·0	7
6	2·1	6	1·9	6	2·6	6	2·9	5
7	3·1	5·5	3·3	6	2·6	6·5	3·6	6
8	4·5	7	4·5	7	4·8	8	5·4	8
9	6·1	7	4·4	7	3·8	7·5	3·3	6·5
10	1·9	6·5	1·3	6	1·5	5	1·2	6·5
11	1·3	5·5	1·5	5	1·7	6	2·0	6
12	1·6	6	2·2	6	1·8	6·5	2·3	6·5
13	2·7	6	3·1	7	2·3	7	1·7	7
14	2·2	6·5	2·0	6	2·2	7	2·2	6·5
15	1·6	6	1·2	6	1·0	6	1·6	6
16	1·3	6	1·7	6	2·3	8	2·2	7
17	2·2	7	2·6	6·5	1·9	6	1·9	5
18	1·5	6	1·7	5·5	1·7	5·5	1·9	5·5
19	2·3	6·5	2·6	6	3·5	7	2·2	7
20	1·9	6	2·2	7	2·4	6	1·5	5
21	1·7	5·5	1·9	5	1·7	5·5	1·6	6·5
22	1·5	6	1·6	5	1·0	5·5	0·9	5
23	0·8	4	0·6	4	0·6	4·5	0·6	4
24	0·6	4·5	0·8	4·5	0·6	4·5	0·9	5·5
25	1·0	5·5	1·0	5	1·0	5·5	1·0	5·5
26	1·0	5	1·0	5	0·9	5	1·0	5
27	0·9	5	0·9	5	1·0	4·5	0·9	5
28	1·0	5	1·0	5·5	0·9	5·5	1·0	5·5
29	0·9	5·5	1·0	5·5	0·9	5·5	0·9	6
30	1·0	5	1·0	5·5	0·9	6	1·3	6

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
3	21 5·0	21 28·0	Series of very small movements.
6	6 22·0	...	Series of very small movements.
22	19 32·6	19 33·7	Very small.
23	...	16 4·0?	
24	18 3·8	...	Series of very small movements.
28	3 55·2	4 2·0	
30	2 17·5	2 27·9	

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	2·0	4·8	...	...	2·1	5·2	...	...	2·0	4·8	...	2·2	...	3·2	...	9·8	6	25
2	4·3	...	1·8	...	9·7	...	4·0	...	3·1	...	7·6	...	...	1·9	4·5	...	21·0	11	0
3	2·1	...	5·2	...	7·3	...	3·0	...	4·4	...	4·4	...	2·4	...	5·7	...	14·0	8	40
4	2·0	...	4·8	...	2·9	...	6·9	...	5·6	...	5·6	...	1·7	...	8·3	...	14·2	11	50
5	1·2	...	5·8	...	1·3	...	6·5	...	4·9	...	4·9	...	2·4	...	3·6	...	10·7	16	0
6	5·1	...	5·1	...	10·9	...	4·5	...	4·4	...	4·4	...	...	...	4·3	...	21·8	10	5
7	...	4·1	10·0	...	3·3	...	7·9	...	2·8	...	6·7	...	...	...	11·5	...	19·9	14	30
8	2·3	...	11·6	...	...	...	15·1	...	...	5·0	12·1	...	...	3·1	15·4	...	25·1	17	10
9	...	6·3	15·2	...	...	7·0	10·4	...	...	5·4	8·1	...	...	3·3	7·9	...	26·6	0	40
10	...	4·7	4·7	...	...	3·0	2·0	...	...	2·1	2·1	...	2·1	...	2·1	...	11·3	0	35
11	1·1	...	2·8	...	...	4·4	4·4	...	...	2·5	2·5	...	...	0·3	1·6	...	10·1	6	50
12	...	0·8	3·8	...	...	...	4·6	...	...	3·8	0·8	...	...	8·8	3·6	...	15·3	12	10
13	...	6·9	2·9	...	...	6·5	1·3	...	...	3·2	2·2	...	...	...	1·6	...	11·6	2	30
14	...	2·7	1·8	...	...	1·3	0·9	...	0·6	...	3·2	...	2·4	...	3·6	...	8·8	18	10
15	...	...	6·2	...	...	...	5·2	...	1·2	...	5·8	...	...	0·4	2·3	...	9·2	15	0
16	1·5	...	3·6	...	1·8	...	4·3	...	...	1·9	4·5	...	...	1·6	0·3	...	10·0	10	50
17	...	6·0	4·0	...	...	4·1	2·7	...	...	1·3	0·9	...	1·4	...	2·2	...	9·6	7	20
18	2·3	...	2·3	...	4·0	...	1·6	...	6·6	...	4·4	...	3·5	...	3·5	...	13·5	15	15
19	4·4	...	4·4	...	6·6	...	4·4	...	7·6	...	5·1	...	8·5	...	5·7	...	16·6	21	20
20	7·4	...	4·9	...	...	6·9	6·9	...	...	6·5	1·3	...	...	8·2	3·4	...	17·7	5	35
21	...	5·2	2·1	...	...	2·5	2·5	...	4·7	...	3·1	...	4·9	...	3·3	...	9·9	20	10
22	3·3	...	3·3	...	...	0·4	2·0	...	...	4·0	...	1·6	...	4·3	...	1·8	9·3	19	0
23	...	...	...	3·3	...	...	...	4·9	...	4·3	...	2·9	...	0·8	...	0·6	7·5	8	30
24	...	0·8	...	0·6	...	1·7	1·1	...	...	9·3	...	1·9	...	7·1	...	1·4	14·3	14	55
25	...	...	...	4·3	...	7·4	...	7·4	...	6·2	...	4·2	...	4·3	...	2·9	14·7	8	25
26	...	...	...	5·9	...	...	...	10·2	...	4·2	...	6·2	...	1·4	...	7·1	14·2	8	40
27	...	1·5	...	3·6	...	...	...	11·8	...	5·2	...	3·4	...	2·1	...	10·6	16·7	22	10
28	...	...	...	6·6	...	4·0	...	9·7	...	2·0	...	10·3	...	...	...	7·9	17·2	11	0
29	1·1	...	...	5·5	...	1·7	1·1	...	...	1·4	1·4	...	2·9	...	4·3	...	9·8	3	25
30	4·0	...	4·0	...	3·7	...	3·7	...	6·4	...	2·6	...	4·3	...	2·9	...	11·4	15	40
S+N & W+E	83·1		144·9		104·5		156·2		122·6		129·0		86·3		137·1				
S−N & W−E	1·1		85·3		−1·5		68·2		−18·0		68·0		−8·9		72·5				

SCOTLAND N.:—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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	...	2·2	11·3	...	...	10·0	10·0	...	...	4·7	4·7	...	...	0·2	0·2	...	14·8	8
2	6·8	...	...	1·3	8·5	...	...	...	5·8	...	1·2	...	1·7	...	8·3	...	10·5	19
3	2·4	...	5·7	...	6·1	...	1·2	...	7·7	...	1·5	...	4·2	...	6·2	...	10·8	17
4	6·8	...	1·3	...	7·4	...	7·4	...	6·9	...	6·9	...	8·1	...	5·4	...	13·1	24
5	5·8	...	8·7	...	4·7	...	7·1	...	3·4	...	8·2	...	3·0	...	3·0	...	11·1	1
6	3·6	...	1·5	...	9·4	...	...	3·9	15·3	...	...	10·2	2·7	...	1·8	...	19·0	16
7	2·3	...	2·3	...	4·0	...	4·0	...	8·0	...	1·6	...	5·7	...	2·4	...	8·9	16
8	9·6	...	...	1·9	5·1	...	...	5·1	...	2·6	3·8	...	...	3·3	3·3	...	11·1	6
9	...	2·4	3·6	...	...	3·1	7·6	...	...	5·1	12·4	...	...	3·3	7·9	...	14·4	13, 16
10	...	4·2	6·2	...	...	5·5	3·7	...	...	2·7	1·8	...	...	0·5	0·5	...	10·5	2
11	6·1	...	1·2	...	3·0	...	...	...	3·6	...	1·5	...	2·3	...	...	...	6·2	3
12	5·8	...	1·2	...	...	...	8·9	...	...	...	10·2	...	...	0·7	3·5	...	10·8	13
13	0·6	...	3·2	...	2·4	...	3·6	...	4·2	...	4·2	...	2·4	...	1·0	...	5·9	13, 14, 15
14	4·3	...	1·8	...	6·5	...	1·3	...	7·9	...	3·3	...	1·0	...	4·8	...	8·5	13, 15
15	...	...	3·9	...	...	...	5·2	...	1·5	...	7·4	...	3·8	...	5·7	...	8·2	19
16	3·1	...	7·6	...	...	...	12·1	...	...	5·5	13·3	...	...	1·3	6·5	...	16·4	14
17	...	1·4	3·3	...	1·3	...	3·0	...	2·8	...	6·7	...	2·9	...	4·3	...	8·2	16
18	4·9	...	3·3	...	10·3	...	2·0	...	3·4	...	8·2	...	1·9	...	4·5	...	10·8	10
19	4·3	...	2·9	...	11·2	...	4·6	...	1·8	...	9·0	...	6·2	...	...	...	13·1	12
20	1·1	...	1·7	...	...	5·8	8·7	...	...	...	10·2	...	...	1·6	8·0	...	11·8	12
21	...	1·5	7·4	...	...	...	5·9	...	...	4·4	6·6	...	...	0·9	2·1	...	9·5	13
22	...	2·8	2·8	...	...	1·3	1·9	...	...	1·4	3·3	...	4·8	...	1·0	...	6·2	16
23	3·8	...	0·8	...	3·8	...	0·8	...	1·8	...	0·8	...	2·1	...	2·1	...	5·9	24
24	1·0	...	5·1	...	...	4·7	4·7	...	...	5·5	3·7	...	...	0·9	0·9	...	6·9	11
25	...	...	1·6	...	...	1·9	4·5	...	...	3·7	5·5	...	...	2·4	3·6	...	6·9	24
26	...	2·4	5·7	...	...	3·3	3·3	...	...	2·9	0·6	...	...	1·3	...	0·3	8·2	2
27	0·2	...	...	1·0	2·1	...	...	0·9	4·0	...	...	1·6	4·3	...	...	...	4·9	16, 17
28	2·3	...	...	...	...	3·2	2·2	...	...	3·5	0·7	...	...	0·3	...	...	3·9	7, 8, 9, 14
29	...	0·1	0·7	...	1·3	...	0·9	...	...	2·1	5·2	...	...	0·3	1·6	...	5·9	16
30	1·4	...	3·3	...	...	4·3	...	2·9	...	1·8	...	2·7	...	0·9	...	0·9	5·9	7, 8
S+N & W+E	93·2		102·3		130·2		127·4		124·0		157·0		75·0		89·8			
S−N & W−E	59·2		93·9		44·0		101·8		32·2		128·0		39·2		87·4			

ENGLAND S.W.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	1·8	2·7	...	...	3·2	0·6	...	...	4·3	1·8	...	...	3·0	3·0	...	6·9	13	25
2	1·0	...	2·3	...	5·6	...	5·6	...	4·3	...	10·4	...	...	1·6	8·1	...	15·3	14	35
3	1·0	...	4·9	...	2·1	...	10·6	...	2·2	...	11·1	...	2·0	...	9·8	...	14·7	15	50
4	...	1·1	5·7	...	...	...	5·0	...	...	...	4·6	...	...	...	3·3	...	10·7	1	40
5	...	1·8	2·7	...	...	3·8	2·6	...	...	2·7	6·6	...	1·2	...	6·2	...	17·0	18	45
6	8·1	...	3·4	...	10·7	...	7·2	...	...	...	8·3	...	...	2·1	10·6	...	20·0	5	50
7	...	...	10·4	...	...	1·7	8·6	...	...	2·0	10·2	...	...	2·4	12·3	...	21·2	19	35
8	...	7·0	17·0	...	...	6·1	14·6	...	...	9·3	13·9	...	...	8·6	12·8	...	28·5	1	30
9	...	7·7	11·5	...	...	7·0	10·4	...	...	4·8	11·6	...	...	5·6	13·5	...	21·7	4	40
10	...	4·9	11·9	...	...	7·0	10·4	...	...	5·6	8·3	...	...	5·6	8·3	...	18·5	0	45
11	...	6·8	6·8	...	...	7·3	3·0	...	...	5·9	3·9	...	...	4·5	3·0	...	14·1	4	50
12	...	3·3	3·3	...	...	3·3	3·3	...	...	5·3	5·3	...	...	10·0	...	...	17·9	16	25
13	...	11·3	...	...	...	9·6	...	...	...	7·1	...	...	...	6·6	4·4	...	16·9	3	25
14	...	7·0	1·4	...	...	5·3	...	1·1	...	3·3	...	...	...	3·0	3·0	...	11·1	0	40
15	...	1·5	3·5	...	...	2·7	2·7	...	...	2·6	3·8	...	...	1·5	3·5	...	7·5	5	40
16	...	1·1	2·7	...	...	1·2	1·2	...	...	3·0	3·0	...	...	4·3	1·8	...	9·0	19	20
17	...	2·3	...	3·5	...	5·0	...	2·1	...	4·6	...	1·9	...	4·3	...	1·8	7·6	16	30
18	...	3·9	...	1·6	...	3·0	...	1·3	...	3·5	1·5	...	...	2·7	1·1	...	5·8	13	30
19	...	1·5	3·5	...	...	...	4·2	...	...	...	5·4	...	2·6	...	3·8	...	10·1	17	30
20	4·7	...	4·7	...	...	9·6	4·0	...	...	8·5	3·5	...	...	6·2	1·2	...	18·2	7	50
21	...	3·3	...	...	...	2·5	...	...	...	1·2	1·7	...	...	0·8	1·9	...	7·7	0	15
22	2·7	...	2·7	...	...	...	2·9	...	...	...	4·2	...	...	4·5	...	0·9	8·1	21	55
23	...	3·5	...	2·3	...	2·3	...	3·5	...	4·8	...	3·2	...	0·5	...	1·2	8·8	15	10
24	...	0·3	...	0·7	...	3·8	...	...	...	4·6	1·9	...	...	8·1	...	1·6	12·9	21	20
25	...	3·5	...	3·5	...	3·7	...	5·6	...	6·9	...	4·6	...	3·8	...	3·8	12·0	11	50
26	...	2·4	...	5·8	...	...	...	10·8	...	...	...	10·4	...	1·3	...	3·0	16·6	10	55
27	...	3·5	...	3·5	...	2·6	...	6·2	...	0·8	...	4·1	...	...	...	1·7	11·0	10	15
28	...	2·3	...	3·5	...	2·2	...	5·4	...	...	...	8·3	2·6	...	...	6·2	15·8	13	50
29	2·4	...	...	5·8	2·7	...	1·1	...	2·1	...	...	2·1	1·4	...	...	0·9	10·7	1	50
30	3·9	...	...	1·6	4·1	...	...	0·8	5·8	...	...	2·4	5·0	...	...	...	9·0	12	10
S+N & W+E	105·6		132·9		118·1		134·8		105·2		158·0		105·8		132·7				
S−N & W−E	−58·0		69·3		−67·7		61·2		−76·4		84·0		−76·2		90·5				

ENGLAND E.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	2·5	...	2·5	...	0·5	...	2·6	...	...	0·4	0·6	...	...	0·7	1·1	...	7·6	1	30
2	...	1·3	1·9	...	...	...	3·6	...	3·7	...	5·5	...	...	...	4·6	...	15·0	14	35
3	...	0·7	3·5	...	...	0·6	2·9	...	2·6	...	3·8	...	3·3	...	3·3	...	10·3	15	20
4	...	...	3·3	...	...	1·6	4·0	...	...	1·9	4·5	...	...	0·8	1·8	...	9·8	13	20
5	...	0·9	2·1	...	...	0·9	2·1	...	...	0·7	...	3·5	1·1	...	...	1·7	5·5	7	50
6	1·9	...	...	1·3	2·9	...	4·3	...	7·1	...	1·4	...	4·8	...	2·0	...	20·8	18	10
7	0·8	...	1·8	...	...	3·3	7·9	...	...	2·1	5·2	...	1·0	...	4·8	...	13·1	9	45
8	1·0	...	4·8	...	1·6	...	8·0	...	...	...	6·2	...	...	1·5	7·4	...	20·2	14	20
9	...	1·8	9·0	...	...	4·5	10·9	...	...	4·0	6·0	...	...	2·4	3·6	...	18·3	8	50
10	...	1·8	2·7	...	...	4·1	2·7	...	...	5·8	1·2	...	...	1·9	1·3	...	13·5	13	15
11	...	1·7	1·1	...	...	2·9	...	0·6	...	1·8	...	2·7	...	1·3	...	1·9	5·3	9	0
12	0·7	...	...	3·5	4·1	...	...	2·7	5·5	...	...	1·1	2·6	...	...	...	10·7	22	35
13	...	5·5	1·1	...	...	9·8	...	...	...	5·5	...	2·3	...	7·4	...	1·5	20·5	8	0
14	...	4·2	...	0·8	...	5·2	...	...	...	2·7	...	1·8	...	1·9	...	1·3	13·8	9	30
15	...	0·3	...	1·6	2·5	...	1·7	...	0·7	...	3·5	...	...	0·3	1·3	...	8·5	11	0
16	...	0·5	2·6	...	...	0·9	4·5	...	...	...	0·8	3·8	...	...	2·5	2·5	9·7	13	5
17	...	1·8	1·8	...	...	4·9	...	...	...	4·0	...	1·6	...	1·2	...	0·5	8·0	12	0
18	...	1·5	...	0·6	...	1·7	...	1·1	4·1	...	...	2·7	1·8	...	...	0·8	7·5	14	30
19	2·7	...	1·8	...	1·3	...	3·0	...	...	...	3·9	...	0·7	...	3·5	...	9·7	17	0
20	0·7	...	3·5	...	...	...	6·9	...	...	2·2	3·2	...	...	0·7	1·1	...	11·5	6	45
21	...	1·8	0·8	...	...	2·8	1·1	...	...	2·8	...	2·8	...	0·9	...	1·3	7·0	9	20
22	...	1·1	...	1·7	3·8	...	0·8	...	6·8	...	...	1·3	4·7	...	...	4·7	10·7	12	30
23	0·6	...	...	2·9	...	1·3	...	6·8	...	2·3	...	5·5	...	3·3	...	4·9	8·9	6	5
24	...	2·4	...	3·6	...	3·8	...	2·6	...	4·4	...	4·4	...	5·6	...	5·6	14·7	23	45
25	...	7·6	...	5·1	...	7·2	...	7·2	...	4·7	...	7·1	...	4·6	...	6·8	15·5	10	35
26	...	2·7	...	4·1	...	3·1	...	4·7	...	6·9	...	2·9	...	4·8	...	2·0	13·2	23	20
27	...	6·3	...	6·3	...	6·8	...	4·6	...	6·8	...	1·3	...	5·1	...	1·0	13·9	2	45
28	...	1·9	...	9·3	...	1·9	...	9·6	...	4·3	...	10·3	...	5·7	...	8·5	12·5	17	30
29	...	2·2	...	3·2	...	2·9	...	4·3	...	2·4	...	3·6	...	1·3	...	1·9	8·1	6	45
30	1·7	...	...	2·5	4·3	...	...	1·8	5·8	...	...	1·2	3·2	...	...	0·6	10·8	13	10
S+N & W+E	60·6		90·8		91·2		113·0		102·8		104·9		77·1		83·3				
S−N & W−E	−35·4		−2·2		−49·2		21·0		−30·2		−7·3		−30·7		−6·7				

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Benson. No. 1512. April 1, 1915. 12 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Balloon lost in St.-Cu.
	...	...	...	...	...		
	2250	290	5	+5	−2		*Pressure Distribution* (7 h.).
	2000	280	6	+6	−1		High pressure area stretching westwards from Central Germany.
	1750	285	5	+5	−1		
	1500	320	4	+3	−3		
	1250	325	1	+1	−1	2·4	
	1000	330	4	+2	−3		
	750	330	4	+2	−4		
	500	315	2	+1	−1		
100 m. above ground.	157	70	1	−1	0		
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 13 h.)	310	4	+3	−3	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. No. 1516. April 30, 1915. 10 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	..	...	...	...	...		*Pressure Distribution* (7 h.).
	3000	215	8	+5	+7		Very irregular high pressure area over Western Europe. Depression over Atlantic.
	2500	220	8	+5	+6		
	2000	215	7	+4	+6		
	1750	220	8	+5	+6		
	1500	225	9	+6	+6		
	1250	220	8	+5	+6	2·4	
	1000	210	6	+3	+5		
	750	195	4	+1	+4		
	500	210	3	+1	+2		
	157	200	3	+1	+3		
	82	180	2	0	+2		
	(at 7 h.)	*Indeterminate*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	210	6	+3	+5	...	

Eskdalemuir. No. 1512. April 10, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2214	...	...	...	...		Balloon lost while changing eye-piece.
	2000	340	8·5	+3·0	−8·0		Sky clear at start: became two-tenths clouded with Ci. and Ci.-St. before the end. Clouds moving from N.W.
	1750	340	8·5	+3·0	−8·0		
	1500	345	9·5	+2·5	−9·5		
	1250	355	8·5	+1·0	−8·5		
	1000	355	5·5	+0·5	−5·5	2·4	*Pressure Distribution* (7 h.).
	750	360	4·6	−0·1	−4·6		
	500	360	3·3	−0·1	−3·3		Anticyclone between British Isles and Azores. Depression over Southern Sweden.
100 m. above ground.	340	340	4·8	+1·6	−4·5		
Anemometer.	250	325	6·0	+3·5	−4·5		
Geostrophic wind.	(at 7 h.)	320	7	+5	−5	...	Weight of balloon 16·5 gm., free lift 49 gm.

Eskdalemuir. No. 1513. April 10, 1915. 12 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2388	...	...	...	...		Balloon lost while eye-piece was being changed.
	2000	345	8·5	+2·5	−8·0		Sky seven-tenths covered with Ci., Ci.-St., Ci.-Cu., and Cirro-Nebula, all moving from N.W.
	1750	350	4·4	+0·8	−4·3		
	1500	345	2·7	+0·6	−2·6		
	1250	275	2·1	+2·1	−0·2		*Pressure Distribution* (7 h.).
	1000	285	1·9	+1·8	−0·5	2·2	
	750	275	3·7	+3·7	−0·2		Anticyclone between British Isles and Azores. Depression over Southern Sweden.
	500	150	1·9	−0·9	+1·7		
	340	160	1·5	−0·5	+1·4		(18 h.) Irregularities developing over British Isles.
	250	180	1·0	0·0	+1·0		
	(at 13 h.)	320	7	+5	−5	...	Weight of balloon 18·3 gm., free lift 41 gm.

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1514. April 13, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3736	...	...	...	...		Sky one-tenth part clouded with cirro-stratus moving from N.W.
	3500	340	12·0	+4·0	−11·0		Balloon lost to view while adjusting focus of eye-piece.
	3000	5	4·8	−0·5	− 4·8		
	2500	360	7·0	+0·0	− 8·0		
	2000	345	7·0	+1·5	− 7·0		
	1750	350	7·0	+1·0	− 7·0		
	1500	345	6·5	+2·0	− 6·5		*Pressure Distribution* (7 h.).
	1250	355	3·5	+0·3	− 3·5	2·5	
	1000	20	3·6	−1·2	− 3·4		Anticyclone W.S.W. of Ireland. Depression Iceland to Spitzbergen.
	750	10	3·6	−0·6	− 3·6		
	500	355	6·5	+0·5	− 6·5		
100 m. above ground.	340	345	5·5	+1·5	− 5·5		
Anemometer.	250	350	2·0	+0·3	− 2·0		
Geostrophic wind.	(at 7 h.)	360	10	0	−10	...	Weight of balloon 17·7 gm., free lift 69 gm.

Eskdalemuir. No. 1515. April 21, 1915. About 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2940	...	...	...	...		At start one-tenth part clouded; cirrus and cirro-stratus moving from N.W.
	...	...	...	...	...		Towards finish sky became nearly half clouded.
	...	...	...	...	...		Balloon lost in distance.
	2500	300	9·5	+8·0	− 4·5		
	2000	285	6·5	+6·5	− 1·5		
	1750	300	5·0	+4·5	− 2·5		
	1500	310	9·0	+7·0	− 6·0		
	1250	310	9·5	+7·0	− 6·0	2·4	*Pressure Distribution* (7 h.).
	1000	310	7·5	+5·5	− 5·0		
	750	305	5·0	+4·0	− 3·0		Anticyclone north of Azores. Depression over Norway.
	500	295	5·0	+4·5	− 2·0		
100 m. above ground.	340	285	4·0	+3·9	− 1·0		
Anemometer.	250	270	3·0	+3·0	0·0		
Geostrophic wind.	(at 7 h.)	290	8	+8	− 3	...	Weight of balloon 18·5 gm., free lift 53·5 gm.

Eskdalemuir. No. 1516. April 23, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2600	...	...	...	...		Sky entirely overcast with A.-St. and A.-Cu. moving from N.
	...	...	...	...	...		Balloon entered alto-stratus.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	2000	5	11·5	−1·5	−11·5		
	1750	350	9·0	+1·5	− 8·5		Ridge of high pressure running from Atlantic to Northern Russia.
	1500	350	4·2	+0·7	− 4·1		
	1250	355	3·9	+0·5	− 3·9	2·4	
	1000	320	4·0	+2·6	− 3·0		
	750	315	2·4	+1·7	− 1·7		
	500	215	1·4	+0·8	+ 1·1		
100 m. above ground.	340	230	1·2	+0·9	+ 0·8		
Anemometer.	250	...	0·0	0·0	0·0		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Weight of balloon 19·0 gm., free lift 55 gm.

Eskdalemuir. No. 1517. April 28, 1915. 12 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4140	...	...	...	...		Entirely clear sky, but atmosphere very hazy; a good deal of smoke from burning moor.
	4000	130	5·0	−3·5	+3·5		Balloon vanished suddenly at 4140 metres. ? burst.
	3500	110	7·0	−6·5	+2·5		Barometer falling moderately.
	3000	100	9·0	−9·0	+1·5		
	2500	90	6·5	−6·5	0·0		
	2000	85	5·5	−5·5	−0·5		
	1750	85	5·0	−5·0	−0·5		
	1500	90	5·5	−5·5	0·0		*Pressure Distribution* (7 h.).
	1250	85	4·1	−4·1	−0·3	2·5	
	1000	95	5·0	−5·0	+0·5		Anticyclone Denmark to south of Iceland.
	750	70	4·6	−4·4	−1·4		
	500	65	4·5	−4·1	−1·9		
100 m. above ground.	340	65	3·9	−3·5	−1·6		
Anemometer.	250	90	3·5	−3·5	0·0		
Geostrophic wind.	(at 13 h.)	110	5	−5	+2	...	Weight of balloon 18·7 gm., free lift 67 gm.

Eskdalemuir. No. 1518. April 29, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4350	...	...	...	...		Atmosphere clear. No clouds visible.
	4000	105	1·5	−1·4	+0·4		Balloon burst.
	3500	130	2·3	−1·8	+1·5		
	3000	135	2·9	−2·0	+2·1		
	2500	170	0·7	−0·1	+0·7		
	2000	125	2·7	−2·2	+1·6		*Pressure Distribution* (7 h.).
	1750	175	1·3	−0·1	+1·3		
	1500	245	1·2	+1·1	+0·5		Anticyclone over Scotland.
	1250	130	3·6	−2·8	+2·2	2·3	
	1000	250	1·4	+1·3	+0·5		
	750	135	4·2	−3·0	+2·9		
	500	65	3·9	−3·5	−1·8		
100 m. above ground.	340	60	1·9	−1·6	−1·0		
Anemometer.	250	65	1·0	−0·9	−0·4		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Weight of balloon 19·1 gm., free lift 47 gm.

South Farnborough. No. 220. April 1, 1915. 8 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	335	5·0	+2·0	−4·5		Atmosphere rather hazy near ground.
	...	...	...	...	...		A.-Cu. and A.-St. 8, motion slight.
	...	...	...	...	...		Balloon entered clouds.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	330	4·5	+2·3	−3·9		
	1750	330	4·0	+2·0	−3·5		*Pressure Distribution* (7 h.).
	1500	330	4·0	+2·0	−3·5	2·4	
	1250	325	5·0	+3·0	−4·0		High pressure area stretching westwards from Central Germany.
	1000	320	5·0	+3·0	−4·0		
	750	310	4·5	+3·4	−2·9		
	500	280	4·0	+3·9	−0·7		
	170	280	2·0	+2·0	−0·3		
	105	315	light	...	...		
	(at 7 h.)	*Indeterminate.*		...	...		Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	310	4	+3	−3	...	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 221. April 2, 1915. 8 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S°.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2150	...	...	...	...		Atmosphere hazy. Ci. and Ci.-St. from N.W. At about 1700 metres azimuth began to change rapidly, and balloon became very indistinct (as when seen through rising currents of unequally heated air).
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	275	10·0	+10·0	−1·0		
	1750	245	8·5	+ 7·5	+3·5		
	1500	225	10·0	+ 7·0	+7·0		
	1250	230	9·0	+ 7·0	+6·0	2·4	
	1000	235	8·5	+ 7·0	+5·0		*Pressure Distribution* (7 h.).
	750	235	8·5	+ 7·0	+5·0		
	500	225	7·0	+ 5·0	+5·0		
100 m. above ground.	170	250	2·5	+ 2·3	+0·9		High pressure over Azores to Bay of Biscay. Low over south of Iceland.
Anemometer.	105	315	light	...	...		
Geostrophic wind.	(at 7 h.)	260	7	+ 7	+1	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	260	14	+14	+2	...	

South Farnborough. No. 229. April 14, 1915. 8 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3950	50	5·0	−4·0	− 3·0		Clear. Almost cloudless. Balloon lost in distance. Local maximum in velocity at 1070 m. 16·5 m/s. (W.–E., −5·5; S.–N., −15·5.)
	3500	25	3·5	−1·5	− 3·2		
	3000	65	6·5	−6·0	− 2·5		
	2500	25	9·5	−4·0	− 8·5		
	2000	25	12·0	−5·0	−11·0		
	1750	20	11·0	−4·0	−10·5		
	1500	20	10·0	−4·0	− 9·0		
	1250	20	13·0	−4·5	−12·0	2·4	*Pressure Distribution* (7 h.).
	1000	20	14·0	−5·0	−13·0		
	750	20	8·0	−2·5	− 7·5		Anticyclone W.S.W. of Ireland.
	500	10	6·0	−1·5	− 5·5		
	170	20	5·5	−2·0	− 5·0		
	105	360	3·5	0·0	− 3·5		
	(at 7 h.)	30	5	−3	− 4	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	*Indeterminate.*				...	

South Farnborough. No. 230. April 14, 1915. 10 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S°.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3300	10	7·0	−1·0	−7·0		Atmosphere clear. A few detached clouds. Balloon lost in distance. Local minima in velocity at 2700 m. 3·5 m/s. (W.–E., −1·8; S.–N., −3·0), and at 580 m. 2·0 m/s. (W.–E., −0·2; S.–N., −2·0).
	3000	20	7·0	−2·5	−6·5		
	2500	30	5·0	−2·5	−4·5		
	2000	30	7·5	−3·5	−6·5		
	1750	20	8·5	−3·0	−8·0		
	1500	20	9·0	−3·0	−8·5		
	1250	20	8·5	−3·0	−8·0		
	1000	20	6·0	−2·0	−5·5	2·4	
	750	20	3·5	−1·2	−3·3		
	500	20	4·5	−1·5	−4·2		*Pressure Distribution* (7 h.).
100 m. above ground.	170	20	5·5	−2·0	−5·0		Anticyclone W.S.W. of Ireland.
Anemometer.	105	35	3·0	−1·7	−2·5		
Geostrophic wind.	(at 7 h.)	30	5	−3	−4	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	*Indeterminate.*				...	

South Farnborough. No. 231. April 14, 1915. 14 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2700	...	...	...	...		*Pressure Distribution* (18 h.).
	...	...	...	...	...		Anticyclone W.S.W. of Ireland. Depression north of Iceland spreading southwards.
	2500	15	7·5	−2·0	−7·0		
	2000	0	5·5	0·0	−5·5		
	1750	10	6·5	−1·0	−6·5		
	1500	15	7·5	−2·0	−7·5		
	1250	10	5·5	−1·0	−5·5		
	1000	10	4·5	−0·8	−4·4	2·4	
	750	10	6·0	−1·0	−6·0		
	500	5	3·0	−0·3	−3·0		
	170	350	5·0	+1·0	−5·0		
	105	360	2·0	0·0	−2·0		
	(at 13 h.)	*Indeterminate.*				...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 18 h.)	*Indeterminate.*				...	

South Farnborough. No. 232. April 15, 1915. 8 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S°.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3400	350	5·5	+1·0	−5·5		Atmosphere hazy. Bank of St. coming up from N.W. Sharp line between St. and clear sky ran S.W.–N.E. Passed overhead 9 h. 30 m. Balloon lost in haze. Local maximum in velocity at 2200 m. 7·5 m/s. (W.–E., +2·5; S.–N., −7·0).
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	3000	350	8·0	+1·5	−8·0		
	2500	330	5·0	+2·5	−4·5		
	2000	335	7·0	+3·0	−6·5		
	1750	300	5·0	+4·5	−2·5		
	1500	300	5·5	+5·0	−2·5	2·4	
	1250	305	4·0	+3·3	−2·3		
	1000	310	4·5	+3·4	−2·9		
	750	315	5·0	+3·5	−3·5		
	500	310	3·5	+2·7	−2·2		*Pressure Distribution* (7 h.).
100 m. above ground.	170	230	1·0	+0·8	+0·6		High pressure area stretching eastwards from Atlantic.
Anemometer.	105	190	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*				...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	310	5	+4	−3	...	

South Farnborough. No. 233. April 16, 1915. 8 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	4750	315	9·0	+6·5	− 6·5		Atmosphere clear. Cu. forming. No Ci. at time of ascent, but some Ci. from W.S.W. two hours later. Balloon lost behind Cu.
	4500	310	9·0	+6·0	− 7·0		
	4000	330	8·0	+4·0	− 7·0		
	3500	350	8·0	+1·5	− 8·0		
	3000	5	9·5	−1·0	− 9·5		
	2500	360	12·0	0·0	−12·0		
	2000	340	9·5	+3·0	− 9·0		*Pressure Distribution* (7 h.).
	1750	315	6·5	+4·5	− 4·5		
	1500	280	5·0	+5·0	− 1·0	2·4	Anticyclone north of Azores. Depression north of Scotland.
	1250	260	5·5	+5·5	+ 1·0		
	1000	255	7·0	+7·0	+ 2·0		
	750	255	8·0	+7·5	+ 2·0		
	500	255	5·0	+5·0	+ 1·5		
	170	260	2·0	+2·0	+ 0·3		
	105	225	light	...	...		
	(at 7 h.)	290	8	+8	−3	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	300	8	+7	−4	...	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 234. April 17, 1915. 8 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2850	310	11·0	+8·5	− 7·0		Atmosphere fairly clear. Cu. forming. Cu. 3-4 at finish of ascent. Balloon lost behind low Cu. Local minimum in velocity at 1850 m. 3·5 m/s. (W.-E., +2·2; S.-N., −2·7).
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2500	325	13·0	+7·5	−10·5		
	2000	330	5·0	+2·5	− 4·5		
	1750	310	4·5	+3·4	− 2·9		
	1500	350	11·5	+2·0	−11·5	2·4	*Pressure Distribution* (7 h.).
	1250	5	7·0	−0·5	− 7·0		
	1000	10	9·0	−1·5	− 9·0		Anticyclone Azores to Ireland.
	750	5	6·5	−0·5	− 6·5		
	500	0	2·5	0·0	− 2·5		
100 m. above ground.	170	15	8·0	−2·0	− 7·5		
Anemometer.	105	360	3·0	0·0	− 3·0		
Geostrophic wind.	(at 7 h.)	10	6	−1	− 6	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	30	4	−2	− 3	...	

South Farnborough. No. 235. April 19, 1915. 8 h. 40 m. G.M.T.

Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
4950	310	7·5	+5·5	− 5·0		Atmosphere fairly clear. Bank of Fr.-St. in W. Portions came overhead at end of ascent. Balloon lost in distance. Local maximum in velocity at 2180 m. 9.5 m/s. (W.-E., +7·5; S.-N., −6·0).
4500	315	6·5	+4·5	− 4·5		
4000	310	6·0	+4·5	− 4·0		
3500	310	7·0	+5·5	− 4·5		
3000	325	6·5	+3·5	− 5·5		
2500	320	7·5	+5·0	− 5·5		
2000	315	8·5	+6·0	− 6·0		
1750	305	6·5	+5·5	− 3·5		
1500	290	6·0	+5·5	− 2·0	2·0	
1250	275	7·0	+7·0	− 0·5		*Pressure Distribution* (7 h.).
1000	290	5·0	+4·5	− 1·5		
750	290	4·0	+3·8	− 1·4		Depression over Iceland affecting British Isles.
500	270	6·5	+6·5	− 0·0		
170	290	2·0	+1·9	− 0·7		
105	290	1·5	+1·4	− 0·5		
(at 7 h.)	*Indetermin*	*ate.*	...	...	...	Approx. weights: balloon 4 gm., free lift 16 gm.
(at 13 h.)	*Indetermin*	*ate.*	...	...	...	

South Farnborough. No. 236. April 21, 1915. 8 h. 50 m. G.M.T.

Greatest height.	5000	345	18·0	+4·5	−17·5		Atmosphere clear. A few detached clouds. Balloon lost in distance. Local maximum in velocity at 900 m. 7·5 m/s. (W.-E., 0·0; S.-N., −7·5).
	4500	345	19·0	+5·0	−18·5		
	4000	330	11·5	+5·5	−10·0		
	3500	350	10·0	+1·5	−10·0		
	3000	320	8·0	+5·0	− 6·0		
	2500	350	10·0	+1·5	−10·0		
	2000	360	10·0	0·0	−10·0		
	1750	360	9·5	0·0	− 9·5		
	1500	5	7·0	−0·5	− 7·0	2·4	*Pressure Distribution* (7 h.).
	1250	10	5·0	−1·5	− 5·0		
	1000	10	5·5	−1·0	− 5·5		Anticyclone north of Azores. Depression over Norway.
	750	345	5·0	+1·5	− 5·0		
	500	335	6·0	+2·5	− 5·5		
100 m. above ground.	170	355	6·0	+0·5	− 6·0		
Anemometer.	105	360	3·0	0·0	− 3·0		
Geostrophic wind.	(at 7 h.)	360	6	0	− 6	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	20	4	−1	− 4	...	

South Farnborough. No. 237. April 22, 1915. 8 h. 45 m. G.M.T.

	4400	325	12·5	+7·0	− 10·0		A.-Cu. and some detached Cu. Balloon lost in A.-Cu.
	...	...	...	...	...		
	4000	330	13·5	+6·5	− 11·5		
	3500	345	13·5	+3·5	− 13·0		*Pressure Distribution* (7 h.).
	3000	355	13·0	+1·0	− 13·0		
	2500	10	10·0	−1·5	− 10·0		Anticyclone over Atlantic. Uniform pressure over British Isles.
	2000	40	9·5	−6·0	− 7·5		
	1750	0	6·5	0·0	− 6·5		
	1500	345	2·5	+0·6	− 2·4	2·4	
	1250	335	1·5	+0·6	− 1·4		
	1000	310	2·0	+1·5	− 1·3		
	750	290	2·0	+1·9	− 0·7		
	500	280	2·0	+2·0	− 0·3		
	170	...	0·0	...	...		
	105	200	light	...	...		
	(at 7 h.)	*Indetermin*	*ate.*	...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	*Indetermin*	*ate.*	...	...	...	

South Farnborough. No. 239. April 29, 1915. 9 h. 45 m. G.M.T.

Greatest height.	3850	125	5·0	− 4·0	+3·0		Atmosphere clear, a little haze near horizon. No cloud. Great difficulty in seeing, owing to shimmer; loss of balloon in distance aided by this fact. Local maximum in velocity at 2750 m. 7·0 m/s. (W.-E., −6·0; S.-N., +3·5).
	3500	120	5·0	− 4·5	+2·5		
	3000	110	5·0	− 4·5	+1·5		
	2500	120	6·0	− 5·0	+3·0		
	2000	120	3·5	− 3·0	+1·8		
	1750	110	4·0	− 3·8	+1·4		
	1500	110	4·0	− 3·8	+1·4		
	1250	110	6·5	− 6·0	+2·0	2·4	
	1000	100	10·0	−10·0	+1·5		
	750	90	11·5	−11·5	0·0		*Pressure Distribution* (7 h.).
	500	85	10·0	−10·0	− 1·0		
100 m. above ground.	170	50	3·0	− 2·3	− 1·9		Anticyclone over Scotland.
Anemometer.	105	90	4·0	− 4·0	0·0		
Geostrophic wind.	(at 7 h.)	90	11	−11	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	60	7	− 6	− 4	...	

South Farnborough. No. 240. April 30, 1915. 8 h. 45 m. G.M.T.

	4000	215	5·0	+3·0	+4·0		Atmosphere rather hazy. A little A.-Cu. Balloon lost in distance.
	3500	220	6·0	+4·0	+4·5		
	3000	240	5·0	+4·5	+2·5		
	2500	225	6·5	+4·5	+4·5		
	2000	230	7·0	+5·5	+4·5		
	1750	220	6·5	+4·0	+5·0		*Pressure Distribution* (7 h.).
	1500	215	6·0	+3·5	+5·0		
	1250	200	5·5	+2·0	+5·0	2·4	Very irregular high pressure area over Western Europe. Depression over Atlantic.
	1000	175	4·0	−0·3	+4·0		
	750	145	2·5	−1·4	+2·0		
	500	160	1·0	−0·3	+0·9		
	170	120	0·5	−0·4	+0·3		
	105	110	light	...	...		
	(at 7 h.)	*Indetermin*	*ate.*	...			Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	230	6	+5	+4		

Note.—In addition to the ascents recorded above, pilot balloons which were lost sight of before reaching a height of 2 kilometres were sent up during the month at the various stations as follows:—Aberdeen, 1; Benson, 3; Eskdalemuir, 1; South Farnborough, 7.

11. Soundings with Registering Balloons.

Benson. No. 305. April 1, 1915. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height,	13·3 km.	148 mb.	220 a.
Lowest Temperature,	10·2 km.	240 mb.	210 a.
Base of Stratosphere,	10·2 km.	240 mb.	210 a.

Type I.

Height above M.S.L., 57 m.

Place of Fall, Barkham.

Distance, 34 km.
and
Orientation, 144° from N.

Data for Station.	at 7 h.	at 18 h. G.M.T.
Pressure (M.S.L.),	...	...
Temperature,	...	...
Vapour Pressure,	...	...
Geostrophic Wind { Direction,	Indeterminate.	
Geostrophic Wind { Velocity,		
Correction for curvature of isobars,	...	...
Gradient Value,	Indeterminate.	
Components { W. to E.,	...	...
Components { S. to N.,	...	...

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Remarks.
km.	mb.	a.	a.	
13·00	155	220 ?		Calm. Sheet of stratus coming from N.W. at about 2 km.
12·00	182	218	−2 ?	
11·38	200	217	−2	Temperature inversions 274 a. to 278 a. at the surface and 260 a. to 261 a. at 2·5 km.
11·00	213	216		
10·00	249	211	−5	
9·00	297	217	+6	Very good trace, but signs of solar radiation at the top. The balloon did not burst.
8·84	300	218	+6	
8·00	342	223		
7·00	398	230	+7	*Note.*—See Section 10 for pilot balloon ascents at Benson and South Farnborough on the same day.
6·97	400	230	+7	
6·00	461	237		
5·45	500	242	+9	
5·00	531	246		
4·11	600	252	+7	
4·00	610	253		
3·00	698	259	+6	*Pressure Distribution* (7 h.).
2·98	700	259		
2·00	796	264	+5	High pressure area stretching westwards from Central Germany.
1·97	800	264		
1·04	900	272	+8	
1·00	904	272		
0·20	1000	278		
Ground	1018	274	...	...
M.S.L.	1025	...	...	...

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m. Velocity V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
5	Cu.	263	3·8	+ 3·8	+ 0·5	Fine detached Cu. ; very typical form.
7	Ci. (*f*).	243	2·7	+ 2·4	+ 1·2	"False" Ci., coalescing into sheets of thin A.-Cu.
7	Cu.	245	4·3	+ 3·9	+ 1·8	Cu. very heavy.
8	Cu.-Nb.	288	25·0	+24·0	− 7·8	Basal portion of cloud measured.
9	Fr.-Cu.	318	31·0	+21·0	−23·0	Gale blowing.
10	St.-Cu.	333	4·5	+ 2·0	− 4·0	St.-Cu. of heavy type.
13	Cu. to St.-Cu.	295	6·0	+ 5·5	− 2·5	Cloud of transition type between Cu. and St.-Cu.
14	Cu. to St.-Cu.	259	6·0	+ 5·9	+ 1·1	,, ,, ,,
15	St.-Cu.	300	5·2	+ 4·5	− 2·6	Heavy St.-Cu.
16	Cu.	293	8·1	+ 7·5	− 3·2	
17	Cu.	278	5·0	+ 5·0	− 0·7	
19	Cu.	270	9·3	+ 9·3	0·0	Degraded Cu.
20	St.-Cu.	257	2·3	+ 2·2	+ 0·5	Cu. below from W.N.W.
21	Cu.	305	5·0	+ 4·1	− 2·9	Cu. changed into Cu.-Nb. later.
22	Ci.	359	6·0	+ 0·1	− 6·0	*Observation at 12 h.* Fine sheaf of Ci. Radiant point N.
26	St.-Cuf.	15	17·0	− 4·4	−16·5	Stratus cumuliformis type. [Cross striæ at 90°.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity.	Total.	Per cent. of Possible.
	hr.		j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	1·7	11	1358	39	72	13 0	64	1·9	13	—	—	—	—	—	—	—	—	—	7·1	48
2	3·3	22	1088	31	70	13 10	62	5·1	34	—	—	—	9·1	60	—	—	—	—	2·1	14
3	8·6	58	2010	57	77	11 40	77	7·9	53	71	57	Ci.-St.	6·8	44	—	—	—	—	—	—
4	2·7	18	1121	32	75	11 55	75	1·5	10	—	—	—	8·4	55	—	—	—	—	0·2	1
5	2·6	17	1101	31	58	14 55	56	3·4	23	—	—	—	1·7	11	—	—	—	—	1·0	7
6	8·9	59	1694	47	72	13 0	68	10·3	68	76	62	Clear	10·0	65	—	—	—	—	0·3	2
7	10·9	72	1844	51	67	11 15	64	11·2	74	69	57	Ci.	3·2	21	12 2	Hazy	1·27	61	5·3	35
8	11·6	77	1936	53	71	12 10	71	11·8	78	57	47	Ci.-St.	—	—	—	—	—	—	13·5	89
9	13·6	89	2274	62	73	13 10	71	13·9	91	56	46	Hazy	1·6	10	—	—	—	—	11·2	74
10	9·1	60	1806	49	78	12 25	78	8·6	57	58	48	Hazy	11·6	73	—	—	—	—	13·3	87
11	10·1	66	1694	46	59	9 45	58	10·7	70	38	31	Hazy	0·3	2	—	—	—	—	0·1	1
12	2·2	14	1128	30	*x* 85	12 25	*x* 85	2·5	16	—	—	—	3·3	21	—	—	—	—	—	—
13	—	—	*n* 226	*n* 6	*n* 13	11 40	13	—	—	—	—	—	9·1	57	10 27	Clear	1·32	94	4·1	26
14	5·1	33	1374	37	82	14 5	78	5·7	37	—	—	—	6·5	41	—	—	—	—	6·4	41
15	9·4	61	1786	47	71	10 45	65	10·3	66	41	34	Ci.-Cu.	9·6	60	—	—	—	—	—	—
16	0·6	4	1031	27	67	13 45	52	1·3	8	—	—	—	9·6	60	—	—	—	—	0·1	1
17	—	—	527	14	27	13 15	18	—	—	—	—	—	3·1	19	—	—	—	—	0·1	1
18	—	—	407	11	18	15 25	16	—	—	—	—	—	8·5	52	—	—	—	—	0·3	2
19	12·5	79	1951	51	64	10 30	61	13·3	85	53	45	Hazy	7·0	43	—	—	—	—	—	—
20	—	—	624	16	47	11 40	47	0·1	1	—	—	—	2·3	14	—	—	—	—	3·5	22
21	3·6	23	1471	38	71	14 50	67	2·4	15	—	—	—	9·0	55	—	—	—	—	3·7	23
22	5·0	32	1462	38	72	11 5	71	5·1	32	—	—	—	5·8	35	—	—	—	—	10·7	67
23	14·3	90	2393	61	72	12 20	72	14·4	91	64	54	Hazy	15·4	93	—	—	—	—	14·4	90
24	*x* 14·8	*x* 93	2543	65	75	12 50	75	15·1	95	—	—	—	15·6	94	12 44	Ci.	1·23	81	15·0	94
25	14·3	89	2363	60	75	13 0	72	14·3	89	61	53	Hazy	15·3	92	12 26	Clear	1·21	90	14·6	91
26	13·3	83	2149	54	70	11 55	70	12·4	78	58	50	Hazy	0·6	4	—	—	—	—	9·2	57
27	13·6	85	*x* 2584	65	81	12 45	82	14·6	91	73	63	Clear	10·3	62	—	—	—	—	3·7	23
28	4·9	30	1196	30	76	14 30	42	5·7	35	—	—	—	1·7	10	—	—	—	—	15·5	96
29	3·4	21	1157	29	73	11 20	68	2·5	16	—	—	—	3·8	23	—	—	—	—	7·9	49
30	6·0	37	1584	40	81	14 45	52	6·4	40	—	—	—	8·7	51	—	—	—	—	15·1	93
31	12·8	79	2273	57	81	11 30	81	13·8	85	75	65	Clear	4·1	24	—	—	—	—	4·4	27
Means	7·06	46	1553	41	67	—	62	7·29	47	—	—	—	6·52	41	—	—	—	—	5·90	38
Normal	5·90	38	—	—	—	—	—	6·45	42	—	—	—	4·94	31	—	—	—	—	6·68	43
	← 4 years →							← 30 years →					← 4 years →						← 30 years →	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground:—h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.		γ	° ′	° ′
1	1007·0	1007·0	84·2	84·1	89	82	12·5	10·8	96	83	—	0	6	2	10	5	—	Fair.	…	…	…
2	1011·4	1014·9	84·7	83·5	86	81	10·5	9·1	75	73	5	3	10	4	10	5	—	Dull to fair.	…	…	…
3	1013·6	1012·9	83·9	84·3	85	81	9·8	8·1	74	62	8	6	8	5	10●	8∞	1·4	o. Showery to fair.	…	…	…
4	1009·4	1007·3	84·1	84·7	86	83	7·8	11·2	60	81	6	8	7	6	10	8	0·5	Dull. ∞	…	…	…
5	1008·1	1010·6	85·7	83·9	88	84	12·2	12·5	84	97	—	1	—	0	10	10	2·5	Fair to ≡⁰ and d.	…	…	…
6	1012·8	1015·1	84·2	84·8	88	83	11·9	12·9	89	94	—	1	—	0	10	10	0·1	Mostly o.	…	…	…
7	1017·2	1018·8	85·4	86·9	91	83	12·9	11·9	89	75	—	0	—	1	10	4	—	Fair.	…	…	…
8	1020·9	1023·8	89·2	89·5	93	84	10·5	13·5	57	73	6	8	6	5	3∞	1∞	—	Fine. ∞	…	…	…
9	1026·6	1029·1	89·2	85·6	92	84	14·9	11·9	81	81	—	0	—	0	3∞	6	—	Fair. ∞	…	…	…
10	1027·7	1024·2	87·7	84·3	90	80	12·5	11·9	74	89	—	0	—	0	2∞	0∞	—	Fine. ∞	…	…	…
11	1018·0	1012·3	85·9	84·4	88	82	11·9	12·9	79	96	14	2	24	4	10∞	10	0·9	∞ to ≡⁰ and d.	…	…	…
12	1010·0	1006·5	82·7	81·2	84	80	10·2	9·1	86	86	2	4	6	6	10	10	0·7	o. to ≡⁰ and ●. Clouds low.	…	…	…
13	1002·7	1009·5	79·7	80·2	84	78	7·4	6·8	74	67	5	10	1	5	10	5	—	Fair. ∞	…	…	…
14	1017·4	1021·1	80·7	81·1	85	78	7·4	7·4	72	70	25	2	5	3	9	10	5·2	Fair to o.	…	…	…
15	1016·0	1009·7	78·7	82·5	*n* 83	78	7·4	10·2	83	85	8	12	9	3	10●	5	6·6	≡⁰●	…	…	…
16	1005·1	996·6	84·8	84·7	86	82	10·8	11·5	78	85	9	7	8	11	10	*10*●	6·8	Dull to ≡⁰●. Clouds low *p*.	…	…	…
17	997·4	1004·4	85·9	84·1	87	83	12·9	12·2	88	93	2	2	—	0	10	8	3·1	≡⁰●. Fog on hills.	…	…	…
18	1008·9	1008·2	83·8	83·8	86	83	12·5	12·2	96	94	15	2	14	5	10	10●	*x* 10·5	o. to ≡⁰● in evening.	…	…	…
19	1004·8	1004·8	85·1	85·0	87	84	13·9	13·2	98	95	14	5	14	5	10≡⁰	9	3·7	o. Showery.	…	…	…
20	1003·5	1005·9	86·5	85·1	88	84	13·5	13·9	87	98	15	6	15	6	10	9	7·8	o. to fair. Clouds low.	…	…	…
21	1008·5	1016·7	85·7	85·7	89	84	13·9	13·9	95	94	14	5	—	0	10●	8	1·9	Showery. ⌢ 20 h.	…	…	…
22	1023·6	1026·4	85·3	85·4	89	83	12·9	12·9	91	89	27	3	—	0	8	1	—	Fair.	…	…	…
23	1026·4	1024·0	88·7	90·9	95	81	14·6	14·2	82	70	—	0	6	3	1	1∞	—	Fine. ∞	…	…	…
24	1023·2	1021·3	92·6	88·9	*x* 96	86	12·2	13·2	*n* 53	73	6	3	—	1	3	1∞	—	Fine. ∞	…	…	…
25	1019·2	1016·7	92·3	90·9	*x* 96	82	12·5	11·9	57	59	7	3	4	3	0∞	2∞	—	Fine. ∞	…	…	…
26	1015·4	1016·4	91·1	90·8	95	*x* 88	11·9	13·9	58	68	4	5	8	4	5∞	8∞	1·4	Fine. ∞. Fine red sunset.	…	…	…
27	1019·0	1021·4	89·1	85·9	92	85	14·2	12·9	78	87	—	1	—	0	8∞	4∞	—	Fine. ∞	…	20 8·4	…
28	1020·8	1019·1	87·3	84·7	89	83	9·5	10·8	58	79	4	5	1	5	0∞	1	—	Fine. ∞	17869	20 4·4	…
29	1015·4	1015·6	84·4	82·4	86	82	9·5	8·5	70	71	1	4	32	7	9	8	0·3	Fine. Clouds low *a.* and *p.*	…	…	…
30	1020·2	1023·6	82·5	82·0	86	80	7·8	8·8	67	76	2	5	30	2	2	1	—	Fine.	…	…	…
31	1023·7	1021·7	83·4	84·1	87	*n* 77	8·1	9·5	64	73	26	3	24	3	10	8	—	Fair.	…	…	…
Means	1014·6	1015·0	85·6	85·0	88·5	82·2	11·3	11·4	77	81		3·7		3·2	7·5	6·0	53·4	Monthly **Totals** or **Means.**	17869	20 6·4	…
Normal	1013·9	1014·3	84·7	83·8	87·4	80·9	10·9	10 8	79	84		5·1		4·4	—	—	79·2	**Normals.**			
	← 40 years →						← 25 years →				← 30 years →						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—3/17. N. & Co., Ltd. **Gp. XV.**

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.	200+	200+	200+	cm.	cm.
1	1012·5	1009·2	86·8	85·8	92	83	11·9	10·8	76	74	20	5	21	3	10	1	0·5	77	83·8	81·4	250	—
2	1009·7	1018·0	82·2	81·6	89	80	9·5	8·1	82	74	—	1	8	8	10≡⁰	3	—	80	84·0	81·6	249	—
3	1021·7	1018·7	81·8	80·8	85	78	6·8	6·8	61	64	8	8	6	8	4	10	—	74	84·0	81·9	248	—
4	1015·9	1014·5	82·3	83·6	88	81	9·1	9·8	79	76	7	7	7	2	10≡⁰	?0≡⁰	—	79	83·4	81·9	249	—
5	1013·5	1012·4	87·8	87·7	95	80	12·2	12·5	72	76	—	0	—	0	0∞	3	—	76	83·5	82·0	248	—
6	1013·2	1013·8	90·4	88·7	96	82	13·9	11·9	71	67	—	1	2	4	1∞	10ϟ	0·5	77	84·4	82·1	247	—
7	1015·8	1017·9	89·9	87·9	95	84	13·2	12·9	70	76	7	4	8	3	1∞	0	—	80	85·8	82·2	246	—
8	1020·5	1025·4	89·5	84·3	93	81	11·2	9·5	60	71	6	6	4	7	2∞	4	—	82	86·0	82·4	244	—
9	1029·5	1030·2	84·1	80·6	88	79	7·4	6·8	57	64	5	7	4	5	0	0	—	78	85·7	82·7	242	—
10	1027·2	1021·2	82·9	84·4	91	77	9·5	8·1	78	62	2	4	9	3	8	2∞	—	71	85·0	82·9	241	—
11	1017·3	1010·3	86·8	86·1	93	77	8·5	9·8	56	66	5	2	17	2	0∞	1	—	*n* 70	84·8	83·0	240	—
12	1006·3	1007·1	87·8	82·9	91	81	11·9	10·2	71	85	22	3	5	4	8	10	13·1	79	85·2	83·0	239	—
13	1004·7	1000·7	80·9	79·4	*n* 82	*n* 76	10·2	8·8	96	90	7	6	4	8	10≡⁰●	10●	*x* 33·4	80	85·0	83·0	238	238
14	1010·7	1021·4	80·1	81·2	84	*n* 76	6·4	7·4	65	69	32	6	32	2	9	10≡⁰	—	75	82·3	83·2	239	—
15	1022·7	1019 0	82·3	82·8	89	*n* 76	8·5	8·5	71	70	—	1	—	1	2	10	1·1	71	83·4	83·2	242	—
16	1015·6	1010·7	84·7	85·3	90	79	10·8	11·2	78	78	—	1	13	2	10≡⁰	10≡⁰	—	79	84·7	83·2	246	—
17	1004·1	1004·1	86·6	84·9	87	83	11·2	10·5	72	75	8	4	5	4	10≡⁰●	10≡⁰	27·6	80	85·1	83·2	249	—
18	1007·2	1013·5	80·4	80·7	*n* 82	80	9·8	8·5	95	80	1	6	1	4	10●	9	3·4	80	84·6	83·2	251	—
19	1017·0	1017·5	82·7	83·7	90	78	8·1	9·8	69	75	3	2	17	3	2	9	0·7	77	83·9	83·3	254	—
20	1016·2	1016·8	84·9	86·9	90	80	12·5	13·9	90	88	14	3	17	3	10	5	—	76	84·9	83·3	258	—
21	1016·3	1016·3	88·6	88·1	93	83	13·9	14·6	80	85	8	3	—	1	10≡⁰	10≡⁰	—	81	85·1	83·4	263	—
22	1018·2	1020·9	88·8	88·0	93	*x* 85	13·9	13·5	78	81	1	2	1	3	4	1	—	83	86·0	83·5	267	—
23	1022·1	1022·9	90·2	88·7	96	84	12·9	*8·1*	66	*n* 45	3	6	4	7	3	0	—	81	86·7	83·6	268	—
24	1022·9	1021·6	90·3	88·6	95	84	9·5	8·8	49	51	5	7	6	5	0∞	0	—	81	86·8	83·8	269	269
25	1019·6	1016·1	86·6	90·3	96	81	11·2	10·8	72	56	4	5	7	3	0∞	1∞	—	78	86·9	83·9	268	—
26	1015·1	1017·6	90·8	86·2	*x* 97	83	12·2	11·9	61	78	4	3	1	5	1	4	—	78	87·2	84·0	265	—
27	1019·6	1020·6	85·7	82·7	88	81	9·1	7·8	61	65	3	7	3	7	3	10	—	80	87·4	84·1	263	—
28	1018·5	1014·6	82·7	83·6	88	80	7·8	8·8	65	70	4	5	4	2	10	0≡⁰	—	80	87·0	84·2	262	—
29	1009·4	1007·7	85·1	83·1	88	78	9·5	9·1	69	75	—	1	32	5	9	8≡⁰	—	72	86·1	84·4	261	—
30	1015·0	1020·3	81·9	83·2	86	77	6·8	7·8	61	64	1	5	1	3	5	3	—	75	85·8	84·6	259	—
31	1022·2	1019·7	83·8	84·0	90	*n* 76	7·8	9·1	61	70	31	2	18	3	1	1	—	*n* 70	85·1	84·5	258	—
Means	1016·1	1016·2	85·5	84·7	90·3	80·2	10·2	9·9	71	72		4·0		3·9	5·3	5·0	80·3	77·4	85·1	83·1	252	—
Normal	1015·0	1014·9	84·9	84·0	89·2	79·9	10·0	10·1	71	76		4·0		2·9	—	—	43·2 (40 years)	—	85·1	83·0		
	40 years						25 years				30 years								11 years			

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	978·6	978·6	81·2	76·9	83	76	9·5	7·1	89	89	18	4	1	2	10●⁰	10	1·4		≡≡⁰●⁰ till 13 h.
2	983·4	991·4	78·2	74·8	83	73	5·8	5·8	64	82	31	5	—	1	5	3	—		Fine all day. c. midday.
3	995·7	995·1	80·4	76·0	83	70	6·1	5·4	59	72	12	4	31	2	1	1	—		Fair to fine throughout.
4	993·1	989·9	80·3	78·3	84	72	6·8	7·4	66	83	11	9	5	4	7	10	—		Cloud and sunshine.
5	986·3	985·9	80·9	82·5	87	78	9·1	10·2	86	86	6	2	—	1	10●⁰	8	2·0		● 9 h.–12 h. Close and oppressive.
6	985·9	987·9	85·8	81·1	90	77	11·9	9·8	82	91	—	1	—	1	6≡⁰	6≡⁰	0·1		Fine and warm throughout.
7	990·7	993·6	81·7	82·6	91	78	10·8	10·8	96	91	—	1	32	4	10≡⁰	2≡⁰	0·4		≡⁰ till 9 h. Sunny midday. T 15 h.
8	999·0	1003·4	79·1	78·0	82	78	9·1	7·8	97	89	3	9	3	8	10≡⁰	10≡⁰	—		Damp, with ≡⁰ all day.
9	1006·2	1006·6	80·3	73·3	85	71	7·4	5·8	73	89	6	6	4	4	9	1	—		o. early. Clear and sunny later.
10	1001·5	994·3	79·6	81·3	87	70	6·8	9·1	71	84	—	1	18	2	6	7∞	—		o. 3 h. ⊕ 7 h. ∞⁰ in evening.
11	988·9	984·0	83·0	74·4	84	74	10·2	6·4	84	93	16	2	2	7	9∞	10●	*x* 18·7		c. 3 h. to o. ● from 13 h.
12	984·4	984·6	75·2	71·7	*n* 79	70	5·8	4·1	80	72	2	9	—	1	10	0	—		✲ ● (sleet) 3 h. o. to c.
13	983·0	982·9	77·5	73·6	81	72	6·4	4·7	77	76	7	5	3	5	6	0	—		Cloud and sunshine.
14	987·2	991·8	78·4	73·9	81	71	5·8	5·8	65	90	32	4	—	1	6	4	0·8		Fine early. ●△ showers p. T
15	993·8	990·7	79·4	73·4	84	*n* 68	5·8	5·4	58	84	20	2	32	2	3	3	—		Frosty early. c. to clear.
16	987·6	984·8	82·7	80·0	87	71	7·4	7·8	63	78	—	1	2	3	4	9∞	—		Sunny and warm. q.
17	982·7	985·0	81·8	78·2	85	76	8·8	7·4	78	84	5	10	4	6	9	10	—		Fair and pleasant.
18	986·5	988·3	78·8	75·4	83	73	6·4	6·1	71	82	5	6	30	2	10	1	—		o., with low clouds all morning.
19	989·2	987·3	81·6	81·6	88	73	7·8	8·5	69	77	12	3	—	1	3	10∞	2·0		Sunny till midday, then o.
20	985·0	987·2	82·8	80·3	87	78	10·5	9·1	88	89	12	7	—	0	10●⁰	3	0·8		≡⁰ early. ● till 9 h. ●² 13 h.
21	989·1	991·9	87·6	82·5	91	78	11·9	8·5	70	72	17	3	—	1	6∞	4	—		Cloud and sunshine.
22	995·7	998·8	89·4	83·6	94	*x* 80	12·2	9·8	65	77	5	4	—	1	7∞	2	—		Cloud and sunshine.
23	1002·0	1002·4	91·4	83·5	95	79	9·8	10·2	*n* 47	80	4	5	4	2	0	1	—		Day almost cloudless. v. all day.
24	1001·7	998·7	90·3	83·3	94	79	10·2	9·5	52	78	6	6	2	3	1	0	—		Very fine all day.
25	995·6	993·3	89·1	84·7	*x* 96	78	9·8	10·8	53	79	6	3	32	7	0	2	—		Very fine and warm.
26	995·6	997·7	82·5	78·2	84	78	10·5	7·4	90	84	3	8	2	6	10	7	—		o. most of day.
27	998·0	996·0	82·5	80·1	87	77	7·8	7·8	66	77	7	6	—	1	7	8	—		⊕ 17 h.–18 h.
28	992·7	986·9	82·8	83·0	88	73	8·5	11·5	70	94	—	1	—	0	9	10	6·7		c. to o.
29	982·7	985·1	75·8	74·8	82	74	6·8	6·1	92	87	3	7	32	4	10●⁰	3	1·7		Frequent △● showers.
30	989·5	991·1	80·0	77·8	85	74	6·8	6·8	66	79	28	3	26	7	6	9	—		c. and clear alternately.
31	991·7	989·5	81·4	80·7	86	77	9·1	7·4	85	70	22	6	21	5	10	8	—		o. to c.
Means	991·1	991·1	82·0	78·7	86·3	74·8	8·4	7·8	73	83		4·6		3·0	6·8	5·2	34·6	—	Monthly **Totals** or **Means**.
Normal 1911-14	986·5	986·7	82·7	80·8	86·2	77·1	9·5	9·2	79	85		5·7		3·6	—	—	78·2	—	**Normals**.

No record.

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism :—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 26 days; they are computed from the data for those days on which values at each of the four hours, 3^h, 9^h, 15^h, 21^h, are given in the table. A similar note applies to the values in Table 6.

x denotes the maximum and n the minimum value in the column. z Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·67.				Charge per cc. $\times 10^{20}$.		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.												
		v/m.	v/m.	v/m.	v/m.	E.-m.U	E.-m.U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	Dull to fine; occasional sun-	225	250	235	385	—	—	—	1	2	516	17 48	433	21 9	83	28·5	13 37	*n* 1·8	21 2	*x*26·7
2	Dull till noon, then fine. [shine.	190	150	195	320	—	—	—	0	2	*x* 534	17 53	431	11 20	103	28·3	12 20	7·9	0 45	20·4
3	∞early. Fine till 14 h., then c.	285	475	500	575	370	200	1·30	0	1	503	22 40	434	9 9	69	26·9	13 24	13·9	7 24	13·0
4	Mostly dull.	235	430	635	385	470	200	1·00	0	1	509	17 46	436	11 20	73	26·9	14 44	15·1	8 8	11·8
5	Fine to fair after 13 h. ≺ 22 h.	35	450	150	275	—	—	—	1	1	495	17 17	434	9 2	61	26·8	12 30	16·8	8 3	10·0
6	Fine till 18 h. ⌇ 20 h.–23 h.	150	305	105	*z*±	770	200	0·65	1	0	493	16 56	450	10 32	43	26·2	13 20	16·6	7 48	9·6
7	∞² *a*. Fine all day. [●⁰.	90	235	385	260	500	300	1·30	1	0	490	18 40	451	9 59	39	24·5	12 44	15·0	7 16	9·5
8	∞ *a*. Fine during day.	195	465	575	375	—	—	—	0	0	484	22 10	459	10 23	*n* 25	26·6	13 2	14·8	7 49	11·8
9	Very fine all day.	250	285	250	485	—	—	—	0	0	498	13 35	458	8 8	40	27·4	13 33	15·4	6 58	12·0
10	Fine from 9 h.	315	270	315	580	950	520	1·05	0	0	500	19 18	455	8 53	45	25·0	13 41	13·9	7 15	11·1
11	Mostly fine. ∞	330	660	150	170	580	280	0·50	0	0	496	19 18	457	10 18	39	24·2	12 50	16·0	7 16	*n* 8·2
12	●⁰ 7 h. and 15 h. ● 23 h.–25 h.	105	205	195	215	—	—	—	1	1	505	19 8	452	10 21	53	25·0	13 43	16·0	8 3	9·0
13	● from 3 h. all day.	135	−145	260	35	—	—	—	2	1	510	15 10	450	9 57	60	27·8	12 47	12·8	8 38	15·0
14	● till 2 h. Dull to fine.	45	215	180	500	—	—	—	1	1	514	18 30	449	10 50	65	26·6	13 1	8·4	20 27	18·2
15	Fine till 17 h., then o.	195	270	115	135	—	—	—	1	1	504	18 18	434	9 53	70	27·3	13 27	13·1	20 38	14·2
16	● till 5 h. Bright intervals.	−145	100	70	195	—	—	—	2	1	516	17 33	448	10 25	68	*x* 28·6	13 20	12·7	22 10	15·9
17	Dull all day. ● *a*. and *n*.	160	−125	555	475	—	—	—	1	1	532	18 10	*n* 418	12 9	*x*114	27·4	12 42	13·9	3 0	13·5
18	● till 14 h. Dull. ⌒ 20 h.	0	100	−115	125	—	—	—	2	0	488	18 30	449	8 58	39	24·1	14 0	14·3	6 13	9·8
19	Fine all day. ∞ *p*.	180	385	680	235	480	130	0·60	0	1	523	17 33	449	9 31	74	26·0	12 43	13·0	20 18	13·0
20	● early *a*. Mostly dull.	295	275	180	270	680	500	1·05	0	1	502	15 53	445	12 55	57	24·9	13 8	13·0	3 45	11·9
21	≡⁰ till 9 h. Fair to fine later.	305	225	465	235	460	190	1·20	0	1	502	21 10	435	11 8	67	25·0	12 38	13·0	6 25	12·0
22	Fair to fine.	125	315	305	190	—	—	—	0	1	493	20 8	448	7 21	45	25·1	12 40	12·9	3 10	12·2
23	Fine all day.	160	240	170	285	—	—	—	0	0	490	18 18	449	14 33	41	25·0	14 0	15·0	6 30	10·0
24	Very fine throughout.	205	315	250	450	—	—	—	0	1	506	20 48	451	13 15	55	24·2	13 12	11·0	20 40	13·2
25	Very fine all day. ∞.	275	385	—	—	—	—	—	—	1	500	17 58	454	7 38	46	25·0	13 20	13·6	6 35	11·4
26	Fine all day. ∞.	—	—	—	—	880	240	—	—	0	494	22 20	454	8 15	40	26·7	12 45	14·2	6 43	12·5
27	∞ *a*. Fine throughout. v. *p*.	—	—	215	230	1210	1010	1·00	—	2	523	20 35	436	17 55	87	27·0	17 7	16·0	1 42	11·0
28	Dull till 13 h., then fine. v. *p*.	150	405	—	360	1360	660	—	0	0	486	19 30	444	9 5	42	25·4	13 30	13·5	7 42	11·9
29	Fine to dull *a*. Dull to o. *p*.	165	185	120	285	—	—	—	0	0	488	19 30	447	9 58	41	24·0	12 40	13·0	7 55	11·0
30	v. *a*. Fine till 10 h.; dull to	185	155	155	405	—	—	—	1	1	500	18 26	451	8 3	49	23·2	12 20	14·0	8 0	9·2
31	Fine throughout. v. *p*. [fine *p*.	120	205	110	120	770	520	0·75	0	1	508	18 28	460	10 35	48	25·1	14 24	12·2	7 7	12·9
M.		169*	253*	272*	306*	—	—	—	—	—	503	—	446	—	57	26·0	—	13·3	—	12·6

6. Atmospheric Electricity and Terrestrial Magnetism :—Eskdalemuir.

Day.	Potential Gradient, Volts per metre.* Factor 5·78.				Charge per cc. $\times 10^{20}$.		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.			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.	Amp/cm².																
1	*z*	−233	47	171	—	—	—	—	1	18 24	1054		972	10 10	18 45	131		*n* −42	21 6	19 20	205	151	11 21
2	93	187	171	264	—	—	—	o *a*	2	17 53	1086		941	11 20	15 13	136		−1	0 58	19 0	*x* 226	140	6 34
3	148	171	171	482	200	130	—	o *a*	1	16 1	1054		963	12 43	15 7	111		45	7 28	16 20	196	157	12 24
4	350	187	311	210	—	—	—	1 *a*	1	17 46	1058		952	11 19	14 37	126		51	8 56	18 32	192	143	1 37
5	109	−8	218	264	910	910	—	1 *b*	1	17 17	1033		959	9 2	12 58	115		56	8 32	17 42	183	157	12 15
6	334	288	179	218	—	—	—	o *a*	0	17 7	1030		977	11 20	13 25	116		60	7 51	18 0	184	157	11 52
7	163	225	*z*	*z*	—	—	—	1 *b*	0	18 38	1023		973	11 4	14 28	106		54	7 46	16 59	180	157	11 58
8	*z*	? 155	124	23	—	—	—	—	0	22 9	1022		984	11 6	12 58	119		56	8 22	4 52	176	153	11 32
9	8	93	78	155	—	—	—	—	1	1 50	1029		991	11 25	13 30	135		62	7 30	6 35	176	156	12 42
10	148	319	241	†	0	130	—	—	0	21 30	1042		987	11 25	13 20	114		55	7 14	21 52	176	157	12 0
11	16	155	*z*	*z*	—	—	—	2 *c*	0	19 14	1038		982	10 20	12 54	105		70	8 18	20 0	180	153	11 35
12	249	187	155	241	—	—	—	1 *b*	1	19 7	1051		982	11 25	16 0	111		63	8 58	19 45	180	154	5 40
13	163	101	163	233	1040	520	—	o *a*	1	15 13	1042		983	{10 58 / 12 28}	15 0	131		48	8 56	18 42	187	147	12 0
14	155	163	505	420	780	0	—	1 *b*	1	20 35	1065		977	11 17	13 23	121		24	20 27	20 30	191	157	12 12
15	303	233	101	93	910	1040	—	o *a*	1	18 12	1056		967	9 44	{13 14 / 14 24}	126		46	8 41	7 31	≺175	‡	‡
16	62	194	93	78	—	—	—	o *a*	1	22 11	1064		969	12 36	17 31	131		49	7 16	18 43	‡	‡	22 52
17	365	86	86	86	—	—	—	o *a*	2	18 8	*x* 1094		*n* 936	12 7	17 8	126		46	3 28	13 46	211	≺151	between 1·40 and 4 h.
18	78	109	124	187	—	—	—	o *a*	—	0 33	≺1017		? 988	? 8 49	3 32	≺83		≻53	8 15	4 50	≺181	≻164	0 0
19	109	148	140	179	260	260	—	o *a*	1	17 33	1066		≻980	11 40	17 32	125?		≻50	22 16	18 20	188	156?	11 36
20	241	148	124	194	—	—	—	1 *a*	2	19 26	1062		974	12 56	15 52	115		44	4 52	19 21	194	134	3 12
21	23	171	101	93	130	390	—	1 *a*	1	20 56	1056		966	11 10	15 13	125		46	6 26	17 7	192	156	0 14
22	140	101	78	78	520	460	—	1 *b*	1	20 7	1038		975	9 44	13 5	110		46	5 8	18 3	178	145	11 15
23	109	93	101	342	—	—	—	o *a*	1	18 12	1040		977	14 30	13 59	114		63	6 32	19 12	189	158	11 56
24	148	124	132	225	—	—	—	—	1	20 47	1074		981	11 28	14 14	113		36	20 37	17 35	189	155	12 15
25	140	93	124	70	—	—	—	o *a*	1	17 56	1054		978	13 42	14 46	117		47	6 27	18 45	193	152	12 0
26	101	163	109	163	—	—	—	1 *a*	0	19 17	1037		985	12 52	12 21	122		56	8 16	17 2	178	141	11 25
27	132	124	163	233	1040	390	—	o *a*	2	20 32	1077		974	17 54	17 10	*x* 152		62	6 26	17 55	*x* 226	*n* 125	5 35
28	101	93	93	155	—	—	—	1 *b*	0	19 43	1027		979	12 7	13 54	109		51	8 40	0 1	182	157	11 52
29	101	86	*z*	155	—	—	—	1 *b*	0	19 32	1029		976	10 58	14 6	111		51	8 40	3 42	175	146	12 6
30	249	155	132	233	—	—	—	o *a*	1	18 26	1057		994	11 25	13 43	119		57	8 13	18 48	193	151	10 57
31	233	101	109	218	—	—	—	1 *a*	1	18 26	1055		990	17 30	15 49	126		50	8 28	19 52	182	152	11 55
M.	166*	140*	150*	205*	—	—	—	—	—	—	1050§		974§	—	—	120§		47§	—	—	189¶	151¶	—

* 25 days. *See* note above. † Accidentally earthed. ‡ Instrument drifting. § 29 days. ¶ 27 days.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
1	P	5 11 49	15	...	...	...	8420	α = 16°. Epicentre in lat. 47° N., long. 153° E. Violent earthquake. Maxima confused by overlapping.
	PR_1 (?)	5 14 38	13	...	...	...	...	
	i	5 16 23	...	...	...	...	...	
	S	5 21 30	14	...	...	...	...	
	L	5 37	...	...	...	...	...	
	e	5¾	...	...	...	...	...	
	M	6	...	...	...	...	...	
	C	9 37	...	...	...	...	...	
	C (?)	11 20	...	...	...	...	...	
2	P	4 10 53	5	...	...	...	8650	Small earthquake.
	S	4 20 46	...	...	...	...	...	
	M	4 51¼	17	4	...	...	...	
3	P	3 26 11	...	...	...	...	8380	Azimuth nearly N. (?)
	PR_1 (?)	3 29 22	...	...	...	...	...	
	S	3 35 50	...	...	...	...	...	
	SR (?)	3 41 18	...	...	...	...	...	
	L	3 51	...	...	...	...	...	
	M	4 10	18	9	...	...	...	
		4½, 4¾ } disturbance subsided		...	...	...	...	
	M or L	4 58	60	20	...	...	...	(?) Long waves of second earthquake.
	M	5 3½	27	14	25	...	...	
	F	8½	...	...	...	...	...	
5	P	11 29 32	...	...	...	..	8760?	
	i	11 32 04	...	...	...	...	...	
	i	11 35 00	...	...	...	...	...	
	i	11 37 22	...	...	...	...	...	
	S (?)	11 39 30	...	...	...	...	...	
	L	12 4	45	...	...	...	...	
	M	12 24¼	20	8	...	...	...	
	F	13 50	...	...	...	...	...	
5	P (?)	15 32 20	...	...	...	...	...	
	i	15 36 56	...	...	...	...	...	
	i	15 39 52	...	...	...	...	...	
	L	15 49	...	...	...	...	...	
	F	17 10	...	...	...	...	...	
6	P	12 20 38	...	...	...	...	8240	
	S	12 30 10	...	...	...	...	...	
	SR_1	12 35 6	...	...	...	...	...	
	L	12 42	...	...	...	...	...	
	M	12 53	16	...	9	...	...	
8	M	6 6	25	3	...	...	...	
8	P	13 55 35	...	...	...	...	*circa* 9300	Confused by wind.
	PR_1	13 58 51	...	...	...	...		
	S	14 6	...	...	...	...	...	
	SR_1	14 12	...	...	...	...	...	
	L	14 24½	30	...	...	...	...	
	M	14 28	24	...	15	...	...	
	M	14 37½	17	12	...	...	...	
12	P	10 39 7	...	...	...	...	6240	S. on N.-S. instrument consists of 2½ complete oscillations occupying 1½ minutes.
	PR_1 (?)	10 42 21	...	...	...	...	...	
	S	10 46 56	...	Greater	on N.-S.	...	...	
	SR_1 (?)	10 53	...	Greater	on E.-W.	...	...	
	M	11 6½	16	36	...	...	...	
	M	11 8¾	15	40	...	...	...	
12		17¼ to 18	*circa* 15	*circa* 1	1	...	...	
14	eP	6 52 44	...	...	...	...	...	
	i	6 53 5	...	...	...	...	...	
	S (?)	7 2 31	...	...	...	...	...	
	e	7 3 15	...	...	...	...	...	
	M	various	15 to 25	< 4	< 4	...	...	
	F	8	...	...	...	...	...	
14		14¼ to 15¾	...	...	...	...	...	Small earthquake obscured by microseisms.
16		14¾ to 15	...	...	...	...	...	Faint disturbance.
16		17½ to 18½	...	...	...	...	...	Faint disturbance.
19	P	5 0 18	...	...	...	...	1910	Small disturbance.
	e S	5 3 33	...	...	...	...	...	
	L	5 4½	40	...	...	...	...	
	F	5 33	...	...	...	...	...	
21	P	4 28 50	...	...	...	...	6350	
	i	4 32 30	...	...	...	...	...	
	S	4 36 45	...	...	...	...	...	
	L	4 47¼	...	...	...	...	...	
	M	4 53	18	11	20	...	...	
	F	6	...	...	...	...	...	
21		13½	...	...	...	...	...	Faint earthquake.
21		18¾	...	...	...	...	...	Faint earthquake.
26		19½ to 19½	...	...	...	...	...	Faint earthquake.
26		21¾ to 22	...	...	...	...	...	Faint earthquake.
27		15 to 15¼	...	...	...	...	...	Faint earthquake.
27		18½	...	...	...	...	...	Faint earthquake.
29		1	...	...	...	...	...	Very faint disturbance.

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	1·0	6	(?)	(?)	1·0	6	1·0	5
2	1·0	5	1·1	5	1·0	5	1·1	4·5
3	1·0	4·5	(?)	(?)	0·9	4	1·2	4
4	1·0	4·5	1·0	4·5	1·0	4·5	0·9	4
5	1·0	4	0·7	4·5	(?) earthqu'ke		0·9	4
6	0·7	4	0·7	4	0·8	4·5	0·7	4
7	0·6	4	0·5	4	0·5	4	0·3	4
8	0·5	4	0·8	5	0·5	4	0·5	5
9	0·6	4	0·7	4	0·7	4·5	0·6	5
10	0·6	4	0·7	4·5	0·8	5	0·9	4·5
11	0·8	5	0·9	5	0·9	5	1·1	5
12	1·1	5	1·1	5	1·6	5	1·0	5
13	0·9	5	0·9	5·5	1·0	5	1·1	5
14	1·0	4·5	1·2	4·5	0·9	6	0·9	5
15	0·8	5	0·6	4	0·9	5	1·0	5
16	1·0	5	1·0	5	1·2	4·5	2·0	4·5
17	1·4	4·5	1·5	4·5	1·1	5	1·1	5
18	1·2	4·5	1·4	5	1·0	5	1·0	5
19	0·9	5	0·5	4·5	1·0	4·5	0·8	5
20	0·7	4·5	0·9	5	1·0	5·5	1·0	5·5
21	1·0	5·5	1·0	6	1·0	5	0·8	5·5
22	0·7	4·5	0·3	4·5	0·3	4	0·2	4
23	0·2	4	0·1	4	0·1	4·5	0·1	4
24	0·1	4	0·1	4	0·1	4·5	0·0	...
25	0·0	...	0·0	...	0·0	...	0·2	5
26	0·2	4	0·2	4	0·3	4·5	0·2	4·5
27	0·2	4·5	0·2	4	0·5	4	0·2	4
28	0·2	4	0·3	4	No trace			
29	0·3	4	0·3	4	0·6	4·5	0·9	4·5
30	0·7	4·5	1·0	4	0·4	4·5	1·0	4·5
31	0·9	4	0·8	4	0·9	5	1·1	4·5

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
1	5 11·7	5 55·5	Amplitude on trace 14 mm. Secondary maximum at 9 h. 37 m.
2	4 45·0	4 54·7	
3	3 56·8	4 10·0	Prolonged disturbance. Amplitude on trace 1·0 mm.
5	12 11·0	12 23·0	Long disturbance.
,,	15 49·1	15 54·1	Long disturbance.
6	...	12 55·5	
8	14 13·8	14 38·8	
12	10 46·0	11 4·0	Long disturbance. Amplitude on trace 2·0 mm.
14	7 27·3	7 36·6	
19	...	5 9·1	Very small.
21	4 39·0	4 52·1	Amplitude on trace 1·0 mm.

8. WIND COMPONENTS; Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	4·4	...	4·4	...	5·3	...	5·3	...	1·2	...	5·8	...	...	4·3	...	...	15·3	12	30
2	...	7·2	...	...	...	5·8	1·2	...	...	5·5	...	2·3	...	2·1	...	2·1	10·6	13	35
3	0·6	...	...	3·2	0·4	...	...	0·9	...	3·0	3·0	...	1·6	...	...	8·0	13·7	23	10
4	1·5	...	...	7·4	2·3	...	...	11·6	1·4	...	...	3·3	0·5	...	...	1·2	15·3	8	45
5	0·3	...	...	0·6	0·3	...	...	0·6	...	2·9	...	0·6	...	0·7	...	0·1	2·1	2	20
6	...	1·6	...	0·3	..	1·8	1·8	...	1·9	...	4·5	...	1·3	...	...	...	8·2	13	15
7	1·6	...	...	...	1·3	...	...	...	...	3·8	...	0·8	...	2·6	...	0·5	6·0	13	0
8	...	1·2	0·5	...	...	1·1	...	0·7	...	...	...	8·9	...	...	...	12·5	16·5	21	50
9	...	...	...	11·1	1·7	...	...	8·7	...	...	...	9·5	...	...	...	10·2	16·2	2	15
10	...	...	...	6·2	...	1·4	...	3·3	...	2·3	...	0·4	...	0·7	...	0·1	11·3	0	15
11	...	1·5	...	0·6	0·6	...	1·5	...	0·4	...	2·3	...	3·6	...	...	...	10·0	22	25
12	...	...	6·2	...	...	5·1	...	12·4	...	2·6	...	13·1	...	1·9	...	9·6	19·2	12	20
13	...	...	...	10·8	...	...	...	11·1	...	...	...	12·8	..	...	...	8·2	17·6	16	55
14	...	2·5	...	6·1	...	3·8	...	0·8	...	2·2	1·4	...	2·1	...	5·2	...	13·2	20	45
15	...	...	...	1·0	...	2·3	...	2·3	...	4·0	...	4·0	...	...	...	6·6	10·3	18	50
16	1·3	...	...	3·0	2·0	...	...	3·0	...	1·4	...	3·3	1·4	...	...	2·2	8·8	16	20
17	2·3	...	...	5·5	...	...	...	9·8	...	...	...	8·2	...	...	...	12·5	15·5	21	10
18	...	...	...	11·8	..	...	...	9·2	...	2·8	...	6·7	...	0·3	...	1·3	17·8	5	25
19	0·4	...	...	2·0	4·5	...	...	0·9	5·6	...	...	...	6·6	...	...	...	11·3	22	25
20	5·2	...	...	2·1	5·7	...	3·8	...	8·0	...	1·6	...	4·3	...	1·8	...	13·9	14	25
21	2·4	...	1·0	...	4·9	...	...	...	...	1·5	...	0·6	...	1·8	...	0·8	8·7	9	50
22	...	0·9	...	0·9	...	2·1	0·9	...	...	3·2	2·2	...	...	1·6	...	...	8·1	17	35
23	...	1·3	...	...	...	1·3	...	6·5	...	4·7	...	4·7	...	1·5	...	7·7	13·2	22	10
24	...	...	...	8·5	...	1·8	...	9·0	...	5·6	...	5·6	...	2·0	...	3·0	14·2	7	10
25	1·6	...	...	4·0	...	...	...	7·5	5·2	...	...	...	...	1·5	...	0·6	11·1	8	0
26	0·5	...	...	2·6	...	1·4	...	7·1	...	4·0	...	9·7	...	...	...	13·1	17·7	20	0
27	...	...	...	11·1	...	...	...	12·5	...	4·6	...	6·8	...	2·6	...	3·8	16·3	7	25
28	..	0·4	...	0·6	...	4·5	...	1·9	...	3·5	0·7	...	...	4·2	0·8	...	7·3	19	5
29	..	3·6	1·5	...	...	10·0	2·0	...	...	7·4	...	1·5	...	6·4	...	2·6	15·0	11	55
30	...	4·2	...	6·2	...	3·2	...	2·2	...	2·0	0·4	...	...	2·1	0·9	...	9·9	1	45
31	...	1·8	0·8	...	...	2·4	1·0	...	...	1·1	2·8	...	3·5	...	3·5	...	8·8	18	5
S+N & W+E	48·3		120·0		77·0		139·5		91·8		127·5		61·2		118·9				
S−N & W−E	− 4·1		− 91·2		− 19·0		− 104·5		− 44·4		− 78·1		− 11·4		− 94·5				

SCOTLAND N.:—DEERNESS.

Height of Cups above—Roof 1·5 m., Ground 4·9 m., M.S.L. 57·8 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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	0·0	0·0	0·0	0·0	...	2·6	0·5	...	...	0·7	...	1·1	...	3·3	...	...	4·3	24
2	...	8·2	...	...	...	6·3	6·3	...	...	8·1	5·4	...	...	2·7	1·8	...	11·8	13
3	...	1·1	0·7	...	4·2	...	0·8	...	6·5	...	...	1·3	5·2	...	...	2·1	7·2	12
4	4·5	...	...	1·9	10·0	...	...	2·0	10·6	...	...	4·4	9·3	...	...	1·9	12·8	17
5	8·0	...	...	1·6	5·2	...	...	2·1	3·2	...	...	2·2	1·1	...	...	1·1	8·9	16
6	0·9	...	...	0·9	1·8	...	...	1·8	1·7	...	..	1·1	0·8	...	0·6	...	2·6	9
7	1·4	...	2·2	...	0·8	...	4·2	...	...	6·5	1·3	...	...	3·0	...	...	7·9	11
8	...	1·3	...	...	...	2·8	1·1	...	...	3·0	...	1·3	...	1·4	...	2·2	4·9	14
9	...	0·8	...	1·8	1·6	...	...	4·0	4·1	...	...	2·7	6·6	...	...	4·4	9·2	23, 24
10	9·2	...	...	...	4·5	...	0·9	...	...	...	9·5	...	...	7·7	1·5	...	9·5	15
11	...	7·5	...	...	...	7·7	...	1·5	...	5·1	1·0	...	...	6·8	1·3	...	8·9	11
12	...	6·4	2·6	...	...	8·5	...	...	...	7·4	4·9	...	...	3·8	5·7	...	9·5	19
13	...	6·7	...	2·8	...	4·3	...	1·8	...	2·5	...	2·5	...	5·9	...	...	8·9	1
14	...	2·0	...	...	...	2·7	1·8	...	...	4·7	4·7	...	...	3·7	5·5	...	8·2	16
15	...	5·2	3·4	...	...	6·0	6·0	...	...	6·8	4·6	...	...	4·7	3·1	...	11·1	12
16	...	1·6	4·0	...	...	4·9	4·9	...	...	1·3	6·5	...	...	4·3	1·8	...	8·2	16
17	...	3·0	3·0	...	...	4·5	1·9	...	...	5·1	1·0	...	...	3·0	1·3	...	5·9	12
18	...	2·4	1·0	...	...	2·5	...	1·7	...	0·8	...	4·2	...	0·6	...	2·9	4·6	18
19	...	...	...	4·3	2·1	...	...	5·2	4·4	...	...	6·6	5·6	...	...	5·6	9·2	12
20	7·9	...	...	5·3	9·0	...	...	6·0	6·2	...	...	9·2	6·5	...	...	6·5	12·5	19
21	4·7	...	...	3·1	5·7	...	...	3·8	3·0	...	...	3·0	3·6	...	...	2·4	6·9	1, 2, 6, 7, 9, 10
22	*	*	*	*	*	*	*	*	...	2·6	...	...	0·7	...	...	1·1	? 4·9	1
23	0·8	...	0·6	...	3·8	...	...	0·8	2·9	...	...	0·6	1·0	...	...	0·2	3·9	9
24	2·3	...	...	0·4	3·0	...	...	1·3	3·9	...	...	...	...	2·6	...	...	5·6	12
25	...	3·3	...	...	...	2·4	...	1·0	...	5·5	..	2·3	...	4·3	...	1·8	6·6	16
26	...	3·2	...	0·6	...	4·5	...	1·9	...	3·8	...	0·8	...	2·0	...	...	6·2	12
27	...	...	1·6	...	...	2·4	3·6	...	...	5·5	3·7	...	...	2·5	2·5	...	7·2	16
28	...	...	3·6	...	...	4·2	6·2	...	...	7·1	4·7	...	...	6·2	4·2	...	9·8	11, 12, 13
29	...	6·7	2·8	...	...	10·5	...	...	...	10·0	2·0	...	...	7·9	...	...	11·5	11
30	...	4·3	1·8	...	...	4·7	3·1	...	2·0	...	4·8	...	5·7	...	2·4	...	7·5	19
31	5·2	...	3·4	...	5·8	...	5·8	...	6·8	...	4·6	...	1·7	...	8·3	...	11·5	19
S+N & W+E	108·6		53·4		139·0		82·0		141·8		102·0		124·2		72·2			
S−N & W−E	− 18·8		8·0		− 24·0		12·2		− 31·2		15·4		− 28·6		7·8			

ENGLAND S.W.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	5·0	...	...	...	5·3	...	...	1·1	5·0	...	2·1	...	4·7	...	4·7	...	10·0	21	30
2	2·9	...	6·9	...	...	2·7	...	2·7	...	4·7	...	4·7	...	1·8	...	4·3	10·0	4	40
3	4·0	...	...	9·6	5·3	...	...	12·8	3·4	...	...	17·3	...	..	...	12·5	22·3	14	10
4	...	...	...	9·2	3·2	...	...	4·8	5·0	...	...	5·0	5·2	...	...	3·5	14·0	1	30
5	3·5	...	...	1·5	3·7	...	...	0·7	3·0	...	...	1·3	1·3	...	...	...	7·5	0	30
6	0·4	...	...	...	1·7	...	...	1·2	...	2·4	...	1·6	...	2·7	...	2·7	6·8	21	45
7	...	3·5	...	2·3	...	3·8	...	3·8	...	1·5	...	3·5	...	0·9	...	4·5	8·7	12	0
8	...	1·8	...	4·3	...	1·8	...	4·3	...	2·4	...	5·8	...	...	...	4·6	11·8	15	35
9	...	2·7	...	6·6	...	...	...	8·3	...	...	...	10·4	...	...	...	7·5	15·8	7	10
10	...	...	...	4·2	...	...	...	4·2	...	5·8	...	2·4	...	4·5	...	0·9	10·9	0	50
11	...	4·1	...	0·8	...	2·1	...	...	...	1·6	3·9	...	...	3·0	3·0	...	7·7	2	30
12	...	...	5·4	...	...	2·2	5·4	...	...	...	4·2	...	2·7	...	1·1	...	12·0	5	50
13	1·1	...	5·7	...	0·7	...	1·6	...	5·0	...	5·0	...	...	10·8	...	...	17·0	19	45
14	...	7·5	...	...	...	3·2	...	0·6	...	3·5	...	1·5	...	0·5	...	1·2	15·0	1	10
15	1·9	...	...	4·6	2·6	...	...	6·2	9·4	...	...	9·4	4·1	...	0·8	...	17·5	12	20
16	2·3	...	...	1·0	4·9	...	...	1·0	8·5	...	...	3·5	8·6	...	...	8·6	16·9	21	55
17	10·8	...	...	4·5	3·5	...	...	2·3	2·7	...	...	2·7	1·5	...	...	1·5	12·7	0	30
18	...	0·4	...	...	...	2·7	1·1	...	1·9	...	0·8	...	2·3	..	1·0	...	7·1	17	25
19	6·6	...	...	2·7	7·7	...	...	3·2	5·3	...	...	1·1	5·3	...	...	1·1	12·0	9	10
20	4·9	...	1·0	...	6·2	...	...	1·2	5·4	...	...	...	5·0	...	...	...	9·1	10	30
21	4·6	...	...	1·9	2·7	...	...	1·1	1·7	...	...	0·3	0·0	...	...	0·0	8·0	0	25
22	...	2·1	...	...	...	5·8	...	...	...	6·2	1·2	...	...	5·8	...	...	12·0	13	15
23	...	3·5	...	2·3	...	5·4	...	2·2	...	5·0	...	5·0	...	2·4	...	5·8	12·0	13	45
24	...	2·2	...	5·4	...	2·2	...	5·4	...	1·8	...	4·3	...	1·2	...	6·2	10·4	22	10
25	...	1·4	...	7·0	...	1·2	...	6·2	...	...	...	5·8	...	4·3	...	1·8	11·2	2	10
26	...	1·9	...	0·8	2·1	...	...	2·1	1·8	...	...	4·3	...	0·3	...	0·3	9·0	13	20
27	1·5	...	...	7·7	1·8	...	...	9·0	...	2·3	...	3·5	...	0·6	...	3·2	12·2	4	20
28	...	1·1	...	5·7	...	2·2	...	5·4	...	5·0	...	5·0	...	2·4	...	1·6	10·1	14	30
29	...	3·2	...	0·6	...	2·8	...	0·6	...	3·9	1·6	...	...	2·7	...	1·1	8·6	15	35
30	...	2·7	...	2·7	...	5·0	...	2·1	...	5·9	...	3·9	...	6·2	...	2·6	10·0	14	35
31	...	2·7	...	1·8	...	2·1	...	3·2	...	3·2	...	0·6	...	1·2	...	0·5	6·0	8	25
S+N & W+E	90·3		106·2		96·6		103·8		113·3		121·7		92·0		86·6				
S−N & W−E	8·7		− 68·2		6·2		− 87·6		2·9		− 84·1		− 10·6		− 67·6				

ENGLAND E.:—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.	
		N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.	S.	N.	W.	E.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h.	m.
1	2·0	...	3·0	...	1·0	...	5·1	...	1·0	...	4·8	...	...	0·5	1·2	...	11·0	11	5
2	1·0	...	4·8	...	...	3·2	2·2	...	...	5·8	...	1·2	...	4·5	...	0·9	11·7	13	0
3	...	2·6	...	3·8	...	...	...	6·9	...	...	...	8·2	...	...	...	13·1	16·3	23	20
4	2·9	...	...	14·8	2·4	...	...	11·9	...	...	...	7·9	...	0·2	...	1·0	16·7	4	25
5	...	0·3	...	1·6	...	1·2	...	0·5	...	1·4	...	2·2	...	1·0	...	2·4	5·7	13	25
6	...	0·6	...	0·8	...	1·3	...	1·9	...	1·1	...	1·7	...	0·6	...	0·8	5·6	15	55
7	...	0·7	...	1·1	...	1·1	...	1·7	...	1·8	...	2·7	...	2·6	...	3·8	5·7		?
8	...	2·0	...	3·0	...	2·6	...	6·4	...	3·6	...	8·8	...	3·4	...	8·2	13·9	18	0
9	...	3·9	...	9·4	...	4·7	...	7·1	...	7·4	...	4·9	...	5·8	...	8·7	13·5	13	50
10	...	4·2	...	6·2	...	3·8	...	5·7	...	2·9	...	4·3	...	2·0	...	3·0	10·7	0	40
11	...	0·7	...	1·1	...	1·1	...	1·7	2·4	...	...	3·6	2·5	...	...	1·7	7·4	23	30
12	2·5	...	1·7	...	0·2	...	1·0	...	...	5·8	...	8·7	...	4·1	...	10·0	13·4	16	30
13	...	5·1	...	7·6	...	4·0	...	9·7	...	2·7	...	13·8	...	9·3	...	13·9	18·7	23	30
14	...	9·8	...	9·8	...	6·7	...	2·8	...	4·8	2·0	...	...	2·0	0·4	...	19·6	5	5
15	...	2·3	0·4	...	...	2·8	2·8	...	...	5·5	...	2·3	...	0·6	...	2·9	10·9	13	10
16	3·8	...	...	0·8	7·1	...	...	1·4	3·6	...	...	1·5	2·4	...	...	1·0	9·4	9	25
17	2·1	...	...	2·1	3·4	...	...	5·2	...	2·0	...	10·0	...	2·6	...	13·1	15·8	23	20
18	...	8·0	...	12·0	...	6·7	...	10·1	...	10·6	...	4·4	...	7·6	...	5·1	17·8	13	40
19	...	6·8	...	4·6	...	6·1	...	2·5	...	3·8	...	2·6	...	2·5	...	1·7	12·7	2	25
20	...	0·6	...	0·4	2·2	...	...	3·2	4·7	...	...	3·1	3·3	...	...	1·4	10·0	11	45
21	2·4	...	...	1·0	1·8	...	...	0·8	...	0·6	...	2·9	...	2·4	...	3·6	7·2	18	30
22	...	3·6	...	1·5	0·4	...	...	2·0	...	5·5	...	1·1	...	4·8	...	1·0	11·1	16	45
23	...	6·1	...	2·5	...	4·7	...	4·7	...	4·7	...	4·7	...	4·9	...	4·9	11·3	1	15
24	...	5·6	...	5·6	...	3·4	...	5·2	...	3·8	...	5·7	...	2·6	...	3·8	10·2	6	15
25	...	3·2	...	2·2	...	3·0	...	2·0	...	3·1	...	4·7	...	2·9	...	4·3	8·2	2	40
26	...	2·2	...	3·2	...	3·0	...	3·0	...	5·6	...	5·6	...	7·1	...	4·7	13·1	20	35
27	...	7·1	...	4·7	...	7·9	...	5·3	...	6·8	...	4·6	...	6·6	...	4·4	16·1	9	0
28	...	4·9	...	3·3	...	5·5	...	2·3	...	5·5	...	1·1	...	3·8	...	2·6	11·3	23	40
29	...	1·9	...	1·3	2·9	...	...	4·3	5·8	...	1·2	...	...	3·0	2·0	...	11·8	12	20
30	...	3·6	1·5	...	...	4·9	...	...	...	4·3	...	...	...	2·0	0·4	...	12·2	9	45
31	...	2·3	0·4	...	...	2·1	...	2·1	6·2	...	...	4·2	2·4	...	...	1·0	10·2	17	25
S+N & W+E	104·8		116·2		101·2		121·5		122·8		134·5		100·0		127·0				
S−N & W−E	− 71·4		− 92·6		− 58·4		− 99·3		− 75·4		− 118·5		− 78·8		− 119·0				

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 171. May 6, 1915. 8 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3025	...	...	...	..	2·6 m/s. assumed	Balloon entered sheet of light high St.-Cu. At 13 h. a nephoscopic observation of this cloud layer was made, and the components (assuming 3 km. as height of layer) were found to be :— W.-E. +6·5 m/s. S.-N. −2·5 m/s.
	3000	290	6·5	+6·0	−2·5		
	2500	275	5·0	+5·0	−0·5		
	2000	240	5·5	+4·5	+3·0		
	1750	245	4·0	+3·7	+1·6		
	1500	245	2·2	+2·0	+0·9		
	1250	260	1·7	+1·7	+0·3		
	1000	255	2·7	+2·6	+0·8		
	750	275	1·1	+1·1	−0·1		
	500	270	0·9	+0·9	0·0		*Pressure Distribution* (7 h.).
100 m. above ground.	114	205	0·4	+0·2	+0·4		Anticyclone over Eastern Europe. Pressure very uniform over Great Britain.
Anemometer.	46	...	0·0	0	0		
Geostrophic wind.	(at 7 h.)	*Inde*	*termin*	*ate*	...	...	Weight of balloon 12 gm., free lift 43 gm.

Aberdeen. No. 172. May 7, 1915. 8 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2550	...	...	...	...	2·8 m/s. assumed	Balloon lost in patch of St.-Cu. which was just forming. Nephoscopic observation was made of this cloud at 9 h. and again at 13 h. The components found were (assuming 2·5 km. as altitude of cloud) :— 9 h. W.-E. =+4·3 m/s. S.-N. =+0·3 m/s. 13 h. W.-E. =+6·5 m/s. S.-N. =+0·5 m/s. So that a considerable difference from the final wind velocity is shown.
	...	...	...	...			
	2500	245	10·0	+9·0	+4·0		
	2000	265	6·5	+6·5	+0·5		
	1750	270	3·4	+3·4	+0·0		
	1500	285	3·4	+3·3	−0·9		
	1250	325	2·4	+1·4	−1·9		
	1000	345	0·8	+0·2	−0·8		
	750	15	5·0	−1·0	−5·0		
	500	40	2·8	−1·7	−2·2		*Pressure Distribution* (7 h.).
100 m. above ground.	114	325	2·3	+1·3	−1·9		Very uniform pressure over British Isles and North Sea. Anticyclone forming N.W. of Scotland during day.
Anemometer.	46	315	1·0	+0·7	−0·7		
Geostrophic wind.	(at 7 h.)	*Inde*	*termin*	*ate*	...	...	Weight of balloon 12 gm., free lift 55 gm.

Aberdeen. No. 173. May 7, 1915. 11 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2680	...	...	...	...	...	Two theodolites. Balloon lost to home station after 1700 m. by passing behind intervening structure; lost to out-station in distance.
	2500	230	7·5	+6·0	+4·5	2·4 assumed	
	2000	255	9·0	+9·0	+2·5		
	1750	260	6·0	+6·0	+1·0		
	1500	255	4·8	+4·7	+1·2	2·4	
	1250	300	1·8	+1·6	−0·9	2·6	
	1000	305	1·7	+1·4	−0·9	2·1	*Pressure Distribution* (7 h.).
	750	55	1·2	−1·0	−0·7	2·2	
	500	50	3·9	−3·0	−2·5	2·0	Very uniform pressure over British Isles and North Sea. Anticyclone forming N.W. of Scotland during day.
100 m. above ground.	114	50	6·0	−4·6	−4·1	2·6	
Anemometer.	46	60	4·0	−3·4	−2·0	...	
Geostrophic wind.	(at 7 h.)	*Inde*	*termin*	*ate*	...	...	Weight of balloon 12 gm., free lift 48 gm.
	(at 13 h.)	20	6	−2	−6	...	

Aberdeen. No. 174. May 10, 1915. 7 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2135	...	...	...	...	2·7 assumed	Balloon lost in high haze. A trace of true Ci. was visible moving from W.
	2500	...	...	...	...		
	2000	225	7·5	+5·5	+5·5		
	1750	215	9·0	+5·0	+7·5		
	1500	215	8·0	+5·0	+6·5		*Pressure Distribution* (7 h.).
	1250	205	4·6	+2·1	+4·1		
	1000	220	6·0	+3·5	+4·5		Anticyclone from Midlands to Denmark.
	750	220	8·5	+5·5	+6·5		
	500	220	6·5	+4·0	+5·0		Depressions Northern Norway and Mediterranean.
100 m. above ground.	114	205	6·0	+2·5	+5·5		
Anemometer.	46	200	5·0	+1·5	+4·5		
Geostrophic wind.	(at 7 h.)	240	11	+10	+6	...	Weight of balloon 12 gm., free lift 52 gm.

Aberdeen. No. 177. May 14, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E. 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4730	...	...	...	...	2·9 assumed	Balloon lost to view behind a passing St.-Cu. cloud.
	4500	350	4·9	+0·7	−4·9		
	4000	335	5·5	+2·0	−5·0		
	3500	350	8·0	+1·5	−8·0		
	3000	360	8·0	0·0	−8·0		*Pressure Distribution* (7 h.).
	2500	10	8·5	−1·5	−8·5		
	2000	15	8·5	−2·0	−8·0		Lows, Holland and N. Atlantic. Highs, Iceland and Spain.
	1750	5	7·0	−1·0	−7·0		
	1500	360	7·5	+0·5	−7·5		
	1250	355	9·5	+0·5	−9·5		
	1000	5	10·5	−1·0	−10·5		
	750	360	10·5	0·0	−10·5		
	500	345	6·5	+1·5	−6·0		
100 m. above ground.	114	305	6·0	+5·0	−3·5		
Anemometer.	46	315	4·0	+2·8	−2·8		
Geostrophic wind.	(at 7 h.)	360	6	0	−6	...	Weight of balloon 12·5 gm., free lift 58 gm.

10. Soundings with Pilot Balloons—*continued.*

Benson. No. 1517. May 5, 1915. 19 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3200	...	...	...	...		Balloon entered cloud at 3200 m. The ascent was made with a registering balloon. Attachments weighed 85 gm. approx.
	3000	195	8	+2	+8		
	2500	190	10	+2	+10		
	2000	180	9	0	+9		
	1750	175	9	−1	+9		
	1500	165	6	−2	+6		
	1250	165	6	−2	+6	3·3	*Pressure Distribution* (18 h.).
	1000	180	4	0	+4		
	750	210	4	+2	+4		Anticyclone N.E. Germany.
	500	220	4	+2	+3		Shallow depression between Azores and Spain.
100 m. above ground.	157	250	4	+4	+2		
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 18 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 350 gm., free lift 220 gm.

Benson. No. 1518. May 11, 1915. 10 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Cirrus moving slowly from W.N.W.
	3000	30	2	−1	−2		
	2500	20	4	−1	−4		
	2000	35	4	−2	−4		*Pressure Distribution* (7 h.).
	1750	20	5	−2	−5		
	1500	0	3	0	−3		Station in central region between 3 highs (Iceland, Germany and Azores) and 3 lows (Norway, W. Mediterranean and N. Atlantic).
	1250	30	1	−1	−1		
	1000	60	2	−2	−1	2·4	
	750	50	1	−1	−1		
	500	5	2	0	−2		
100 m. above ground.	157	60	3	−2	−1		
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 7 h.)	30	6	−3	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	*Indeterminate.*			...	...	

Benson. No. 1519. May 14, 1915. 12 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2250	...	...	...	...		Balloon lost in cumulus at 2250 m.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Lows, Holland and N. Atlantic. Highs, Iceland and Spain. Pressure becoming uniform over British Isles at 18 h.
	2000	335	8	+3	−7		
	1750	335	8	+3	−7		
	1500	350	9	+1	−8	2·4	
	1250	340	10	+3	−10		
	1000	340	13	+5	−12		
	750	340	13	+4	−12		
	500	340	10	+4	−9		
100 m. above ground.	157	330	5	+2	−4		
Anemometer.	82	340	7	+3	−6		
Geostrophic wind.	(at 7 h.)	20	15	−5	−14	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	360	7	0	−7	...	

Benson. No. 1520. May 15, 1915. 10 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Upper cloud was moving rapidly from W.N.W.
	4500	285	30	+29	−8		
	4000	290	20	+19	−7		
	3500	310	13	+10	−9		*Pressure Distribution* (7 h.).
	3000	305	10	+8	−6		
	2500	335	2	+1	−2		Uniform high pressure over British Isles and France.
	2000	305	4	+3	−2		
	1750	290	3	+3	−1		Lows, Baltic and N. Atlantic.
	1500	270	5	+5	0	2·4	During the day the Atlantic low spread in somewhat towards Ireland.
	1250	285	4	+4	−1		
	1000	245	2	+2	+1		
	750	...	0	0	0		
	500	360	1	0	−1		
100 m. above ground.	157	20	3	−1	−3		
Anemometer.	82	340	2	0	−2		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Approx. weights: balloon 12 gm. free lift 45 gm.
	(at 13 h.)	*Indeterminate.*		...	...		

Benson. No. 1521. May 19, 1915. 11 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		
	8000	275	11	+11	−1		*Pressure Distribution* (7 h.).
	7000	250	6	+6	+2		
	6000	270	5	+5	0		Station in col between lows over N. Atlantic and Austria, and highs over Norway and Spain.
	5000	245	4	+4	+2		
	4000	225	3	+2	+2		During the morning the Atlantic low moved eastward.
	3500	230	4	+3	+2		
	3000	275	2	+2	0		
	2500	295	2	+2	−1		
	2000	120	2	−1	+2		
	1750	120	2	−2	+1	2·4	
	1500	175	1	0	+1		
	1250	210	2	+1	+2		
	1000	220	3	+2	+2		
	750	155	3	−1	+3		
	500	190	1	0	+1		
100 m. above ground.	157	125	1	−1	+1		
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	180	7	0	+7	...	

Eskdalemuir. No. 1520. May 3, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	6050	...	...	...	...		
	...	...	...	...	...		No clouds.
	...	...	...	...	...		Atmosphere clear.
	6000	255	5·5	+ 5·5	+ 1·5		Balloon lost while changing eye-pieces.
	5000	240	5·0	+ 4·5	+ 2·5		Barometer rising moderately fast.
	4000	210	3·6	+ 1·8	+ 3·1		
	3500	230	4·5	+ 3·3	+ 3·0		
	3000	215	3·7	+ 2·1	+ 3·0		
	2500	220	2·4	+ 1·6	+ 1·8		*Pressure Distribution* (7 h.).
	2000	100	0·7	− 0·7	+ 0·1	2·5	
	1750	130	2·5	− 1·9	+ 1·7		Anticyclone over North Sea influencing all British Isles.
	1500	125	4·3	− 3·4	+ 2·6		
	1250	145	6·0	− 3·0	+ 5·0		
	1000	150	7·0	− 3·0	+ 6·0		
	750	135	4·7	− 3·3	+ 3·4		
	500	125	3·6	− 3·0	+ 2·0		
	340	115	3·9	− 3·5	+ 1·8		
	250	130	3·2	− 2·5	+ 2·2		
Geostrophic wind.	(at 7 h.)	150	10	− 5	+ 9	...	Weight of balloon 19·3 gm., free lift 64·3 gm.

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1521. May 4, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2080	...	...	...	...		Sky four-tenths covered, cirrus from S., cumulus from S.E. Balloon lost in distance. Barometer falling slowly.
	...	..	...	...	...		
	...	...	...	...	...		
	2000	150	13·0	− 7·0	+11·0		
	1750	145	13·5	− 8·0	+11·0		
	1500	140	14·5	− 9·0	+11·5		*Pressure Distribution* (7 h.).
	1250	145	11·0	− 6·0	+ 9·0		
	1000	135	10·0	− 7·5	+ 7·0	2·7	Anticyclone Southern Norway. Depression Azores.
	750	120	12·0	−10·5	+ 6·0		
	500	110	6·0	− 5·5	+ 2·0		
100 m. above ground.	340	120	9·0	− 7·5	+ 4·0		
Anemometer.	250	120	6·5	− 5·5	+ 3·5		
Geostrophic wind.	(at 7 h.)	140	15	−10	+12	...	Weight of balloon 19·5 gm., free lift 87·3 gm.

Eskdalemuir. No. 1522. May 6, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3130	...	...	...	...		Atmosphere very misty. A bank of low stratus in valley to southward. Very warm and close. Balloon entered A.-Cu. cloud.
	3000	215	5·0	+3·0	+4·5		
	2500	225	5·5	+4·0	+4·0		
	2000	220	4·0	+2·6	+3·1		
	1750	210	4·0	+1·9	+3·5		
	1500	210	3·4	+1·7	+3·0		
	1250	205	1·8	+0·7	+1·6		*Pressure Distribution* (7 h.).
	1000	190	0·9	+0·2	+0·9	2·8	
	750	210	1·5	+0·7	+1·3		Anticyclone over Eastern Europe. Pressure very uniform over Great Britain.
	500	175	1·1	−0·1	+1·1		
100 m. above ground.	340	155	1·0	−0·4	+0·9		
Anemometer.	250	155	0·4	−0·2	+0·4		
Geostrophic wind.	(at 7 h.)	*Indeterminate*				...	Weight of balloon 16·6 gm., free lift 98 gm.

Eskdalemuir. No. 1523. May 10, 1915. 12 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2200	...	...	...	...		Cirrus from west. Sky two-tenths covered throughout ascent. Balloon burst. Barometer falling quickly.
	...	...	...	...	...		
	2000	305	7·5	+6·0	−4·5		
	1750	305	7·0	+6·0	−4·0		
	1500	310	7·0	+5·5	−5·0		
	1250	330	5·5	+3·0	−5·0		
	1000	280	3·0	+3·0	−0·4	2·5	*Pressure Distribution* (7 h.).
	750	205	4·2	+1·7	+3·8		
	500	200	6·0	+2·0	+5·5		Anticyclone from Midlands to Denmark. Depressions Northern Norway and Mediterranean.
100 m. above ground.	340	215	4·9	+2·9	+3·9		
Anemometer.	250	180	4·0	0·0	+4·0		
Geostrophic wind.	(at 13 h.)	? 180	6	0	+6	...	Weight of balloon 18·9 gm., free lift 65·3 gm.

Eskdalemuir. No. 1525. May 15, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2930	...	...	...	...		Sky one-tenth part covered. Ci.-st. from N.W.? Balloon lost while changing eye-pieces. Barometer steady.
	2500	325	9·5	+5·5	−7·5		
	2000	340	7·0	+2·5	−6·5		
	1750	350	6·5	+1·0	−6·0		
	1500	355	5·5	+0·5	−5·5		
	1250	350	6·5	+1·5	−6·5		
	1000	315	4·1	+2·9	−2·9	2·3	*Pressure Distribution* (7 h.).
	750	260	1·3	+1·3	+0·2		
	500	160	0·9	−0·3	+0·8		High pressure over British Isles and France. Lows, Baltic and North Atlantic.
100 m. above ground.	340	140	1·3	−0·8	+1·0		
Anemometer.	250	155	2·0	−0·8	+1·8		
Geostrophic wind.	(at 7 h.)	320	7	+5	−5	...	Weight of balloon 18·8 gm., free lift 47·3 gm.

Eskdalemuir. No. 1528. May 22, 1915. 12 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4430	...	...	...	...		Atmosphere very hazy. Sky seven-tenths covered with Ci.; Ci.-St.; A.-Cu., all from S.W., Fr.-Cu.; Cu. from N. Barometer steady. Balloon passed through Fr.-Cu. at 1300 metres height.
	4000	210	2·7	+1·3	+2·4		
	3500	235	2·0	+1·7	+1·1		
	3000	210	1·6	+0·8	+1·4		
	2500	240	2·3	+2·0	+1·2		
	2000	355	1·7	+0·2	−1·7		
	1750	15	1·5	−0·4	−1·4		
	1500	40	1·7	−1·1	−1·3		
	1250	35	3·0	−1·7	−2·5	2·5	*Pressure Distribution* (7 h.).
	1000	50	3·6	−2·7	−2·3		
	750	60	2·2	−1·9	−1·1		
	500	80	2·5	−2·4	−0·5		High pressure ridge running S.W.-N.E. across the country.
100 m. above ground.	340	80	2·9	−2·9	−0·5		
Anemometer.	250	90	2·0	−2·0	0·0		
Geostrophic wind.	(at 13 h.)	60 ?	4	−3	−2	...	Weight of balloon 18·6 gm., free lift 60·3 gm.

Eskdalemuir. No. 1529. May 24, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2200	...	...	...	...		Atmosphere very clear. Ci., 1, on horizon. Direction appeared to be from S.E. Barometer falling slightly.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	85	9·0	− 9·0	−0·5		*Pressure Distribution* (7 h.).
	1750	90	8·5	− 8·5	0·0		
	1500	85	7·0	− 7·0	−0·5		
	1250	95	8·5	− 8·5	+1·0	2·5	High pressure centred over East Scotland.
	1000	100	10·0	−10·0	+2·0		
	750	90	7·0	− 7·0	0·0		
	500	75	5·0	− 5·0	−1·0		
100 m. above ground.	340	60	3·5	− 3·0	−1·9		
Anemometer.	250	45	5·0	− 3·5	−3·5		
Geostrophic wind.	(at 7 h.)	130	3	− 2	+2	...	Weight of balloon 19·2 gm., free lift 65·3 gm.

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1530. May 24, 1915. 11 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2280	...	...	...	...	2·3	Atmosphere very clear. Ci. ; Ci.-Cu. ; A.-Cu. ; Fr.-Cu.; all from S.E. Four to five-tenths of sky covered. Radiant point of Cirrus S.E. Balloon lost sight of in distance. Barometer falling moderately.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	65	7·5	−7·0	−3·0		
	1750	70	4·6	−4·3	−1·7		
	1500	100	4·4	−4·3	+0·7		
	1250	95	6·5	−6·5	+0·5		*Pressure Distribution* (7 h.).
	1000	100	9·5	−9·5	+1·5		
	750						High pressure centred over East Scotland.
	500	70	4·5	−4·2	−1·5		
100 m. above ground.	340						
Anemometer.	250	60	5·0	−4·5	−2·5		
Geostrophic wind.	(at 7 h.)	130	3	−2	+2	...	Weight of balloon 14 gm., free lift 40 gm.
	(at 13 h.)	*Indeterminate.*			...	...	

Eskdalemuir. No. 1531. May 25, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3830	...	...	...	...	2·6	Atmosphere clear. No clouds. Barometer falling slightly.
	3500	160	6·5	−2·5	+6·0		
	3000	140	6·0	−3·5	+4·5		
	2500	145	4·9	−2·7	+4·1		*Pressure Distribution* (7 h.).
	2000	185	6·0	+0·5	+6·0		
	1750	165	6·0	−2·0	+6·0		
	1500	140	6·0	−3·5	+4·5		High pressure North Sea, Scotland, and to the westward. Low over Spain.
	1250	140	5·5	−3·5	+4·0		
	1000	145	5·0	−3·0	+4·0		
	750	130	4·7	−3·5	+3·1		
	500	55	3·1	−2·5	−1·8		
	340	50	4·3	−3·3	−2·8		
	250	60	4·8	−4·2	−2·4		
Geostrophic wind.	(at 7 h.)	140	3	−2	+2	...	Weight of balloon 19·3 gm., free lift 79·3 gm.

Eskdalemuir. No. 1532. May 25, 1915. 12 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2940	...	...	...	...	2·0	Atmosphere clear. Ci., Ci.-St. from S.W. Sky three-tenths covered. Balloon lost in distance. Barometer falling moderately.
	2500	205	3·4	+1·3	+3·1		
	2000	175	3·9	−0·2	+3·9		
	1750	155	3·6	−1·6	+3·2		
	1500	155	1·0	−0·6	+0·8		
	1250	100	4·7	−4·6	+1·0		
	1000	175	1·1	−0·1	+1·1		
	750	175	1·1	−0·1	+1·1		*Pressure Distribution* (7 h.).
	500	175	1·7	−0·2	+1·7		
100 m. above ground.	340	170	1·4	−0·3	+1·4		High pressure North Sea, Scotland, and to the westward. Low over Spain.
Anemometer.	250	165	1·2	−0·3	+1·2		
Geostrophic wind.	(at 13 h.)	90	6	−6	0	...	Weight of balloon 11 gm., free lift 21 gm.

South Farnborough. No. 241. May 5, 1915. 9 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2000	...	...	...	...	2·4	Mist at first. A. Cu. ? Lost in cloud.
	...	...	...	...	...		
	2000	210	11·5	+6·0	+10·0		
	1750	205	11·5	+5·0	+10·5		
	1500	205	10·5	+4·5	+ 9·5		
	1250	205	8·0	+3·5	+ 7·0		*Pressure Distribution* (7 h.).
	1000	210	6·0	+3·0	+ 5·0		
	750	225	2·0	+1·4	+ 1·4		Anticyclone over N.E. Germany. Shallow low stretching southwards from Iceland.
	500	180	2·0	0·0	+ 2·0		
	170	130	1·0	−0·8	+ 0·6		
	105	110	light	...	...		
Geostrophic wind.	(at 7 h.)	110	5	−5	+ 2	...	Approx. weights : balloon 12 gm., free lift 45 gm.
	(at 13 h.)	*Indeterminate.*			...	...	

South Farnborough. No. 242. May 6, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3700	230	7·0	+5·4	+4·5	2·4	A.-Cu. Balloon certainly below cloud sheet up to 3400 metres, but probably lost in cloud.
	3500	230	5·5	+4·0	+3·5		
	3000	230	6·0	+4·5	+4·0		
	2500	235	7·0	+5·5	+4·0		
	2000	220	4·5	+2·9	+3·4		
	1750	225	3·0	+2·1	+2·1		*Pressure Distribution* (7 h.)
	1500	270	3·5	+3·5	0·0		
	1250	280	2·5	+2·5	−0·4		Anticyclone over Eastern Europe. Pressure very uniform over Great Britain.
	1000	315	2·0	+1·4	−1·4		
	750	330	2·0	+1·0	−1·7		
	500	320	1·5	+0·9	−1·1		
100 m. above ground.	170	315	2·5	+1·8	−1·8		
Anemometer.	105	290	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Approx. weights : balloon 12 gm., free lift 45 gm.

South Farnborough. No. 243. May 7, 1915. 8 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2300	95	5·0	−5·0	+0·5	2·4	Atmosphere misty. Ci. and A.-Cu. Ci. from W.S.W. Balloon lost in haze.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	90	6·0	−6·0	0·0		
	1750	90	5·5	−5·5	0·0		*Pressure Distribution* (7 h.).
	1500	95	4·5	−4·5	+0·4		
	1250	100	5·5	−5·5	+1·0		Very uniform pressure British Isles and North Sea. Shallow low over Bay of Biscay.
	1000	100	5·5	−5·5	+1·0		
	750	95	5·0	−5·0	+0·5		
	500	90	6·0	−6·0	0·0		
	170	65	2·5	−2·3	−1·1		
	105	70	light	...	...		
Geostrophic wind.	(at 7 h.)	90	6	−6	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	130	7	−5	+5	...	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 244. May 8, 1915. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	6000	280	2·5	+ 2·5	−0·4		Atmosphere hazy. Ci. and Ci.-St. 4; Ci. moving slowly from S.W. Balloon lost in distance. Local minimum in velocity at 3200 m., 2·0 m/sec. (−2·0, W.-E.; −0·3, S.-N.). *Pressure Distribution* (7 h.). Anticyclone Scotland to Iceland. Depression S. of Spain.
	...	...	...	...	...		
	...	...	...	...	...		
	5000	130	2·5	− 1·9	+1·6		
	4000	80	6·0	− 6·0	−1·0		
	3500	90	4·0	− 4·0	0·0		
	3000	70	3·5	− 3·3	−1·2		
	2500	85	11·0	−11·0	−1·0		
	2000	90	9·0	− 9·0	0·0		
	1750	90	12·0	−12·0	0·0	2·4	
	1500	80	12·5	−12·5	−2·0		
	1250	80	13·0	−13·0	−2·5		
	1000	80	13·0	−13·0	−2·5		
	750	85	13·5	−13·5	−1·0		
	500	85	13·5	−13·5	−1·0		
100 m. above ground.	170	60	7·0	− 6·0	−3·5		
Anemometer.	105	70	4·0	− 3·8	−1·4		
Geostrophic wind.	(at 7 h.)	90	14	−14	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 245. May 11, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	7800	350	8·0	+1·5	−8·0		Atmosphere clear. Balloon lost in distance. *Pressure Distribution* (7 h.). Station in central region between three highs (Iceland, Germany and Azores), and three lows (Norway, W. Mediterranean, and N. Atlantic).
	7000	310	7·0	+5·5	−4·5		
	6000	310	6·0	+4·5	−4·0		
	5000	335	4·0	+1·7	−3·6		
	4000	310	4·5	+3·4	−2·9		
	3500	295	3·5	+3·2	−1·5		
	3000	310	4·0	+3·1	−2·6		
	2500	310	4·0	+3·1	−2·6		
	2000	320	4·0	+2·6	−3·1		
	1750	340	4·0	+1·4	−3·8	2·4	
	1500	330	4·5	+2·3	−3·9		
	1250	335	2·5	+1·1	−2·3		
	1000	25	3·5	−1·5	−3·2		
	750	45	8·5	−6·0	−6·0		
	500	30	7·0	−3·5	−6·0		
	170	25	1·5	−0·6	−1·4		
	105	20	light	...	...		
	(at 7 h.)	40	5	−3	−4	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 246. May 11, 1915. 15 h. 30 m. G.M.T.

Greatest height.	7000	260	13·0	+13·0	+2·5		
	6000	285	9·0	+ 8·5	−2·5		
	5000	280	6·0	+ 6·0	−1·0		*Pressure Distribution* (18 h.).
	4000	260	5·5	+ 5·5	+1·0		
	3500	280	4·0	+ 3·9	−0·7		Station in central area between three highs and three lows. (As preceding ascent.)
	3000	325	3·0	+ 1·7	−2·5		
	2500	310	2·0	+ 1·5	−1·3		
	2000	360	1·0	0·0	−1·0		
	1750	330	2·0	+ 1·0	−1·7	2·0	
	1500	5	1·0	− 0·1	−1·0		
	1250	145	0·5	− 0·3	+0·4		
	1000	290	0·5	+ 0·5	−0·2		
	750	340	1·5	+ 0·5	−1·4		
	500	320	2·0	+ 1·3	−1·5		
100 m. above ground.	250	300	2·0	+ 1·7	−1·0		
	170	?	?	...	...		
Anemometer.	105	330	light	...	...		
Geostrophic wind.	(at 13 h.)	*Indeterminate.*		...	...		Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 18 h.)	*Indeterminate.*		...	...		

South Farnborough. No. 248. May 15, 1915. 7 h. 0 m. G.M.T.

	2430	340	6·5	+2·0	−6·0		Atmosphere fairly clear. A little St.-Cu. Balloon lost from field of view while moving rapidly, though previously quite distinct. *Pressure Distribution* (7 h.). Uniform high pressure over British Isles and France. Lows, Baltic and N. Atlantic.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	335	3·5	+1·5	−3·2		
	1750	300	2·0	+1·0	−1·7	2·4	
	1500	265	2·5	+2·5	+0·2		
	1250	245	3·0	+2·7	+1·3		
	1000	245	3·5	+3·2	+1·5		
	750	270	4·0	+4·0	0·0		
	500	270	4·0	+4·0	0·0		
	170	270	2·5	+2·5	0·0		
	105	270	light	...	...		
	(at 7 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 249. May 19, 1915. 7 h. 15 m. G.M.T.

Greatest height.	6700	325	9·0	+5·0	−7·5		Detached Cu. moving from N.E. Balloon frequently hidden by clouds after 2200 metres; finally lost behind cloud. *Pressure Distribution* (7 h.). Station in col between two lows over N. Atlantic and Austria, and highs over Norway and Spain.
	...	...	...	...	...		
	6000	315	6·5	+4·5	−4·5		
	5000	310	7·5	+5·5	−5·0		
	4000	335	3·5	+1·5	−3·2		
	3500	335	3·5	+1·5	−3·2		
	3000	330	4·0	+2·0	−3·5		
	2500	85	3·5	−3·5	−0·3		
	2000	45	4·5	−3·2	−3·2		
	1750	15	5·0	−1·3	−4·8	2·4	
	1500	340	4·0	+1·4	−3·8		
	1250	320	3·5	+2·2	−2·7		
	1000	340	3·0	+1·0	−2·8		
	750	20	3·0	−1·0	−2·8		
	500	35	5·0	−3·0	−4·0		
100 m. above ground.	170	25	6·0	−2·5	−5·5		
Anemometer.	105	20	0·5	−0·2	−0·5		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 250. May 19, 1915. 11 h. 55 m. G.M.T.

	7200	280	2·0	+2·0	−0·3		Balloon lost in distance. Local minimum in velocity at 850 m. 0·2 m/s. (+0·2, W.-E.; −0·1, S.-N). Local maximum at 600 m. 5·0 m/s. (+5·0, W.-E.; −1·0, S.-N.). *Pressure Distribution* (7 h.). Station in col between two lows over N. Atlantic and Austria, and highs over Norway and Spain. During the morning the Atlantic low moved eastward.
	7000	300	2·5	+2·2	−1·3		
	6000	280	5·0	+5·0	−1·0		
	5000	285	6·0	+6·0	−1·5		
	4000	245	3·0	+2·9	+0·8		
	3500	310	1·5	+1·1	−1·0		
	3000	325	0·5	+0·3	−0·4		
	2500	150	1·0	−0·5	+0·9		
	2000	145	2·0	−1·1	+1·6		
	1750	145	1·0	−0·6	+0·8	2·0	
	1500	300	1·0	+0·9	−0·5		
	1250	260	2·0	+2·0	+0·3		
	1000	205	1·5	+0·6	+1·4		
	750	295	3·0	+2·7	−1·3		
	500	110	3·0	−2·8	+1·0		
	170	?	?	...	...		
	105	135	light	and variable			
	(at 7 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	180	7	0	+7		

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 251. May 24, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2100	...	...	...	...	2·4	Atmosphere fairly clear. No cloud. Towards end of ascent balloon appeared to get into a haze, which must have been very high. Lost in distance. Maximum velocity occurred at 550 m. 16·5 m/s. (−16·5, W.-E.; −1·5, S.-N.).
	2000	85	13·5	−13·5	−1·0		
	1750	85	12·5	−12·5	−1·0		
	1500	85	13·5	−13·5	−1·0		
	1250	80	16·0	−16·0	−3·0		
	1000	80	15·0	−15·0	−2·5		
	750	90	14·0	−14·0	0·0		
	500	75	15·5	−15·0	−4·0		
100 m. above ground.	170	55	9·5	−8·0	−5·5		*Pressure Distribution* (7 h.).
Anemometer.	105	55	5·5	−4·5	−3·0		High pressure centred over East Scotland.
Geostrophic wind.	(at 7 h.)	90	15	−15	0		Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 252. May 24, 1915. 11 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2450	100	17·5	−17·0	+3·0	2·4	Atmosphere fairly clear, but some haze. No cloud. Balloon lost in distance and haze. Local minimum in velocity at 1850 m. 9·5 m/s. (−9·5, W.-E.,; −1·0, S.-N.).
	2000	95	12·0	−12·0	+1·0		
	1750	105	11·0	−10·5	+3·0		
	1500	90	19·0	−19·0	0·0		
	1250	80	13·0	−13·0	−2·5		
	1000	80	11·0	−11·0	−2·0		
	750	65	12·5	−11·5	−5·5		
	500	55	16·5	−13·5	−9·5		
100 m. above ground.	170	55	9·0	−7·5	−5·0		*Pressure Distribution* (7 h.).
Anemometer.	105	65	8·0	−7·0	−3·5		High pressure centred over East Scotland.
Geostrophic wind.	(at 7 h.)	90	15	−15	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	90	14	−14	0	...	

South Farnborough. No. 253. May 25, 1915. 8 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3400	130	6·0	−4·5	+4·0	2·4	Atmosphere rather hazy. No cloud. Balloon lost in haze.
	...	...	...	...	...		
	3000	115	3·5	−3·2	+1·5		
	2500	125	8·5	−7·0	+5·0		
	2300	...	...	...	...		*Pressure Distribution* (7 h.).
	2000	120	14·0	−12·0	+7·0		
	1750	110	14·0	−13·0	+5·0		High pressure North Sea, Scotland, and to the westward. Low over Spain.
	1500	110	12·0	−11·5	+4·0		
	1250	110	11·0	−10·5	+4·0		
	1000	100	10·5	−10·5	+2·0		
	750	90	8·0	−8·0	0·0		
	500	70	7·5	−7·0	−2·5		
100 m. above ground.	170	40	4·5	−2·9	−3·4		
Anemometer.	105	?	?	...	...		
Geostrophic wind.	(at 7 h.)	90	12	−12	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	90	11	−11	0	...	

South Farnborough. No. 254. May 26, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3700	255	2·0	+1·9	+0·5	2·4	Atmosphere clear. A little Ci. Balloon lost while reading was being taken.
	3500	190	1·0	+0·2	+1·0		
	3000	160	0·5	−0·2	+0·5		
	2500	130	3·5	−2·7	+2·2		
	2300	115	4·5	−4·1	+1·9		*Pressure Distribution* (7 h.).
	2000	110	1·5	−1·4	+0·6		
	1750	105	2·0	−1·9	+0·5		Anticyclone southwards of Iceland. Shallow low over France and Spain.
	1500	85	4·0	−4·0	−0·3		
	1250	80	4·0	−3·9	−0·7		
	1000	85	4·0	−4·0	−0·3		
	750	75	6·5	−6·5	−1·5		
	500	65	9·0	−8·0	−4·0		
100 m. above ground.	170	45	3·0	−2·1	−2·1		
Anemometer.	105	45	light	...	...		
Geostrophic wind.	(at 7 h.)	90	11	−11	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 255. May 26, 1915. 11 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	6100	220	9·0	+6·0	+7·0	2·4	Atmosphere clear. Balloon appeared like a star during last part of ascent. No cloud at time of ascent; a good deal of small Cu. formed by 13 h. 30 m. Minimum velocity at 2750 m. 1·0 m/s. (+0·4, W.-E.; −0·9, S.-N.)
	6000	215	10·0	+5·5	+8·0		
	5000	195	6·5	+1·5	+6·5		
	4000	240	4·0	+3·5	+2·0		
	3500	235	4·0	+3·3	+2·3		
	3000	360	1·5	0·0	−1·5		
	2500	55	2·0	−1·6	−1·1		
	2000	95	2·5	−2·5	+0·2		
	1750	110	2·0	−1·9	+0·7		
	1500	110	2·5	−2·3	+0·9		
	1250	105	4·0	−3·9	+1·0		
	1000	90	6·5	−6·5	0·0		*Pressure Distribution* (7 h.).
	750	60	5·5	−5·0	−3·0		
	500	45	7·0	−5·0	−5·0		Anticyclone southwards of Iceland. Shallow low over France and Spain.
100 m. above ground.	170	55	7·0	−5·5	−4·0		
Anemometer.	105	35	3·5	−2·0	−2·9		
Geostrophic wind.	(at 7 h.)	90	11	−11	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	90	10	−10	0	...	

South Farnborough. No. 256. May 27, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4000	325	2·5	+1·4	−2·0	2·4	Clear. Ci. 3. Balloon difficult to see at times, with a considerable shimmer. At other times visibility very good.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	3500	340	4·0	+1·4	−3·8		
	3000	360	5·5	0·0	−5·5		
	2500	15	4·0	−1·0	−3·9		
	2000	45	4·5	−3·2	−3·2		
	1750	35	5·0	−3·0	−4·0		*Pressure Distribution* (7 h.).
	1500	35	7·5	−4·5	−6·0		
	1250	50	12·5	−9·5	−8·0		Anticyclone, Scotland to Iceland. Shallow low, South Europe and Mediterranean.
	1000	50	15·0	−11·5	−9·5		
	750	55	13·0	−10·5	−7·5		
	500	45	9·5	−6·5	−6·5		
100 m. above ground.	170	40	5·0	−3·0	−4·0		
Anemometer.	105	45	6·5	−4·5	−4·5		
Geostrophic wind.	(at 7 h.)	80	14	−14	−2	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 257. May 27, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	Metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3300	345	3·0	+ 0·8	−2·9		Local maximum in velocity at 2750 m. 7·0 m/s. (−2·5, W.-E.; −6·5, S.-N.).
	3000	65	4·0	− 3·6	−1·7		
	2500	45	5·0	− 3·5	−3·5		
	2000	60	5·0	− 4·5	−2·5		*Pressure Distribution* (7 h.).
	1750	60	6·5	− 5·5	−3·5		
	1500	50	10·0	− 7·5	−6·5		Anticyclone Scotland to Iceland. Shallow low, S. Europe and Mediterranean.
	1250	45	10·5	− 7·5	−7·5	2·4	
	1000	55	9·0	− 7·5	−5·0		
	750	50	10·0	− 7·5	−6·5		
	500	45	6·5	− 4·5	−4·5		
100 m. above ground.	170	?	?	...	...		
Anemometer.	105	45	8·0	− 5·5	−5·5		
Geostrophic wind.	(at 7 h.)	80	14	−14	−2	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	90	14	−14	0	...	

South Farnborough. No. 259. May 29, 1915. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	Metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2150	340	5·0	+ 1·5	−4·5		Atmosphere hazy.
	...	...	...	...	...		No cloud, St.-Cu. having cleared off half an hour before ascent.
	...	...	...	...	...		Balloon lost in haze.
	2000	340	5·5	+ 2·0	− 5·0		Mean geostrophic wind over S. England, N. 5 m/s.; but uniform pressure in neighbourhood of station.
	1750	340	6·5	+ 2·0	− 6·0		
	1500	335	6·0	+ 2·5	− 5·5		
	1250	320	4·0	+ 2·6	− 3·1		
	1000	300	4·0	+ 3·5	− 2·0	2·4	
	750	310	3·0	+ 2·3	− 1·9		
	500	310	3·5	+ 2·3	− 2·7		*Pressure Distribution* (7 h.).
100 m. above ground.	170	245	1·5	+ 1·4	+ 0·6		Anticyclone Iceland and stretching southwards.
Anemometer.	105	180	light	...	...		Depressions S. Norway and France.
Geostrophic wind.	(at 7 h.)	*Indeterminate.*				...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 260. May 31, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	Metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2550	...	...	...	...		Atmosphere hazy.
	...	...	...	...	...		No cloud.
	...	...	...	...	...		Balloon lost in distance.
	...	...	...	...	...		Station near crest of high-pressure ridge running E. and W.
	2500	355	4·0	+ 0·3	−4·0		
	2000	15	5·0	− 1·5	−5·0		
	1750	355	3·5	+ 0·3	−3·5		
	1500	325	1·5	+ 0·9	−1·2		*Pressure Distribution* (7 h.).
	1250	340	3·5	+ 1·2	−3·3	2·4	
	1000	340	5·0	+ 1·5	−4·5		High over England and stretching westwards to Atlantic. Low north of Faröe.
	750	340	4·0	+ 1·4	−3·8		
	500	325	4·0	+ 2·3	−3·3		
100 m. above ground.	170	?	?	...	...		
Anemometer.	105	335	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*				...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 261. May 31, 1915. 11 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	Metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4250	60	4·0	− 3·5	−2·0		Atmosphere clear, but a good deal of shimmer.
	4000	60	4·5	− 3·9	−2·3		Small Cu. clouds.
	3500	55	3·0	− 2·5	−1·7		Balloon lost behind cloud.
	3000	5	4·5	− 0·4	−4·5		Local maximum in velocity at 3300 m. 6·0 m/s. (−3·5, W.-E.; −5·0, S.-N.).
	2500	340	2·0	+ 0·7	−1·9		
	2000	10	2·0	− 0·3	−2·0		
	1750	35	4·0	− 2·3	−3·3		
	1500	35	4·0	− 2·3	−3·3		
	1250	355	4·0	+ 0·3	−4·0	2·0	*Pressure Distribution* (7 h.).
	1000	15	2·0	− 0·5	−1·9		
	750	335	1·5	+ 0·6	−1·4		High over England and stretching westwards to Atlantic. Low north of Faröe.
	500	290	1·5	+ 1·4	−0·5		
100 m. above ground.	170	10	4·5	− 0·8	−4·4		
Anemometer.	105	10	light	...	..		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*				...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	*Indeterminate.*				...	

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:—Aberdeen, 4; Eskdalemuir, 3; South Farnborough, 12.

11. Soundings with Registering Balloons.

None.

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E, 180° = S.).	Computed for 1000 m. Velocity. V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
4	St.-Cu.	172	6·0	−0·8	+ 5·9	Transition type between Cu and St.-Cu.
5	A.-Cu.	198	3·3	+1·0	+ 3·2	Partially formed cloudlets.
6	St.-Cu.	292	2·3	+2·1	− 0·9	St.-Cu. fused into sheet.
7	St.-Cu.	266	2·6	+2·6	+ 0·2	Thin high type of St.-Cu.
12	Cu.-Nb.	357	1·7	+0·1	− 1·7	Heavy sheet of Cu.-Nb.; base measured.
13	Cu.-Nb.	323	2·0	+1·2	− 1·6	
14	Cu.-Nb.	315	4·0	+2·8	− 2·8	Apical part of cloud measured.
18	St.-Cu.	4	5·0	−0·3	− 5·0	Fine normal type.
19	St.-Cu.	187	6·2	+0·7	+ 6·1	St.-Cu. in closed sheet.
22	Ci.-Cu.	211	3·0	+1·6	+ 2·6	Ci.-Cu. to A.-Cu. in bands, Radiant point S.S.W.
25	Ci.	194	1·8	+0·4	+ 1·7	Earlier in morning Ci.-Cu. in lenticular bands from S.W.
26	St.-Cu.	359	8·6	+0·2	− 8·6	
27	St.-Cu.	347	5·4	+1·2	− 5·2	Cloud of transition type between Cu. and St.-Cu.
31	Cu.	265	4·6	+4·6	+ 0·4	Cloud had been Nb. from S.W. earlier in morning.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Angström Pyrheliometer.			Bright Sunshine.		Radiation by Angström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec. Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm²	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	4·0	25	1033	26	36	11 40	36	7·4	46	—	—	—	0·9	5	—	—	—	—	0·2	1
2	7·5	46	1543	38	62	13 20	25	9·7	60	—	—	—	—	—	—	—	—	—	—	—
3	0·1	1	947	23	55	12 30	55	—	—	—	—	—	1·5	9	—	—	—	—	12·2	74
4	8·5	52	1885	47	78	13 10	76	7·5	46	65	57	Clear	10·1	59	—	—	—	—	8·8	54
5	4·7	29	1505	37	73	13 0	73	6·2	38	—	—	—	7·3	43	—	—	—	—	6·1	37
6	11·2	68	2089	51	85	13 0	62	8·7	53	—	—	—	1·5	9	—	—	—	—	8·1	49
7	10·9	66	2065	51	76	14 0	73	10·3	63	64	56	Clear	—	—	—	—	—	—	7·7	47
8	11·0	67	2269	56	73	13 5	74	11·2	68	73	64	Clear	4·4	26	—	—	—	—	8·9	54
9	1·5	9	1080	26	60	12 50	46	3·1	19	—	—	—	11·3	66	—	—	—	—	1·8	11
10	1·7	10	1220	30	76	14 0	36	0·7	4	—	—	—	1·2	7	—	—	—	—	5·0	30
11	4·5	27	1533	37	61	12 50	33	5·3	32	—	—	—	7·6	44	—	—	—	—	8·3	50
12	8·0	48	1768	43	57	14 20	51	7·1	43	—	—	—	13·7	79	—	—	—	—	8·2	49
13	9·5	58	1879	46	58	11 20	58	10·1	61	22	19	Hazy	9·9	57	—	—	—	—	10·7	64
14	11·9	72	2299	56	78	11 10	78	13·4	81	61	54	Clear	15·3	88	12 32	Clear	1·18	92	6·6	40
15	12·5	76	2061	50	71	12 55	69	*x* 13·7	83	51	45	Hazy	14·6	84	8 11	Ci.-haze	1·71	69	2·8	17
16	8·8	53	1921	47	69	12 40	63	9·1	55	—	—	—	*x* 15·6	90	13 3	Hazy	1·19	82	2·7	16
17	7·9	48	1863	45	71	12 55	72	7·7	46	50	44	Hazy	8·9	51	—	—	—	—	7·1	43
18	6·2	37	1901	46	81	11 25	80	6·6	40	—	—	—	14·6	84	12 27	Hazy	1·18	83	2·0	12
19	13·1	79	2391	58	82	13 10	80	12·6	76	67	59	Hazy	10·3	59	—	—	—	—	7·8	47
20	*x* 13·8	83	*x* 2443	59	77	11 25	76	12·5	75	73	64	Clear	10·3	59	—	—	—	—	5·7	34
21	9·7	58	1742	42	66	11 45	66	9·0	54	56	49	Ci.-St.	6·5	37	—	—	—	—	7·7	46
22	12·0	72	2227	54	72	13 5	70	11·0	66	—	—	—	6·5	37	—	—	—	—	*x* 14·5	87
23	0·8	5	773	19	56	8 35	24	1·0	6	—	—	—	0·6	3	—	—	—	—	0·2	1
24	—	—	*n* 400	10	*n* 21	11 55	21	—	—	—	—	—	0·2	1	—	—	—	—	—	—
25	3·4	20	1533	37	78	11 50	78	3·9	23	—	—	—	1·7	10	—	—	—	—	—	—
26	11·3	68	2014	49	*x* 93	11 15	*x* 90	10·0	60	—	—	—	—	—	—	—	—	—	0·8	5
27	4·3	26	1340	33	92	13 0	67	4·4	27	—	—	—	2·3	13	—	—	—	—	—	—
28	1·9	12	1144	28	92	13 10	81	2·4	15	—	—	—	8·8	51	12 9	Hazy	1·15	78	1·6	10
29	4·6	28	1345	33	85	14 15	65	4·0	24	—	—	—	5·5	32	—	—	—	—	0·8	5
30	2·6	16	1192	29	85	12 45	36	2·1	13	—	—	—	1·1	6	—	—	—	—	12·2	73
Means	6·93	43	1647	40	71	—	60	7·03	43	—	—	—	6·40	38	—	—	—	—	5·30	32
Normal	6·97	43	—	—	—	—	—	6·43	39	—	—	—	5·20	30	—	—	—	—	6·33	39
	←4 years→							←30 years→					←4 years→						←30 years→	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Declination West.	Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.		γ	′	′
1	1019·3	1017·5	85·5	83·6	88	82	10·5	10·5	73	83	20	2	16	2	9	2	—	Fair.	…	…	…
2	1009·5	1008·2	84·8	84·3	*n* 86	82	11·5	12·5	83	93	15	10	24	2	10●	7	*x* 34·9	≡⁰●	…	…	…
3	1015·5	1018·4	86·6	85·4	89	82	13·5	13·2	88	92	—	1	16	2	10∞	8	—	Fine.	…	…	…
4	1020·3	1019·3	88·5	86·4	91	85	14·2	14·6	81	95	14	3	15	4	10	10≡⁰	2·6	Fine. Clouds low 21 h.	17890	20 5·4	…
5	1020·4	1020·8	85·4	86·2	89	84	12·2	13·5	85	89	31	6	—	1	10	10	8·3	Fair.	…	…	…
6	1015·2	1015·2	86·5	85·4	90	85	14·9	12·9	97	90	15	5	17	2	10●⁰≡⁰	8	0·6	Fair. Clouds low 21 h.	…	…	…
7	1010·1	1009·8	87·6	85·4	89	85	14·6	11·5	88	80	15	6	—	1	10	8	1·5	Fair. Clouds low early.	…	…	…
8	1006·9	1010·5	85·4	84·7	89	84	11·2	10·8	78	79	17	5	17	3	10	1	—	Fair.	…	…	…
9	1011·3	1012·2	87·0	85·2	90	82	12·5	12·2	78	85	15	4	—	1	10	8	—	Fair.	…	…	…
10	1013·5	1013·3	87·0	88·6	91	83	11·5	12·5	73	72	5	6	6	4	8	10	1·2	Fair.	…	…	…
11	1014·5	1018·6	88·8	88·5	92	86	14·2	13·5	80	78	9	6	12	3	9∞	4	—	Fine.	…	…	…
12	1022·0	1021·1	89·6	91·7	93	85	12·9	11·9	68	*n* 55	9	5	8	7	1	9∞	—	Fine. ∞	…	…	…
13	1020·5	1020·0	92·9	90·8	*x* 96	86	14·2	11·5	62	57	7	4	—	0	1∞	10∞	—	Fine. ∞	…	…	…
14	1018·4	1017·2	92·7	89·3	95	85	13·9	10·5	61	57	9	7	8	5	8∞	5∞	—	Fine. ∞	…	…	…
15	1018·5	1020·5	89·6	87·7	91	*x* 87	14·2	14·9	76	89	10	4	—	0	8	8	0·1	Fair.	…	…	…
16	1019·9	1018·0	88·4	86·6	90	84	14·6	14·2	84	91	—	0	—	0	10	3∞	0·1	o. to fine in evening. Clouds low a.	…	…	…
17	1017·3	1017·0	90·7	89·2	94	83	14·2	14·6	70	80	10	3	10	4	6∞	10∞	—	Fair.	…	…	…
18	1017·8	1019·1	88·9	87·5	92	*x* 87	13·9	12·5	78	77	9	5	9	5	10∞	10∞	—	c.	…	…	…
19	1019·3	1018·0	89·6	87·6	92	85	12·5	11·9	67	72	9	4	11	2	4∞	1∞	—	Fair.	…	…	…
20	1013·6	1011·1	88·1	88·2	91	84	12·2	12·9	71	75	9	7	8	3	9∞	7	—	Fair. ∞	…	…	…
21	1010·9	1013·4	88·9	87·4	94	84	12·9	13·9	72	84	6	3	17	2	10	1∞	—	Fine.	17851	20 1·5	…
22	1014·7	1014·4	88·8	88·3	93	*n* 81	13·9	14·2	78	83	—	1	15	4	0∞	2∞	—	Fine. ∞	…	…	…
23	1011·4	1010·4	87·7	86·3	91	84	14·2	13·5	85	90	31	3	—	0	10∞	9∞	1·7	Fair to ≡⁰. ●⁰ from 15 h.	17845	20 3·1	68 8·6
24	1010·3	1009·4	85·6	86·3	88	84	12·9	12·5	90	83	—	0	5	4	10●∞	10∞	4·7	≡⁰●. Distant ↯ 13 h. 20 m.	…	…	…
25	1009·1	1011·2	86·7	87·1	89	84	12·9	13·2	84	83	5	7	2	3	10∞	10∞²	2·5	o. ∞²	…	…	…
26	1012·5	1013·7	86·4	86·6	89	86	13·2	13·2	85	85	32	4	30	5	10∞	10∞	—	c. Clouds low 21 h.	…	…	…
27	1012·9	1011·5	86·6	86·2	88	86	12·2	13·9	79	93	26	5	25	7	10	10●⁰	0·8	c. Clouds low p.	…	…	…
28	1008·9	1005·5	87·9	87·2	89	86	13·5	15·2	81	95	22	4	—	1	3∞	10	6·2	≡⁰●. Clouds low 21 h. [21 h.	…	…	…
29	1006·3	1009·3	87·5	86·8	91	86	15·6	14·9	95	94	21	5	24	6	10●	10	7·0	c. Showery. Clouds low early a. and	…	…	…
30	1012·0	1017·3	87·5	87·1	90	85	13·2	13·9	80	86	25	6	26	3	7	6	—	Fair. Clouds low early a.	…	…	…
Means	1014·4	1014·7	87·9	87·1	90·6	84·3	13·3	13·0	79	82		4·4		2·9	7·8	7·2	72·2	Monthly **Totals** or **Means**.	17862	20 3·3	68 8·6
Normal	1014·4	1014·6	87·2	86·3	89·8	83·7	13·2	13·0	80	84		4·7		4·1	—	—	90·4	**Normals**.			
	←40 years→						←40 years→				←30 years→						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—3/17. N. & Co., Ltd. **Gp. XV.**

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.	200+ °	200+ °	200+ °	cm.	cm.
1	1018·1	1017·3	85·8	84·8	91	*n* 77	9·1	11·2	63	81	—	1	—	0	0⊙⊙	1≡⁰	—	*n* 72	85·8	84·6	257	258
2	1018·1	1016·5	88·5	87·4	95	79	11·2	10·8	63	65	—	0	19	2	0⊙⊙	3⊙⊙	0·4	74	85·6	84·5	257	—
3	1016·3	1018·7	87·1	86·3	90	83	10·8	13·5	67	90	19	5	20	2	9	8≡⁰	—	77	86·2	84·5	256	—
4	1022·8	1023·6	86·9	88·3	96	85	13·5	14·2	86	82	21	2	18	2	10	1	—	83	86·6	84·5	255	—
5	1021·9	1021·6	90·5	90·8	96	84	15·2	14·9	77	73	20	5	—	1	8	3	—	81	87·5	84·6	254	—
6	1021·3	1018·9	91·4	88·2	95	85	15·9	13·9	76	82	18	2	20	2	8	1	—	83	88·3	84·7	252	—
7	1018·1	1013·6	87·8	93·0	100	84	14·9	17·9	89	78	—	0	—	1	4≡⁰	1	—	81	88·3	84·9	250	—
8	1009·9	1011·2	97·0	94·3	*r* 101	*x* 89	20·7	17·6	69	70	17	3	25	3	1	8	—	86	89·9	85·0	248	—
9	1012·6	1011·4	92·1	89·2	96	88	13·5	14·6	61	81	5	4	8	2	7≡⁰	10●	1·9	85	90·4	85·0	245	—
10	1012·4	1014·9	90·5	89·8	93	88	13·9	13·2	70	70	5	3	6	4	10	8	—	86	90·0	85·3	243	—
11	1019·3	1022·6	89·1	87·6	94	86	11·2	11·2	61	67	5	3	10	2	9	0⊙⊙	—	83	89·5	85·5	241	—
12	1024·4	1023·4	88·5	87·5	94	83	11·2	9·8	64	60	7	3	7	2	? 0⊙⊙	? 0⊙⊙	—	78	88·8	85·7	240	—
13	1022·9	1022·6	89·8	88·4	96	81	7·8	12·5	*n* 42	72	7	3	7	5	? 0⊙⊙	1	—	75	88·1	85·9	238	—
14	1023·2	1022·5	85·7	84·9	92	83	9·1	10·5	62	75	5	5	10	5	1	7	—	82	88·3	86·0	237	—
15	1023·2	1022·0	85·2	85·6	93	82	9·1	11·2	64	77	5	4	9	4	5	1⊙⊙	—	80	88·1	86·0	236	—
16	1022·0	1018·8	86·3	88·2	95	81	11·9	12·2	77	72	4	2	10	3	2⊙⊙	1≡⁰	—	76	88·3	86·0	235	—
17	1020·6	1021·8	85·1	86·3	93	83	11·2	10·8	78	70	4	3	6	6	2	10	—	77	88·5	86·0	234	—
18	1022·6	1021·5	85·6	83·6	90	82	8·8	8·5	61	68	5	5	9	5	7⊙⊙	1	—	80	88·7	86·1	233	—
19	1021·4	1021·4	85·0	85·2	91	79	8·1	9·1	60	64	6	4	8	3	4	0	—	75	87·7	86·0	232	—
20	1020·1	1015·1	87·1	86·9	95	78	9·5	10·8	59	68	11	2	10	2	1	1	—	*n* 72	88·0	86·2	231	—
21	1013·0	1012·9	89·6	88·7	95	80	10·8	11·9	56	67	—	1	—	1	3⊙⊙	1≡⁰	—	74	88·4	86·1	229	—
22	1016·1	1016·1	88·8	85·5	93	83	11·5	8·5	65	59	7	7	7	6	1⊙⊙	7	—	77	88·4	86·1	228	—
23	1013·8	1012·8	88·6	85·7	89	83	11·2	9·5	64	66	7	7	5	4	5≡⁰	10≡⁰	—	81	88·5	86·1	227	—
24	1012·7	1011·9	84·0	85·7	*n* 88	84	11·5	13·2	88	91	5	2	3	3	10≡⁰●⁰	10≡⁰●⁰	—	83	87·5	86·2	226	—
25	1011·2	1011·5	88·0	88·9	95	85	12·5	14·9	74	84	5	3	9	2	10	9≡⁰	—	85	87·6	86·2	225	—
26	1011·8	1011·8	90·4	88·2	95	87	12·2	11·5	62	67	20	5	18	2	4	7	4·4	85	89·0	86·2	224	—
27	1010·0	1008·1	87·1	87·0	92	85	13·5	13·9	84	87	17	3	21	2	9	6	*x* 4·7	81	89·0	86·3	223	—
28	1007·4	1008·0	88·9	88·3	93	84	14·2	12·9	79	74	23	3	23	4	10	10●	2·7	80	88·5	86·3	222	—
29	1006·6	1006·8	88·7	89·3	94	85	13·9	15·9	80	86	22	2	—	1	10●⁰	2	—	82	88·7	86·3	222	—
30	1007·4	1011·2	89·3	87·8	94	86	14·2	15·2	77	93	25	2	—	1	9	1≡⁰	0·7	83	89·0	86·3	221	221
Means	1016·7	1016·4	88·3	87·7	93·7	83·4	12·1	12·5	69	75	3·1		2·7		5·3	4·3	14·8	79·9	88·2	85·6	237	—
Normal	1015·4	1015·2	88·2	87·5	92·7	83·4	12·2	12·5	71	75	3·6		2·7		—	—	57·2 (40 years)	—	88·1	85·6	—	—
	40 years						40 years				30 years								11 years			

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	988·2	988·9	82·5	82·0	85	79	9·1	10·5	77	93	21	7	20	4	10	8	1·6		Dull and o. Showery afternoon.
2	988·6	984·8	83·6	81·5	86	80	11·5	9·5	89	88	17	5	18	5	10⊙⊙	10●	5·3		o. all day. ● from 21 h.
3	983·0	989·1	83·4	83·0	87	79	12·2	9·5	98	78	20	6	20	2	10	7	—		q. and ● till 7 h. ≡ *a*.
4	992·6	993·0	83·8	82·1	90	76	11·5	10·5	90	91	19	6	19	2	10⊙⊙	7	5·5		Fine and sunny.
5	989·1	993·7	84·5	80·7	90	76	11·5	8·5	87	81	28	3	26	4	9	1	—		≡⁰● early. Fine *p*.
6	992·8	989·4	85·2	84·0	88	*n* 73	8·8	12·2	63	93	—	1	17	3	9	10≡⁰	2·7		Bright intervals *a*. Showery afternoon.
7	988·3	986·1	84·8	85·0	89	82	13·5	12·5	99	89	18	7	19	2	10●⁰≡⁰	7	1·6		●⁰≡ *a*. Fine *p*.
8	981·8	982·5	87·0	84·1	89	82	14·6	11·9	91	90	—	1	20	8	10⊙⊙	8	—		o. *a*. Fair to fine afternoon.
9	985·7	985·9	85·2	83·6	90	80	9·8	9·1	69	72	20	6	—	0	7	10●	—		Fine to c. Fine afternoon. v.
10	988·3	991·0	86·2	85·0	91	82	10·8	10·8	71	77	6	2	—	1	7	10	—		Fair to fine.
11	993·5	994·5	87·5	84·9	93	81	10·8	11·2	67	80	5	2	—	1	9	0⊙⊙	—		Fair to fine. Much ≡⁰⊙⊙.
12	997·1	996·7	89·4	86·1	*x* 95	78	11·9	11·5	64	77	19	5	—	0	0⊙⊙	2⊙⊙	—		Very fine throughout.
13	998·6	999·8	88·7	81·1	91	79	12·5	8·8	71	83	4	6	3	3	2	1	—		Fair to fine all day.
14	998·9	997·6	84·2	81·1	88	78	8·5	8·1	65	75	5	7	3	7	2	0	—		Fine and cloudless.
15	997·7	996·7	86·7	83·2	92	78	9·5	8·5	61	68	5	4	—	2	1	1	—		Fine, bright, and warm.
16	995·7	993·5	88·6	85·5	94	78	12·2	11·2	70	77	5	3	32	5	1	1	—		Fine throughout.
17	997·4	998·3	82·2	77·1	87	74	9·8	6·8	85	84	3	8	4	2	10	4	—		Fine from 9 h. ⊕ 16 h.
18	997·8	995·8	83·8	80·4	89	*n* 73	8·5	6·8	66	65	5	6	1	2	3	3	—		Fine throughout.
19	995·0	993·1	87·2	84·5	92	74	6·8	9·5	*n* 43	69	8	2	—	1	1	7	—		Fine throughout.
20	991·0	987·1	87·9	83·2	93	75	9·1	10·2	55	82	21	3	—	0	7	2≡⁰	—		Fine and warm all day.
21	985·9	990·1	87·2	80·2	92	76	10·5	8·5	66	82	—	1	4	2	9	5	—		Fine to c.
22	991·3	990·0	85·1	82·3	89	77	9·1	10·2	65	87	5	3	2	2	8	5⊙⊙	—		Fair to fine.
23	988·3	989·6	85·5	82·0	87	79	9·5	8·8	67	79	14	3	6	3	10	10	—		o. all day.
24	990·2	988·7	81·5	80·9	*n* 84	77	8·1	8·5	73	80	5	9	2	7	10	10	—		o. all day; cold and gloomy.
25	987·2	986·8	83·4	84·3	87	80	10·2	11·9	82	89	2	8	2	3	8	10≡⁰	—		d. early. o. and gloomy.
26	985·4	983·1	84·3	84·3	87	83	12·2	11·9	92	90	2	6	1	3	10≡⁰	10	4·9		d. and ≡⁰ 1 h. ●² 11 h.–13 h.
27	981·8	980·7	86·7	86·6	91	*x* 84	14·2	13·5	90	88	—	1	2	3	10≡⁰	10≡⁰●	—		d. and ≡⁰ till 9 h. Distant ϒ 15 h.
28	979·7	978·7	86·6	84·8	92	83	12·2	12·2	77	89	6	4	3	4	9	8	—		o. at first.
29	978·5	978·9	86·4	85·6	93	*x* 84	11·9	13·5	77	93	—	1	16	2	10	9≡⁰	—		o. and ⊙⊙ ●. Distant ϒ *p*.
30	980·6	986·3	88·4	85·6	91	*x* 84	13·5	13·2	79	90	—	1	—	1	7⊙⊙	10⊙⊙	*x* 18·3		ϟ●² 10 h.–14 h.
Means	989·7	989·7	85·6	83·2	89·7	78·8	10·8	10·3	75	83	4·2		2·8		7·3	6·2	39·9	—	Monthly **Totals** or **Means**.
Normal 1911-14	986·0	986·2	85·5	83·7	88·9	79·8	11·2	10·9	78	85	5·6		3·8		—	—	90·2	—	**Normals**.

No record.

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism :—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 25 days; they are computed from the data for those days on which values at each of the four hours, 3^h, 9^h, 15^h, 21^h, are given in the table. A similar note applies to the values in Table 6.

x denotes the maximum and n the minimum value in the column. : Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·85.				Charge per cc. ×10²⁰.		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.												
		v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	Fine till 11 h. and from 16 h.	100	280	185	110	370	40	0·75	1	0	485	18 0	437	11 18	48	23·6	14 26	15·3	7 50	*n* 8·3
2	≡⁰ early. Fine. ∞	155	335	75	130	440	110	0·35	**0**	0	495	18 42	447	10 43	48	24·3	13 59	15·4	8 30	8·9
3	●⁰ 6 h.–7 h. Mostly dull.	75	185	45	195	540	560	0·25	0	0	495	17 50	445	11 50	50	24·4	14 26	13·4	8 5	11·0
4	Dull till 11 h., then fine.	45	95	100	215	370	410	0·70	0	0	493	17 48	457	12 21	36	23·8	13 58	13·4	7 55	10·4
5	Dull till 9 h. Fine later. v. *p.*	185	120	—	150	—	—	—	0	0	496	19 29	462	11 8	*n* 34	22·6	13 29	13·8	8 30	8·8
6	Fair to fine. v. *p.*	175	110	195	295	—	—	—	0	0	495	16 50	453	9 56	42	25·3	13 20	14·8	7 38	10·5
7	≡⁰ early. Fine from 9 h. v. *p.*	415	285	—	165	920	580	—	0	1	530	20 15	461	11 22	69	23·8	13 38	12·8	7 25	11·0
8	Fine till 16 h., then c. v. p.	175	150	120	—	300	280	1·25	**0**	1	510	0 19	429	14 47	81	26·2	14 12	13·2	5 58	13·0
9	Fine till 11 h. ● at times *p.*	75	390	−55	305	—	—	—	1	0	484	19 14	443	12 11	41	24·3	13 4	14·3	6 11	10·0
10	Fair to dull.	295	500	405	445	360	450	1·40	0	0	487	20 11	448	10 59	39	24·0	12 58	13·8	7 10	10·2
11	Fair to dull *a.* Fine *p.*	250	510	415	405	500	100	1·40	**0**	1	501	19 40	453	9 15	48	25·4	12 33	12·9	7 35	12·5
12	Fine. ∞²	165	390	445	465	—	—	—	0	2	495	3 40	420	8 47	75	**29·3**	13 35	2·7	23 50	26·6
13	Fine all day. ∞	230	340	220	280	—	—	—	0	2	505	20 3	389	10 20	116	27·4	13 39	4·4	0 9	23·0
14	Fine throughout. ∞ *p.*	110	340	470	270	560	260	1·35	0	1	495	19 48	424	10 58	71	23·4	14 38	12·3	7 58	11·1
15	Fine during day. ∞ *p.*	185	400	405	315	220	220	1·25	**0**	0	492	19 20	435	9 28	57	24·9	16 39	11·7	8 10	13·2
16	o. till 8 h., then fine.	240	335	175	335	320	190	0·80	0	1	510	15 53	435	10 43	75	**27·8**	15 18	11·4	**6 40**	16·4
17	Fine 9 h.–17 h. ; c. later.	110	**435**	**240**	205	660	560	1·00	0	2	*x* 618	17 43	*n* 159	9 30	*x* 459	*x* 42·8	13 29	*n* −29·0	17 37	*x* 71·8
18	Fine till noon, then dull to fair.	285	335	315	405	600	260	1·45	0	2	453	0 0	348	10 2	105	27·9	14 7	8·4	1 59	19·5
19	Fine.	480	340	250	360	—	—	—	0	0	456	18 27	402	10 42	54	23·4	12 59	13·3	7 37	10·1
20	Fine throughout. v.	110	215	150	205	—	—	—	0	0	**469**	18 30	403	10 21	66	24·5	14 13	11·8	6 38	12·7
21	Fine *a.* ; fair to fine later. ∞	150	405	425	**240**	20	120	1·15	0	2	**516**	15 30	408	10 27	108	28·3	15 13	12·6	4 35	15·7
22	∞ early. Fine throughout.	165	350	445	425	470	380	2·10	0	2	**497**	18 46	411	10 55	86	27·5	13 10	10·6	5 58	16·9
23	Fair to dull. ●⁰ 14 h. and 18 h.	205	405	260	400	—	—	—	1	0	471	20 15	410	13 12	61	24·8	12 58	12·5	2 33	12·3
24	Dull all day. ●⁰ 9 h., 18 h. and 21 h.	195	325	250	185	—	—	—	0	0	495	21 34	414	10 25	81	25·9	13 45	**12·7**	7 33	13·2
25	Dull to fine. c. 15 h.–17 h.	120	325	220	335	520	200	0·80	0	1	485	17 55	422	12 45	63	28·4	14 6	13·0	**6 49**	15·4
26	Fine. c. 13 h.–17 h.	20	175	110	230	—	—	—	1	1	506	19 44	424	9 40	82	23·8	14 9	10·2	23 49	13·6
27	●² 7 h. 50 m.–8 h. 30 m. Showery.	150	20	*z*±	165	—	—	—	2	0	477	18 0	424	9 23	53	23·4	14 30	11·3	0 0	12·1
28	Showery with bright intervals.	100	140	110	130	—	—	—	1	0	491	17 43	423	9 17	68	24·8	13 43	12·1	6 5	12·7
29	●⁰ 9 h. Fair to dull. [*p.*	240	230	165	195	760	600	0·75	0	1	487	0 30	413	11 50	74	26·1	13 48	13·4	6 33	12·7
30	Intermittent sun till 12 h. ☈●	55	110	*z*±	150	—	—	—	2	0	474	18 9	426	9 23	48	25·2	14 27	12·4	8 12	12·8
M.		171*	316*	241*	283*	—	—	—	—	—	495	—	417	—	78	25·9	—	10·7	—	15·2

6. Atmospheric Electricity and Terrestrial Magnetism :—Eskdalemuir.

Day.	Potential Gradient, Volts per metre.* Factor 5·96.				Charge per cc. ×10²⁰.		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.															
	v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			h m	γ	γ	h m	h m	γ	γ	h m	h m	γ	γ	h m
1	192	48	24	120	—	—	—	1 *b*	0	19 13	1026	963	11 3	15 36	106	62	9 25	19 43	177	158	9 46
2	168	96	32	−120	—	—	—	1 *a*	0	18 42	1038	972	11 42	16 4	104	62	9 16	19 2	184	157	11 38
3	24	24	16	88	—	—	—	0 *a*	**0**	17 50	1033	971	11 52	14 27	110	56	8 57	19 42	176	153	12 41
4	**96**	16	136	48	—	—	—	—	0	18 31	1032	990	12 17	14 36	115	57	8 10	19 26	177	**161**	11 46
5	8	88	...	...	650	130	—	—	**0**	17 50	1037	987	11 10	§	§	§	§	18 0	178	157	10 55
6	...	...	80	48	—	—	—	—	**0**	**16 47**	1039	980	11 13	§	§	§	§	5 37	178	158	11 10
7	...	497	56	312	—	—	—	—	1	20 15	1085	991	12 21	§	§	§	§	5 29	175	159	12 25
8	120	64	192	**160**	—	—	—	?1 *b*	1	{0 17 / 19 30}	1047	955	13 27	14 9	121	51	6 0	17 33	179	149	12 8
9	352	200	208	112	—	—	—	0 *a*	0	0 42	1035	967	12 20	14 40	115	55	8 8	17 47	178	161	13 24
10	48	176	48	120	1040	1040	—	—	0	20 9	1032	977	10 59	{12 55 / 13 52}	106	56	8 29	16 57	174	155	11 19
11	160	72	168	200	260	0	—	—	1	19 39	1046	986	12 14	13 30	114	49	7 37	17 10	183	150	11 45
12	248	208	168	240	—	—	—	0 *a*	2	18 52	1046	946	8 46	13 42	140	− 36	23 51	17 59	218	120	24 0
13	240	168	128	248	—	—	—	0 *a*	2	19 59	1081	920	10 18	13 33	131	− 23	0 12	19 52	196	107	2 0
14	96	160	280	312	—	—	—	0 *a*	1	19 45	1052	963	10 54	17 40	105	40	6 58	19 22	191	135	3 55
15	96	280	232	296	980	460	—	0 *a*	0	19 12	1040	877	11 19	16 39	121	45	8 13	18 52	181	162	13 42
16	240	?144	208	168	650	330	—	0 *a*	1	16 14	1056	971	11 10	16 11	151	42	7 21	18 2	211?	156?	11 26
17	160	32	176	168	—	—	—	1 *a*	2	16 15	> 1426*x*	< 575*n*	9 35	16 19	*x* 388	−319*n*	7 51	16 25	> 486*x*	§	§
18	160	232	144	224	—	—	—	0 *a*	2	3 22	1003	822	**2 34**	14 9	**119**	− 40	2 24	17 30	198	*n* 18	2 33
19	72	...	96	80	—	—	—	—	0	20 46	1008	945	11 57	16 26	94	40	7 37	19 40	191	169	11 39
20	184	88	112	192	—	—	—	0 *a*	0	18 11	1025	952	11 12	17 28	103	34	6 37	19 48	198	167	12 28
21	128	104	48	96	—	—	—	0 *a*	2	17 43	1072	948	10 28	15 14	157	40	5 42	18 30	199	165	2 0
22	**48**	160	152	248	—	—	—	0 *a*	1	**18 38**	1075	937	12 31	14 52	128	12	6 17	18 36	207	137	7 28
23	88	64	32	56	—	—	—	1 *a*	1	20 13	1020	943	13 11	13 39	99	39	2 35	18 23	187	**145**	0 1
24	64	96	88	80	—	—	—	0 *a*	1	21 33	1047	**949**	11 18	21 32	104	43	8 18	7 18	179	159	13 33
25	72	120	112	160	—	—	—	1 *b*	2	17 54	1033	943	14 29	14 8	137	**45**	6 50	15 55	191	158	4 42
26	320	...	152	48	—	—	—	—	1	19 45	1069	967	9 40	14 15	109	29	23 48	19 38	189	153	12 10
27	64	232	*z*	**417**	—	—	—	1 *b*	1	18 40	1031	961	10 52	14 35	106	32	0 0	19 9	186	**163**	12 2
28	481	...	96	**96**	—	—	—	—	1	17 43	1039	958	11 17	14 20	110	34	8 38	{18 53 / 19 13}	178	147	11 48
29	152	128	160	−56	—	—	—	1 *b*	1	18 47	1035	930	11 48	15 14	123	41	6 35	16 49	192	144	2 55
30	152	88	*z*	152	—	—	—	2 *c*	0	4 53	1022	962	11 6	14 24	116	40	8 14	19 35	182	161	11 23
M.	143*	122*	130*	144*	—	—	—	—	—	—	1042‖	953‖	—	—	127¶	22¶	—	—	187‖	148‖	—

* 22 days. *See* note above. § Light failed. ‖ 29 days. ¶ 27 days.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	A_E.	A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
1	e	14 44	...	...	...	...	2800(?)	Azimuth nearly N. or S.
	P (?)	14 49 7	4	...	...	...	...	
	S (?)	14 53 38	...	...	...	...	...	
	M	15 1	14	31	27	...	...	
	F	18	...	...	...	...	...	
4	P	17 27 1	...	...	...	...	2550	$\alpha = 121°$. Epicentre, Greece.
	PR_1	17 28 41	...	...	...	...	...	
	S	17 31 10	9	...	...	...	...	
	L	17 33½	33	...	...	...	...	
	M	17 35	22	18	...	...	...	
	M	17 37	17	...	12	...	...	
	F	18½	...	...	...	...	...	
4	P	22 10 8	...	...	...	...	8770	
	S	22 20 7	...	...	...	...	...	
	SR_1	22 25½	...	...	...	...	...	
	M	22 45	19	9	11	...	...	
	F	23½	...	...	...	...	...	
6		8¼	...	...	...	...	...	Small waves.
6	M	9 5	20	2	...	...	...	
	M	9 5½	20	...	4	...	...	
6	P	21 42 25	...	..	...	...	8970	$\alpha = 235°$. Epicentre, lat. 11° S., long. 58° W.
	PR_1	21 46 8	...	...	...	...	...	
	S	21 52 34	...	...	...	...	...	
	i	21 53½	...	Large	...	...	...	
	M	22 9	...	...	...	...	...	
	F	1	...	...	...	...	...	
7	P	22 11 22	...	...	...	...	8420	$\alpha = 17°$ (?)
	S (?)	22 21 3	...	...	...	...	or	
	S (?)	22 22 1	...	...	...	...	9580	
	SR_1	22 26 49	...	...	...	...	...	
	L	22 38½	...	...	...	...	...	
	M	22 47½	23	6	...	...	...	
	M	22 49½	21	...	6	...	...	
	F	23½	...	...	...	...	...	
18	M	0 27	26	8	6	...	...	
	F	1	...	...	...	...	...	
22	P	3 37 29	...	...	...	...	9280	Principal phase inconspicuous.
	PR_1	3 41 12	...	...	...	...	...	
	S	3 47 53	...	...	...	...	...	
	i	3 49 46	...	...	...	...	...	
	SR_1	3 54 44	...	...	...	...	...	
	L (?)	4 7	...	...	...	...	...	
	F	5	...	...	...	...	...	
23		4 40	...	...	...	...	...	Small waves.
		4 50	14	...	...	...	...	
23		5 37	...	...	...	...	...	Small waves.
		6 0	14	...	...	...	...	
24	e	5 31 10	...	...	...	...	...	
	e	5 31 36	...	...	...	...	...	
	L	5 34½	...	...	...	...	...	
	M	5 37	19	6	4	...	...	
	e	6 34	17	1	½	...	...	
27	P	15 37 31	...	...	...	...	...	$\alpha = 16°$ (?)
	PR_1	15 40 27	...	...	...	...	...	
	e	15 43 37	...	...	...	...	...	
	S (?)	15 47 15	...	...	...	...	...	On N.S. instrument.
	S (?)	15 47 42	...	...	...	...	...	On E.W. instrument.
	S (?)	15 48 7	...	...	...	...	...	On N.S. instrument.
	SR_1	15 52 57	...	...	...	...	...	
	L	16 5	35	...	...	...	...	
	M	16 14	21	9	...	...	...	
	M	16 16	21	...	6	...	...	
	F	17	...	...	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	0·9	5	1·0	5	0·8	5·5	1·0	4·5
2	1·0	5	1·0	5·5	1·3	5	1·5	5
3	1·8	5·5	1·8	5	1·0	5	1·0	5
4	0·7	5	0·6	4·5	0·5	5	?Earthquake	
5	0·8	5·5	0·9	4·5	0·3	5·5	0·3	5
6	0·2	5	0·2	4·5	0·1	4	0·1	3·5
7	?Earthquake		0·1	4	0·1	4	0·1	4·5
8	0·1	4	0·2	4	0·2	4·5	0·3	5·5
9	0·7	5	0·4	4·5	0·3	5	0·2	5
10	0·1	4·5	0·1	4·5	0·0	...	0·0	...
11	0·0	...	0·0	...	0·0	...	0·1	3·5
12	0·1	3·5	0·2	4	0·1	4·5	0·1	3·5
13	0·2	4·5	0·0	...	0·2	5	0·0	...
14	0·0	...	0·0	...	0·0	...	0·1	4·5
15	0·0	...	0·1	4·5	0·2	5	0·1	5·5
16	0·0	...	0·0	...	0·0	...	0·0	...
17	0·0	...	0·0	...	0·1	3·5	0·3	4
18	0·2	4	0·2	4	0·1	3·5	0·0	...
19	0·0	...	0·0	...	0·1	4	0·0	...
20	0·0	...	0·0	...	0·0	...	0·0	...
21	0·1	4·5	0·0	...	0·2	4	0·1	4
22	0·2	5	0·3	5·5	0·5	5·5	0·4	4·5
23	0·6	5	?Earthquake		0·3	5	0·1	4
24	0·0	...	?Earthquake		0·0	...	0·0	...
25	0·0	...	0·0	...	0·0	...	0·0	...
26	0·0	...	0·0	...	0·0	...	0·0	...
27	0·0	...	0·0	...	0·0	...	0·0	...
28	0·0	...	0·0	...	0·1	3·5	0·1	4
29	0·3	4	0·2	4·5	0·3	4	0·1	4
30	0·2	4·5	0·1	4	0·1	5	0·2	4·5

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
1	14 53·0	15 2·2	Prolonged disturbance.
4	17 32·0	17 33·0	
,,	22 44·3	22 50·6	
6	...	9 10·5	Series of very small movements.
,,	21 46·0	22 23·5	Amplitude on trace 1·6 mm.
7	22 19·0	22 56·0	
18	0 30	0 38·5	
22	3 47·0	4 20	Series of very small movements.
23	4 40	...	Very small.
,,	5 37	...	Very small.
24	5 29·5	5 38·3	Very small.
27	16 10·9	16 16·0	

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	...	4·9	...	...	...	5·9	...	4·0	...	4·0	...	3·6	...	2·4	...	9·7	17	5
2	3·5	...	0·7	...	6·1	...	2·5	...	7·3	...	3·0	...	7·9	...	3·3	...	17·5	22	30
3	8·2	...	3·4	...	...	2·3	5·5	...	2·1	...	2·1	...	3·8	...	2·6	...	16·3	0	35
4	4·5	...	1·9	...	4·9	...	3·3	...	5·2	...	3·4	...	5·5	...	2·3	...	13·0	22	55
5	6·1	...	2·5	...	3·4	...	5·2	...	...	2·0	0·4	...	...	1·3	0·3	...	13·1	5	30
6	...	2·0	...	3·0	2·3	...	...	0·4	6·7	...	2·8	...	6·5	...	1·3	...	12·3	15	10
7	5·2	...	3·4	...	5·8	...	1·2	...	5·5	...	3·7	...	0·7	...	...	...	11·9	14	30
8	...	...	2·6	...	3·7	...	3·7	...	7·1	...	4·7	...	4·0	...	4·0	...	14·2	13	45
9	1·5	...	3·6	...	3·2	...	0·6	...	0·8	...	1·8	...	0·5	...	1·2	...	8·2	0	55
10	...	2·5	...	1·7	...	4·3	...	1·8	...	3·0	...	2·0	...	4·2	...	6·2	11·4	21	50
11	0·3	...	...	1·3	0·6	...	1·5	...	...	2·6	0·5	...	...	1·9	1·3	...	5·4	2	10
12	...	0·7	0·7	...	...	1·1	1·1	...	...	4·2	0·8	...	...	1·8	...	0·8	7·1	11	25
13	...	0·4	...	0·9	...	3·6	...	...	...	2·6	...	...	...	2·4	...	11·9	16·3	23	0
14	...	1·7	...	8·3	...	2·0	...	10·0	...	...	...	10·8	...	1·5	...	7·7	15·3	12	30
15	...	...	...	10·2	...	0·1	...	0·7	...	1·8	2·7	...	...	2·0	...	0·4	15·2	2	20
16	...	0·7	...	0·1	...	1·0	...	0·2	...	4·5	0·9	...	...	1·0	0·2	...	6·5	14	0
17	...	1·3	0·3	...	...	1·8	...	4·3	...	...	...	9·5	...	...	...	10·8	15·1	20	0
18	...	...	...	10·5	...	1·1	...	1·1	...	2·9	...	4·3	...	0·4	...	2·3	14·0	3	0
19	...	...	...	2·0	...	...	...	5·9	...	4·1	...	2·7	...	0·8	...	1·8	8·3	11	30
20	0·4	...	...	2·0	4·3	...	1·8	...	...	1·3	3·0	...	...	1·0	...	...	7·2	8	50
21	...	0·3	...	0·6	...	3·3	...	...	...	3·3	...	...	...	2·3	...	0·4	7·4	11	30
22	...	...	...	3·9	1·1	...	2·8	...	...	2·4	1·0	...	...	0·9	0·4	...	8·5	3	45
23	0·9	...	0·9	...	4·0	...	...	4·0	1·3	...	...	1·9	1·4	...	...	7·1	10·3	23	30
24	1·8	...	...	9·0	2·0	...	...	10·3	...	1·5	...	7·4	...	2·0	...	10·0	14·2	9	45
25	...	...	...	3·3	...	...	...	6·2	...	4·7	...	4·7	...	1·9	...	1·3	10·9	13	20
26	...	0·9	...	0·4	...	1·1	...	2·8	...	4·3	...	2·9	...	3·5	...	0·7	9·1	10	55
27	...	2·0	...	0·4	...	1·5	0·6	...	...	3·6	2·4	...	1·7	...	1·1	...	6·2	14	10
28	1·5	...	0·6	...	2·8	...	1·1	...	2·7	...	4·1	...	3·0	...	2·0	...	7·8	15	25
29	1·4	...	2·2	...	1·8	...	1·8	...	3·6	...	2·4	...	1·7	...	1·1	...	7·5	16	5
30	2·5	...	1·7	...	...	3·3	3·3	...	...	1·4	2·2	...	...	2·2	3·2	...	7·0	11	40
S+N & W+E	50·3		87·0		72·5		89·6		96·5		92·1		71·4		88·1				
S−N & W−E	25·3		−28·2		19·5		−5·8		−3·9		−0·3		9·2		−34·7				

SCOTLAND N.:—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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	0·8	...	3·8	...	...	...	9·2	...	...	2·8	6·7	...	...	0·8	1·8	...	9·2	8, 9
2	...	0·5	1·2	...	3·1	...	...	4·7	4·9	...	...	4·9	3·6	...	...	1·5	7·5	24
3	6·8	...	...	4·6	3·8	...	...	0·8	...	1·6	1·6	..	...	0·6	3·2	...	8·5	1
4	0·6	...	0·8	...	4·6	...	...	...	4·5	...	...	0·9	1·6	...	...	...	7·2	13
5	0·7	...	0·7	...	1·1	...	5·5	...	...	...	8·5	...	...	1·1	5·5	...	9·5	14, 16
6	0·9	...	4·5	...	...	0·6	3·2	...	1·9	...	...	1·3	1·9	...	...	4·5	6·9	1
7	3·5	...	...	3·5	5·7	...	...	3·8	3·7	...	...	3·7	3·2	...	...	2·2	8·2	18
8	...	1·4	3·3	...	...	...	...	4·9	4·2	...	...	4·2	...	2·4	5·7	...	6·2	21, 22
9	4·6	...	...	...	8·2	...	...	...	4·5	...	...	0·9	0·4	...	...	0·9	8·5	8
10	0·6	...	...	1·5	...	...	4·9	...	...	3·7	5·5	...	...	1·7	1·1	...	6·6	13, 14, 15
11	1·1	...	0·7	...	2·9	...	...	0·6	0·8	...	4·2	...	...	0·5	2·6	...	4·9	18
12	1·0	...	5·1	...	1·7	...	8·7	...	...	1·9	9·6	...	...	2·5	2·5	...	12·5	11
13	...	2·8	1·1	...	...	4·0	...	1·6	...	2·0	...	3·0	...	1·3	...	1·9	5·6	4
14	...	0·1	...	0·7	...	1·1	...	2·8	...	0·8	...	3·8	...	0·8	...	1·8	4·3	12
15	...	0·5	...	1·2	...	0·4	...	2·0	0·7	...	...	3·5	1·3	...	...	1·9	3·9	16
16	0·9	...	...	1·3	1·9	...	...	1·3	...	5·1	...	5·1	...	6·2	...	4·2	9·8	17
17	...	3·8	...	2·6	...	5·2	2·1	...	...	5·9	...	...	...	4·2	0·8	...	7·5	10, 11
18	...	2·7	1·8	...	...	3·8	2·6	...	...	5·8	5·8	...	...	5·2	3·4	...	8·5	18 *
19	...	2·5	1·7	...	...	4·7	3·1	...	...	5·1	5·1	...	...	3·0	3·0	...	8·5	13
20	...	0·5	2·6	...	...	3·0	3·0	...	...	...	5·6	...	...	3·1	4·7	...	6·9	16, 17, 20
21	...	6·4	2·6	...	...	5·7	3·8	...	...	5·5	1·1	...	...	3·2	2·2	...	8·2	12
22	...	1·0	...	...	...	0·9	...	2·1	0·8	...	...	4·2	0·5	...	...	2·6	4·3	14, 15, 16, 17
23	...	...	...	4·3	...	1·3	...	6·5	...	...	...	6·2	0·7	...	...	3·5	8·2	12
24	...	1·8	...	4·3	...	3·1	...	4·7	...	4·7	...	4·7	...	4·2	...	4·2	7·9	11
25	...	4·7	...	4·7	...	4·9	...	4·9	...	5·6	...	5·6	...	2·0	...	4·8	7·9	11, 15
26	...	1·3	...	3·0	...	1·1	...	2·8	...	...	...	5·9	...	...	...	4·3	5·9	15, 22
27	...	2·1	...	5·2	...	4·0	...	6·0	...	4·4	...	6·6	...	4·9	...	7·4	10·5	11
28	...	4·2	...	4·2	...	3·3	...	4·9	...	3·1	...	4·7	...	1·7	...	2·5	7·2	1
29	...	1·3	...	0·3	...	...	...	1·3	...	2·8	...	1·1	...	1·1	...	1·7	4·9	16
30	...	2·6	...	...	...	2·8	...	1·1	...	3·7	...	3·7	...	2·8	...	2·8	5·9	14
S+N & W+E	61·7		71·3		82·9		102·9		90·5		127·7		66·5		89·2			
S−N & W−E	−18·7		−11·5		−16·9		−10·7		−38·5		−20·3		−40·1		−16·2			

ENGLAND S.W.:—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.			
	m/s.	m/s	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s	m/s.	m/s.	m/s	m/s.	m/s.	m/s.	h	m
1	...	2·3	1·0	...	...	0·4	0·2	...	...	3·7	...	0·7	...	2·1	...	...	5·6	16	35
2	...	0·1	...	0·4	3·8	...	...	...	7·1	...	...	...	9·2	...	...	...	12·9	18	15
3	3·0	...	4·5	...	...	2·4	1·6	...	...	1·1	0·7	...	...	0·8	1·9	...	11·1	0	30
4	...	0·5	1·2	...	2·7	...	1·1	...	3·7	...	...	0·7	1·8	...	2·7	...	6·9	23	0
5	1·9	...	4·6	...	2·4	...	5·8	...	3·2	...	4·8	...	1·8	...	2·7	...	8·7	12	30
6	1·8	...	2·7	...	2·7	...	2·7	...	3·2	...	2·1	...	2·1	...	...	...	6·7	14	10
7	2·5	...	...	...	2·3	...	...	1·0	0·4	...	...	...	0·0	...	...	0·0	5·0	5	50
8	...	...	2·5	...	2·1	...	2·1	...	3·0	...	3·0	...	...	0·0	0·0	...	6·0	17	40
9	...	0·0	0·0	...	0·6	...	...	2·8	0·7	...	...	1·6	...	0·3	...	1·7	4·7	11	30
10	...	0·7	...	1·6	...	1·5	...	3·5	...	...	...	4·2	1·5	...	...	1·5	6·0	14	15
11	2·3	...	...	1·0	2·7	...	...	2·7	4·2	...	...	2·8	0·9	...	...	0·9	6·7	24	0
12	...	...	...	3·3	...	...	...	7·5	2·3	...	...	11·5	...	...	...	9·6	15·0	19	20
13	...	...	...	7·1	...	...	...	5·8	...	2·4	...	5·8	...	1·9	...	4·6	10·9	1	10
14	...	...	...	10·4	3·2	...	...	16·0	2·9	...	...	14·7	4·5	...	...	10·8	21·7	9	10
15	2·7	...	...	6·6	2·2	...	...	5·4	1·9	...	...	4·6	0·6	...	...	2·8	11·2	0	35
16	...	0·6	...	3·2	1·5	...	...	3·5	1·8	...	...	1·8	0·5	...	...	1·2	6·0	11	5
17	1·2	...	...	1·2	1·9	...	...	0·8	2·1	...	...	2·1	1·5	...	...	1·5	3·3	23	30
18	1·5	...	...	3·5	4·1	...	...	10·0	3·2	...	...	7·7	...	...	...	4·2	13·7	10	35
19	...	...	...	5·0	3·4	...	...	8·1	3·7	...	...	5·6	2·2	...	...	5·4	11·2	7	10
20	4·9	...	...	7·3	4·5	...	...	10·8	2·0	...	...	10·2	1·7	...	...	8·6	14·7	15	20
21	1·8	...	...	9·0	...	...	...	6·7	...	...	...	5·0	...	...	...	4·6	13·0	0	35
22	...	2·7	...	2·7	...	...	...	5·4	...	...	...	6·3	...	0·8	...	1·9	10·8	11	55
23	...	...	...	0·8	...	...	...	5·4	...	...	...	2·5	...	3·5	...	1·5	7·0	10	10
24	...	0·3	...	0·2	0·3	...	...	1·7	1·2	...	...	1·2	3·0	...	...	7·3	9·3	23	45
25	2·6	...	...	6·2	2·4	...	...	1·6	4·2	...	...	...	3·0	...	...	3·0	10·1	0	10
26	1·2	...	0·5	...	...	2·2	5·4	...	...	2·2	5·4	...	...	2·1	5·0	...	12·8	11	30
27	...	1·0	4·9	...	...	4·2	6·2	...	...	1·5	7·4	...	...	3·2	7·7	...	13·5	22	15
28	...	1·5	7·7	...	...	1·1	5·3	...	2·7	...	1·1	...	0·7	...	3·7	...	12·0	4	15
29	...	1·8	4·3	...	...	1·1	5·3	...	...	...	6·7	...	...	1·7	8·6	...	12·0	19	40
30	...	1·6	8·1	...	...	2·9	6·9	...	*	*	*	*	*	*	*	*	12·9	5	5
S+N & W+E	40·5		111·5		58·6		141·3		64·4		120·2		51·4		103·4				
S−N & W−E	14·3		−27·5		27·0		−56·1		42·6		−57·8		18·6		−38·8				

ENGLAND E.:—GREAT YARMOUTH.

Height of Head above—Roof 10·7 m., Ground 12·3 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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	1·5	...	...	0·6	4·3	...	...	1·8	2·8	...	...	1·1	1·6	...	...	0·3	7·0	9	50
2	0·7	...	...	0·1	1·6	...	...	0·3	5·5	...	...	2·3	3·6	...	...	1·5	8·6	19	15
3	1·0	...	...	0·2	0·5	...	2·6	...	0·8	...	4·2	...	...	...	1·3	...	11·4	11	30
4	...	...	2·3	...	...	...	1·3	...	2·4	...	...	3·6	1·0	...	...	0·2	7·1	17	45
5	2·4	...	1·0	...	3·1	...	4·7	...	...	0·7	3·5	...	...	1·0	0·2	...	9·9	9	40
6	...	2·6	0·5	...	...	0·6	...	3·2	2·0	...	...	4·8	4·3	...	...	1·8	9·3	18	50
7	2·1	...	...	0·9	3·0	...	1·3	...	4·2	...	...	0·8	3·2	...	...	0·6	9·3	13	45
8	2·0	...	...	0·4	3·8	...	...	2·6	5·1	...	...	1·0	1·4	...	1·4	...	11·1	17	50
9	...	3·0	...	...	...	5·8	...	1·2	...	5·5	...	2·3	...	5·5	...	2·3	9·5	6	10
10	...	3·0	...	2·0	...	4·1	...	2·7	...	5·2	...	3·4	...	3·4	...	5·2	10·4	22	20
11	...	3·3	...	3·3	...	3·7	...	3·7	...	2·6	...	3·8	...	3·1	...	4·7	9·4	0	40
12	...	0·9	...	1·3	...	1·7	...	2·5	...	1·1	...	1·7	...	1·3	...	1·9	5·4	6	15
13	...	0·9	...	1·3	...	1·3	...	1·9	...	3·7	...	5·5	...	4·6	...	6·8	11·5	20	50
14	...	4·0	...	6·0	...	5·6	...	5·6	...	4·2	...	4·2	...	3·8	...	5·7	11·1	6	20
15	...	2·0	...	3·0	...	2·2	...	3·2	...	2·7	...	4·1	...	2·7	...	4·1	7·0	3	20
16	...	2·4	...	3·6	...	2·4	...	3·6	...	2·4	...	3·6	...	1·4	...	2·2	6·2	6	35
17	...	0·7	...	1·1	...	4·7	...	3·1	...	3·7	...	5·5	5·3	...	7·9	...	10·9	19	0
18	...	2·9	...	4·3	...	2·1	...	5·2	...	2·6	...	3·8	...	2·6	...	3·8	9·3	0	40
19	...	2·2	...	3·2	...	2·0	...	3·0	...	3·8	...	2·6	...	2·8	...	1·1	7·1	0	40
20	...	1·8	...	0·8	...	0·6	...	3·2	4·7	...	...	3·1	1·9	...	...	1·3	7·8	14	5
21	1·3	...	...	0·9	2·7	...	...	1·8	3·2	...	...	2·2	...	1·0	...	4·8	8·8	22	55
22	...	3·7	...	5·5	...	3·8	...	5·7	...	2·9	...	6·9	...	3·4	...	8·2	9·2	23	55
23	...	1·7	...	8·7	...	1·5	...	7·4	...	3·6	...	8·8	...	5·4	...	8·1	13·1	22	20
24	...	...	...	7·1	...	4·2	...	4·2	...	3·5	...	3·5	...	2·1	...	0·9	11·3	0	55
25	...	1·2	...	0·5	...	2·4	...	1·0	...	3·5	...	3·5	2·4	...	1·0	...	8·0	15	55
26	...	2·5	...	1·7	...	0·8	...	0·6	2·4	...	1·0	...	1·8	...	2·7	...	11·6	15	10
27	1·1	...	1·1	...	5·6	...	...	...	7·4	...	...	1·5	3·5	...	...	0·7	12·5	11	55
28	2·1	...	0·9	...	2·4	...	1·0	...	5·5	...	...	1·1	1·6	...	...	0·3	9·8	14	20
29	1·1	...	1·7	...	0·9	...	2·1	...	3·0	...	...	2·0	0·1	...	0·3	...	10·7	14	45
30	0·3	...	...	0·1	1·8	...	...	0·8	2·4	...	...	1·0	2·0	...	...	3·0	5·2	21	35
S+N & W+E	54·4		64·1		79·2		81·3		103·1		96·4		77·8		84·3				
S−N & W−E	−23·2		−49·1		−19·8		−55·3		−0·3		−79·0		−10·4		−54·7				

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 180. June 4, 1915. 11 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2430	...	...	...	...		Balloon entered St.-Cu. cloud, nephoscope measurements of which gave the components shown at 2400 m. (which is assumed as cloud height).
	2400	235	13·5	+11·0	+7·5		
	2000	235	11·5	+ 9·5	+7·0		
	1750	240	10·5	+ 9·0	+5·0		*Pressure Distribution* (7 h.).
	1500	240	10·5	+ 9·0	+5·0		
	1250	230	9·5	+ 7·0	+6·0		Anticyclone W. of Spain. Depression over Iceland.
	1000	225	9·5	+ 7·0	+6·5	2·5	
	750	225	9·0	+ 6·5	+6·0		
	500	205	9·5	+ 4·0	+9·0		
100 m. above ground.	114	180	9·0	0·0	+9·0		
Anemometer.	46	170	4·0	− 0·7	+3·9		
Geostrophic wind.	(at 7 h.)	240	8	+ 7	+4	...	Weight of balloon 12 gm., free lift 38 gm.
	(at 13 h.)	250	6	+ 6	+2		

Aberdeen. No. 181. June 11, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2430	...	...	...	...		Balloon lost in high haze. No cloud visible all day.
	...	...	...	...	...		
	2000	230	7·5	+6·0	+ 5·0		*Pressure Distribution* (7 h.).
	1750	240	6·0	+5·0	+ 3·0		
	1500	245	5·5	+5·0	+ 2·5		High pressure ridge W.S.W. from Scotland. Low west of Bay of Biscay.
	1250	225	4·2	+3·0	+ 2·9		
	1000	220	7·0	+4·5	+ 5·5	2·5	Anticyclone spreading over British Isles by evening.
	750	210	10·0	+5·5	+ 8·5		
	500	205	14·0	+6·0	+13·0		
100 m. above ground.	114	185	11·5	+1·0	+11·5		
Anemometer.	46	175	7·5	−0·5	+ 7·5		
Geostrophic wind.	(at 7 h.)	220	5	+3	+4	...	Weight of balloon 12 gm., free lift 51 gm.
	(at 13 h.)	220	5	+3	+4	...	

Benson. No. 1523. June 2, 1915. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		*Pressure Distribution* (7 h.).
	4500	245	4	+4	+2		High pressure over British Isles. Depression approaching from Atlantic.
	4000	255	4	+4	+1		
	3500	250	3	+3	+1		
	3000	245	2	+2	+1		
	2500	270	2	+2	0		
	2000	270	2	+2	0		
	1750	295	2	+2	−1		
	1500	245	2	+2	+1	2·4	
	1250	225	3	+2	+2		
	1000	245	2	+2	+1		
	750	180	2	0	+2		
	500	155	2	−1	+2		
100 m. above ground.	157	90	1	−1	0		
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. No. 1525. June 4, 1915. 19 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Cirrus clouds were moving up from the West.
	4500	270	17	+17	0		
	4000	275	13	+13	−1		*Pressure Distribution* (18 h.).
	3500	270	12	+12	0		
	3000	260	7	+ 7	+1		Anticyclone southwestwards from Bay of Biscay. Depression over Iceland.
	2500	260	11	+11	+2		
	2000	250	12	+11	+4		
	1750	260	9	+ 9	+2		
	1500	265	8	+ 8	+1	2·4	
	1250	270	7	+ 7	0		
	1000	255	7	+ 7	+2		
	750	265	8	+ 8	+1		
	500	250	2	+ 6	+2		
100 m. above ground.	157	205	7	+ 3	+6		
Anemometer.	82	210	4	+ 2	+3		
Geostrophic wind.	(at 18 h.)	270	6	+6	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

Benson. No. 1527. June 15, 1915. 12 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		
	3000	70	8	−8	−3		*Pressure Distribution* (7 h.).
	2500	60	6	−5	−3		
	2000	70	3	−3	−1		Anticyclone over Scotland, Norway, and Iceland.
	1750	75	4	−4	−1		
	1500	70	5	−5	−2		
	1250	70	5	−5	−2	2·4	
	1000	70	3	−3	−1		
	750	70	3	−3	−1		
	500	45	3	−2	−2		
100 m. above ground.	157	55	4	−3	−2		
Anemometer.	82	65	3	−3	−1		
Geostrophic wind.	(at 7 h.)	90	8	−8	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	110	5	−5	+2	...	

Benson. No. 1528. June 16, 1915. 12 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Balloon seen to burst. Small isolated cumulus clouds coming from about S.E.
	...	...	...	...	...		
	2500	50	6	−5	−4		
	2000	75	4	−4	−1		*Pressure Distribution* (7 h.).
	1750	75	4	−4	−1		
	1500	75	4	−4	−1		
	1250	110	5	−5	+2	2·4	Anticyclone over Iceland, extending to British Isles. Shallow depression S.W. of Ireland.
	1000	115	7	−6	+3		
	750	65	4	−4	−2		
	500	0	2	0	−2		
100 m. above ground.	157	0	4	0	−4		
Anemometer.	82	315	2	+1	−1		
Geostrophic wind.	(at 7 h.)	70	8	−8	−3	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	90	4	−4	0	...	

Benson. No. 1529. June 17, 1915. 11 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		
	5500	105	4	−4	+1		*Pressure Distribution* (7 h.).
	5000	80	5	−5	−1		
	4500	75	4	−4	−1		Anticyclone over Iceland.
	4000	75	4	−4	−1		Depressions over White Sea and W. of Ireland.
	3500	90	3	−3	0		
	3000	75	4	−4	−1		
	2500	80	7	−7	−1		
	2000	105	4	−4	+1		
	1750	90	2	−2	0	2·4	
	1500	270	1	+1	0		
	1250	15	4	−1	−4		
	1000	60	6	−5	−3		
	750	45	6	−4	−4		
	500	30	11	−5	−9		
100 m. above ground.	157	30	6	−3	−5		
Anemometer.	82	45	5	−4	−4		
Geostrophic wind.	(at 7 h.)	90	6	−6	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	110	8	−8	+3	...	

Benson. No. 1530. June 21, 1915. 12 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		A paper cylinder was suspended beneath the balloon for finding the rate of ascent by the tail method.
	...	...	...	...	...		
	...	...	...	...	...		
	4500	270	4	+4	0		*Pressure Distribution* (7 h.).
	4000	270	2	+2	0		
	3500	270	3	+3	0		
	3000	270	4	+4	0		Rather uniform; no prominent features.
	2500	270	2	+2	0		
	2000	315	1	+1	−1		
	1750	...	0	0	0	1·8	
	1500	160	3	−1	+3		
	1250	155	2	−1	+2		
	1000	...	0	0	0		
	750	205	4	+2	+4		
	500	45	7	−5	−5		
100 m. above ground.	157	15	4	−1	−4		
Anemometer.	82	0	2	0	−2		
Geostrophic wind.	(at 13 h.)	*Indeterminate.*				...	Approx. weights: balloon 15 gm., free lift 42 gm.

Benson. No. 1531. June 23, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		
	2000	100	6	−6	+1		*Pressure Distribution* (7 h.).
	1750	95	8	−8	+1		
	1500	110	9	−8	+3		Anticyclone N. of Scotland Shallow trough E. and W. through France.
	1250	125	7	−6	+4		
	1000	110	9	−8	+3		
	750	100	14	−14	+3	2·4	
	500	90	6	−6	0		
100 m. above ground.	157	55	7	−6	−4		
Anemometer.	82	50	4·5	−3·4	−2·9		
Geostrophic wind.	(at 7 h.)	100	11	−11	+2	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Eskdalemuir. No. 1534. June 4, 1915. 15 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2360	...	...	...	...		Nephoscope observation on Ci. and Ci.-St. gave velocity height ratio:— W.E., +4·4 m/s; S.N., +1·2 m/s. Atmosphere clear; sky three-tenths clouded.
	2000	250	8·0	+7·5	+3·0		
	1750	245	9·5	+8·5	+4·0		
	1500	235	9·0	+7·0	+5·5		
	1250	230	10·0	+7·5	+6·5		
	1000	230	9·0	+7·0	+6·0		
	750	220	7·5	+5·5	+6·0	2·4	
	500	215	6·5	+4·0	+5·0		*Pressure Distribution* (18 h.).
	340	205	7·5	+3·0	+7·0		Anticyclone south-westwards from Bay of Biscay. Depression over Iceland.
Anemometer.	250	205	7·0	+2·5	+6·5		
Geostrophic wind.	(at 13 h.)	250	5	+5	+2	...	Weight of balloon 177 gm., free lift 52·3 gm.
	(at 18 h.)	250	6	+6	+2	...	

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1535. June 9, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S°.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	...	...	...	...		Atmosphere clear. Cloud 4. Ci., Ci.-St., Cu.; direction of Ci., S.W.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	220	13·0	+ 8·5	+9·5		
	1750	220	11·5	+ 7·5	+9·0		*Pressure Distribution* (7 h.).
	1500	220	11·0	+ 7·5	+8·5		
	1250	230	13·0	+10·0	+8·5		Shallow depression N.W. of Scotland. Uniform pressure, England to Spain.
	1000	230	12·0	+ 9·0	+7·5	2·1	
	750	230	8·5	+ 6·5	+5·0		
	500	220	4·3	+ 2·8	+3·3		
100 m. above ground. Anemometer.	340	240	4·7	+ 4·0	+2·4		
	250	240	6·0	+ 5·0	+3·0		
Geostrophic wind.	(at 7 h.)	220	10	+ 6	+8	...	Weight of balloon 11·1 gm., free lift 28·3 gm.

Eskdalemuir. No. 1536. June 9, 1915. 12 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3000	...	...	...	...		Atmosphere clear. Cloud 4. Ci.-Cu., Cu., Fr.-Cu.; direction of Ci.-Cu. from W.S.W.
	3000	220	10·5	+ 7·0	+ 8·0		
	2500	215	17·0	+10·0	+13·5		
	2000	220	8·0	+ 5·0	+ 6·0		
	1750	210	7·0	+ 3·5	+ 6·0		*Pressure Distribution* (7 h.).
	1500	200	4·5	+ 1·6	+ 4·2		
	1250	220	7·5	+ 4·5	+ 6·0		Shallow depression N.W. of Scotland. Uniform pressure England to Spain.
	1000	220	12·5	+ 8·0	+ 9·5	2·4	
	750	225	9·0	+ 6·5	+ 6·5		
	500	215	7·5	+ 4·5	+ 6·0		
	340	215	7·0	+ 4·0	+ 5·5		
	250	205	7·0	+ 2·5	+ 6·5		
	(at 13 h.)	230	6	+ 5	+ 4	...	Weight of balloon 11·8 gm., free lift 50·3 gm.

Eskdalemuir. No. 1537. June 10, 1915. 12 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2475	...	...	...	...		Atmosphere clear. Cloud 8. A.-St. from S.W. Cu.
	...	...	...	...	...		
	2000	255	1·0	+1·0	+0·3		
	1750	325	1·7	+1·0	−1·4		
	1500	345	4·0	+1·0	−3·7		*Pressure Distribution* (7 h.).
	1250	10	3·5	−0·5	−3·5		
	1000	50	2·7	−2·0	−1·8		Weak anticyclone over Scotland.
	750	85	1·7	−1·7	−0·2	2·5	
	500	90	4·7	−4·7	−0·2		
100 m. above ground. Anemometer.	340	100	5·0	−5·0	+1·0		
	250	90	4·0	−4·0	0·0		
Geostrophic wind.	(at 13 h.)	50	4	−3	−3	...	Weight of balloon 11·2 gm., free lift 55·3 gm.

Eskdalemuir. No. 1538. June 10, 1915. 14 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2850	...	...	...	...		Atmosphere clear. Cloud 9. Ci.-St., Ci.-Cu., A.-St. from W.S.W.
	2500	220	7·0	+4·5	+5·0		
	2000	240	4·5	+3·8	+2·4		
	1750	275	1·5	+1·5	−0·1		*Pressure Distribution* (18 h.).
	1500	350	0·6	+0·1	−0·6		
	1250	15	2·4	−0·6	−2·3		High pressure ridge stretching S.W. from Scotland.
	1000	40	2·6	−1·7	−2·0	2·5	
	750	70	2·8	−2·6	−0·9		
	500	90	4·1	−4·1	0·0		
	340	100	3·0	−2·9	+0·6		
	250	110	5·0	−4·5	+2·0		
	(at 13 h.)	50	4	−3	−3	...	Weight of balloon 11·2 gm., free lift 55·3 gm.
	(at 18 h.)	80	6	−6	−1		

Eskdalemuir. No. 1539. June 11, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2670	...	...	...	...		Atmosphere clear at surface, but hazy above. Cloud 4. A.-St. from West.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2500	240	7·0	+6·0	+3·5		
	2000	235	5·0	+4·0	+3·0		*Pressure Distribution* (7 h.).
	1750	225	2·3	+1·7	+1·6		
	1500	215	3·1	+1·8	+2·5		High pressure ridge W.S.W. from Scotland. Low west of Bay of Biscay.
	1250	220	2·4	+1·5	+1·9	2·4	
	1000	155	2·6	−1·1	+2·3		
	750	125	6·0	−4·5	+3·5		
	500	80	2·8	−2·8	−0·4		
100 m. above ground. Anemometer.	340	45	3·3	−2·4	−2·3		
	250	40	2·5	−1·6	−1·9		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*				...	Weight of balloon 10·8 gm., free lift 46·3 gm.

Eskdalemuir. No. 1540. June 12, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	4300	...	...	...	...		Atmosphere clear. Cloud amount 0. Surface wind at start S.E. 1 m/s., after 2 mins. S.W. 5 m/s.
	4000	250	4·4	+ 4·2	+1·4		
	3500	235	7·5	+ 6·0	+4·0		
	3000	240	5·5	+ 5·0	+3·0		
	2500	260	6·0	+ 6·0	+1·0		
	2000	255	5·5	+ 5·5	+1·5		*Pressure Distribution* (7 h.).
	1750	245	6·0	+ 5·5	+3·0		
	1500	250	7·5	+ 7·0	+2·5		Anticyclone over British Isles.
	1250	260	10·0	+10·0	+1·5	2·3	
	1000	265	10·5	+10·5	+0·5		
	750	255	8·0	+ 7·5	+2·0		
	500	250	3·0	+ 2·8	+1·1		
	340	210	0·9	+ 0·5	+0·8		
	250	135	1·0	− 0·7	+0·7		
	(at 7 h.)	240	4	+ 3	+2	...	Weight of balloon 11 gm., free lift 36·3 gm.

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1541. June 14, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3070	...	...	...	...		Atmosphere clear. Cloud 3. Cu., Fr.-Cu., from N.E.
	3000	75	7·5	− 7·0	− 2·0		
	2500	75	10·5	− 10·5	− 3·0		
	2000	70	5·5	− 5·5	− 2·0		*Pressure Distribution* (7 h.).
	1750	80	3·6	− 3·5	− 0·7		
	1500	55	7·0	− 6·0	− 4·0		Anticyclone N. of Scotland. Depression over Russia.
	1250	70	9·0	− 8·5	− 3·0	2·5	
	1000	75	8·0	− 7·8	− 1·8		
	750	70	8·0	− 7·5	− 2·5		
	500	50	7·0	− 5·5	− 4·0		
100 m. above ground.	340	40	5·5	− 3·5	− 4·0		
Anemometer.	250	30	7·0	− 3·5	− 6·0		
Geostrophic wind.	(at 7 h.)	110	8	− 8	+ 3	...	Weight of balloon 11·2 gm., free lift 55·3 gm.

Eskdalemuir. No. 1542. June 15, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3100	...	...	...	...		Atmosphere clear. Cloud 1. Cirrus haze, no structure visible.
	3000	85	6·0	− 6·0	− 0·5		
	2500	75	7·5	− 7·0	− 1·5		
	2000	75	6·5	− 6·0	− 1·5		*Pressure Distribution* (7 h.).
	1750	70	6·0	− 5·5	− 2·0		
	1500	85	6·5	− 6·5	− 0·5		Anticyclone over Scotland, Norway, and Iceland.
	1250	85	6·0	− 6·0	− 0·5	2·4	
	1000	85	5·0	− 5·0	− 0·5		
	750	80	5·5	− 5·5	− 1·0		
	500	50	2·8	− 2·1	− 1·9		
	340	15	2·3	− 0·6	− 2·2		
	250	20	3·0	− 1·0	− 2·8		
	(at 7 h.)	90	7	− 7	0	...	Weight of balloon 11·4 gm., free lift 46·3 gm.

Eskdalemuir. No. 1543. June 17, 1915. 14 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	6000	...	...	...	...		Atmosphere clear. Cloud 6. Ci., Ci.-Cu., Ci.-St., from N.W.
	6000	325	5·0	+ 3·0	− 4·0		
	5500	330	7·0	+ 3·5	− 6·0		Balloon lost in distance.
	5000	315	6·0	+ 4·0	− 4·0		
	4500	320	6·0	+ 3·5	− 4·5		
	4000	340	6·5	+ 2·5	− 6·0		*Pressure Distribution* (18 h.).
	3500	340	6·0	+ 2·0	− 6·0		
	3000	330	4·2	+ 2·0	− 3·7		Anticyclone over Iceland. Depressions near White Sea and W. of Ireland.
	2500	15	6·5	− 1·5	− 6·5		
	2000	360	4·2	− 0·1	− 4·2	2·6	
	1750	35	4·2	− 2·3	− 3·5		
	1500	60	7·0	− 6·0	− 3·5		
	1250	75	8·0	− 8·0	− 2·0		
	1000	85	6·0	− 6·0	− 0·5		
	750	75	7·0	− 6·5	− 1·5		
	500	60	8·0	− 7·0	− 4·0		
100 m. above ground.	340	60	8·5	− 7·5	− 4·5		
Anemometer.	250	65	8·0	− 7·5	− 3·0		
Geostrophic wind.	(at 13 h.)	140	8	− 5	+ 6	...	Weight of balloon 11·2 gm., free lift 67·3 gm.
	(at 18 h.)	150	12	− 6	+ 10	...	

Eskdalemuir. No. 1544. June 18, 1915. 12 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2240	...	...	...	...		Atmosphere clear. Cloud 3. Ci. from N.W.; Cu., Fr.-Cu.
	...	...	...	...	...		Balloon lost in Fr.-Cu.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Anticyclone over Iceland and British Isles. Depression over White Sea.
	...	...	...	...	...		
	2000	45	3·4	− 2·5	− 2·3	2·6	
	1750	55	4·7	− 3·7	− 2·8		
	1500	50	4·0	− 3·0	− 2·7		
	1250	75	3·7	− 3·5	− 1·1		
	1000	80	4·5	− 4·4	− 0·8		
	750	75	2·4	− 2·3	− 0·7		
	500	85	3·4	− 3·4	− 0·4		
	340	85	3·7	− 3·7	− 0·3		
	250	45	5·0	− 3·5	− 3·5		
	(at 13 h.)	120	8	− 7	+ 4	...	Weight of balloon 11·1 gm., free lift 65·3 gm.

Eskdalemuir. No. 1545. June 19, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3000	...	...	...	...		Calm and clear. No clouds visible.
	...	...	...	...	...		Balloon lost while changing eyepieces.
	2500	355	7·5	+ 0·5	− 7·5		
	2000	355	8·0	+ 1·0	− 8·0		
	1750	360	7·5	− 0·5	− 7·5		*Pressure Distribution* (7 h.).
	1500	360	6·5	0·0	− 6·5		
	1250	350	6·0	+ 1·0	− 6·0	2·5	Anticyclone over Iceland and British Isles. Depression over White Sea and N. of Azores.
	1000	350	4·0	+ 0·6	− 4·0		
	750	20	2·2	− 0·8	− 2·0		
	500	60	1·3	− 1·1	− 0·7		
100 m. above ground.	340	60	2·1	− 1·8	− 1·0		
Anemometer.	250	45	1·0	− 0·7	− 0·7		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*				...	Weight of balloon 11 gm., free lift 54 gm.

Eskdalemuir. No. 1546. June 21, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3020	...	...	...	...		Atmosphere hazy. Cloud 6. A.-Cu.
	3000	315	6·0	+ 4·5	− 4·5		Balloon lost in A.-Cu.
	2500	310	11·5	+ 8·5	− 7·5		
	2000	305	10·0	+ 8·5	− 5·5		*Pressure Distribution* (7 h.).
	1750	305	7·5	+ 6·5	− 4·5		
	1500	300	7·5	+ 6·5	− 3·5		Rather uniform. No prominent features.
	1250	300	6·5	+ 6·0	− 3·5	2·6	
	1000	300	5·0	+ 4·5	− 2·5		
	750	335	3·0	+ 1·4	− 2·7		
	500	55	2·0	− 1·6	− 1·2		
	340	130	1·7	− 1·3	+ 1·1		
	250	125	1·0	− 0·8	+ 0·6		
	(at 7 h.)	*Indeterminate.*				...	Weight of balloon 12·3 gm., free lift 68·3 gm.
	(at 13 h.)	...	...	...	...	...	

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1547. June 22, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4115	...	...	...	...	2·6	Atmosphere clear. Ci. and St.-Cu. 3. Ci. from W. Balloon lost in cirrus haze.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	4000	340	6·0	+2·0	−6·0		*Pressure Distribution* (7 h.).
	3500	350	7·5	+1·5	−7·5		Anticyclone Scotland to Iceland.
	3000	330	6·5	+3·5	−5·5		
	2500	325	4·1	+2·3	−3·4		
	2000	295	3·5	+3·2	−1·4		
	1750	240	4·2	+3·6	+2·1		
	1500	270	2·8	+2·8	+0·1		
	1250	200	2·6	+0·9	+2·4		
	1000	150	2·3	−1·2	+2·0		
	750	105	0·7	−0·7	+0·2		
	500	65	7·5	−7·0	−3·0		
100 m. above ground. Anemometer.	340	65	4·7	−4·3	−1·9		
	250	70	3·5	−3·2	−1·3		
Geostrophic wind.	(at 7 h.)	120	6	−5	+3	...	Weight of balloon 11·4 gm., free lift 66·4 gm.

South Farnborough. No. 262. June 1, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	8800	240	8·0	+7·0	+4·0	2·4	Atmosphere clear, a little haze. No cloud.
	8000	240	10·0	+8·5	+5·0		Balloon lost in distance, or possibly burst.
	7000	245	4·5	+4·1	+1·9		
	6000	215	4·5	+2·6	+3·7		
	5000	265	1·0	+1·0	+0·1		
	4000	30	1·5	−0·8	−1·3		*Pressure Distribution* (7 h.).
	3500	10	2·5	−0·4	−2·5		
	3000	355	5·0	+0·5	−5·0		Shallow depression off Norwegian coast. High belt running E.-W. across S. England.
	2500	355	0·5	0·0	−0·5		
	2000	55	2·0	−1·6	−1·1		
	1750	45	3·0	−2·1	−2·1		
	1500	40	3·5	−2·2	−2·7		
	1250	45	3·5	−2·5	−2·5		
	1000	30	2·5	−1·3	−2·2		
	750	60	4·5	−3·9	−2·3		
	500	35	3·5	−2·0	−2·9		
100 m. above ground. Anemometer.	170	30	1·5	−0·8	−1·3		
	105	360	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 264. June 1, 1915. 14 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2250	100	1·5	−1·5	+0·3	2·0	*Pressure Distribution* (18 h.).
	...	...	...	...	...		
	...	...	...	...	...		High pressure over British Isles. Depression approaching across Atlantic.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	100	0·5	−0·5	+0·1		
	1750	70	2·5	−2·3	−0·9		
	1500	40	3·5	−2·2	−2·7		
	1250	20	3·0	−1·1	−2·8		
	1000	5	3·0	−0·3	−3·0		
	750	0	2·0	0·0	−2·0		
	500	350	4·5	+0·8	−4·5		
100 m. above ground. Anemometer.	170	335	2·5	+1·1	−2·3		
	105	340	light	...	...		
Geostrophic wind.	(at 13 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 18 h.)	*Indeterminate.*		...	...	...	

South Farnborough. No. 265. June 2, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4850	270	4·5	+4·5	0·0	2·4	Atmosphere hazy. No cloud.
	4000	280	3·5	+3·4	−0·6		Balloon lost when moving rapidly, and very faint.
	3500	270	1·5	+1·5	0·0		
	3000	295	1·0	+0·9	−0·4		
	2500	290	2·0	+1·9	−0·7		
	2000	250	0·5	+0·5	+0·2		
	1750	195	0·5	+0·1	+0·5		*Pressure Distribution* (7 h.)
	1500	...	0·0	0·0	0·0		
	1250	175	2·5	−0·2	+2·5		High pressure over British Isles. Depression approaching from Atlantic.
	1000	180	1·5	0·0	+1·5		
	750	195	1·0	+0·3	+1·0		
	500	175	0·5	0·0	+0·5		
100 m. above ground. Anemometer.	170	60	2·0	−1·7	−1·0		
	105	315	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	..		Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 267. June 5, 1915. About 9 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2550	250	23·0	+21·5	+8·0	2·0	Atmosphere clear, some shimmer. Ci. and Fr.-Cu. Balloon lost in distance. Local maxima in velocity at 1600 m. 16·5 m/s. (+16·0, W.-E.; +4·5, S.-N.) and at 620 m. 22·5 m/s. (+17·0, W.-E.; +14·5, S.-N.).
	...	...	...	...	...		
	...	...	...	...	...		
	2500	250	21·5	+20·0	+7·5		
	2000	250	14·0	+13·5	+5·0		
	1750	250	13·0	+12·0	+4·5		
	1500	260	14·0	+14·0	+2·5		
	1250	260	8·0	+8·0	+1·5		
	1000	280	15·5	+15·5	+2·5		*Pressure Distribution* (7 h.).
	750	245	11·5	+10·5	+5·0		
	500	230	17·0	+13·0	+11·0		Anticyclone stretching south-westwards from France.
100 m. above ground. Anemometer.	170	220	9·5	+6·0	+7·5		Depression over Iceland, secondary over Ireland.
	105	250	4·5	+4·2	+1·9		Anticyclone moved northward during day.
Geostrophic wind.	(at 7 h.)	240	10	+9	+5	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	260	11	+11	+2	...	

South Farnborough. No. 268. June 5, 1915. 10 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3850	260	20·0	+19·5	+3·5	2·4	Atmosphere clear, some shimmer. Ci., Fr.-Cu. Balloon lost in distance. Maximum velocity at 2850 m. 26·5 m/s. (+26·0, W.-E.; +4·5, S.-N.).
	3500	250	16·0	+15·0	+5·5		
	3000	265	20·5	+20·5	+2·0		
	2500	250	21·5	+20·0	+7·5		
	2000	260	17·5	+17·0	+3·0		
	1750	255	14·0	+13·5	+3·5		
	1500	250	14·5	+13·5	+5·0		
	1250	255	10·5	+10·0	+2·5		
	1000	260	11·0	+11·0	+2·0		*Pressure Distribution* (7 h.).
	750	260	12·0	+12·0	+2·0		
	500	245	7·5	+2·0	+3·0		Anticyclone stretching south-westwards from France.
100 m. above ground. Anemometer.	170	225	5·5	+4·0	+4·0		Depression over Iceland, secondary over Ireland.
	105	225	4·5	+3·2	+3·2		Anticyclone moved northward during day.
Geostrophic wind.	(at 7 h.)	240	10	+9	+5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	260	11	+11	+2	...	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 270. June 7, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2750	215	9·5	+5·5	+ 8·0		*Pressure Distribution* (7 h.).
	…	…	…	…	…		Anticyclone over Germany. Shallow depression on Atlantic.
	…	…	…	…	…		
	2500	205	14·0	+6 0	+12·5		
	2000	215	9·5	+5·5	+ 8·0		
	1750	215	6·5	+3·5	+ 5·5		
	1500	205	4·5	+1·9	+ 4·1		
	1250	195	4·0	+1·0	+ 3·9	2·3	
	1000	220	5·5	+3·5	+ 4·0		
	750	215	4·0	+2·3	+ 3·3		
	500	175	3·5	−0·3	+ 3·5		
100 m. above ground.	170	170	2·5	−0·4	+ 2·5		
Anemometer.	105	180	0·5	0·0	+ 0·5		
Geostrophic wind.	(at 7 h.)	? 180	7	0	+ 7	…	Approx. weights: balloon ? Free lift ?
	(at 13 h.)	? 180	4	0	+ 4	…	

South Farnborough. No. 272. June 8, 1915. About Noon G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2000	…	…	…	…		*Pressure Distribution* (7 h.).
	…	…	…	…	…		Shallow depression N.W. of Ireland.
	…	…	…	…	…		
	…	…	…	…	…		
	2000	200	13·0	+4·5	+12·0		
	1750	205	16·0	+7·0	+14·5		
	1500	205	12·5	+5·5	+11·5		
	1250	210	15·5	+8·0	+13·5	2·4	
	1000	210	8·5	+4·5	+ 7·5		
	750	210	6·5	+3·5	+ 5·5		
	500	210	5·0	+2·5	+ 4·5		
100 m. above ground.	170	190	4·5	+0·8	+ 4·4		
Anemometer.	105	200	5·5	+2·0	+ 5·0		
Geostrophic wind.	(at 7 h.)	180	5	0	+ 5	…	Approx. weights: balloon 12 gm., Free lift 45 gm.
	(at 13 h.)	230	6	+5	+ 4	…	

South Farnborough. No. 273. June 9, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	215	11·0	+6·5	+9·0		Ci. 3 from 190°. Some St.
	2000	210	8·5	+4·5	+7·5		Balloon hazy, appearing to be in thin St., at first; clear above 1500 m.
	1750	225	6·5	+4·5	+4·5		Lost by accident while moving rapidly.
	1500	220	4·0	+2·6	+3·1		Local maximum in velocity at 600 m. 10·0 m/s. (−10·0, W.-E.; −1·0, S.-N.).
	1250	150	3·5	−1·8	+3·0		
	1000	140	4·5	−2·9	+3·4	2·4	
	750	115	7·0	−6·5	+3·0		
	500	80	7·5	−7·5	−1·5		
100 m. above ground.	170	35	3·0	−1·7	−2·5		*Pressure Distribution* (7 h.).
Anemometer.	105	45	light	…	…		Shallow depression N.W. of Scotland. Uniform pressure England to Spain.
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		…	…		Approx. weights: balloon 12 gm., Free lift 45 gm.

South Farnborough. No. 274. June 9, 1915. 11 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2300	230	3·0	+2·3	+1·9		Upper cloud from 155°; lower from 105°.
	2000	95	1·0	+1·0	+0·1		Wind backed from 140° at 1500 m. to 10° at 1800 m.
	1750	65	3·5	−3·2	−1·5		Local minimum in velocity at 1100 m. 4·5 m/s. (−1·9, W.-E.; +4·1, S.-N.).
	1500	140	9·0	−5·5	+7·0		
	1250	135	10·0	−7·0	+7·0		
	1000	130	8·5	−6·5	+5·5	2·0	
	750	130	5·0	−4·0	+3·0		
	500	115	5·5	−5·0	+2·5		
100 m. above ground.	170	?	?	…	…		*Pressure Distribution* (7 h.).
Anemometer.	105	110	light	…	…		Shallow depression N.W. of Scotland. Uniform pressure England to Spain.
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		…	…	…	Approx. weights: balloon 4 gm., Free lift 16 gm.
	(at 13 h.)	…	…	…	…	…	

South Farnborough. No. 275. June 10, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2650	45	1·0	−0·7	−0·7		A.-Cu. 10.
	…	…	…	…	…		Balloon entered cloud at 2200 m. and reappeared. Finally lost behind a cloud.
	…	…	…	…	…		Local maximum in velocity at 2150 m. 4·0 m/s (−3·3, W.-E.; −2·3, S.-N.).
	…	…	…	…	…		
	2500	55	0·5	−0·4	−0·3		
	2000	50	1·5	−1·1	−1·0		
	1750	35	3·5	−2·0	−2·9		
	1500	55	5·0	−4·0	−3·0	2·0	
	1250	50	8·0	−6·0	−5·0		*Pressure Distribution* (7 h.).
	1000	65	9·0	−8·0	−4·0		
	750	65	8·5	−7·5	−3·5		Weak anticyclone over Scotland.
	500	55	6·5	−5·5	−3·5		
100 m. above ground.	170	25	3·5	−1·5	−3·2		
Anemometer.	105	360	0·5	0·0	−0·5		
Geostrophic wind.	(at 7 h.)	90	6	−6	0	…	Approx. weights: balloon 4 gm., Free lift 16 gm.

South Farnborough. No. 277. June 11, 1915. 11 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3400	235	1·0	+0·8	+0·6		Balloon burst.
	3000	?	1·5	…	…		Wind direction very variable in third kilometre.
	2850	?	0·0	…	…		Maximum velocity at 900 m. 8·5 m/s. (−8·0, W.-E.; −2·0, S.-N.).
	2500	?	1·5	…	…		
	2300	?	0·5	…	…		
	2000	65	4·0	−3·6	−1·7		
	1750	60	4·5	−3·9	−2·3		
	1500	70	3·0	−2·8	−1·0	2·0	
	1250	115	5·0	−4·5	+2·0		*Pressure Distribution* (7 h.).
	1000	85	7·5	−7·5	−0·5		
	750	65	7·0	−6·5	−3·0		High pressure ridge W.S.W. from Scotland. Low west of Bay of Biscay. Anticyclone spreading over British Isles by evening.
	500	85	5·0	−5·0	−0·5		
100 m. above ground.	170	?	?	…	…		
Anemometer.	105	90	2·0	−2·0	0·0		
Geostrophic wind.	(at 7 h.)	80	5	−5	−1	…	Approx. weights: balloon 4 gm., Free lift 16 gm.
	(at 13 h.)	140	5	−2	+4	…	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 278. June 12, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2300	70	3·0	− 2·8	− 1·0		Balloon lost in cloud. Minimum velocity at 2150 m. 1·5 m/s. (− 1·4, W.-E. ; − 0·4, S.-N).
	…	…	…	…	…		
	…	…	…	…	…		
	…	…	…	…	…		
	…	…	…	…	…		
	2000	110	3·0	− 2·8	+ 1·0		*Pressure Distribution* (7 h.).
	1750	80	8·0	− 8·0	− 1·5		
	1500	80	8·5	− 8·5	− 1·5	2·0	Anticyclone over British Isles.
	1250	85	10·5	− 10·5	− 1·0		
	1000	85	9·0	− 9·0	− 1·0		
	750	70	10·5	− 10·0	− 3·5		
	500	80	7·5	− 7·5	− 1·5		
100 m. above ground.	170	60	6·0	− 5·0	− 3·0		
Anemometer.	105	70	light	…	…		
Geostrophic wind.	(at 7 h.)	90	6	− 6	0	…	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 279. June 12, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	5000	260	5·5	+ 5·5	+ 1·0		From 3000 to 4500 m. alternate veer and backing, extremes 305° and 60° respectively.
	4000	195	2·5	+ 0·6	+ 2·4		Local maximum in velocity at 3150 m. 5·5 m/s. (− 5·5, W.-E. ; 0.0, S.-N).
	3500	100	1·0	− 1·0	+ 0·2		
	3000	60	2·0	− 1·7	− 1·0		
	2500	60	2·0	− 1·7	− 1·0		
	2000	80	3·5	− 3·4	− 0·6		
	1750	70	6·0	− 5·5	− 2·0		
	1500	130	3·5	− 2·7	+ 2·2		*Pressure Distribution* (7 h.).
	1250	110	8·0	− 7·5	+ 2·5	2·4	
	1000	100	7·5	− 7·5	+ 1·5		Anticyclone over British Isles.
	750	105	4·0	− 3·9	+ 1·0		
	500	80	7·5	− 7·5	− 1·5		
	170	70	5·5	− 5·0	− 2·0		
	105	80	2·0	− 2·0	− 0·3		
(at 7 h.)		90	6	− 6	0	…	Approx. weights: balloon 12 gm.
(at 13 h.)		120	5	− 4	+ 3	…	free lift 45 gm.

South Farnborough. No. 280. June 14, 1915. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	65	9·5	− 8·5	− 4·0		Cu. 4 from E. Balloon lost in clouds.
	…	…	…	…	..		
	…	…	…	…	…		
	3000	55	9·0	− 7·5	− 5·0		*Pressure Distribution* (7 h.).
	2500	60	6·0	− 5·0	− 3·0		
	2000	55	5·0	− 4·0	− 3·0		Anticyclone N. of Scotland. Depression over Russia.
	1750	40	7·0	− 4·5	− 5·5		
	1500	60	10·5	− 9·0	− 5·5		
	1250	50	11·0	− 8·5	− 7·0	2·4	
	1000	70	8·5	− 8·0	− 3·0		
	750	55	9·5	− 8·0	− 5·5		
	500	65	10·5	− 9·5	− 4·5		
100 m. above ground.	170	55	5·0	− 4·0	− 3·0		
Anemometer.	105	70	6·5	− 6·0	− 2·0		
Geostrophic wind.	(at 7 h.)	100	13	− 13	+ 2	…	Approx. weight: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 282. June 15, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	4400	80	8·0	− 8·0	− 1·5		Atmosphere clear. A little Fr.-Cu.
	4000	75	12·0	− 11·5	− 3·0		Maximum velocity at 3850 m. 13·5 m/s. (− 13·0, W.-E. ; − 3·5, S.-N).
	3500	85	9·0	− 9·0	− 1·0		
	3000	80	5·5	− 5·5	− 1·0		
	2500	80	5·0	− 5·0	− 1·0		
	2000	70	6·0	− 5·5	− 2·0		
	1750	70	5·5	− 5·0	− 2·0		
	1500	70	4·5	− 4·2	− 1·5		*Pressure Distribution* (7 h.).
	1250	50	2·0	− 1·5	− 1·3	2·4	
	1000	105	3·5	− 3·4	+ 0·9		Anticyclone over Scotland, Norway, and Iceland.
	750	70	8·5	− 8·0	− 3·0		
	500	50	11·5	− 9·0	− 7·5		
	170	60	8·0	− 7·0	− 4·0		
	105	80	6·0	− 6·0	− 1·0		
(at 7 h.)		90	8	− 8	0	…	Approx weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 283. June 15, 1915. 11 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2000	…	…	…	…		*Pressure Distribution* (7 h.).
	…	…	…	…	…		Anticyclone over Scotland, Norway, and Iceland.
	…	…	…	…	…		
	2000	60	6·5	− 5·5	− 3·5		
	1750	75	7·0	− 7·0	− 2·0		
	1500	70	4·5	− 4·2	− 1·5		
	1250	50	5·5	− 4·0	− 3·5		
	1000	70	4·5	− 4·3	− 1·5	2·4	
	750	80	5·0	− 5·0	− 1·0		
	500	50	6·0	− 4·5	− 4·0		
100 m. above ground.	170	75	5·0	− 5·0	− 1·5		
Anemometer.	105	80	0·5	− 0·5	− 0·1		
Geostrophic wind.	(at 7 h.)	90	8	− 8	0	…	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	110	5	− 5	+ 2	…	

South Farnborough. No. 284. June 15, 1915. 20 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3150	75	6·5	− 6·5	− 1·5		An aeroplane pilot reported that at 19 h., at 1000 m., he found patches of mist, invisible from below. When in them he could not see the ground, and could only see a little distance ahead. It was very cold at this height. Balloon lost in darkness.
	3000	70	8·5	− 8·0	− 3·0		
	2500	55	8·5	− 7·0	− 5·0		
	2000	65	5·5	− 5·0	− 2·5		
	1750	80	2·5	− 2·5	− 0·4		
	1500	50	5·0	− 4·0	− 3·0		
	1250	35	7·5	− 4·5	− 6·0		
	1000	30	6·5	− 3·5	− 5·5	2·4	
	750	45	4·5	− 3·2	− 3·2		
	500	95	4·0	− 4·0	+ 0·3		
	170	90	7·0	− 7·0	0·0		*Pressure Distribution* (18 h.).
	105	100	0·5	− 0·5	0·0		Anticyclone northward of Scotland. Depression S.W. of Ireland.
(at 18 h.)		90	6	− 6	0	…	Approx. weights: balloon 12 gm.,
(at 1 h., 16th.)		90	5	− 5	0	…	free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 285. June 16, 1915. 9 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	6700	115	5·0	−4·5	+2·0		Atmosphere clear. Balloon lost in distance.
	6000	100	5·5	−5·5	+1·0		
	5000	110	7·0	−6·5	+2·5		*Pressure Distribution* (7 h.).
	4000	90	5·5	−5·5	0·0		
	3500	100	6·0	−6·0	+1·0		Anticyclone over Iceland extending to British Isles. Shallow depression S.W. of Ireland.
	3000	65	3·5	−3·2	−1·5		
	2500	75	5·5	−5·3	−1·4		
	2000	65	3·5	−3·2	−1·5		
	1750	65	4·0	−3·6	−1·7	2·4	
	1500	110	4·0	−3·8	+1·4		
	1250	200	1·5	+0·5	+1·4		
	1000	160	3·5	−1·2	+3·3		
	750	110	3·5	−3·3	+1·2		
	500	20	2·5	−0·9	−2·4		
100 m. above ground.	170	50	5·0	−4·0	−3·0		
Anemometer.	105	45	0·5	−0·4	−0·4		
Geostrophic wind.	(at 7 h.)	70	8	−8	−3	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	90	4	−4	0		

South Farnborough. No. 286. June 17, 1915. 10 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	5300	110	3·0	−2·8	+1·0		Balloon lost in cloud. Minimum velocity at 1550 m. 0·5 m/s. (+0·4, W.-E.; −0·4, S.-N.), followed by sharp veer to 85° at 1700 m.
	...	...	...	...	...		
	5000	115	2·5	−2·3	+1·1		
	4000	60	1·5	−1·3	−0·8		
	3500	80	2·0	−2·0	−0·3		
	3000	75	2·5	−2·4	−0·6		
	2500	75	3·0	−2·9	−0·8		*Pressure Distribution* (7 h.).
	2000	40	1·5	−0·9	−1·1		
	1750	80	2·0	−2·0	−0·3	2·4	Anticyclone over Iceland. Depressions over White Sea and W. of Ireland.
	1500	315	1·5	+1·1	−1·1		
	1250	300	3·0	+2·6	−1·5		
	1000	320	1·5	+0·9	−1·1		
	750	25	2·0	−0·8	−1·8		
	500	50	4·0	−3·1	−2·6		
100 m. above ground.	170	35	2·5	−1·4	−2·0		
Anemometer.	105	70	light	...	...		
Geostrophic wind.	(at 7 h.)	90	6	−6	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	110	8	−8	+3		

South Farnborough. No. 287. June 17, 1915. 10 h. 55½ m.* G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	5300	120	2·5	−2·2	+1·3		Balloon lost in cloud. Minimum velocity at 1700 m. 0·5 m/s. (+0·4, W.-E.; −0·4, S.-N), followed by sharp veer to 75° at 1800 m. (*cf.* No. 286).
	5000	100	3·0	−3·0	+0·5		
	4500	60	3·0	−2·6	−1·5		
	4000	50	2·0	−1·5	−1·3		
	3500	80	3·0	−3·0	−0·5		
	3000	60	2·5	−2·2	−1·3		
	2500	65	4·0	−3·6	−1·7		*Pressure Distribution* (7 h.).
	2000	55	2·0	−1·6	−1·1		
	1750	?	0·5	...	...		
	1500	310	2·5	+1·9	−1·6	2·0	Anticyclone over Iceland. Depressions over White Sea and W. of Ireland.
	1250	310	3·0	+2·3	−1·9		
	1000	340	1·5	+0·5	−1·4		* This ascent ½ minute later than preceding.
	750	30	2·0	−1·0	−1·7		
	500	45	3·0	−2·1	−2·1		
100 m. above ground.	170	55	3·5	−2·9	−2·0		
Anemometer.	105	70	light	...	...		
Geostrophic wind.	(at 7 h.)	90	6	−6	0	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	110	8	−8	+3		

South Farnborough. No. 290. June 19, 1915. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	5850	345	3·0	+0·8	−2·9		Atmosphere clear. A.-St. 4, clearing, during ascent, Cu. forming. Balloon lost behind low cloud.
	...	...	...	...	...		
	5000	340	5·0	+1·5	−4·5		
	4000	345	4·5	+1·2	−4·3		
	3500	10	5·0	−1·0	−5·0		*Pressure Distribution* (7 h.).
	3000	0	5·0	0·0	−5·0		
	2500	20	3·5	−1·2	−3·3		Anticyclone over Iceland and British Isles. Depressions over White Sea and N. of Azores.
	2000	45	5·5	−4·0	−4·0		
	1750	40	5·0	−3·0	−4·0	2·4	
	1500	45	6·0	−4·0	−4·0		
	1250	60	8·0	−7·0	−4·0		
	1000	80	4·5	−4·4	−0·8		
	750	80	7·5	−7·5	−1·5		
	500	75	8·0	−7·5	−2·0		
100 m. above ground.	170	50	4·5	−3·4	−2·9		
Anemometer.	105	70	2·5	−2·3	−0·8		
Geostrophic wind.	(at 7 h.)	60	8	−7	−4	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 291. June 19, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2700	10	4·0	− 0·7	− 3·9		Balloon lost in cloud. Local maximum in velocity at 2300 m. 6·5 m/s. (−4·0, W.-E; −5·0, S.-N).
	2500	15	3·5	− 0·9	− 3·4		
	2000	40	4·5	− 2·9	− 3·4		
	1750	40	5·5	− 3·5	− 4·0		
	1500	50	7·0	− 5·5	− 4·5		
	1250	60	8·5	− 7·5	− 4·5		*Pressure Distribution* (7 h.).
	1000	80	4·0	− 3·9	− 0·7	2·4	
	750	75	7·0	− 7·0	− 2·0		Anticyclone over Iceland and British Isles. Depressions over White Sea and N. of Azores.
	500	65	9·5	− 8·5	− 4·0		
100 m. above ground.	170	60	11·5	−10·0	− 6·0		
Anemometer.	105	70	4·0	− 3·8	− 1·4		
Geostrophic wind.	(at 7 h.)	60	8	− 7	− 4	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 292. June 19, 1915. 11 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2550	25	7·0	− 3·0	− 6·5		Atmosphere a little hazy. No cloud. Balloon lost in distance. Veer from 245° at 2000 m. to 20° at 2250 m. Minimum velocity at 1850 m. 1·5 m/s. (+0·1, W.-E.; −1·5, S.-N.). Local minimum in velocity at 1350 m. 7·0 m/s. (−5·0, W.-E.; −5·0, S.-N.).
	2500	10	5·5	− 1·0	− 5·5		
	2000	245	4·5	+ 4·1	+ 1·9		
	1750	45	5·0	− 3·5	− 3·5		
	1500	50	19·0	−14·5	−12·0		
	1250	50	8·5	− 6·5	− 5·5		
	1000	60	12·5	−11·0	− 6·5	2·0	
	750	65	10·0	− 9·0	− 4·0		
	500	60	14·5	−12·5	− 7·5		
100 m. above ground.	170	55	9·5	− 8·0	− 5·5		*Pressure Distribution* (7 h.). Anticyclone over Iceland and British Isles. Depressions over White Sea and N. of Azores.
Anemometer.	105	45	3·0	− 2·1	− 2·1		
Geostrophic wind.	(at 7 h.)	60	8	− 7	− 4	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	90	4	− 4	0		

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 293. June 21, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	6300	290	12·0	+11·5	−4·0		Atmosphere rather hazy. Ci.-Cu. and high cloud, clearing somewhat during ascent. Balloon lost by accident. Wind backed from 155° at 1600 m. to 345° at 1850 m., then veered to 280° at 2050 m.
	6000	290	12·0	+11·5	−4·0		
	5000	305	5·5	+ 4·5	−3·0		
	4000	275	4·5	+ 4·5	−0·4		
	3500	265	2·0	+ 2·0	+0·2		
	3000	235	1·5	+ 1·2	+0·9		
	2500	245	2·0	+ 1·8	+0·8		
	2000	260	2·0	+ 2·0	+0·3		
	1750	45	3·5	− 2·5	−2·5		*Pressure Distribution* (7 h.).
	1500	130	2·5	− 1·9	+1·6	2·0	
	1250	160	2·0	− 0·7	+1·9		Rather uniform; no prominent features.
	1000	165	3·0	− 0·8	+2·9		
	750	125	3·5	− 2·9	+2·0		
	500	110	4·5	− 4·2	+1·5		
100 m. above ground.	170	60	1·5	− 1·3	−0·8		
Anemometer.	105	?	?	...	...		
Geostrophic wind.	(at 7 h.)	100	6	− 6	+1	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 294. June 21, 1915. 11 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s	m/s.	m/s.	
	2300	160	1·0	−0·3	+0·9		Atmosphere clear, some shimmer.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Rather uniform; no prominent features.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	125	2·5	−2·0	+1·4		
	1750	195	1·5	+0·4	+1·4		
	1500	125	2·0	−1·6	+1·1	2·0	
	1250	90	3·5	−3·5	0·0		
	1000	135	3·0	−2·1	+2·1		
	750	145	4·5	−2·6	+3·7		
	500	120	2·5	−2·2	+1·3		
	170	135	5·5	−4·0	+4·0		
	105	160	light	...	...		
(at 7 h.) (at 13 h.)		100	6 *Inde*	−6 *termin*	+1 *ate.*	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 295. June 22, 1915. 9 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3850	240	2·5	+ 2·2	+1·3		*Pressure Distribution* (7 h.).
	3500	80	0·5	− 0·5	−0·1		
	3000	95	4·5	− 4·5	+0·4		Anticyclone Scotland to Iceland.
	2500	115	1·5	− 1·3	+0·6		
	2000	105	11·5	−11·0	+3·0		
	1750	110	11·0	−10·5	+4·0		
	1500	130	7·5	− 5·5	+5·0		
	1250	110	8·0	− 7·5	+2·5	2·4	
	1000	95	10·0	−10·0	+1·0		
	750	85	10·5	−10·5	−1·0		
	500	65	6·5	− 6·0	−2·5		
100 m. above ground.	170	?	?	...	...		
Anemometer.	105	45	4·0	− 2·8	−2·8		
Geostrophic wind.	(at 7 h.) (at 13 h.)	110 130	9 11	− 8 − 8	+3 +7	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 296. June 23, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s	m/s.	m/s.	
	3250	110	7·0	− 6·5	+2·5		Atmosphere rather hazy. Ci.-Cu., with very little movement. Local maximum in velocity at 2850 m. 8·5 m/s. (−8·5, W.-E.; +1·5, S.-N.)
	...	..	...	...	...		
	3000	120	6·5	− 5·5	+3·5		
	2500	100	4·0	− 3·9	+0·7		
	2000	70	6·0	− 5·5	−2·0		
	1750	90	7·5	− 7·5	0·0		
	1500	105	10·0	− 9·5	+2·5		
	1250	95	10·0	−10·0	+1·0	2·4	*Pressure Distribution* (7 h.).
	1000	105	10·0	− 9·5	+2·5		
	750	110	10·0	− 9·5	+3·5		
	500	105	11·0	−10·5	+3·0		Anticyclone N. of Scotland. Shallow trough E. and W. through France.
	170	75	4·5	− 4·3	−1·2		
	105	55	6·5	− 5·3	−3·7		
(at 7 h.)		100	11	−11	+2	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 298. June 25, 1915. 10 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2700	150	6·0	−3·0	+5·0		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Anticyclone N. of Scotland. Irregular low, France and Bay of Biscay.
	...	...	...	...	...		
	2500	140	5·0	−3·0	+4·0		
	2000	140	5·0	−3·0	+4·0		
	1750	145	5·0	−3·0	+4·0		
	1500	150	4·0	−2·0	+3·5		
	1250	140	3·5	−2·2	+2·7	2·4	
	1000	120	5·0	−4·5	+2·5		
	750	125	3·5	−2·9	+2·0		
	500	65	4·5	−4·1	−1·9		
100 m. above ground.	170	15	2·5	−0·6	−2·4		
Anemometer.	105	20	1·5	−0·5	−1·4		
Geostrophic wind.	(at 7 h.) (at 13 h.)	90 90	6 5	−6 −5	0 0	... ...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 299. June 26, 1915. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	4550	175	10·5	−1·0	+10·5		Visibility good. Ci.-St., Cu., 1. Balloon lost in distance.
	4000	175	10·0	−1·0	+10·0		
	3500	180	8·0	0·0	+ 8·0		
	3000	190	8·5	+1·5	+ 8·5		
	2500	185	8·5	+0·5	+ 8·5		*Pressure Distribution* (7 h.).
	2000	185	6·5	+0·5	+ 6·5		
	1750	210	7·5	+4·0	+ 6·5		Shallow low over England.
	1500	220	8·0	+5·0	+ 6·0		
	1250	230	6·5	+5·0	+ 4·0	2·4	
	1000	250	6·0	+5·5	+ 2·0		
	750	240	8·0	+7·0	+ 4·0		
	500	240	10·0	+8·5	+ 5·0		
	170	225	5·5	+4·0	+ 4·0		
	105	215	4·0	+2·3	+ 3·3		
(at 7 h.)		*Inde*	*termin*	*ate.*		...	Approx. weights: balloon 12 gm., free lift 45 gm.

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:—Benson, 3; South Farnborough, 12.

11. Soundings with Registering Balloons.

Benson. No. 308. June 1, 1915. 19 h. 25 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height,	7·13 km.	400 mb.	240 a.
Lowest Temperature,	...	...	...
Base of Stratosphere, Type ?	Stratosphere not reached.		

Height above M.S.L. ... ... 57 m.

Place of Fall, Hambledon.

Distance, and Orientation, 17 km. 106° from N.

Geostrophic Wind, . . *Indeterminate.*

Pressure Distribution (18 h.).

High pressure over British Isles. Depression approaching across Atlantic.

Weight of balloon 230 gm., weight of instruments, etc., 86 gm. Free lift 230 gm.

Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	km.	mb.	a.	a.
4000	335	2	+1	−2	...	7·13	400	240	
3500	315	3	+2	−2	..	7·00	407	241	+6
						6·00	468	247	
3000	335	2	+1	−2	...	5·52	500	250	+7
2500	25	2	−1	−2	...	5·00	536	254	+6
2000	360	2	0	−2	...	4·13	600	259	
						4·00	612	260	+7
1750	360	2	0	−2	...	3·00	696	267	
1500	345	4	+1	−4	...	2·95	700	268	+6
1250	340	3	+1	−3	...	2·00	789	273	+5
						1·89	800	273	
1000	335	4	+2	−4	...	1·00	894	278	
750	335	4	+2	−4	...	·94	900	279	
500	335	4	+2	−4	...	·08	1000	287	
157	350	5	+1	−5	...	Ground	1002	287·5	...
82	...	0	0	0	...	M.S.L.	1010	...	...

Remarks.—Temperature inversion of 2 a. at 1·7 km. The balloon started to leak at about 5 km. height and most probably did not burst.

Benson. No. 309. June 3, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height,	14·3 km.	139 mb.	? a.
Lowest Temperature,	11·3 km.	221 mb.	216 a.
Base of Stratosphere,	11·3 km.	221 mb.	216 a.
Type 1.			

Height above M.S.L., 57 m.

Place of Fall, Saxmundham.

Distance, and Orientation, 186 km. 70° from N.

Data for Station. at 7 h. G.M.T.

Geostrophic Wind, Direction, ... 235°

Geostrophic Wind, Velocity, ... 10 m/s.

Correction for curvature of isobars, . . . 0 m/s.

Gradient Wind, ... 10 m/s.

Components, W. to E., ... +8 m/s.

Components, S. to N., ... +6 m/s.

Height above M.S.L	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Remarks.
km.	mb.	a.	a.	Isothermal at 279 a. from 1·0 to 1·7 km.
14·00	146	?		The balloon did not burst and the temperatures at heights above 13 km. were not reliable.
13·00	169	223	−4	
12·00	198	219		
11·93	200	219	−1	
11·00	232	218	+8	*Pressure Distribution* (7 h.).
10·00	270	226		
9·30	300	230	+6	Anticyclone Azores to Germany. Depression S.W. of Iceland. Secondary over Bristol Channel.
9·00	313	232	+9	
8·00	362	241		
7·28	400	247	+7	
7·00	416	248	+7	
6·00	477	255		
5·65	500	257	+5	
5·00	545	260		
4·25	600	265	+7	
4·00	619	267		
3·04	700	272	+5	
3·00	703	272	+6	
2·00	797	278		
1·97	800	278	+1	
1·02	900	279		
1·00	902	279		
0·16	1000	286		
Ground	1010	287	...	
M.S.L.	1018	...	...	

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m.			Remarks.
			Velocity	Components.		
			V.	W.-E.	S.-N.	
		°	m/s.	m/s.	m/s.	
1	St.-Cu.	269	6·0	+6·0	+0·1	*Observation at* 9 *h.*
3	St.-Cu.	272	4·0	+4·0	−0·1	*Observation at* 11 *h.* 30 *m.* St.-Cu. formed from apices of Cu.-Nb.
4	St.-Cu.	235	5·6	−4·6	+3·2	Transition type between Cu. and St.-Cu.
5	Cu.-Nb.	319	5·6	+3·7	−4·2	
9	Ci.-Cu.	210	4·0	+2·0	+3·5	Ci.-Cu. massed in fine lenticular sheets. *Observation at* 12 *h.*
10	St.-Cu.	280	3·6	+3·5	−0·6	Transition type between Cu. and St.-Cu.
12	Cu.	269	4·0	+4·0	+0·1	
21	Cu.	307	7·4	+5·9	−4·4	
22	Cu.	270	2·3	+2·3	0·0	
28	A.-St.	225	1·4	+1·0	+1·0	Cloud in thin sheets and flakes, very diffuse, measurement approximate only.

General Note.—From the 12th to the 21st the sky was practically cloudless every day, some slight Ci.-Cu., A.-Cu., and St.-Cu. appearing on the horizons only. From the 23rd to the 30th the sky was practically overcast every day except on the 28th. During this dull spell, the prevailing cloud-character was either a degraded cumulus layer showing no detail, or else a uniform sheet of stratus.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	2·6	16	1128	28	61	14 10	52	4·7	28	—	—	—	2·3	13	—	—	—	—	5·6	34
2	4·8	29	1639	40	89	12 10	89	3·9	24	—	—	—	—	—	—	—	—	—	1·6	10
3	9·2	56	2004	49	86	14 20	80	9·1	55	—	—	—	2·2	13	—	—	—	—	—	—
4	5·7	35	1600	39	62	10 0	43	5·5	34	—	—	—	8·4	49	—	—	—	—	*x*12·0	73
5	9·4	57	1863	46	86	12 20	86	9·1	55	—	—	—	8·8	51	—	—	—	—	8·0	48
6	7·2	44	1760	43	78	12 50	78	7·4	45	52	45	Ci.	7·0	41	—	—	—	—	—	—
7	5·0	30	1083	27	78	14 25	33	6·3	38	—	—	—	—	—	—	—	—	—	0·6	4
8	0·2	1	631	16	59	9 10	27	—	—	—	—	—	6·0	35	—	—	—	—	7·9	48
9	9·0	55	1860	46	81	11 5	80	8·1	50	75	66	Clear	5·0	29	—	—	—	—	8·1	49
10	6·7	41	1658	41	*x* 95	12 25	*x* 95	6·5	40	—	—	—	3·2	19	—	—	—	—	—	—
11	—	—	741	18	32	9 20	32	—	—	—	—	—	5·6	33	—	—	—	—	0·7	4
12	7·5	46	1559	39	87	12 45	60	6·9	43	—	—	—	9·1	54	—	—	—	—	5·4	33
13	4·3	27	1092	27	54	10 10	29	4·0	25	—	—	—	6·2	37	—	—	—	—	4·5	28
14	4·7	29	1381	35	84	10 10	61	4·0	25	—	—	—	0·8	5	—	—	—	—	8·1	50
15	11·4	71	1789	45	83	12 5	83	11·2	70	83	72	Clear	3·0	18	—	—	—	—	9·6	59
16	0·4	2	621	16	47	10 40	17	—	—	—	—	—	1·0	6	—	—	—	—	1·0	6
17	2·1	13	687	17	49	9 55	7	1·9	12	—	—	—	5·2	31	—	—	—	—	7·0	43
18	6·4	40	1510	38	77	12 15	77	5·6	35	—	—	—	8·5	51	—	—	—	—	—	—
19	1·5	9	940	24	52	11 15	53	2·4	15	—	—	—	—	—	—	—	—	—	3·2	20
20	11·0	69	*x* 2095	54	94	11 20	90	11·4	71	80	69	Clear	0·2	1	—	—	—	—	6·5	40
21	8·1	51	1675	43	83	12 20	83	7·4	47	—	—	—	2·1	13	—	—	—	—	—	—
22	—	—	*n* 404	10	*n* 23	7 55	14	—	—	—	—	—	0·3	2	—	—	—	—	6·1	38
23	4·0	25	1071	28	74	12 20	74	5·7	36	—	—	—	6·5	39	—	—	—	—	7·5	47
24	6·6	42	1453	38	83	12 5	83	5·4	34	—	—	—	8·2	50	—	—	—	—	10·6	67
25	6·4	41	1559	41	86	13 25	85	6·8	43	—	—	—	7·7	47	—	—	—	—	10·1	64
26	10·6	67	1912	50	85	13 20	77	11·0	70	—	—	—	8·2	50	—	—	—	—	7·5	47
27	7·0	45	1469	39	83	13 0	82	6·3	40	81	68	Clear	3·7	23	—	—	—	—	10·6	68
28	*x*11·5	74	1924	51	81	11 30	81	*x*11·8	76	78	66	Clear	5·8	36	—	—	—	—	7·5	48
29	9·1	59	1641	44	82	13 30	79	8·2	53	74	62	Clear	*x*12·5	78	—	—	—	—	11·7	75
30	10·4	67	1792	48	79	13 25	74	10·7	69	81	68	Clear	9·7	60	—	—	—	—	4·2	27
31	2·6	17	1304	35	65	12 50	58	2·7	18	—	—	—	5·4	34	—	—	—	—	3·7	24
Means	5·97	38	1414	36	73	—	63	5·94	37	—	—	—	4·94	30	—	—	—	—	5·45	34
Normal	5·55	35	—	—	—	—	—	6·58	41	—	—	—	5·00	30	—	—	—	—	5·06	32
	←4 years→							←30 years→					←4 years→						←30 years→	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.		γ	′	′
1	1021·0	1020·6	88·6	88·2	*x* 92	85	13·9	16·3	80	96	21	3	14	6	7	10≡⁰●	6·4	c. and v. ● from 21 h.	…	…	…
2	1018·3	1018·6	89·2	89·0	*x* 92	*x* 88	17·6	17·3	97	96	17	4	15	3	10≡⁰●	10≡⁰	2·1	● *a.* ≡⁰ *a.* and *p.*	…	…	…
3	1017·1	1015·5	89·1	86·5	89	86	17·6	14·6	96	95	15	4	13	4	10≡⁰	10	8·9	o. with ≡⁰●.	…	…	…
4	1013·4	1014·7	89·9	87·7	*x* 92	86	16·6	14·6	88	87	20	4	23	2	7	3	—	Fine.	…	…	…
5	1016·0	1015·6	88·7	86·9	91	85	13·9	14·2	80	89	21	3	17	2	8	6	14·0	Fair.	…	…	…
6	1005·3	1000·6	86·2	85·8	89	85	13·9	13·5	84	93	8	10	5	9	10	10≡⁰●	19·3	q., with ≡⁰●.	…	…	…
7	1009·0	1015·8	86·2	86·5	*n* 88	85	13·5	11·9	90	76	30	8	29	8	10●	7	1·3	Gloomy and showery.	…	…	…
8	1019·6	1022·4	87·5	86·4	90	85	12·9	12·5	78	81	1	3	30	4	9	2	3·3	c. to fair.	…	…	…
9	1024·5	1024·8	87·3	87·3	89	84	12·2	12·9	76	79	1	2	25	4	9	9	—	Fair.	…	…	…
10	1022·6	1020·5	87·4	87·1	*n* 88	86	14·2	13·2	87	83	25	6	25	6	10	10	1·2	o. and c. Clouds low.	…	…	…
11	1016·2	1012·3	87·2	87·4	89	86	14·2	14·2	87	87	25	5	24	8	10●⁰	8	—	o. Clouds low.	…	…	…
12	1011·9	1013·5	87·2	86·2	90	86	12·5	11·9	78	78	25	6	28	3	9	7	0·7	c.	17848	20 4·6	68 7·6
13	1010·6	1009·3	86·4	86·0	89	83	12·2	11·2	79	*n* 75	23	4	26	2	10	5	0·3	c. to fair.	…	…	…
14	1007·4	1006·7	87·7	85·5	90	*n* 81	12·9	12·2	77	85	23	5	24	5	7	7	3·1	c. to fair. ⌒ 19 h.	…	…	…
15	1007·4	1005·4	86·9	87·3	90	84	11·9	12·9	76	79	24	5	13	5	7	10●	17·1	●² *n.* Fair.	…	…	…
16	992·8	989·6	88·9	85·8	91	86	14·9	14·2	84	97	19	6	26	13	10	10●⁰	4·7	● showers.	17860	20 1·8	68 6·2
17	1011·6	1021·0	87·1	86·4	90	84	12·2	12·5	77	82	29	9	26	2	9	4	0·9	Fair. Clouds low.	…	…	…
18	1020·5	1017·1	86·0	88·2	90	83	13·9	16·6	95	97	15	5	16	4	10≡⁰●⁰	10	8·7	≡⁰●. Clouds low.	…	…	…
19	1010·8	1013·1	88·3	87·4	91	87	16·3	14·2	95	87	19	7	21	8	10	8	0·6	● showers.	…	…	…
20	1014·9	1017·5	87·3	87·0	90	85	12·5	13·5	77	85	23	7	22	5	8	10	0·1	Fair.	…	…	…
21	1013·1	1006·0	88·7	87·0	89	85	15·9	14·9	89	94	18	5	19	3	10	8	3·1	≡⁰●.	…	…	…
22	999·1	993·9	88·3	86·6	91	86	15·2	13·5	89	88	20	8	20	6	7	7	3·6	Fair. v. *p.*	…	…	…
23	999·0	1004·6	87·0	87·0	91	86	14·6	13·5	91	86	23	6	27	4	8	9	0·6	Fair. v. *p.*	…	…	…
24	1008·6	1010·4	87·1	86·7	90	85	12·2	12·9	77	83	26	5	—	1	7	7	0·7	Fair. v. *p.*	17874	20 4·6	68 6·5
25	1007·0	1005·5	88·0	86·6	91	83	13·5	12·9	81	84	19	4	21	3	9	8●	8·5	Fair.	…	…	…
26	1001·3	1002·2	85·5	83·8	89	83	13·2	11·2	93	88	16	5	21	4	8	9●	12·2	● showers.	…	…	…
27	1003·2	1011·9	86·6	86·6	*n* 88	83	11·9	12·9	*n* 75	84	26	8	27	6	4	5	1·7	Fair.	…	…	…
28	1017·5	1019·1	87·9	87·0	91	85	13·2	14·6	79	91	23	5	—	1	4	7	0·1	Fair.	…	…	…
29	1019·5	1022·8	88·7	87·3	91	86	15·2	13·9	85	85	21	6	—	1	8	4	—	Fair.	…	…	…
30	1021·2	1011·8	89·6	87·9	91	85	15·6	12·9	84	76	—	1	11	8	7	10●	*x* 22·4	Fair to ≡⁰● in evening. ⊕ 9 h.	…	…	…
31	1000·8	998·8	87·4	88·2	91	86	14·9	13·5	92	79	12	11	11	5	10≡⁰●	8	9·2	≡⁰● ; clearing in evening.	…	…	…
Means	1011·7	1012·0	87·7	86·9	90·0	84·9	14·0	13·6	84	86		5·5		4·7	8·5	7·7	154·8	Monthly Totals or Means.	17861	20 3·7	68 6·8
Normal	1013·9	1014·4	88·3	87·4	90·7	85·2	14·6	14·2	83	86		4·7		4·0	—	—	94·5 (40 yrs.)	Normals.			
	←40 years→						←25 years→				←30 years→										

x denotes the maximum and *n* the minimum value in the column.

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3. METEOROLOGY :—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
																					Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.	9 h.		0·3 m.	1·2 m.		
			200+	200+	200+	200+									Tenths of Sky covered.			200+	200+	200+		
	mb.	mb.	°	°	°	°	millibar.		%	%	Dir.	m/s.	Dir.	m/s.			mm.		°	°	cm.	cm.
1	1018·3	1022·7	87·1	90·4	94	83	13·9	15·2	86	77	—	1	—	1	10	10≡⁰	—	79	88·5	86·4	221	221
2	1024·1	1023·1	89·4	92·9	97	85	15·9	16·6	86	72	12	3	25	2	5≡⁰	9	—	81	89·0	86·5	221	—
3	1022·5	1019·2	93·2	94·3	100	88	14·6	18·6	61	74	20	3	—	1	1	8	—	85	90·4	86·5	221	—
4	1013·4	1009·8	96·7	92·1	x102	x 89	16·9	17·6	58	80	16	4	1	3	9	4	—	86	91·4	86·7	220	—
5	1014·3	1016·4	91·8	93·0	98	88	14·9	14·6	70	62	26	2	23	2	4	7	—	85	91·4	86·9	219	—
6	1015·0	1006·4	91·1	92·3	97	86	14·2	12·2	69	n 55	—	1	10	4	6	9	x 26·9	81	91·1	86·9	218	—
7	1002·2	1004·7	88·6	88·3	94	87	14·9	13·5	85	78	17	6	21	6	9	4	5·8	86	91·0	87·0	217	—
8	1011·9	1017·7	87·8	88·6	90	87	13·9	15·6	83	88	24	3	—	1	9●	10	2·6	85	89·9	87·1	216	—
9	1020·4	1019·5	89·4	87·5	93	86	11·2	12·5	60	75	29	2	—	1	5	1	—	85	88·4	87·2	215	—
10	1017·8	1015·5	89·2	89·0	93	84	11·5	13·2	63	75	24	4	24	4	8	10	—	79	89·6	87·3	214	—
11	1011·1	1008·5	88·8	88·0	91	86	12·9	12·9	72	76	24	4	24	3	10	9	—	86	89·7	87·4	213	—
12	1008·0	1010·4	89·1	87·8	92	85	11·5	11·5	63	69	25	4	24	2	7	1	—	83	89·0	87·3	212	—
13	1009·9	1006·0	89·4	88·7	93	n 81	13·2	13·2	71	74	—	1	22	3	6	9	—	n 75	88·8	87·2	212	—
14	1008·9	1002·8	89·1	86·8	93	83	12·5	14·9	70	94	21	4	—	1	7	10●≡⁰	14·9	79	89·0	87·2	211	—
15	1003·5	1006·9	88·3	87·3	92	84	12·2	12·5	70	77	24	4	23	2	4	1	—	81	88·7	87·2	211	—
16	1006·5	992·6	88·0	88·1	90	83	13·2	16·3	77	97	20	4	17	6	10	10●	14·3	79	88·2	87·2	212	—
17	993·6	1012·8	89·0	86·5	n 89	84	12·9	10·5	71	69	25	7	31	2	10	0	0·5	85	88·3	87·2	212	—
18	1021·3	1022·4	87·6	88·7	94	83	11·9	12·5	72	71	26	2	22	2	9	5	—	79	87·2	87·2	211	—
19	1019·5	1016·1	90·1	88·9	95	87	15·2	11·9	79	66	19	6	19	4	10	2	1·2	83	88·4	87·1	212	—
20	1012·7	1014·7	90·0	87·8	93	86	12·9	11·9	68	71	22	5	24	2	4	5	—	85	88·8	87·0	213	—
21	1015·6	1013·9	89·1	87·9	93	86	10·5	14·6	58	86	24	4	20	3	3	10	0·2	83	89·0	87·0	212	—
22	1007·4	1002·0	89·2	88·2	n 89	87	14·6	16·3	81	95	18	7	18	5	10●⁰	10	23·6	86	89·2	87·0	211	—
23	999·0	1003·4	87·2	88·1	91	86	14·6	13·2	90	77	20	4	21	4	10●	7	2·4	84	88·7	87·0	210	—
24	1005·4	1007·2	89·0	86·9	93	85	14·6	14·6	82	92	21	3	—	1	8	10	1·4	82	88·7	87·1	209	—
25	1009·3	1007·8	88·1	85·6	92	85	11·9	13·9	69	95	22	3	—	1	5	9●⁰	7·2	83	89·3	87·1	209	209
26	1009·6	1010·1	87·4	87·1	93	84	13·2	13·2	81	82	22	2	18	2	4	1	3·4	79	89·1	87·2	211	—
27	1007·1	1006·7	86·6	87·3	93	83	13·9	12·5	90	78	18	4	20	5	10●	7	3·6	79	89·0	87·2	212	—
28	1014·1	1019·1	88·3	87·4	93	84	11·5	11·9	66	73	24	5	25	2	5	1	—	82	88·8	87·2	213	—
29	1020·6	1020·7	89·3	86·4	94	82	13·2	14·2	73	91	23	2	—	1	8	5≡⁰	—	78	88·9	87·2	214	—
30	1020·4	1016·6	88·5	89·0	94	83	14·6	13·5	84	76	19	2	21	2	1∞	4	—	79	89·0	87·2	215	—
31	1013·4	1010·2	89·3	89·4	94	85	14·6	14·2	79	78	21	2	—	1	8	10	—	82	89·7	87·3	218	—
Means	1012·2	1011·8	89·2	88·7	93·5	85·0	13·5	13·7	74	78		3·5		2·5	6·9	6·4	108·0	82·1	89·2	87·1	214	—
Normal	1014·6	1014·5	90·1	89·5	94·7	85·4	13·6	14·1	71	76		3·4		2·4	—	—	61·0 (40 years)	—	90·1	87·3	—	—
	40 years						25 years				30 years								11 years			

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

Heights above Mean Sea Level :—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground :—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

1	990·3	994·1	86·3	83·4	90	82	13·2	10·8	88	86	20	3	26	3	10∞	4	3·8	
2	990·9	990·3	84·0	86·9	89	82	12·5	15·6	96	98	16	9	17	4	10●⁰≡⁰	10●⁰≡⁰	5·4	
3	991·9	990·5	88·1	84·8	91	x 84	14·6	13·5	86	98	19	6	17	5	9	10≡⁰	5·8	
4	986·5	984·6	86·2	85·7	x 93	82	12·5	12·9	81	89	17	6	—	1	9	4∞	—	
5	985·2	987·8	89·5	83·0	92	81	12·5	11·2	68	91	23	4	20	3	4	5	—	
6	987·5	982·5	88·3	87·5	x 93	80	12·5	10·2	72	63	16	4	6	6	7	10●	5·5	
7	973·5	974·0	85·2	84·1	86	x 84	13·2	12·2	94	92	3	10	32	10	10●	10	15·6	
8	983·7	989·3	86·0	84·3	90	81	10·5	11·5	71	87	31	7	—	1	7	7	—	
9	991·1	989·6	87·0	83·8	89	82	11·2	10·8	69	83	24	4	22	5	5	9	0·2	
10	985·0	982·7	86·4	85·0	91	83	11·5	12·2	74	88	22	7	—	2	9	10	0·6	
11	978·8	976·3	84·5	83·3	89	82	10·5	10·2	78	83	25	5	24	4	9	8	—	
12	976·6	980·2	86·5	82·6	89	81	10·2	9·8	66	83	25	5	25	2	6	5	—	
13	980·5	977·6	85·7	82·1	88	n 75	9·8	10·2	67	87	20	3	22	4	6	3	2·6	
14	976·3	974·7	83·7	82·7	n 85	78	10·8	11·2	83	93	20	7	20	3	8	10	5·3	
15	973·5	977·0	85·2	80·0	87	77	10·8	9·1	75	92	23	5	—	0	9	4	4·3	
16	975·4	969·4	84·5	83·5	89	77	11·5	11·9	86	94	—	0	4	8	10	10●	6·1	
17	975·3	986·1	84·7	83·5	89	83	9·8	10·8	72	86	2	9	32	2	9	7	—	
18	991·5	990·5	87·1	83·5	90	80	10·2	10·8	n 62	87	25	3	17	4	1	10●	x 18·4	
19	982·7	977·3	86·6	86·3	87	83	15·2	13·5	97	90	17	10	19	12	10●≡⁰	10	18·3	
20	974·8	978·9	83·1	83·6	86	83	10·5	10·8	86	83	19	12	23	12	10●	10●⁰	3·4	
21	982·4	978·0	83·4	85·0	88	82	9·8	13·5	79	97	22	7	17	10	10	10●≡⁰	11·4	
22	971·5	967·9	86·2	84·6	87	x 84	13·2	12·9	87	96	18	7	17	4	9	6≡⁰	5·2	
23	967·6	971·3	87·3	83·8	90	82	12·2	11·2	74	86	18	3	25	6	5	4	2·0	
24	976·0	978·7	85·4	81·0	91	79	10·8	8·8	75	84	24	4	25	3	9	3	0·1	
25	978·7	978·3	84·6	80·3	87	76	10·8	9·1	81	89	22	3	—	1	8●	4	3·1	
26	979·1	979·3	85·3	81·8	89	n 75	10·5	10·2	74	90	—	1	—	1	8	10	7·0	
27	977·6	977·4	84·9	83·0	89	79	11·5	10·5	82	87	—	0	22	2	7	7	2·9	
28	980·9	987·5	85·4	81·6	88	77	10·8	9·5	75	86	26	7	26	5	9	1	0·8	
29	990·7	992·2	86·5	82·5	90	78	10·2	10·2	65	87	25	4	—	0	2	1	—	
30	991·4	987·9	88·9	81·9	92	76	12·2	9·8	69	87	—	1	27	4	4	1	—	
31	984·8	981·9	86·4	85·2	92	78	12·5	13·2	81	92	21	3	—	1	9	3	0·3	
Means	981·7	981·7	85·9	83·6	89·1	80·1	11·5	11·2	78	88		5·1		4·1	7·7	6·6	128·1	—
Normal 1911-14	987·7	987·9	87·1	85·5	90·6	81·9	12·6	12·6	79	87		4·6		3·2	—	—	64·6	—

No record.

REMARKS.
o. till afternoon. Brilliant sunset.
q. with ≡ ● from 13 h.
●≡⁰ all day.
● early. Fair to fine from 7 h.
≡ early. Fine and sunny from 7 h.
c. throughout.
● *a*. o. throughout. ●⁰ in afternoon.
● 1 h.–3 h. Sun and cloud.
Bright intervals *a*. ●⁰ in evening.
c. to o. with q. and ●⁰ showers.
Frequent bright intervals. q.
c. and cool. v.
●² shower between 13 h. and 14 h.
c. to o. ● showers in afternoon.
Cool and c. ●² showers 10 h.–15 h.
o. and cool. ● in afternoon.
● *a*. v. in evening.
Fine *a*.
o. all day. ●² during day.
● *a*. *q*.
Dull and o., with ●.
● till 5 h. ● showers in afternoon.
T ●² showers. Frequent bright intervals.
Fine most of day.
Occasional showers. T in N.W. 16 h.
Distant T in afternoon.
●² showers throughout.
● showers in afternoon. Fine evening.
Fine throughout.
≡ 1 h.–7 h. ⌓². ⟀ in afternoon.
c. to o.

Monthly **Totals** or **Means**.

Normals.

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism:—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 22 days; they 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.

x denotes the maximum and *n* the minimum value in the column. z Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·86.				Charge per cc. ×10²⁰.		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.												
		v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	≡⁰ early. Fine from 13 h. ●⁰ 19 h.	160	150	150	215	200	150	0·70	1	1	493	22 40	436	9 49	57	25·3	13 29	12·2	7 51	13·1
2	≡ early. Occasional sunshine.	225	110	—	175	790	430	—	0	2	510	0 30	420	11 29	90	23·7	3 38	10·7	0 55	13·0
3	Fine *a.*; fair to fine later.	240	260	120	325	—	—	—	1	1	487	19 25	414	11 33	73	25·2	13 45	13·0	7 18	12·2
4	Dull to fair. Fine evening.	130	195	95	110	—	—	—	0	0	478	19 35	431	7 55	47	22·3	13 15	14·4	5 42	*n* 7·9
5	Fair to fine. [23 h.	85	130	95	110	670	1070	0·90	0	0	497	20 51	436	10 19	61	24·0	14 31	12·3	8 30	11·7
6	Fair to fine. ⊕12 h. ⌇●²	95	215	95	205	450	680	1·20	1	1	508	8 13	430	13 5	78	26·3	12 50	11·3	8 48	15·0
7	q. and showery *a.* ⊤ 15 h. Fine *p.*	110	55	*z*±	—	770	660	—	1	0	486	19 13	446	10 53	*n* 40	24·4	12 58	13·7	8 27	10·7
8	Dull with occasional ●⁰.	—	—	120	150	—	—	—	1	1	506	19 40	443	10 42	63	24·2	13 45	11·1	23 29	13·1
9	●² 4 h. Fair to fine.	65	235	95	75	1010	990	1·30	1	2	505	18 7	446	6 40	59	26·5	14 1	8·7	21 21	17·8
10	Fine early, then fair to o.	175	175	140	160	—	—	—	0	1	512	22 10	431	10 13	81	*x* 27·9	12 48	12·3	23 59	15·6
11	Dull throughout.	110	160	130	130	—	—	—	0	1	489	18 29	403	10 16	86	25·8	12 55	9·7	5 5	16·1
12	Fair to fine.	—	195	95	185	600	540	0·80	0	1	476	4 48	*n* 387	9 1	89	26·0	13 12	12·3	6 20	13·7
13	≡⁰ early. Sun and cloud.	215	370	110	110	1030	500	1·05	0	0	480	15 13	419	10 34	61	27·8	13 52	12·1	7 33	15·7
14	Fair to dull. Occasional ●⁰.	55	165	130	*z*−	—	—	—	2	0	476	23 32	408	10 30	68	27·2	14 6	12·0	6 5	15·2
15	Fair to fine.	75	270	150	335	—	—	—	1	0	480	17 40	416	9 29	64	24·3	13 38	11·3	7 13	13·0
16	≡⁰ and d. *a.* ● 16 h.–22 h.	290	300	205	−35	—	—	—	2	0	479	19 49	423	10 50	56	25·0	14 24	12·2	6 26	12·8
17	d. *a.* and *p.* Fine *n.*	95	160	110	240	—	—	—	1	0	480	16 1	426	9 55	54	25·2	13 31	12·3	6 48	12·9
18	Fair *a.* Fine *p.* v. *p.*	110	130	110	215	—	—	—	0	0	485	17 37	425	10 33	60	26·7	12 58	10·4	8 0	16·3
19	Dull to fair.	130	160	110	355	200	490	0·80	0	0	483	18 33	425	9 43	58	23·4	13 42	10·1	7 8	13·3
20	● 4 h.–5 h. Fine to c.	65	175	100	250	1190	780	0·55	1	0	483	20 26	432	10 7	51	23·1	14 43	9·3	7 53	13·8
21	Fine till 16 h. ●⁰ 20 h.	150	250	130	140	950	710	0·80	0	0	494	19 49	435	11 3	59	24·2	12 30	10·3	7 5	13·9
22	Dull throughout, with ●.	130	110	*z*−	−45	—	—	—	2	1	503	15 20	443	8 39	60	24·4	12 42	9·0	6 33	15·4
23	Dull, with ●, to fine. ⊤ *p.*	150	*z*±	*z*+	150	—	—	—	2	1	497	16 36	438	9 48	59	23·5	13 14	11·5	7 9	12·0
24	Fine to dull. ● *p.* ⌇ 14 h.	150	130	165	380	—	—	—	1	0	486	17 17	441	10 0	45	24·2	12 18	12·2	6 3	12·0
25	Fine *a.* Showery later. ⌇ 14 h.	30	165	*z*+	95	—	—	—	2	1	493	20 58	441	12 31	52	22·0	11 49	10·3	6 58	11·7
26	Fine to fair. [*p.*	150	225	130	270	—	—	—	1	1	503	17 53	431	11 3	72	26·0	14 0	10·3	7 50	15·7
27	● to dull. Fine from 11 h. ⊤	195	*z*±	140	250	—	—	—	2	2	498	16 33	414	10 10	84	26·8	12 38	9·3	7 0	17·5
28	Mostly fine.	110	185	100	280	470	460	0·60	1	0	477	19 50	415	10 10	62	26·0	13 0	10·8	7 55	15·2
29	Fine *a.* ⌇ *p.*	215	215	55	215	—	—	—	1	1	*x* 518	20 33	414	9 30	*x*104	26·5	12 38	*n* 4·6	20 20	*x*21·9
30	≡ early. Fine.	110	235	100	215	730	480	0·60	0	1	489	23 24	420	10 20	69	27·3	12 30	12·0	2 0	15·3
31	Dull to fine.	85	185	150	355	—	—	—	0	0	484	17 43	431	10 50	53	23·8	14 20	11·5	7 35	12·3
M.		137*	205*	120*	212*	—	—	—	—	—	491	—	426	—	65	25·1	—	11·1	—	14·1

6. Atmospheric Electricity and Terrestrial Magnetism:—Eskdalemuir.

Day.	Potential Gradient, Volts per metre.* Factor 6·15.				Charge per cc. ×10²⁰.		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+.		Minimum. 45000 γ+.		Maximum. 45000 γ+.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	c.			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.	Amp/cm².														
1	132	141	99	256	—	—	—	1 *a*	1	22 39	1039	971	11 5	14 24	109	39	8 16	17 45	187	164	11 49
2	165	...	422	314	—	—	—	?1 *a*	2	0 29	1060	950	4 3	3 42	117	31	1 6	18 7	217	*n* 92	4 2
3	256	306	199	190	—	—	—	1 *a*	1	19 46	1034	931	11 36	13 52	112	48	6 32	18 8	199	163	13 20
4	273	248	165	562	—	—	—	1 *a*	0	19 36	1018	978	12 32	14 31	93	48	{8 25 / 8 40}	6 5	181	159	11 47
5	968	157	116	182	—	—	—	0 *a*	0	20 50	1043	974	11 2	14 6	111	38	8 32	19 18	179	159	12 59
6	331	165	108	0	—	—	—	1 *a*	1	8 10	1056	950	13 3	14 46	123	38	8 49	16 25	188	148	10 10
7	149	*z*	−215	83	—	—	—	2 *b*	0	19 14	1030	973	11 2	12 52	105	50	8 7	18 34	182	158	11 45
8	132	116	0	174	—	—	—	1 *b*	1	19 38	1054	978	12 11	14 25	109	40	23 58	19 32	180	156	12 27
9	66	165	157	174	—	—	—	1 *b*	1	17 51	1057	968	15 11	16 46	*x* 130	21	21 22	18 48	201	139	1 41
10	174	91	91	58	—	—	—	0 *a*	1	21 51	1053	957	10 41	12 51	124	40	6 41	16 37	184	142	22 56
11	149	99	...	...	—	—	—	?	1	18 27	1054	950	13 12	15 10	107	*n* 13	5 8	18 51	187	127	4 41
12	...	...	141	339	—	—	—	?	1	4 47	1028	*n* 925	9 1	13 58	110	36	6 37	14 57	190	135	4 48
13	190	174	−190	256	—	—	—	1 *b*	0	21 42	1030	952	11 12	{14 10 / 15 3}	126	37	7 35	17 36	180	151	12 57
14	157	141	83	265	—	—	—	1 *b*	0	20 36	1027	933	11 47	15 7	117	41	6 8	17 57	183	147	12 52
15	141	199	*z*	331	—	—	—	2 *b*	0	{17 20 / 42 3}	1026	956	10 32	13 39	104	38	8 13	16 23	180	155	11 33
16	306	232	165	−571	—	—	—	2 *b*	0	19 46	1024	962	11 2	15 25	110	40	6 50	19 30	178	147	13 29
17	207	99	157	190	—	—	—	1 *a*	0	17 13	1021	968	11 55	14 11	109	43	8 29	19 30	177	156	12 20
18	199	223	141	174	—	—	—	0 *a*	0	18 34	1035	963	11 35	13 31	114	30	8 10	18 8	181	147	12 26
19	8	−165	−17	99	—	—	—	2 *b*	0	18 33	1032	969	10 49	14 15	109	29	7 8	19 9	183	149	11 54
20	91	...	17	83	—	—	—	1 *b*	0	{20 20 / 7 26}	1026	967	11 12	14 53	103	22	7 54	6 0	183	151	11 27
21	66	−8	83	91	—	—	—	1 *b*	0	19 49	1036	964	{11 27 / 11 41}	13 23	98	31	6 28	5 15	179	146	13 10
22	41	265	74	289	—	—	—	1 *a*	1	15 18	1050	972	13 12	14 50	124	17	6 35	17 52	180	138	12 49
23	108	157	207	207	—	—	—	1 *b*	1	16 31	1044	980	11 52	16 30	102	38	7 10	17 40	176	149	13 8
24	240	108	58	248	—	—	—	0 *a*	0	17 15	1036	974	10 22	12 23	109	43	6 10	16 35	174	157	9 28
25	165	41	207	165	—	—	—	1 *c*	1	20 50	1039	967	12 32	15 6	107	40	7 1	17 55	183	144	{11 39 / 11 49}
26	141	116	116	240	—	—	—	1 *b*	1	17 55	1059	955	11 2	13 38	119	28	7 52	19 20	201	152	11 50
27	91	240	91	74	710	520	—	1 *c*	2	18 9	1060	951	9 34	13 52	127	24	7 1	17 38	*x* 220	129	3 5
28	165	116	*z*	289	—	—	—	1 *b*	0	19 11	1027	950	10 41	14 13	114	29	7 57	17 31	189	153	12 38
29	215	108	91	298	—	—	—	0 *a*	2	20 7	*x* 1100	956	10 8	13 4	114	16	20 16	20 22	193	152	12 55
30	389	198	157	380	—	—	—	0 *a*	1	23 23	1045	951	11 12	13 57	119	34	0 42	18 20	184	142	1 25
31	190	157	157	190	1040	390	—	0 *a*	1	17 58	1035	973	12 42	14 59	99	40	7 13	18 30	190	139	12 30
M.	210*	145*	105*	175*	—	—	—	—	—	—	1041	960	—	—	112	34	—	—	187	147	—

* 24 days. *See* note above.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
2	M	14 16	18	...	3	...	...	
	M	14 22	15	3	...	...	...	
3	M	21 40	12	...	1	...	...	
7		17	...	...	...	...	...	Small disturbance confused by wind.
8	P	22 32 29	...	...	...	...	9220	Azimuth roughly NN.E. or S.S.W.
	S	22 42 50	...	...	...	...	...	
	SR_1	22 48 27	...	...	...	...	...	
	M	23 2½	35	...	6	...	...	
	M	23 5½	26	...	4	...	...	
	M	23 14	18	4	...	...	...	
	F	24	...	...	...	...	...	
11	P	11 32 49	...	...	...	...	2210	Azimuth S.S.W. At maximum, displacement was alternately 122° and 302°.
	S	11 36 30	...	...	...	...	...	
	M	11 39	19	16	26	...	...	
12	M	3	...	1	1	...	...	Faint disturbance.
13	M	0	...	1	1	...	...	Faint disturbance.
13	M	20¼	...	1	1	...	...	Faint disturbance.
22	M	4 49	17	...	2	...	...	Small disturbance.
24	P	19 21 15	...	...	...	...	...	
	i	19 21 51	...	...	...	...	...	
	i	19 22 43	...	...	...	...	...	
	PR_1 (?)	19 25 30	...	...	...	...	...	
	eS (!)	19 33 58	...	...	...	...	12610	
	S (!) or Y (?)	19 35 35	...	...	...	...	or 15500	Y refers to British Association Report, 1915.
	SR_1	19 45 33	...	...	...	...	...	
	M	20 27	25	...	1½	...	...	Oscillation in principal phase mostly N.W. to S.E.
	M	20 28	24	1½	...	...	...	
	F	21	...	...	...	...	...	
26		8½ to 9¾	...	< 3	< 3	...	...	Small waves.
31	P	1 42 42	...	...	...	...	7900	Large earthquake. Azimuth nearly N. or S.
	S	1 51 57	...	...	...	...	...	
	F	5½	...	...	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	0·3	4·5	0·2	4	0·2	4	0·2	5
2	0·1	5	0·1	4	0·1	4	0·2	4
3	0·3	7·5	0·3	7	0·3	6·5	0·4	6
4	0·3	4·5	0·3	6	0·5	5	0·5	5
5	0·3	5	0·2	5·5	0·1	4·5	0·2	5
6	0·1	4·5	0·1	4	0·3	4	0·4	4·5
7	0·6	4	0·3	3·5	0·4	3	0·6	3
8	0·2	4	0·3	3·5	1·0	3·5	0·9	4
9	0·3	3·5	0·1	4·5	0·1	3·5	0·2	4
10	0·1	3·5	0·2	4·5		Clock	stopped	
11	0·5	4·5	0·5	5	0·4	5	0·4	5
12	0·6	5·5	0·5	5	0·2	5·5	0·5	4·5
13	0·1	5	0·3	4·5	0·3	5	0·3	5
14	0·4	5	0·3	4·5	0·2	5	0·1	4
15	0·1	4	0·0	...	0·1	4	0·0	...
16	0·1	4	0·3	3·5	0·5	4	0·6	4
17	0·9	5	Clock	stopped	0·7	4	0·6	4
18	0·3	4	0·3	4	0·3	5	0·4	5
19	0·3	4	0·3	4·5	0·5	4·5	0·5	5
20	0·6	5	1·2	5·5	0·9	6	0·8	5·5
21	0·9	4·5	0·7	5·5	0·4	5	0·5	4
22	0·2	4	0·6	4	No trace		N.–S. trace	
23	0·7	4	0·5	5	No trace		N.–S. trace	
24	0·7	5·5		Clock	stopped		0·4	4·5
25	0·3	4·5	0·2	4·5	0·2	4·5	0·1	4
26	0·2	4	0·2	4	No trace		0·2	5·5
27	0·3	4·5	0·3	5·5	0·3	4	0·4	4·5
28	0·2	4	0·2	4·5	0·1	3	0·0	...
29	0·0	...	0·0	...	0·0	...	0·0	...
30	0·1	4	0·1	3·5	0·2	4	0·5	4
31	0·5	4·5	0·5	4·5	0·6	4·5	0·7	4·5

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
2	14 15	...	Series of very small movements.
8	...	23 16·2	
11	11 36·4	11 40·0	
22	4 58·0	5 2	Very small.
31	1 44·0	2 18·4	Long disturbance. Amplitude on trace 5·9 mm.

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. N.	21 h. W.	21 h. E.	Max. in a Gust.	Time of Gust. h	Time of Gust. m
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	3·5	0·7	...	...	1·0	0·2	...	...	1·3	1·9	...	2·1	...	2·1	...	6·8	23	55
2	5·8	...	1·2	...	8·2	...	3·4	...	6·8	...	4·6	...	5·3	...	5·3	...	15·4	19	0
3	4·2	...	4·2	...	6·4	...	2·6	...	5·5	...	2·3	...	2·4	...	1·0	...	15·7	10	40
4	3·8	...	...	2·6	...	0·9	0·4	...	...	2·1	2·1	...	...	0·7	0·7	...	7·9	2	50
5	0·7	...	0·7	...	...	0·4	2·3	...	3·5	...	3·5	...	3·0	...	1·3	...	9·9	16	55
6	3·3	...	1·4	...	4·8	...	2·0	...	...	4·0	...	1·6	...	6·3	...	6·3	13·0	20	40
7	...	2·1	...	2·1	...	2·3	...	0·4	...	11·5	7·7	...	...	9·8	6·6	...	16·9	14	55
8	...	7·8	7·8	...	...	6·2	4·2	...	...	2·8	2·8	...	...	2·8	1·1	...	15·8	0	35
9	...	5·5	3·7	...	...	4·1	2·7	...	...	2·7	4·1	...	1·8	...	4·3	...	11·2	4	10
10	...	...	5·2	...	...	...	8·2	...	...	2·1	10·6	...	...	2·6	6·4	...	13·9	14	30
11	...	2·0	10·0	...	...	...	8·2	...	1·2	...	6·1	...	...	...	8·5	...	15·0	3	40
12	...	3·3	7·9	...	...	...	6·6	...	2·1	...	5·2	...	0·6	...	2·9	...	13·0	7	25
13	...	1·0	5·1	...	...	0·6	3·2	...	4·2	...	4·2	...	1·8	...	4·3	...	11·3	17	55
14	...	...	4·6	...	3·3	...	4·9	...	6·2	...	4·2	...	2·4	...	3·6	...	11·9	14	50
15	...	1·5	7·7	...	...	...	8·5	...	2·5	...	6·1	...	0·7	...	3·5	...	13·1	8	55
16	0·9	...	1·3	...	8·2	...	...	3·4	6·1	...	...	1·2	0·9	...	...	0·4	13·5	9	20
17	...	7·1	...	4·7	...	11·3	2·2	...	...	6·9	2·9	...	...	4·0	1·6	...	17·8	6	50
18	...	3·8	2·6	...	...	2·2	3·2	...	5·7	...	3·8	...	7·6	...	3·1	...	15·2	21	0
19	6·6	...	4·4	...	7·1	...	4·7	...	9·6	...	6·4	...	4·7	...	7·1	...	20·6	14	50
20	2·9	...	6·9	...	4·3	...	10·3	...	...	...	10·8	...	...	1·7	8·3	...	17·6	8	25
21	...	...	6·6	...	2·6	...	6·4	...	7·4	...	4·9	...	6·9	...	2·9	...	15·5	17	35
22	4·4	...	4·4	...	4·4	...	4·4	...	7·4	...	4·9	...	4·7	...	4·7	...	15·3	16	35
23	4·2	...	4·2	...	1·4	...	3·3	...	...	2·2	3·2	...	0·9	...	4·5	...	9·1	1	20
24	...	2·7	1·8	...	...	1·7	2·5	...	...	1·8	2·7	...	1·4	...	3·3	...	10·3	18	30
25	...	1·9	4·5	...	...	1·5	3·6	...	4·9	...	3·3	...	4·9	...	3·3	...	9·3	14	50
26	1·8	...	2·7	...	4·1	...	2·7	...	5·7	...	2·4	...	5·5	...	2·3	...	13·7	19	20
27	1·8	...	0·8	...	3·6	...	1·5	...	2·4	...	...	3·6	...	6·2	4·2	...	12·2	12	55
28	...	5·3	7·9	...	...	3·3	7·9	...	3·3	...	4·9	...	1·9	...	4·5	...	12·4	11	55
29	...	...	4·3	...	...	...	3·3	...	3·5	...	3·5	...	1·9	...	1·3	...	8·9	2	25
30	2·2	...	1·4	...	...	...	1·0	...	...	2·1	2·1	...	1·8	...	1·8	..	7·0	19	25
31	3·0	...	1·3	...	3·5	...	0·7	...	4·8	...	...	1·0	2·2	...	...	3·2	8·3	16	50
S+N & W+E	93·1		124·7		97·4		118·9		132·3		128·6		99·5		114·4				
S−N & W−E	−1·9		105·9		26·4		111·3		53·3		113·8		31·3		94·6				

SCOTLAND N.:—DEERNESS.

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

Date.	3 h. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. N.	21 h. W.	21 h. E.	Vel. in Max. Hourly Run.	Time of Max.
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	...	2·0	...	3·0	...	0·8	...	4·2	0·7	...	...	3·5	1·6	...	...	4·0	5·2	20, 24
2	4·2	...	...	4·2	5·4	...	...	8·1	6·9	...	...	6·9	...	...	3·6	...	10·2	12
3	2·5	...	1·7	...	3·9	...	...	...	4·3	...	...	...	0·6	...	0·3	...	4·3	10, 12, 15
4	0·3	...	...	1·3	1·1	...	1·7	...	...	2·7	4·1	...	3·5	...	0·7	...	5·9	12, 13
5	2·0	...	0·4	...	...	1·3	0·9	...	...	1·7	...	1·1	0·5	...	...	1·2	3·3	16
6	1·3	...	...	0·9	2·0	...	3·0	...	2·3	...	...	...	1·0	...	...	0·2	3·9	10, 11, 13
7	0·3	...	...	1·6	...	1·8	...	4·3	...	4·4	...	6·6	...	6·1	...	2·5	9·2	24
8	...	8·5	...	...	...	8·0	1·6	...	...	6·8	4·6	...	...	4·7	3·1	...	9·5	12
9	...	4·4	4·4	...	...	...	7·9	...	3·8	...	9·1	...	...	2·6	6·4	...	10·2	17
10	...	2·8	6·7	...	...	3·3	7·9	...	...	...	7·2	...	...	...	4·9	...	8·5	9
11	...	1·2	5·8	...	...	1·2	5·8	...	...	...	4·6	...	...	3·8	2·6	...	7·5	4
12	...	3·5	3·5	...	...	6·7	2·8	...	...	6·6	4·4	...	...	1·3	3·0	..	9·2	12
13	...	...	3·0	...	3·3	...	...	1·4	4·0	...	...	4·0	2·8	...	...	2·8	5·9	19
14	0·5	...	...	0·5	1·4	...	...	2·2	...	...	...	4·6	...	...	...	4·6	5·2	17
15	...	1·0	...	2·4	...	2·8	...	1·1	...	4·6	...	...	...	3·0	...	...	5·2	14, 16
16	...	0·7	0·1	...	2·6	...	...	...	4·1	...	...	2·7	0·6	...	...	0·4	4·9	12, 15, 16
17	1·3	...	...	0·9	...	3·8	2·6	...	...	5·6	5·6	...	...	2·4	3·6	...	8·5	17
18	...	0·7	3·5	...	...	...	4·9	...	...	...	5·9	...	1·5	...	0·6	...	7·5	13
19	4·9	...	...	3·3	7·1	...	...	1·4	4·7	...	...	3·1	3·6	...	...	1·5	10·8	6
20	1·3	...	...	...	8·5	...	...	3·5	4·3	...	...	2·9	...	...	...	0·7	9·2	9
21	...	3·4	5·2	...	1·2	...	5·8	...	5·7	...	8·5	...	1·3	...	3·0	...	10·2	15
22	1·9	...	...	1·3	2·5	...	...	2·5	3·3	...	...	1·4	...	1·5	0·6	...	5·6	11
23	0·0	0·0	0·0	0·0	0·6	...	1·5	...	...	0·2	...	1·0	...	0·3	...	0·1	3·3	12
24	...	3·6	2·4	...	...	2·3	0·4	...	0·3	...	...	1·6	0·7	...	...	0·7	5·9	5
25	0·5	...	...	0·5	...	2·3	...	...	...	5·2	...	...	...	3·8	0·8	...	5·9	16
26	...	0·5	2·6	...	0·6	...	3·2	...	3·6	...	...	1·5	1·8	...	...	0·8	4·9	14
27	1·7	...	...	1·1	2·4	...	...	3·6	...	...	...	3·6	...	0·4	...	2·0	4·9	10, 11
28	...	1·1	...	1·7	...	2·0	...	0·4	...	3·2	...	2·2	...	1·3	0·3	...	3·9	15
29	...	1·9	1·3	...	...	4·4	4·4	...	...	4·7	3·1	...	...	0·9	1·3	...	6·2	9
30	...	0·7	3·5	...	...	1·9	1·3	...	...	4·5	0·9	...	...	2·5	1·7	...	5·9	18
31	...	4·0	4·0	...	...	3·8	5·7	...	...	4·4	4·4	...	...	2·1	2·1	...	7·5	10, 11
S+N & W+E	62·7		70·8		89·0		94·1		102·6		109·1		56·2		60·1			
S−N & W−E	−17·3		25·4		−3·8		28·7		−6·6		15·7		−17·2		17·1			

ENGLAND S.W.:—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. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. N.	21 h. W.	21 h. E.	Max. in a Gust.	Time of Gust. h	Time of Gust. m
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	2·1	5·0	...	...	1·6	3·9	...	...	1·3	3·0	...	...	...	2·1	...	8·8	0	35
2	*	*	*	*	3·3	...	3·3	...	5·8	...	2·4	...	2·1	...	1·4	...	9·0	14	5
3	2·9	...	...	...	3·2	...	...	2·1	3·0	...	...	3·0	2·1	...	...	2·1	7·2	19	45
4	...	...	...	3·8	...	0·6	...	0·6	...	5·3	5·3	...	...	2·2	5·4	...	10·9	15	30
5	...	1·6	3·9	...	...	1·3	3·0	...	...	1·1	2·7	...	...	0·0	0·0	...	7·0	1	5
6	3·5	...	...	1·5	7·3	...	...	3·0	8·3	...	...	8·3	7·1	...	...	...	15·6	23	45
7	3·8	...	19·2	...	...	7·7	11·5	...	...	4·6	11·2	...	...	5·6	5·6	...	25·6	3	20
8	...	4·5	4·5	...	...	4·5	4·5	...	...	3·8	3·8	...	...	1·1	2·7	...	10·9	1	10
9	...	1·8	2·7	...	...	1·5	1·5	...	...	5·0	...	2·1	...	2·9	...	...	6·5	14	45
10	...	2·7	2·7	...	...	1·1	2·7	...	...	2·1	5·0	...	...	1·4	7·0	...	13·1	19	45
11	...	2·9	6·9	...	...	2·6	6·2	...	...	1·4	7·0	...	...	3·0	7·3	...	13·2	21	55
12	...	3·0	7·3	...	...	1·9	4·6	...	...	1·8	4·3	...	...	1·3	3·0	...	12·7	2	10
13	...	1·5	1·5	...	...	1·3	...	...	...	1·3	3·0	...	...	0·8	4·1	...	7·3	21	50
14	1·5	...	1·5	...	...	1·8	...	1·8	...	3·9	1·6	...	...	2·7	6·6	...	10·0	20	5
15	...	2·7	6·6	...	...	2·2	5·4	...	...	1·8	4·3	...	...	...	2·9	...	11·2	2	30
16	7·0	...	1·4	...	3·7	...	5·6	...	2·6	...	3·8	...	2·7	...	6·6	...	15·8	5	40
17	...	...	7·9	...	...	10·4	7·0	...	...	7·1	7·1	...	...	2·1	5·0	...	18·3	5	55
18	...	3·0	3·0	...	...	0·7	1·6	...	2·7	...	2·7	...	5·3	...	5·3	...	10·0	20	10
19	3·5	...	3·5	...	5·9	...	3·9	...	5·6	...	5·6	...	2·8	...	4·2	...	11·4	16	20
20	...	...	5·4	...	...	1·3	6·6	...	...	2·6	6·2	...	...	0·9	4·5	...	13·4	7	5
21	...	0·8	4·1	...	1·6	...	3·9	...	3·8	...	3·8	...	6·9	...	4·6	...	12·0	24	25
22	6·8	...	6·8	...	1·3	...	6·6	...	2·2	...	5·4	...	3·2	...	7·7	...	14·0	1	25
23	...	...	11·7	...	...	4·5	10·8	...	...	...	8·8	...	...	...	7·5	...	18·8	7	35
24	...	...	4·2	...	...	1·3	3·0	...	...	1·6	3·9	...	...	3·9	5·9	...	10·2	19	40
25	...	0·8	4·1	...	...	...	5·0	...	2·1	...	3·2	...	...	...	2·5	...	7·1	1	0
26	...	...	4·2	...	3·5	...	2·3	...	7·4	...	1·5	...	1·5	...	3·5	...	11·3	15	20
27	2·4	...	5·8	...	...	...	7·1	...	...	...	11·3	...	...	4·5	10·8	...	19·0	16	35
28	...	3·5	8·5	...	...	1·8	4·3	...	...	...	3·3	...	...	0·6	3·2	...	13·9	0	40
29	...	1·0	2·3	...	...	0·8	1·9	...	...	...	4·2	...	...	0·8	4·1	...	6·2	23	55
30	...	1·1	2·7	...	...	0·5	1·2	...	0·0	0·0	0·0	0·0	...	0·7	1·6	...	6·3	0	5
31	4·3	...	...	1·8	7·3	...	...	3·0	10·4	...	...	4·3	1·8	...	4·3	...	15·1	12	10
S+N & W+E	68·7		144·5		86·5		127·9		98·6		142·1		70·0		131·5				
S−N & W−E	2·7		130·3		−12·3		106·9		9·2		106·7		1·0		127·3				

ENGLAND E.:—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. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. N.	21 h. W.	21 h. E.	Max. in a Gust. (Gorleston.)	Time of Gust. h	Time of Gust. m
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	1·1	...	...	1·7	0·6	...	...	0·8	...	1·4	...	2·2	...	0·7	...	1·1	6·0	12	20
2	...	1·1	...	1·7	...	1·8	...	2·7	5·9	...	...	...	0·6	...	0·4	...	10·4	12	0
3	0·5	...	2·6	...	0·4	...	2·0	...	3·8	...	0·8	...	...	1·1	1·7	...	7·6	19	0
4	...	0·7	1·1	...	*	*	*	*	*	*	*	*	*	*	*	*	11·9	22	25
5	*	*	*	*	*	*	*	*	...	1·5	...	0·6	1·7	...	...	1·1	9·2	0	55
6	1·9	...	...	1·3	...	0·4	...	2·0	6·0	...	...	4·0	4·6	...	...	3·1	11·7	24	0
7	2·8	...	2·8	...	5·3	...	5·3	...	7·1	...	1·4	...	2·9	...	4·3	...	21·4	8	50
8	1·5	...	7·4	...	...	1·3	6·8	...	...	3·8	0·8	...	...	2·2	1·4	...	15·0	1	0
9	...	0·8	0·6	...	...	3·6	2·4	...	*	*	*	*	*	*	*	*	10·4	12	30
10																	9·2	17	50
11																	10·6	11	25
12																	12·2	12	25
13																	9·4	12	40
14																	13·5	16	45
15																	15·5	13	55
16																	19·8	23	35
17																	21·4	18	30
18																	11·5	8	0
19																	10·5	13	45
20																	10·0	14	10
21																	10·1	11	0
22																	14·2	18	15
23																	17·1	11	30
24																	9·5	15	55
25																	11·6	17	20
26																	9·5	17	30
27																	8·7	17	40
28																	12·0	12	40
29																	6·0	9	0
30																	5·2	13	35
31																	8·8	14	45
S+N & W+E	—		—		—		—		—		—		—		—				
S−N & W−E	—		—		—		—		—		—		—		—				

No record until 10 h., August 1st.

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 182. July 29, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3180	...	...	...	...		Balloon entered sheet of high St.-Cu., which was moving from N.W. at the time. At 13 h. nephoscope observation gave components (assuming 3·2 km. as height of cloud) of:—W.-E. +5·0 m/s.; S.-N. −1·0 m/s.
	3000	310	7·5	+5·5	− 4·5		
	2500	250	3·9	+3·7	+ 1·2		
	2000	305	4·7	+3·8	− 2·7		
	1750	335	4·7	+1·8	− 4·3		
	1500	330	5·0	+2·5	− 4·5		
	1250	335	5·0	+2·0	− 4·5	2·5	*Pressure Distribution* (7 h.).
	1000	345	9·0	+2·5	− 8·5		Anticyclone Azores to Germany.
	750	345	10·0	+2·5	− 9·5		Depressions Iceland and Sweden.
	500	325	12·0	+6·5	− 10·0		
100 m. above ground.	114	310	9·0	+6·5	− 6·0		
Anemometer.	46	310	6·0	+4·5	− 4·0		
Geostrophic wind.	(at 7 h.)	330	10	+5	− 9	...	Weight of balloon 12 gm., free lift 50 gm.

Aberdeen. No. 183. July 30, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3030	...	...	...	...		Balloon entered high St.-Cu. sheet. Nephoscope observation of this cloud gave components (assuming 3 km. as height of cloud) of:—W.-E. +9·5 m/s.; S.-N. −8·5 m/s.
	3000	320	11·0	+7·0	− 8·0		
	2500	320	13·5	+8·5	− 10·0		
	2000	300	9·0	+7·5	− 4·5		
	1750	300	7·0	+6·0	− 3·5		
	1500	320	7·0	+4·5	− 5·5		*Pressure Distribution* (7 h.).
	1250	330	9·0	+4·5	− 7·5	2·5	Anticyclone over Southern Britain and Bay of Biscay.
	1000	325	12·0	+7·5	− 10·0		Depressions W. of Ireland and over Baltic.
	750	320	14·0	+9·0	− 11·0		
	500	320	13·5	+8·5	− 10·0		
100 m. above ground.	114	310	9·0	+7·0	− 5·5		
Anemometer.	46	300	5·0	+4·5	− 2·5		
Geostrophic wind.	(at 7 h.)	300	10	+8	−6	...	Weight of balloon 12·5 gm., free lift 47 gm.

Aberdeen. No. 184. July 31, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E. 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2280	...	...	...	...		Balloon lost in distance and high haze. Cu. forming; became Cu.-Nb. later.
	2000	285	8·0	+ 7·5	− 2·5		
	1750	280	12·0	+12·0	− 2·0		
	1500	285	10·0	+ 9·5	− 2·5		*Pressure Distribution* (7 h.).
	1250	310	9·5	+ 7·5	− 6·0		
	1000	310	11·0	+ 8·0	− 7·5	2·5	Col over British Isles.
	750	310	9·5	+ 7·5	− 6·0		Anticyclones over France and Iceland.
	500	310	9·5	+ 7·0	− 6·0		Depressions W. of Ireland and over Southern Sweden.
100 m. above ground.	114	310	8·0	+ 6·0	− 5·0		
Anemometer.	46	315	4·9	+ 3·5	− 3·5		
Geostrophic wind.	(at 7 h.)		*Indeterminate.*			...	Weight of balloon 12·5 gm., free lift 48 gm.

10. Soundings with Pilot Balloons—*continued.*

Benson. No. 1534. July 6, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Cumulus and cirrus clouds.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	2000	160	6	−2	+6		Shallow depression S. of Ireland. Uniform pressure over Western Europe.
	1750	150	8	−4	+7		
	1500	150	8	−4	+7		
	1250	150	6	−3	+5	2·4	(18 h.). Depression had grown somewhat deeper.
	1000	160	6	−2	+6		
	750	170	5	−1	+5		
	500	155	2	−1	+2		
100 m. above ground.	157	200	3	+1	+3		
Anemometer.	82	225	4	+3	+3		
Geostrophic wind.	(at 7 h.)	210	4	+2	+3	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	180	5	0	+5	...	

Benson. No. 1536. July 13, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Cirro-stratus and a few detached cumulus clouds.
	3500	265	8	+8	+1		
	3000	270	5	+5	0		
	2500	260	6	+6	+1		*Pressure Distribution* (7 h.).
	2000	205	2	+1	+2		
	1750	180	2	0	+2		Anticyclone beyond Azores.
	1500	180	1	0	+1		Shallow depression over Bay of Biscay. Depression over Scandinavia.
	1250	...	0	0	0	2·4	
	1000	180	3	0	+3		
	750	180	3	0	+3		At 18 h. shallow depressions over France and Hebrides.
	500	205	2	+1	+2		
100 m. above ground.	157	225	3	+2	+2		
Anemometer.	82	225	3	+2	+2		
Geostrophic wind.	(at 7 h.)	*Inde*	*termin*	*ate*	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	320	3	+2	−2	...	

Benson. No. 1537. July 15, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Balloon lost behind cumulus.
	2000	285	14	+13	−4		
	1750	290	9	+8	−3		*Pressure Distribution* (7 h.).
	1500	300	8	+7	−4		
	1250	295	10	+9	−4		Anticyclone over Azores.
	1000	305	9	+7	−5		Shallow depression over North Sea.
	750	285	14	+13	−4	2·4	
	500	275	9	+9	−1		(18 h.). Depression developing W. of Ireland.
100 m. above ground.	157	275	10	+10	−1		
Anemometer.	82	270	6	+6	0		
Geostrophic wind.	(at 7 h.)	300	10	+9	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	290	11	+10	−4	...	

Benson. No. 1539. July 16, 1915. 4 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Strato-cumulus, 8. Balloon seen to enter cloud.
	2000	270	7	+7	0		
	1750	240	8	+7	+4		
	1500	255	8	+8	+2		*Pressure Distribution* (7 h.).
	1250	255	8	+8	+2		
	1000	270	7	+7	0		
	750	270	8	+8	0	2·4	Depressions W. of Ireland and over Denmark.
	500	275	9	+9	−1		
100 m. above ground.	157	210	6	+3	+5		
Anemometer.	82	200	3	+1	+3		
Geostrophic wind.	(at 7 h.)	230	11	+8	+7	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. No. 1540. July 16, 1915. 5 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Overcast. Balloon was not seen to enter cloud.
	...	...	...	...	...		
	...	...	...	...	...		
	3000	270	14	+14	0		*Pressure Distribution* (7 h.).
	2500	255	11	+11	+3		
	2000	235	7	+6	+4		Depressions W. of Ireland and over Denmark.
	1750	240	9	+8	+5		
	1500	230	6	+5	+4		
	1250	235	7	+6	+4	2·4	
	1000	250	6	+6	+2		
	750	255	7	+7	+2		
	500	265	8	+8	+1		
100 m. above ground.	157	195	4	+1	+4		
Anemometer.	82	200	2	+1	+2		
Geostrophic wind.	(at 7 h.)	230	11	+8	+7	...	Approx. weights: balloon 12 gm., free lift 45 gm.
						...	

Benson. No. 1541. July 16, 1915. 6 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Alto-cumulus, 9. Balloon not actually seen to enter it.
	4000	260	14	+14	+3		
	3500	245	11	+10	+5		
	3000	250	14	+13	+5		*Pressure Distribution* (7 h.).
	2500	260	12	+12	+2		
	2000	240	8	+7	+4		Depressions W. of Ireland and over Denmark.
	1750	225	7	+5	+5		
	1500	220	9	+6	+7		
	1250	230	11	+8	+7	2·4	
	1000	225	8	+6	+6		
	750	230	8	+6	+5		
	500	235	9	+7	+5		
100 m. above ground.	157	200	6	+2	+6		
Anemometer.	82	180	5	0	+5		
Geostrophic wind.	(at 7 h.)	230	11	+8	+7	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

Benson. No. 1542. July 16, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Nimbus 9.
	3000	230	6	+ 5	+4		Balloon was not seen to enter cloud.
	2500	255	10	+10	+3		A few drops of rain. Heavy rain set in at 9 h.
	2000	230	9	+ 7	+6		
	1750	235	9	+ 7	+5		
	1500	220	9	+ 6	+7		
	1250	245	7	+ 6	+3		*Pressure Distribution* (7 h.).
	1000	235	9	+ 7	+5	2·4	
	750	225	8	+ 6	+6		Depressions W. of Ireland and over Denmark.
	500	220	8	+ 5	+6		
100 m. above ground.	157	205	4	+ 2	+4		
Anemometer.	82	190	4	+ 1	+4		
Geostrophic wind.	(at 7 h.)	230	11	+ 8	+7	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. No. 1543. July 20, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Cumulus 3.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	2000	275	15	+15	−1		
	1750	275	14	+14	−1		Depression over Hebrides.
	1500	270	16	+16	0		Anticyclones over Azores and Germany.
	1250	265	16	+16	+1		
	1000	255	19	+18	+4	2·4	(18 h.) Depression moved across to Shetlands.
	750	260	14	+14	+2		
	500	265	16	+16	+2		
100 m. above ground.	157	265	9	+ 9	+1		
Anemometer.	82	250	7	+ 7	+3		
Geostrophic wind.	(at 7 h.)	270	10	+10	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	290	11	+10	−4		

Benson. No. 1544. July 24, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Thunderstorm approaching from S.W.
	3000	255	4	+4	+1		
	2500	270	4	+4	0		
	2000	255	4	+4	+1		*Pressure Distribution* (7 h.).
	1750	250	3	+3	+1		
	1500	235	4	+3	+2		Shallow depressions Iceland and Norway. High pressure to S.
	1250	245	4	+4	+2		
	1000	225	4	+3	+3	2·4	
	750	225	4	+3	+3		
	500	215	5	+3	+4		
100 m. above ground.	157	180	2	0	+2		
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 7 h.)	240	7	+6	+4	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	270	5	+5	0		

Benson. No. 1547. July 30, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Balloon passed through part of cumulus at 2000 and 2400 metres.
	...	...	...	...	...		
	2500	270	5	+5	0		Irregularities may be due to effect of vertical currents.
	2000	260	5	+5	+1		
	1750	250	5	+5	+2		
	1500	260	4	+4	+1		
	1250	250	6	+6	+2		*Pressure Distribution* (7 h.).
	1000	260	9	+9	+2	2·4	
	750	255	8	+8	+2		
	500	260	6	+6	+1		Anticyclone over Southern Britain and Bay of Biscay.
100 m. above ground.	157	270	2	+2	0		Depressions W. of Ireland and over Baltic.
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 7 h.)	300	4	+3	−2	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	310	6	+5	−4	...	

Eskdalemuir. No. 1548. July 13, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2200	...	...	...	...		Atmosphere clear.
	...	...	...	...	...		Ci.-Cu. ; Cu. ; Fr.-Cu. 5.
	..	...	...	...	...		Balloon lost behind Fr.-Cu.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	2000	285	6·5	+ 6·0	−2·0		
	1750	280	6·5	+ 6·5	−1·0		Anticyclone beyond Azores.
	1500	275	7·5	+ 7·5	−1·0		Shallow depression over Bay of Biscay. Depression over Scandinavia.
	1250	270	13·5	+13·5	0·0	2·5	
	1000	270	13·5	+13·5	0·0		
	750	270	11·5	+11·5	−0·5		
	500	250	7·5	+ 7·0	+3·0		
100 m. above ground.	340	160	8·0	− 2·5	+8·0		
Anemometer.	250	145	2·5	− 1·4	+2·1		
Geostrophic wind.	(at 7 h.)	250	6	+ 6	+2	...	Weight of balloon 11·3 gm., free lift 57·3 gm.

Eskdalemuir. No. 1549. July 29, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4200	...	...	...	...		Atmosphere clear.
	4000	310	3·8	+2·9	−2·5		Cloud 1. Ci. from N.W.
	3500	295	9·5	+8·5	−4·0		Balloon lost in distance.
	3000	305	4·8	+3·8	−2·9		
	2500	305	7·5	+6·0	−4·0		
	2000	290	6·0	+5·5	−2·5		*Pressure Distribution* (7 h.).
	1750	285	4·0	+3·8	−1·1		
	1500	305	4·6	+3·7	−2·7		Anticyclone Azores to Germany.
	1250	295	7·0	+6·0	−3·0	2·6	Depressions Iceland and Sweden.
	1000	300	7·5	+6·5	−4·0		Conditions unsuitable for determination of geostrophic wind.
	750	305	6·5	+5·5	−4·0		
	500	310	4·4	+3·5	−2·7		
100 m. above ground.	340	285	3·7	+3·6	−1·0		
Anemometer.	250	280	4·0	+3·9	−0·7		
Geostrophic wind.	(at 7 h.)	?270	?3	?+3	?0	...	Weight of balloon 11·2 gm., free lift 63·3 gm.

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1550. July 30, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4110	...	...	...	...	2·6	Atmosphere clear. A.-Cu. 5. Balloon lost in distance.
	4000	240	9·0	+8·0	+4·5		
	3500	235	9·0	+7·5	+5·0		
	3000	230	10·5	+8·5	+6·5		*Pressure Distribution* (7 h.).
	2500	225	6·5	+4·5	+4·5		
	2000	230	4·3	+3·3	+2·7		Anticyclone over Southern Britain and Bay of Biscay. Depressions W. of Ireland and over Baltic.
	1750	225	4·7	+3·3	+3·4		
	1500	230	5·5	+4·0	+3·5		
	1250	230	6·0	+5·0	+4·0		
	1000	220	6·5	+4·0	+5·0		
	750	275	3·3	+3·3	−0·2		
	500	...	...	...	...		
100 m. above ground.	340	...	...	...	...		
Anemometer.	250	160	1·0	−0·3	+0·9		
Geostrophic wind.	(at 7 h.)	310	4	+3	−3	...	Weight of balloon 10·7 gm., free lift 65·3 gm.

South Farnborough. No. 302. July 2, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2000	...	...	...	...	2·4	Atmosphere hazy.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Anticyclone over France and Bay of Biscay. Depression on Atlantic.
	2000	270	7·0	+7·0	0·0		
	1750	270	7·5	+7·5	0·0		
	1500	255	6·0	+6·0	+1·5		
	1250	230	5·0	+4·0	+3·0		
	1000	225	5·0	+3·5	+3·5		
	750	255	6·0	+6·0	+1·5		
	500	255	7·5	+7·0	+2·0		
	170	265	1·5	+1·5	+0·1		
	105	270	light	...	...		
Geostrophic wind.	(at 7 h.)	250	6	+6	+2	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 303. July 2, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2500	...	...	...	...	2·4	Atmosphere clear. A.-Cu. Balloon lost in cloud.
	...	...	...	...	...		
	2500	300	12·5	+11·0	−6·5		
	2000	305	8·5	+ 7·0	−5·0		
	1750	300	8·5	+ 7·5	−4·5		*Pressure Distribution* (7 h.).
	1500	285	9·0	+ 8·5	−2·5		
	1250	280	7·0	+ 6·0	−1·0		Anticyclone over France and Bay of Biscay. Depression on Atlantic.
	1000	290	3·0	+ 2·8	−1·0		
	750	285	4·0	+ 3·9	−1·0		
	500	240	7·0	+ 6·0	+3·5		
100 m. above ground.	170	240	8·0	+ 7·0	+4·0		
Anemometer.	105	250	2·0	+ 1·9	+0·7		
Geostrophic wind.	(at 7 h.)	250	6	+ 6	+2	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	270	9	+ 9	0		

South Farnborough. No. 304. July 3, 1915. 6 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3000	...	...	...	...	2·4	Atmosphere clear. A.-Cu. Balloon lost in cloud. Local minimum in velocity at 1850 m. 3·0 m/s. (+2·6, W.-E.; +1·5, S.-N.).
	3000	270	12·0	+12·0	0·0		
	2500	280	11·5	+11·5	−2·0		
	2000	250	4·5	+ 4·2	+1·5		
	1750	240	4·0	+ 3·5	+2·0		
	1500	275	6·5	+ 6·5	−0·5		
	1250	285	8·5	+ 8·0	−2·0		
	1000	275	8·0	+ 8·0	−0·5		*Pressure Distribution* (7 h.).
	750	250	6·0	+ 5·5	+2·0		
	500	230	4·5	+ 3·4	+2·9		Anticyclone over France. Depression S. of Iceland.
100 m. above ground.	170	230	2·5	+ 1·9	+1·6		
Anemometer.	105	250	light	...	...		
Geostrophic wind.	(at 7 h.)	260	6	+ 6	+1	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 307. July 5, 1915. 11 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	255	4·5	+ 4·3	+1·2	2·0	Atmosphere moderately clear. Cu. 5. Local minimum in velocity at 700 m. 3·0 m/s. (+2·6, W.-E.; +1·5, S.-N.).
	3000	235	9·0	+ 7·5	+5·0		
	2500	255	15·5	+15·0	+4·0		
	2000	260	7·5	+ 7·5	+1·5		
	1750	260	13·0	+13·0	+2·5		
	1500	270	8·5	+ 8·5	0·0		
	1250	270	9·5	+ 9·5	0·0		
	1000	255	9·0	+ 8·5	+2·5		*Pressure Distribution* (7 h.).
	750	240	3·5	+ 3·0	+1·8		
	500	265	7·0	+ 7·0	+0·5		Anticyclone Bay of Biscay to Azores. Shallow depression over Iceland. Secondary over Holland.
100 m. above ground.	170	275	5·5	+ 5·5	−0·5		
Anemometer.	105	270	2·0	+ 2·0	0·0		
Geostrophic wind.	(at 7 h.)	300	5	+ 4	−3	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	290	9	+ 8	−3		

South Farnborough. No. 308. July 6, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	230	7·0	+5·5	+4·5	2·4	Balloon lost in distance.
	3000	225	7·5	+5·5	+5·5		
	2500	220	7·0	+4·5	+5·5		*Pressure Distribution* (7 h.).
	2000	175	4·5	−0·4	+4·5		
	1750	155	3·5	−1·5	+3·2		Shallow depression S. of Ireland. Uniform pressure over Western Europe.
	1500	155	4·5	−1·9	+4·1		
	1250	165	4·0	−1·0	+3·9		
	1000	160	3·5	−1·2	+3·3		
	750	190	4·0	+0·7	+3·9		
	500	205	3·5	+1·5	+3·2		
	170	?	?	...	...		
	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	210	4	+2	+3	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 309. July 6, 1915. 14 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	3550	200	10·5	+3·5	+10·0		Low Cu.
							Balloon lost in cloud.
	3500	200	11·0	+4·0	+10·5		Local maximum in velocity at 570 m. 10·0 m/s. (−4·0, W.-E.; +9·0, S.-N.).
	3000	200	8·5	+3·0	+ 8·0		
	2500	195	7·0	+2·0	+ 7·0		
	2000	180	5·0	0·0	+ 5·0		
	1750	120	2·5	−2·2	+ 1·3		
	1500	165	4·0	−1·0	+ 3·9		*Pressure Distribution* (7 h.).
	1250	165	5·5	−1·5	+ 5·5	2·4	
	1000	165	9·0	−2·5	+ 8·5		Shallow depression S. of Ireland, Uniform pressure over Western Europe.
	750	165	7·5	−2·0	+ 7·0		
	500	180	7·0	0·0	+ 7·0		
100 m. above ground.	170	170	4·0	−0·7	+ 3·9		(18 h.) Depression had grown somewhat deeper.
Anemometer.	105	170	2·0	−0·3	+ 1·9		
Geostrophic wind.	(at 13 h.)	180	5	0	+ 5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 18 h.)	170	8	−1	+ 8	...	

South Farnborough. No. 310. July 9, 1915. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2800	255	4·0	+3·9	+1·0		Balloon lost in cloud.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	2500	240	4·0	+3·5	+2·0		
	2000	300	5·0	+4·5	−2·5		Anticyclone W. of Ireland.
	1750	310	5·0	+4·0	−3·0		Depression over Scandinavia.
	1500	305	3·5	+2·9	−2·0		
	1250	310	5·0	+4·0	−3·0	2·0	
	1000	335	4·5	+1·9	−4·1		
	750	360	4·5	0·0	−4·5		
	500	355	6·5	+0·5	−6·5		
	170	355	3·5	+0·3	−3·5		
	105	325	0·5	+0·3	−0·4		
(at 7 h.)	*Indeterminate.*			...	...		Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 311. July 9, 1915. 11 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	270	6·0	+6·0	0·0		Atmosphere moderately clear. Cu 5.
	...	...	...	...	...		Balloon lost behind Cu.
	...	...	...	...	...		
	2000	290	5·5	+5·0	−2·0		
	1750	285	4·0	+3·9	−1·0		*Pressure Distribution* (7 h.).
	1500	285	4·5	+4·3	−1·2		
	1250	295	5·0	+4·5	−2·0		
	1000	305	7·0	+5·5	−4·0	2·4	Anticyclone W. of Ireland.
	750	300	6·0	+5·0	−3·0		Depression over Scandinavia.
	500	290	4·5	+4·2	−1·5		
100 m. above ground.	170	300	1·5	+1·3	−0·8		
Anemometer.	105	290	0·5	+0·5	−0·2		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...		Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	300	5	+4	−3	...	

South Farnborough. No. 312. July 10, 1915. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3450	300	16·0	+14·0	−8·0		Atmosphere clear.
	3000	310	12·5	+ 9·5	−8·5		Local minimum in velocity at 2300 m. 6·5 m/s. (+4·5, W.-E.; −4·5, S.-N).
	2500	315	8·5	+ 6·0	−6·0		
	2000	300	10·0	+ 8·5	−5·0		
	1750	305	10·0	+ 8·0	−5·5		
	1500	300	9·0	+ 8·0	−4·5		*Pressure Distribution* (7 h.).
	1250	295	9·0	+ 8·0	−4·0		
	1000	290	8·0	+ 7·5	−2·5	2·4	Anticyclone W. of Ireland.
	750	300	7·0	+ 6·0	−3·5		Depression over Scandinavia.
	500	300	6·5	+ 5·5	−3·5		
	170	270	3·0	+ 3·0	0·0		
	105	270	0·5	+ 0·5	0·0		
(at 7 h.)	300	8	+7	−4	...		Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 313. July 13, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	5500	285	18·5	+18·0	−5·0		*Pressure Distribution* (7 h.).
	5000	285	16·5	+16·0	−4·5		
	4000	275	12·0	+12·0	−1·0		Anticyclone beyond Azores.
	3500	275	10·0	+10·0	−1·0		Shallow depression over Bay of Biscay. Depression over Scandinavia.
	3000	275	10·0	+10·0	−1·0		
	2500	285	8·5	+ 8·0	−2·0		
	2000	275	3·0	+ 3·0	−0·3		
	1750	295	3·5	+ 3·2	−1·5		
	1500	280	3·0	+ 3·0	−0·5	2·4	
	1250	290	2·0	+ 1·9	−0·7		
	1000	270	0·5	+ 0·5	0·0		
	750	275	1·0	+ 1·0	−0·1		
	500	75	2·0	− 1·9	−0·5		
100 m. above ground.	170	?	?	...	...		
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	..		Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 314. July 14, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2400	265	19·0	+19·0	+1·5		Balloon lost in distance.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Anticyclone over Azores.
	...	...	...	...	...		Shallow depression over Northern Norway.
	2000	270	13·0	+13·0	0·0		
	1750	260	11·5	+11·5	+2·0		
	1500	260	10·0	+10·0	+1·5	2·0	
	1250	260	10·0	+10·0	+1·5		
	1000	255	8·0	+ 7·5	+2·0		
	750	255	8·5	+ 8·0	+2·0		
	500	255	8·0	+ 7·5	+2·0		
	170	240	4·5	+ 3·9	+2·3		
	105	235	3·0	+ 2·5	+1·7		
(at 7 h.)	260	10	+10	+2	...		Approx. weights: balloon 4 gm., free lift 16 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 318. July 21, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2300	285	16·0	+15·5	−4·0		Atmosphere rather hazy in direction taken by balloon. Balloon lost in distance.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	290	9·5	+ 9·0	−3·0		*Pressure Distribution* (7 h.).
	1750	280	9·5	+ 9·5	− 1·5		
	1500	285	10·5	+10·0	−2·5		
	1250	290	12·0	+11·5	−4·0		Depression near Shetlands.
	1000	290	10·0	+ 9·5	−3·5	2·4	Anticyclone Azores to France.
	750	290	7·0	+ 6·5	−2·5		
	500	295	5·5	+ 5·0	−2·5		
100 m. above ground.	170	280	4·0	+ 3·9	−0·7		
Anemometer.	105	260	3·0	+ 3·0	+5·2		
Geostrophic wind.	(at 7 h.)	270	9	+ 9	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 320. July 24, 1915. 11 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3000	...	...	...	...		Balloon lost in cloud.
	3000	280	6·0	+6·0	−1·0		Irregular changes of wind between 2000 and 2500 metres.
	2500	250	4·0	+3·8	+1·4		
	2000	235	3·0	+2·5	+1·7		
	1750	240	4·5	+3·9	+2·3		*Pressure Distribution* (7 h.).
	1500	235	4·5	+3·7	+2·6		
	1250	230	4·5	+3·4	+2·9		Shallow depressions over Iceland and Norway. High pressure to south.
	1000	225	5·0	+3·5	+3·5	2·0	
	750	230	4·0	+3·1	+2·6		
	500	245	2·5	+2·3	+1·1		
	170	260	2·0	+2·0	+0·3		
	105	250	light	...	...		
	(at 7 h.)	240	7	+6	+4	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	270	5	+5	0	...	

South Farnborough. No. 324. July 28, 1915. 11 h. 30 m. G.M.T.

Greatest height.	2400	275	17·0	+17·0	−1·5		Balloon lost in cloud.
	2000	270	13·0	+13·0	0·0		Minimum velocity at 570 m. 3·5 m/s. (+2·7, W.-E.; −2·2, S.-N.).
	1750	275	17·5	+17·5	−1·5		
	1500	270	18·0	+18·0	0·0		Local minimum at 1850 m. 9·0 m/s. (+9·0, W.-E.; −1·0, S.-N.).
	1250	275	15·0	+15·0	−1·5		
	1000	270	22·5	+22·5	0·0		
	750	265	10·5	+10·5	+1·0	2·4	
	500	270	5·0	+ 5·0	0·0		*Pressure Distribution* (7 h.).
100 m. above ground.	170	265	8·5	+ 8·5	+0·5		Anticyclone Azores to France.
Anemometer.	105	260	9·0	+ 9·0	+1·5		Shallow depression over Scotland and Scandinavia.
Geostrophic wind.	(at 7 h.)	290	14	+13	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	280	9	+ 9	−2	...	

South Farnborough. No. 325. July 29, 1915. 7 h. 15 m. G.M.T.

	2150	305	7·5	+6·0	−4·5		Atmosphere somewhat hazy. Ci. and Ci.-Cu.
	2000	300	6·0	+5·0	−3·0		Balloon lost in cloud.
	1750	295	6·0	+5·5	−2·5		
	1500	300	7·5	+6·5	−4·0		
	1250	295	8·5	+7·5	−3·5		*Pressure Distribution* (7 h.).
	1000	305	8·0	+6·5	−4·5		
	750	305	7·0	+5·5	−4·0	2·4	Anticyclone Azores to Germany.
	500	305	8·0	+6·5	−4·5		Depressions Iceland and Sweden.
	170	290	4·0	+3·8	−1·4		
	105	290	1·0	+0·9	−0·3		
	(at 7 h.)	270	5	+5	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 326. July 30, 1915. 7 h. 30 m. G.M.T.

Greatest height.	3150	310	4·5	+3·4	−2·9		Some haze.
	3000	310	4·5	+3·4	−2·9		Balloon lost in distance.
	2500	310	6·0	+4·5	−4·0		
	2000	315	5·5	+4·0	−4·0		*Pressure Distribution* (7 h.).
	1750	310	6·5	+5·0	−4·0		
	1500	300	5·0	+4·5	−2·5		Anticyclone over Southern Britain and Bay of Biscay.
	1250	295	5·0	+4·5	−2·0		
	1000	280	3·5	+3·4	−0·6	2·1	Depressions W. of Ireland and Baltic.
	750	305	1·5	+1·2	−8·6		
	500	320	3·0	+1·9	−2·3		
100 m. above ground.	170	315	3·0	+2·1	−2·1		
Anemometer.	105	305	light	...	...		
Geostrophic wind.	(at 7 h.)	300	4	+3	−2	...	Approx. weights: balloon ? free lift ?

South Farnborough. No. 327. July 30, 1915. 11 h. 55 m. G.M.T.

	2300	260	4·0	+3·9	+0·7		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Anticyclone over Southern Britain and Bay of Biscay.
	2000	270	5·5	+5·5	0·0		Depressions W. of Ireland and Baltic.
	1750	290	4·5	+4·2	−1·5		
	1500	330	1·0	+0·5	−0·9		
	1250	280	3·0	+3·0	−0·5		
	1000	155	5·5	−2·5	+5·0	2·1	
	750	265	8·5	+8·5	+0·5		
	500	275	8·0	+8·0	−0·5		
	170	245	5·0	+4·5	+2·0		
	105	250	1·5	+1·4	+0·5		
	(at 7 h.)	300	4	+3	−2	...	Approx. weights: balloon ? free lift ?
	(at 13 h.)	310	6	+5	−4	...	

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:— Benson, 4; South Farnborough, 14.

11. Soundings with Registering Balloons.

None.

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m.			Remarks.
			Velocity	Components.		
			V.	W.-E.	S.-N.	
		°	m/s.	m/s.	m/s.	
3	St.-Cu.	252	4·6	+4·4	+ 1·4	
8	Cu.	335	18·0	+7·6	−16·4	Cu. to Nb.-Cuf., low type.
9	Cu.	269	5·2	+5·2	0·0	Closed sheet of cloud.
10	Cu.	290	5·0	+4·7	− 1·7	Cu. in degraded sheet.
13	Ci.-St.	263	2·3	+2·3	+ 0·3	Ci.-St. became A.-St. later.
14	St.-Cu.	234	2·7	+2·2	+ 1·6	
16	A.-Cu.	210	1·3	+0·6	+ 1·1	A.-Cu. to thin high St.-Cu.
17	Cu.	341	5·0	+1·6	− 4·7	
20	St.-Cu.	236	3·4	+2·8	+ 1·7	Seen through momentary opening of Nb.-Cuf.
22	St.-Cu.	214	2·5	+1·4	+ 2·1	Grouped in lenticular masses.
24	Cu.	260	1·8	+1·8	+ 0·2	Degraded type.
28	Cu.-Nb.	275	3·0	+3·0	− 0·3	
29	St.-Cu.	271	1·6	+1·6	0·0	
30	Cu.-Nb.	315	5·0	+3·5	− 3·5	
31	Ci.-Cu.	298	4·0	+3·5	− 1·9	False Ci. to Ci.-Cu. in sheets.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

DAILY VALUES.—*Solar Radiation, Meteorology, Atmospheric Electricity, Terrestrial Magnetism, and Seismology.*

Fifth Year.—No. 8. AUGUST 1915]. Units based on the C.G.S. System. [*Price* 1*s.*

1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.	Radiation by Ångström Pyrheliometer.					Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	x11·3	73	—	—	—	—	—	x10·1	66	—	—	—	1·5	9	—	—	—	—	0·6	4
2	4·9	32	1374	37	80	12 45	62	4·2	27	—	—	—	2·8	18	—	—	—	—	7·5	49
3	0·9	6	638	17	64	13 10	58	1·2	8	—	—	—	9·5	60	—	—	—	—	1·9	12
4	4·3	28	1250	34	x 84	11 25	71	3·5	23	—	—	—	0·7	4	—	—	—	—	6·0	39
5	5·5	36	1266	35	83	11 35	x 83	5·0	33	—	—	—	—	—	—	—	—	—	0·7	5
6	3·1	21	1065	30	73	11 20	73	3·4	23	—	—	—	5·1	33	—	—	—	—	1·2	8
7	0·6	4	730	20	n 44	12 5	44	0·7	5	—	—	—	2·5	16	—	—	—	—	0·5	3
8	2·9	19	1114	31	73	13 5	72	1·7	11	—	—	—	0·5	3	—	—	—	—	—	—
9	0·2	1	563	16	47	14 45	28	0·7	5	—	—	—	0·4	3	—	—	—	—	1·3	9
10	3·3	22	712	20	55	15 5	17	3·6	24	—	—	—	2·5	16	—	—	—	—	6·7	45
11	7·2	49	—	—	—	—	—	6·5	44	—	—	—	5·3	35	—	—	—	—	7·9	53
12	2·1	14	1104	32	79	12 40	59	1·9	13	—	—	—	8·6	57	—	—	—	—	9·5	64
13	6·5	44	1494	43	73	10 35	37	6·1	41	—	—	—	7·1	47	—	—	—	—	7·1	48
14	10·2	69	x 1691	49	82	13 30	78	9·4	64	—	—	—	3·9	26	—	—	—	—	5·3	36
15	4·4	30	1094	32	75	14 20	73	6·6	45	—	—	—	5·9	39	—	—	—	—	9·9	67
16	5·5	38	1371	41	74	13 12	74	5·5	38	65	52	Clear	3·6	24	—	—	—	—	8·8	60
17	5·3	37	1074	32	71	12 35	71	5·8	40	66	52	Clear	6·4	43	—	—	—	—	12·6	86
18	5·2	36	1277	39	65	13 40	57	6·0	42	—	—	—	x12·1	82	12 28	Hazy	1·32	81	11·4	79
19	9·4	65	1414	43	75	12 10	75	9·4	65	65	51	Clear	2·5	17	—	—	—	—	12·4	86
20	6·5	45	1420	44	62	13 43	62	5·1	36	—	—	—	0·5	3	—	—	—	—	x13·0	90
21	4·8	34	1054	33	69	10 30	58	5·2	36	—	—	—	5·7	39	—	—	—	—	6·7	47
22	1·3	9	778	24	58	11 35	58	1·9	13	—	—	—	0·6	4	—	—	—	—	10·1	71
23	3·3	23	1174	37	66	13 30	62	3·4	24	—	—	—	6·7	46	—	—	—	—	2·1	15
24	1·3	9	882	28	49	13 25	47	3·3	23	54	41	Ci.	1·1	8	—	—	—	—	6·8	48
25	8·5	60	1426	46	60	11 25	60	8·0	57	56	42	Hazy	3·3	23	12 29	Ci.	1·40	61	9·7	69
26	8·3	60	1221	39	46	12 38	46	7·8	56	18	14	Hazy	7·3	51	—	—	—	—	12·6	90
27	6·7	48	1201	39	51	11 20	48	9·3	67	43	32	Hazy	2·5	18	—	—	—	—	10·6	76
28	8·4	61	1274	42	49	12 55	48	8·4	61	45	34	Hazy	—	—	—	—	—	—	0·3	2
29	0·2	1	n 456	15	n 44	8 40	n 7	0·8	6	—	—	—	8·1	58	—	—	—	—	12·5	91
30	9·2	67	1330	44	66	10 35	65	9·3	68	73	54	Clear	5·4	39	—	—	—	—	9·4	69
31	1·6	12	931	31	71	13 15	43	3·1	23	—	—	—	3·0	22	—	—	—	—	4·3	31
Means	4·94	34	1116	33	65	—	56	5·06	35	—	—	—	4·03	27	—	—	—	—	6·74	47
Normal	5·13	36	—	—	—	—	—	6·16	43	—	—	—	4·42	30	—	—	—	—	4·90	34
	← 4 years →							← 30 years →					← 4 years →						← 30 years →	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 m.

Day.	Air 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
			200+	200+	200+	200+									Tenths of Sky covered.						
	mb.	mb.	°	°	°	°	millibar.		%	%	Dir.	m/s.	Dir.	m/s.			mm.		γ	′	° ′
1	995·8	996·2	88·1	88·3	90	87	14·9	14·9	88	86	7	5	*2*	*5*	10●	5	2·4	● showers.	…	…	…
2	1000·3	1006·7	88·0	87·1	90	87	14·2	13·5	85	84	*32*	*6*	27	7	6	10	1·5	Fair to o. Clouds low *p*.	…	…	…
3	1010·2	1014·8	86·8	86·1	89	86	14·6	11·2	94	76	27	6	27	5	10	6	0·4	o. Clouds low *p*.	…	…	…
4	1015·2	1014·1	86·9	86·2	90	85	11·5	11·9	73	78	28	2	—	1	10	9	5·4	o. to fair in evening.	…	…	…
5	1008·0	1006·5	85·3	89·0	92	85	12·9	16·6	91	92	7	4	16	3	10	9	0·8	≡⁰● *a*. Fair to c. in evening.	…	…	…
6	1010·1	1014·1	88·3	87·9	91	88	16·6	15·9	97	95	—	1	16	2	10	10	7·8	c. Clouds very low *a*.	…	…	…
7	1009·9	1015·0	90·0	88·8	91	88	19·0	16·9	98	96	15	6	24	2	10≡⁰●⁰	10	x 10·4	c. Clouds low *p*.	…	…	…
8	1012·7	1012·7	89·5	89·2	91	x 89	18·3	17·9	99	99	14	4	14	4	10●⁰	10	7·4	≡⁰ and d. Clouds low.	17865	20 1·3	68 7·6
9	1013·6	1013·4	87·7	88·5	91	88	16·3	15·9	99	92	20	2	16	2	10	10	4·9	≡⁰ to c. Clouds low *a*.	…	…	…
10	1009·4	1011·0	88·9	89·2	92	88	17·3	16·9	97	94	14	2	16	3	10●	8	8·0	● showers to fair in evening.	…	…	…
11	1012·1	1012·7	88·9	88·7	92	87	17·3	15·9	95	90	18	4	17	2	6	9	—	● showers to fair in evening.	…	…	…
12	1011·3	1011·3	89·0	87·2	92	86	14·9	14·6	83	90	17	4	18	2	9●	3	3·6	Fair. Clouds low midday.	…	…	…
13	1010·2	1011·4	88·7	87·5	91	86	16·3	14·6	92	88	21	5	21	5	9●	9	1·9	● showers at first, then fair with v.	…	…	…
14	1011·1	1014·4	88·4	87·6	90	87	15·2	14·6	88	88	21	8	26	7	9	6	2·4	● showers *a*. ●² showers 12 h. to 14 h.	…	…	…
15	1017·0	1018·0	87·8	86·7	90	86	14·6	12·9	88	84	27	5	29	4	9●	7	0·8	Fair to fine.	…	…	…
16	1017·0	1017·4	87·9	87·7	90	86	15·2	14·2	90	86	23	6	25	5	9	9	1·4	●⁰ showers *a*. Fair from 10 h.	…	…	…
17	1018·5	1019·5	88·4	87·8	91	85	14·6	14·9	85	89	31	3	—	1	5	1	0·1	Fine.	…	…	…
18	1019·0	1019·5	88·1	88·4	92	83	15·6	13·5	91	77	28	2	6	3	4∞	2∞	—	☍² *a*. Fine; ∞.	…	…	…
19	1020·8	1023·0	87·9	88·3	91	85	11·9	13·2	70	75	5	6	2	2	1	8	—	Fine.	…	…	…
20	1025·6	1026·7	88·1	87·3	90	84	13·9	13·9	82	85	31	2	29	3	4	6	—	Fine.	…	…	…
21	1026·9	1028·1	88·7	88·0	91	86	13·9	14·2	80	84	27	5	27	3	9	8	—	o. to fair. ♆⁰ 21 h.	17868	20 0·0	68 5·8
22	1028·6	1028·7	88·9	88·0	92	85	14·6	15·6	81	92	27	3	—	0	3	8	0·1	Fine.	…	…	…
23	1026·9	1025·5	88·6	86·4	91	83	15·2	13·9	86	90	—	1	—	0	10	6	—	☍² *a*. Fair.	…	…	…
24	1024·6	1024·4	89·5	86·9	92	84	15·9	14·6	85	92	—	1	—	1	8	1	—	Fine. Fine sky at sunset.	…	…	…
25	1023·9	1023·7	86·9	88·6	91	n 81	13·2	15·2	83	86	—	0	—	1	0	5	—	Fine.	…	…	…
26	1023·0	1022·5	89·3	88·1	x 93	83	15·2	13·9	83	83	4	2	2	2	1	1	—	Fine.	…	…	…
27	1021·1	1018·9	89·3	88·7	92	86	12·9	15·9	71	90	2	4	—	0	2	10	—	Fine.	…	…	…
28	1016·8	1013·6	88·5	88·2	90	87	14·2	16·6	81	97	30	3	27	3	10	10≡⁰	0·9	Fair *a*. to ≡⁰ and d.	…	…	…
29	1015·7	1021·2	85·5	85·8	n 88	84	9·5	10·5	n 66	71	3	9	32	6	3	2	—	≡⁰ and damp early. Fine and sunny.	…	…	…
30	1023·7	1024·0	87·6	85·9	90	83	11·9	12·9	71	87	29	2	—	1	7	6	1·2	Fine. c. in evening, with v.	…	…	…
31	1018·2	1015·8	87·9	86·6	89	83	14·9	13·5	89	87	16	4	21	5	10	6	5·3	● showers *a*. Fair during day. ⌒ *p*.	…	…	…
Means	1016·0	1016·9	88·2	87·7	90·7	85·5	14·7	14·5	86	87		3·8		2·9	7·2	6·8	66·7	Monthly **Totals** or **Means**.	17867	20 0·7	68 6·7
Normal	1012·7	1013·0	88·3	87·4	90·9	85·3	14·6	14·2	84	87		4·9		4·2	—	—	129·8	**Normals.**			
	← 10 years →						← 25 years →				← 30 years →						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—6/17. N. & Co., Ltd. Gp. XV.

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h_t = 3·0 m Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water	
							Vapour Pressure.		Percentage.												Daily Mean.	Extreme
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.	9 h.		0·3 m.	1·2 m.		
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.	200+ °	200+ °	200+ °	cm.	cm.
1	1005·2	1004·3	93·3	88·5	96	87	14·9	13·9	*n* 63	80	15	4	—	1	5	1	—	82	90·1	87·3	221	—
2	1001·7	996·6	90·0	88·3	93	86	15·2	15·6	79	90	16	4	17	5	9●²	10●	15·7	82	90·0	87·5	222	—
3	1000·7	1007·9	87·7	87·8	92	87	15·6	15·2	93	91	24	5	25	3	10	10●	6·5	87	89·9	87·5	222	223
4	1011·5	1014·3	89·1	89·0	93	85	14·9	15·2	83	85	25	2	—	1	9	2	0·8	83	89·4	87·6	221	—
5	1015·6	1012·9	89·3	88·6	93	84	12·5	13·9	67	80	22	3	12	2	5	10	0·1	80	89·7	87·6	220	—
6	1011·3	1015·1	91·9	90·4	95	88	17·9	15·9	83	81	18	4	24	3	10	4	0·1	87	90·0	87·6	219	—
7	1018·2	1015·8	91·3	91·5	96	88	16·6	18·6	80	88	24	2	20	4	9	4≺	0·7	86	90·2	87·7	217	—
8	1016·8	1017·3	92·0	92·0	96	*x* 90	16·9	19·3	78	88	23	4	—	1	9	10	0·9	89	90·5	87·7	216	—
9	1016·7	1015·9	91·0	92·1	96	89	19·0	20·0	93	91	—	0	—	0	10≡⁰●	9	1·0	88	89·2	87·8	214	—
10	1015·4	1015·4	92·6	92·1	*x* 97	88	20·0	18·6	88	85	—	1	—	1	*10*≡⁰	8	5·0	85	91·1	87·9	214	—
11	1017·0	1017·0	91·2	90·0	96	89	16·3	16·9	78	88	23	2	25	2	8	8	0·7	84	91·1	88·0	213	—
12	1015·5	1013·5	91·6	89·6	94	87	16·3	15·9	77	86	20	3	22	2	8	9●	6·4	86	91·3	88·0	213	—
13	1012·2	1011·5	89·3	88·0	95	85	13·9	15·2	76	90	—	1	19	3	4	1	*x* 26·6	81	90·9	88·1	214	—
14	1013·0	1012·8	89·2	88·5	94	85	14·6	14·9	81	85	23	3	21	3	5	5	0·4	81	90·0	88·1	216	—
15	1011·6	1011·3	89·2	87·8	93	85	14·6	14·2	79	87	22	3	—	1	9	0	—	82	90·1	88·2	218	—
16	1012·9	1013·6	88·3	88·2	93	84	13·5	12·9	80	74	27	2	25	2	10	8	0·4	80	90·0	88·4	218	—
17	1015·7	1017·6	89·5	87·4	94	84	14·2	14·9	77	93	—	1	—	1	8	2≡⁰	13·3	*n* 79	90·0	88·3	219	—
18	1018·4	1016·6	87·7	87·1	93	85	13·2	14·6	78	90	3	3	—	0	10	0	0·1	83	90·0	88·2	219	—
19	1018·0	1019·6	87·8	87·2	93	84	13·9	13·2	83	81	28	2	4	2	3ↀ	0⊗	—	80	89·8	88·2	220	—
20	1021·1	1020·6	87·1	89·0	94	84	14·6	12·9	92	73	—	1	29	2	10	6	—	80	89·7	88·3	219	—
21	1020·1	1022·0	88·8	88·6	93	86	13·2	13·2	74	76	28	5	—	1	8	10	—	82	89·9	88·3	218	—
22	1024·8	1026·2	89·0	89·6	93	86	13·9	15·9	78	86	—	1	—	1	8	10	—	85	89·9	88·3	216	—
23	1026·9	1024·7	91·5	90·0	95	87	13·5	15·6	65	81	—	1	—	1	9	7	—	85	90·2	88·3	215	—
24	1024·0	1023·0	89·3	88·4	94	86	12·9	14·2	70	83	24	2	—	1	9≡⁰	1≡⁰	—	82	90·6	88·2	214	—
25	1023·4	1022·0	90·1	88·0	95	86	13·9	15·6	72	93	—	1	—	0	3≡⁰	0≡⁰	0·1	81	90·4	88·2	213	—
26	1021·3	1019·1	88·1	90·1	96	84	15·6	15·6	91	81	—	0	—	1	*10*≡⁰	*5*≡⁰	—	81	90·4	88·3	213	213
27	1018·6	1015·4	88·3	90·4	95	84	13·5	15·2	78	76	—	1	—	1	0	9	—	80	89·9	88·4	213	—
28	1013·0	1008·5	87·3	89·0	94	85	14·2	13·5	88	76	—	1	—	1	0≡⁰	7	—	80	90·0	88·4	215	—
29	1005·6	1013·4	90·1	84·6	91	82	15·2	10·5	78	78	25	3	—	1	9	9	3·8	80	90·1	88·5	217	—
30	1016·7	1019·2	85·5	85·6	*n* 90	*n* 80	10·2	10·2	70	71	28	5	27	2	1	7	—	75	88·6	88·6	218	—
31	1020·6	1018·2	87·1	85·0	91	84	11·5	11·9	72	84	27	2	—	1	10	5	0·2	80	88·3	88·6	218	—
Means	1015·6	1015·5	89·5	88·8	93·8	85·3	14·7	14·9	79	84		2·3		1·6	7·4	5·7	82·8	82·5	90·0	88·1	217	—
Normal	1014·1	1014·0	89·6	88·7	94·0	85·1	13·8	14·0	74	80		3·5		2·5	—	—	55·9 (40 years)	—	89·7	88·1	—	—
	40 years						25 years				30 years								11 years			

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	979·9	977·0	87·8	85·2	90	84	13·5	12·5	80	90	7	5	5	8	6≡⁰	10●	5·7		Mostly o ● 13 h.–14 h. 30 m.
2	974·6	974·9	89·1	85·2	92	85	13·5	12·5	76	88	—	1	2	5	7	10	2·6		Fine *a*. ☈² 13 h.–14 h. ●² showers.
3	977·5	981·2	88·0	85·7	91	84	13·2	12·9	77	89	3	4	4	3	7	10	—		Bright and warm.
4	983·2	985·4	85·7	86·1	90	83	13·2	13·9	91	93	—	0	16	2	10●	9	4·6		● shower 10 h. and 15 h. T 14 h.
5	986·0	984·4	86·2	84·1	89	84	12·9	11·9	86	89	17	3	—	1	10	10●	8·6		o. all day. ●² from 22 h.
6	981·5	985·8	85·7	84·5	90	83	13·2	11·5	92	86	—	1	26	8	10≡⁰	2	0·4		● till 8 h. Very fine from noon.
7	988·5	988·3	88·6	85·0	89	82	12·9	12·9	74	91	17	2	—	2	8	10	1·9		Fine early. ● 15 h.–18 h.
8	990·2	988·9	85·4	86·2	89	83	12·2	13·9	85	93	5	3	—	1	10	10≡⁰●⁰	3·0		≡⁰ early. o. midday. ● in evening.
9	987·4	988·4	87·9	87·8	91	86	15·9	16·3	96	97	18	4	17	2	10≡⁰	10≡⁰	0·3		≡⁰ *a*. and *p*. d. during morning.
10	986·8	985·4	89·0	87·6	91	*x* 87	16·6	15·2	91	92	14	4	17	3	10●	9	4·4		≡⁰ early. ● from 9 h.
11	985·8	986·1	87·6	86·1	92	86	15·2	14·2	91	94	16	3	—	1	10	6	0·8		≡⁰● 1 h. Dull to clear.
12	985·5	984·5	87·4	84·9	91	84	15·2	12·9	94	94	18	5	—	1	10●	4	0·3		Dull and c. to fine. ∞ 17 h.
13	983·2	982·3	87·0	83·9	91	83	12·9	11·9	81	93	17	3	—	0	10	10	5·6		Distant T● showers *a*. Fine *p*.
14	982·3	982·9	85·0	81·8	89	80	12·9	10·5	93	93	15	3	—	1	9	1	7·1		●△ 1 h. Distant T.
15	984·4	985·6	89·0	84·5	92	80	13·2	12·2	75	90	3	4	—	1	7	10	*x* 14·0		●⁰ showers. ☈⁰ in evening.
16	984·8	987·2	88·5	85·2	89	84	14·2	13·2	82	92	2	7	3	9	9	10●⁰	0·5		●² 5 h.–6 h. d. from 19 h.
17	991·2	993·1	86·5	81·4	89	81	13·2	10·2	85	92	2	6	—	1	8	2	—		Fair to fine *a*. c. *p*. ⊕ 18 h.
18	991·2	990·0	88·2	85·3	*x* 93	80	11·9	12·2	70	85	25	4	4	3	2	1	—		☾² 7 h. Very fine.
19	991·2	992·5	87·0	85·5	89	81	11·2	11·9	71	82	5	3	—	1	7	9	—		Fair to c. and o.
20	992·6	990·9	87·4	84·6	88	81	12·5	10·8	77	81	25	6	26	9	9	6	—		Fine 1 h. o. *a*. d. noon.
21	993·2	994·7	88·0	86·1	91	83	10·2	12·5	*n* 60	84	32	6	27	3	6	10	—		Fine to o.
22	995·7	996·6	87·4	86·0	91	85	14·2	12·2	87	83	23	3	23	7	10	8	—		Mostly dull. Fair evening.
23	996·5	995·0	87·5	85·7	91	85	12·5	10·8	77	73	20	4	23	6	7	4	—		Fair to fine.
24	994·7	994·9	86·5	87·0	89	83	12·9	14·2	83	90	17	4	20	2	9	10	0·7		● till 8 h. ●⁰ showers later.
25	994·3	994·7	88·5	86·2	92	83	13·9	13·5	80	89	20	6	23	3	5	1	—		Bright intervals; warm and pleasant.
26	993·6	992·6	86·7	82·9	90	78	13·2	10·2	85	83	21	5	—	1	8	2	—		Very fine.
27	991·0	987·7	86·4	85·4	90	75	13·2	11·2	85	78	—	1	22	5	6	10	—		Clear to o.
28	984·1	982·5	86·3	80·2	89	79	14·2	9·8	94	95	21	5	3	8	10≡⁰●⁰	10≡⁰●⁰	5·1		Dull, with occasional d. and ≡⁰.
29	984·9	986·6	82·6	79·3	86	77	8·1	8·1	70	85	32	6	—	0	5	1	0·4		Dull and c. ●° 18 h.
30	986·3	990·1	84·4	80·0	86	77	9·1	8·8	68	88	28	6	27	5	5	3	—		Sun and cloud.
31	991·0	985·3	82·7	82·6	*n* 85	*n* 73	9·5	10·5	80	89	16	3	—	1	4	10●⁰	3·6		Fine to c. ● *n*.
Means	987·5	987·6	86·9	84·6	89·8	81·7	12·9	12·1	82	88		3·9		3·3	7·9	7·0	69·6	—	Monthly **Totals** or **Means**.
Normal	985·2	985·6	86·3	84·5	89·6	81·0	12·4	12·1	81	89		4·6		3·3	—	—	112·2	—	**Normals**.

5. Atmospheric Electricity and Terrestrial Magnetism :—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 23 days ; they 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.

x denotes the maximum and *n* the minimum value in the column. *z* Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 2·10 to 23rd, then 1·87.				Charge per cc. ×10²⁰.		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.*			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.	Amp/cm².												
1	Mostly fine.	105	180	105	180	—	—	—	0	1	494	18 43	427	9 35	67	*x* 28·8	12 43	11·3	6 45	17·5
2	●² 9 h. ● at times *p.*	85	10	115	20	—	—	—	1	2	490	23 50	404	10 3	86	26·9	13 50	7·9	23 33	19·0
3	● early. ⌈● *p.* Dull.	20	30	210	95	520	150	1·00	2	1	*x* 507	22 0	410	11 24	97	23·7	12 33	10·7	6 9	13·0
4	Fine *a.* Distant T● *p.*	−55	210	170	250	400	130	0·70	2	1	479	15 39	419	7 29	60	23·7	13 32	11·9	6 28	11·8
5	Fine *a.* to dull.	220	315	240	440	1010	450	2·05	0	0	479	21 3	426	10 3	53	23·9	13 30	9·8	7 22	14·1
6	Dull *a.* Fair to fine *p.*	105	200	125	200	890	750	0·70	0	1	505	23 22	421	10 11	84	26·7	12 19	11·2	24 0	15·5
7	● 11 h. Mostly dull. ⩽21 h.	180	190	85	—	—	—	—	0	2	493	18 54	410	9 42	83	23·9	13 20	4·8	3 40	19·1
8	Dull to fine. ●⁰ 17 h.	—	—	135	295	—	—	—	0	1	488	0 52	420	9 45	68	22·9	12 40	8·4	1 23	14·5
9	● 8 h.–11 h. Mostly dull.	180	180	160	170	370	320	0·50	0	0	481	0 14	427	10 17	54	25·2	14 18	11·7	7 23	13·5
10	≡ early. T● 12 h. Fine later.	105	—	—	265	320	120	—	1	1	481	20 25	419	10 22	62	25·6	13 29	9·0	4 35	16·6
11	Mostly fine. ●²⌒ 18 h.	95	135	145	345	1030	870	0·85	1	0	481	22 0	422	9 28	59	25·8	14 38	13·2	6 8	12·6
12	Fair till 12 h. ⌈●²⌒ 14 h. [19 h.	115	230	*z*±	485	—	—	—	1	0	474	21 50	422	9 29	52	25·2	12 46	12·4	7 12	12·8
13	Fine to dull. ⌈●²⌒ 18 h. ⌒	250	325	180	275	730	680	0·75	1	0	473	18 37	423	9 36	50	24·6	13 50	13·8	6 6	10·8
14	Mostly fine. T 15 h.	125	190	−50	335	—	—	—	1	0	484	19 10	435	11 35	49	23·8	14 27	11·9	7 8	11·9
15	● 2 h. Fine to fair. ⌈13 h.	380	180	*z*±	440	—	—	—	2	0	482	19 12	440	11 11	42	25·6	13 44	12·2	8 2	13·4
16	Dull to fine *a.* ● 13 h. T 15 h.	85	190	*z*±	200	990	500	—	1	0	495	20 33	442	11 12	53	27·8	13 30	12·7	7 30	15·1
17	Fine till 14 h. ⌈●²△ 15 h.	230	265	*z*±	335	—	—	—	1	1	*x* 507	20 10	417	14 37	90	27·5	13 30	11·2	7 48	16·3
18	Dull *a.* ; fine later. ≡ *n.*	65	315	145	135	340	600	0·35	0	1	490	20 45	437	11 20	53	25·1	13 15	10·5	2 27	14·6
19	⊃ early. Fine.	170	325	220	355	480	350	1·10	0	1	488	4 20	431	12 14	57	23·9	11 58	5·6	7 30	18·3
20	≡⁰ early. Dull to fine.	230	170	170	220	200	130	0·80	0	1	482	16 58	423	10 53	59	23·9	13 10	11·8	7 4	12·1
21	Fair to fine.	220	180	105	345	—	—	—	0	1	493	14 39	438	8 38	55	24·6	12 41	11·7	7 11	12·9
22	Dull to fine.	75	145	160	105	—	—	—	0	1	484	16 19	448	9 24	*n* 36	23·4	13 5	9·7	6 58	13·7
23	Dull to fine.	105	315	145	230	500	320	0·65	0	0	478	20 50	427	9 44	51	26·7	12 48	10·8	7 49	15·9
24	Dull to fine.	120	460	130	290	240	620	0·55	0	0	477	19 37	426	7 30	51	24·0	12 35	13·1	6 34	10·9
25	≡ early. Fine from 9 h.	310	270	160	150	490	220	0·65	1	1	493	20 51	429	23 40	64	23·8	12 12	5·8	23 59	18·0
26	≡² ⊃ early. Fine from 8 h.	—	185	260	185	400	110	0·70	0	2	501	0 35	396	8 43	*x* 105	24·0	13 37	*n*−0·3	1 36	*x* 24·3
27	Fine all day. ∞ [∞ *p.*	235	280	140	160	390	170	0·65	0	1	493	20 23	*n* 394	9 42	99	26·2	13 47	10·8	19 53	15·4
28	≡⁰ early. Fine. ∞	95	180	185	195	—	—	—	0	1	473	20 58	418	11 55	55	24·5	12 45	11·9	7 53	12·6
29	Mostly dull, with ●.	120	185	170	280	—	—	—	1	2	490	22 18	399	9 3	91	27·7	14 35	8·6	19 15	19·1
30	Mostly fine.	185	225	140	310	1210	900	0·85	0	1	472	15 50	410	9 25	62	25·6	13 19	12·5	7 28	13·1
31	Fine to dull.	130	195	110	365	750	560	0·70	0	1	473	15 20	427	10 20	46	23·7	13 13	13·4	8 42	*n* 10·3
M.		139*	218*	147*	237*	—	—	—	—	—	486	—	422	—	64	25·1	—	10·3	—	14·8

6. Atmospheric Electricity and Terrestrial Magnetism :—Eskdalemuir.

Day.	Potential Gradient, Volts per metre.* Factor 6·37.				Charge per cc. ×10²⁰.		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+.		Minimum. 45000 γ+.		Maximum. 45000 γ+.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	*c.*			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.	Amp/cm².														
1	257	265	−291	*z*	—	—	—	1 *b*	1	18 43	1051	985	9 34	12 19	119	33	7 3	18 2	‡	‡	11 34
2	240	231	*z*	240	—	—	—	2 *c*	1	19 38	1057	919	11 54	13 52	112	10	23 34	19 32	‡	‡	4 16
3	308	154	103	171	—	—	—	0 *a*	1	21 55	1055	935	2 25	14 52	111	26	7 52	17 40	‡	‡	2 43
4	111	0	*z*	223	—	—	—	1 *b*	1	18 1	1027	946	11 34	15 23	102	34	6 48	18 39	199	156	2 36
5	69	265	103	26	1040	970	—	1 *a*	0	20 1	1022	963	10 48	14 34	101	21	7 23	18 20	186	163	12 20
6	−171	360	154	180	—	—	—	1 *a*	1	21 19	1051	949	11 6	23 10	118	17	24 0	16 30	182	136	23 35
7	265	180	137	437	—	—	—	1 *a*	2	17 5	1047	947	4 4	2 52	124	−23	3 40	{16 56 / 17 31}	180	59	3 10
8	548	248	†	†	—	—	—	—	1	1 17	1043	961	11 17	15 6	101	16	1 13	17 50	178	147	0 56
9	†	†	205	531	—	—	—	—	0	19 39	1023	967	12 37	14 12	104	33	7 42	17 38	178	161	12 58
10	94	103	128	257	—	—	—	1 *b*	1	4 6	1033	954	11 41	13 30	105	12	4 34	22 36	181	152	12 18
11	171	146	128	377	—	—	—	1 *a*	0	18 5	1033	948	10 46	14 38	116	39	19 37	19 35	194	153	12 20
12	257	−556	214	411	—	—	—	1 *b*	0	21 46	1018	953	{9 42 / 10 8}	13 31	106	37	7 19	18 0	189	158	12 10
13	171	188	214	385	—	—	—	1 *b*	0	18 37	1022	962	10 34	{14 28 / 14 30}	101	? 46	? 8 35	16 38	173	162	13 16
14	86	*z*	146	334	—	—	—	2 *c*	0	18 42	1032	972	11 41	{14 37 / 15 44}	100	40	8 29	18 44	177	153	12 45
15	214	231	163	283	—	—	—	1 *b*	0	19 11	1024	961	11 41	13 53	104	40	8 8	7 0	170	144	12 10
16	−274	171	94	94	—	—	—	1 *c*	0	20 25	1034	964	13 33	13 32	112	42	7 35	7 25	172	148	13 12
17	103	86	69	257	—	—	—	0 *a*	1	20 6	1060	940	10 20	13 33	123	38	7 50	16 42	184	150	{10 51 / 12 29}
18	180	325	128	248	—	—	—	0 *a*	0	20 35	1032	960	11 21	13 18	101	26	{2 45 / 8 50}	21 25	175	147	13 0
19	231	120	128	240	—	—	—	0 *a*	0	20 9	1029	951	12 12	13 31	97	3	7 30	21 42	177	153	11 35
20	214	103	86	163	910	520	—	0 *a*	0	16 57	1028	956	10 51	13 12	105	33	? 8 46	19 53	184	147	12 33
21	103	180	163	137	970	710	—	0 *a*	0	22 2	1032	974	9 53	12 43	111	34	7 12	21 55	179	146	12 46
22	128	111	111	163	—	—	—	0 *a*	1	16 18	1035	973	11 45	13 51	95	26	6 50	23 0	175	153	11 0
23	120	197	154	214	710	580	—	0 *a*	0	18 4	1021	961	10 9	13 34	110	25	7 51	{15 55 / 16 42}	178	157	11 55
24	146	103	51	257	1170	1170	—	0 *a*	0	19 34	1023	966	10 58	13 7	97	42	8 35	16 40	188	165	12 22
25	342	171	103	146	710	650	—	0 *a*	1	20 51	1042	959	23 40	13 33	97	−26	23 41	17 50	189	106	24 0
26	120	171	171	188	450	450	—	0 *a*	2	17 4	1039	*n* 907	1 17	4 7	112	*n*−69	1 33	17 40	216	*n* 13	0 41
27	180	146	154	171	840	390	—	0 *a*	1	18 23	1059	936	9 41	13 37	114	25	9 3	18 14	201	137	0 43
28	94	120	94	231	—	—	—	1 *a*	1	17 37	1026	942	11 53	12 47	95	28	8 2	18 7	198	146	2 44
29	94	188	240	428	—	—	—	1 *b*	1	19 22	*x* 1065	937	12 51	14 32	*x* 127	18	19 15	15 58	*x* 233	141	22 43
30	248	171	171	419	—	—	—	0 *a*	1	15 51	1028	953	12 17	15 49	114	? 37	7 30	17 5	209	164	11 48
31	351	402	120	111	1170	780	—	1 *b*	1	15 19	1026	963	10 36	14 5	99	40	8 53	18 40	194	167	11 40
M.	150*	153*	135*	240*	—	—	—	—	—	—	1036	954	—	—	108	23	—	—	187§	142§	—

* 25 days. *See* note above. † Instrument accidentally earthed. ‡ Instrument drifting very rapidly. § 28 days.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
2	e	7 9 29	...	...	...	...	...	
	F	8½	...	...	...	...	...	
3	eP	13 24 56	...	...	...	...	8540	α N.E. or S.W.
	e	13 30 28	...	...	...	...	...	
	e	13 31 57	...	...	...	...	...	
	S	13 34 43	...	...	...	...	...	
	M	14 20	19	24	...	...	...	
4	eP (?)	12 57 6	...	...	...	...	1970(?)	Azimuth N. or S.
	eS (?)	13 0 26	...	...	...	...	...	
	M	13 2½	20	2	...	...	...	
	F	13½	...	...	...	...	...	
6	P	13 24 27	...	...	...	...	8790	α = 26°.
	PR_1	13 27 31	...	...	...	...	...	Epicentre, lat. 42° N., long. 143° E. Japan.
	S	13 34 27	...	...	...	...	...	
	SR_1	13 39½	...	...	...	...	...	
	L	13 52½	40	...	...	...	...	
	M	13 59	21	...	15	...	...	
	M	14 4	18	28	...	...	...	
	F	16 10	...	...	...	...	...	
7	e	4 54 10	...	...	...	...	...	
	M		...	< 2	< 2	...	...	
	F	5½	...	...	...	...	...	
7	P	15 9 15	...	...	...	...	2540	α = 123°.
	S	15 13 23	...	On N.S.	and	E.W.	...	Epicentre, lat. 39° N., long. 22° E. Greece.
	?	15 13 54	...	On E.W.	mainly.		...	
	L	15 17½	...	...	...	...	...	
	M	15 18	19	50	42	...	...	
8		1½ to 2	...	< 2	< 2	...	...	Small waves.
8	e	3 30 36	...	...	...	...	...	
9	i	6 8 58	...	...	...	...	...	Followed by very small disturbance.
10	P	0 53 9	...	...	...	...	2550	α approximately S.E.
	S	0 57 18	...	...	...	...	...	
	F	1½	...	...	...	...	...	
10	P	2 7 50	...	...	...	...	2550	α = 130° ± 10°.
	S	2 11 59	...	..	...	...	...	Epicentre, lat. 38° N., long. 19° E.
	F	3¼	...	...	...	...	...	Adriatic (?) Larger than the preceding.
11	eP	9 15 37	...	...	...	...	2500	
	S (?)	9 19 42	...	...	...	...	...	
	e	9 21½	...	...	...	...	...	
11	P	10 3 26	...	...	...	...	2440	
	S	10 7 26	...	...	...	...	...	
	L	10 10 49	...	...	...	...	...	
	F	10 40	...	...	...	...	...	
12	P	7 55 36	...	Horizontal and vertical.			...	α = 60° ± 20°.
	e_1	7 57 56	...				...	Parallel to P.
	e_2	8 3 4	...	Horizontal only.		...	...	Perpendicular to P.
	e_3	8 4 49	...				...	Parallel to P.
	e_4	8 5 56	...	Horizontal and vertical.			...	,,
	e_5	8 8 54	...				...	,,
	e_6	8 11 1	...				...	Perpendicular to P.
	L	8 32	...	...	...	...	...	
	M	8 40	22	8	...	...	...	
12	M	10 12½	23	8	...	...	...	First part lost in changing sheets.
		10 13	20	...	7	...	...	
12	eP	13 46 12	...	Vertical only		...	...	Phases similar in form to those having same subscript, about 8h.
	e_3	13 55 20	...				...	
	e_4	13 56 29	...	Horizontal and vertical.			...	
	e_6	14 1 36	...				...	
	M	14 30	25	2·5	1·7	...	...	
	c	14¾	...	...	...	...	...	
12	e	22 13 6	...	...	...	...	...	
16	P	0 7 55	...	...	...	...	...	
(A)	L	0 11	...	...	...	...	...	
16	P	1 8 16	...	...	...	...	8220	α North.
	S	1 17 47	...	...	...	...	...	Epicentre, lat. 51° N., long. 177° E. Aleutian Islands.
	SR_1	1 23	...	...	...	...	...	
	F	2¾	...	...	...	...	...	
16	P	2 50 20	...	...	...	...	...	
(B)	L	2 53½	...	...	...	...	...	The Mean azimuth for the four earthquakes (A), (B), (C), (D) on the 16th was 307°, and the common epicentre was placed under the Atlantic in lat. 62° N., long. 30° W.
16	P	3 28 50	...	...	...	...	1740	
(C)	eS (?)	3 31 50	...	...	...	...	...	
	L	3 32	...	...	...	...	...	
16	P	5 21 45	...	...	...	...	1690	
(D)	eS (?)	5 24 35	...	...	...	...	...	
	L	5 25	...	...	...	...	...	
18	M	23 30½	10	0·7	1·3	...	...	
19	P	0 17 19	...	...	...	...	...	
	i	0 24 9	...	...	...	...	...	
	i	0 28 37	...	...	...	...	...	
	F	2½	...	...	...	...	...	
19	P	6 47 30	...	...	...	...	2510	α 117°. Epicentre, lat. 41° N., long. 24° E. Macedonia.
	S	6 51 36	...	...	...	...	...	
	M	6 55½	19	15	...	...	...	
26	M	9 16½	11	0·9	1·1	...	...	
27		6¾ to 7¾	...	< 3	< 3	...	...	Small irregular waves.
31	P	21 4 54	...	...	...	...	7500(?)	Azimuth approximately N.E.-S.W. Azimuth of M phase N.W.-S.E.
	e	21 5 50	...	...	...	...	...	
	L	21 30	...	...	...	...	...	
	M	21 36	30	10	11	...	...	
	F	22½	...	...	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	0·9	5	1·1	4	0·8	5	0·8	4·5
2	0·7	4·5	0·6	4	0·5	4	0·5	3·5
3	0·1	4	0·1	4	0·0	...	0·1	4·5
4	0·0	...	0·0	...	0·0	...	0·0	...
5	0·0	...	0·0	...	0·1	4	0·1	3·5
6	0·0	...	0·0	...	0·0	...	0·0	...
7	0·0	...	0·0	...	0·0	...	0·0	...
8	0·2	4	Clock	stopped	0·2	4·5	0·2	4·5
9	0·3	4	0·1	4·5	0·3	4·5	0·2	4·5
10	0·2	5	0·2	4·5	0·2	4·5	0·3	4·5
11	0·4	4·5	0·3	4	0·3	5	0·5	4
12	0·6	4	0·4	5·5	0·4	4·5	0·4	5
13	0·3	4·5	0·3	4·5	0·3	4	0·5	4
14	0·2	4·5	0·1	4·5	0·1	4	0·1	4
15	0·1	4·5	0·0	...	0·0	...	0·0	...
16	0·0	...	0·0	...	0·0	...	0·0	...
17	0·0	...	0·0	...	0·0	...	0·0	...
18	0·0	...	0·0	...	0·0	...	0·1	3·5
19	0·2	6	0·1	4	0·1	4	0·1	4
20	0·0	...	0·0	...	0·0	...	0·0	...
21	0·2	4·5	0·3	5	0·4	4·5	0·2	4
22	0·2	4	0·1	4	0·2	4	0·3	4·5
23	0·4	4·5	0·3	5·5	0·4	5·5	0·7	5·5
24	0·7	5·5	0·8	4·5	0·7	5·5	0·8	5
25	0·8	5·5	0·7	5·5	0·9	5	0·8	5
26	0·8	5	0·8	5	0·9	5	0·8	5
27	0·7	5·5	0·7	5	0·6	4·5	0·5	4·5
28	0·5	5·5	0·4	4·5	0·6	5·5	0·3	4·5
29	0·8	4·5	0·5	5	0·6	5	0·7	5·5
30	0·7	5·5	0·8	5·5	0·8	5	0·7	5
31	0·7	4·5	0·5	5·5	0·6	4	0·6	4·5

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
2	8 10	...	Series of very small movements.
3	13 25·0	14 18·3	Disturbance lasted until 16 h.
,,	...	15 25·1	
6	13 26·9	14 8·6	Amplitude on trace 1·0 mm.
7	15 7·9	15 17·2	Amplitude on trace 4·6 mm.
10	0 23·3	0 24·5	Very small.
,,	0 57·1	1 4·0	Small.
,,	2 7·9	2 19·0	Amplitude on trace 5·2 mm.
12	...	8 51	Series of very small movements.
,,	...	10 13	Series of very small movements.
,,	...	22 19	Very small.
16	1 36	...	Series of very small movements.
,,	3 29·5	3 36·5	Very small.
19	6 50·2	6 57·1	Amplitude on trace 1·9 mm.
31	...	21 48·0	Series of very small movements.

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	1·9	...	...	4·5	1·5	...	...	3·6	2·0	...	0·4	...	2·0	...	...	0·4	10·6	6	45
2	0·3	...	...	4·2	0·4	...	...	2·3	...	1·9	...	4·5	...	4·5	...	1·9	10·1	17	30
3	...	5·1	1·0	...	...	4·5	1·9	...	...	3·1	4·7	...	...	1·1	2·8	...	8·3	2	15
4	...	2·9	4·3	...	...	1·8	1·8	...	...	1·8	4·3	...	2·0	...	3·0	...	8·7	5	15
5	0·2	...	1·0	...	1·5	...	0·6	...	...	1·2	0·5	...	...	...	...	4·3	6·2	20	35
6	...	...	...	1·6	...	1·7	...	1·1	...	2·2	1·4	...	...	0·8	0·6	...	5·2	13	35
7	...	1·1	0·7	...	0·6	...	...	3·2	3·8	...	...	2·6	1·1	...	1·1	...	10·7	17	0
8	...	6·9	...	...	...	0·2	...	0·2	1·1	...	1·1	...	4·5	...	1·9	...	9·8	2	35
9	4·0	...	3·3	...	5·1	...	1·0	...	5·5	...	2·3	...	3·8	...	0·8	...	10·2	1	40
10	2·6	...	0·5	...	4·8	...	2·0	...	5·7	...	3·8	...	6·0	...	4·0	...	12·8	20	40
11	3·5	...	3·5	..	6·0	...	4·0	...	5·6	...	5·6	...	5·5	...	3·7	...	13·5	16	25
12	2·7	...	4·1	...	4·3	...	2·9	...	5·1	...	5·1	...	4·1	...	2·7	...	11·2	15	55
13	2·5	...	1·7	...	3·2	...	2·2	...	5·2	...	3·4	...	2·5	...	2·5	...	10·8	13	50
14	1·6	...	4·0	...	3·7	...	3·7	...	4·4	...	4·4	...	2·0	...	3·0	...	12·0	13	30
15	...	...	4·3	...	...	4·8	2·0	...	...	4·1	2·7	...	...	3·5	3·5	...	7·8	12	5
16	...	2·1	2·1	...	...	4·2	4·2	...	...	1·9	4·5	...	...	2·1	5·2	...	9·2	21	50
17	...	5·2	2·1	...	...	3·8	...	5·7	...	3·1	...	4·7	...	2·3	...	2·3	10·6	9	8
18	...	1·3	...	2·7	...	2·7	...	4·1	...	3·6	...	1·5	...	4·5	...	1·9	6·7	22	35
19	...	4·3	2·0	...	...	4·0	1·6	...	...	4·5	1·9	...	...	7·7	...	1·5	9·8	21	0
20	...	5·5	...	1·1	...	4·3	1·8	...	...	2·0	4·8	...	...	1·3	6·5	...	13·2	21	55
21	...	4·4	6·6	...	...	4·7	4·7	...	...	2·3	2·3	...	...	3·3	3·3	...	11·2	6	45
22	...	4·7	4·7	...	...	2·4	3·6	...	...	2·4	5·7	...	0·8	...	3·8	...	8·0	23	45
23	...	1·5	3·6	...	...	0·8	4·2	...	2·6	...	3·8	...	3·3	...	3·3	...	8·1	16	45
24	...	0·9	4·5	...	...	0·6	3·2	...	...	1·1	2·8	...	2·2	...	3·2	...	6·8	0	5
25	0·7	...	1·1	...	0·4	...	2·3	...	...	3·2	2·2	...	...	0·8	0·6	...	4·3	14	55
26	...	1·1	0·7	...	...	1·7	1·1	...	...	2·3	...	...	...	2·3	...	0·4	5·3	12	15
27	...	2·5	...	1·7	...	3·8	0·8	...	...	3·0	2·0	...	...	2·4	3·6	...	5·6	1	40
28	...	3·6	1·5	...	...	2·3	2·3	...	0·8	...	4·2	...	1·5	...	3·6	...	7·4	18	0
29	...	3·5	...	...	...	10·4	...	7·0	...	8·5	...	...	...	8·9	...	...	18·8	5	50
30	...	3·5	3·5	...	...	7·8	7·8	...	...	3·1	4·7	...	...	3·0	...	...	14·4	7	10
31	...	1·9	1·3	...	0·8	...	3·8	...	6·9	...	2·9	...	...	...	5·2	...	15·1	19	20
S+N & W+E	94·4		77·9		98·8		90·7		104·0		94·8		89·8		80·6				
S−N & W−E	−51·6		46·3		−34·2		36·3		−6·6		68·2		−7·2		55·2				

SCOTLAND N.:—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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	...	1·4	1·4	...	...	1·2	0·5	...	...	...	2·0	...	0·3	...	...	1·3	3·3	2
2	...	...	...	1·0	0·8	...	...	3·8	...	0·6	...	2·9	0·3	...	...	0·6	3·9	9, 17
3	...	0·7	...	1·1	...	2·0	0·4	...	...	3·0	...	1·3	...	1·7	...	1·1	3·3	14, 15
4	...	0·7	...	1·1	...	1·8	...	0·8	0·3	...	...	1·6	0·7	...	...	...	2·3	16
5	0·2	...	...	1·0	1·9	...	...	1·3	1·4	...	...	3·3	0·8	...	...	1·8	3·9	16
6	0·5	...	...	2·6	...	...	...	3·3	1·0	...	...	0·2	...	4·5	0·9	...	5·6	23
7	...	2·5	1·7	...	...	2·2	1·4	...	...	0·6	0·3	...	...	2·0	0·4	...	4·6	1
8	...	0·8	0·6	...	...	0·1	0·7	...	2·5	...	...	2·5	1·4	...	...	2·2	4·6	17
9	1·9	...	...	4·5	3·4	...	...	5·2	3·7	...	...	5·5	1·0	...	...	5·1	7·2	11
10	1·8	...	...	4·3	1·4	...	...	7·1	1·5	...	...	7·4	1·5	...	...	7·7	8·5	11
11	1·1	...	...	5·5	1·7	...	...	1·1	1·1	...	...	0·7	...	0·6	0·3	...	6·2	2
12	...	0·3	...	0·6	...	0·1	0·3	...	...	0·2	...	1·0	0·2	...	...	1·0	3·0	23
13	1·4	...	...	2·2	2·0	...	...	3·0	0·8	...	...	4·2	...	0·5	...	2·6	4·3	15
14	...	0·2	...	1·0	2·0	...	...	0·4	2·0	...	...	3·0	0·5	...	...	2·6	3·9	17
15	0·3	...	...	1·3	...	1·8	...	2·7	...	2·6	0·5	...	...	0·5	...	1·2	4·9	13
16	...	3·3	...	4·9	...	4·8	...	1·0	...	5·2	...	2·1	...	3·2	...	0·6	6·2	11, 12
17	...	3·9	...	...	...	4·5	0·9	...	...	3·3	3·3	...	...	3·3	4·9	...	6·2	20, 23
18	...	2·5	6·1	...	...	3·5	8·5	...	...	6·3	6·3	...	...	4·2	6·2	..	10·8	11
19	...	3·4	5·2	...	...	3·3	3·3	...	..	2·8	6·7	...	...	1·4	3·3	...	7·2	2, 15
20	2·4	...	3·6	...	1·3	...	6·5	...	...	1·6	8·0	...	...	3·7	5·5	...	9·5	16
21	...	5·3	5·3	...	...	4·7	4·7	...	...	1·8	4·3	...	...	...	4·9	...	7·5	3
22	2·6	...	3·8	...	2·4	...	5·7	...	3·0	...	7·3	...	3·6	...	8·8	...	9·5	21
23	...	...	4·6	...	2·6	...	3·8	...	5·8	...	1·2	...	3·4	...	5·2	...	9·5	18, 21
24	...	...	4·9	...	1·5	...	7·7	...	1·4	...	7·1	...	0·5	...	2·6	...	8·2	12
25	4·1	...	2·7	...	1·7	...	8·7	...	3·0	...	7·3	...	1·6	...	8·0	...	9·2	10
26	1·6	...	8·0	...	1·7	...	8·7	...	1·9	...	9·6	...	...	...	9·8	...	11·5	14
27	1·5	...	7·4	...	1·9	...	9·3	...	3·4	...	8·2	...	3·7	...	5·5	...	11·1	24
28	...	5·3	5·3	...	...	4·2	4·2	...	...	4·4	6·6	...	...	2·5	2·5	...	9·2	1
29	...	3·5	3·5	...	...	7·4	4·9	...	...	4·0	9·7	...	...	5·7	8·5	...	11·5	20
30	...	5·7	8·5	...	...	8·7	5·8	...	...	9·0	6·0	...	...	4·9	3·3	...	11·1	13
31	...	1·4	2·2	...	...	1·4	2·2	...	...	2·1	0·9	...	...	0·6	0·3	...	4·3	23
S+N & W+E	60·3		105·9		78·0		117·9		80·3		131·0		58·8		108·7			
S−N & W−E	−21·5		43·7		−25·4		58·5		−14·7		59·6		−19·8		53·1			

ENGLAND S.W.:—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.			
	m/s	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	4·5	...	...	0·9	7·3	...	...	3·0	9·6	...	...	4·0	8·5	...	...	3·5	13·7	22	0
2	7·7	...	...	3·2	...	3·7	8·9	...	...	2·3	11·5	...	...	2·1	10·6	...	18·0	11	35
3	...	4·8	11·6	...	...	1·5	7·7	...	...	...	8·3	...	...	3·0	7·3	...	17·0	3	55
4	...	1·5	3·5	...	...	2·3	3·5	...	...	0·7	1·6	...	...	0·1	0·4	...	7·3	0	45
5	2·7	...	...	1·1	7·1	...	...	7·1	4·1	...	4·1	...	1·8	...	2·7	...	15·6	10	15
6	2·1	...	5·0	...	1·1	...	5·7	...	2·6	...	3·8	...	2·3	...	2·3	...	8·1	8	15
7	2·7	...	1·8	...	3·9	...	5·9	...	3·9	...	5·9	...	2·3	...	3·5	...	10·1	10	50
8	3·0	...	3·0	...	2·7	...	1·1	...	2·4	...	1·6	...	2·5	...	...	...	5·6	0	15
9	1·7	...	...	0·3	2·5	...	...	...	1·7	...	...	0·3	0·4	...	0·7	...	4·0	1	30
10	1·4	...	0·9	...	4·1	...	0·8	...	3·5	...	3·5	...	1·8	...	2·7	...	8·0	13	0
11	2·7	...	1·8	...	1·5	...	3·5	...	2·3	...	3·5	...	1·6	...	2·4	...	6·6	3	25
12	0·8	...	4·1	...	0·3	...	1·7	...	1·3	...	3·0	...	...	...	2·5	...	6·8	2	10
13	0·0	0·0	0·0	0·0	0·7	...	1·6	...	...	...	5·0	...	...	...	5·8	...	8·2	21	30
14	...	...	5·8	...	...	1·1	5·7	...	...	...	7·1	...	...	3·2	7·7	...	12·1	19	55
15	...	2·7	6·6	...	...	3·0	4·5	...	...	1·6	3·9	...	...	3·0	4·5	...	9·8	4	15
16	...	2·7	2·7	...	...	3·2	2·1	...	...	1·8	4·3	...	...	3·2	4·8	...	6·8	20	45
17	...	1·8	2·7	...	...	1·6	2·4	...	...	1·6	2·4	...	...	1·5	1·5	...	7·1	1	35
18	...	0·9	0·9	...	...	0·3	0·2	...	0·3	...	...	1·3	0·9	...	...	0·9	3·0	0	5
19	0·3	...	...	0·3	...	1·0	...	2·3	...	3·8	...	3·8	...	3·2	...	2·1	8·0	16	30
20	...	4·2	...	2·8	...	5·2	...	3·5	...	4·5	...	0·9	...	3·3	...	...	7·0	8	30
21	...	3·0	1·3	...	...	3·0	1·3	...	...	4·8	3·2	...	...	3·3	3·3	...	8·2	17	0
22	...	2·7	1·1	...	...	3·2	...	0·6	...	1·9	...	0·8	...	1·2	...	0·5	5·3	8	15
23	0·9	0·0	0·0	0·0	1·0	...	...	2·3	0·2	...	0·4	...	0·0	0·0	0·0	0·0	1·8	8	30
24	0·0	0·0	0·0	0·0	...	1·1	...	2·7	...	0·8	...	1·9	...	2·1	...	2·1	4·2	10	5
25	...	2·1	...	2·1	...	1·6	...	3·9	...	3·8	...	3·8	...	3·5	...	3·5	7·8	15	0
26	...	1·3	...	3·0	...	1·5	...	3·5	...	1·5	...	3·5	...	3·8	...	2·6	9·1	23	40
27	...	1·3	...	3·0	...	1·9	...	4·6	...	3·7	...	5·6	...	4·8	...	3·2	11·2	13	40
28	...	4·2	...	2·8	...	4·1	...	4·1	...	3·0	...	1·3	...	2·5	0·5	...	8·5	8	40
29	...	2·1	3·2	...	...	6·2	2·6	...	...	7·7	...	3·2	...	7·3	...	3·0	11·9	17	55
30	...	2·5	...	0·5	...	4·1	...	0·8	...	4·1	0·8	...	...	1·7	1·2	...	7·6	5	30
31	...	1·5	1·5	...	...	0·7	1·6	...	...	...	6·3	...	1·5	...	7·7	...	13·1	21	45
S+N & W+E	68·9		77·5		82·5		99·2		79·5		110·6		76·4		93·5				
S−N & W−E	−9·7		37·5		−18·1		22·4		−15·7		49·8		−29·2		50·7				

ENGLAND E.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1			No rec		ord.				5·8	...	...	5·8	2·7	...	...	1·8	8·7	14	55
2	1·2	...	0·5	...	3·5	...	...	0·7	8·9	...	...	...	9·3	...	...	1·9	14·5	22	15
3	7·7	...	1·5	...	2·8	...	1·1	...	...	3·8	0·8	...	...	3·8	2·6	...	15·4	2	35
4	...	2·5	2·5	...	...	2·7	1·8	...	...	5·5	...	2·3	...	0·9	...	0·4	8·7	12	0
5	...	1·3	0·9	...	...	1·3	0·9	...	6·2	...	...	...	2·0	...	0·4	...	12·2	14	10
6	4·8	...	...	2·0	3·5	...	0·7	...	1·9	...	1·3	...	...	1·3	3·0	...	11·6	14	45
7	...	1·4	3·3	...	...	1·4	3·3	...	...	0·5	2·6	...	3·7	...	...	5·5	9·2	22	50
8	...	2·3	...	5·5	...	2·1	...	5·2	...	1·0	...	2·4	0·6	...	...	3·2	9·3	8	30
9	1·1	...	...	2·8	0·6	...	...	3·2	0·3	...	...	1·3	0·2	...	...	1·0	6·4	8	30
10	0·1	...	...	0·7	0·4	...	...	2·3	1·8	...	...	4·3	1·6	...	...	1·6	7·2	15	20
11	2·9	...	0·6	...	...	1·5	3·6	...	...	...	...	3·3	2·3	...	0·5	...	9·9	16	30
12	1·6	...	1·6	...	0·5	...	1·2	...	0·9	...	0·9	...	...	0·6	1·5	...	9·6	16	15
13	0·9	...	2·1	...	0·4	...	2·3	...	5·2	...	...	...	0·3	...	...	1·3	11·0	15	45
14	...	...	...	2·3	...	2·5	2·5	...	...	...	3·0	...	...	2·3	...	...	10·5	16	40
15	...	0·6	2·9	...	...	0·6	2·9	...	2·4	...	1·0	...	1·7	...	1·1	...	9·2	13	35
16	0·9	...	2·1	...	0·3	...	1·6	...	5·2	...	...	2·1	...	...	2·0	...	10·8	14	50
17	...	...	2·0	...	...	2·9	0·6	...	...	3·6	...	...	...	1·0	...	0·2	7·0	18	35
18	...	2·3	0·4	...	...	3·2	0·6	...	...	3·8	0·8	...	...	2·3	0·4	...	10·8	13	30
19	...	2·5	1·7	...	...	3·8	2·6	...	...	4·8	2·0	...	...	2·3	0·4	...	13·7	10	40
20	...	2·4	1·0	...	...	2·5	1·7	...	...	...	2·0	...	0·3	...	1·3	...	7·6	17	45
21	...	0·6	3·2	...	...	4·0	1·6	...	...	6·7	2·8	...	...	2·3	0·4	...	16·3	4	10
22	...	1·6	0·3	...	...	2·9	0·6	...	...	1·7	...	1·1	3·8	...	0·8	...	8·7	9	10
23	1·4	...	2·2	...	...	...	3·6	..	...	0·6	3·2	...	...	0·1	0·3	...	8·0	13	50
24	...	...	2·6	...	...	0·4	0·6	...	...	2·2	...	1·4	...	...	...	1·0	7·5	10	20
25	...	0·5	2·6	...	...	0·4	2·3	...	...	1·1	...	1·7	...	0·4	...	0·9	6·3	1	10
26	...	0·1	...	0·3	...	0·3	...	1·6	...	0·8	...	1·8	...	0·3	...	0·6	4·2	13	55
27	...	0·2	0·2	...	...	1·3	0·9	...	5·5	...	1·1	...	...	0·4	...	0·6	8·2	13	30
28	...	0·4	...	0·6	...	1·7	1·1	...	...	2·1	...	0·9	...	1·2	...	0·5	6·2	9	40
29	...	1·0	2·4	...	...	0·8	4·2	...	...	4·2	0·8	...	...	2·6	0·5	...	18·4	10	10
30	...	2·8	3·8	...	...	4·7	4·7	...	...	3·6	2·4	...	...	2·1	2·1	...	13·2	16	0
31	...	2·5	2·5	...	...	2·5	2·5	...	...	3·6	...	...	1·3	...	...	1·9	9·2	10	20
S+N & W+E	47·6		56·1		55·5		62·5		93·7		53·1		53·7		39·7				
S−N & W−E	−2·4		27·7		−31·5		36·5		−5·5		2·9		5·9		−5·1				

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 185. August 5, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3030	...	...	...	...		Balloon entered sheet of high St.-Cu., the direction of which was unobtainable.
	3000	210	0·9	+0·5	+0·8		
	2500	190	0·5	+0·1	+0·5		
	2000	170	3·5	−0·6	+3·5		
	1750	180	3·6	−0·1	+3·6		*Pressure Distribution* (7 h.).
	1500	185	4·8	+0·6	+4·8		
	1250	190	4·6	+0·9	+4·5		Anticyclones over France and Iceland.
	1000	170	2·6	−0·4	+2·6	2·5	Low pressure on Atlantic.
	750	155	3·1	−1·4	+2·8		
	500	185	4·5	+0·4	+4·5		
100 m above ground.	114	185	4·5	+0·5	+4·5		
Anemometer.	46	175	2·0	−0·1	+2·0		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...	...	Weight of balloon 12 gm., free lift 54 gm.

Aberdeen. No. 188. August 12, 1915. 7 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3330	...	...	...	...		Balloon entered detached sheet of A.-Cu., above which were sheets of A.-St., formed from false cirrus. Thunder was heard from 11h till 17h intermittently.
	3000	165	5·5	−1·0	+5·0		
	2500	195	5·0	+1·0	+5·0		
	2000	205	5·5	+2·5	+5·0		
	1750	210	5·5	+3·0	+5·0		
	1500	210	5·0	+2·5	+4·5		
	1250	215	4·9	+2·9	+3·9		
	1000	215	6·0	+3·0	+5·0	2·5	*Pressure Distribution* (7 h.).
	750	215	4·4	+2·4	+3·7		
	500	255	3·5	+3·3	+1·0		Shallow low N.W. of Ireland.
100 m above ground.	114	260	2·8	+2·8	+0·5		
Anemometer.	46	...	0·0	0·0	0·0		
Geostrophic wind.	(at 7 h.)	210	5	+3	+4	...	Weight of balloon 12 gm., free lift 44 gm.

Benson. No. 1549. August 19, 1915. 14 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Atmosphere hazy. Soft cumulus clouds, 2.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2500	325	7	+ 4	− 6		*Pressure Distribution* (18 h.).
	2000	335	8	+ 3	− 7		
	1750	325	7	+ 4	− 6		Anticyclone over Atlantic. Shallow low eastwards from Denmark.
	1500	340	5	+ 2	− 5	2·4	
	1250	335	4	+ 2	− 4		
	1000	345	4	+ 1	− 4		
	750	325	4	+ 2	− 3		
	500	315	1	+ 1	− 1		
100 m. above ground.	157	335	2	+ 1	− 2		
Anemometer.	82	...	0	0	0		
Geostrophic wind.	(at 13 h.) (at 18 h.)	360 *Indeterminate.*	? 5	0	? −5	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 328. August 5, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4400	270	9·0	+9·0	0·0		Local minimum in velocity at 1600 m. 5·0 m/s. (+1·0 W.-E.; +5·0 S.-N.).
	4000	260	7·5	+7·5	+1·5		
	3500	250	5·5	+5·0	+2·0		
	3000	230	6·5	+5·0	+4·0		
	2500	225	7·5	+5·5	+5·5		*Pressure Distribution* (7 h.).
	2000	210	8·0	+4·0	+7·0		
	1750	190	7·0	+1·0	+7·0		
	1500	195	6·5	+1·5	+6·5	2·4	Anticyclones over France and Iceland. Low pressure on Atlantic.
	1250	215	8·5	+5·0	+7·0		
	1000	230	9·0	+7·0	+6·0		
	750	245	8·0	+7·0	+3·5		
	500	240	4·5	+3·9	+2·3		
100 m. above ground.	170	200	2·0	+0·7	+1·9		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	220	5	+3	+4	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 329. August 5, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2050	225	8·0	+ 5·5	+ 5·5		Atmosphere moderately clear. Sky almost overcast with cumulus. Maximum velocity at 1900 m. 10·0 m/s. (7·5 W.-E.; +6·5 S.-N.).
	...	...	...	...	...		
	..	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	225	9·0	+ 6·5	+ 6·5		
	1750	225	8·0	+ 5·5	+ 5·5		
	1500	215	6·0	+ 3·5	+ 5·0	2·0	*Pressure Distribution* (7 h.).
	1250	205	6·0	+ 2·5	+ 5·5		
	1000	205	6·0	+ 2·5	+ 5·5		Anticyclones over France and Iceland. Low pressure on Atlantic.
	750	190	6·0	+ 1·0	+ 6·0		
	500	185	4·5	+ 0·4	+ 4·5		
100 m. above ground.	170	235	7·0	+ 5·5	+ 4·0		
Anemometer.	105	205	3·0	+ 1·3	+ 2·7		
Geostrophic wind.	(at 7 h.) (at 13 h.)	220 190	5 5	+ 3 + 1	+ 4 + 5	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 331. August 13, 1915. 6 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4550	245	13·0	+12·0	+ 5·5		Atmosphere fairly clear. Much A.-Cu. and bank of heavy cloud in west.
	4000	235	15·5	+12·5	+ 9·0		
	3500	245	13·5	+12·0	+ 5·5		
	3000	260	10·0	+10·0	+ 1·5		
	2500	255	9·0	+ 8·5	+ 2·5		*Pressure Distribution* (7 h.).
	2000	240	7·5	+ 6·5	+ 4·0		
	1750	270	5·5	+ 5·5	0·0		Shallow low off N.W. coasts. Uniform pressure British Isles and Germany.
	1500	290	4·0	+ 3·8	− 1·4	2·4	
	1250	290	4·0	+ 3·8	− 1·4		
	1000	275	4·0	+ 4·0	− 0·3		
	750	285	4·0	+ 3·9	− 1·0		
	500	295	3·0	+ 2·7	− 1·3		
100 m. above ground.	170	300	3·5	+ 3·0	− 1·8		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h).	*Indeterminate.*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 332. August 13, 1915. 11 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3125	230	8·0	+ 6·0	+5·0		Atmosphere clear. Much cloud.
	3000	240	5·5	+ 5·0	+3·0		Balloon entered high stratus type.
	2500	250	5·0	+ 4·5	+1·5		Local minimum in velocity at 2700 m. 4·0 m/s. (+3·8 W.-E.; +1·4 S.-N).
	2000	275	7·5	+ 7·5	−1·0		
	1750	290	5·0	+ 4·5	−1·5		
	1500	270	4·0	+ 4·0	0·0		
	1250	280	6·5	+ 6·5	−1·0	2·4	
	1000	275	5·5	+ 5·5	−0·5		*Pressure Distribution* (7 h.).
	750	270	5·0	+ 5·0	0·0		
	500	260	4·0	+ 3·9	+0·7		
100 m. above ground.	170	250	4·5	+ 4·2	+1·5		Shallow low off N.W. coasts. Uniform pressure British Isles and Germany.
Anemometer.	105	250	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	*Indeterminate.*		...	...	...	

South Farnborough. No. 333. August 16, 1915. 6 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2375	320	9·0	+6·0	− 7·0		Atmosphere clear. Stratus, which cleared off rapidly at time of ascent.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	325	9·0	+5·0	− 7·5		*Pressure Distribution* (7 h.).
	1750	325	10·0	+5·5	− 8·0		
	1500	320	10·0	+6·5	− 7·5		
	1250	320	9·0	+6·0	− 7·0	2·0	Anticyclone over Atlantic. Shallow low over Russia.
	1000	325	8·0	+4·5	− 6·5		
	750	325	6·5	+3·5	− 5·5		
	500	325	12·0	+7·0	−10·0		
100 m. above ground.	170	295	6·5	+6·0	− 2·5		
Anemometer.	105	280	light	...	...		
Geostrophic wind.	(at 7 h.)	310	7	+5	− 5	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 334. August 16, 1915. 11 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2375	305	4·5	+3·7	−2·6		Atmosphere clear.
	2000	305	4·5	+3·7	−2·6		Much Cu. and some A.-Cu.
	1750	305	5·5	+4·5	−3·0		Balloon probably in rising current from 1 to 2 mins. Cloud seemed to be forming, in which balloon became misty for a few moments.
	1500	300	7·0	+6·0	−3·5		
	1250	310	6·5	+5·0	−4·0		
	1000	300	6·0	+5·0	−3·0		
	750	300	5·0	+4·5	−2·5	2·4	
	500	275	3·5	+3·5	−0·3		
100 m. above ground.	170	305	2·5	+2·0	−1·4		*Pressure Distribution* (7 h.).
Anemometer.	105	280	light	...	...		Anticyclone over Atlantic. Shallow low over Russia.
Geostrophic wind.	(at 7 h.)	310	7	+5	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	310	5 (?)	+4 (?)	−3 (?)	...	

South Farnborough. No. 335. August 17, 1915. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	315	4·0	+ 2·8	−2·8		Atmosphere misty, clearing. Overcast sky. Cloud looked like St., but was in reality fairly high.
	2000	310	4·0	+ 3·1	−2·6		
	1750	330	4·0	+ 2·0	−3·5		
	1500	295	5·0	+ 4·5	−2·0		
	1250	265	3·5	+ 3·5	+0·3		
	1000	240	3·5	+ 3·0	+1·8		
	750	220	4·0	+ 2·6	+3·1	2·0	*Pressure Distribution* (7 h.).
	500	265	2·5	+ 2·5	+0·2		
100 m. above ground.	170	250	3·5	+ 3·3	+1·2		Anticyclone over Atlantic. Shallow low over Russia.
Anemometer.	105	..	calm	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 339. August 21, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2150	305	14·5	+12·0	− 8·5		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	2000	310	13·0	+10·0	− 8·5		High pressure centre S.W. of Ireland. Large low pressure area beyond Arctic circle.
	1750	315	9·5	+ 6·5	− 6·5		
	1500	320	13·0	+ 8·5	−10·0		
	1250	320	9·0	+ 6·0	− 7·0		
	1000	330	11·5	+ 6·0	−10·0	2·4	
	750	335	9·5	+ 4·0	− 8·5		
	500	325	10·0	+ 5·5	− 8·0		
100 m. above ground.	170	315	8·0	+ 5·5	− 5·5		
Anemometer.	105	280	2·0	+ 2·0	− 0·3		
Geostrophic wind.	(at 7 h.)	330	9	+ 5	− 8	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 347. August 26, 1915. 11 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2850	60	2·5	−2·2	− 1·3		Rather hazy. No cloud. Balloon lost in distance and haze.
	2500	50	3·0	−2·3	− 1·9		
	2000	95	2·0	−2·0	+ 0·2		
	1750	85	2·5	−2·5	− 0·2		
	1500	70	5·5	−5·0	− 2·0		*Pressure Distribution* (7 h.).
	1250	60	6·5	−5·5	− 3·5		
	1000	60	6·0	−5·0	− 3·0	2·4	High pressure belt Atlantic to Germany. Lows to North and South.
	750	75	3·0	−2·9	− 0·8		
	500	30	2·5	−1·3	− 2·2		
100 m. above ground.	170	65	5·0	−4·5	− 2·0		
Anemometer.	105	70	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	70	4	−4	− 1		

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 348. August 27, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E, 180° = S.).	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	70	2·0	− 1·9	− 0·7		Atmosphere hazy.
	3000	110	2·0	− 1·9	+ 0·7		
	2500	30	4·0	− 2·0	− 3·5		No cloud.
	2000	313	5·0	+ 3·5	− 3·5		
	1750	345	4·5	+ 1·2	− 4·3		The balloon suddenly got hazy at 1000 m. height.
	1500	360	6·5	0·0	− 6·5		
	1250	355	4·0	+ 0·3	− 4·0	2·4	
	1000	360	2·5	0·0	− 2·5		
	750	15	2·0	− 0·5	− 1·9		*Pressure Distribution* (7 h.)
	500	5	4·5	− 0·4	− 4·5		
100 m. above ground.	170	355	4·5	+ 0·4	− 4·5		High pressure ridge from England westward. Lows to north and south.
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	70	3	− 3	− 1	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 km., were sent up during the month at the various stations as follows:—Aberdeen, 2; Benson, 1; Eskdalemuir, 2; South Farnborough, 22.

11. Soundings with Registering Balloons.

Benson. No. 311. August 5, 1915. 19 h. 10 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height.	13·8 km.?	147 mb.	219 a.
Lowest Temperature	10·4 km.	249 mb.	215 a.
Base of Stratosphere,	10·4 km.	249 mb.	215 a.
Type	No. 1.		

Sounding No., 311.

Height above M.S.L., 57 m.

Place of Fall, Hitchin.

Distance, 69 km.

and Orientation, 60° from N.

Data for Station.		at 7 h.	at 18 h. G.M.T.
Geostrophic Wind,	Direction,	...	180°
	Velocity,	...	10 m/s.
Correction for curvature of isobars,		..	− 1 m/s.
Gradient value,		...	9 m/s.
Components,	W. to E.	...	0 m/s.
	S. to N.	...	+9 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	REMARKS.
km.	mb.	a.	a.	
13·00	167	220 ?		The upper part of the trace was badly blurred, so that figures above 11 km. are somewhat doubtful.
12·00	194	220 ?	0	
11·82	200	220 ?	− 1	
11·00	227	219 ?	− 2	
10·00	265	217		Isothermal at 280 a. from 1·2 to 1·5 km., and again at 254 a. from 5·4 to 5·6 km.
9·18	300	224	+9	
9·00	308	226	+9	
8·00	357	235		There were all the usual local signs of the advance of a depression from the S.W., but it did not come.
7·22	400	242	+8	
7·00	412	243	+8	
6·00	474	251		
5·60	500	254		
5·00	541	258	+7	
4·20	600	264	+7	
4·00	617	265		*Pressure Distribution* (18 h.)
3·01	700	271	+6	
3·00	701	271		
2·00	794	278	+7	Anticyclones over France and Iceland. Low pressure far out on Atlantic (40° W.). Over S.W. coasts a secondary moved northwards to Irish Sea during following night.
1·94	800	278	+4	
1·00	898	282		
0·98	900	282		
0·11	1000	288		
Ground	1007	288	...	
M.S.L.	1013	...	...	

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m. Velocity V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
5	St.-Cuf.	166	11·0	− 2·8	+10·7	
7	Cu.	315	1·5	+ 1·1	− 1·1	Cloud direction varying somewhat.
11	Ci.	203	1·6	+ 0·6	+ 1·5	
	Cu.	237	5·0	+ 4·2	+ 2·7	
13	Ci.	120	1·4	− 1·2	+ 0·7	
14	A.-Cu. to St.-Cu.	180	1·8	0·0	+ 1·8	*Observation at 9 h.*
15	Ci.-St.	135	1·9	− 1·3	+ 1·3	Solar halo visible.
18	Fr.-Cu.	315	28·0	+19·5	−19·5	*Observation at 12 h.* High squally wind.
19	St.-Cu.	322	6·3	+ 3·9	− 5·0	
20	Nb.	282	6·6	+ 6·5	− 1·4	*Observation at 12 h.*
21	Fr.-Cu.	315	8·9	+ 6·2	− 6·2	
23	St.-Cu.	277	6·9	+ 6·8	− 0·8	Thin flat type of St.-Cu.
24	Cu.	273	4·5	+ 4·4	− 0·2	Cu. to St.-Cu., transition type.
25	St.-Cu.	294	2·5	+ 2·3	− 1·2	St.-Cu. in lenticular patches.
27	Ci.	334	1·0	+ 0·4	− 0·9	Indefinite, hazy Ci.
30	Cu.-Nb.	330	17·0	+ 8·5	−14·8	
31	St.-Cu.	245	5·0	+ 4·5	+ 2·1	Thin flat St.-Cu.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec. Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm.²	%	mw/cm².	h. m.	mw/cm²	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	4·6	34	1085	37	67	12 0	67	4·5	33	—	—	—	1·9	14	—	—	—	—	8·8	65
2	0·2	1	913	31	45	12 0	45	—	—	—	—	—	5·1	37	—	—	—	—	4·5	33
3	5·6	42	1266	44	69	12 15	69	7·6	57	63	45	Clear	7·2	53	—	—	—	—	*x* 11·5	85
4	*x* 10·6	79	*x* 1605	56	*x* 77	11 50	*x* 77	*x* 10·9	81	—	—	—	*x* 11·4	84	10 28	Hazy	1·62	78	9·9	74
5	10·2	77	1440	51	64	12 35	64	9·8	74	60	43	Clear	5·1	38	—	—	—	—	1·4	11
6	8·5	64	1344	48	64	12 50	59	8·0	61	—	—	—	0·1	1	—	—	—	—	—	—
7	9·5	72	1463	53	63	11 35	63	9·9	75	—	—	—	—	—	—	—	—	—	10·8	82
8	9·8	75	1401	51	57	10 20	54	10·3	79	66	46	Clear	10·4	78	12 17	Misty	1·53	80	11·1	85
9	8·3	64	1182	43	50	13 30	49	8·9	68	48	33	Hazy	8·7	66	12 28	Misty	1·56	63	0·1	1
10	10·0	77	1524	57	59	12 25	59	9·7	75	72	50	Clear	10·9	83	12 20	Clear	1·49	92	6·5	50
11	10·3	80	1476	55	55	12 40	55	9·5	74	59	41	Hazy	11·0	84	—	—	—	—	9·1	71
12	9·7	76	1481	56	58	11 40	58	9·4	73	—	—	—	9·4	72	—	—	—	—	4·0	31
13	4·4	34	952	37	53	12 35	50	5·4	42	—	—	—	1·3	10	—	—	—	—	1·5	12
14	0·4	3	570	22	50	11 5	45	0·1	1	—	—	—	3·5	27	—	—	—	—	0·3	2
15	8·2	65	1329	52	63	10 50	61	6·9	54	67	45	Clear	3·2	25	—	—	—	—	0·6	5
16	2·4	19	777	31	58	12 0	58	2·2	17	—	—	—	9·2	72	—	—	—	—	—	—
17	7·8	62	1286	52	61	10 40	58	8·0	64	76	50	Clear	0·5	4	—	—	—	—	7·0	56
18	5·8	46	954	39	47	11 19	42	5·6	45	44	29	Hazy	—	—	—	—	—	—	8·5	68
19	7·2	58	1139	47	57	10 25	52	7·7	62	65	42	Clear	—	—	—	—	—	—	8·4	68
20	10·0	*x* 81	1340	56	53	11 45	53	9·8	80	71	46	Clear	8·2	66	—	—	—	—	1·7	14
21	8·3	68	1121	48	56	12 34	52	8·4	69	53	33	Ci.	2·8	23	—	—	—	—	5·4	44
22	5·1	42	911	39	49	12 5	49	4·6	38	59	37	Ci. ?	4·7	38	—	—	—	—	—	—
23	—	—	484	21	*n* 34	12 1	34	—	—	—	—	—	—	—	—	—	—	—	7·4	61
24	2·1	17	628	28	53	10 55	51	2·3	19	—	—	—	2·1	17	—	—	—	—	4·8	40
25	2·5	21	911	41	44	11 25	44	2·3	19	—	—	—	2·3	19	—	—	—	—	8·1	68
26	5·0	42	963	44	55	12 10	55	5·1	43	—	—	—	1·0	8	—	—	—	—	4·8	40
27	0·1	1	*n* 441	20	36	10 10	27	0·1	1	—	—	—	5·3	45	—	—	—	—	2·0	17
28	1·8	15	698	32	49	10 15	32	1·4	12	—	—	—	10·0	85	—	—	—	—	7·1	60
29	3·6	31	793	37	54	12 45	52	5·0	43	60	35	Clear	6·7	57	—	—	—	—	8·2	70
30	1·7	15	626	30	45	10 30	40	1·9	16	—	—	—	8·2	71	—	—	—	—	5·2	44
Means	5·80	47	1070	42	55	—	52	5·83	47	—	—	—	5·00	40	—	—	—	—	5·30	43
Normal	5·17	41	—	—	—	—	—	4·70	38	—	—	—	4·13	33	—	—	—	—	4·40	35
	←4 years→							←30 years→					←4 years→						←30 years→	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 m.

Day.	Air 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism.		
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.	9 h.		Horizontal Force.	Declination West.	Inclination.
			200+	200+	200+	200+															
	mb.	mb.	°	°	°	°	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.		γ	° ′	° ′
1	1008·8	1013·7	87·3	86·2	89	85	13·5	11·2	84	73	25	6	31	9	5	2	2·4	● showers. Fair to v. in evening.	…	…	…
2	1013·2	1009·2	85·4	84·2	87	83	10·5	11·9	74	89	28	5	—	0	10	10●	2·7	● showers *a.* to fair.	…	…	…
3	1011·6	1016·5	84·3	83·6	87	81	9·8	9·8	73	78	1	5	—	0	3	1	—	●⁰ showers *a.* Fine and bright.	…	…	68 5·8
4	1018·6	1019·7	84·2	84·6	89	*n* 79	11·2	11·9	85	87	—	1	15	2	5	5	—	Fine and bright.	…	…	…
5	1020·8	1019·9	87·6	88·3	91	83	12·9	13·9	78	81	14	5	13	10	10	4	12·4	Fair but c. during day. Fine sunset.	…	…	…
6	1019·4	1021·1	88·4	88·4	89	87	17·3	16·6	99	96	15	7	15	5	10≡⁰●⁰	10	6·9	●² *a.* d. and ≡⁰ during day.	…	…	68 7·3
7	1020·6	1018·9	89·3	88·8	91	87	15·9	15·2	87	85	14	6	13	7	4	5	—	Fine and bright.	17865	20 3·0	68 7·3
8	1017·2	1016·0	90·0	89·9	92	88	12·9	14·9	68	78	10	5	12	8	0∞	5∞	8·8	Fine. ∞	…	…	…
9	1018·2	1019·6	89·4	89·3	91	87	17·6	17·3	95	94	13	3	—	1	10	7∞	1·0	●² *a.* ≡⁰ and low clouds.	…	…	…
10	1018·9	1018·3	88·7	89·8	94	84	14·2	13·5	80	71	—	0	7	4	3∞	4∞	—	◐² *a.* Fine. Fine sunset.	…	…	…
11	1017·1	1015·0	88·7	88·5	92	88	12·9	12·2	73	70	9	5	11	5	7∞	1∞	—	Fine. ∞	…	…	…
12	1011·3	1014·2	87·7	86·7	90	84	13·5	12·5	82	81	14	3	25	3	10	1	1·7	Dull, with ● showers *a.* Fine sunset.	…	…	…
13	1014·2	1011·6	87·9	87·2	90	83	13·9	14·9	84	93	19	3	15	5	7	10≡⁰●	10·8	Fine *a.* Dull afternoon. ● *n.*	…	…	…
14	1008·9	1015·2	88·8	86·3	91	84	14·9	13·9	84	93	21	8	—	1	10	1	0·4	c. to o. Fine *n.*	…	…	…
15	1014·7	1019·3	90·1	89·8	92	84	19·3	18·6	99	98	15	5	19	2	10≡⁰	10≡⁰	1·5	Dull with ≡⁰. ●² shower midday.	…	…	…
16	1023·6	1024·7	90·5	89·2	91	89	19·0	17·9	96	99	14	2	15	4	10	10≡⁰	1·0	Damp ≡⁰, with ● *a.* Brighter *p.*	…	…	…
17	1021·8	1018·3	90·5	92·8	94	89	16·6	17·3	84	76	12	5	12	8	8	6	—	Sunny and hot.	…	…	…
18	1016·3	1013·8	93·6	92·2	*x* 96	*x* 92	15·9	15·9	*n* 66	73	10	4	12	7	7	7	—	Fine and sunny.	…	…	…
19	1012·8	1011·0	93·0	90·9	*x* 96	91	16·6	15·9	71	78	10	8	9	13	8	1∞	—	Fine, bright, and warm.	…	…	…
20	1009·2	1011·8	90·9	89·8	92	89	16·3	18·3	80	96	9	12	15	4	7∞	10	1·0	Clouds low. ●⁰≡⁰ in evening.	…	…	…
21	1014·8	1015·2	90·0	89·5	92	88	16·6	15·2	86	81	14	5	11	6	5	7	15·1	o. and ≡⁰ to fine. v.	17867	20 3·4	68 7·4
22	1013·3	1007·2	89·0	89·6	90	88	17·6	17·9	97	97	15	4	14	8	10	10≡⁰●⁰	*x* 56·7	●² at times *a.* and *p.*	…	…	…
23	1004·9	1003·9	88·3	87·9	91	87	16·3	14·9	94	89	21	4	14	4	8	8	2·9	●² till 3 h. Mostly fine. [and 17 h.	…	…	…
24	1000·0	1001·3	87·4	85·3	90	83	14·9	13·2	92	93	14	2	32	2	5	3	5·9	Frequent ● showers. ⌒ 12 h., 14 h.,	…	…	…
25	1001·0	998·6	86·3	84·8	89	82	14·2	12·9	94	94	—	1	—	1	6	9	0·3	Fine and warm. ⊔ 22 h.	…	…	…
26	997·5	1004·4	85·9	85·6	89	84	13·9	11·5	94	78	—	0	32	7	10	10	0·3	Occasional ●⁰ showers.	…	…	…
27	1010·2	1010·4	84·7	83·7	86	83	10·8	10·8	78	83	1	6	—	1	7	10	3·4	●⁰ showers *a.* c. to dull and o.	…	…	…
28	1001·2	1003·6	84·8	81·7	88	81	10·8	8·8	79	79	24	7	3	9	6	9	1·0	Occasional ● showers.	…	…	…
29	1010·7	1013·9	82·5	82·9	*n* 85	81	9·8	9·1	84	76	30	8	31	8	6	4●	3·4	q. and ● showers.	…	…	…
30	1015·6	1017·5	83·3	82·7	*n* 85	81	9·5	9·1	78	77	1	2	—	1	7	3	2·5	c. to fine and clear.	…	…	…
Means	1012·9	1013·5	88·0	87·3	90·2	85·0	14·3	13·9	84	85		4·6		4·8	7·1	6·1	142·1	Monthly **Totals** or **Means**.	17866	20 3·2	68 7·0
Normal	1014·1	1014·2	86·6	86·1	89·6	83·7	13·3	13·1	85	86		4·8		4·3	—	—	106·2	**Normals.**			
	←40 years→						←25 years→				←30 years→						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—7/17.—N. & Co., Ltd. Gp. XV.

3. METEOROLOGY :—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.	200+ °	200+ °	200+ °	cm.	cm.
1	1010·1	1005·2	88·8	84·1	91	82	13·5	11·9	77	91	21	3	—	1	8	2	1·4	79	88·5	88·4	218	218
2	1004·5	1004·8	84·8	83·3	87	81	10·8	9·5	79	78	30	4	1	2	9	10	—	76	88·0	88·2	216	—
3	1005·2	1009·0	84·7	84·6	88	81	9·8	10·5	71	77	32	5	32	5	3	1	0·7	78	87·5	88·1	213	—
4	1013·7	1019·0	85·1	82·9	89	80	9·5	10·5	68	87	32	6	—	1	1	0	—	76	86·9	88·0	211	—
5	1024·2	1026·9	82·4	84·8	91	78	10·5	11·9	91	86	—	1	26	2	0 ≡0	0	—	73	86·6	88·0	209	—
6	1028·8	1027·5	85·6	86·4	93	79	12·2	13·2	84	86	25	2	—	1	1 ∞	8	—	73	86·7	87·9	208	—
7	1027·4	1025·6	86·2	86·5	94	79	12·2	13·5	79	88	24	2	—	0	3	0	—	76	86·9	87·7	206	—
8	1025·8	1024·1	89·1	88·3	95	81	12·5	14·2	70	82	—	1	9	3	2 ≡0	0	—	77	87·3	87·7	205	—
9	1024·8	1025·5	90·0	87·9	94	86	15·6	13·9	82	84	8	5	7	4	? 4 ≡0	0	0·1	83	88·0	87·6	204	—
10	1025·8	1023·8	88·4	87·3	93	81	14·2	12·5	83	77	6	4	7	4	0 ≡0	0	—	77	87·8	87·6	204	—
11	1022·7	1020·2	87·6	86·9	91	83	11·5	12·2	70	77	7	8	5	3	4	0	—	76	87·4	87·6	204	—
12	1017·9	1015·1	87·3	85·6	96	82	13·5	13·9	84	96	5	3	—	0	0 ≡0	0	—	77	87·0	87·6	205	—
13	1013·6	1013·0	87·9	88·8	95	80	13·9	13·5	82	76	—	1	22	2	5 ≡0	9	—	77	87·1	87·4	206	—
14	1015·4	1015·0	86·9	87·9	90	85	12·9	15·6	82	94	22	2	18	3	10	10	1·0	83	87·6	87·3	206	—
15	1020·4	1022·5	88·9	91·3	94	86	13·2	18·6	75	90	25	3	20	4	0	9	—	82	87·9	87·3	205	—
16	1026·0	1028·0	92·3	91·0	*x* 97	*x* 90	20·0	19·3	89	94	21	3	—	1	10	2	—	88	89·0	87·3	205	—
17	1027·4	1023·6	92·2	91·1	*x* 97	88	17·6	17·6	80	85	23	2	20	2	2	7	0·1	86	89·6	87·3	204	—
18	1022·5	1023·0	87·8	89·8	95	86	15·6	16·3	94	86	—	0	8	4	? 1 ≡0	10	—	83	89·6	87·4	204	—
19	1024·0	1022·9	88·5	85·7	91	84	12·9	10·8	73	74	8	7	8	5	10	0	—	86	89·7	87·6	203	—
20	1022·6	1022·3	87·7	85·7	91	83	10·5	10·8	*n* 63	74	8	7	7	5	1	3 ∞	—	76	88·4	87·7	201	—
21	1022·2	1022·2	87·2	86·1	92	83	10·2	11·5	*n* 63	77	8	5	8	3	7	7 ≡0	—	80	87·9	87·7	200	—
22	1021·5	1019·7	87·9	88·1	95	84	12·2	14·6	72	85	8	3	—	0	? 6 ≡0	9 ≡0	—	78	87·5	87·7	200	—
23	1013·4	1011·8	91·0	90·9	94	87	15·9	16·9	78	83	13	3	16	3	10 ●	10	8·2	84	88·0	87·6	199	—
24	1009·8	998·0	89·6	88·9	94	87	15·9	15·9	86	89	—	1	18	4	6	10	12·0	84	88·4	87·6	199	198
25	1001·2	999·6	87·1	86·0	92	84	13·9	13·5	87	92	20	3	—	1	7	0 ☂	0·1	83	88·5	87·5	199	—
26	996·9	995·4	86·4	86·6	92	83	13·9	13·9	90	89	22	2	—	1	9 ≡0	9 ≡0	—	78	87·9	87·5	200	—
27	998·8	1005·5	85·6	83·0	87	81	12·2	9·8	83	82	29	2	28	2	10	9	—	81	88·0	87·5	200	—
28	1006·2	996·2	81·2	80·8	87	78	8·5	9·8	78	93	22	2	4	6	2	10 ●	*x* 35·3	73	86·1	87·5	202	—
29	997·7	1001·6	80·0	78·7	*n* 84	77	7·8	6·8	79	75	30	5	—	1	10	0	—	77	85·5	87·4	204	—
30	1005·8	1010·9	80·7	80·2	*n* 84	*n* 75	7·8	7·8	76	76	30	4	29	2	9	0 ≡0	0·1	*n* 71	84·2	87·3	205	—
Means	1015·9	1015·3	87·0	86·3	91·7	82·1	12·7	13·0	79	84		3·3		2·5	5·0	4·5	59·0	79·0	87·7	87·6	205	—
Normal	1015·8	1015·6	86·7	86·1	91·2	82·7	12·6	12·7	80	83		3·1		2·3	—	—	51·8 (40 years)	—	87·1	87·2	—	—
	40 years						25 years				30 years								11 years			

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

Heights above Mean Sea Level :—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground :—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			REMARKS.
1	979·8	981·3	83·6	80·0	85	79	10·2	8·5	80	86	28	5	2	4	6	9	2·3		o. all day. ● in afternoon.
2	980·2	979·5	81·4	77·2	85	76	8·1	7·4	74	89	32	5	—	0	6	4	—		● *a.* c. afternoon. Fine evening.
3	982·4	985·2	83·0	78·8	86	74	9·1	7·4	76	81	4	4	—	1	3	1	—		Cloudless early. Fine to c.
4	988·2	991·4	83·5	76·2	88	71	8·1	6·8	65	88	—	1	—	0	0	0	—		Fine day.
5	994·4	997·5	81·0	80·6	88	72	10·5	9·5	97	91	14	2	—	1	10	1	—		⌣ early. ≡ till 9 h. Fair to fine.
6	997·5	996·1	85·4	85·9	88	76	12·5	14·2	88	96	18	5	17	7	10	10 ●0 ≡0	8·8		≡0 early. Dull till 15 h. d. from 21 h.
7	995·4	997·4	86·6	85·7	88	81	14·9	13·9	96	96	18	5	—	1	10 ●0 ≡0	10 ≡0	1·5		q. ≡0 ● till 13 h. Dull afternoon.
8	998·1	996·7	85·9	84·6	*x* 94	76	12·9	12·9	87	94	—	0	30	2	4 ☂	0 ☂	—		☂2 early and *n*. Beautifully fine.
9	997·6	998·5	89·5	85·2	*x* 94	81	14·2	13·2	76	94	14	3	—	1	2 ≡0 ☂	0	—		☂≡0 early. Beautifully fine.
10	1000·1	999·8	87·7	83·2	93	81	14·9	10·8	88	89	32	2	1	2	1 ≡0 ☂	0	—		☂2 early. Fine and cloudless.
11	999·3	995·9	84·6	81·6	91	79	11·2	10·2	84	92	6	5	1	2	8 ☂	0	0·2		☂≡0 early. Very fine.
12	991·3	985·9	85·8	82·9	92	80	11·5	10·8	77	88	11	6	—	0	6	? 2	—		☂2 early. Fine and sunny.
13	983·7	982·1	83·7	82·5	87	81	11·2	10·5	88	90	19	6	22	7	10	10 ●	7·2		≡0 early. Dull *a.* ☈ ● 17 h.
14	983·3	985·1	85·1	85·3	89	80	10·2	13·5	72	95	16	3	18	2	7	10 ●0 ≡0	1·5		⊕ 9 h. Dull to o. d. from 18 h.
15	989·3	990·2	87·0	85·0	89	85	12·5	13·5	78	97	21	6	18	6	9	10 ● ≡0	0·5		d. and ≡0 till 3 h. o. *a.* d. from 20 h.
16	994·8	998·3	87·7	84·3	91	83	12·2	12·2	73	92	25	6	—	1	6	7	0·2		Wet ≡0 early. Mostly fine.
17	994·1	993·7	89·5	87·3	91	*x* 86	16·9	15·2	92	95	21	12	21	3	8 ≡0	8 ●0 ≡0	2·5		≡0 and d. all day.
18	996·4	997·9	83·9	82·0	88	82	11·9	11·2	93	97	4	6	5	3	10	10	0·5		d. most of day.
19	997·6	996·3	82·8	82·8	85	81	11·5	10·8	95	92	5	3	—	1	10 ●0 ≡0	? 0	—		≡0 *a.* and in evening.
20	996·2	995·6	85·6	82·8	89	80	11·2	9·8	76	82	7	2	9	3	0 ☂	4	—		Very fine. ☋ 21 h.
21	995·6	995·4	83·8	82·9	89	77	10·5	10·5	82	87	5	2	32	2	8 ☂ ☂	7	—		☂ *a.* ⊕ 13 h.
22	994·0	991·4	85·1	83·4	90	79	10·5	10·8	75	87	3	2	—	0	5 ☂	8	—		☂ *a.* Much high cloud. ⊕ 15 h.
23	982·6	981·0	86·7	86·7	88	79	12·9	14·6	83	95	10	2	19	2	10 ≡0	10	6·9		● *a.* and till 16 h. ☋☋ 21 h.
24	981·1	977·5	86·5	84·7	90	83	13·5	12·2	88	89	—	0	12	2	8 ☂	? 10	*x* 14·6		☂ early. o. early and *p*.
25	969·6	967·6	84·7	82·8	87	82	10·8	10·2	79	86	31	8	21	6	10	5	0·8		● early. o. to fair.
26	964·5	968·4	83·6	81·8	86	81	10·5	8·5	81	78	21	5	32	7	7	10	—		● 3 h., then d. till 7 h. o. afternoon.
27	975·1	978·6	80·1	75·5	84	74	6·8	6·4	66	88	2	8	30	3	7	0	—		Fine from 9 h.
28	977·1	976·0	79·7	75·1	83	*n* 70	6·1	5·8	63	83	—	1	1	3	4	0	—		Very fine.
29	973·7	977·2	79·3	77·7	*n* 82	74	6·1	6·4	*n* 62	76	30	8	32	9	1	5	—		⌣ early. Fine *a.* ● shower 15 h.
30	981·3	985·1	79·4	75·2	83	74	6·8	5·8	69	80	31	9	1	2	3	0	—		Fine throughout. ☋ 20 h.–21 h. 30 m.
Means	987·8	988·1	84·4	82·0	88·0	78·5	11·0	10·5	80	89		4·4		2·8	6·3	5·0	47·5	—		No record.	Monthly **Totals** or **Means.**
Normal 1911-14	989·7	989·5	83·6	82·1	87·3	78·4	10·8	10·3	84	87		4·6		3·5	—	—	71·9	—			**Normals.**

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism:—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 27 days; they 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.

x denotes the maximum and *n* the minimum value in the column. z Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 1·91.				Charge per cc. ×10²⁰.		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.												
		v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	Dull to fine. ● 18 h.–19 h.	170	230	145	430	840	600	0·70	1	0	470	18 13	431	9 13	39	23·9	13 34	11·5	8 7	12·4
2	Dull throughout. ●⁰ 15 h. ≺ 21 h.	230	250	95	275	—	—	—	0	0	478	22 30	433	9 32	45	24·6	12 54	12·8	7 30	11·8
3	Fine *a*.; dull to fine later. ⊕	160	325	190	265	1230	1490	1·65	1	0	477	18 47	435	9 50	42	22·6	12 43	12·0	7 10	10·6
4	Fine all day. [12 h. ⌒17 h.	220	275	145	170	—	—	—	0	0	475	22 12	433	10 20	42	24·6	12 35	12·3	7 46	12·3
5	≡⁰ early. Fine throughout.	200	190	85	240	—	—	—	0	1	471	14 26	424	9 28	47	26·6	12 12	11·3	6 45	15·3
6	≡ early. Fair to fine.	260	295	155	370	1180	900	1·30	0	0	483	21 33	427	11 0	56	22·5	13 32	12·0	7 53	10·5
7	≡ early. Fine all day.	135	335	115	240	930	690	0·50	1	0	469	19 5	422	10 24	47	23·5	12 58	11·6	7 28	11·9
8	≡ early. Fine all day.	170	495	180	295	800	280	0·75	0	0	478	22 50	427	10 32	51	23·6	12 34	11·6	7 53	12·0
9	≡⁰early. Fine throughout. ∞	125	265	305	265	560	450	0·70	0	0	488	18 53	431	10 15	57	23·0	12 13	12·3	7 29	10·7
10	≡ early. Fine all day.	135	200	345	200	650	240	1·50	0	1	483	0 56	438	11 0	45	22·9	13 8	9·6	7 7	13·3
11	Fine all day. ∞⁰	—	285	430	—	—	—	—	0	0	475	16 25	428	10 17	47	22·6	14 56	11·6	8 7	11·0
12	≡ early. Fine all day.	85	240	170	200	—	—	—	0	0	476	1 2	433	10 10	43	23·6	13 10	11·6	20 35	12·0
13	≡⁰ early. Fine *a*. Fair *p*.	155	265	105	190	520	240	0·55	0	1	475	17 10	433	16 12	42	27·0	13 18	11·5	21 23	15·5
14	Dull. ● at times *p*.	125	160	125	250	—	—	—	0	0	472	23 29	430	10 53	42	23·4	13 38	12·6	8 27	10·8
15	Fine till 15 h., then c.	105	275	125	220	1060	800	0·70	0	0	478	19 53	426	10 44	52	24·9	13 18	12·2	2 38	12·7
16	Dull to fair *a*.; fine to c. later.	95	85	65	155	410	260	0·30	0	1	480	23 38	430	16 6	50	27·3	14 10	11·2	23 55	16·1
17	Fine from 9 h.	115	200	125	265	560	240	0·75	0	1	468	0 29	400	12 55	68	*x* 29·0	12 18	7·6	2 5	21·4
18	≡ early. Fine till 15 h.	220	505	400	170	—	—	—	0	0	468	22 19	429	9 28	39	21·3	12 35	12·0	7 37	*n* 9·3
19	Dull till 10 h.; fine later.	135	180	315	265	—	—	—	0	0	464	22 35	428	7 50	*n* 36	21·5	12 15	11·6	7 50	9·9
20	Fine all day. ⋃ 20 h.–22 h.	230	335	370	325	1030	860	1·15	0	0	472	22 49	425	10 39	47	21·6	13 22	11·9	7 56	9·7
21	Fine during day. ⋃ 21 h.	265	480	410	345	970	600	1·55	0	0	473	20 58	437	10 29	*n* 36	23·5	12 50	11·3	7 55	12·2
22	≡⁰ early. Fine *a*.; fair later.	200	355	180	260	750	500	1·15	0	2	491	16 3	416	17 1	75	27·5	15 14	1·6	16 20	25·9
23	●⁰ 9 h. ●² 23 h. Dull throughout.	155	210	135	145	670	140	0·50	1	2	*x* 513	18 36	*n* 380	12 46	*x* 133	26·6	6 58	*n*−4·0	18 19	*x* 30·6
24	Fair to fine, then dull. ● *p*.	115	170	180	40	—	—	—	1	2	507	21 43	402	9 4	105	22·5	13 8	4·0	17 30	18·5
25	Dull to fine. ≡⁰ *n*.	125	305	180	265	—	—	—	0	1	486	23 15	415	9 53	71	23·8	13 29	7·2	19 50	16·6
26	Dull till 9 h., then fine. ⊕	345	160	170	260	—	—	—	0	2	493	22 6	396	9 30	97	23·2	12 34	3·6	22 1	19·6
27	Dull to gloomy. [16 h.	145	135	105	200	—	—	—	0	1	462	21 20	399	13 4	63	25·1	14 1	11·4	16 20	13·7
28	Fair to fine *a*. ● from 15 h.	145	365	−105	*z*±	—	—	—	2	1	474	2 40	386	10 55	88	23·3	13 5	1·8	23 48	21·5
29	● till 7 h. Dull to fine.	*z*±	250	135	210	320	220	0·50	2	2	481	1 40	383	11 35	98	23·6	3 24	3·2	0 8	20·4
30	Fair to fine till 13 h. Dull *p*.	275	180	155	240	300	190	0·35	0	2	484	5 15	383	10 7	101	25·3	6 48	4·5	21 38	20·8
M.		174*	263*	188*	242*	—	—	—	—	—	479	—	419	—	60	24·1	—	9·2	—	15·0

6. Atmospheric Electricity and Terrestrial Magnetism:—Eskdalemuir.

Day.	Potential Gradient, Volts per metre. Factor 6·64.				Charge per cc. ×10²⁰.		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. 4000 γ+.		Minimum. 4000 γ+.		Minimum. 45000 γ+.		Maximum. 45000 γ+.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	c.			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.	Amp/cm².														
1	339	366	−80	196	—	—	—	1 *b*	0	18 7	1017	971	10 30	13 36	1098	1031	8 51	7 47	192	160	11 42
2	232	223	232	357	1040	650	—	0 *a*	0	22 32	1024	959	{11 7 / 11 47}	12 53	1102	1046	8 34	17 0	185	150	12 6
3	375	116	98	179	1100	450	—	0 *a*	0	18 45	1025	966	10 30	12 35	1095	1041	6 55	20 25	186	162	11 22
4	170	179	116	268	—	—	—	0 *a*	0	22 12	1017	962	11 18	13 24	1099	1037	7 48	21 50	176	160	12 5
5	179	438	143	455	—	—	—	0 *a*	0	22 0	1014	957	11 38	12 57	1121	1037	7 54	18 30	185	158	12 8
6	179	179	205	161	—	—	—	0 *a*	0	21 32	1033	958	11 2	13 33	1095	1038	{7 51 / 7 57}	16 55	183	169	12 45
7	268	116	348	607	—	—	—	1 *a*	0	22 59	1012	948	10 18	13 4	1095	1035	8 8	15 20	177	157	11 30
8	679	223	205	447	—	—	—	0 *a*	0	22 39	1024	962	11 0	13 43	1098	1034	7 50	6 28	176	161	13 25
9	384	250	134	250	—	—	—	0 *a*	0	18 53	1034	968	10 20	13 31	1096	1042	8 0	7 0	175	162	11 0
10	268	393	196	679	—	—	—	0 *a*	1	19 33	1027	970	12 25	14 30	1092	1030	7 20	18 15	178	156	8 57
11	634	357	188	598	—	—	—	0 *a*	0	16 39	1022	963	10 27	14 57	1105	1034	8 21	17 15	184	157	12 10
12	447	205	179	714	—	—	—	0 *a*	0	1 6	1028	966	10 50	14 20	1103	1040	20 43	20 47	175	150	11 50
13	277	250	170	−1143	—	—	—	1 *b*	1	17 9	1023	959	11 44	14 32	1127	1036	{21 23 / 21 26}	17 40	199	145	12 10
14	196	125	205	116	—	—	—	0 *a*	0	23 28	1022	967	12 26	13 39	1097	1039	8 28	17 10	176	157	0 0
15	250	116	134	107	—	—	—	0 *a*	1	23 26	1027	962	{11 4 / 11 51}	13 17	1104	1041	2 40	16 48	176	151	4 15
16	170	116	134	107	—	—	—	0 *a*	1	23 37	1037	958	1 9	14 13	1131	1030	24 0	16 36	203	155	23 50
17	89	45	36	179	—	—	—	0 *a*	1	1 47	1026	918	12 49	12 17	1124	1008	2 8	15 50	188	138	1 5
18	89	89	0	−80	—	—	—	1 *a*	0	22 18	1914	970	12 8	13 24	1084	1036	7 40	6 55	178	164	14 0
19	98	80	188	447	—	—	—	0 *a*	0	23 21	1011	959	10 57	12 38	1085	1032	7 53	7 20	176	158	12 3
20	152	313	223	438	—	—	—	0 *a*	0	22 45	1024	959	11 26	13 23	1084	1039	{7 58 / 8 7}	23 41	173	160	11 35
21	170	179	179	? 268	—	—	—	0 *a*	1	20 1	1017	969	10 32	14 36	1103	1035	7 56	{17 25 / 18 57}	182	161	11 4
22	...	...	170	366	—	—	—	0 *a*	2	16 1	*x* 1152	953	14 5	16 1	*x* 1155	962	22 11	16 14	*x* 318	140	24 0
23	447	330	241	366	—	—	—	0 *a*	2	18 34	1113	*n* 897	12 43	6 58	1121	*n* 950	18 16	18 11	225	130	1 21
24	125	313	134	...	—	—	—	? 0 *a*	1	21 38	1080	934	8 28	13 10	1100	986	17 33	15 20	206	127	2 57
25	...	...	188	188	—	—	—	...	1	19 58	1048	952	7 39	{13 26 / 13 32}	1106	1008	19 50	17 21	195	146	23 18
26	170	188	107	116	—	—	—	0 *a*	1	22 7	1058	947	11 56	13 59	1096	994	21 36	17 22	224	148	4 45
27	18	205	188	321	1040	780	—	1 *a*	1	16 36	1027	924	11 6	14 4	1105	1036	16 11	16 22	212	163	0 0
28	268	107	179	473	1170	580	—	0 *a*	2	2 42	1026	921	10 53	14 11	1100	962	23 48	18 50	215	137	24 0
29	268	170	−839	250	—	—	—	2 *b*	1	20 54	1046	913	11 34	3 23	1115	966	0 10	17 25	214	*n* 75	3 32
30	205	205	205	491	—	—	—	0 *a*	1	5 10	1026	916	10 5	6 58	1116	987	21 40	16 3	203	157	24 0
M.	260*	206*	123*	273*	—	—	—	—	—	—	1035	951	—	—	1105	1020	—	—	195	150	—

* 27 days. *See* note above.

† Note: The West Component constant is 4000 γ instead of 5000 γ as in the preceding months.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
1	P (?)	1 25 7	...	...	...	...	...	
	L	1 40	...	...	...	...	...	
	M	1 44	32	4	...	...	...	
1	M	20 23	10	< 1	< 1	...	...	
	M	20 49	9	< 1	< 1	...	...	
3	M	0 9	...	...	...	...	...	Small irregular waves.
3		12 to 12½	...	...	...	...	...	Small irregular waves.
4		0¼	...	...	...	...	...	Small irregular waves.
5	M (?)	13 7	45	...	...	...	...	
	M	13 15	30	...	4	...	...	
6	P	17 45 0	...	...	...	...	...	
	M	18 42	21	4	4	...	...	
	F	20	...	...	...	...	...	
7	P_1	1 32 35	...	...	...	...	8270 (From S_1-P_1 and S_2-P_2)	$\alpha=270°\pm5°$. Computed epicentre, lat. 13° N., long. 84° W. Destructive earthquake in lat. 13½° to 14° N., long. 89° to 90° W.
	P_2	1 33	...	...	...	...		
	PR_1	1 35 56	...	...	...	...		
	S_1	1 42 7	...	On E.-W.				
	S_2	1 42 37	...	On N.-S. and	E.-W.			
	M	1 58	29	250	...	...	...	
	F	6½	...	...	...	...	...	
7		13 to 14	...	...	...	...	...	Small waves.
7		21 to 22	...	...	...	...	...	Small irregular waves, mainly E.-W.
10	M	22 43	13	0·7	0·2	...	...	
12	P	0 17 12	...	...	...	...	...	$\alpha=240°$.
	i	0 20 6	...	...	...	...	...	
	i	0 22 25	...	...	...	...	...	
	i	0 23 46	...	...	...	...	...	
	i	0 29 14	...	...	...	...	...	
	F	1½	...	...	...	...	...	
12	P	20 53 22	...	...	...	...	6110	$\alpha=220°$. Epicentre, lat. 6° N., long. 35° W.
	i	20 56 26	...	...	...	...	...	
	S	21 1 4	...	...	...	...	...	
16	i (?)	10 31 48	...	...	...	...	...	
21	P (?)	18 59 56	...	...	...	...	...	
	eS	19 2 46	...	...	...	...	...	
	L	19 3	...	...	...	...	...	
	M	19 5½	15	...	5	...	...	
23	P	8 23 58	...	...	...	...	5660	Azimuth N.W. or S.E.
	S (?)	8 31 16	...	...	...	...	...	
	F	10¾	...	...	...	...	...	
25		21 to 21½	...	...	...	...	...	Small disturbance.

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	0·5	5·5	0·4	5	0·6	4·5	0·4	4·5
2	0·5	4·5	0·5	4	0·4	3·5	0·2	4
3	0·2	4	0·2	4·5	0·5	3·5	0·4	5
4	0·3	4·5	0·4	5·5	No trace		0·3	5
5	0·3	5·5	0·5	5	0·5	4·5	0·6	3·5
6	0·6	4·5	0·5	5	0·6	4·5	0·3	5
7	0·5	4·5	0·5	4·5	0·6	4·5	0·5	4
8	0·3	4·5	0·4	4·5	0·3	5	0·5	6
9	0·3	6	0·4	6	0·6	5·5	...	...
10	0·5	4·5	0·4	5	0·3	4·5	0·2	5·5
11	0·6	4	0·5	4·5	0·6	4·5	0·5	4·5
12	0·6	4·5	0·4	5	0·3	5	0·2	4·5
13	0·2	4	0·2	4·5	0·3	4·5	0·5	5
14	0·3	6	0·5	6·5	0·7	6·5	0·7	5·5
15	0·6	6	0·8	6	0·9	6	0·8	6
16	0·8	6	0·7	6	0·7	5·5	0·7	5
17	0·6	7	0·5	6	0·7	4·5	0·4	6
18	0·5	4·5	0·5	4·5	0·9	4·5	0·8	5
19	1·0	4·5	1·0	4·5	1·1	5	0·9	5
20	0·9	4·5	0·8	4·5	1·0	4	1·0	4
21	0·9	5	0·9	4·5	0·9	5	0·7	4·5
22	0·8	5	0·4	4·5	0·4	4·5	0·3	4
23	0·4	5	No trace		0·4	4·5	0·2	4·5
24	0·2	4·5	0·2	4	0·3	4	0·2	5
25	0·3	5·5	0·3	5	0·4	4·5	0·4	3·5
26	0·8	4	0·9	4·5	1·0	5·5	1·0	5·5
27	2·3	6·5	3·6	6·5	2·3	6	2·1	5·5
28	1·5	6	1·6	5·5	1·9	5	1·4	4
29	0·8	5·5	1·0	5·5	0·9	6	1·1	5·5
30	1·6	5	1·0	5	0·8	5·5	0·6	4·5

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
6	...	18 57·0	Series of very small movements.
7	1 33·0	2 9	Lasted until about 6 h. Amplitude on trace exceeded 17 mm.
,,	13 30	...	Series of very small movements.
,,	21 25	...	Series of very small movements.
12	1 0	...	Series of very small movements.
,,	21 0·0	21 17·0	Amplitude on trace 1·7 mm.
21	...	19 7·0	Very small.
23	8 28·7	8 51·0	Small.

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	1·1	5·5	...	...	2·0	4·8	...	...	2·8	2·8	...	...	11·8	...	4·9	16·7	21	15
2	...	10·0	...	2·0	...	4·9	...	...	...	4·5	0·9	...	...	0·7	...	1·1	13·0	4	40
3	0·9	...	2·1	...	...	3·6	...	...	...	4·5	...	1·9	...	4·9	...	...	8·9	5	10
4	...	4·8	2·0	...	...	4·1	2·7	...	...	3·3	1·4	...	...	1·7	1·1	...	7·7	9	15
5	...	0·9	0·9	...	1·0	...	2·4	...	3·7	...	3·7	...	2·5	...	2·5	...	9·0	13	50
6	3·2	...	2·2	...	5·5	...	2·3	...	6·0	...	4·0	...	6·0	...	4·0	...	13·3	12	10
7	5·2	...	2·1	...	5·7	...	3·8	...	4·5	...	1·9	...	1·8	...	0·8	...	11·3	11	30
8	1·3	...	0·3	...	2·9	...	...	0·6	...	1·5	1·0	...	...	0·5	1·2	...	5·1	9	25
9	...	0·8	1·8	...	4·7	...	...	3·1	3·5	...	0·7	...	1·2	...	...	0·5	9·3	9	30
10	0·9	...	...	0·4	0·5	...	...	1·2	...	2·4	1·0	...	0·5	...	...	1·2	7·2	18	50
11	...	...	...	3·3	0·3	...	...	1·6	...	1·8	1·8	...	0·5	...	...	2·6	7·8	16	55
12	0·5	...	...	1·2	0·6	...	...	2·9	3·0	...	...	...	2·0	...	...	...	9·6	12	35
13	...	0·9	4·5	...	1·8	...	4·3	...	4·2	...	4·2	...	2·9	...	4·3	...	11·8	17	0
14	2·0	...	3·0	...	5·5	...	...	1·1	2·2	...	3·2	...	...	...	8·5	...	12·8	21	45
15	1·4	...	2·2	...	1·3	...	3·0	...	6·9	...	...	...	5·5	...	3·7	...	12·8	14	10
16	1·3	...	6·5	...	0·9	...	2·1	...	3·0	...	1·3	...	4·8	...	1·0	...	11·5	1	40
17	3·6	...	2·4	...	7·3	...	3·0	...	9·4	...	3·9	...	4·8	...	2·0	...	14·8	14	20
18	6·1	...	2·5	...	1·3	...	...	0·9	...	2·9	0·6	...	0·8	...	...	1·8	11·1	2	45
19	0·6	...	...	1·5	0·0	0·0	0·0	0·0	1·6	...	...	...	0·4	...	...	0·9	5·5	13	0
20	0·0	0·0	0·0	0·0	2·1	...	...	2·1	2·0	...	...	4·8	...	0·1	...	0·7	9·2	11	45
21	1·7	...	...	1·1	0·1	...	...	0·3	0·8	...	1·8	...	0·6	...	...	0·8	7·7	11	10
22	1·9	...	...	1·3	5·2	...	...	...	5·6	...	...	...	3·5	...	...	0·7	10·0	10	10
23	1·6	...	...	4·0	9·0	...	...	1·8	3·0	...	...	3·0	3·3	...	...	1·4	16·6	7	50
24	4·3	...	...	...	5·2	...	...	2·1	3·3	...	...	1·4	0·1	...	...	0·3	10·4	9	40
25	0·6	...	...	1·5	0·7	...	3·5	...	2·7	...	4·1	...	3·3	...	3·3	...	9·6	12	5
26	...	...	5·2	...	...	1·3	6·5	...	...	1·3	6·8	...	...	7·1	4·7	...	14·0	23	45
27	...	10·6	2·1	...	...	11·8	...	...	...	7·4	1·5	...	...	5·2	2·1	...	15·0	5	5
28	...	2·8	2·8	...	0·4	...	...	0·9	...	5·3	...	5·3	...	4·9	...	4·9	14·5	23	55
29	...	10·5	...	...	...	6·9	2·9	...	...	10·3	4·3	...	...	13·8	...	...	19·2	21	15
30	...	11·9	...	2·4	...	9·4	...	3·9	...	7·6	3·1	...	...	8·5	...	...	15·4	1	35
S+N & W+E	91·4		66·8		106·0		63·8		121·0		79·4		103·7		61·0				
S−N & W−E	−17·2		29·4		18·0		18·8		9·8		37·6		−14·7		17·4				

SCOTLAND N.:—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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	...	3·0	...	1·3	...	4·8	...	1·0	...	6·5	1·3	...	...	4·8	1·0	...	7·9	17
2	...	5·5	2·3	...	...	6·4	2·6	...	...	8·2	...	...	...	4·3	2·9	...	8·2	13, 14, 15, 17
3	...	1·8	4·3	...	...	2·8	6·7	...	...	4·0	4·0	...	...	0·9	1·3	...	8·2	10
4	...	0·2	0·2	...	...	1·4	1·4	...	...	1·5	0·6	...	...	0·3	1·3	...	3·0	12
5	...	0·2	1·0	...	2·1	...	2·1	...	2·6	...	0·5	...	3·2	...	0·6	...	3·6	16, 19
6	2·0	...	...	0·4	1·0	...	0·2	...	1·8	...	...	0·8	1·1	...	...	1·7	3·6	24
7	2·2	...	...	3·2	2·3	...	...	...	2·0	...	0·4	...	...	0·3	...	1·3	4·6	1
8	...	0·3	...	1·3	3·2	...	...	2·2	4·1	...	...	2·7	3·8	...	...	2·6	6·6	23, 24
9	5·5	...	...	2·3	7·3	...	...	3·0	5·5	...	...	2·3	4·5	...	...	0·9	9·2	5
10	5·1	...	...	1·0	4·8	...	...	1·0	5·2	...	...	2·1	5·2	...	...	2·1	6·2	16
11	4·1	...	...	2·7	6·0	...	...	4·0	4·2	...	...	6·2	4·9	...	...	4·9	8·2	22, 23
12	5·5	...	...	3·7	5·5	...	...	3·7	7·1	...	...	4·7	5·5	...	...	3·7	8·5	15
13	4·5	...	...	0·9	2·3	...	2·3	...	...	2·9	4·3	...	...	1·8	4·3	...	5·9	1
14	...	1·0	4·8	...	...	4·3	1·8	...	...	2·1	...	2·1	...	...	...	2·3	4·9	10
15	2·9	...	...	4·3	4·8	...	2·0	...	...	...	9·2	...	3·0	...	...	1·3	9·5	11, 13, 14
16	6·2	...	4·2	...	5·1	...	12·4	...	2·9	...	14·5	...	...	2·0	4·8	...	15·7	13, 14
17	...	0·3	1·6	...	...	0·1	0·7	...	0·9	...	...	0·9	...	3·6	...	1·5	5·2	18, 19, 23, 24
18	...	3·2	...	2·2	...	2·6	...	3·8	...	0·6	...	3·2	0·7	...	...	3·5	4·6	1, 9
19	1·0	...	...	4·8	4·2	...	...	6·2	4·7	...	...	7·1	3·3	...	...	7·9	9·2	24
20	4·7	...	...	7·1	5·3	...	...	7·9	7·6	...	...	7·6	9·0	...	...	6·0	11·5	14
21	8·5	...	...	5·7	8·5	...	...	5·7	9·2	...	...	6·2	7·9	...	...	3·3	11·8	11
22	7·4	...	...	1·5	9·6	...	...	1·9	7·6	...	...	5·1	6·6	...	...	4·4	10·2	11
23	6·1	...	...	2·5	6·3	...	...	6·3	6·5	...	...	6·5	4·5	...	...	0·9	11·1	11
24	...	...	1·3	...	0·7	...	0·7	...	2·3	...	...	0·4	1·3	...	...	0·3	3·0	1
25	...	2·0	...	3·0	...	3·3	...	4·9	...	6·3	...	6·3	...	12·3	...	8·2	16·1	24
26	...	13·4	...	9·0	...	14·9	...	6·2	...	16·1	...	3·2	...	15·4	...	3·1	18·4	7
27	...	13·8	...	2·7	...	11·5	...	...	...	9·3	...	1·9	...	7·3	3·0	...	14·4	2
28	...	10·6	4·4	...	...	12·6	2·5	...	...	11·6	2·3	...	...	8·7	5·7	...	12·8	9
29	...	9·6	1·9	...	...	12·6	...	2·5	...	12·1	...	...	...	11·5	...	...	14·4	11
30	...	9·6	1·9	...	...	8·9	...	...	...	9·5	...	...	...	6·9	...	...	10·8	4
S+N & W+E	140·2		87·5		165·2		95·7		164·9		106·4		144·6		84·8			
S−N & W−E	−8·8		−31·7		−7·2		−24·9		−16·5		−32·2		−15·6		−35·0			

ENGLAND S.W.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	0·7	3·7	...	...	2·9	6·9	...	...	...	7·9	...	...	6·8	6·8	...	18·3	12	20
2	...	7·9	...	...	...	10·2	2·0	...	...	6·6	4·4	...	...	3·3	...	...	16·0	7	5
3	...	2·3	1·0	...	...	4·1	0·8	...	...	6·3	...	...	...	3·8	...	...	10·1	4	5
4	...	3·3	...	...	...	1·7	1·2	...	...	3·2	0·6	...	...	1·2	0·5	...	12·8	5	30
5	0·0	0·0	0·0	0·0	3·0	...	...	1·3	3·5	...	...	1·5	3·3	...	...	...	6·2	15	35
6	6·6	...	...	2·7	6·6	...	...	1·3	4·6	...	...	1·9	3·8	...	...	2·6	9·7	3	15
7	3·3	...	...	3·3	3·3	...	...	3·3	3·5	...	...	3·5	4·2	...	...	6·2	10·9	23	30
8	5·6	...	...	5·6	4·4	...	...	6·6	3·4	...	...	8·1	1·9	...	...	4·6	11·2	1	15
9	1·6	...	...	2·4	1·9	...	...	4·6	2·2	...	...	5·4	...	...	...	3·8	8·1	0	0
10	1·9	...	...	4·6	1·4	...	...	7·0	...	...	...	8·3	2·0	...	...	9·8	14·1	19	25
11	3·0	...	...	7·3	1·5	...	...	7·4	4·0	...	...	9·6	1·1	...	...	5·7	12·9	16	25
12	3·5	...	...	5·2	2·7	...	...	1·1	2·5	...	...	0·5	0·8	...	...	...	9·5	1	18
13	0·7	...	1·1	...	...	3·9	1·6	...	...	2·7	2·7	...	...	1·5	1·5	...	7·9	10	35
14	2·1	...	3·2	...	6·8	...	6·8	...	1·4	...	7·0	...	0·6	...	2·8	...	13·2	9	11
15	2·1	...	5·0	...	2·1	...	5·0	...	3·5	...	3·5	...	3·2	...	4·8	...	8·4	13	17
16	2·3	...	3·5	...	3·5	...	2·3	...	2·8	...	0·6	...	3·5	...	...	1·5	6·1	23	15
17	3·5	...	...	2·3	3·0	...	...	3·0	2·3	...	...	3·5	1·6	...	...	3·9	6·7	1	0
18	2·4	...	...	5·8	1·2	...	...	6·2	1·6	...	...	8·1	3·2	...	...	7·7	11·7	23	32
19	2·1	...	...	10·6	1·8	...	...	9·0	4·8	...	...	11·6	5·4	...	...	13·1	19·3	16	25
20	5·1	...	...	12·3	4·8	...	...	11·6	4·9	...	...	7·3	2·4	...	...	5·8	17·0	4	36
21	0·7	...	...	1·1	0·3	...	...	0·3	*	*	*	*	*	*	*	*	4·0	0	5
22	*	*	*	*	*	*	*	*	3·9	...	...	1·6	4·7	...	...	4·7	12·9	23	55
23	10·8	...	...	4·5	...	...	5·4	...	1·8	...	2·7	...	2·7	...	1·8	...	14·2	1	0
24	4·9	...	...	1·0	5·0	...	...	...	0·8	...	1·9	...	0·0	0·0	0·0	0·0	9·9	8	30
25	0·0	0·0	0·0	0·0	0·2	...	0·8	...	...	...	3·3	...	0·0	0·0	0·0	0·0	3·6	12	40
26	0·0	0·0	0·0	0·0	0·5	...	2·5	...	...	5·8	2·4	...	...	7·3	3·0	...	13·4	22	30
27	...	11·2	4·6	...	...	9·6	4·0	...	...	8·6	5·8	...	...	5·2	3·5	...	19·7	3	15
28	...	...	1·7	...	...	0·8	1·9	...	...	3·5	8·5	...	...	7·7	...	1·5	16·8	12	33
29	...	7·7	...	3·2	...	6·6	...	2·7	...	9·2	3·8	...	...	11·5	2·3	...	19·9	21	14
30	...	11·5	2·3	...	...	10·2	2·0	...	...	8·6	1·7	...	...	7·3	3·0	...	18·8	0	43
S+N & W+E	106·8		98·0		104·0		108·6		106·0		127·7		100·0		100·9				
S−N & W−E	17·6		−45·8		4·0		−22·2		−3·0		−14·1		−11·2		−40·9				

ENGLAND E.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	2·8	...	1·1	...	3·1	...	4·7	...	...	2·5	2·5	...	...	0·4	2·3	...	11·7	9	45
2	...	0·6	2·9	...	...	4·8	1·0	...	...	4·6	...	...	...	3·0	...	...	13·3	13	10
3	...	2·9	...	0·6	...	7·6	...	3·1	...	7·6	...	7·6	...	9·6	...	6·4	20·0	20	10
4	...	6·9	...	...	...	5·9	...	...	...	5·6	...	...	...	3·2	0·6	...	17·5	1	55
5	...	3·2	0·6	...	...	2·8	1·1	...	...	1·5	...	0·6	...	0·9	...	0·4	7·5	8	50
6	...	1·0	0·2	...	...	1·3	0·3	...	...	1·1	...	1·7	...	0·6	...	0·8	6·0	12	10
7	...	0·9	...	1·3	...	0·7	0·7	...	3·6	...	...	...	1·3	...	...	...	8·4	14	50
8	1·3	...	...	...	1·6	...	...	...	2·3	...	...	...	2·3	...	...	...	7·1	23	30
9	3·0	...	...	3·0	2·4	...	...	3·6	2·4	...	...	3·6	...	...	...	6·9	8·1	20	40
10	...	...	...	4·9	...	...	...	5·9	...	...	...	7·9	...	...	...	8·9	11·1	18	50
11	1·5	...	...	7·7	1·5	...	...	7·7	1·3	...	...	6·5	1·4	...	...	7·1	9·4	2	55
12	...	...	...	4·3	0·9	...	...	4·5	2·4	...	...	3·6	1·3	...	...	1·9	8·0	7	25
13	0·7	...	...	1·1	0·4	...	...	0·6	3·6	...	...	2·4	...	0·4	0·6	...	9·1	14	5
14	...	1·1	1·7	...	...	0·8	3·8	...	...	0·9	4·5	...	...	...	1·3	...	9·2	12	50
15	...	...	2·0	...	...	...	0·7	...	...	...	2·6	...	...	...	2·3	...	?	?	
16	0·5	...	2·6	...	...	...	3·3	...	...	2·3	2·3	...	...	0·9	0·9	...	9·5	12	45
17	...	1·1	1·7	...	...	1·8	2·7	...	...	...	3·3	...	...	...	1·6	...	8·7	13	30
18	...	0·5	2·6	...	...	0·4	2·0	...	...	1·5	...	7·7	...	1·6	...	8·0	9·3	15	10
19	...	1·3	...	6·5	1·3	...	...	6·8	1·2	...	...	5·8	1·3	...	...	6·8	9·2	23	30
20	1·2	...	...	6·1	1·6	...	...	8·0	2·6	...	...	6·4	2·0	...	...	10·3	13·9	22	30
21	5·8	...	...	8·7	6·4	...	...	9·6	5·4	...	...	8·1	5·8	...	...	8·7	13·2	19	35
22	3·4	...	...	5·2	3·7	...	...	5·5	3·7	...	...	5·5	3·6	...	...	2·4	9·3	4	40
23	3·0	...	...	2·0	4·9	...	...	3·3	6·1	...	...	1·2	2·3	...	0·4	...	12·1	13	25
24	2·9	...	0·6	...	1·3	...	0·3	...	4·9	...	...	3·3	9·0	...	...	6·0	16·5	24	0
25	4·7	...	3·1	...	1·8	...	4·3	...	0·6	...	2·9	...	1·1	...	2·8	...	16·3	0	10
26	0·6	...	3·2	...	0·8	...	3·8	...	1·1	...	2·8	...	1·1	...	1·7	...	8·1	10	35
27	0·6	...	2·9	...	...	1·1	5·5	...	...	4·1	2·7	...	...	3·5	3·5	...	13·0	13	35
28	...	2·6	3·8	...	...	1·8	4·3	...	...	0·3	1·3	...	...	4·0	...	4·0	10·9	23	45
29	...	7·2	...	7·2	...	5·7	...	2·4	...	4·7	3·1	...	...	3·7	3·7	...	15·6	6	45
30	...	2·6	3·8	...	...	3·0	3·0	...	...	2·5	2·5	...	...	4·1	2·7	...	12·5	15	20
S+N & W+E	63·9		91·4		69·4		102·5		80·4		102·4		68·4		103·0				
S−N & W−E	0·1		−25·8		−6·0		−19·5		2·0		−41·4		−3·4		−54·2				

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 190. September 3, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2650	...	...	...	...		Balloon lost in distance and high haze.
	...	...	...	...	...		Cloudless at time of ascent, but Cu. and Cu.-Nb. later.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		Anticyclone over Atlantic. Shallow depression Norway to Germany.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2500	285	−5·5	+5·5	− 1·5		
	2000	265	6·0	+6·0	+ 0·5	2·4	
	1750	280	7·0	+7·0	− 1·5		
	1500	310	5·5	+4·0	− 3·5		
	1250	325	6·0	+3·5	− 5·0		
	1000	335	5·5	+2·5	− 5·0		
	750	335	7·0	+3·0	− 6·5		
	500	320	10·5	+6·5	− 8·0		
100 m. above ground.	114	305	7·5	+6·0	− 4·5		
Anemometer.	46	285	7·0	+7·0	− 2·0		
Geostrophic wind.	(at 7 h.)	320	6	+4	− 5	...	Weight of balloon 12 gm., free lift 51 gm.

Benson. No. 1551. September 7, 1915. 11 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	7000	255	4	+4	+1		Anticyclone South England to Germany.
	6000	270	4	+4	0		
	5000	250	5	+5	+2		
	4500	290	3	+3	−1		
	4000	270	1	+1	0		
	3500	360	2	0	−2		
	3000	90	2	−2	0		
	2500	90	1	−1	0		
	2000	135	1	−1	+1	2·4	
	1750	270	1	+1	0		
	1500	65	2	−2	−1		
	1250	...	0	0	0		
	1000	235	4	+3	+2		
	750	245	2	+2	+1		
	500	250	3	+3	+1		
	157	250	3	+3	+1		
	82	270	2	+2	0		
	(at 7 h.)	*Indeterminate*		...	...		Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	250	4	+4	+1	...	

Benson. No. 1554. September 15, 1915. 12 h. 15 m. G.M.T.

Greatest height.	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		Depression S.W. of Iceland. Anticyclone France and Bay of Biscay.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	305	14	+12	−8		
	1750	305	14	+12	−8		
	1500	295	18	+16	−8		
	1250	295	18	+16	−8	2·4	
	1000	300	7	+ 6	−4		
	750	265	4	+ 4	0		
	500	255	6	+ 6	+2		
100 m. above ground.	157	265	7	+ 7	+1		
Anemometer.	82	250	5	+ 5	+2		
Geostrophic wind.	(at 13 h.)	270	7	+ 7	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. No. 1555. September 18, 1915. 12 h. 5 m. G.M.T.

	...	...	...	...	...		*Pressure Distribution* (7 h.).
	3500	285	15	+14	−4		High pressure ridge Iceland to Germany.
	3000	280	11	+11	−2		Depressions over Atlantic and Russia.
	2500	265	9	+ 9	+1		
	2000	275	6	+ 6	−1		
	1750	270	6	+ 6	0		
	1500	245	3	+ 3	+1		
	1250	270	2	+ 2	0	2·4	
	1000	200	1	0	+1		
	750	125	4	− 3	+2		
	500	75	2	− 2	−1		
	157	35	3	− 2	−2		
	82	20	2	− 1	−2		
	(at 7 h.)	*Indeterminate*		...	...		Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	...	...	...	...	...	

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1553. September 2, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	2700	...	...	...	...		Atmosphere clear. Balloon lost in distance.
	...	...	...	...	...		Ci. and Ci.-St. moving rapidly from E.
	...	...	...	...	...		Sky four-tenths clouded.
	2500	355	4·6	+0·4	− 4·6		
	2000	345	11·5	+3·0	−11·0		
	1750	350	13·5	+2·5	−13·0		*Pressure Distribution* (7 h.).
	1500	355	10·0	+1·0	−10·0		
	1250	360	7·5	0·0	− 7·5	2·3	
	1000	15	7·5	−2·0	− 7·0		Anticyclone over Atlantic.
	750	5	8·0	−1·0	− 8·0		Depression over Gulf of Bothnia.
	500	355	11·5	+1·5	−11·0		
100 m. above ground. Anemometer.	340	350	11·0	+2·5	−10·5		
	250	350	6·5	+1·0	− 6·5		
Geostrophic wind.	(at 7 h.)	20	12	−4	−11	...	Weight of balloon 12·5 gm., free lift 40·3 gm.

Eskdalemuir. No. 1556. September 8, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3500	...	...	...	...		Atmosphere clear. Balloon lost in distance.
	3500	180	1·4	0·0	+1·4		Ci., Ci.-St., Ci.-Cu. 2 moving from W.
	3000	200	4·2	+1·3	+4·0		
	2500	190	6·5	+1·0	+6·5		
	2000	185	9·0	+1·0	+9·0		
	1750	175	6·5	−0·5	+6·5		*Pressure Distribution* (7 h.).
	1500	195	7·0	+2·0	+7·0		
	1250	190	7·5	+1·5	+7·5	2·3	High pressure ridge Norway to Germany.
	1000	210	5·5	+2·5	+5·0		Shallow depression southwards from Iceland.
	750	235	3·1	+2·6	+1·7		
	500	250	1·6	+1·5	+0·6		
	340	...	0·0	0·0	0·0		
	250	...	0·0	0·0	0·0		
	(at 7 h.)	*Indeterminate*		...	...		Weight of balloon 11·7 gm., free lift 43·3 gm.

Eskdalemuir. No. 1558. September 10, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2700	...	...	...	...		Atmosphere misty. A little Ci. on western horizon.
	2500	175	8·0	−1·0	+8·0		Balloon lost through theodolite moving.
	2000	135	2·9	−2·1	+2·0		
	1750	145	7·0	−4·5	+5·5		
	1500	140	6·5	−4·0	+5·0		
	1250	140	5·5	−3·5	+4·5		
	1000	155	4·6	−1·9	+4·2	2·3	*Pressure Distribution* (7 h.).
	750	165	4·3	−1·0	+4·2		
	500	130	2·6	−2·0	+1·7		Anticyclone over Denmark.
100 m. above ground. Anemometer.	340	20	2·3	−0·8	−2·2		Depression S.W. of Iceland.
	250	360	2·7	0·0	−2·7		
Geostrophic wind.	(at 7 h.)	180	10	0	+10	...	Weight of balloon 12·2 gm., free lift 40·3 gm.

Eskdalemuir. No. 1561. September 21, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2600	...	...	...	...		Atmosphere clear. Balloon lost in distance.
	2500	205	2·6	+1·1	+2·4		Clouds Ci.-St. stationary; A.-St., A.-Cu., Cu., Fr.-Cu. from S.
	2000	185	6·5	+0·5	+6·5		Sky eight-tenths clouded.
	1750	170	9·5	−2·0	+9·0		
	1500	170	6·5	−1·5	+6·5		
	1250	160	7·5	−2·5	+7·0		
	1000	150	6·5	−3·0	+5·5	2·2	*Pressure Distribution* (7 h.).
	750	160	7·5	−2·5	+7·0		
	500	170	3·3	−0·5	+3·3		Anticyclone over Norway and Denmark.
	340	...	0·0	0·0	0·0		Depression W. of Ireland.
	250	360	2·0	0·0	−2·0		
	(at 7 h.)	180	12	0	+12	...	Weight of balloon 12·2 gm., free lift 36·2 gm.

Eskdalemuir. No. 1562. September 22, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	...	...	...	...		Atmosphere slightly hazy. Balloon lost in distance.
	2000	195	11·0	+2·5	+10·5		Clouds Ci., Ci.-St., A.-Cu. from S.W.
	1750	180	11·0	0·0	+11·0		Sky three-tenths clouded.
	1500	175	11·5	−1·5	+11·0		
	1250	170	7·5	−1·0	+ 7·5		
	1000	170	10·0	−2·0	+ 9·5		
	750	150	8·0	−4·0	+ 7·0	2·3	*Pressure Distribution* (7 h.).
	500	130	3·9	−3·1	+ 2·4		
100 m. above ground. Anemometer.	340	95	1·8	−1·8	+ 0·1		Anticyclone over Germany. Depression W. of Ireland
	250	30	1·7	−0·9	− 1·5		
Geostrophic wind.	(at 7 h.)	180	12	0	+12	..	Weight of balloon 11·1 gm., free lift 39·2 gm.

Eskdalemuir. No. 1563. September 28, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2050	...	...	...	...		Atmosphere clear. Balloon burst.
	2000	320	7·0	+4·5	−5·5		Clouds Ci., Ci.-St. from S.W.?
	1750	310	4·1	+3·1	−2·7		Sky one-tenth clouded.
	1500	335	4·4	+2·0	−3·9		
	1250	360	5·0	0·0	−5·0		
	1000	360	9·5	−0·5	−9·5	2·2	*Pressure Distribution* (7 h.).
	750	35	10·0	−5·5	−8·5		
	500	?	?	?	?		Station in high pressure ridge between depressions W. of Ireland and over Denmark.
	340	?	?	?	?		
	250	115	0·2	−0·2	+0·1		
	(at 7 h.)	*Indeterminate*		...	...		Weight of balloon 12·2 gm., free lift 36·3 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 355. September 3, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3575	50	7·0	−5·5	− 4·5		Atmosphere clear.
	3500	45	7·5	−5·5	− 5·5		A.-Cu. from N. at 9 h., Ci. from S.
	3000	50	7·5	−5·5	− 5·0		Balloon entered A.-Cu. cloud.
	2500	20	8·5	−3·0	− 8·0		
	2000	15	9·0	−2·5	− 8·5		*Pressure Distribution* (7 h.).
	1750	10	8·0	−1·5	− 8·0		
	1500	20	10·5	−3·5	−10·0	2·4	Anticyclone over Atlantic.
	1250	20	11·0	−4·0	−10·5		Shallow depression Norway to
	1000	20	10·5	−3·5	−10·0		Germany.
	750	10	11·0	−2·0	−11·0		
	500	15	12·5	−3·0	−12·0		
100 m. above ground.	170	340	5·0	+1·5	− 4·5		
Anemometer.	105	340	1·0	+0·3	− 0·9		
Geostrophic wind.	(at 7 h.)	10	9	−2	−9	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 357. September 4, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2275	5	10·5	−1·0	−10·5		Atmosphere clear.
	...	...	...	...	...		No cloud.
	...	...	...	...	...		Balloon lost while taking a
	...	...	...	...	...		* reading.
	2000	10	10·5	−2·0	−10·5		
	1750	10	11·0	−2·0	−11·0		*Pressure Distribution* (7 h.).
	1500	10	12·0	−2·0	−12·0		
	1250	10	11·0	−2·0	−11·0	2·4	Anticyclone, Spain to Azores.
	1000	5	13·0	−1·0	−13·0		Shallow depression over Austria.
	750	10	12·0	−2·0	−12·0		
	500	10	12·5	−2·0	−12·5		
100 m. above ground.	170	340	5·0	+1·5	− 4·5		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	20	12	−4	−11	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 358. September 6, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2850	280	4·5	+4·4	−0·8		Atmosphere rather hazy round horizon.
	...	...	...	...	...		Small band of Ci.-St. which had
	...	...	...	...	...		either no motion or a slight
	2500	265	5·0	+5·0	+0·5		motion from N.W.
	2000	245	5·5	+5·0	+2·5		Balloon burst (?)
	1750	275	3·5	+3·5	−0·3		
	1500	260	2·0	+2·0	+0·3		
	1250	200	1·0	+0·3	+0·9	2·4	*Pressure Distribution* (7 h.).
	1000	190	1·5	+0·3	+1·5		
	750	245	2·5	+2·3	+1·1		Anticyclone over France.
	500	260	4·0	+3·9	+0·7		
100 m. above ground.	170	255	5·5	+5·5	+1·4		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	220	5	+3	+4	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 360. September 7, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3700	10	11·0	−2·0	−11·0		Atmosphere foggy near ground.
	3500	25	7·0	−3·0	− 6·5		Balloon lost while reading circle.
	3000	25	5·0	−2·0	− 4·5		
	2500	30	4·0	−2·0	− 3·5		*Pressure Distribution* (7 h.).
	2000	360	2·5	0·0	− 2·5		
	1750	350	3·5	+0·6	− 3·4		Anticyclone, South England to
	1500	10	3·0	−0·5	− 3·0		Germany.
	1250	250	0·5	+0·5	+ 0·2	2·4	
	1000	210	4·5	+2·3	+ 3·9		
	750	220	5·5	+3·5	+ 4·0		
	500	235	4·0	+3·3	+ 2·3		
100 m. above ground.	170	260	4·0	+3·9	+ 0·7		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate*			...	...	Approx weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 361. September 7, 1915. 11 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4400	320	1·0	+0·6	−0·8		Atmosphere clear.
	...	...	...	...	...		Some Ci.-Cu.
	4000	295	3·0	+2·7	−1·3		Minimum velocity at 2100 m.
	3500	360	2·0	0·0	−2·0		
	3000	55	2·5	−2·0	−1·4		*Pressure Distribution* (7 h.).
	2500	85	2·5	−2·5	−0·2		
	2000	135	0·5	−0·4	+0·4		Anticyclone, South England to
	1750	75	1·5	−1·4	−0·4		Germany.
	1500	60	2·0	−1·7	−1·0	2·4	
	1250	80	1·5	−1·5	−0·3		
	1000	210	2·5	+1·3	+2·2		
	750	210	3·0	+1·5	+2·6		
	500	220	2·5	+1·6	+1·9		
100 m. above ground.	170	250	1·5	+1·4	+0·5		
Anemometer.	105	260	light	...	...		
Geostrophic wind.	(at 7 h.) (at 13 h.)	*Indeterminate* 250	4	+4	+1	... ...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 362. September 8, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.–E.	Wind. Components. S.–N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4975	350	5·0	+1·0	−5·0		Atmosphere hazy round horizon.
	4500	360	3·0	0·0	−3·0		Some Ci., with slow motion from
	4000	80	3·0	−3·0	−0·5		W.N.W.
	3500	85	4·0	−4·0	−0·3		
	3000	90	3·5	−3·5	0·0		*Pressure Distribution* (7 h.).
	2500	110	5·5	−5·0	+2·0		
	2000	130	6·0	−4·5	+4·0		High pressure ridge Norway to
	1750	125	8·0	−6·5	+4·5		Germany.
	1500	130	7·5	−5·5	+5·0	2·4	Shallow depression southwards
	1250	140	6·0	−4·0	+4·5		from Iceland.
	1000	145	4·5	−2·6	+3·7		
	750	165	5·0	−1·5	+5·0		
	500	160	5·5	−2·0	+5·0		
100 m. above ground.	170	105	5·5	−5·5	+1·5		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	160	5	−2	+5	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 363. September 8, 1915. 11 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	9825	330	9·5	+5·0	−8·0		Atmosphere clear. Balloon accidentally lost. For some time it showed as a star, very white; towards the end the balloon itself was again faintly visible. The wind fell calm at 4650 m.
	9500	315	11·0	+8·0	−8·0		
	9000	310	10·5	+8·0	−7·0		
	8500	320	8·5	+5·5	−6·5		
	8000	330	4·0	+2·0	−3·5		
	7500	335	3·0	+1·3	−2·7		
	7000	355	2·0	+0·2	−2·0		
	6500	330	2·0	+1·0	−1·7		
	6000	345	3·0	+0·8	−2·9		*Pressure Distribution* (7 h.).
	5500	355	2·0	+0·2	−2·0		
	5000	340	2·0	+0·7	−1·9		High pressure ridge Norway to Germany. Shallow depression southwards from Iceland.
	4500	85	1·0	−1·0	−0·1		
	4000	80	1·0	−1·0	−0·2		
	3500	100	1·5	−1·5	+0·3	2·4	
	3000	115	4·0	−3·6	+1·7		
	2500	115	4·0	−3·6	+1·7		
	2000	115	6·5	−6·0	+2·5		
	1750	130	5·5	−4·0	+3·5		
	1500	115	6·5	−6·0	+2·5		
	1250	130	6·0	−4·5	+4·0		
	1000	140	7·5	−5·0	+5·5		
	750	130	4·0	−3·1	+2·6		
	500	110	2·0	−1·9	+0·7		
100 m. above ground.	170	130	4·0	−3·1	+2·6		
Anemometer.	105	135	0·5	−0·4	+0·4		
Geostrophic wind.	(at 7 h.)	160	5	−2	+5	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	130	5	−4	+3	...	

South Farnborough. No. 364. September 9, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2850	60	4·5	−3·9	−2·3		Atmosphere foggy. No clouds. Balloon lost in mist.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		Anticyclone over Denmark. Shallow low over Iceland.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...	2·4	
	...	...	...	...	...		
	2500	80	3·5	−3·4	−0·6		
	2000	105	7·0	−7·0	+2·0		
	1750	105	4·5	−4·3	+1·2		
	1500	120	6·0	−5·0	+3·0		
	1250	120	6·0	−5·0	+3·0		
	1000	110	8·0	−7·5	+2·5		
	750	120	9·0	−8·0	+4·5		
	500	125	8·0	−6·5	+4·5		
100 m. above ground.	170	90	4·5	−4·5	0·0		
Anemometer.	105	80	light	...	...		
Geostrophic wind.	(at 7 h.)	100	6	−6	+1	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 365. September 9, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	125	4·5	−3·2	+3·2		Atmosphere fairly clear. Some Cu. moving from about E. and some Ci. Local minimum in velocity at 2850 m. 2·5 m/s. (−2·4 W.-E.; +0·6 S.-N.).
	3000	125	3·5	−2·9	+2·0		
	2500	45	5·0	−3·5	−3·5		
	2000	70	3·0	−2·8	−1·0		
	1750	85	5·0	−5·0	−0·5		
	1500	85	5·0	−5·0	−0·5		
	1250	110	5·5	−5·0	+2·0		
	1000	110	4·5	−4·2	+1·5	2·4	
	750	125	5·5	−5·0	+3·0		*Pressure Distribution* (7 h.).
	500	110	4·0	−3·8	+1·4		
100 m. above ground.	170	85	2·5	−2·5	−0·2		Anticyclone over Denmark. Shallow low over Iceland.
Anemometer.	105	80	2·0	−2·0	−0·3		
Geostrophic wind.	(at 7 h.)	100	6	−6	+1	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	130	9	−7	+6	...	

South Farnborough. No. 367. September 11, 1915. 10 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2725	110	9·5	− 9·0	+3·0		Atmosphere fairly clear, but some haze round horizon. A few small Cu., less than 1. Balloon lost in haze.
	...	...	...	...	...		
	2500	105	9·0	− 8·5	+2·5		
	2000	130	7·0	− 5·5	+4·5		
	1750	110	8·0	− 7·5	+3·0		
	1500	105	8·5	− 8·0	+2·0		
	1250	110	10·0	− 9·5	+3·5	2·4	*Pressure Distribution* (7 h.).
	1000	105	10·5	− 10·0	+2·5		
	750	110	9·5	− 9·0	+3·0		Anticyclone over North Sea. Depression W. of Ireland.
	500	75	3·5	− 3·4	−0·9		
100 m. above ground.	170	95	8·0	− 8·0	+0·5		
Anemometer.	105	90	7·0	− 7·0	0·0		
Geostrophic wind.	(at 7 h.)	110	10	−9	+3	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	100	9	−9	+2	...	

South Farnborough. No. 368. September 13, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2075	225	10·5	+7·5	+7·5		Atmosphere rather hazy. A.-Cu. 7. Balloon entered clouds.
	...	...	..	...	...		
	2000	220	11·5	+7·5	+9·0		
	1750	220	7·5	+5·0	+5·5		
	1500	200	5·5	+2·0	+5·0		
	1250	195	7·0	+2·0	+7·0		
	1000	210	7·5	+4·0	+6·5	2·0	*Pressure Distribution* (7 h.).
	750	220	6·5	+4·0	+5·0		Deep depression S.W. of Iceland. Uniform pressure over England.
	500	220	6·5	+4·0	+5·0		
100 m. above ground.	170	145	3·5	−2·0	+2·9		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate*		...	...		Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 370. September 14, 1915. 7 h. 5 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2650	280	23·0	+22·5	−4·0		Balloon lost through entering clouds (?) Local maximum in velocity at 1600 m. 12·0 m/s. (+12·0 W.-E.; −2·0 S.-N.).
	2500	280	21·0	+20·5	−3·5		
	2000	285	10·5	+10·0	−2·5		
	1750	275	11·0	+11·0	−1·0		
	1500	280	10·0	+10·0	−1·5		
	1250	285	9·5	+ 9·0	−2·5		
	1000	280	7·5	+ 7·5	−1·5	2·0	*Pressure Distribution* (7 h.).
	750	250	4·0	+ 3·8	+1·4		
	500	250	8·5	+ 8·0	+3·0		Deep depression S.W. of Iceland. Shallow depression Norway. Anticyclone France and Spain.
100 m. above ground.	170	245	6·5	+ 6·0	+2·5		
Anemometer.	105	260	1·0	+ 1·0	+0·2		
Geostrophic wind.	(at 7 h.)	250	6	+ 6	+2	...	Approx. weights: balloon 4 gm., free lift 16 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 375. September 18, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	290	14·5	+13·0	−5·0		Fog on ground; clear at roof level.
	...	...	...	...	...		No cloud.
	...	...	...	...	...		Balloon lost through proximity to sun, while taking a reading.
	3000	295	14·5	+13·0	−6·0		
	2500	290	10·0	+ 9·5	−3·5		
	2000	255	6·0	+ 6·0	+1·5		*Pressure Distribution* (7 h.).
	1750	240	5·5	+ 5·0	+3·0		
	1500	245	4·0	+ 3·6	+1·7	2·4	High pressure ridge Iceland to Germany.
	1250	290	3·5	+ 3·3	−1·2		Depressions over Atlantic and Russia.
	1000	285	3·0	+ 2·9	−0·8		
	750	335	2·5	+ 1·1	−2·3		
	500	340	3·5	+ 1·2	−3·3		
100 m. above ground.	170	345	2·5	+ 0·6	−2·4		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	*Indetermi*		*nate*	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 376. September 18, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	4000	...	...	...	...		Atmosphere rather hazy.
	4000	285	14·0	+13·5	−3·5		No cloud.
	3500	285	13·0	+12·5	−3·5		Balloon lost through haziness.
	3000	285	12·0	+11·5	−3·0		
	2500	275	8·5	+ 8·5	−0·5		*Pressure Distribution* (7 h.).
	2000	285	6·0	+ 6·0	−1·5		
	1750	280	5·5	+ 5·5	−1·0		High pressure ridge Iceland to Germany.
	1500	260	3·5	+ 3·4	+0·6		
	1250	240	2·5	+ 2·2	+1·3	2·4	Depressions over Atlantic and Russia.
	1000	295	1·0	+ 0·9	−0·4		
	750	335	1·0	+ 0·4	−0·9		
	500	190	0·5	+ 0·1	+0·5		
	170	65	1·0	− 0·9	−0·4		
	105	70	light	...	...		
(at 7 h.)		*Indetermi*		*nate*	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
(at 13 h.)		*Indetermi*		*nate*	...	...	

South Farnborough. No. 377. September 20, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	7400	260	3·0	+ 3·0	+0·5		A little haze.
	7000	240	3·0	+ 2·6	+1·5		No cloud.
	6500	310	3·0	+ 2·3	−1·9		Balloon burst.
	6000	295	7·5	+ 7·0	−3·0		There was a calm at 3850 m.
	5500	295	8·5	+ 7·5	−3·5		
	5000	245	4·5	+ 4·1	+1·9		
	4500	255	4·0	+ 3·9	+1·0		*Pressure Distribution* (7 h.).
	4000	280	2·5	+ 2·5	−0·4		
	3500	215	4·5	+ 2·6	+3·7		High pressure ridge along Norwegian coast to North Sea.
	3000	230	2·5	+ 1·9	+1·6		Depression over Atlantic.
	2500	165	4·0	− 1·0	+3·9		
	2000	150	3·5	− 1·8	+3·0	2·4	
	1750	120	8·5	− 7·5	+4·5		
	1500	110	10·5	−10·0	+3·5		
	1250	105	11·0	−10·5	+3·0		
	1000	100	12·0	−12·0	+2·0		
	750	115	14·0	−12·5	+6·0		
	500	110	14·5	−13·5	+5·0		
100 m. above ground.	170	95	8·0	− 8·0	+0·5		
Anemometer.	105	90	1·0	− 1·0	0·0		
Geostrophic wind.	(at 7 h.)	140	10	− 6	+8	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 378. September 20, 1915. 11 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3025	...	...	...	...		Atmosphere clear.
	...	...	...	...	...		A little Ci.-St.
	...	...	...	...	...		Balloon disappeared in shimmer of atmosphere.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		High pressure ridge along Norwegian coast to North Sea.
	...	...	...	...	...		
	3000	145	2·5	− 1·4	+2·0		Depression over Atlantic.
	2500	160	4·0	− 1·4	+3·8		
	2000	120	12·5	−11·0	+6·5	2·4	
	1750	115	10·5	− 9·5	+4·5		
	1500	125	8·5	− 7·0	+5·0		
	1250	105	11·5	−11·0	+3·0		
	1000	110	13·0	−12·0	+4·5		
	750	110	13·5	−12·5	+4·5		
	500	105	18·5	−18·0	+5·0		
	170	105	15·0	−14·5	+4·0		
	105	125	4·0	− 3·3	+2·3		
(at 7 h.)		140	10	− 6	+8	...	Approx. weights: balloon 12 gm., free lift 45 gm.
(at 13 h.)		120	14	−12	+7	...	

South Farnborough. No. 379. September 21, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	6975	180	6·5	0·0	+ 6·5		Atmosphere rather hazy.
	6500	180	8·0	0·0	+ 8·0		Much Ci. and Ci.-St.
	6000	175	10·5	−1·0	+10·5		Balloon almost certainly lost in the Ci. cloud.
	5500	185	9·0	+1·0	+ 9·0		
	5000	180	9·5	0·0	+ 9·5		
	4500	185	8·5	+0·5	+ 8·5		*Pressure Distribution* (7 h.).
	4000	195	7·5	+2·0	+ 7·0		
	3500	185	5·0	+0·5	+ 5·0		Anticyclone over Norway and Denmark.
	3000	200	4·5	+1·5	+ 4·2		
	2500	165	2·5	−0·6	+ 2·4		Depression W. of Ireland.
	2000	155	4·0	−1·7	+ 3·6	2·4	
	1750	145	4·5	−2·6	+ 3·7		
	1500	135	6·0	−4·0	+ 4·0		
	1250	140	5·0	−3·0	+ 4·0		
	1000	125	9·0	−7·5	+ 5·0		
	750	120	9·5	−8·0	+ 5·0		
	500	125	8·5	−7·0	+ 5·0		
100 m. above ground.	170	90	4·0	−4·0	0·0		
Anemometer.	105	115	light	...	...		
Geostrophic wind.	(at 7 h.)	140	14	− 9	+11	...	Approx. weight: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 380. September 21, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	5850	195	10·0	+2·5	+9·5		Atmosphere fairly clear.
	...	...	...	...	...		Ci. and Ci.-Cu. 5.
	...	...	...	...	...		Balloon lost in distance.
	5500	195	9·0	+2·5	+8·5		Maximum velocity at 650 m. 10·5 m/s. (−8·0 W.-E.; +7·0 S.-N.). Minimum at 2350 m. 2·5 m/s. (−0·2 W.-E.; +2·5 S.-N.).
	5000	210	7·0	+3·5	+6·0		
	4500	205	6·5	+2·5	+6·0		
	4000	215	7·0	+4·0	+5·5		
	3500	190	7·0	+1·0	+7·0		
	3000	195	4·5	+1·2	+4·3		
	2500	180	3·5	0·0	+3·5		*Pressure Distribution* (7 h.).
	2000	150	4·0	−2·0	+3·5	2·4	
	1750	170	4·5	−0·8	+4·4		Anticyclone over Norway and Denmark.
	1500	150	5·0	−2·5	+4·5		
	1250	145	5·5	−3·0	+4·5		Depression W. of Ireland.
	1000	120	6·5	−5·5	+3·5		
	750	130	8·5	−6·5	+5·5		
	500	120	9·0	−8·0	+4·5		
	170	90	5·0	−5·0	0·0		
	105	100	4·5	−4·4	+0·8		
(at 7 h.)		140	14	− 9	+11	...	Approx. weights: balloon 12 gm., free lift 45 gm.
(at 13 h.)		140	9	− 6	+ 7	...	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 384. September 24, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2175	200	11·5	+ 4·0	+11·0	2·0	Ci., A.-Cu., Cu., and St.-Cu. from S. Scud. Balloon probably entered St.-Cu. cloud.
	2000	200	10·5	+ 3·5	+10·0		
	1750	215	17·5	+10·0	+14·5		*Pressure Distribution* (7 h.).
	1500	215	15·5	+ 9·0	+12·5		Shallow depression W. of Ireland.
	1250	215	11·5	+ 6·5	+ 9·5		
	1000	225	8·5	+ 6·0	+ 6·0		
	750	245	9·5	+ 8·5	+ 4·0		
	500	240	6·5	+ 5·5	+ 3·5		
100 m. above ground.	170	245	3·0	+ 2·7	+ 1·3		
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	200	6	+ 2	+ 6	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 386. September 27, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2050	310	7·0	+5·5	−4·5	2·0	Atmosphere clear. Almost overcast. St.-Cu. Balloon lost in cloud sheet (?)
	2000	310	7·5	+5·5	−5·0		
	1750	310	6·0	+4·5	−4·0		*Pressure Distribution* (7 h.).
	1500	310	6·0	+4·5	−4·0		Col W. of Ireland. Depression over Denmark.
	1250	310	6·5	+5·0	−4·0		
	1000	320	6·5	+4·0	−5·0		
	750	325	7·0	+4·0	−5·5		
	500	350	8·0	+1·5	−8·0		
100 m. above ground.	170	315	5·5	+4·0	−4·0		
Anemometer.	105	295	light	...	...		
Geostrophic wind.	(at 7 h.)	320	8	+5	−6	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 387. September 28, 1915. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4550	265	14·0	+14·0	+1·0	2·4	Atmosphere very hazy. A.-Cu. 6. Balloon lost in cloud. Maximum velocity at 2850 m. 16·0 m/s. (+16·0 W.-E.; −3·0 S.-N.).
	4500	265	13·5	+13·5	+1·0		
	4000	270	13·0	+13·0	0·0		
	3500	275	14·5	+14·5	−1·5		
	3000	275	14·5	+14·5	−1·5		*Pressure Distribution* (7 h.).
	2500	290	10·0	+ 9·5	−3·5		Irregular pressure over British Isles. Lows W. of Ireland and over Denmark.
	2000	280	6·5	+ 6·5	−1·0		
	1750	275	5·5	+ 5·5	−0·5		
	1500	275	5·5	+ 5·5	−0·5		
	1250	250	6·0	+ 5·5	+2·0		
	1000	250	6·0	+ 5·5	+2·0		
	750	260	6·0	+ 6·0	+1·0		
	500	255	6·5	+ 6·5	+1·5		
100 m. above ground.	170	235	4·5	+ 3·7	+2·6		
Anemometer.	105	...	calm	...	...		
Geostrophic wind.	(at 7 h.)	270	6	+ 6	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 389. September 29, 1915. 9 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4700	310	6·5	+5·0	− 4·0	2·4	Atmosphere rather hazy. Previous lower clouds had nearly all cleared off, leaving Ci.-St. and Ci. from W. Very slow motion. Balloon lost either in, or against, the background of Ci.-Cu. which came over when the balloon was very faint. Balloon passed behind low cloud about 10 minutes after start.
	4500	315	4·5	+3·2	− 3·2		
	4000	325	8·0	+4·5	− 6·5		
	3500	310	5·5	+4·0	− 3·5		
	3000	320	8·0	+5·0	− 6·0		
	2500	360	8·5	0·0	− 8·5		
	2000	5	14·5	−1·5	−14·5		*Pressure Distribution* (7 h.).
	1750	10	14·0	−2·5	−14·0		Depression over Flanders. (18 h.) depression moved to Rhineland.
	1500	10	13·5	−2·5	−13·5		
	1250	5	13·5	−1·0	−13·5		
	1000	5	13·5	−1·0	−13·5		
	750	5	14·0	−1·0	−14·0		
	500	355	15·5	+1·5	−15·5		
100 m. above ground.	170	340	7·5	+2·5	− 7·0		
Anemometer.	105	340	8·0	+2·5	− 7·5		
Geostrophic wind.	(at 7 h.)	30	25	− 13	− 22	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	360	16	0	− 16	...	

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:—Aberdeen, 1; Benson, 5; Eskdalemuir, 5; South Farnborough, 21.

11. Soundings with Registering Balloons.

Benson. No. 312. September 1, 1915. 18 h. 40 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height,	13·4 km.	149 mb.	223 a.
Lowest Temperature,	8·5 km.	316 mb.	221 a.
Base of Stratosphere, Type I.	8·5 km.	316 mb.	221 a.

Height above M.S.L., 57 m.

Place of Fall, Romford.

Distance, 88 km.

and

Orientation, 93° from N.

Data for Station. at 18 h. G.M.T.

Geostrophic Wind { Direction, . 270°
Velocity, . 8 m/s.

Correction for curvature of isobars, . −2 m/s.

Gradient Wind . . . . 6 m/s.

Components, { W. to E., . . +6 m/s.
S. to N., . . 0 m/s.

Pressure Distribution (18 h.).

Depression over Gulf of Bothnia, with a secondary stretching over the southern North Sea.
Anticyclone over N. Atlantic.
N.B.—Pressure conditions not suitable for definite determination of the gradient wind.

Weight of balloon 465 gm., free lift 348 gm.

Height above M.S.L.	Wind. Direction (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.
metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	km.	mb.	a.	a.
3000	270	8	+ 8	0		13·00	158	223	+1
						12·00	184	224	
2500	275	10	+10	− 1		11·47	200	224	+1
						11·00	216	225	−2
						10·00	252	223	−2
2000	285	7	+ 7	− 2		9·00	293	221	
						8·83	300	221	+2
						8·00	392	223	+7
1750	295	9	+ 8	− 4		7·00	397	230	
						6·95	400	231	+9
						6·00	459	239	+8
1500	295	9	+ 8	− 4		5·40	500	244	
						5·00	528	247	+9
1250	290	9	+ 8	− 3	3·3	4·06	600	256	
						4·00	606	256	+8
						3·00	690	264	
1000	285	8	+ 8	− 2		2·89	700	264	+7
						2·00	784	271	
						1·83	800	272	+6
750	295	7	+ 6	− 3		1·00	888	277	
						0·88	900	278	
500	290	5	+ 5	− 2		0·03	1000	...	
157	270	2	+ 2	0					
						Ground	997	284	...
82	270	1	+ 1	0		M.S.L.	1004	...	...

Remarks.—Thunder shower in the afternoon. Sky becoming overcast after a clear interval. Clouds at 2½ kilometres.

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m. Velocity V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
1	Cu.	112	5·0	− 1·0	− 4·4	Low, diffuse type of cloud.
2	Cu.-Nb.	349	4·4	+ 0·8	− 4·3	Apical part of cloud measured.
3	Cu. to Cu.-Nb.	315	2·8	+ 2·0	− 2·0	Cu. rapidly changing to Cu.-Nb., latter character now predominant.
4	St.-Cu.	270	3·6	+ 3·6	0·0	*Observation at 12 h. 30 m.*
5	Ci. to Ci.-Cu. / Cu.	270	1·1	+ 1·1	0·0	Ci. changing to Ci.-Cu.
		270	4·6	+ 4·6	0·0	
6	A.-Cu.	250	1·3	+ 1·2	+ 0·4	*Observation at 12 h.*
7	Ci. / Cu.	270	1·4	+ 1·4	0·0	*Observation at 12 h.*
		252	2·8	+ 2·7	+ 0·9	
11	Fr.-Cu.	180	10·4	0·0	+10·4	*Observation at 12 h.*
12	Fr.-Cu.	180	16·7	0·0	+16·7	
13	A.-Cu. / Cu.	202	3·1	+ 1·1	+ 2·9	*Observation at 12 h.*
		270	6·3	+ 6·3	0·0	
14	Ci. to Ci.-St. / St.-Cu.	315	2·8	+ 2·0	− 2·0	*Observation at 11 h. 30 m.*
		280	3·1	+ 3·0	− 0·5	
15	Ci.-St.	270	3·5	+ 3·5	0·0	*Observation at 12 h.*
16	A.-Cu.	270	4·4	+ 4·4	0·0	A.-Cu. thin type.
22	A.-Cu.	179	2·4	0·0	+ 2·4	A.-Cu. thin, massing into sheet.
24	Ci.	223	5·2	+ 3·5	+ 3·8	Coarse Ci., changing to Ci.-St.
27	Cu.-Nb.	4	10·0	− 0·7	−10·0	
30	St.-Cu.	351	7·6	+ 1·2	− 7·5	St.-Cu. formed from apices of Cu.-Nb.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	*x* 8·7	*x* 75	*x* 1042	50	*x* 50	12 10	*x* 50	8·5	73	73	42	Clear	5·0	43	—	—	—	—	—	—
2	—	—	287	14	18	14 40	14	—	—	—	—	—	5·3	46	11 57	Cloud	1·92	71	6·8	59
3	3·8	33	770	38	40	12 40	49	4·5	39	—	—	—	2·0	18	—	—	—	—	2·9	25
4	2·7	24	563	28	48	13 35	43	2·3	20	43	24	A.-Cu.	3·7	32	—	—	—	—	1·2	11
5	0·8	7	481	25	40	10 15	32	1·9	17	—	—	—	10·1	89	11 54	Clear	1·98	86	0·3	3
6	0·3	3	586	31	39	11 40	39	1·6	14	—	—	—	0·1	1	—	—	—	—	0·5	4
7	—	—	337	18	28	12 50	27	—	—	—	—	—	1·8	16	—	—	—	—	—	—
8	3·2	29	622	33	38	14 25	18	3·1	28	—	—	—	1·8	16	—	—	—	—	3·1	28
9	—	—	285	15	19	11 45	19	—	—	—	—	—	0·7	6	—	—	—	—	2·0	18
10	2·4	22	558	31	41	11 40	40	1·5	14	—	—	—	0·1	1	—	—	—	—	—	—
11	1·0	9	506	28	31	13 0	31	1·6	15	—	—	—	0·7	6	—	—	—	—	5·8	53
12	4·6	42	723	41	43	12 50	42	3·6	33	—	—	—	1·7	16	—	—	—	—	4·3	39
13	1·6	15	540	31	30	10 55	20	1·7	16	55	28	Ci.	1·1	10	—	—	—	—	—	—
14	5·4	50	651	38	35	11 40	35	3·8	36	—	—	—	3·6	34	—	—	—	—	4·5	42
15	0·3	3	371	22	24	13 50	20	—	—	—	—	—	4·0	38	—	—	—	—	6·6	62
16	—	—	266	16	13	12 5	13	—	—	—	—	—	8·3	79	11 58	Ci.	2·26	72	9·1	86
17	—	—	251	16	28	10 0	·5	0·2	2	—	—	—	1·1	11	—	—	—	—	2·5	24
18	0·2	2	414	26	30	10 55	28	—	—	—	—	—	—	—	—	—	—	—	2·8	27
19	1·4	13	439	28	40	12 5	40	1·6	15	52	25	St.-Cu.	1·6	16	—	—	—	—	5·7	55
20	2·1	20	443	29	30	10 45	28	1·3	13	—	—	—	—	—	—	—	—	—	0·2	2
21	—	—	199	13	20	13 30	7	—	—	—	—	—	6·1	60	—	—	—	—	7·7	75
22	1·9	18	465	31	37	10 20	20	3·3	32	—	—	—	5·3	53	—	—	—	—	0·7	7
23	0·4	4	380	26	43	11 10	41	0·7	7	—	—	—	—·	—	—	—	—	—	6·4	63
24	—	—	188	13	*n* 10	10 35	8	—	—	—	—	—	—	—	—	—	—	—	6·9	68
25	0·4	4	386	27	31	13 25	14	0·9	9	—	—	—	7·1	72	—	—	—	—	7·0	70
26	0·9	9	384	28	30	10 20	21	1·1	11	—	—	—	0·4	4	—	—	—	—	6·0	60
27	—	—	343	25	19	10 5	18	0·1	1	—	—	—	—	—	—	—	—	—	—	—
28	0·4	4	267	20	31	12 55	16	1·1	11	—	—	—	0·1	1	—	—	—	—	1·4	14
29	4·4	45	492	37	33	12 35	29	4·5	46	42	18	Ci-St.	2·9	31	—	—	—	—	1·4	14
30	2·2	22	278	22	23	13 35	12	2·7	28	—	—	—	7·4	79	12 11	Mist	2·75	66	—	—
31	—	—	*n* 142	11	13	13 40	9	—	—	—	—	—	1·8	19	—	—	—	—	0·2	2
Means	1·58	15	441	27	31	—	25	1·68	16	—	—	—	2·71	26	—	—	—	—	3·10	30
Normal	2·29	22	—	—	—	—	—	2·97	28	—	—	—	2·42	24	—	—	—	—	3·26	31
	← 4 years →							← 30 years →					← 4 years →						← 30 years →	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 m.

Day.	Air 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
			200+	200+	200+	200+															
	mb.	mb.					millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.		γ	° ′	° ′
1	1013·0	1008·1	84·1	87·1	88	81	11·9	15·9	91	100	12	6	14	3	10	10	5·0	●≡⁰ most of day.	…	…	…
2	1013·3	1019·6	87·8	86·1	89	85	16·2	13·3	97	89	26	6	30	2	10●	4	—	Damp ≡⁰ *a*. Fine and sunny *p*.	…	…	…
3	1023·6	1025·3	85·1	86·6	*x* 90	82	13·2	13·7	94	89	—	0	—	0	7	0	—	$\mathfrak{P}^2$. Fine and bright.	…	…	…
4	1025·4	1024·0	87·1	87·3	*x* 90	86	13·6	13·8	85	85	—	1	13	3	10	9	0·1	≡⁰ till 10 h. c. to fine.	…	…	…
5	1021·9	1021·0	87·4	87·7	89	*x* 87	13·9	13·3	85	80	13	6	11	5	10	10	1·5	o., with low clouds *a*. Brighter *p*.	…	…	…
6	1019·9	1017·9	87·2	87·6	89	86	13·5	12·7	84	77	11	6	12	9	8	10	26·5	c., with d., and ≡⁰.	…	…	…
7	1007·4	998·2	87·0	87·6	88	*x* 87	15·1	15·8	95	96	14	11	24	7	10≡⁰●	10	38·1	●² 3 h.–12 h. ●² (very heavy) 17 h.	…	…	…
8	1005·5	1007·5	86·7	84·4	89	83	13·2	12·6	85	94	26	5	—	1	8●	3	0·2	⌒ 8 h. and 10 h. Fair, with v.	17864	19 59·4	68 6·5
9	1005·2	1002·9	85·9	86·2	88	81	12·1	12·1	82	80	9	5	9	6	8	7	0·7	$\mathfrak{P}^2$ *a*. Fair to c.	…	…	…
10	1002·3	1003·1	86·7	85·6	88	85	12·3	11·4	79	79	7	4	7	4	10	9	1·5	Dull, with ●⁰ showers. ∞	…	…	…
11	1002·0	998·2	86·4	87·2	*x* 90	85	12·5	14·1	82	88	7	2	15	5	4∞	10	2·7	Fine, but c. ∞	…	…	…
12	1004·9	1010·6	86·6	85·4	88	84	12·2	12·4	79	87	25	5	16	3	8	4	0·3	Fine, but c. Fine sunset.	…	…	…
13	1009·4	1011·4	87·2	86·7	88	85	15·3	12·9	95	83	15	7	19	6	10●⁰≡⁰	4	5·3	Damp ≡⁰. ●² shower 15 h. 30 m.	…	…	…
14	1018·1	1019·0	85·4	84·5	89	82	12·7	12·4	89	92	18	2	—	1	2	1	3·6	Fine and bright *a*. ●² 17 h.	…	…	…
15	1019·8	1019·0	82·3	83·6	88	79	10·5	10·9	91	86	—	1	—	1	3	8	—	$\mathfrak{P}^2$. Fine all day.	…	…	…
16	1019·4	1019·3	80·6	81·0	86	78	9·8	9·9	94	93	—	1	6	2	1	4	—	Calm and sunny all day.	…	…	…
17	1019·1	1021·7	85·5	85·7	88	81	12·8	13·5	89	93	14	5	27	4	7	10●	19·5	c. to dull. ● showers *p*.	…	…	…
18	1024·3	1026·8	84·1	84·1	88	82	12·3	11·9	94	91	5	8	—	1	10●	4	3·6	Intermittent ●² 4 h.–12 h. Fair later.	…	…	…
19	1025·5	1020·1	80·9	85·2	87	79	9·7	11·6	92	82	—	0	11	4	4∞	6∞	0·2	$\mathfrak{P}^2$. Fine. Fine sunset.	…	…	…
20	1013·3	1004·9	85·3	83·8	86	82	10·1	11·6	71	90	12	10	14	6	8∞	10●	*x* 45·4	c. q. · ● from 17 h. ●² 19 h.–24 h.	…	…	…
21	1009·3	1012·3	84·2	85·5	87	83	10·8	13·3	82	92	23	4	16	4	5	10●²	5·5	Fine, with v. ⌒ 17 h. ⋃⋃ 22 h.	17855	…	68 8·0
22	1011·9	1008·6	85·7	84·9	88	85	12·7	13·1	87	95	15	5	14	7	8	10	9·8	⌒ 8 h. ● showers.	…	…	…
23	1008·7	1011·3	84·4	81·6	86	81	9·2	10·2	*n* 69	92	26	5	—	1	6	10●	2·1	●² showers early. Fair to c.	…	…	…
24	1016·1	1019·3	83·2	84·3	85	81	9·9	9·6	80	72	31	5	32	8	7	4	0·1	Frequent ⌒ *a*. Bright later. v.	…	…	…
25	1026·6	1030·9	81·1	79·3	84	79	9·0	8·1	84	85	5	6	5	2	3∞	0	—	Fine and bright all day.	…	…	…
26	1031·4	1027·5	78·6	76·3	83	*n* 76	7·0	7·1	77	92	5	2	4	2	7	3	1·0	Fine. ⋃ from 19 h. 30 m.	…	…	…
27	1015·3	995·4	82·2	84·2	85	79	10·3	10·8	89	82	15	6	20	9	10●	9	29·4	● *a*. and till 19 h. Dull.	…	…	…
28	995·8	997·8	83·5	81·8	84	80	9·1	8·2	72	73	25	8	23	5	8●	5	10·6	q. *a*. ●△ showers.	…	…	…
29	1003·4	1006·4	79·5	78·9	*n* 82	77	9·1	8·6	94	93	5	3	7	2	8●	3	5·9	△² showers *a*. Fine to showery *p*.	—	19 59·5	…
30	1002·8	984·0	82·7	84·3	84	77	10·4	12·5	87	94	13	7	11	7	10	10●	25·8	● showers.	…	19 55·5	…
31	986·5	998·4	82·9	83·0	84	81	10·4	9·5	86	78	1	8	32	8	8	5	2·8	Fine early. c. to o. during day.	…	…	…
Means	1012·9	1012·0	84·4	84·4	87·0	81·8	11·6	11·8	86	87		4·8		4·1	7·4	6·5	247·2	Monthly **Totals** or **Means**.	17860	19 59·5	68 7·2
Normal	1010·7	1011·0	83·7	83·5	86·6	81·1	11·1	11·0	86	85		5·3		5·1	—	—	133·9 (40 yrs.)	**Normals.**			
	← 40 years →						← 25 years →				← 30 years →										

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—7/17.—N. & Co., Ltd. **Gp. XV.**

3. METEOROLOGY :—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level :—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground :—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200 + °	200 + °	200 + °	200 + °	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.	200 + °	200 + °	200 + °	cm.	cm.
1	1015·0	1016·0	79·5	79·2	85	75	7·4	8·5	76	90	24	2	—	0	0	? 6≡0	0·7	71	83·6	87·1	207	—
2	1016·2	1019·2	81·1	83·2	85	77	9·5	10·7	88	87	—	1	13	2	0≡●0	10≡●0	0·9	73	83·3	87·1	207	207
3	1024·0	1026·3	84·3	79·1	89	78	10·9	9·1	82	97	10	2	—	0	10≡0	0≡0	—	80	84·0	86·7	206	—
4	1026·5	1025·4	81·7	81·7	87	78	10·4	9·7	93	87	—	0	—	1	9≡0	0	—	73	83·9	86·5	203	—
5	1024·0	1022·5	82·8	83·0	85	78	9·5	10·2	79	84	32	4	32	3	8	10	1·1	71	83·2	86·3	201	—
6	1022·9	1024·7	84·8	83·6	88	82	11·7	10·5	85	83	32	3	2	2	10	0≡0	—	82	83·8	86·2	200	—
7	1023·8	1017·4	84·6	82·6	87	82	11·4	9·4	84	79	5	2	12	3	10≡0	9≡0	—	75	84·2	86·0	199	—
8	1011·1	1010·3	84·1	80·6	87	80	10·4	9·8	79	94	10	4	—	1	2≡0	0≡	—	78	84·1	86·0	198	—
9	1010·7	1010·8	84·9	84·4	87	83	12·1	11·9	88	89	—	1	6	3	10≡0	10≡0●0	0·5	74	84·0	85·9	198	—
10	1009·7	1009·0	85·1	84·9	87	83	12·3	12·7	88	92	7	5	8	6	9≡0	? 0≡0	—	82	84·3	85·8	198	—
11	1008·9	1008·3	85·3	84·3	89	83	11·9	12·8	84	96	7	4	—	1	? 4≡0	3≡0	0·2	80	84·5	85·7	199	—
12	1009·9	1011·9	85·2	87·4	*x* 91	*x* 84	13·8	14·5	98	89	—	1	17	3	*10*≡	? 8	—	79	84·7	85·7	199	—
13	1016·7	1018·9	86·3	82·6	89	81	12·2	11·4	81	96	27	2	—	1	7	? 0≡0	0·1	83	85·3	85·6	199	—
14	1021·3	1021·2	83·3	82·5	89	80	12·3	11·5	99	97	—	1	—	0	?10≡	*10*≡	—	76	85·0	85·6	198	—
15	1020·8	1019·3	83·3	80·6	88	80	11·8	10·1	95	97	—	0	—	0	? 8≡	?10≡	—	77	84·9	85·6	198	—
16	1018·7	1019·4	84·7	84·6	87	82	12·6	12·5	92	92	5	2	—	1	10≡0	10≡0	—	78	84·6	85·6	199	—
17	1020·8	1023·6	85·2	82·5	87	81	12·4	11·5	88	97	2	2	—	1	10≡0	*10*≡	—	78	84·7	85·6	198	—
18	1026·2	1027·2	83·5	82·4	87	80	12·0	10·7	95	91	—	0	—	1	?10≡	0≡0	—	77	84·3	85·4	197	—
19	1026·1	1022·4	81·8	82·7	86	80	9·9	10·2	88	85	2	3	3	2	10≡0	10≡0	0·1	73	83·7	85·5	196	—
20	1020·0	1018·9	82·2	80·7	85	77	10·3	8·1	89	77	—	1	8	2	5≡0	0≡0	—	78	83·8	85·3	195	—
21	1017·2	1018·0	79·5	82·3	84	75	9·0	9·4	93	81	—	1	14	2	?10≡	10≡0	0·2	*n* 70	82·5	85·2	194	—
22	1020·7	1020·4	83·4	81·9	88	78	11·5	10·5	92	93	11	2	—	1	3≡0	6≡0	0·1	73	82·2	85·1	193	—
23	1017·7	1015·0	82·1	82·8	86	80	10·3	11·5	89	96	10	2	10	3	7≡0	10≡0●	15·3	72	82·4	85·1	192	—
24	1011·3	1010·8	82·8	83·1	83	82	11·2	10·5	93	85	8	3	5	10	10≡0●	10≡0	7·2	82	82·9	85·0	192	—
25	1018·4	1023·2	81·3	79·9	83	79	7·1	7·5	*n* 65	75	3	7	2	6	8≡0	2	0·3	79	82·8	85·0	192	192
26	1025·3	1024·2	79·8	80·5	82	79	7·9	8·6	80	83	32	5	31	2	9	10	—	76	82·0	84·9	193	—
27	1019·3	1010·9	78·9	79·1	*n* 81	77	7·5	7·3	81	78	—	1	—	1	10≡0	10	7·0	72	81·6	84·7	195	—
28	997·3	999·5	81·9	79·5	86	79	10·8	9·1	96	94	16	7	—	1	10●0	? 9≡0	2·0	77	81·1	84·6	197	—
29	1005·8	1010·3	76·3	77·1	84	*n* 74	7·5	7·9	97	97	—	0	—	0	*10*≡	0≡	0·1	72	81·1	84·2	196	—
30	1013·1	1008·9	76·6	78·9	84	*n* 74	7·5	8·1	96	88	—	0	14	3	*10*≡	0≡0	1·1	72	81·1	84·2	193	—
31	996·9	991·4	81·0	81·8	83	79	9·8	10·6	92	94	9	6	6	9	10≡0●	10●	*x* 21·2	73	80·7	84·1	192	—
Means	1016·7	1016·3	82·5	81·9	86·1	79·4	10·5	10·2	88	89		2·4		2·3	8·4	5·9	58·1	76·0	83·4	85·5	198	—
Normal	1012·7	1012·8	82·5	82·3	86·3	79·3	10·4	10·5	86	88		3·2		2·6	—	—	70·1	—	84·1	85·6	—	—
			40 years				25 years				30 years						40 years		11 years			

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

Heights above Mean Sea Level :—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground :—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	986·7	986·9	80·3	73·4	83	72	6·6	5·2	*n* 65	83	3	2	—	0	1	8	—		⌣ early. Sunshine and cloud.
2	987·4	991·1	79·9	76·3	84	72	7·5	7·0	75	90	2	2	—	1	7	0≡0	—		c. to clear.
3	996·2	999·5	78·9	75·3	85	73	8·3	6·6	90	91	—	0	—	1	10∞	0	—		o. *a.* ∞ in afternoon. Clear evening.
4	1000·9	1000·9	78·1	75·0	85	74	8·3	6·4	94	91	2	3	—	2	5≡0	0	—		≡0 *a.* Fair to fine later.
5	999·9	998·6	78·4	75·5	86	*n* 71	7·7	6·7	86	91	—	0	—	1	1∞	2	—		⌣ till 7 h. Beautifully fine.
6	998·2	998·3	80·1	80·3	84	74	9·1	9·8	90	96	—	1	—	2	9	4	—		o. to c.
7	994·9	986·7	82·6	81·2	85	79	9·8	8·2	82	76	14	2	12	6	8	6	—		o. to dull. ⊕ 15 h. ∞ *p.*
8	981·4	982·2	83·3	82·3	85	78	9·5	10·8	76	93	13	5	—	1	8	10●≡0	1·0		o. to dull. d. from 18 h.
9	984·5	985·7	81·7	82·8	86	80	10·1	10·6	90	88	—	0	10	4	10≡0	10≡0	—		d. till 8 h. ≡0 *a.* and *p.*
10	986·4	985·3	83·6	82·4	86	81	11·0	9·6	87	82	8	4	10	4	9	5	—		o. most of day.
11	982·9	977·5	83·6	83·7	86	*x* 82	9·5	11·6	75	91	10	5	15	5	9	? 3≡0	6·1		q. o. Distant ≺ in S.W. 21 h.
12	975·1	982·1	83·9	77·8	*x* 87	77	12·3	8·4	95	98	16	9	—	0	10●≡0	7≡0	13·4		● till 10 h. Brilliantly coloured ci. 15 h.
13	986·1	985·9	83·0	84·9	*x* 87	77	11·7	11·4	96	83	16	4	18	9	10≡0	10	2·5		≡0 till 9 h. o. q. in afternoon.
14	989·4	992·8	83·7	81·8	*x* 87	81	11·6	10·5	91	93	20	5	—	1	6	?4	0·1		● early. ● showers. ⌢ *p.* ♕0 *n.*
15	993·8	993·8	81·5	77·6	*x* 87	75	10·3	8·3	93	98	—	1	—	0	10	2	—		o. to fine. ♕ 21 h.
16	993·7	994·3	81·7	79·7	86	75	10·1	9·3	90	95	—	1	1	3	0∞	10≡0	—		♕ 1 h. ⌣ early. Fine. ∞ *p.*
17	994·1	995·6	81·8	81·4	85	79	10·4	10·4	92	95	—	0	—	0	10	10≡0	1·7		≡0 *a.* ∞ *a.* and *p.*
18	998·0	1001·8	82·5	81·2	84	81	11·1	10·3	94	96	—	1	2	4	10●0≡0	10●≡0	*x* 15·9		≡0 ● showers *a.* ● 17 h.–21 h.
19	1002·1	998·7	80·1	80·3	84	79	9·0	9·5	89	93	2	5	—	1	10	10●0	0·2		o. to fair *a.* Fair to dull *p.*
20	994·5	992·1	80·0	80·0	83	77	9·2	8·5	92	85	4	3	8	2	9	9	—		Mostly o. ● shower 12 h. 30 m.
21	990·2	990·7	79·1	76·0	83	74	8·5	7·2	90	95	3	4	—	1	3	2∞	0·2		Fair to fine.
22	993·0	991·5	76·7	80·1	84	73	7·3	9·3	92	92	31	2	—	0	2∞	10	0·7		⊕ 9 h. and 13 h. Fine.
23	987·1	985·0	81·4	81·1	82	79	9·4	9·9	86	92	13	4	13	6	10●≡0	10●≡0	7·3		Dark, with ≡0 *a.* ● all day.
24	987·6	995·8	81·2	77·8	82	76	8·9	7·5	83	87	10	8	3	6	10●	3	0·6		● 7 h.–10 h. Mostly o.
25	1002·2	1003·9	78·6	77·5	81	76	6·2	7·3	69	87	4	7	2	5	2	8	0·5		v. 9 h. Fine ♆ 21 h.
26	1002·5	997·7	77·5	75·0	80	74	6·3	6·2	75	88	26	5	—	0	9	9	—		Mostly o.
27	990·2	977·6	74·3	76·2	*n* 79	*n* 71	6·2	6·3	93	83	—	0	13	5	9	10●	7·7		o. all day.
28	966·3	969·8	76·9	77·6	80	76	7·2	8·0	89	94	12	8	—	1	10	9	1·6		● till 8 h., 10 h.–11 h. 30 m., and 16 h.
29	976·7	981·1	77·2	72·7	82	72	7·9	6·0	97	100	—	0	—	1	9≡0	0	0·1		o. *a.* Fine afternoon. ≺ *n.*
30	983·0	979·4	74·5	74·0	82	*n* 71	6·4	6·1	94	93	—	0	—	1	4⌣≡0	0≡0	0·1		⌣2 *a* Fine and sunny.
31	975·0	976·1	78·3	77·9	82	75	7·4	7·4	83	85	7	7	3	6	8∞	10	0·2		Fair to gloomy. ● shower 15 h.
Means	989·7	989·6	80·1	78·7	83·8	75·9	8·9	8·4	87	91		3·2		2·5	7·4	6·2	59·9	—	Monthly **Totals** or **Means.**
Normal 1911-14	984·6	984·6	80·5	79·5	83·7	76·6	9·3	8·8	88	89		4·8		3·7	—	—	110·5	—	**Normals.**

No record.

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism :—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 28 days; they are computed from the data for those days on which values at each of the four hours, 3^h, 9^h, 15^h, 21^h, are given in the table. A similar note applies to the values in Table 6.

x denotes the maximum and n the minimum value in the column.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 2·25.				Charge per cc. $\times 10^{20}$.		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.												
		v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	⌣ early. Fine throughout.	430	645	225	645	580	350	0·60	0	1	475	18 41	414	10 50	61	23·0	12 25	12·9	0 15	10·1
2	≡⁰ till 10 h. Dull. ≡ *n*.	330	125	250	615	—	—	—	1	0	472	19 13	434	11 52	38	21·1	13 5	12·3	8 43	8·8
3	≡⁰ till 10 h., then fair. ≡⁰ *n*.	355	340	225	365	—	—	—	1	1	490	22 31	437	10 43	53	22·3	14 27	9·4	23 53	12·9
4	≡⁰ till 11 h. Fine 11 h.–14 h.	125	175	455	480	540	260	1·25	0	1	479	20 7	448	10 8	31	22·0	12 13	9·5	0 1	12·5
5	Fair to fine till 11 h., then dull.	265	275	225	275	370	70	0·60	0	0	476	18 25	446	12 0	30	20·9	13 41	12·0	8 34	8·9
6	Dull till 10 h., then dull to fine.	100	275	300	565	470	160	1·25	0	0	478	23 3	452	10 23	*n* 26	21·6	13 45	11·6	8 56	10·0
7	≡⁰ from 18 h. Dull and o.	190	355	355	530	300	130	0·75	0	1	483	19 48	448	10 56	35	22·5	13 13	7·4	22 24	15·1
8	Fine 9 h.–11 h. ≡ *n*.	200	480	415	250	340	70	1·75	0	0	476	19 17	442	10 40	34	22·6	13 28	12·0	8 38	10·6
9	≡ 9 h. 30 m.–10 h. 30 m. o.	190	240	440	275	—	—	—	0	0	474	22 54	437	10 47	37	21·8	12 18	11·8	8 32	10·0
10	Dull to fine. [all day.	200	265	380	365	—	—	—	0	2	491	16 1	436	22 7	55	21·9	14 6	−3·1	21 7	25·0
11	Dull to fine, with ≡⁰.	300	250	315	320	380	340	0·70	0	1	467	22 8	425	10 37	42	24·3	12 43	8·9	22 13	15·4
12	≡ till 10 h., then fine.	150	380	265	390	1060	540	2·10	1	0	483	21 37	434	10 53	49	22·9	12 26	12·3	8 54	10·6
13	Dull to fine. ≡ *n*. [≡ *n*.	175	340	300	150	380	430	0·80	0	0	483	23 25	433	10 43	50	21·9	13 26	11·8	8 45	10·1
14	≡ till 10 h. Fine from 11 h.	—	—	250	−125	290	410	0·50	1	2	479	14 9	398	16 6	81	32·5	15 24	2·4	21 40	30·1
15	≡ till 14 h., then fair. ≡² *n*.	330	—	350	340	450	800	—	1	2	493	5 36	*n* 342	19 40	151	26·7	11 50	−3·3	23 23	30·0
16	Dull throughout.	480	—	355	275	—	—	—	0	2	467	22 43	390	0 18	77	19·6	13 30	−0·8	0 3	20·4
17	Dull to fair. ≡ from 18 h.	165	190	250	380	—	—	—	1	1	481	5 12	417	11 5	64	20·8	4 55	11·3	9 5	9·5
18	≡ till 11 h. Dull. ≡ *n*.	265	240	335	490	350	250	0·45	1	0	461	0 30	418	11 15	43	20·9	13 29	11·5	8 53	9·4
19	Mostly o.	440	465	655	580	540	400	1·40	0	2	469	5 43	370	19 15	99	27·7	13 38	−3·1	19 18	*x* 30 8
20	≡ till 10 h. ≡⁰ *n*.	330	265	720	745	220	250	1·15	1	2	487	22 31	348	9 55	139	25·9	5 48	5·5	18 19	20·4
21	≡ 9 h.–13 h. ●⁰ 11 h. and 15 h.	365	605	455	530	—	—	—	1	1	499	20 48	389	10 9	110	23·0	11 54	2·7	20 36	20·3
22	Fine to c. ≡⁰ ⋃ 21 h.	380	440	200	405	450	220	1·00	0	2	458	1 35	400	18 43	58	25·9	12 53	2·1	21 30	23·8
23	≡ early. o. from 12 h. ● from	340	380	355	−150	—	—	—	2	2	*x* 514	23 17	349	18 4	*x* 165	*x* 35·0	13 52	*n* −13·9	18 13	48·9
24	Dull and o., with ≡⁰ ●. [18 h.	−250	−200	−490	75	—	—	—	2	2	488	18 0	377	10 8	111	27·3	5 31	−3·3	18 55	30·6
25	Fair to fine till 12 h. ● 14 h.	150	630	480	680	—	—	—	1	2	459	18 27	357	11 9	102	27·8	5 50	0·2	18 15	27·6
26	Fair *a*. Fair to dull *p*.	415	405	480	490	490	340	0·70	0	2	484	22 16	405	14 13	79	22·8	12 32	7·9	19 15	14·9
27	Mostly dull.	340	480	340	670	180	300	1·05	1	1	457	18 28	412	12 5	45	20·5	13 15	6·9	17 58	13·6
28	● *a*. ⋋ ● 16 h.	−565	240	265	530	290	320	0·35	2	1	456	7 15	425	21 28	31	19·4	12 45	9·8	22 42	9·6
29	≡² till 11 h. Sunny to fair.	430	645	330	−50	430	540	1·20	2	1	462	19 30	420	9 57	42	20·2	13 45	12·9	9 44	*n* 7·3
30	≡² till 13 h., then fine. [≡ *n*.	820	65	430	555	—	—	—	1	1	496	23 33	444	12 7	52	19·9	13 10	8·9	23 51	11·0
31	Dull and o. all day. ● at times.	265	−515	125	−15	—	—	—	2	1	471	0 0	434	11 3	37	23·0	13 20	6·0	23 53	17·0
M.		246*	303*	324*	398*	—	—	—	—	—	478	—	412	—	65	23·5	—	6·2	—	17·3

6. Atmospheric Electricity and Terrestrial Magnetism :—Eskdalemuir.

Day.	Potential Gradient, Volts per metre. Factor 6·82.				Charge per cc. $\times 10^{20}$.		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. 4000 γ+.		Minimum. 4000 γ+.		Maximum. 45000 γ+.		Minimum. 45000 γ+.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	c.			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.	Amp/cm².														
1	193	119	101	193	1040	460	—	0 *a*	2	18 40	1017	938	10 49	12 43	1093	1041	0 18	20 20	185	105	5 30
2	193	193	165	284	910	260	—	0 *a*	0	19 10	1010	958	11 52	13 5	1082	1041	8 56	7 50	178	170	0 0
3	275	73	348	550	—	—	—	0 *a*	1	22 28	1049	972	12 12	14 30	1092	1020	23 50	18 50	181	172	14 7
4	275	642	229	376	390	0	—	0 *a*	1	21 19	1019	977	12 32	12 16	1093	1021	0 4	21 36	182	167	12 25
5	376	367	138	422	1620	580	—	0 *a*	0	24 0	1013	971	11 59	13 42	1083	1041	9 18	0 12	178	164	11 45
6	193	183	73	358	130	580	—	0 *a*	0	22 2	1022	982	11 45	13 40	1088	1041	9 12	22 15	181	165	12 50
7	92	183	183	284	—	—	—	0 *a*	1	22 23	1042	977	11 42	14 26	1100	1017	22 23	22 40	180	161	11 55
8	110	211	220	101	—	—	—	0 *a*	0	19 16	1018	974	10 40	13 45	1098	1040	0 1	20 48	180	162	12 15
9	303	193	220	275	390	70	—	1 *a*	0	22 53	1015	966	11 22	13 12	1091	1040	{8 55; 9 23}	8 0	176	163	12 0
10	183	147	193	339	—	—	—	0 *a*	2	20 44	1053	976	11 37	16 1	1107	939	21 7	20 29	186	155	23 2
11	193	220	165	248	—	—	—	1 *b*	1	22 14	1019	951	11 59	13 45	1099	1020	22 31	15 30	185	160	0 0
12	128	−257	156	1018	—	—	—	1 *b*	1	21 33	1035	971	11 0	{12 28; 13 13}	1094	1046	8 46	16 45	180	166	11 55
13	358	? 101	? 110	? 83	—	—	—	0 *a*	1	23 23	1035	970	12 6	14 10	1091	1042	8 38	16 12	179	167	12 0
14	...	358	229	477	—	—	—	0 *a*	2	21 52	1036	932	16 7	15 55	*x* 1170	972	21 43	18 24	282	167	11 36
15	275	119	275	376	450	70	—	0 *a*	2	15 43	1073	*n* 828	21 25	14 57	1109	918	23 57	16 15	> 337	9	21 39
16	110	514	266	642	—	—	—	0 *a*	2	22 43	1041	906	1 19	13 30	1081	921	0 1	22 8	196	34	0 50
17	257	101	284	367	—	—	—	0 *a*	1	5 8	1024	962	11 15	5 6	1107	1033	9 6	0 16	183	143	5 19
18	284	211	92	128	—	—	—	1 *b*	0	0 29	1015	961	12 20	14 11	1077	1036	9 29	0 0	176	160	? 12 52
19	−165	174	220	−128	710	0	—	1 *a*	2	19 23	1041	930	20 14	13 37	1120	922	19 18	? 18 8	266	137	24 0
20	110	183	183	440	—	—	—	1 *a*	2	22 25	1048	866	9 53	5 54	1115	993	18 17	14 47	169	116	24 0
21	440	275	284	926	580	330	—	0 *a*	2	20 43	1089	930	1 7	11 54	1093	987	20 36	18 10	149	68	3 36
22	532	284	229	257	780	710	—	0 *a*	2	19 0	1027	920	22 15	12 46	1109	963	21 32	{17 3; 18 23}	203	97	24 0
23	128	−92	−83	−284	—	—	—	1 *a*	2	23 11	1093	900	13 52	13 54	1166	*n* 850	18 10	17 12	*x* > 353	59	2 46
24	110	128	193	183	—	—	—	1 *b*	2	17 59	*x* 1152	901	5 29	4 9	1131	923	17 57	17 56	213	*n* −14	2 40
25	83	101	165	−28	—	—	—	1 *b*	2	18 0	1065	880	11 9	5 52	1125	962	18 14	16 43	248	71	0 10
26	119	119	220	550	—	—	—	0 *a*	2	22 9	1050	936	0 14	3 3	1099	1002	19 12	15 50	187	92	3 6
27	376	275	202	−789	580	200	—	2 *b*	2	19 5	1023	953	12 4	14 16	1077	1002	17 55	18 0	170	143	23 30
28	−1678	64	275	514	—	—	—	2 *b*	1	7 17	1004	974	11 17	13 8	1074	1020	21 3	21 22	172	145	1 10
29	477	367	211	284	—	—	—	0 *a*	1	19 30	1013	965	9 56	13 56	1087	1040	9 40	16 3	165	146	1 44
30	275	578	238	477	—	—	—	0 *a*	1	23 24	1052	977	12 6	{15 0; 15 7}	1087	1020	23 53	17 0	160	134	23 44
31	275	293	0	220	—	—	—	1 *a*	1	†	†	†	†	†	†	†	†	†	†	†	†
M.	163*	202*	185*	289*	—	—	—	—	—	—	1040‡	943‡	—	—	1101‡	997‡	—	—	189§	133§	—

* 30 days. *See* note above. † Clock string broke. ‡ 30 days. § 28 days.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. $A_{N.}$	Amplitudes. $A_{E.}$	Amplitudes. $A_{Z.}$	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
2	M	3 9 46	< 3	...	8·5	...	...	Felt locally.
3	i	0 5 26	...	...	...	...	...	
	M	0 20	20	...	1	...	...	
3	P (?)	1 59 18	...	...	...	...	...	
	i	2 8 28	...	...	...	...	...	
	M	2 28½	18	...	3	...	...	
3	P	7 4 25	...	...	...	...	8000	α = 307°.
	PR_1	7 7 4	...	...	...	...	...	Δ doubtful.
	S (?)	7 13 45	...	...	...	...	...	Western U.S.A.
	PRS (?)	7 14 38	...	...	...	...	...	
	SR_1	7 18	...	...	...	...	...	
	M	7 35	15	...	180	...	...	From Milne-Shaw.
	F	11½	...	...	...	...	...	
5	iP	14 5 59	...	...	...	...	13,700(?)	Steep emergence.
	i	14 8 19	} on vertical only	...	...	...	...	α = 352° to 346°.
	i	14 9 15						
	e	14 12 27	...	...	...	...	...	Epicentre in middle of Pacific Ocean.
	e	14 12 57	...	...	...	...	...	
	S (?)	14 19 22	...	...	...	...	...	
	e	14 22 44	...	...	...	...	...	
	e	14 26 14	...	...	...	...	...	
	i	14 27 31	} mainly E.-W.	...	...	...	...	
	i	14 31 2						
	F	17	...	...	...	...	...	
8	i	15 58 9	...	...	...	...	...	
	i	15 58 25	...	...	...	...	...	
	i	16 4 9	...	...	...	...	...	
	M	16 20	30	4	4½	...	...	
9	eP (?)	4 8	...	...	...	...	...	
	L	4 15	60	...	...	...	...	
	M	4 24	24	6	7	...	...	
	F	4 40	...	...	...	...	...	
10		7 to 8	...	...	...	...	...	Very small.
10		10½ to 11½	...	...	...	...	...	,,
11	P	2 47 24	...	...	...	...	5900	Multiple earthquake. ?
	S	2 54 55	...	...	...	...	...	
	L	3 0	...	...	...	...	...	
	e	3 2	...	...	...	...	...	
	e	3 6	...	...	...	...	...	
	i	3 7 58	...	...	...	...	...	
11		17	...	...	...	...	...	Small irregular waves.
11	P	19 43 9	...	...	...	...	8640	
	γ (?)	19 51 26	...	...	...	...	...	
	S	19 53 1	...	...	...	...	...	
	M_1	20 4	20	4	12	...	...	
	M_2	20 7	19	...	12	...	...	
12	L (?)	22 13	...	...	...	...	...	Confused by microseisms.
17	L	23 48	...	...	...	...	...	
20	M	0 11	...	< 5	< 5	...	...	,, ,,
23	L	2 57	...	...	...	...	...	,, ,,
26	M	13 39	...	< 3	< 3	...	...	
31	M	10 1	21	4	...	...	...	

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. $A_{N.}$	0 h. T.	6 h. $A_{N.}$	6 h. T.	12 h. $A_{N.}$	12 h. T.	18 h. $A_{N.}$	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	0·9	4·5	0·9	4	0·5	5	0·6	5
2	0·9	4·5	0·6	4	0·8	4·5	0·7	4
3	0·5	4·5	0·5	4·5	0·4	4·5	0·3	4·5
4	0·2	5	0·3	4·5	0·2	5·5	0·2	5
5	0·2	5·5	0·2	5·5	0·2	5	0·7	5
6	0·5	5·5	0·5	5	0·6	5	0·7	5·5
7	0·5	5	0·5	5	0·6	5	0·6	5
8	No trace		No trace		1·2	5·5	0·9	4·5
9	0·9	5	0·8	4·5	0·4	4·5	0·5	4·5
10	0·2	4	0·1	4	0·2	4	0·6	4
11	0·9	4·5	1·0	4	0·7	4·5	0·9	4·5
12	0·9	5	1·5	5	1·9	5	2·8	5
13	1·6	6	1·9	5	1·7	5·5	1·7	5·5
14	1·6	6	3·3	6·5	3·1	5·5	1·9	6·5
15	1·8	6·5	1·6	6	1·3	7	1·1	6
16	1·5	6	1·0	6·5	0·7	6·5	0·7	6
17	0·8	6	0·8	5·5	0·8	6	0·8	5·5
18	0·8	6	0·9	6	0·9	6	0·7	6·5
19	0·8	5·5	0·5	6	0·6	6	0·5	5·5
20	0·8	6	0·8	6	0·7	5·5	1·0	4·5
21	0·9	6	1·3	5	0·9	6·5	1·1	5
22	0·9	5	0·9	5·5	1·1	5	1·0	4·5
23	1·2	4·5	1·0	5·5	1·0	4·5	1·1	4·5
24	0·9	5	1·6	5	0·9	5	0·7	5
25	0·5	5	0·3	3·5	0·3	4	0·2	4·5
26	0·6	5	0·4	4·5	0·4	5	0·3	5·5
27	0·9	4·5	1·0	4·5	1·0	4·5	1·5	5
28	No trace		No trace		3·1	6	3·8	6
29	3·9	6	4·8	6	2·9	6·5	2·3	6
30	2·1	6·5	1·3	6	0·9	5	1·2	4
31	1·2	4·5	0·9	5	0·9	4·5	1·0	5

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
3	7 3·9	7 36·3	Amplitude on trace 7·1 mm.
5	14 6·0	14 38·0	Series of very small movements.
8	15 58·0	16 26·5	,, ,,
9	4 26·0	4 29·5	,, ,,
11	2 54·0	3 11·6	
,,	19 51·5	20 13·0	Amplitude on trace 1·6 mm.
12	21 59·0	22 22·0	
31	10 0·0	10 6·5	Very small.

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	4·8	2·0	...	1·4	...	3·3	...	0·6	...	1·5	...	3·3	...	...	1·4	11·7	0	25
2	4·0	...	...	4·0	1·9	...	...	4·5	...	0·3	...	1·3	...	0·3	...	0·6	9·9	0	40
3	...	1·1	...	1·7	...	0·9	...	1·3	...	0·9	...	0·9	...	1·1	...	1·1	7·8	11	25
4	...	1·3	...	1·9	...	0·7	...	1·1	...	2·4	...	1·0	...	0·6	...	2·9	5·8	17	45
5	0·3	...	...	1·6	0·4	...	...	2·3	...	...	3·0	...	...	1·6	...	1·6	5·7	16	55
6	...	0·3	...	0·6	...	0·4	...	2·0	...	0·6	...	0·4	...	...	...	1·0	7·7	17	40
7	1·8	...	...	2·7	2·0	...	...	4·8	6·5	...	...	6·5	5·1	...	...	7·6	17·8	24	0
8	6·9	...	...	6·9	7·6	...	...	5·1	6·8	...	...	4·6	5·5	...	...	1·1	16·5	3	45
9	2·8	...	...	1·1	1·8	...	...	2·7	1·7	...	...	1·1	...	...	...	3·3	8·7	1	10
10	...	...	...	6·9	...	1·5	...	7·4	...	3·3	...	4·9	...	2·9	...	6·9	10·5	11	10
11	...	1·3	...	6·5	0·8	...	...	3·8	4·7	...	...	3·1	6·6	...	...	4·4	12·6	23	15
12	7·7	...	...	1·5	6·5	...	1·3	...	...	0·5	2·6	...	1·6	...	1·6	...	13·9	0	30
13	1·6	...	1·6	...	6·8	...	...	1·3	8·0	...	...	1·6	7·1	...	...	1·4	15·7	16	10
14	4·3	...	1·8	...	3·0	...	2·0	...	1·6	...	1·6	...	1·2	...	...	0·5	11·8	0	30
15	2·3	...	...	0·4	1·7	...	...	2·5	1·1	...	0·7	...	0·1	...	...	0·7	5·5	3	35
16	...	1·0	...	2·4	...	2·5	...	1·7	...	4·5	...	1·9	...	1·2	...	0·5	6·6	12	45
17	...	1·2	...	0·5	...	0·9	...	0·4	1·7	...	1·1	...	2·3	...	0·4	...	5·9	12	40
18	2·6	...	...	...	2·6	...	...	...	...	3·0	2·0	...	...	2·9	0·6	...	5·5	15	40
19	...	2·0	0·4	...	...	2·7	...	4·1	...	1·8	...	4·3	...	...	...	3·0	9·4	19	30
20	...	...	...	3·3	...	...	...	5·9	3·6	...	...	2·4	2·6	...	...	6·4	9·6	23	0
21	2·1	...	...	5·2	...	...	...	5·2	3·0	...	...	3·0	1·8	...	...	9·1	12·3	11	5
22	0·3	...	...	1·6	0·6	...	...	2·9	3·3	...	...	1·4	2·0	...	...	3·0	6·8	16	0
23	3·7	...	...	5·5	6·7	...	...	6·7	8·2	...	...	3·4	4·2	...	...	0·8	20·9	11	5
24	0·7	...	...	1·1	...	8·5	...	...	...	4·1	...	10·0	...	6·4	...	9·6	18·5	23	30
25	...	6·6	...	9·8	...	9·3	...	9·3	...	4·5	...	10·9	...	3·0	...	7·3	18·2	9	45
26	...	2·3	...	5·5	...	4·0	...	4·0	...	5·1	...	1·0	...	4·3	...	2·9	10·7	18	5
27	...	0·5	...	2·6	1·8	...	...	1·8	3·7	...	3·7	...	10·8	...	...	...	21·0	24	0
28	9·7	...	4·0	...	1·3	...	6·8	...	...	3·0	7·3	...	...	1·9	4·5	...	21·3	1	25
29	1·1	...	1·1	...	1·3	...	...	0·3	3·2	...	...	0·6	2·8	...	...	1·1	9·1	6	45
30	4·2	...	...	0·8	4·8	...	...	2·0	7·5	...	...	...	6·0	...	...	4·0	12·1	23	15
31	7·6	...	...	7·6	3·0	...	...	15·1	...	...	...	14·8	...	...	...	14·8	22·1	7	15
S+N & W+E	86·1		92·6		87·4		111·6		99·2		102·6		89·2		104·1				
S−N & W−E	41·3		−70·8		24·6		−84·8		31·2		−55·6		36·8		−89·9				

SCOTLAND N.:—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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	...	6·2	...	...	...	4·8	2·0	...	...	4·9	...	...	...	2·1	...	0·9	6·9	1
2	...	1·5	...	0·6	...	2·6	...	0·5	0·9	...	...	0·9	0·5	...	...	0·5	2·6	9
3	1·6	...	...	1·6	1·4	...	...	3·3	1·8	...	...	2·7	3·0	...	...	3·0	5·6	22, 23, 24
4	4·5	...	...	1·9	6·5	...	...	1·3	5·8	...	...	1·2	4·5	...	...	0·9	7·9	13
5	2·6	...	...	0·5	2·3	...	...	...	3·5	...	...	0·7	1·3	...	...	0·3	4·3	13
6	2·0	...	...	0·4	2·0	...	...	0·4	5·5	...	...	1·1	5·7	...	...	2·4	7·2	18, 24
7	5·8	...	...	1·2	6·1	...	...	1·2	7·9	...	...	5·3	9·8	...	...	6·6	12·5	22
8	10·4	...	...	7·0	10·1	...	...	6·7	12·3	...	...	8·2	9·7	...	...	4·0	15·4	12
9	7·7	...	...	1·5	8·0	...	...	1·6	6·6	...	...	4·4	8·2	...	...	3·4	9·5	16, 17, 18, 19
10	5·5	...	...	2·3	5·7	...	...	3·8	5·3	...	...	5·3	5·6	...	...	5·6	9·8	24
11	5·5	...	...	3·7	9·0	...	...	6·0	11·7	...	...	7·8	12·5	...	...	8·4	15·1	21, 22
12	14·1	...	...	9·5	12·0	...	...	8·0	3·8	...	2·6	...	3·8	...	2·6	...	17·4	4
13	4·1	...	2·7	...	7·2	...	...	...	10·0	...	...	2·0	8·0	...	...	1·6	11·8	18
14	6·9	...	...	...	6·1	...	1·2	...	4·2	...	0·8	...	3·3	...	1·4	...	8·9	1
15	6·2	...	2·1	...	4·9	...	1·9	...	4·5	...	0·9	...	2·0	...	0·4	...	5·9	4, 5
16	0·7	...	1·1	...	0·7	...	...	...	3·2	...	...	0·6	4·1	...	...	2·7	5·9	23, 24
17	5·5	...	...	2·3	8·2	...	...	3·4	6·1	...	...	1·2	4·2	...	...	0·8	8·9	9
18	...	5·5	3·7	...	...	5·7	2·4	...	...	4·8	1·0	...	...	2·9	0·6	...	6·9	12
19	...	2·6	0·5	...	...	1·4	...	3·3	...	0·9	...	4·5	...	...	...	3·6	4·6	12, 13, 15, 17, 18
20	3·3	...	...	4·9	4·9	...	...	7·4	6·0	...	...	9·0	3·5	...	...	8·5	10·8	15
21	5·8	...	...	8·7	5·4	...	...	8·1	6·0	...	...	9·0	6·4	...	...	9·6	12·1	24
22	6·6	...	...	9·8	8·6	...	...	8·6	7·0	...	...	10·4	4·8	...	...	11·6	13·8	12
23	6·7	...	...	10·1	7·1	...	...	10·6	7·3	...	...	10·9	7·1	...	...	10·6	14·8	14
24	7·1	...	...	10·6	4·0	...	...	9·7	4·9	...	...	7·4	0·8	...	...	4·2	13·4	2
25	...	1·8	...	1·8	...	4·3	...	1·8	...	3·6	...	...	...	4·1	2·7	...	5·9	23
26	...	4·6	...	...	...	4·7	3·1	...	...	3·9	...	...	...	1·2	0·5	...	6·2	7
27	...	0·2	0·2	...	0·6	...	...	2·9	4·2	...	...	6·2	7·5	...	...	11·1	15·7	23
28	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
29	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
30	*	*	*	*	*	*	*	*	*	*	*	*	7·9	...	...	3·3	11·1	24
31	8·7	...	...	5·8	5·3	...	...	5·3	3·3	...	...	4·9	4·7	...	...	4·7	10·5	3
S+N & W+E	142·7		94·5		149·6		104·5		149·9		109·0		139·2		116·5			
S−N & W−E	97·9		−73·9		102·6		−83·3		113·7		−98·4		118·6		−100·1			

ENGLAND S.W.:—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.			
	m/s	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	3·5	2·3	...	...	2·3	3·5	...	1·9	...	0·8	...	9·2	...	...	3·8	13·3	20	45
2	...	...	4·2	...	...	2·2	5·4	...	...	1·9	4·6	...	...	4·1	4·1	...	9·9	19	30
3	...	5·6	3·7	...	...	3·5	1·5	...	...	2·7	1·1	...	...	2·5	...	...	9·7	3	20
4	...	1·6	...	0·7	...	...	...	2·9	1·8	...	...	1·8	0·0	0·0	0·0	0·0	4·9	11	25
5	0·6	...	...	0·6	2·1	...	...	3·2	2·6	...	...	3·8	1·2	...	...	1·2	7·1	13	20
6	1·2	...	...	1·2	1·5	...	...	1·5	2·4	...	...	1·6	2·7	...	...	1·8	7·0	24	0
7	6·2	...	...	4·2	8·6	...	...	5·8	11·9	...	...	4·9	13·5	...	...	5·6	20·0	22	0
8	7·5	...	...	...	...	7·0	1·4	...	...	2·5	...	0·5	...	1·6	0·7	...	13·8	12	5
9	0·0	0·0	0·0	0·0	...	1·5	...	1·5	1·5	...	...	3·5	2·4	...	...	5·8	11·0	23	5
10	3·5	...	...	8·5	4·1	...	...	10·0	4·8	...	...	11·6	6·5	...	...	6·5	16·8	10	10
11	5·3	...	...	5·3	4·7	...	...	4·7	5·2	...	...	3·5	6·2	...	...	1·2	10·1	3	25
12	5·3	...	...	1·1	2·3	...	3·5	...	...	3·3	3·3	...	...	1·1	2·7	...	11·9	10	35
13	...	0·7	1·6	...	*	*	*	*	4·2	...	...	...	3·8	...	...	...	7·3	12	25
14	...	...	...	1·7	...	0·3	1·3	...	...	2·7	1·8	...	0·0	0·0	0·0	0·0	5·9	0	15
15	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	...	1·3	...	...	0·0	0·0	0·0	0·0	0·5	14	0
16	...	2·5	...	0·5	...	3·2	...	0·6	...	1·6	...	0·7	...	0·7	...	0·3	4·6	11	30
17	...	0·4	...	0·7	...	0·2	...	0·8	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	2·3	7	20
18	...	...	...	0·8	0·8	...	...	1·9	0·3	...	...	0·7	...	...	...	3·8	4·1	?	
19	1·0	...	...	4·9	1·1	...	...	5·7	2·0	...	...	4·7	0·9	...	...	1·4	8·7	10	15
20	0·9	...	...	1·4	2·1	...	...	5·0	5·0	...	...	5·0	7·4	...	...	7·4	15·9	22	10
21	7·7	...	3·2	...	...	7·1	...	...	...	1·0	4·9	...	...	0·6	2·8	...	20·3	2	55
22	1·9	...	0·8	...	2·9	...	...	...	3·0	...	...	1·3	9·0	...	...	6·0	13·8	21	10
23	6·2	...	...	1·2	3·5	...	1·5	...	1·7	...	0·3	...	...	4·5	4·5	...	14·5	0	15
24	...	5·6	5·6	...	...	3·7	5·6	...	...	11·2	4·6	...	...	10·3	10·3	...	22·7	22	20
25	...	6·5	...	6·5	...	8·3	...	8·3	...	7·0	...	10·4	...	5·8	...	8·6	20·0	9	50
26	...	6·3	...	9·4	...	3·8	...	9·2	...	4·7	...	4·7	...	0·7	...	3·7	17·8	2	15
27	...	...	...	1·3	2·5	...	...	...	6·2	...	1·2	...	10·6	...	2·1	...	15·9	22	20
28	2·7	...	6·6	...	...	4·1	10·0	...	...	...	7·5	...	0·6	...	3·2	...	22·0	6	10
29	...	1·0	2·3	...	...	0·7	3·7	...	...	0·6	3·2	...	...	0·2	0·4	...	12·9	1	0
30	...	0·2	0·8	...	4·1	...	...	0·8	10·0	...	...	4·1	16·3	...	...	6·7	23·4	21	10
31	8·9	...	3·7	...	9·4	...	...	1·9	...	5·8	8·6	...	...	14·3	2·8	...	20·8	23	35
S+N & W+E	92·8		84·8		90·5		108·3		110·8		104·7		136·7		97·4				
S−N & W−E	25·0		−15·2		8·9		−19·3		18·2		−20·9		43·9		−30·2				

ENGLAND E.:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	...	2·0	4·8	...	...	3·4	5·2	...	...	3·3	3·3	...	...	2·1	2·1	...	13·5	11	5
2	...	1·6	1·6	...	...	0·5	0·5	...	0·6	...	2·9	...	0·2	...	0·2	...	9·4	14	35
3	0·9	...	1·3	...	0·9	...	1·3	...	...	0·4	...	2·3	...	0·3	...	1·3	5·6	10	20
4	...	0·9	...	2·1	...	4·4	...	4·4	...	4·9	...	7·4	...	4·9	...	7·4	14·0	9	20
5	...	6·8	...	4·6	...	5·8	...	5·8	...	6·4	...	2·6	...	4·7	...	4·7	15·6	2	20
6	...	3·0	...	3·0	...	2·1	...	5·2	...	2·6	...	6·4	...	1·9	...	4·5	? 9·4	6	10
7	...	0·6	...	3·2	...	0·5	...	2·6	...	...	...	3·3	...	...	...	2·6	? 7·5	?	
8	1·1	...	...	2·8	0·2	...	...	0·2	1·6	...	...	...	1·7	...	...	1·1	10·0	23	10
9	3·8	...	...	5·7	...	...	...	7·5	...	...	...	4·9	...	...	...	8·9	11·4	20	0
10	2·4	...	...	5·7	3·1	...	...	7·6	3·8	...	...	9·1	4·0	...	...	9·7	13·2	18	15
11	3·9	...	...	9·4	2·8	...	...	6·7	4·4	...	...	6·6	3·3	...	...	3·3	12·1	6	35
12	1·4	...	...	1·4	1·8	...	2·7	...	3·8	...	0·8	...	3·5	...	0·7	...	8·1	14	55
13	1·6	...	0·3	...	1·0	...	0·2	...	2·3	...	...	0·4	3·2	...	...	0·6	6·8	21	5
14	1·0	...	0·2	...	1·6	...	...	0·3	2·3	...	...	...	1·3	...	...	...	7·6	17	20
15	0·3	...	...	...	0·0	0·0	0·0	0·0	2·1	...	...	2·1	1·3	...	...	3·0	6·7	19	10
16	0·4	...	...	0·9	...	1·9	...	1·3	...	2·4	...	1·0	...	2·8	...	2·8	7·6	10	25
17	...	1·1	...	2·8	...	1·9	...	4·5	...	...	...	2·0	...	...	...	3·3	6·6	10	55
18	...	1·1	...	2·8	...	0·6	...	1·5	...	2·4	...	3·6	...	1·7	...	2·5	8·4	18	15
19	...	3·8	...	5·7	...	5·1	...	5·1	...	4·9	...	4·9	...	...	...	3·9	12·6	13	5
20	2·0	...	...	3·0	1·6	...	...	8·0	...	1·3	...	6·8	...	1·2	...	5·8	17·1	3	15
21	...	...	...	4·6	0·4	...	...	0·6	2·0	...	...	...	1·8	...	0·8	...	9·7	13	25
22	0·3	...	0·1	...	3·7	...	...	3·7	4·1	...	...	2·7	6·6	...	...	4·4	10·5	24	10
23	5·5	...	...	3·7	8·7	...	...	5·8	6·2	...	...	4·2	6·5	...	...	6·5	13·5	8	55
24	7·4	...	...	7·4	7·3	...	...	10·9	2·7	...	...	13·8	...	...	...	17·0	20·0	22	20
25	...	4·2	...	19·9	...	3·1	...	15·8	...	3·3	...	16·7	...	5·7	...	13·7	21·9	10	45
26	...	4·9	...	7·4	...	6·6	...	4·4	...	3·9	...	...	...	2·6	...	0·5	15·1	9	0
27	...	3·0	1·3	...	...	3·2	2·2	...	...	1·6	1·6	...	...	0·9	1·3	...	6·5	9	10
28	...	0·3	1·3	...	9·1	...	...	3·8	7·2	...	...	...	2·3	...	0·4	...	21·7	13	25
29	0·3	...	0·1	...	2·6	...	...	...	5·1	...	...	13·8	...	1·0	3·5	...	9·5	14	15
30	1·1	...	...	0·7	1·1	...	...	0·7	1·5	...	...	0·6	2·0	...	...	0·4	10·2	24	0
31	8·0	...	...	1·6	10·9	...	...	7·3	8·0	...	...	12·0	5·1	...	...	12·4	17·7	20	0
S+N & W+E	74·7		109·4		95·9		125·8		95·1		123·0		75·1		129·3				
S−N & W−E	8·1		−87·4		17·7		−101·6		20·3		−105·8		17·5		−118·3				

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 192. October 14, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2250	220	19·5	+12·5	+15·0		Balloon lost in distance and haze.
	...	...	...	...	...		Ci.-Cu. moving from S.S.W.
	...	...	...	...	...		
	2000	210	26·5	+12·5	+19·0		
	1750	215	16·0	+10·0	+13·0		
	1500	225	10·0	+ 7·0	+ 7·0		*Pressure Distribution* (7 h.).
	1250	245	7·5	+ 7·0	+ 3·5		
	1000	250	9·0	+ 8·5	+ 3·0	2·4	Very deep depression over Iceland. Secondary over Scilly.
	750	245	10·5	+ 9·0	+ 4·5		
	500	230	11·5	+ 8·5	+ 7·5		
100 m. above ground.	114	215	6·5	+ 3·5	+ 5·5		
Anemometer.	46	200	3·0	+ 1·1	+ 2·8		
Geostrophic wind.	(at 7 h.)	230	13	+10	+ 8	...	Weight of balloon 12 gm., free lift 50 gm.

Aberdeen. No. 194. October 16, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Atmosphere hazy.
	3000	75	2·5	−2·4	−0·6		Sky cloudless.
	2500	230	0·9	+0·7	+0·6		Balloon lost to view in haze.
	2000	245	3·6	+3·2	+1·6		Cloudless all day till 17 h., when St. overspread the sky.
	1750	235	2·9	+2·4	+1·7		
	1500	260	3·0	+3·0	+0·4		
	1250	220	3·7	+2·4	+2·8		*Pressure Distribution* (7 h.).
	1000	210	4·0	+1·9	+3·5	2·4	
	750	220	2·3	+1·4	+1·8		Depression over Iceland. Col over British Isles.
	500	285	0·4	+0·4	−0·1		
100 m. above ground.	114	280	2·1	+2·1	−0·3		
Anemometer.	46	270	2·0	+2·0	0·0		
Geostrophic wind.	(at 7 h.)	*Indeterminate*				...	Weight of balloon 12 gm., free lift 47 gm.

Benson. No. 1558. October 12, 1915. 12 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Ci.-St. clouds and a few small pieces of scud.
	...	...	...	...	...		
	...	...	...	...	...		
	2500	225	13	+ 9	+ 9		*Pressure Distribution* (7 h.).
	2000	215	19	+11	+16		
	1750	210	20	+11	+17		Depression off S.W. of Iceland. Secondary over Ireland, moving E. slowly during day.
	1500	210	15	+ 8	+13		
	1250	205	14	+ 6	+13		
	1000	205	17	+ 8	+15	2·4	
	750	205	12	+ 5	+11		
	500	205	13	+ 6	+12		
100 m. above ground.	157	190	7	+ 1	+ 7		
Anemometer.	82	180	10	0	+10		
Geostrophic wind.	(at 13 h.)	220	9	+ 6	+ 7	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. No. 1559. October 13, 1915. 14 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Ci. clouds stretching N.–S.
	3500	320	9	+6	− 7		
	3000	305	10	+8	− 6		
	2500	305	6	+5	− 4		*Pressure Distribution* (7 h. and 18 h.).
	2000	325	7	+4	− 6		
	1750	345	11	+3	−11		
	1500	270	4	+4	0		Deep depression S. of Iceland. Secondaries in region of British Isles.
	1250	265	2	+2	0		
	1000	250	4	+4	+ 1	2·4	
	750	240	4	+3	+ 2		
	500	220	3	+2	+ 2		
100 m. above ground.	157	225	1	+1	+ 1		
Anemometer.	82	230	2	+1	+ 1		
Geostrophic wind.	(at 13 h.)	250	5	+5	+ 2	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 18 h.)	*Indeterminate*			...	...	

Benson. No. 1560. October 22, 1915. 12 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E. 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Balloon lost behind soft-edged cumulus cloud for 2 mins. at 700 metres and again at termination of ascent.
	2000	225	8	+6	+6		
	1750	205	9	+4	+8		
	1500	200	8	+3	+7		
	1250	210	7	+3	+6		
	1000	?	?	?	?	2·4	*Pressure Distribution* (7 h.).
	750	200	5	+2	+5		
	500	190	4	0	+4		Depression S. of Iceland.
100 m. above ground.	157	175	2	0	+2		Anticyclone Northern Russia.
Anemometer.	82	175	2	0	+2		
Geostrophic wind.	(at 13 h.)	160	5	−2	+5	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

Benson. No. 1561. October 29, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		A few cirrus clouds overhead and hard-edged cumulus on the horizon. The cirrus was moving up from S.W.
	5000	200	8	+3	+7		
	4500	200	6	+2	+6		
	4000	205	5	+2	+5		
	3500	200	8	+3	+7		
	3000	210	7	+4	+6		*Pressure Distribution* (7 h.).
	2500	205	4	+2	+4		
	2000	205	4	+2	+4		Uniform relatively low pressure over British Isles.
	1750	205	4	+2	+4		(18 h.) Lower pressure to north-westward.
	1500	185	4	0	+4	2·4	
	1250	200	4	+2	+4		
	1000	215	5	+3	+4		
	750	225	4	+3	+3		
	500	225	3	+2	+2		
100 m. above ground. Anemometer.	157	...	0	0	0		
	82	...	0	0	0		
Geostrophic wind.	(at 13 h.)	200	4	+1	+4	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Benson. No. 1562. October 30, 1915. 12 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Slight mist. Clear sky.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	3000	205	7	+3	+6		Depression W. of Ireland. Uniform pressure over England.
	2500	200	5	+2	+5		
	2000	185	5	0	+5		(18 h.) Depression advanced eastward.
	1750	190	6	+1	+6		
	1500	185	6	+1	+6	2·4	
	1250	185	3	0	+3		
	1000	175	3	0	+3		
	750	170	5	−1	+5		
	500	155	4	−2	+4		
100 m. above ground. Anemometer.	157	175	3	0	+3		
	82	180	2	0	+2		
Geostrophic wind.	(at 13 h.)	200	7	+2	+7	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Eskdalemuir. No. 1564. October 1, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	...	...	...	...		Atmosphere clear. Cloudless sky. Balloon burst. Barometer rising slowly. Very fine morning.
	...	...	...	...	...		
	...	...	...	...	...		
	..	...	...	...	...		
	...	...	...	...	...		
	2000	15	4·8	−1·2	−4·7		
	1750	20	2·4	−0·8	−2·3		
	1500	20	1·6	−0·5	−1·5		*Pressure Distribution* (7 h.).
	1250	35	1·4	−0·8	−1·2	2·1	
	1000	35	1·9	−1·1	−1·6		Anticyclone W. of Spain. Wedge running N.E. over Ireland.
	750	20	6·5	−2·0	−6·5		
	500	360	9·5	0·0	−9·5		
100 m. above ground. Anemometer.	340	360	4·1	0·0	−4·1		
	250	145	0·5	−0·3	+0·4		
Geostrophic wind.	(at 7 h.)	*Indeterminate*			...	...	Weight of balloon 11·1 gm., free lift 28·3 gm.

Eskdalemuir. No. 1565. October 5, 1915. 12 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4070	...	...	...	...		Atmosphere very clear. High visibility. Cu. 1. Very fine day. Barometer falling slowly Balloon lost in distance.
	4000	90	4·6	−4·6	+0·2		
	3500	95	6·5	−6·5	+0·5		
	3000	115	5·5	−5·0	+2·5		
	2500	100	5·5	−5·5	+1·0		
	2000	105	4·3	−4·2	+1·0		
	1750	105	6·5	−6·0	+1·5		
	1500	100	4·9	−4·8	+0·7		*Pressure Distribution* (7 h.).
	1250	65	2·6	−2·3	−1·1	2·1	
	1000	55	1·9	−1·6	−1·1		Anticyclone beyond Baltic. Wedge running down to British Isles.
	750	90	3·2	−3·2	+0·1		
	500	110	0·9	−0·8	+0·3		
100 m. above ground. Anemometer.	340	170	0·7	−0·1	+0·7		
	250	190	1·0	+0·2	+1·0		
Geostrophic wind.	(at 13 h.)	*Indeterminate*			...	..	Weight of balloon 12·2 gm., free lift 30·3 gm.

Eskdalemuir. No. 1566. October 16, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2750	...	...	...	...		Atmosphere clear. Ci.-Cu., A.-Cu. appeared stationary. Sky one-tenth covered. Balloon lost in distance. Barometer rising slightly.
	2500	115	4·0	−3·6	+1·7		
	2000	100	1·5	−1·5	+0·3		
	1750	40	2·0	−1·3	−1·5		
	1500	100	4·3	−4·2	+0·8		
	1250	95	4·9	−4·9	+0·3		
	1000	85	5·5	−5·5	−0·5	2·3	
	750	75	6·0	−5·5	−1·5		*Pressure Distribution* (7 h.).
	500	60	4·9	−4·3	−2·4		
100 m. above ground. Anemometer.	340	60	3·3	−2·9	−1·6		Depression over Iceland. Col over British Isles.
	250	...	0·0	0·0	0·0		
Geostrophic wind.	(at 7 h.)	*Indeterminate*			...	...	Weight of balloon 10·9 gm., free lift 40·2 gm.

Eskdalemuir. No. 1567. October 16, 1915. 12 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2000	...	...	...	...		Atmosphere clear. Cu. from E. Sky one-tenth covered. Barometer falling slightly. Balloon lost while changing eye-pieces.
	...	...	...	...	...		
	2000	100	6·5	−6·5	+1·0		
	1750	95	4·5	−4·5	+0·5		
	1500	100	5·5	−5·5	+1·0		
	1250	90	5·5	−5·5	0·0		
	1000	105	3·0	−2·9	+0·8	2·2	
	750	60	2·4	−2·1	−1·1		*Pressure Distribution* (7 h.).
	500	55	2·9	−2·4	−1·7		
100 m. above ground. Anemometer.	340	60	2·6	−2·2	−1·4		Depression over Iceland. Col over British Isles.
	250	50	1·8	−1·4	−1·2		
Geostrophic wind.	(at 13 h.)	*Indeterminate*			...	...	Weight of balloon 10·7 gm., free lift 31·3 gm.

10. Soundings with Pilot Balloons—*continued.*

Eskdalemuir. No. 1569. October 22, 1915. 12 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2360	...	...	...	...	2·4	Atmosphere hazy. Ci.-Cu. and A.-St. 7 from S.W. Barometer falling slowly. Balloon lost in distance.
	...	...	...	...	...		
	2000	155	7·5	−3·0	+6·5		
	1750	150	11·0	−5·5	+9·0		*Pressure Distribution* (7 h.).
	1500	160	10·0	−3·5	+9·0		
	1250	170	9·5	−1·5	+9·5		Depression S. of Iceland. Anticyclone Northern Russia.
	1000	170	5·0	−1·0	+5·0		
	750	120	1·7	−1·5	+0·8		
	500	145	6·0	−3·5	+5·0		
100 m. above ground.	340	150	4·6	−2·4	+3·9		
Anemometer.	250	140	2·5	−1·6	+1·9		
Geostrophic wind.	(at 13 h.)	160	10	−3	+9	...	Weight of balloon 11·0 gm., free lift 51·2 gm.

Eskdalemuir. No. 1570. October 30, 1915. 7 h. 35 m. G.M.T

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2500	...	...	...	...	2·3	Atmosphere slightly misty. Clouds Ci. from S.S.W.? A.-Cu.; A.-St. and Cu. from S. Sky two-tenths clouded. Balloon lost in distance. Thick hoar frost on ground. Anemometer had shown a north-north-westerly current for some hours. Balloon reached its maximum distance to S.S.E. at 55 secs. from start, at a height of 124 metres above ground, and then returned nearly overhead.
	2500	195	8·5	+2·5	+8·0		
	2000	190	9·5	+1·5	+9·5		
	1750	185	9·0	+1·0	+9·0		
	1500	190	8·0	+1·5	+8·0		
	1250	190	7·5	+1·0	+7·5		
	1000	190	6·0	+1·0	+6·0		
	750	180	5·5	0·0	+5·5		
	500	175	2·8	−0·2	+2·8		
	340	225	0·1	+0·1	+0·1		*Pressure Distribution* (7 h.).
	250	340	0·9	+0·3	−0·8		Depression W. of Ireland.
	(at 7 h.)	180	7	0	+7	...	Weight of balloon 10·5 gm., free lift 35·5 gm.

South Farnborough. No. 391. October 1, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2200	340	9·0	+3·0	−8·5	2·0	Atmosphere fairly clear. A very little high cloud low down on horizon. Balloon lost sight of. Maximum velocity at 650 m. 12·0 m/s. (+8·5 W.E.; −8·5 S.-N.).
	2000	340	7·0	+3·0	−6·5		
	1750	330	6·5	+3·5	−5·5		
	1500	335	6·0	+2·5	−5·5		
	1250	330	8·5	+4·5	−7·5		
	1000	320	9·0	+6·0	−7·0		
	750	315	10·5	+7·5	−7·5		*Pressure Distribution* (7 h.).
	500	320	10·0	+6·5	−7·5		Anticyclone W. of Spain. Wedge running N.E. over Ireland.
100 m. above ground.	170	285	6·0	+6·0	−1·5		
Anemometer.	105	270	light	...	...		
Geostrophic wind.	(at 7 h.)	340	11	+4	−10	...	Approx. weights: balloon 4 gm., free lift 16 gm.

South Farnborough. No. 392. October 1, 1915. 11 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2100	...	...	...	...	2·0	Atmosphere clear, with high visibility. Practically no cloud. Balloon lost in distance.
	2000	320	8·5	+ 5·5	− 6·5		
	1750	325	5·0	+ 3·0	− 4·0		
	1500	325	8·0	+ 4·5	− 6·5		
	1250	320	8·5	+ 5·5	− 6·5		*Pressure Distribution* (7 h.).
	1000	315	14·5	+10·5	−10·5		Anticyclone W. of Spain. Wedge running N.E. over Ireland. (18 h.) Wedge moved E. to England.
	750	310	9·0	+ 7·0	− 6·0		
	500	310	9·0	+ 7·0	− 6·0		
	170	305	4·5	+ 3·7	− 2·6		
	105	305	2·5	+ 2·0	− 1·4		
	(at 7 h.)	340	11	+ 4	−10	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	300	6	+ 5	− 3	...	

South Farnborough. No. 395. October 4, 1915. 11 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2300	10	10·5	−2·0	−10·5	2·4	Atmosphere slight mist. St.-Cu. Balloon lost in St.-Cu. clouds. Local minimum in velocity at 625 m. 3·0 m/s. (−1·5 W.-E.; −2·6 S.-N.).
	...	...	...	...	...		
	2000	355	7·5	+0·5	− 7·5		
	1750	350	6·5	+1·0	− 6·5		
	1500	360	6·5	0·0	− 6·5		
	1250	30	9·5	−5·0	− 8·0		*Pressure Distribution* (7 h.).
	1000	40	12·0	−7·5	− 9·0		Anticyclonic wedge Norway to British Isles.
	750	50	6·5	−5·0	− 4·0		
	500	25	4·5	−1·9	− 4·1		
100 m. above ground.	170	20	2·5	−0·9	− 2·3		
Anemometer.	105	350	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate.*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	50	7	−5	− 5	...	

South Farnborough. No. 396. October 5, 1915. 9 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E, 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2850	30	11·0	−5·5	− 9·5	2·4	Atmosphere clear. Fr.-Cu. and A.-Cu. Balloon lost behind Fr.-Cu.
	2500	25	12·0	−5·0	−11·0		
	2000	20	10·5	−3·5	−10·0		
	1750	10	6·0	−1·0	− 6·0		*Pressure Distribution* (7 h.).
	1500	35	7·5	−4·5	− 6·0		
	1250	35	9·5	−5·5	− 8·0		Anticyclone beyond Baltic. Wedge running down to British Isles.
	1000	40	12·0	−7·5	− 9·0		
	750	40	12·5	−8·0	− 9·5		
	500	25	10·5	−4·5	− 9·5		
	170	360	4·5	0·0	− 4·5		
	105	360	2·0	0·0	− 2·0		
	(at 7 h.)	40	9	−6	− 7	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	40	10	−6	− 8		

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 398. October 8, 1915. 7 h. 10 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3000	...	...	...	...		Atmosphere hazy. Ci. and Cu. Balloon lost in distance and haze.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	3000	160	12·0	−4·0	+11·5		*Pressure Distribution* (7 h.).
	2500	165	10·5	−2·5	+10·0		
	2000	165	11·0	−3·0	+10·5		Low pressure centred near Iceland. "V" stretching down to Bay of Biscay.
	1750	160	10·5	−3·5	+10·0		
	1500	160	9·5	−3·5	+ 9·0	2·4	
	1250	165	11·0	−3·0	+10·5		
	1000	175	10·5	−1·0	+10·5		
	750	160	11·0	−4·0	+10·5		
	500	155	11·0	−4·5	+10·0		
100 m. above ground.	170	125	7·0	−5·5	+ 4·0		
Anemometer.	105	100	1·5	−1·5	+ 0·3		
Geostrophic wind.	(at 7 h.)	170	10	−2	+10	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 404. October 13, 1915. 9 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4600	325	12·5	+7·0	−10·0		Atmosphere rather hazy at first. A.-Cu. coming from N. Balloon lost in distance. Maximum velocity at 4225 m. 17·5 m/s. (+10·0 W.-E.; −14·5 S.-N.). Local maximum 2775 m. 13·0 m/s. (+10·0 W.-E.; −8·5, S.-N.).
	4500	330	14·5	+7·5	−12·5		
	4000	325	15·5	+9·0	−12·5		
	3500	325	12·5	+7·0	−10·0		
	3000	305	7·5	+6·0	− 4·5		
	2500	310	9·0	+7·0	− 6·0		
	2000	295	7·0	+6·5	− 3·0		
	1750	320	4·5	+2·9	− 3·4		
	1500	325	4·0	+2·3	− 3·3	2·0	
	1250	330	8·0	+4·0	− 7·0		*Pressure Distribution* (7 h.).
	1000	325	6·0	+3·5	− 5·0		
	750	325	7·5	+4·5	− 6·0		Deep depression S. of Iceland. Secondaries in region of British Isles.
	500	345	7·5	+2·0	− 7·0		
100 m. above ground.	170	295	4·5	+4·1	− 1·9		
Anemometer.	105	315	light	...	...		
Geostrophic wind.	(at 7 h.)	270	6	+6	0	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	250	5	+5	+2	...	

South Farnborough. No. 406. October 15, 1915. 10 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2650	260	1·0	+1·0	+0·2		Atmosphere foggy. Ci. from S.W. and St.-Cu. Balloon lost in St.-Cu. Calm at 2575 m. Maximum velocity at 1400 m. 7·0 m/s. (−6·5 W.-E.; −3·0 S.-N.).
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2500	60	1·5	−1·3	−0·8		
	2000	95	4·0	−4·0	+0·3		
	1750	95	4·0	−4·0	+0·3		
	1500	75	5·0	−5·0	−1·5		
	1250	55	5·0	−4·0	−3·0	2·0	*Pressure Distribution* (7 h.).
	1000	70	3·5	−3·3	−1·2		
	750	65	3·5	−3·2	−1·5		
	500	45	1·5	−1·1	−1·1		Depression, Iceland to Spitzbergen. Uniform pressure, England and France.
100 m. above ground.	170	40	0·5	−0·3	−0·4		
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate*		...	...	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 13 h.)	70	2	−2	−1	...	

South Farnborough. No. 415. October 26, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4275	65	20·5	−18·5	− 8·5		Atmosphere very clear. Ci. from about 65°. Some St.-Cu. on northern horizon. Balloon lost in distance. (High power eye-piece in use.) Maximum velocity at 3350 m. 26·0 m/s. (−23·5 W.-E.; −11·0 S.-N.). Local minimum at 2700 m. 13·5 m/s. (−12·0 W.-E.; −5·5 S.-N.).
	4000	65	19·0	−17·0	− 8·0		
	3500	65	22·0	−20·0	− 9·5		
	3000	60	19·5	−17·0	−10·0		
	2500	65	17·5	−16·0	− 7·5		
	2000	70	19·0	−18·0	− 6·5		
	1750	60	16·5	−14·5	− 8·5		
	1500	55	15·5	−12·5	− 9·0	2·4	
	1250	55	16·0	−13·0	− 9·0		
	1000	55	14·5	−12·0	− 8·5		
	750	50	18·0	−14·0	−11·5		
	500	45	16·5	−11·5	−11·5		*Pressure Distribution* (7 h.).
100 m. above ground.	170	25	5·5	− 2·5	− 5·0		Anticyclone off N.W. coasts. Depression, Western Mediterranean.
Anemometer.	105	20	3·5	− 1·2	− 3·3		
Geostrophic wind.	(at 7 h.)	70	14	−13	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 420. October 29, 1915. 10 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4650	190	6·0	+1·0	+6·0		Atmosphere clear above ground mist. Ci. 2. Balloon burst.
	4500	190	4·5	+0·8	+4·4		
	4000	210	6·5	+3·5	+5·5		
	3500	215	4·0	+2·3	+3·3		
	3000	215	4·5	+2·6	+3·7		
	2500	195	6·0	+1·5	+6·0		*Pressure Distribution* (7 h.).
	2000	190	3·5	+0·6	+3·4		
	1750	190	3·5	+0·6	+3·4		
	1500	200	2·0	+0·7	+1·9	2·9	Uniform relatively low pressure over British Isles. (18 h.) Lower pressure to north-westwards.
	1250	215	2·0	+1·1	+1·6		
	1000	230	2·0	+1·5	+1·3		
	750	235	2·5	+2·0	+1·4		
	500	240	2·5	+2·2	+1·3		
100 m. above ground.	170	215	0·5	+0·3	+0·4		
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate*		...	...	...	Approx. weights: balloon 33 gm., free lift 180 gm.
	(at 13 h.)	200	4	+1	+4	...	

South Farnborough. No. 421. October 30, 1915. 11 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2150	195	4·5	+1·2	+4·3		Misty below, clear above. Ci.-Cu. 1 from S.S.E. Balloon lost in factory smoke.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	2000	190	4·5	+0·8	+4·4		
	1750	200	4·0	+1·4	+3·8		Depression W. of Ireland. Uniform pressure over England. (18 h.) Depression advanced eastward.
	1500	195	4·0	+1·0	+3·9	2·4	
	1250	185	3·5	+0·3	+3·5		
	1000	180	4·5	0·0	+4·5		
	750	175	5·0	−0·5	+5·0		
	500	165	5·0	−1·5	+5·0		
100 m. above ground.	170	150	3·5	−2·0	+3·0		
Anemometer.	105	110	light	...	...		
Geostrophic wind.	(at 7 h.)	*Indeterminate*		...	...	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	200	7	+2	+7	...	

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:—Aberdeen, 3; Eskdalemuir, 2; South Farnborough, 24.

11. Soundings with Registering Balloons.

Benson. No. 313. October 7, 1915. 7 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height.	12·4 km.	182 mb.	218 a.
Lowest Temperature	11·1 km.	233 mb.	213 a.
Base of Stratosphere,	11·1 km.	233 mb.	213 a.

Type I.

Height above M.S.L., 57 m.

Place of Fall, Midhurst.

Distance, 72 km.

and Orientation, 160° from N.

Data for Station. at 7 h. G.M.T.

Geostrophic Wind, Direction, . . ?90°

Velocity, . . ?4 m/s.

Correction for curvature of isobars . ?

Gradient Wind . . . . . ?

Components, W. to E. . . . ?

S. to N. . . . ?

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Humidity.	Remarks.
km.	mb.	a.	a.	%	
12·00	194	217		...	Light S.E. wind; fog early.
11·81	200	217	−4	...	One trace shows an inversion fr 274 a. to 278 a. at 1·3 k
11·00	238	213		...	The other shows a uniform te
10·00	266	220	+7	...	perature of 276 a. from 1·0 1·5 km. and an inversion
9·21	300	226	+8	...	278 a. at 1·6 km.
9·00	309	228		...	The up and down humidity trac differ largely, but both show
8·00	359	235	+7	...	great decrease in humidity
7·25	400	238	+5	...	the inversion.
7·00	415	240		...	Base of stratosphere at 11·0 k
6·00	478	249	+9	...	on one trace and at 11·3 on t other; temperature 213 a. both.
5·66	500	252		...	
5·00	546	258	+9	35	
4·27	600	263	+7	...	*Pressure Distribution* (7 h.).
4·00	622	265		40	Depression W. of Ireland.
3·07	700	271	+6	...	Anticyclone Scandinavia to Franc
3·00	706	271		40	Irregularities of pressure cau value of gradient wind to
2·00	800	276	+5	40	uncertain.
1·06	900	276	0	...	
1·00	906	276		95	
0·21	1000	280		95	
Ground	1018	281	...	...	
M.S.L.	1025	...	...	...	

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m. Velocity V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
1	St.-Cu.	345	3·8	+1·0	− 3·7	St.-Cu. formed from apices of Cu.-Nb.
2	St.-Cu.	232	5·0	+3·9	+ 3·1	Normal type.
5	Ci.	45	2·8	−2·0	− 2·0	Radiant-point = N.E. Striae at 90° to direction.
6	A.-Cu.	272	0·4	+0·4	0·0	*Observation at 12 h.*
7	St.-Cu.	176	10·0	−0·7	+10·0	
8	St.-Cu.	187	2·0	+0·2	+ 2·0	St.-Cu. in extensive lenticular mass.
9	St.-Cu.	176	6·9	−0·5	+ 6·9	Normal type.
13	Ci.-Cu.	255	1·6	+1·6	+ 0·4	False Ci., massing into lenticular sheets of Ci.-Cu.
15	Cu.	240	5·0	+4·3	+ 2·5	
18	St.-Cu.	305	1·3	+1·1	− 0·7	
21	St.-Cu.	123	3·7	−3·1	+ 2·0	
22	Cu.-Nb.	157	15·0	−6·0	+13·8	Base measured.
25	Cu.-Nb.	1	6·0	−0·1	− 6·0	Degraded sheet of cloud.
26	Cu.-Nb.	350	10·0	+1·7	− 9·8	Degraded sheet of cloud.
27	Cu.-Nb.	100	2·0	−2·0	+ 0·3	Heavy degraded mass of cloud.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec. Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm.²	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	—	—	129	10	13	11 5	10	—	—	—	—	—	3·7	40	—	—	—	—	1·5	16
2	4·8	50	x 475	39	33	12 5	x 33	4·8	50	—	—	—	6·1	66	—	—	—	—	3·1	33
3	3·8	40	413	34	29	11 35	29	4·6	48	49	19	Cu.	5·2	57	—	—	—	—	2·7	28
4	3·2	34	402	34	28	12 57	20	1·9	20	—	—	—	2·9	32	—	—	—	—	x 7·4	79
5	2·2	23	457	39	29	10 50	21	2·0	21	—	—	—	3·0	33	—	—	—	—	4·9	53
6	—	—	275	24	16	10 5	12	1·0	11	—	—	—	0·1	1	—	—	—	—	2·0	22
7	—	—	205	18	12	13 50	11	—	—	—	—	—	1·2	13	—	—	—	—	0·3	3
8	1·5	16	285	26	23	13 15	18	2·0	22	—	—	—	—	—	—	—	—	—	0·6	7
9	—	—	140	13	10	11 45	10	—	—	—	—	—	0·6	7	—	—	—	—	1·8	20
10	5·3	58	465	44	x 33	11 15	24	x 6·3	69	—	—	—	4·2	48	—	—	—	—	5·4	59
11	2·3	25	393	38	26	11 5	24	2·7	30	33	12	Ci.-St.	6·1	71	10 47	Ci.	3·47	53	—	—
12	0·2	2	174	17	23	13 45	12	—	—	—	—	—	—	—	—	—	—	—	—	—
13	2·4	27	386	39	23	13 15	27	2·5	28	—	—	—	6·7	79	11 58	Clear	3·36	64	1·2	13
14	5·1	57	395	40	23	12 15	23	x 6·3	71	—	—	—	6·7	80	—	—	—	—	5·4	61
15	4·4	50	370	38	21	12 30	21	5·1	58	56	19	Clear	0·2	2	—	—	—	—	2·9	33
16	5·1	58	422	44	24	11 15	...	x 6·3	72	52	18	Clear	x 7·4	89	11 58	Clear	3·60	72	6·4	74
17	4·0	46	339	36	20	12 30	20	4·9	56	41	14	Hazy	5·4	66	11 58	Ci.	3·68	39	5·5	63
18	—	—	131	14	16	13 15	10	—	—	—	—	—	6·3	77	11 58	Ci.-haze	3·74	72	2·3	27
19	2·4	28	266	29	19	11 55	19	1·0	11	—	—	—	1·1	14	—	—	—	—	1·5	17
20	2·1	24	246	28	25	12 20	25	0·3	3	—	—	—	6·0	75	—	—	—	—	0·1	1
21	—	—	100	11	6	14 0	5	—	—	—	—	—	0·4	5	—	—	—	—	—	—
22	—	—	151	18	12	12 20	12	—	—	—	—	—	—	—	—	—	—	—	4·5	54
23	—	—	84	10	8	10 30	6	—	—	—	—	—	3·6	46	—	—	—	—	4·5	54
24	0·7	8	292	35	23	11 50	23	1·2	14	—	—	—	0·2	3	—	—	—	—	0·2	2
25	0·8	10	231	28	22	12 5	22	2·2	26	—	—	—	4·1	53	—	—	—	—	7·2	87
26	x 5·7	x 69	321	40	20	11 40	20	5·5	66	40	12	Hazy	6·3	82	—	—	—	—	1·5	18
27	—	—	118	15	12	12 35	9	—	—	—	—	—	—	—	—	—	—	—	—	—
28	—	—	255	32	17	10 20	13	—	—	—	—	—	—	—	—	—	—	—	0·8	10
29	—	—	n 47	6	n 4	12 10	4	—	—	—	—	—	—	—	—	—	—	—	2·4	30
30	1·6	20	237	31	22	11 40	22	1·5	18	54	16	Clear	—	—	—	—	—	—	1·2	15
Means	1·93	22	273	28	20	—	17	2·07	24	—	—	—	2·93	36	—	—	—	—	2·57	30
Normal	1·33	15	—	—	—	—	—	1·70	20	—	—	—	1·57	19	—	—	—	—	2·20	26
	←4 years→							←30 years→					←4 years→						←30 years→	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 m.

Day.	Air 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism. Horizontal Force.	Magnetism. Declination West.	Magnetism. Inclination.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.					
	mb.	mb.	° 200+	° 200+	° 200+	° 200+	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.		γ	′	′
1	1005·3	1012·1	81·2	80·5	83	80	9·0	8·0	84	77	1	6	2	3	10∞	8	—	Fair from 10 h. Fine sunset.	...	...	...
2	1012·7	1011·2	76·7	75·0	82	74	7·2	6·2	90	88	—	0	2	2	9	2	—	⌙ *a.* Fine. Fine sunset.	...	...	...
3	1010·0	1010·8	73·6	77·4	81	*n* 72	5·6	6·5	88	78	5	2	6	4	7⌙	1	—	⌙ *a.* Fine to c. Fine sunset.	...	...	...
4	1015·9	1020·2	77·3	77·9	81	77	7·1	6·5	85	75	4	4	6	6	2∞	1	—	∞ *a.* Fine. Fine sunset.	...	...	...
5	1021·3	1023·8	78·0	82·4	84	76	7·5	8·9	86	76	11	2	2	6	4	9	—	Fine to c. v. during day.	...	...	...
6	1026·7	1024·8	80·8	80·7	84	79	8·3	10·0	79	96	—	1	—	0	8	5	0·2	Fair to c. *a.*; dull later.	...	...	...
7	1022·4	1017·9	81·2	84·0	x 85	80	10·7	11·6	99	89	—	0	25	5	10∞	3	3·2	∞ early. Drizzling ● showers.	...	...	...
8	1012·1	1002·3	84·3	83·7	x 85	x 83	11·3	11·5	85	90	22	8	19	8	10	10	11·3	Occasional ● showers. q. afternoon.	...	...	...
9	994·1	996·1	80·2	80·9	84	78	7·7	8·5	76	80	25	9	28	8	6	7●	6·1	● showers. ▲ 9 h. q. *p.*	17874	20 1·0	68 8·5
10	1004·0	1007·0	81·0	79·9	82	79	7·2	7·9	68	80	28	11	29	4	5	6	3·3	▲ showers *n.* and during day.	...	...	...
11	997·2	976·3	78·6	82·7	83	78	7·6	11·5	84	96	9	7	11	5	10●	10	x 68·4	● from 7 h. v. afternoon.	...	...	...
12	961·5	991·7	84·7	80·2	x 85	76	13·5	5·8	99	*n* 57	20	4	32	18	10●	7	29·6	●² all *n.* and *a.* Great floods. ⸝ 13 h.–	...	...	...
13	1008·0	1010·6	80·3	78·1	81	78	7·6	7·3	74	83	26	7	28	8	8	7●	8·7	● showers. [21 h.	...	...	...
14	1009·7	1013·0	79·6	75·7	81	75	8·3	7·1	85	95	30	5	—	1	8●	7●	2·5	● showers. v. at times.	...	...	...
15	1010·2	1015·4	73·5	75·0	80	73	6·2	6·4	97	91	—	1	—	0	8⌙	0⌙	0·2	▲ showers past *n.* ⌙ *a.* Fair.	17890	...	...
16	1022·2	1022·6	75·1	79·2	80	74	5·3	6·6	76	70	7	4	9	6	1⌙	8	—	⌙ *a.* Fine and clear.	17848	...	...
17	1020·5	1021·2	80·5	80·4	82	79	7·4	7·4	71	72	11	8	11	7	3	4	—	Fine. Fine sunset	...	...	...
18	1023·2	1023·3	80·3	80·1	82	80	7·5	7·8	73	77	12	5	11	5	4	3	—	Fine. ⋃⁰ 20 h.–21 h.	...	...	...
19	1023·2	1026·0	80·1	81·6	82	80	6·8	8·0	68	72	9	8	12	9	6∞	8	—	Fine to c. ⋃⁰ 21 h.	...	...	...
20	1029·1	1032·2	82·0	82·6	83	81	8·6	9·4	75	79	13	11	14	9	9∞	10∞	—	Dull, with ∞.	...	...	...
21	1034·1	1033·2	82·1	80·3	83	80	9·2	8·1	80	79	13	7	11	4	10∞	4	—	Dull and c. ⋃ all evening.	...	...	...
22	1031·7	1029·7	74·8	77·0	80	74	6·4	7·4	92	91	7	2	—	1	7∞	10∞	—	Mostly bright and sunny.	17874	20 2·7	68 7·6
23	1028·9	1030·1	73·7	78·9	82	*n* 72	5·7	7·8	88	84	—	1	5	6	3⌙	1	—	Fine *a.* to c.	17874	...	...
24	1031·1	1030·3	75·0	78·3	81	75	6·5	8·0	93	90	6	2	5	3	4	9∞	—	Fair to c. and ∞.	...	...	...
25	1029·9	1027·7	75·2	76·0	*n* 79	74	5·6	7·1	78	94	6	4	—	0	0	9	1·2	Fine and cloudless. Brilliant afterglow.	...	...	...
26	1024·6	1022·9	76·1	79·2	80	74	7·7	8·5	100	90	—	1	4	2	4≡⁰	10	—	≡² to fine *a.* o. in afternoon.	...	...	...
27	1019·8	1016·2	79·1	80·9	82	77	8·1	10·3	86	98	12	5	15	7	9	10	3·5	⋃ 7 h. c. to o. *a.* ●⁰ showers *p.*	...	...	...
28	1009·8	996·9	80·7	80·5	82	80	8·7	7·9	83	76	15	7	15	8	10	10	14·6	Mostly o.	...	...	...
29	982·2	979·5	79·6	78·4	81	78	9·4	8·3	97	93	15	2	18	3	10●	8●	4·4	● 3 h.–11 h. ⌒ 15 h. ● shower 20 h.	...	...	...
30	979·5	973·9	80·0	81·5	82	79	8·9	10·2	89	92	17	4	15	6	9●	8	11·9	▲● showers *a.* ●⁰ later. < 18 h.	...	...	...
Means	1013·4	1013·3	78·8	79·6	81·9	77·0	7·9	8·2	84	84		4·6		5·1	6·8	6·5	169·1	Monthly **Totals** or **Means.**	17872	20 1·9	68 8·1
Normal	1011·4	1011·5	81·3	81·4	84·2	79·0	9·6	9·6	87	86		5·7		5·8	—	—	138·9	**Normals.**			
	←40 years→						←25 years→				←30 years→						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—7/17.—N. & Co., Ltd. Gp. XV.

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200+ °	200+ °	200+ °	200+ °	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.	200+ °	200+ °	200+ °	cm.	cm.
1	993·2	1000·7	82·4	80·3	83	*x* 80	11·1	8·2	95	80	2	5	32	5	10●≡⁰	1	4·6	81	81·2	84·0	191	191
2	1004·7	1006·5	78·0	77·6	81	76	7·1	6·9	79	82	31	7	31	3	1	0	0·1	75	81·0	84·0	193	—
3	1007·3	1010·1	75·7	77·4	81	74	6·2	7·6	84	92	31	2	32	2	0≡⁰	0≡⁰	—	69	80·0	83·8	197	—
4	1011·4	1015·1	79·6	80·1	82	76	8·5	7·4	87	73	32	5	3	4	8	10	—	70	79·3	83·8	201	—
5	1015·8	1018·3	77·0	76·4	81	76	7·2	7·0	89	90	1	2	32	3	8≡⁰	0	—	70	79·6	83·6	205	—
6	1022·0	1022·4	77·0	80·1	82	76	7·8	8·9	97	88	3	2	—	1	10≡⁰	7≡⁰	—	73	79·1	83·3	208	—
7	1020·5	1015·3	74·8	80·5	81	73	6·7	9·6	96	93	—	1	24	2	? 10≡	9≡⁰	—	71	79·0	83·1	210	—
8	1011·8	1006·0	79·8	81·8	84	78	9·3	10·4	94	92	23	2	20	3	10≡⁰	4	—	73	79·3	83·1	211	—
9	994·8	987·5	83·4	78·2	84	76	10·3	8·2	82	93	19	7	20	3	10●	1≡⁰	9·5	79	80·1	82·9	212	—
10	989·6	996·3	78·2	78·8	83	76	7·7	7·1	87	77	22	4	24	5	2	1	—	72	79·7	82·9	213	—
11	1003·1	989·9	77·1	79·0	81	76	7·2	8·6	88	92	21	2	10	5	3≡⁰	10●≡⁰	*x* 16·8	72	79·0	82·8	214	—
12	976·9	969·9	81·1	83·3	*x* 86	79	10·8	11·2	100	90	—	1	17	6	10●≡	10●	8·1	77	78·2	82·7	215	—
13	992·0	1005·3	76·6	76·0	81	75	5·4	6·0	*n* 69	80	27	9	25	2	9	3	—	76	80·1	82·6	218	—
14	1006·0	1009·5	74·0	73·4	78	73	6·0	5·5	91	87	25	2	—	1	? 6≡⁰⌊	0≡⁰⌊	0·1	69	78·6	82·5	222	—
15	1010·8	1008·6	72·5	75·9	78	71	5·2	6·6	88	87	—	1	18	3	0≡⁰⌊	10≡⁰●⁰	4·5	66	77·6	82·5	228	—
16	1016·5	1024·6	74·8	74·8	79	73	5·9	5·9	86	85	1	3	—	1	6≡⁰	1≡⁰	—	69	77·0	82·2	234	—
17	1025·9	1026·1	71·9	74·6	78	71	4·9	5·8	86	85	29	2	—	0	2≡⌊	10≡⁰	0·1	67	76·7	82·0	238	—
18	1026·2	1026·0	72·5	76·0	78	70	5·7	6·7	97	89	30	2	5	3	*10*≡⌊	10≡⁰●⁰	0·3	67	76·0	82·0	241	—
19	1030·9	1033·8	73·2	78·4	79	73	5·6	6·7	91	75	—	0	4	4	7≡⌊	10≡⁰	—	68	75·8	81·6	243	—
20	1038·2	1040·7	76·8	77·1	78	75	6·1	6·3	77	77	6	5	6	2	9≡⁰	9≡⁰	—	73	75·8	81·2	243	—
21	1040·5	1036·9	77·0	76·4	78	76	6·8	6·4	84	83	4	3	4	4	10	10≡⁰	—	72	76·1	81·1	243	—
22	1033·0	1028·2	77·3	75·8	78	75	7·0	6·5	84	88	4	3	2	2	10≡⁰	10≡⁰	—	76	76·6	81·0	243	—
23	1026·4	1028·5	72·5	79·2	79	72	5·3	7·8	90	83	31	2	32	5	10≡⁰	10	—	73	76·9	80·9	243	—
24	1030·2	1028·4	76·0	76·5	79	75	6·2	6·1	83	78	32	2	31	3	9≡⁰	10	—	69	76·8	80·8	243	—
25	1024·7	1020·0	72·4	75·7	78	72	4·4	6·5	76	88	28	2	28	2	2≡⁰⌊	0≡⁰	—	69	76·7	80·8	244	244
26	1020·7	1024·8	73·6	72·9	77	72	5·1	5·0	81	82	28	3	—	1	0≡⁰⌊	0≡⁰⌊	—	69	76·2	80·7	243	—
27	1027·5	1026·8	69·3	68·9	*n* 72	68	4·3	4·5	93	100	—	1	—	0	0≡⌊	*10*≡⌊	—	*n* 64	75·7	80·7	242	—
28	1022·3	1010·4	73·9	71·6	74	*n* 67	5·2	4·0	80	73	17	4	10	2	8≡⁰⌊	0≡⁰	—	66	75·2	80·6	241	—
29	998·5	986·9	75·1	81·9	82	72	6·4	11·1	90	98	—	1	15	4	10≡●⁰	10≡⁰●	3·2	68	75·0	80·4	239	—
30	989·9	992·6	78·7	79·3	81	78	8·5	8·8	93	93	17	4	17	4	7≡⁰	10≡⁰●	4·4	75	75·1	80·1	237	—
Means	1013·7	1013·2	76·1	77·3	79·9	74·1	6·8	7·2	87	86		3·0		2·8	6·6	5·9	51·7	71·3	77·8	82·1	225	—
Normal	1013·4	1013·3	79·1	79·2	82·3	76·6	8·4	8·5	88	88		3·3		3·2	—	—	55·6	—	80·0	83·1	—	—
	40 years						25 years				30 years						40 years		11 years			

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	979·8	984·2	77·3	75·0	80	74	6·7	5·7	81	81	2	7	1	6	6	1	1·4		Mostly fair; ● showers. ♕
2	983·9	982·9	76·4	71·7	80	70	5·1	4·6	66	83	1	5	—	0	2	4∞⌊	—		⌊ early. Fine.
3	982·9	987·8	74·6	72·8	79	69	6·2	5·4	91	90	2	4	2	2	8	1	0·2		✳⁰ 8 h. Fair to c. q. evening.
4	990·2	991·5	75·2	75·5	79	72	6·2	5·8	87	80	1	3	—	0	9	7	—		● shower 9 h. ⊕² 13 h. Fine afternoon.
5	990·9	995·7	78·2	74·4	81	71	7·3	6·3	83	93	1	3	—	1	9	4	0·3		Fair to c. ● 13 h. ♕ from 19 h.
6	994·0	990·3	74·6	80·7	82	71	5·8	8·7	86	84	—	0	20	4	8	9	—		Dull and o. ♕ 22 h.
7	986·4	982·3	81·0	79·5	*x* 83	*x* 79	7·5	8·2	70	85	24	7	19	6	9	7	4·4		o. till 13 h. ● shower 20 h.
8	976·2	969·3	79·9	79·8	82	78	9·3	9·2	94	93	20	5	17	3	10●	9	*x* 32·3		●⁰ till 12 h. ●² in afternoon.
9	952·1	948·9	77·7	75·5	82	74	7·3	5·9	85	81	20	12	26	12	9	10●	6·1		●² 1 h. ● showers. ⌒ 12 h.
10	952·9	965·4	77·5	76·0	79	72	6·5	4·7	77	62	27	14	28	10	6	2	—		⸝ 1 h. and 14 h.–16 h. Fair to fine.
11	970·1	965·1	74·3	70·7	78	70	4·9	4·0	74	77	32	3	4	2	3	0	0·2		Fine *a.* and *p.* ⊕ 15 h.
12	956·9	956·6	74·0	73·7	74	72	6·0	5·5	91	86	4	8	1	14	10●✳	10	8·8		✳⁰ 7 h.–9 h. ✳● (sleet) *a.* and *p.*
13	967·7	975·3	73·9	72·0	75	70	5·4	4·2	83	74	28	12	29	2	0	6	—		⊠ 3 cm. Fine. Parhelion 15 h.
14	977·0	980·1	71·9	69·5	74	66	5·0	2·7	88	54	28	5	—	1	6	0	—		Fine but cold.
15	978·6	983·0	65·8	70·3	*n* 72	63	2·4	2·7	71	*n* 52	—	0	1	6	10	4	2·9		✳ from 12 h. 30 m. ⊠ 5 cm.
16	993·1	997·6	71·7	70·0	76	64	4·2	3·2	71	65	1	3	1	3	0	0	—		⊠ 4 cm. Fine. ∞ evening.
17	998·5	1000·1	66·7	65·8	75	*n* 62	2·4	3·4	63	97	—	0	—	0	5	2	—		⊠. Fine but cold.
18	1000·0	1001·7	68·9	74·0	77	65	2·7	6·3	62	96	—	0	4	4	1⌊	5	0·3		⊠. ⌊ *a.* Fine *a.* ●⁰ in afternoon.
19	1005·6	1008·5	73·8	72·5	76	70	5·5	5·2	85	88	6	6	—	1	9	6Ψ	—		⊠. o. *a.* Sunny afternoon. Ψ 21 h.
20	1011·8	1012·9	70·9	68·3	77	67	5·1	3·7	96	87	30	2	—	0	5⌊	3⌊	—		Fine and sunny.
21	1012·3	1009·5	65·4	69·7	74	64	2·7	4·4	84	91	—	0	—	0	4⌊	10≡⁰⌊	—		Fine early; c. to o. later.
22	1005·1	1001·1	70·4	72·7	74	69	4·2	4·9	84	82	—	0	—	1	10≡	10≡⁰	—		≡ *a.* ≡⁰ to ≡ *p.*
23	999·9	1003·5	75·6	71·6	78	70	6·2	3·6	85	69	—	1	32	4	7	3	—		≡ *a.* Fair to c. later.
24	1004·2	1000·9	69·3	67·9	74	67	3·4	3·4	76	80	—	0	—	1	10⌊	8	—		Brilliant red sunrise. ⊕ 9 h. Ψ 18 h.
25	995·7	994·4	76·2	74·8	77	69	6·7	5·7	87	83	31	6	1	5	8	9	—		c. to very fine.
26	995·8	998·0	72·4	67·5	76	66	3·8	3·0	66	74	32	7	—	1	1⌊	1	—		Fine and sunny.
27	996·7	991·6	69·4	73·0	74	64	3·7	4·7	83	77	—	0	15	6	10⌊	10	11·0		o. all day. ✳⁰ 22 h.
28	985·7	978·2	74·1	73·4	76	70	6·3	5·5	95	87	16	6	15	5	10●✳	10	3·1		✳ early. ⊠ 2·5 cm. 9 h. ● 13 h.
29	967·8	957·1	67·2	75·0	76	66	2·4	6·3	65	90	32	3	11	5	8	10●✳	12·2		Red sunrise. Dull. ✳ ● (sleet) in evening.
30	954·5	957·6	75·6	76·5	77	75	7·1	7·2	96	92	17	4	17	2	10	10≡⁰	14·2		▲ 12 h., then steady ●.
Means	985·5	985·7	73·3	73·0	77·1	69·2	5·3	5·1	81	81		4·2		3·6	6·8	5·7	97·4	—	Monthly **Totals** or **Means.**
Normal 1911-14	979·3	979·5	77·5	77·3	80·4	74·8	7·6	7·8	88	87		6·1		6·1	—	—	181·9	—	**Normals.**

Temperatures at or below the normal freezing point of water are printed in small type.

5. Atmospheric Electricity and Terrestrial Magnetism :—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 27 days; they 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.
† The insulation was less satisfactory than usual.
x denotes the maximum and n the minimum value in the column.
z Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre.† Factor 2·24.				Charge per cc. ×10²⁰.		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.												
		v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	● till 9 h. Dull to c. Clear n.	−165	−65	100	450	—	—	—	2	2	489	19 36	360	15 33	129	x 36·2	15 24	−1·7	19 28	37·9
2	Fine a. Fine to fair p.	150	290	300	600	280	380	1·05	0	1	454	20 19	412	10 0	42	19·0	15 54	6·0	20 2	13·0
3	⌣ early. Fine till 13 h. Fair p.	450	630	365	550	340	360	0·75	0	0	457	21 3	429	10 50	28	18·3	14 24	10·6	22 41	7·7
4	Fair to fine a. Dull to fair p.	400	440	425	780	390	220	0·95	0	0	460	18 12	436	20 6	24	17·5	12 48	11·7	1 28	5·8
5	Fine to c.	375	600	440	705	150	180	0·65	0	2	x 530	21 34	375	23 59	155	21·1	18 8	−2·2	20 56	23·3
6	≡⁰ till 11 h. Fine to c.	425	525	490	490	—	—	—	0	2	515	1 27	n 311	11 27	x204	35·3	11 38	n−15·7	1 13	x51·0
7	≡ till 9 h., then dull and o.	680	400	450	400	—	—	—	0	1	445	23 59	402	11 14	43	19·1	14 38	7·3	19 40	11·8
8	Dull a. Fine to fair p.	300	250	300	350	360	150	0·70	0	1	480	22 3	414	8 43	66	21·8	12 8	4·3	17 3	17·5
9	Mostly dull. ● p. ●² 14 h.	165	190	−655	575	—	—	—	2	1	471	23 55	425	14 11	46	20·3	12 35	9·1	21 20	11·2
10	Fine from 9 h. v. p. [30 m.	275	500	265	415	990	500	0·85	0	1	478	6 34	418	13 34	60	23·1	14 20	13·1	22 0	10·0
11	⌣ early. ⊕ 15 h. ● from 18 h.	250	650	500	z±	220	240	1·55	2	1	459	6 55	417	10 22	42	21·6	14 3	8·2	22 10	13·4
12	≡ till 10 h. ● at times all day.	450	165	150	z±	—	—	—	2	1	476	17 32	418	10 18	58	19·8	12 5	9·1	21 35	10·7
13	Dull to fair. ⊔ 19 h.	−200	300	265	690	—	—	—	2	0	491	0 41	442	15 46	49	18·2	12 16	12·3	2 2	5·9
14	⌣ early. Fine from 9 h.	425	665	325	600	—	—	—	0	0	468	18 35	443	10 20	25	16·9	14 6	13·3	5 50	n 3·6
15	⌣ early. Fine. ● from 21 h.	550	555	575	−100	390	520	0·95	1	2	471	21 30	355	22 50	116	17·4	11 53	−8·2	22 33	25·6
16	✲ 5 h.-7 h. ⊠ 6 mm. 9 h. Fine.	340	930	550	855	220	200	1·00	1	2	479	19 22	372	13 53	107	27·5	12 49	−6·9	19 13	34·4
17	⌣≡⁰ early. ≡ 9 h.-10 h. Fine.	500	495	755	755	390	360	0·60	0	2	479	2 55	366	11 45	113	26·7	12 1	5·3	23 29	21·4
18	⌣ early. ≡ a. and p. ●⁰ 18 h.-21 h.	450	930	655	665	280	430	0·30	0	2	489	0 38	397	13 27	92	30·3	7 17	2·6	21 40	27·7
19	⌣ early. ≡ 9 h.-11 h. Fair p.	705	705	615	1055	520	400	0·55	0	1	471	22 23	398	13 0	73	21·3	7 5	8·3	19 54	13·0
20	Mostly fair.	805	655	690	705	—	—	—	0	2	508	22 49	391	15 33	117	20·5	5 45	2·4	22 33	18·1
21	Dull throughout. ≡⁰ p.	325	550	465	440	—	—	—	0	1	492	20 24	417	12 3	75	18·8	11 35	7·0	16 20	11·8
22	≡⁰ a. Dull all day.	225	400	540	680	—	370	0·70	0	1	487	19 38	419	10 41	68	21·9	12 25	3·6	19 30	18·3
23	Dull and o., with ≡⁰.	315	425	90	490	—	—	—	1	0	465	21 25	433	14 19	32	17·9	11 2	12·2	19 53	5·7
24	Dull to fine.	450	600	350	475	—	180	0·75	0	0	467	22 47	433	11 20	34	18·1	12 39	12·3	22 40	5·8
25	⌣ early. Fine to c.	425	525	465	425	—	160	0·55	0	0	466	17 40	433	10 21	33	19·4	12 27	13·0	21 58	6·4
26	⌣ early. Fine throughout.	450	630	490	940	—	—	—	0	1	477	21 10	450	1 28	27	18·2	10 35	10·2	21 0	8·0
27	⌣≡ all day. ≡² n.	600	325	565	465	—	—	—	0	1	489	21 18	433	23 3	56	19·3	12 57	7·3	23 59	12·0
28	⌣ early. Dull. ⊕ 9 h. Fine n.	565	300	600	805	—	—	—	0	1	478	0 15	432	9 53	46	20·2	11 50	7·5	1 48	12·7
29	≡ till 10 h. Dull. ● 20 h.-21 h.	265	655	175	200	—	—	—	0	0	461	21 8	441	10 18	20	17·3	12 20	13·0	9 5	4·3
30	● early. Dull to fair. ● 16 h.-19 h.	115	200	140	z−	—	—	—	2	0	465	21 17	446	10 0	n 19	17·3	11 44	12·3	5 0	5·0
M.		380*	496*	394*	573*	—	—	—	—	—	477	—	411	—	67	21·3	—	6·2	—	15·1

6. Atmospheric Electricity and Terrestrial Magnetism :—Eskdalemuir.

Day.	Potential Gradient, Volts per metre. Factor 6·73.				Charge per cc. ×10²⁰.		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. 4000 γ+.		Minimum. 4000 γ+.		Maximum. 45000 γ+.		Minimum. 45000 γ+.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	c.			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.	Amp/cm².														
1	100	163	100	136	—	—	—	1 b	2	19 34	1081	875	19 53	15 18?	x1202?	947?	19 28	15 34	305	‡	‡
2	253	127	480	534	390	260	—	0 a	1	{20 7 / 20 17}	1017	952	10 0	15 1	1076	999	20 0	20 0	195	155	10 50
3	281	145	91	253	—	—	—	1 a	0	22 48	1013	974	10 39	14 36	1080	1034	22 40	17 35	186	172	7 30
4	181	0	272	625	—	—	—	1 a	1	19 10	1012	978	20 5	18 41	1071	1039	1 40	20 16	189	167	10 23
5	199	244	109	253	—	—	—	1 b	2	21 21	1134	852	24 0	18 12	1103	921	24 0	20 55	267	38	23 54
6	136	353	380	299	—	—	—	0 a	2	1 17	x 1141	n 817	11 25	8 17	1170	865	1 8	16 50	x 309	n 9	0 8
7	145	136	181	181	—	—	—	1 a	1	19 47	1010	948	11 13	14 33	1080	1007	20 16	16 18	202	153	0 0
8	100	−9	0	272	—	—	—	2 c	1	16 47	1056	947	12 14	2 35	1087	983	17 0	16 36	207	159	2 59
9	z	109	z	−36	—	—	—	2 b	1	19 29	1019	965	14 6	23 51	1080	1012	21 19	14 21	190	153	24 0
10	100	199	163	335	—	—	—	0 b	1	6 30	1020	952	13 34	14 22	1097	1038	0 33	15 24	193	151	0 11
11	127	335	...	...	1230	710	—	...	1	22 6	1009	955	10 23	14 7	1086	1006	22 8	19 16	206	170	1 55
12	...	...	932	2263	—	—	—	...	1	21 23	1034	961	10 40	17 30	1074	1015	21 36	10 20	186	166	5 55
13	443	281	272	824	1230	1750	—	0 b	1	0 40	1031	981	17 13	0 25	1082	1038	2 0	17 12	180	145	0 53
14	335	217	272	1330	—	—	—	0 b	0	18 33	1014	988	11 40	13 45	1070	1051	{7 21 / 7 33}	19 40	176	172	24 0
15	344	371	1294	489	—	—	—	1 b	2	21 32	1027	845	22 40	12 0	1075	n861	22 36	20 10	197	143	22 46
16	724	480	824	815	200	130	—	0 b	2	19 18	1097	928	13 53	{14 18 / 14 53}	1123	911	19 10	14 25	298	132	6 26
17	181	299	199	543	—	—	—	0 a	2	23 43	1025	885	11 45	5 41	1113	990	23 30	15 0	220	83	3 9
18	181	263	199	733	—	—	—	1 b	2	19 47	1057	902	7 56	7 18	1161	979	1 7	13 45	222	81	0 54
19	226	263	109	923	—	—	—	0 a	1	22 19	1021	937	12 58	7 4	1092	1014	19 58	16 53	206	144	0 30
20	543	480	389	525	—	—	—	0 a	1	22 43	1086	938	15 33	5 46	1089	973	15 38	15 51	213	153	0 0
21	326	624	697	1358	—	—	—	0 a	1	20 17	1066	954	12 4	12 51	1075	1007	16 5	16 4	202	157	3 39
22	905	968	1104	1711	—	—	—	0 a	1	19 35	1080	937	10 41	12 29	1090	990	19 29	15 51	203	158	1 17
23	1475	398	407	706	—	—	—	0 b	0	21 23	1019	976	14 14	11 0	1064	1037	19 54	19 45	184	171	10 30
24	263	796	335	1303	—	—	—	0 b	0	22 39	1019	979	11 23	12 55	1069	1042	18 15	18 6	183	172	23 40
25	172	281	389	643	—	—	—	0 a	0	{5 42 / 17 20}	1019	979	{12 39 / 12 42}	13 57	1081	1046	22 10	20 5	185	173	0 10
26	407	181	643	688	—	—	—	0 b	1	21 8	1041	994	11 10	10 39	1078	1034	21 2	17 45	180	166	10 40
27	190	172	489	353	390	260	—	0 a	1	20 43	1057	979	23 4	13 2	1089	1014	20 37	18 4	186	158	24 0
28	z	−272	317	462	—	—	—	1 c	1	0 4	1049	974	10 59	11 53	1087	1010	1 49	15 10	175	127	3 55
29	...	462	208	−851	—	—	—	...	0	2 57	1011	990	10 44	12 19	1072	1047	8 58	18 45	177	168	9 30
30	−525	281	z	82	—	—	—	2 c	0	4 32	1016	992	2 18	12 37	1068	1045	4 10	9 30	173	169	4 45
M.	342*	310*	392*	660*	—	—	—	—	—	—	1043	944	—	—	1093	999	—	—	203†	144†	—

* 24 days. *See* note above. † 29 days. ‡ Trace imperfect.

7. Seismological Diary.

Earthquakes :—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
1	P	7 36 12	...	...	...	...	9000	Epicentre (from Ottawa and Eskdalemuir), lat 41° N., long. 149°
	PR_1	7 39½	...	...	...	...	...	
	S	7 46 22	...	...	...	...	...	On E.W. instrument. [E.
	S (?)	7 47 8	...	...	...	...	...	On vertical instrument.
	M	8 13	20	...	146	...	...	From Milne-Shaw.
4		2¾ to 5	...	...	...	...	...	Small disturbance.
18	e	4 25 6	...	...	...	...	...	
	e	4 30 31	...	...	...	...	...	
	M	4 48	23	...	15	...	...	
	M	4 52	18	10	...	...	...	
18	P_1	20 43 3	...	...	...	...	...	Double P.
	P_2	20 43 33	...	...	...	...	...	
	S	20 50 6	...	...	...	...	...	
	L	21 2	...	...	...	...	...	
	M	21 9 57	26	+ 13	− 18	...	...	Phases exactly opposite.
20		16¼ to 17	...	...	...	...	...	Small disturbance.
21	i	0 35 10	...	...	...	...	...	Subsequent maxima, with shorter periods.
	e	0 45	...	...	...	...	...	
	L	0 46	...	...	...	...	...	
	M_1	0 52½	21	...	...	...	...	
21	P	22 56 35	...	...	...	...	...	Epicentre, determined by combining with Ottawa, lat. 30° N., long. 35° W.
	S	23 0	...	...	...	...	...	
	M	23 3	18	4	3	...	...	
22		5 8 to 5 30	...	...	...	...	...	Small disturbance.
26	i	19 33 48	...	...	...	...	...	,,
	F	20¾	...	...	...	...	...	

Microseisms of N. Component :—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	1·0	4·5	0·7	4·5	0·6	4	0·7	5
2	0·3	4	0·2	4·5	0·2	4	0·2	4
3	0·2	4	0·2	4	0·2	4	0·1	4
4	0·1	4	0·1	4	0·2	4	0·3	5
5	0·7	5·5	0·7	5·5	0·5	6	0·6	6
6	0·5	5	0·5	5·5	0·4	5	0·3	5
7	0·6	6	0·8	5·5	1·6	6	1·4	7
8	1·5	6·5	1·2	6	0·9	6	0·7	7
9	0·8	6	0·8	6·5	1·4	6	1·7	5·5
10	1·5	5	1·7	5·5	2·3	6	2·2	5·5
11	2·0	5·5	1·7	5·5	1·3	6	1·9	4·5
12	1·7	5·5	2·7	5	2·6	5·5	3·8	6·5
13	3·7	6·5	3·2	6	2·0	7	1·5	6·5
14	2·2	6	1·9	6	No trace		...	...
15	1·6	6	1·4	5·5	1·0	5·5	0·9	6
16	? 0·8	7	1·4	6·5	No trace		1·2	6
17	2·5	6	2·2	7	2·3	6	2·3	6
18	1·9	6	1·5	6	1·5	6	0·9	6
19	0·9	5·5	0·8	5·5	0·7	6·5	1·3	7
20	1·4	7	1·5	7	1·5	6·5	1·5	6·5
21	1·8	7	1·5	6·5	1·5	6	0·9	6
22	1·0	6·5	0·8	5·5	0·8	6	0·7	6·5
23	1·0	5·5	1·5	6	2·9	7·5	3·6	8
24	3·9	8	3·3	6·5	2·5	6	1·6	6
25	1·6	6	1·4	6	1·2	6	0·9	6
26	...	No trace		...	0·7	5·5	0·6	5·5
27	0·3	5	0·1	5	0·1	5	0·3	3·5
28	0·2	4	0·7	4	0·5	4·5	1·0	4·5
29	1·5	5	1·9	5	2·0	5	2·7	5
30	2·5	5	2·6	5	3·0	5	2·6	5·5

Earthquakes :—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
1	7 36·7	8 20·1 9 55·2	Lasted more than 4 hours. Amplitude on trace of first and largest, maximum 9 mm.
4	4 1·5	4 7·0	Small.
18	4 24·5	4 52·9	Amplitude on trace 1 mm.
,,	...	21 18·0	
21	0 37·0	1 7·8	Lasted nearly 2 hours. Amplitude on trace 2 mm.
,,	...	23 2·8	Very small.

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. N.	21 h. W.	21 h. E.	Max. in a Gust.	Time of Gust. h	Time of Gust. m
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.		
1	...	2·8	...	14·1	...	4·6	...	11·2	...	3·8	...	9·1	...	3·5	...	8·5	20·8	2	15
2	...	2·3	...	5·5	...	3·4	...	5·2	...	4·2	...	4·2	...	3·8	...	2·6	11·6	11	5
3	...	4·5	0·9	...	1·2	...	...	0·5	...	...	...	4·9	1·8	...	...	4·3	13·9	19	10
4	1·6	...	...	4·0	...	2·3	...	5·5	...	5·1	...	7·6	...	2·5	...	6·1	14·6	13	40
5	...	4·0	...	4·0	...	4·7	...	3·1	...	3·1	...	7·6	...	0·8	...	4·2	10·9	14	55
6	...	...	...	4·6	1·3	...	...	0·9	1·8	...	1·8	...	...	4·0	4·0	...	9·7	23	20
7	...	2·6	6·4	...	...	4·7	7·1	...	...	5·7	3·8	...	...	2·9	6·9	...	12·3	11	25
8	...	3·4	8·2	...	3·4	...	5·2	...	...	...	10·2	...	3·5	...	8·5	...	16·4	17	45
9	5·8	...	8·7	...	...	5·1	12·4	...	...	4·9	11·8	...	...	8·4	12·5	...	23·5	6	5
10	...	12·7	12·7	...	...	10·0	15·0	...	...	13·2	13·2	...	...	10·7	10·7	...	25·1	5	45
11	...	7·6	7·6	...	...	4·0	4·0	...	...	0·4	2·3	...	4·9	...	...	11·8	21·9	23	35
12	3·2	...	...	16·1	...	...	...	18·0	...	7·8	...	18·8	...	19·0	...	12·7	33·8	21	40
13	...	17·0	...	...	...	12·4	5·1	...	...	6·6	9·8	...	...	6·9	6·9	...	27·5	0	0
14	...	7·1	1·4	...	...	5·1	1·0	...	...	3·3	3·3	...	...	6·8	1·3	...	15·7	1	5
15	...	1·6	4·0	...	...	...	7·9	...	...	12·4	5·1	...	...	11·3	2·2	...	19·0	21	5
16	...	4·4	...	10·6	...	3·4	...	5·2	...	3·3	...	3·3	...	0·6	...	0·8	18·4	1	5
17	...	0·9	...	1·3	...	1·1	...	1·7	...	0·5	...	2·6	...	0·5	...	2·6	6·7	22	20
18	0·2	...	...	1·0	0·3	...	...	1·6	0·8	...	...	3·8	0·4	...	...	2·0	10·8	24	0
19	3·4	...	...	5·2	2·8	...	...	6·7	4·1	...	...	2·7	1·0	...	...	2·4	11·2	4	50
20	3·6	...	...	1·5	0·7	...	...	0·7	1·8	...	...	1·8	1·8	...	...	1·8	8·5	2	30
21	0·6	...	...	0·4	0·8	...	...	0·6	1·1	...	1·1	...	0·7	...	0·7	...	4·1	13	30
22	1·3	...	...	...	0·3	...	...	...	0·7	...	...	0·1	...	1·6	...	4·0	9·0	19	50
23	...	4·2	...	4·2	...	5·2	...	...	...	2·4	...	1·0	1·2	...	...	5·8	11·4	10	40
24	1·3	...	...	3·0	1·2	...	0·5	...	...	0·5	...	1·2	...	6·1	...	2·5	12·2	22	35
25	...	4·9	...	3·3	...	8·7	5·8	...	...	8·7	1·7	...	...	5·5	...	3·7	14·5	9	55
26	...	1·9	...	4·5	...	...	...	3·3	0·6	...	...	3·2	0·9	...	...	2·1	10·6	1	30
27	0·8	...	...	1·8	5·2	...	...	...	7·7	...	1·5	...	8·7	...	1·7	...	15·6	20	40
28	8·0	...	1·6	...	6·6	...	4·4	...	8·7	...	1·7	...	5·1	...	...	1·0	16·5	13	5
29	6·6	...	...	...	6·9	...	...	2·9	4·4	...	...	4·4	3·1	...	4·7	...	11·6	7	40
30	2·0	...	4·8	...	4·9	...	3·3	...	4·0	...	4·0	...	6·5	...	...	1·3	14·9	15	40
S+N & W+E	120·3		141·4		110·3		138·8		121·6		147·6		134·5		140·3				
S−N & W−E	−43·5		−28·8		−39·1		4·6		−50·2		−5·0		−55·3		−20·1				

SCOTLAND N.:—DEERNESS.

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

Date.	3 h. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. N.	21 h. W.	21 h. E.	Vel. in Max. Hourly Run.	Time of Max.
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	1·3	...	...	1·9	1·4	...	...	2·2	0·2	...	...	0·2	0·6	...	...	0·8	3·6	1
2	0·6	...	...	0·8	...	3·9	...	...	...	6·2	...	...	...	0·7	1·1	...	6·9	8
3	...	3·4	...	5·2	...	...	...	4·9	...	3·3	...	1·4	...	2·9	...	0·6	6·2	1, 3, 4
4	...	2·8	1·1	...	...	2·5	1·7	...	...	1·6	1·6	...	...	2·4	1·0	...	4·3	12
5	...	2·0	...	0·4	...	1·0	...	0·2	1·4	...	2·2	...	...	1·1	5·5	...	8·5	24
6	...	3·3	4·9	...	...	1·3	6·5	...	1·9	...	9·6	...	...	...	9·8	...	13·1	24
7	...	2·2	11·3	...	...	...	10·2	...	...	2·6	12·9	...	...	1·7	8·7	...	13·4	13
8	...	2·5	6·1	...	...	2·1	5·2	...	...	1·1	5·5	...	...	0·3	1·3	...	7·9	1, 5
9	...	0·1	0·3	...	...	3·8	...	5·7	...	10·6	...	7·1	...	13·9	...	9·3	17·4	23
10	...	15·8	...	3·1	...	17·4	...	3·5	...	18·3	3·6	...	...	13·7	5·7	...	21·3	13
11	...	9·3	9·3	...	...	12·1	5·0	...	...	8·5	5·7	...	...	8·2	3·4	...	14·8	1
12	...	9·2	...	...	...	11·1	...	...	...	9·4	3·9	...	...	8·1	5·4	...	16·1	24
13	...	14·8	2·9	...	...	15·4	3·1	...	...	9·8	6·6	...	...	9·8	6·6	...	16·7	2
14	...	5·4	8·1	...	...	10·1	6·7	...	...	9·7	4·0	..	...	6·2	4·2	...	13·8	11
15	0·5	...	2·6	...	...	...	0·7	...	...	4·3	...	...	...	8·2	3·4	...	9·8	22
16	...	10·5	...	...	...	6·6	4·4	...	...	5·2	2·1	...	...	2·6	3·8	...	11·8	1
17	...	5·3	5·3	...	...	2·3	2·3	...	...	2·1	2·1	...	...	1·1	1·1	...	8·5	2
18	...	0·5	0·5	...	...	1·0	...	0·2	0·4	...	...	2·3	3·3	...	...	1·4	4·9	24
19	5·8	...	1·2	...	6·1	...	...	1·2	5·5	...	1·1	...	5·5	...	2·3	...	7·9	24
20	9·5	..	...	...	8·7	...	...	1·7	5·9	...	...	...	7·7	...	...	1·5	9·8	2
21	5·5	...	1·1	...	4·3	...	1·8	...	1·8	...	2·7	...	4·8	...	2·0	...	7·5	1
22	2·1	...	0·9	...	4·4	...	6·6	...	...	1·5	7·7	...	...	4·0	6·0	...	11·1	13, 14
23	...	8·5	5·7	...	...	10·1	6·7	...	...	11·1	7·5	...	...	10·4	7·0	...	14·1	16
24	...	9·8	6·6	...	...	7·1	4·7	...	...	5·3	5·3	...	...	6·0	4·0	...	12·1	2
25	...	5·2	3·4	...	...	5·2	3·4	...	...	10·8	...	...	...	8·3	1·7	...	11·1	14
26	...	6·9	...	...	...	4·8	...	1·0	...	0·4	2·0	...	...	0·5	0·5	...	8·5	1
27	0·9	...	1·3	...	2·3	...	2·3	...	5·2	...	3·4	...	8·0	...	1·6	...	10·2	24
28	9·0	...	1·8	...	3·0	...	2·0	...	2·7	...	1·8	...	6·5	...	1·3	...	10·2	2, 4
29	7·2	...	...	...	10·9	...	...	7·3	7·8	...	...	11·7	8·4	...	...	12·5	15·1	21
30	...	...	...	13·8	...	3·2	...	16·1	6·0	...	...	4·0	6·0	...	...	4·0	16·7	12
S+N & W+E	159·9		99·6		162·1		117·3		160·6		118·0		160·9		117·5			
S−N & W−E	−75·1		49·2		−79·9		29·3		−83·0		64·6		−59·3		57·3			

ENGLAND S.W.:—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. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. W.	21 h. N.	21 h. E.	Max. in a Gust.	Time of Gust. h	Time of Gust. m
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.		
1	...	11·6	4·8	...	...	9·2	...	...	...	8·9	...	3·7	...	8·0	...	5·3	19·2	2	5
2	...	6·2	...	2·6	...	5·6	...	3·7	...	4·5	...	3·0	...	...	...	5·0	11·7	0	35
3	...	0·7	...	3·7	...	2·2	...	5·4	...	...	...	4·6	...	...	...	5·0	9·5	21	50
4	...	1·5	...	7·4	...	4·1	...	10·0	...	4·0	...	9·6	...	3·7	...	8·9	18·7	18	55
5	...	4·0	...	9·6	...	3·5	...	8·5	...	5·0	...	5·0	...	3·0	...	3·0	16·1	4	25
6	...	2·7	...	6·6	...	1·2	...	6·2	...	2·1	...	5·0	...	...	...	4·2	11·5	7	25
7	...	1·2	...	1·7	...	1·4	...	0·9	...	4·1	4·1	...	...	2·2	5·4	...	9·7	23	25
8	...	2·1	5·0	...	...	2·1	5·0	...	...	2·7	6·6	...	1·5	...	7·7	...	13·9	12	55
9	4·0	...	9·6	..	8·3	...	12·5	...	...	6·1	14·6	...	...	10·0	10·0	...	22·8	16	5
10	...	11·8	11·8	...	...	11·8	11·8	...	*	*	*	*	*	*	*	*	25·2	4	0
11	*	*	*	*	*	*	*	*	13·9	...	...	2·8	2·6	...	13·0	...	19·3	13	30
12	6·6	...	4·4	..	8·3	...	8·3	...	8·8	...	8·8	...	...	10·4	7·0	...	34·0	23	20
13	...	27·0	11·0	...	...	13·3	13·3	...	...	5·6	13·5	...	...	4·6	6·9	...	39·0	0	45
14	...	6·5	9·7	...	...	4·0	9·6	...	...	6·9	2·9	...	...	3·5	2·3	...	22·6	1	20
15	...	1·6	2·4	...	0·3	...	1·3	...	...	0·4	0·1	...	...	6·9	2·9	...	16·5	21	15
16	...	9·4	1·9	...	...	6·9	...	4·6	...	1·3	...	6·6	...	2·9	...	6·9	15·3	8	10
17	6·5	...	...	6·5	7·6	...	...	7·6	4·6	...	...	6·9	3·0	...	...	7·3	13·7	11	20
18	3·2	...	...	7·7	3·2	...	...	4·8	...	...	...	4·6	...	...	...	5·4	11·6	1	45
19	...	...	...	5·4	...	...	...	11·3	1·5	...	...	3·5	1·9	...	...	9·4	15·1	19	40
20	3·2	...	...	7·7	1·5	...	...	7·4	2·9	...	...	6·9	4·6	...	...	6·9	13·1	20	35
21	3·7	...	...	5·6	3·5	...	...	5·2	2·1	...	...	5·0	...	...	...	5·0	12·4	0	5
22	...	...	...	5·0	...	...	...	5·0	...	2·2	...	5·4	...	2·3	...	3·5	9·4	9	25
23	...	1·0	...	2·3	...	3·2	...	2·1	...	1·8	...	1·8	...	2·2	...	5·4	8·8	21	15
24	...	...	...	5·9	...	...	...	7·5	...	...	...	5·0	...	3·8	...	3·8	11·2	5	20
25	...	1·3	...	3·0	0·2	...	...	0·4	...	5·0	...	...	...	5·8	...	...	9·9	19	30
26	...	4·6	...	...	...	4·5	0·9	...	...	...	...	0·8	2·6	...	...	6·2	9·4	0	30
27	3·5	...	...	5·2	4·1	...	...	4·1	5·8	...	...	2·4	7·7	...	...	3·2	12·8	23	45
28	10·8	...	...	4·5	7·1	...	...	7·1	3·8	...	...	3·8	3·2	...	0·6	...	15·4	5	35
29	6·9	...	...	2·9	3·5	...	2·3	...	8·5	...	3·5	...	4·4	...	6·6	...	16·6	15	20
30	4·3	...	10·4	...	3·7	...	8·9	...	6·5	...	6·5	...	7·6	...	7·6	...	19·5	20	30
S+N & W+E	145·9		163·4		124·3		175·7		119·0		147·0		108·4		164·4				
S−N & W−E	−40·5		−21·4		−21·7		−27·9		−2·2		−25·8		−30·2		−24·4				

ENGLAND E.:—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. S.	3 h. N.	3 h. W.	3 h. E.	9 h. S.	9 h. N.	9 h. W.	9 h. E.	15 h. S.	15 h. N.	15 h. W.	15 h. E.	21 h. S.	21 h. N.	21 h. W.	21 h. E.	Max. in a Gust. (Gorleston.)	Time of Gust. h	Time of Gust. m
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.		
1	2·7	...	...	13·5	...	2·5	...	12·6	...	6·7	...	16·1	...	5·4	...	13·0	20·6	15	45
2	...	8·7	...	5·8	...	8·1	...	5·4	...	10·0	...	2·0	...	6·6	...	...	21·2	8	40
3	...	6·1	1·2	...	...	4·5	0·9	...	...	5·8	...	1·2	...	5·1	...	1·0	16·4	16	35
4	...	5·5	...	1·1	...	6·6	...	4·4	*	*	*	*	*	*	*	*	15·3	15	50
5	*	*	*	*	*	*	*	*	...	4·5	...	1·9	...	4·8	...	2·0	12·9	6	25
6	...	1·3	...	6·5	...	0·9	...	4·5	...	0·1	...	0·7	...	0·3	...	1·3	8·1	7	25
7	...	0·4	...	2·0	...	0·7	3·5	...	...	...	3·0	...	...	...	3·9	...	8·0	11	25
8	...	0·6	3·2	...	...	0·7	3·5	...	...	...	4·3	...	2·1	...	5·2	...	9·8	21	5
9	1·3	...	3·0	...	4·9	...	4·9	...	6·8	...	4·6	...	0·8	...	3·8	...	16·2	15	0
10	0·7	...	3·5	...	1·3	...	6·5	...	...	...	8·2	...	...	1·5	7·4	...	16·0	15	35
11	...	3·4	5·2	...	...	1·2	6·1	...	...	0·5	2·6	...	1·4	...	2·2	...	12·5	10	30
12	6·4	...	...	9·6	1·9	...	...	9·6	4·7	...	...	3·1	2·7	...	1·8	...	12·8	0	45
13	3·2	...	2·2	...	...	6·0	4·0	...	...	5·4	8·1	...	...	3·1	4·7	...	25·8	5	25
14	..	1·8	4·3	...	...	1·4	3·3	...	...	2·9	4·3	...	...	2·6	3·8	...	9·6	11	40
15	...	1·8	2·7	...	...	2·7	4·1	...	...	1·4	2·2	...	...	0·4	0·6	...	8·3	11	10
16	...	3·7	...	5·5	...	2·3	...	...	...	3·5	3·5	...	...	2·6	0·5	...	13·9	22	5
17	...	3·7	3·7	...	...	2·1	2·1	...	...	1·1	1·1	...	...	1·4	1·4	...	10·7	12	20
18	..	2·3	2·3	...	...	2·3	2·3	...	...	...	...	7·2	...	...	...	8·2	14·9	13	25
19	1·7	...	...	8·3	1·3	...	...	6·5	...	1·6	...	8·0	...	3·1	...	7·6	11·6	1	30
20	...	1·7	...	8·7	...	1·5	...	7·4	...	...	...	6·6	...	...	...	8·5	10·7	0	14
21	...	1·5	...	7·4	...	1·2	...	5·8	...	2·6	...	6·4	...	...	...	7·5	11·1	6	30
22	...	...	...	5·6	...	0·9	...	4·5	...	1·1	...	1·7	...	0·6	...	0·4	7·5	4	25
23	...	2·1	0·9	...	...	3·6	2·4	...	...	3·3	1·4	...	...	4·5	0·9	...	14·3	18	10
24	...	3·9	...	...	...	3·9	...	...	...	3·5	0·7	...	...	3·2	2·2	...	14·5	1	40
25	...	4·4	4·4	...	...	3·3	3·3	...	...	2·1	2·1	...	...	4·3	2·9	...	12·0	21	40
26	...	3·6	...	...	...	6·5	...	1·3	...	4·4	...	6·6	...	4·2	...	4·2	18·9	9	30
27	...	2·0	0·4	...	...	3·8	...	5·7	2·4	...	...	5·7	6·6	...	...	4·4	11·0	21	55
28	4·3	...	...	...	3·8	...	0·8	...	2·9	...	0·6	...	9·0	...	...	1·8	14·1	23	30
29	9·0	...	...	1·8	5·9	...	...	...	6·6	...	...	...	6·9	...	...	...	14·5	22	0
30	4·3	...	1·8	...	4·1	...	2·7	...	3·6	...	2·4	...	4·0	...	1·6	...	14·0	0	55
S+N & W+E	92·1		114·6		89·9		118·1		87·5		116·3		87·2		102·8				
S−N & W−E	−24·9		−37·0		−43·5		−17·3		−33·5		−18·1		−20·2		−17·0				

* No record.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Aberdeen. No. 196. November 4, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2510	...	...	...	...		Balloon lost behind fragment of cloud.
	2500	360	9·5	0·0	− 9·5		About 8 h., just after the ascent, some Ci. to Ci.-Cu. appeared, moving from 40°. A nephoscope observation gave components (at 1000 m.):— W.-E. −3·0 m/s. S.-N. −3·3 m/s. After 11 h. a sheet of thin A.-Cu. appeared, and was also observed with nephoscope. The components (at 1000 m.) were:— W.-E. +0·1 m/s. S.-N. −1·9 m/s.
	2000	15	9·5	−3·0	− 9·0		
	1750	15	10·0	−2·5	− 9·5		
	1500	15	12·0	−2·5	−12·0		
	1250	15	10·0	−3·0	− 9·5		
	1000	15	8·5	−2·0	− 8·5	2·3	
	750	5	8·5	−1·0	− 8·5		
	500	5	8·5	−0·5	− 8·5		
100 m. above ground.	114	320	10·0	+6·5	− 8·0		*Pressure Distribution* (7 h.).
Anemometer.	46	310	7·0	+5·5	− 4·5		Depression off Corunna. Uniform fairly high pressure W. of British Isles.
Geostrophic wind.	(at 7 h.)	10	10	−2	−10	...	Weight of balloon 12 gm., free lift 41 gm.

Aberdeen. No. 199. November 15, 1915. 8 h. 5 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2240	...	...	...	...		Balloon lost in haze.
	...	...	...	...	...		Immediately after the ascent, a nephoscope observation was made of some coarse Ci. to Ci.-Cu. which was moving from 315°. The components found were (at 1000 m.):— W.-E. +1·2 m/s. S.-N. −1·3 m/s. which shows a veering of the higher currents. By 13 h. the direction of this same cloud had backed to 280°, the velocity remaining the same. The components then were (at 1000 m.):— W.-E. +1·8 m/s. S.-N. −0·3 m/s.
	2000	255	7·0	+7·0	+1·5		
	1750	275	5·5	+5·5	−0·5		
	1500	265	4·7	+4·7	+0·5		
	1250	225	6·0	+4·0	+4·0		
	1000	230	5·0	+4·0	+3·5	2·2	
	750	225	4·0	+2·8	+2·9		
	500	245	4·0	+3·7	+1·6		
100 m. above ground.	114	245	5·5	+5·0	+2·5		
Anemometer.	46	270	2·0	+2·0	0·0		*Pressure Distribution* (7 h.). Irregular col over British Isles.
Geostrophic wind.	(at 7 h.)	*Inde*	*termin*	*ate*	...	...	Weight of balloon 11 gm., free lift 31 gm.
	(at 13 h.)	*Inde*	*termin*	*ate*	...	...	

Aberdeen. No. 202. November 22, 1915. 8 h. 5 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2145	...	...	...	...		Balloon lost in haze which was rapidly forming, and which became very dense during forenoon. Above was a sheet of high St.-Cu. or low A.-Cu. Nephoscope observation gave components at 1000 m.:— W.-E. +1·8 m/s. S.-N. +1·4 m/s. These suggest a very marked decrease in velocity at the cloud level, compared with that of the wind at 2 km., as well as a backing of the higher air currents.
	2000	250	15·5	+14·5	+5·5		
	1750	250	14·0	+13·0	+5·0		
	1500	250	11·5	+10·5	+4·0		
	1250	265	10·0	+10·0	+1·0		
	1000	255	8·0	+8·0	+2·0	2·4	
	750	245	7·5	+6·5	+3·0		
	500	255	6·0	+5·5	+1·5		
100 m. above ground.	114	235	4·9	+4·0	+2·9		*Pressure Distribution* (7 h.).
Anemometer.	46	225	1·0	+0·7	+0·7		Large high pressure area British Isles to Russia.
Geostrophic wind.	(at 7 h.)	270	11	+11	0	...	Weight of balloon 11 gm., free lift 43 gm.
	(at 13 h.)	300	13	+11	−7	...	

Eskdalemuir. No. 1574. November 11, 1915. 12 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2230	...	...	...	...		Atmosphere clear.
	2000	315	10·0	+7·5	−7·0		Balloon lost because the sun shining on it made it appear transparent. Clouds Ci.; Ci.-St. from W.N.W.; Fr.-Cu. from N.W. Sky four-tenths covered.
	1750	315	11·5	+8·0	−8·0		
	1500	320	8·0	+5·5	−6·0		
	1250	320	4·9	+3·2	−3·7		
	1000	350	4·1	+0·7	−4·0	2·1	
	750	330	4·6	+2·4	−3·9		*Pressure Distribution* (7 h.).
	500	310	5·0	+4·0	−3·0		
100 m. above ground.	340	300	6·5	+5·5	−3·0		Deep depression over Scandinavia. Another west of Ireland moving eastward during day and causing rain by 18 h. over all the S. of the British Isles.
Anemometer.	250	310	5·5	+4·0	−3·5		
Geostrophic wind.	(at 13 h.)	310	8	+6	−5	...	Weight of balloon 10·8 gm., free lift 29·2 gm.

Eskdalemuir. No. 1576. November 16, 1915. 12 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3400	...	...	...	...		Atmosphere clear. Cloud Ci., 1. Balloon burst.
	...	...	...	...	...		
	...	...	...	...	...		
	3000	345	4·5	+1·0	−4·4		
	2500	25	2·0	−0·9	−1·8		*Pressure Distribution* (7 h.).
	2000	345	4·6	+1·2	−4·4		
	1750	345	6·0	+1·5	−5·5		
	1500	30	6·0	−3·0	−5·0		Anticyclone off N.W. coasts. (18 h.) Centre moving over British Isles.
	1250	35	8·5	−5·0	−7·0	2·3	
	1000	35	9·5	−5·5	−7·5		
	750	35	9·5	−5·5	−7·5		
	500	20	5·0	−2·0	−5·0		
100 m. above ground.	340	15	3·1	−0·8	−3·0		
Anemometer.	250	10	2·0	−0·3	−2·0		
Geostrophic wind.	(at 13 h.)	10	12	−2	−12	...	Weight of balloon 10·8 gm., free lift 41·2 gm.

Eskdalemuir. No. 1577. November 17, 1915. 12 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4010	...	...	...	...		Atmosphere moderately clear. Balloon lost as it passed across the sun. Clouds Ci.; Ci.-St. from N.N.W. Sky five-tenths covered.
	4000	15	12·0	−3·5	−11·5		
	3500	360	11·5	−0·5	−11·5		
	3000	15	10·0	−2·5	− 9·5		
	2500	5	9·5	−1·0	− 9·5		
	2000	350	4·1	+0·7	− 4·0		
	1750	30	3·2	−1·6	− 2·8		*Pressure Distribution* (7 h.).
	1500	15	3·7	−1·0	− 3·6		
	1250	30	7·5	−4·0	− 6·5	2·2	Anticyclone, British Isles to France.
	1000	50	10·0	−7·5	− 6·0		
	750	45	9·0	−6·5	− 6·5		
	500	25	2·6	−1·0	− 2·4		
	340	90	0·2	−0·2	0·0		
	250	...	0·0	0·0	0·0		
Geostrophic wind.	(at 13 h.)	*Inde*	*termin*	*ate*	...	...	Weight of balloon 10·6 gm., free lift 32·3 gm.

10. SOUNDINGS WITH PILOT BALLOONS—*continued.*

ESKDALEMUIR. No. 1578. November 18, 1915. 12 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest Height.	2450	...	...	...	...		Atmosphere very clear. Ci. and cirro-nebula; very rapidly from E.N.E. A.-St. and A.-Cu. from S.E. Sky four-tenths covered.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	20	7·0	−2·5	−6·5		
	1750	40	4·9	−3·0	−3·9		
	1500	55	5·5	−4·5	−3·5		
	1250	65	3·4	−3·0	−1·5	1·9	*Pressure Distribution* (7 h.).
	1000	70	5·0	−5·0	−1·5		
	750	45	7·0	−5·0	−5·0		Anticyclone, British Isles to Southern Norway.
	500	30	6·5	−3·5	−6·0		
100 m. above ground.	340	20	4·3	−1·5	−4·0		
Anemometer.	250	360	1·5	0·0	−1·5		
Geostrophic wind.	(at 13 h.)	60	7	−6	−4	...	Weight of balloon 10·8 gm., free lift 20·3 gm.

ESKDALEMUIR. No. 1579. November 20, 1915. 12 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3390	...	...	...	...		Atmosphere rather hazy. Ci. and Ci.-St. from N.W.
	3000	160	9·0	−3·0	+8·5		Nephoscope observations (computed for 1000 m.), W.-E. +1·4 m/s.; S.-N. −2·3 m/s.
	2500	170	8·0	−1·5	+8·0		
	2000	150	6·0	−2·5	+5·0		Balloon lost in distance.
	1750	155	6·5	−3·0	+6·0		Cirrus radiant point N.W.
	1500	165	8·0	−2·0	+7·5		
	1250	170	7·5	−1·5	+7·5		
	1000	150	7·5	−3·5	+6·5	2·3	
	750	165	5·0	−1·0	+5·0		*Pressure Distribution* (7 h.).
	500						
	340	Direction variable. Velocity <0·5 m/s.					Anticyclone North Sea. Depression far out on Atlantic.
	250						
Geostrophic wind.	(at 13 h.)	180	5	0	+5	...	Weight of balloon 10·4 gm., free lift 41·3 gm.

ESKDALEMUIR. No. 1580. November 24, 1915. 12 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2300	...	...	...	...		Atmosphere clear. Ci.-St. from N.W.; A.-St., A.-Cu. 10. Nephoscope observation (computed for 1000 m.), W.-E. +3·2 m/s., S.-N. −3·7 m/s. Balloon lost while changing eye-pieces.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	335	11·5	+5·0	−10·0		
	1750	325	5·5	+3·0	−4·5		
	1500	345	10·0	+2·5	−9·5		
	1250	330	4·4	+2·2	−3·8	2·3	
	1000	345	6·5	+2·0	−6·5		
	750	340	6·0	+2·0	−5·5		*Pressure Distribution* (7 h.).
	500	320	4·8	+3·2	−3·6		
100 m. above ground.	340	305	4·9	+3·9	−2·9		Anticyclone, British Isles to Iceland.
Anemometer.	250	285	4·0	+3·9	−1·0		
Geostrophic wind.	(at 13 h.)	350	8	+1	−8	...	Weight of balloon 10·2 gm., free lift 42·2 gm.

SOUTH FARNBOROUGH. No. 422. November 2, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	3575	...	...	...	...		Atmosphere clear. Balloon lost in distance while taking a reading. Local maximum in velocity at 2230 m., 19·0 m/s. (−3·5 W.-E.; −18·5 S.-N.).
	3500	10	15·5	− 2·5	−15·5		
	3000	15	14·0	− 3·5	−13·5		
	2500	15	14·0	− 3·5	−13·5		
	2000	20	12·0	− 4·0	−11·5		
	1750	20	12·5	− 4·5	−11·5		
	1500	25	13·0	− 5·5	−12·5		
	1250	25	14·0	− 6·0	−12·5	2·4	
	1000	40	19·5	−12·5	−15·0		
	750	15	16·0	− 4·0	−15·5		*Pressure Distribution* (7 h.).
	500	15	17·5	− 4·5	−17·0		Depression over Germany. Anticyclone, Iceland to Spitzbergen.
	170	345	7·5	+ 2·0	− 7·0		
	105	340	6·0	+ 2·0	− 5·5		
Geostrophic wind.	(at 7 h.)	20	17	− 6	−16	..	Approx. weights: balloon 12 gm., free lift 45 gm.

SOUTH FARNBOROUGH. No. 423. November 3, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3000	...	...	...	...		Atmosphere misty. Balloon lost in distance. Local minimum in velocity at 2850 m., 5·0 m/s. (+2·5 W.-E.; −4·5 S.-N.).
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	3000	345	6·5	+1·5	− 6·5		
	2500	360	9·0	0·0	− 9·0		
	2000	10	8·5	−1·5	− 8·5		*Pressure Distribution* (7 h.).
	1750	5	9·0	−1·0	− 9·0		
	1500	5	10·5	−1·0	−10·5	2·4	Depression over Holland. Anticyclone, Iceland to Spitzbergen.
	1250	5	11·0	−1·0	−11·0		
	1000	15	9·5	−2·5	− 9·0		
	750	15	11·5	−3·0	−11·0		
	500	15	12·0	−3·0	−11·5		
100 m. above ground.	170	320	5·5	+3·5	− 4·0		
Anemometer.	105	280	1·0	+1·0	− 0·2		
Geostrophic wind.	(at 7 h.)	360	13	0	−13	...	Approx. weights: balloon 12 gm., free lift 45 gm.

SOUTH FARNBOROUGH. No. 424. November 3, 1915. 11 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	5425	255	11·5	+11·0	+ 3·0		A little fracto-cumulus. Balloon lost in distance while taking a reading. Minimum velocity at 3250 m., 1·5 m/s. (W.-E. +1·1 m/s.; S.-N. −1·1 m/s.).
	5000	265	6·5	+ 6·5	+ 0·5		
	4500	270	3·5	+ 3·5	0·0		
	4000	270	3·0	+ 3·0	0·0		
	3500	335	3·5	+ 1·5	− 3·2		
	3000	355	3·5	+ 0·3	− 3·5		
	2500	345	5·5	+ 1·5	− 5·5		
	2000	350	4·0	+ 0·7	− 3·9		*Pressure Distribution* (7 h.).
	1750	15	6·5	− 1·5	− 6·5		
	1500	20	11·0	− 4·0	−10·5	2·4	Depression over Holland. Anticyclone, Iceland to Spitzbergen.
	1250	20	9·5	− 3·0	− 9·0		
	1000	20	11·0	− 4·0	−10·5		
	750	15	9·0	− 2·5	− 8·5		
	500	355	6·0	+ 0·5	− 6·0		
	170	355	7·0	+ 0·5	− 7·0		
	105	350	2·0	+ 0·3	− 2·0		
Geostrophic wind.	(at 7 h.)	360	13	0	−13	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	360	8	0	− 8	...	

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 425. November 5, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3000	...	...	...	...	2·4	Some mist. Ci.-Cu. from N. Balloon lost in distance.
	3000	360	15·0	0·0	−15·0		
	2500	10	12·5	−2·0	−12·5		
	2000	25	12·5	−5·5	−11·5		*Pressure Distribution* (7 h.).
	1750	30	13·0	−6·5	−11·5		
	1500	35	14·0	−8·0	−11·5		
	1250	35	13·5	−7·5	−11·0		Anticyclone over North Atlantic, Depressions Spain and Poland.
	1000	30	13·0	−6·5	−11·5		
	750	35	11·5	−6·5	−9·5		
	500	35	14·0	−8·0	−11·5		
100 m. above ground.	170	355	4·0	+0·3	−4·0		
Anemometer.	105	325	light	...	...		
Geostrophic wind.	(at 7 h.)	50	8	−6	−5	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 427. November 8, 1915. 11 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2400	305	8·5	+7·0	−5·0	2·4	Atmosphere clear. A.-Cu. and Ci. Balloon lost in clouds. Maximum velocity at 1150 m., 12·0 m/s. (W.-E. +10·5 m/s.; S.-N. −6·0 m/s.).
	...	...	...	...	...		
	...	...	...	...	...		
	2000	295	7·5	+7·0	−3·0		*Pressure Distribution* (7 h.).
	1750	305	7·0	+5·5	−4·0		
	1500	305	9·5	+8·0	−5·5		
	1250	300	10·5	+9·0	−5·5		Depression over Scandinavia. Anticyclone over Azores.
	1000	295	9·5	+8·5	−4·0		
	750	295	7·5	+7·0	−3·0		
	500	280	7·5	+7·5	−1·5		
100 m. above ground.	170	270	5·0	+5·0	0·0		
Anemometer.	105	270	1·5	+1·5	0·0		
Geostrophic wind.	(at 7 h.)	280	10	+10	−2	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	280	11	+11	−2	...	

South Farnborough. No. 429. November 10, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3000	...	...	...	...	2·4	Atmosphere clear. Ci.; Ci.-Cu.; A.-Cu. Balloon lost in distance. Local minimum in velocity 2650 m., 12·5 m/s. (W.-E. +10·0 m/s.; S.-N. −7·0 m/s.).
	3000	305	14·0	+11·5	−8·0		
	2500	305	14·0	+11·5	−8·0		
	2000	305	19·0	+15·5	−11·0		*Pressure Distribution* (7 h.).
	1750	305	20·5	+17·0	−12·0		
	1500	305	18·5	+15·0	−10·5		
	1250	310	17·0	+13·0	−11·0		Deep depression over North Sea.
	1000	305	19·5	+16·0	−11·0		
	750	300	22·0	+19·0	−11·0		
	500	285	19·5	+19·0	−5·0		
100 m. above ground.	170	255	12·5	+12·0	+3·0		
Anemometer.	105	250	6·0	+5·5	+2·0		
Geostrophic wind.	(at 7 h.)	290	19	+18	−7	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 430. November 11, 1915. 7 h. 15 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2275	290	13·5	+12·5	−4·5	2·4	Atmosphere clear. Bands of Ci.-St., Ci., and A.-Cu. Radiant point 325°. Ci. moving from between 310° and 315°. A.-Cu. from about the same point. A little St.-Cu. Balloon lost behind St.-Cu.
	...	...	...	...	...		
	...	...	...	...	...		
	2000	295	16·5	+15·0	−7·0		*Pressure Distribution* (7 h.).
	1750	290	15·0	+14·0	−5·0		
	1500	295	13·5	+12·0	−5·5		
	1250	295	13·0	+12·0	−5·5		Deep depression over Scandinavia. A second depression W. of Ireland.
	1000	295	12·0	+11·0	−5·0		
	750	295	13·0	+12·0	−5·5		
	500	285	14·0	+13·5	−3·5		
100 m. above ground.	170	260	8·5	+8·5	+1·5		
Anemometer.	105	235	3·5	+2·9	+2·0		
Geostrophic wind.	(at 7 h.)	300	11	+10	−6	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 431. November 11, 1915. 15 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2000	...	...	...	...	2·4	A.-St. 10.
	...	...	...	...	...		
	...	...	...	...	...		*Pressure Distribution* (7 h.).
	...	...	...	...	...		
	...	...	...	...	...		
	2000	215	12·0	+7·0	+10·0		Deep depression over Scandinavia. Another deep depression W. of Ireland moving eastward during day and causing rain by 18 h. over all the S. of the British Isles.
	1750	225	10·0	+7·0	+7·0		
	1500	225	11·0	+8·0	+8·0		
	1250	220	10·5	+6·5	+8·0		
	1000	220	9·5	+6·0	+7·5		
	750	215	8·0	+4·5	+6·5		
	500	200	5·5	+1·9	+5·0		
100 m. above ground.	170	195	2·5	+0·6	+2·4		
Anemometer.	105	180	light	...	...		
Geostrophic wind.	(at 13 h.)	260	10	+10	+2	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 18 h.)	180	25	0	+25		

South Farnborough. No. 432. November 15, 1915. 7 h. 20 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4425	325	10·0	+5·5	−8·0	2·4	Atmosphere clear above, but mist coming up during ascent. No cloud. Balloon lost in distance while looking away from telescope. Local minimum in velocity at 3575 m., 6·0 m/s. (+4·0 W.-E.; −4·0 S.-N.).
	4000	345	10·0	+2·5	−9·5		
	3500	310	7·5	+5·5	−5·0		
	3000	300	9·5	+8·0	−5·0		
	2500	310	8·5	+6·5	−5·5		
	2000	325	9·5	+5·5	−8·0		*Pressure Distribution* (7 h.).
	1750	320	11·0	+7·0	−8·5		
	1500	330	11·0	+5·5	−9·5		
	1250	320	9·0	+6·0	−7·0		Irregular col over British Isles.
	1000	325	8·5	+5·0	−7·0		
	750	320	8·5	+5·5	−6·5		
	500	310	7·5	+5·5	−5·0		
100 m. above ground.	170	280	5·5	+5·5	−1·0		
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	270	5	+5	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

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10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 434. November 17, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	345	14·0	+3·5	−13·5	2·4	Atmosphere misty. Ci. moving from N.
	3000	345	14·5	+4·0	−14·0		Balloon lost whilst taking a reading.
	2500	350	15·0	+2·5	−15·0		Local minimum in velocity at 850 m. 6·5 m/s. (+1·5 W.-E.; −6·5 S.-N.).
	2000	340	11·5	+4·0	−11·0		
	1750	345	11·0	+3·0	−10·5		
	1500	335	12·5	+5·5	−11·5		
	1250	340	9·5	+3·0	− 9·0		
	1000	345	10·0	+2·5	− 9·5		
	750	360	8·5	0·0	− 8·5		*Pressure Distribution* (7 h.).
	500	10	11·0	− 2·0	−11·0		
100 m. above ground.	170	315	5·0	+3·5	− 3·5		Anticyclone British Isles to France.
Anemometer.	105	270	light	...	...		
Geostrophic wind.	(at 7 h.)	...	*Indeterminate*			...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 436. November 19, 1915. 7 h. 30 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2575	85	9·5	− 9·5	− 1·0	2·4	Ground fog in patches. St.-Cu. moving from 70°.
	...	...	...	...	...		Balloon lost accidentally.
	2500	80	10·5	−10·0	− 2·0		The smoke from the R.A.F. chimney was in the shape of a sickle, starting off from N.W., then N., and finally from N.E.
	2000	65	9·0	− 8·0	− 4·0		
	1750	75	7·5	− 7·0	− 2·0		
	1500	90	6·0	− 6·0	0·0		
	1250	75	14·5	−14·0	− 4·0		
	1000	80	15·0	−15·0	− 2·5		
	750	80	13·0	−13·0	− 2·5		*Pressure Distribution* (7 h.).
	500	80	10·5	−10·5	− 2·0		
100 m. above ground.	170	25	3·0	− 1·3	− 2·7		Anticyclone northern North Sea.
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	90	9	−9	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 438. November 19, 1915. 15 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2300	95	20·0	−20·0	+1·5	2·0	Atmosphere clear. A little Ci. and St.-Cu.
	...	...	...	...	...		
	2000	110	14·5	−13·5	+5·0		
	1750	100	11·0	−11·0	+2·0		*Pressure Distribution* (18 h.).
	1500	95	12·0	−12·0	+1·0		
	1250	85	17·0	−17·0	−1·5		
	1000	75	19·5	−19·0	−5·0		Anticyclone North Sea.
	750	75	12·5	−12·0	−3·0		
	500	70	11·5	−11·0	−4·0		
100 m. above ground.	170	60	4·0	− 3·5	−2·0		
Anemometer.	105	55	light	...	...		
Geostrophic wind.	(at 13 h.)	90	9	− 9	0	...	Approx. weights: balloon 4 gm., free lift 16 gm.
	(at 18 h.)	80	9	− 9	− 2	...	

South Farnborough. No. 439. November 24, 1915. 11 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2925	330	9·5	+5·0	− 8·0	2·4	Slight mist.
	2500	345	8·5	+2·0	− 8·0		St.-Cu. disappearing in S. and W. A little Cu. increasing considerably after ascent.
	2000	335	9·5	+4·0	− 8·5		
	1750	345	10·0	+2·5	− 9·5		Balloon passed very close to sun at end of ascent; lost behind Cu.
	1500	25	12·0	−5·0	−11·0		
	1250	40	8·5	−5·5	− 6·5		Maximum velocity at 1575 m. 14·0 m/s. (0·0 W.-E.; −14·0 S.-N.).
	1000	25	9·0	−4·0	− 8·0		
	750	20	9·5	−3·5	− 9·0		
	500	10	5·5	−1·0	− 5·5		
100 m. above ground.	170	335	3·5	+1·5	− 3·2		*Pressure Distribution* (7 h.).
Anemometer.	105	335	1·0	+0·4	− 0·9		Anticyclone British Isles to Iceland.
Geostrophic wind.	(at 7 h.)	360	7	0	− 7	...	Approx. weights: balloon 12 gm., free lift 45 gm.
	(at 13 h.)	30	7	−4	− 6		

South Farnborough. No. 440. November 25, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4400	345	28·5	+7·5	−27·5	2·4	Misty. Some A.-Cu. moving from N.
	4000	345	12·5	+3·0	−12·0		
	3500	345	15·0	+4·0	−14·5		
	3000	345	16·5	+4·5	−16·0		*Pressure Distribution* (7 h.).
	2500	350	11·5	+2·0	−11·5		
	2000	15	9·0	−2·5	− 8·5		Anticyclone off N.W. coasts. Depression near Petrograd.
	1750	15	10·0	−2·5	− 9·5		
	1500	25	4·5	−1·9	− 4·1		
	1250	90	4·0	−4·0	0·0		
	1000	345	1·5	+0·4	− 1·4		
	750	335	8·0	+3·5	− 7·5		
	500	325	9·0	+5·0	− 7·5		
100 m. above ground.	170	295	6·5	+6·0	− 2·5		
Anemometer.	105	270	light	...	...		
Geostrophic wind.	(at 7 h.)	360	10	0	−10	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 442. November 26, 1915. 7 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2425	5	14·5	−1·5	−14·5	2·4	Misty. No cloud.
	...	...	...	...	...		Balloon either lost in distance, or burst.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	5	14·0	−1·0	−14·0		*Pressure Distribution* (7 h.).
	1750	10	13·5	−2·5	−13·5		
	1500	5	15·5	−1·5	−15·5		Anticyclone N.W. of British Isles.
	1250	5	15·5	−1·5	−15·5		
	1000	5	14·0	−1·0	−14·0		
	750	10	11·5	−2·0	−11·5		
	500	10	12·5	−2·0	−12·5		
100 m. above ground.	170	335	7·5	+3·0	− 7·0		
Anemometer.	105	315	2·0	+1·4	− 1·4		
Geostrophic wind.	(at 7 h.)	360	9	0	− 9	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 444. November 27, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E, 180° = S.).	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	Shallow haze.
Greatest height.	3425	25	12·0	−5·0	−11·0		Clear sky. Small patch of Ci. appearing during ascent, moving from a northerly point.
	3000	30	11·0	−5·5	− 9·5		
	2500	30	5·5	−3·0	− 5·0		Balloon burst (?).
	2000	60	11·0	−9·5	− 5·5		Velocity 13·5 m/s. at 2275 m. (−11·1 W.-E.; −7·0 S.-N.); 3·5 m/s. at 2425 m. (−2·3 W.-E.; −2·7 S.-N.).
	1750	70	9·0	−8·5	− 3·0		
	1500	60	9·0	−8·0	− 4·5	2·4	
	1250	55	10·5	−8·5	− 6·0		
	1000	50	8·5	−6·5	− 5·5		*Pressure Distribution* (7 h.)
	750	45	10·0	−7·0	− 7·0		
	500	55	9·5	−8·0	− 5·5		Anticyclone over England, North Sea, and Northern France. Indications of shallow depression over Straits of Dover.
100 m. above ground.	170	355	3·5	+0·3	− 3·5		
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 7 h.)	30	9	−5	− 8	...	Approx. weights: balloon 12 gm., free lift 45 gm.

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:—Aberdeen, 4; Benson, 8; Eskdalemuir, 5; South Farnborough, 17.

11. Soundings with Registering Balloons.

Benson. No. 314. November 4, 1915. 16 h. 0 m. G.M.T.

	Height above M.S.L.	Pressure.	Temp.
Greatest Height,	10·0 km.	250 mb.	219 a.
Lowest Temperature,	9·3 km.	278 mb.	218 a.
Base of Stratosphere,	9·3 km.	278 mb.	218 a.
Type I.			

Height above M.S.L., 57 m.

Place of Fall, Salisbury.

Distance, and Orientation, 74 km. 216° from N.

Data for Station		at 7 h.	at 18 h. G.M.T.
Geostrophic Wind	Direction, . .	50°	60°
	Velocity, . .	11 m/s.	9 m/s.
Correction for curvature of isobars, .		+6 m/s.	+6 m/s.
Gradient Value, ...		17 m/s.	15 m/s.
Components,	W. to E. . . .	−13 m/s.	−13 m/s.
	S. to N. . . .	−11 m/s.	− 8 m/s.

Height above M.S.L.	Pressure.	Temperature. Reading.	Temperature. Fall per Km.	Remarks.
km.	mb.	a.	a.	
10·00	250	219	+1	Trace somewhat indistinct. Double crossing in places.
9·00	293	220		
8·82	300	220	+4	Sky overcast. Surface wind 30° 7 m/s.
8·00	352	224	+6	
7·00	397	230		
6·94	400	230	+8	
6·00	460	238		*Pressure Distribution* (18 h.).
5·42	500	242	+7	
5·00	529	245		Depression over Portugal.
4·08	600	253	+9	Anticyclone over North-eastern Atlantic.
4·00	607	254	+7	
3·00	693	261		
2·93	700	262	+5	
2·00	789	266		
1·91	800	266	+6	
1·00	897	272		
0·97	900	272		
0·12	1000	279		
Ground	1008	280	...	
M.S.L.	1015	...	...	

12. Nephoscope Observations.

Aberdeen. Taken 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m. Velocity. V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
1	Cu.	27	5·0	− 2·3	− 4·5	
2	St.-Cu.	338	4·2	+ 1·6	− 3·9	St.-Cu. formed from upper parts of Cu.-Nb.
3	Cu.-Nb.	45	5·0	− 3·6	− 3·6	Base measured.
4	A.-Cu.	356	1·9	+ 0·1	− 1·9	*Observation at 11 h. 30 m.* Thin flat A.-Cu.
5	Cu. to St.-Cu.	5	4·8	− 0·4	− 4·8	Transition type between Cu. and St.-Cu.
6	St.-Cu.	285	10·0	+ 9·7	− 2·6	
8	St.-Cu.	277	7·4	+ 7·3	− 0·9	Fused sheet of St.-Cu.
9	Cu.	164	13·0	− 3·6	+12·5	Sheet of low degraded Cu.
11	Fr.-Nb.	310	50·0	+39·0	−32·0	Scud Nb. below the base of Cu-Nb. (very low).
13	Cu.-Nb.	338	10·0	+ 3·7	− 9·3	Apical part measured.
15	Ci.	281	1·8	+ 1·8	− 0·3	Coarse Ci. to Ci.-Cu. ⊕ visible.
16	Ci.	348	4·6	+ 1·0	− 4·5	Ci. to high Ci.-Cu. *Observation at 12 h.*
17	Ci.	9	3·7	− 0·6	− 3·7	Ci. to fine high Ci.-Cu. ⊕ visible.
19	St.-Cu.	177	5·0	− 0·3	+ 5·0	Measurement approximate; cloud diffuse.
20	St.-Cu.	185	18·0	+ 1·6	+17·9	Low diffuse St.-Cu.
25	St.-Cu.	355	8·9	+ 0·8	− 8·9	
26	St.-Cu.	356	4·0	+ 0·3	− 4·0	Formed from upper parts of Cu.-Nb.
29	Cu.	161	16·0	− 0·5	+15·2	Heavy degraded type of Cu.
30	St.-Cu.	214	19·0	+10·6	+15·8	Low diffuse St.-Cu.

METEOROLOGICAL OFFICE OBSERVATORIES—GEOPHYSICAL JOURNAL.

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1. SUNSHINE AND SOLAR RADIATION.

Day.	SOUTH KENSINGTON.—Lat. 51° 30′ N. Long. 0° 10′ W.							RICHMOND.—Lat. 51° 28′ N. Long. 0° 19′ W.					ESKDALEMUIR.—Lat. 55° 19′ N. Long. 3° 12′ W.						CAHIRCIVEEN.	
	Bright Sunshine.		Radiation received on Horizontal Surface by Callendar Radiograph.					Bright Sunshine.		Radiation at Noon by Ångström Pyrheliometer.			Bright Sunshine.		Radiation by Ångström Pyrheliometer.				Bright Sunshine.	
	Total.	Per cent. of Possible.	Daily Total.	Per cent. of Planetary.	Maximum. For Day. Amount.	Maximum. For Day. Time.	Maximum. 11.30 h. to 12.30 h.	Total.	Per cent. of Possible.	Intensity.	Vertical Component.	Sky.	Total.	Per cent. of Possible.	Time.	Sky.	$\frac{p}{p_0}$ sec Z.	Intensity.	Total.	Per cent. of Possible.
	hr.	%	j/cm².	%	mw/cm².	h. m.	mw/cm².	hr.	%	mw/cm².	mw/cm².		hr.	%	h. m.			mw/cm².	hr.	%
1	—	—	118	16	11	12 40	8	—	—	—	—	—	0·3	4	—	—	—	—	4·0	49
2	0·7	9	176	24	15	11 30	15	1·3	16	—	—	—	3·9	53	12 5	Clear	4·42	45	—	—
3	—	—	*n* 38	5	5	12 15	5	—	—	—	—	—	—	—	—	—	—	—	4·0	50
4	—	—	86	12	9	9 55	5	—	—	—	—	—	—	—	—	—	—	—	—	—
5	0·1	1	197	27	18	12 16	18	0·4	5	—	—	—	—	—	—	—	—	—	0·1	1
6	2·8	35	212	30	19	11 45	19	2·7	34	—	—	—	—	—	—	—	—	—	0·2	3
7	—	—	172	25	16	11 20	16	0·3	4	—	—	—	0·3	4	—	—	—	—	4·2	53
8	*x* 4·3	*x* 54	251	36	23	12 40	19	4·6	58	57	16	Clear	5·6	78	12 9	Clear	4·67	45	4·9	63
9	—	—	56	8	6	9 55	3	—	—	—	—	—	—	—	—	—	—	—	—	—
10	0·5	6	152	22	21	12 10	21	0·2	3	—	—	—	—	—	—	—	—	—	0·7	9
11	1·7	22	192	28	18	11 30	18	2·1	27	—	—	—	—	—	—	—	—	—	1·6	21
12	0·1	1	140	21	10	10 20	9	0·7	9	—	—	—	3·8	54	—	—	—	—	2·9	37
13	3·5	45	210	31	13	11 55	13	*x* 5·3	68	31	8	Ci-St.	1·3	18	—	—	—	—	—	—
14	—	—	138	21	9	11 10	8	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—	77	12	6	12 20	6	—	—	—	—	—	—	—	—	—	—	—	3·4	44
16	1·5	19	194	29	20	12 10	20	2·4	31	—	—	—	—	—	—	—	—	—	2·4	31
17	—	—	95	14	6	11 45	6	—	—	—	—	—	2·8	40	—	—	—	—	0·9	12
18	0·3	4	149	23	18	11 5	9	0·1	1	—	—	—	*x* 5·9	84	12 4	Clear	5·09	50	*x* 6·2	81
19	2·0	26	235	36	18	12 25	18	4·0	51	—	—	—	—	—	—	—	—	—	1·6	21
20	—	—	154	24	10	14 25	8	—	—	—	—	—	—	—	—	—	—	—	—	—
21	—	—	79	12	6	13 0	5	—	—	—	—	—	—	—	—	—	—	—	—	—
22	—	—	127	20	12	12 10	12	—	—	—	—	—	—	—	—	—	—	—	0·1	1
23	2·5	32	205	32	22	11 45	22	3·2	41	—	—	—	—	—	—	—	—	—	2·8	36
24	0·2	3	179	28	17	10 40	14	0·5	6	—	—	—	—	—	—	—	—	—	0·3	4
25	0·4	5	152	23	*x* 26	11 40	*x* 26	0·5	6	—	—	—	—	—	—	—	—	—	—	—
26	3·7	47	*x* 253	39	23	12 50	20	4·1	53	—	—	—	0·9	13	—	—	—	—	0·7	9
27	0·5	6	174	26	22	11 30	22	0·2	3	—	—	—	—	—	—	—	—	—	—	—
28	1·6	21	215	33	17	11 30	17	1·8	23	—	—	—	—	—	—	—	—	—	0·4	5
29	—	—	70	11	*n* 4	10 20	3	—	—	—	—	—	—	—	—	—	—	—	0·1	1
30	—	—	152	23	19	10 45	16	0·2	3	—	—	—	—	—	—	—	—	—	0·4	5
31	0·2	3	104	16	18	14 10	3	0·1	1	—	—	—	—	—	—	—	—	—	0·4	5
Means	0·87	11	153	23	15	—	13	1·13	15	—	—	—	0·81	12	—	—	—	—	1·35	18
Normal	0·84	11	—	—	—	—	—	1·16	15	—	—	—	0·65	9	—	—	—	—	1·32	17
	← 4 years →							← 30 years →					← 4 years →						← 30 years →	

2. METEOROLOGY AND MAGNETISM:—CAHIRCIVEEN (VALENCIA OBSERVATORY).—Lat. 51° 56′ N. Long. 10° 15′ W.

Heights above M. S. L.:—H = 12·5 m. H_b = 13·7 m. H_a = 26·4 m. Above Ground: h_t = 1·2 m. h_r = 0·56 m. h_a = 13·9 m.

Day.	Air 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 (0–10) and Weather.		Rain 24 hours beginning 9 h.	Remarks.	Magnetism.		
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			Horizontal Force.	Declination West.	Inclination.
			200+	200+	200+	200+															
	mb.	mb.					millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.		γ	° ′	° ′
1	980·6	993·0	81·6	80·6	83	78	9·0	9·4	81	90	26	8	—	1	9	2	1·2	●⁰ showers. ⌒ 13 h.	…	…	…
2	998·9	998·8	80·2	82·0	82	75	8·1	8·9	80	78	8	6	8	5	9	10	2·6	Dull and o. ≡⁰ and d. *n.*	…	…	…
3	995·2	996·3	83·0	82·2	84	81	11·6	11·0	95	95	16	5	19	2	9	7	0·6	≡⁰ and d. *n.* and *a.* Fair from 11 h.	…	…	…
4	987·9	991·4	81·1	77·0	81	77	9·2	8·0	85	99	6	4	—	1	10	5	4·0	≡⁰ and d. Clear 18 h.–20 h.	…	…	…
5	984·9	981·5	83·5	81·5	84	81	11·0	9·9	87	89	15	9	18	2	9	10	2·9	● showers early. Fair, but o.	…	…	…
6	978·3	985·8	80·2	79·6	82	79	9·0	7·8	89	80	19	3	20	7	10●	7	10·6	●▲ showers. ⌒ 16 h.	…	…	…
7	989·5	992·2	79·5	81·4	82	78	7·8	7·6	81	69	20	6	21	13	6	3	0·4	● showers *a.* Fine *p.*	…	…	…
8	1001·8	1005·4	79·9	79·6	82	78	8·2	7·4	83	76	1	2	8	5	2	7	7·0	Fine *a.* and *p.*	17872	20 0·8	68 8·1
9	987·4	985·3	81·9	85·0	*x* 85	80	9·8	13·2	87	95	9	16	17	7	10●	10●⁰	14·5	● early. ●² *a.* Dull *p.*	…	…	…
10	986·3	995·1	82·1	81·3	*x* 85	80	9·6	10·1	83	93	22	14	20	4	8	7	1·7	● *n.* and early *a.* 🌂 8 h. Fair later.	…	…	…
11	1001·2	1006·9	79·9	76·9	82	75	7·6	6·3	76	78	29	10	28	10	10	10▲	3·8	d. early. Fair to showery. ▲² *p.*	…	…	…
12	1019·9	1030·6	78·1	76·9	79	75	5·9	6·4	*n* 68	79	32	11	1	4	4	5	1·8	🌂 2 h.–3 h. ▲● showers. ⓘ *n.*	…	…	…
13	1033·0	1022·5	74·6	80·5	81	74	6·1	9·7	89	94	—	1	15	6	8	10	8·5	Dull. ≡⁰ ● showers in evening.	…	…	…
14	1013·2	1005·6	82·2	78·9	83	79	11·2	8·9	97	97	22	5	7	2	8	9	12·5	d. and ≡⁰ *a.* ⓤ in evening.	…	…	…
15	994·7	993·9	80·6	78·5	82	77	9·3	7·9	89	88	26	6	20	2	9●	3	14·8	● showers. ⌒ 14 h.	…	…	…
16	990·9	996·7	78·7	76·9	80	76	8·8	7·9	97	98	10	2	—	1	8	8≡⁰●⁰	2·0	Frequent ●² showers early to fair. ⓤ *n.*	…	…	…
17	1004·2	1015·7	79·8	78·7	80	77	7·3	7·2	74	79	1	6	4	9	5	9	—	Fair to c.	…	…	…
18	1022·9	1028·9	76·9	74·9	79	74	6·7	6·3	83	89	5	5	—	1	3	0	—	Dull early to fine. ⓤ 18 h.	…	…	…
19	1031·3	1031·4	73·6	76·1	*n* 77	*n* 72	6·1	7·2	96	94	—	1	—	1	6⌴	8	0·1	Fine and calm. ⓤ in evening.	…	…	…
20	1029·8	1026·4	77·8	81·5	82	77	8·1	9·7	94	88	—	1	21	5	10	10	—	o. all day. ∞	…	…	…
21	1021·0	1015·4	82·5	82·8	83	*x* 82	10·2	11·2	86	93	21	8	20	4	10	10	1·6	Fair, but o. 🌂 21 h.–22 h.	…	…	…
22	1004·6	982·6	83·7	79·8	84	80	12·4	8·9	97	90	16	6	23	23	10●	10	15·9	● 8 h.–11 h.; ● showers later. 🌂	…	…	…
23	987·5	978·1	81·2	81·1	83	79	9·0	10·0	84	93	22	12	13	5	8●	10●⁰	7·3	● showers *a.*; finer *p.* d. *n.*	17895	19 59·0	68 6·5
24	967·8	968·2	81·7	80·9	83	81	10·5	10·1	94	96	15	4	17	2	8	10	4·7	● showers all day.	…	…	…
25	971·5	984·6	81·1	80·8	82	80	9·9	9·4	92	89	28	3	24	7	10	8	4·0	o. to c. ● showers *p.*	…	…	…
26	995·8	992·4	80·3	78·6	81	78	7·9	7·5	77	83	21	7	7	7	6	10	25·7	Dull. d. to ● *n.*	…	…	…
27	970·9	1002·7	83·0	80·1	84	80	11·7	9·4	96	93	21	10	24	7	10	9●	2·3	Gloomy, with ● showers. 🌂 11 h.–14 h.	…	…	…
28	1006·8	997·7	75·4	78·5	80	75	7·2	7·9	99	87	8	2	5	11	7	10●	7·6	ⓤ 7 h. ⊕ and parhelion 10 h. Fair.	…	…	…
29	985·6	977·0	83·4	81·0	*x* 85	80	9·0	10·1	72	95	8	12	23	6	8	9	1·7	●⁰ showers.	…	…	…
30	992·2	981·5	80·6	84·0	84	80	7·9	12·4	76	95	15	5	15	13	8	10●	*x* 27·2	Intermittent ● 17 h.–24 h.	…	…	…
31	971·0	989·0	82·6	80·8	84	80	9·5	10·1	80	96	15	13	15	7	10	10●	19·5	● early. ● showers later.	…	…	…
Means	997·0	998·5	80·4	79·9	82·2	78·0	8·9	9·0	86	89		6·5		5·8	8·0	7·9	206·5	Monthly **Totals** or **Means.**	17884	19 59·9	68 7·3
Normal	1010·3	1010·4	80·2	80·4	82·9	77·9	9·1	9·3	88	88		6·3		6·5	—	—	163·6	**Normals.**			
	← 40 years →						← 25 years →				← 30 years →						40 yrs.				

x denotes the maximum and *n* the minimum value in the column.

Wt. 43708/421—400—8/17.—N. & Co., Ltd. Gp. XV.

3. METEOROLOGY:—RICHMOND, SURREY (KEW OBSERVATORY).—Lat. 51° 28′ N. Long. 0° 19′ W.

Heights above Mean Sea Level:—Rain-gauge Site, H = 5·5 m. Barometer, H_b = 10·4 m. Cups of Anemometer, H_a = 25 m.
Heights above Ground:—Thermometers, h_t = 3·0 m. Rain-gauge, h_r = 0·53 m. Cups of Anemometer, h_a = 20 m.

Day.	Air 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 9 h.	Min. Temp. on Grass.	Earth Temperature at 9 h.		Height above M.S.L. of Surface of Underground Water.	
							Vapour Pressure.		Percentage.												Daily Mean.	Extremes.
	9 h.	21 h.	9 h.	21 h.	Max.	Min.	9 h.	21 h.	9 h.	21 h.	9 h.		21 h.		9 h.	21 h.			0·3 m.	1·2 m.		
	mb.	mb.	200+	200+	200+	200+	millibar.		%	%	Dir.	m/s.	Dir.	m/s.	Tenths of Sky covered.		mm.	200+	200+	200+	cm.	cm.
1	989·0	989·9	80°8	81°0	82	76	9·4	8·9	89	84	16	5	20	8	10 ≡0 ●	10	12·9	71	76°1	80°0	234	—
2	1003·4	1005·5	77·4	79·3	81	77	7·9	8·3	95	87	—	1	24	3	7 ≡0	10 ≡0	2·7	71	77·1	79·9	232	232
3	1001·4	1000·1	79·5	81·7	82	79	9·4	10·1	97	90	7	4	20	5	?10 ● ≡	1	10·5	76	77·2	79·8	234	—
4	997·0	987·8	81·0	85·2	*x* 86	80	10·3	12·6	97	89	19	2	20	9	9 ≡0	10	6·7	78	78·1	79·9	238	—
5	1002·3	992·1	77·7	82·4	84	77	7·5	11·2	88	96	26	2	10	3	2 ≡0	10 ≡0	7·1	73	79·5	79·9	238	—
6	978·8	989·8	84·3	81·4	85	81	11·3	9·3	85	85	20	11	20	6	8	1	13·0	81	79·8	79·9	247	—
7	998·9	989·9	81·0	82·7	84	80	8·8	11·5	83	96	18	6	17	5	2	10 ≡0 ●	5·8	77	79·6	80·0	262	—
8	999·6	1008·8	79·2	75·9	83	73	7·7	6·9	82	91	19	5	—	0	1	0 ≡0	0·1	76	79·6	80·3	272	—
9	1008·0	994·3	76·2	84·4	85	*n* 71	6·7	13·0	87	97	5	4	19	7	?10 ≡0	8	*x* 15·5	70	78·1	80·2	360	436
10	994·9	999·5	85·2	82·9	*x* 86	81	13·8	9·8	98	81	18	4	20	6	10 ≡0 ●0	10	3·2	79	78·1	80·2	427	—
11	994·7	1001·6	80·1	77·6	83	76	9·3	6·5	92	77	24	3	23	4	9 ≡0	0	1·2	78	80·0	80·4	414	—
12	1004·9	1018·5	73·1	73·9	*n* 76	73	5·1	4·4	83	67	—	1	28	3	1 ≡0 ⌊	2	0·2	*n* 68	78·4	80·4	401	—
13	1027·0	1028·4	72·3	74·1	*n* 76	72	4·2	5·5	72	84	27	2	25	2	0 ≡0 ⌊	1 ≡0 ⌊	0·1	*n* 68	76·8	80·4	391	—
14	1023·9	1013·2	75·1	80·6	81	73	6·0	9·7	85	93	22	2	17	7	9 ≡0	10 ≡0	9·6	69	76·0	80·5	386	—
15	1004·0	997·6	79·4	80·5	81	79	8·6	9·7	90	94	16	6	16	5	10 ● ≡0	10 ●	1·4	78	76·9	80·2	386	—
16	999·8	1001·8	77·0	78·5	81	76	7·6	8·4	94	93	17	2	17	3	5 ≡0	5 ≡0	1·0	71	75·9	80·1	381	—
17	1005·1	1009·8	77·8	77·9	80	76	8·3	7·9	97	91	—	1	2	3	7 ≡	10 ≡0	—	72	75·6	80·1	374	—
18	1016·7	1025·5	77·0	78·4	80	75	7·2	7·4	89	83	31	3	2	5	10 ≡0	10	—	75	75·7	80·0	368	—
19	1030·3	1030·1	74·1	75·4	78	73	5·6	6·2	85	85	2	2	1	2	1 ≡0 ⌊	10 ≡0	—	*n* 68	77·0	80·0	364	—
20	1026·7	1023·5	74·3	75·6	77	74	5·6	6·6	84	90	27	2	—	1	10 ≡0	10 ≡0	4·6	70	76·1	80·0	363	—
21	1014·4	1011·0	78·8	81·0	82	76	8·6	8·3	94	78	21	3	27	5	10 ≡0	7	1·0	72	76·4	80·0	361	—
22	1010·5	1003·5	79·7	82·0	83	77	9·5	10·4	97	91	22	2	19	6	10 ≡ ●0	10	3·0	72	77·0	79·9	358	—
23	994·6	988·0	79·1	80·6	82	79	8·2	9·1	87	87	19	5	18	4	1	10 ≡0 ●0	7·6	76	78·2	79·9	358	—
24	979·3	978·9	82·0	82·3	84	80	10·5	10·1	92	87	19	6	18	7	4 ≡0	10	7·4	78	79·4	79·9	359	—
25	980·9	983·5	81·6	78·4	82	78	10·0	8·1	90	91	16	3	17	3	10 ≡0	0	2·7	78	79·1	79·9	363	—
26	997·4	1005·9	80·3	80·1	83	79	8·7	9·5	85	94	20	6	19	2	4	10 ●	13·1	74	78·6	79·9	363	—
27	996·5	998·7	84·4	82·9	85	80	12·0	8·0	90	*n* 66	16	8	20	13	10 ●	9	1·6	78	79·0	80·0	371	—
28	1010·0	1009·7	79·6	81·0	83	80	8·4	9·2	86	86	19	4	11	2	3 ≡0	10 ≡0	—	77	79·3	80·0	377	—
29	1003·7	1004·0	80·7	79·8	82	79	9·8	9·2	94	93	7	8	—	1	10 ≡0	4 ≡0	0·2	78	79·3	80·0	379	—
30	1007·7	1009·2	80·6	82·1	83	79	9·6	9·9	92	86	16	3	14	7	7 ≡0	10	0·2	72	78·9	80·0	374	—
31	1002·0	1005·7	84·3	82·3	84	*x* 82	10·1	9·3	76	80	15	11	18	8	10 ●	9	4·6	80	79·7	80·0	372	—
Means	1003·3	1003·4	79·1	80·1	82·0	77·2	8·6	8·9	89	87		4·1		4·7	6·8	7·3	137·0	74·3	78·0	80·1	342	—
Normal	1013·4	1013·4	76·9	77·2	79·6	74·8	7·2	7·3	87	87		3·6		3·6	—	—	51·3 (40 years)	—	78·4	81·1	—	—
			40 years				25 years				30 years								11 years			

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

Heights above Mean Sea Level:—Rain-gauge Site, H = 242 m. Barometer, H_b = 237·3 m. Vane of Anemometer, H_a = 250 m.
Heights above Ground:—Thermometers, h_t = 0·9 m. Rain-gauge, h_r = 0·38 m. Vane of Anemometer, h_a = 15 m.

																			Remarks.
1	959·7	964·5	74·5	76·6	77	74	6·2	7·3	91	93	3	2	2	5	10	10 ●	1·1		c. to fair *a*. Damp ≡0 *p*.
2	974·7	980·0	74·9	73·1	78	71	6·2	5·2	88	85	—	1	32	4	6	1	—		Fine.
3	977·0	970·8	73·0	72·7	74	71	5·3	5·0	87	84	2	3	4	7	10 ⌊	10	3·9		Drizzling ✳ *a*. and *p*. ⊠
4	970·2	965·4	72·1	72·4	*n* 73	71	4·6	5·0	81	86	3	6	2	8	10	10	0·5		⊠ 3 cm. 9 h. Drizzling ✳. ⚓.
5	970·4	961·8	72·6	77·2	78	72	5·3	7·9	90	97	5	4	14	4	10 ✳	10	25·9		✳ showers *a*. ✳ ● *p*.
6	945·1	951·1	79·1	75·9	80	74	9·3	6·3	99	84	—	1	19	5	10 ●	1	5·7		● *a*. Dull *p*. Ш *n*.
7	959·0	954·8	76·4	76·5	78	74	6·7	6·4	86	82	17	7	20	12	8	4	1·7		⌊0. ● showers 7 h.–9 h. Fair.
8	963·8	979·1	75·3	70·5	78	70	6·0	3·5	84	69	27	10	24	4	7	1	—		● showers 7 h.–9 h. Fine *p*. ✳ 22 h.
9	980·5	966·3	66·0	73·0 ●	74	*n* 64	3·0	5·7	87	93	—	1	8	8	5 ⌊	10 ✳	18·1		c. to o. ✳ from 18 h. ⊠
10	958·9	962·1	75·0	75·5	78	74	6·8	7·2	97	98	32	5	—	0	10 ●0	10 ● ≡0	13·3		⊠. ✳● (sleet) to ●.
11	956·7	967·5	77·9	73·6	79	73	8·3	5·6	97	88	17	3	32	6	10 ●0	8	2·3		●2 till 10 h. ✳● (sleet) 15 h. to ✳.
12	980·6	990·7	72·4	71·8	74	69	3·3	3·8	*n* 56	69	29	11	28	8	5	0 ⌊	—		✳ showers early. Fine.
13	996·3	995·2	72·5	74·9	76	70	4·8	6·0	82	85	22	5	21	3	4	10	4·4		Fine to c.
14	981·6	978·1	74·0	77·3	80	72	6·3	7·9	96	95	14	5	18	5	10 ●	9	5·4		● to ≡ ⋮ *a*. o. all afternoon.
15	972·5	962·8	77·4	77·9	79	77	8·0	7·9	97	91	—	1	8	4	10	10 ●	9·9		Dull and o. ● afternoon.
16	964·9	971·4	76·8	75·5	79	75	7·6	6·7	96	91	18	4	—	1	10 ●0 ≡0	10 ≡0	3·6		o., with ● at times till 17 h.
17	977·4	986·6	73·8	74·5	76	73	6·2	5·8	96	85	—	0	2	6,	7 ≡0	8	—		≡0 *a*. Fine afternoon.
18	995·0	1002·1	74·0	69·1	75	67	5·4	3·1	82	68	2	9	—	1	3	3 ⌊	—		Fine. ⌊Ш *n*.
19	1002·6	1000·4	66·7	72·6	74	65	3·4	5·0	88	84	—	0	19	2	7 ⌊	7	0·3		⌊. Fine red sunrise. o.
20	997·2	991·0	73·5	74·8	77	73	6·0	6·7	94	96	14	2	—	1	10 ●0	10 ● ≡0	10·4		≡0 and drizzling ● showers.
21	980·9	982·5	80·4	72·8	81	71	9·6	5·1	94	86	26	11	—	1	9	5	1·4		d. at times. Double Ш 21 h.
22	978·4	966·3	73·5	79·2	80	71	6·2	9·4	97	100	—	0	14	5	10 ●0 ≡0	10 ●0 ≡0	14·7		● ≡0 at intervals. ●2 18 h.–20 h.
23	953·4	952·8	77·2	75·6	80	75	7·8	6·8	95	93	17	11	12	2	10 ●0	10	11·0		Dull and o., with d. ●2 evening.
24	950·4	947·7	76·0	77·4	79	76	7·2	7·6	95	92	5	5	7	6	9	10 ●0	10·2		Dull and o. ● *p*.
25	947·2	953·3	79·6	75·0	80	75	9·4	6·7	97	95	17	8	—	1	10 ●0	2	1·4		Dull and o. ● at times.
26	962·1	971·8	74·6	77·2	79	74	6·1	7·5	89	92	23	2	17	3	10 ●0	10	2·9		o. to fair. ● 21 h.
27	962·6	959·3	75·1	76·7	79	75	6·5	7·1	91	89	6	9	1	11	10 ●	10	12·0		●2 all morning. d. at times *p*.
28	978·5	983·5	75·1	75·1	76	75	6·2	6·8	88	95	32	3	6	4	10 ●0	10	0·5		o. and d. *a*. and *p*.
29	981·6	976·5	74·9	75·8	77	74	6·4	6·8	91	91	4	6	8	12	10 ●0	10 ●	7·7		o. and d.
30	973·6	973·7	77·6	79·4	80	77	7·2	8·6	85	90	14	7	14	6	4	9	2·2		● from 10 h. 30 m. Fair evening.
31	959·9	961·2	82·4	80·1	*x* 83	*x* 79	10·5	9·4	89	93	14	11	18	15	10 ●	10 ●	*x* 30·5		o., with ●2 *a*. and *p*.
Means	971·4	971·9	75·0	75·2	77·8	72·5	6·5	6·4	90	88		4·9		5·2	8·5	7·7	201·0	—	Monthly **Totals** or **Means**.
Normal 1911-14	976·1	975·9	76·0	76·3	78·5	73·6	6·9	7·1	89	89		6·7		6·9	—	—	222·0	—	**Normals**.

No record.

5. Atmospheric Electricity and Terrestrial Magnetism:—Richmond (Kew Observatory).

* The mean values of the Potential gradient in Table 5 are for 28 days; they 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.

x denotes the maximum and *n* the minimum value in the column. *z* Indeterminate.

Day.	Remarks.	Potential Gradient, Volts per metre. Factor 2·41.				Charge per cc. ×10²⁰.		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.*												
		v/m.	v/m.	v/m.	v/m.	E.m.-U.	E.m.-U.	Amp/cm².			γ	h m	γ	h m	γ	′	h m	′	h m	′
1	Dull from 9 h. ● at intervals.	215	230	230	95	—	—	--	2	0	457	18 31	442	9 25	*n* 15	16·8	12 35	12·7	22 50	4·1
2	Fair. ⊕ 12 h.–13 h.	150	430	295	540	350	220	0·20	1	0	462	19 18	434	23 20	28	17·6	12 8	11·6	22 5	6·0
3	≡ *a.* Mostly dull.	405	270	215	500	—	—	—	0	0	461	5 0	436	22 52	25	17·3	10 50	9·2	23 2	8·1
4	≡● *a.* Dull throughout.	-80	485	160	160	—	—	—	2	0	457	19 18	438	9 53	19	16·6	11 43	12·3	0 21	4·3
5	Fair to o. ● 16 h.–21 h.	110	355	255	95	—	—	—	1	0	461	19 2	441	9 35	20	16·7	12 29	12·6	22 2	4·1
6	● early. Fine 10 h.–13 h.	30	220	*z* ±	245	—	—	—	2	2	*x* 504	22 45	*n* 304	18 16	*x*200	*x* 32·7	15 19	*n*-16·3	22 30	*x* 49·0
7	Fair to fine *a.*; dull later.	150	420	135	-230	—	—	—	1	1	471	21 24	391	3 39	80	20·2	3 56	1·7	21 11	18·5
8	Mostly fine. ≡⁰ *n.* [Dull.	230	475	350	825	240	220	0·25	0	1	463	23 23	423	11 13	40	18·5	12 30	9·7	23 10	8·8
9	⌣ early. ● 11 h. 30 m.–18 h.	755	880	-365	325	—	—	—	2	1	462	20 23	420	20 0	42	16·6	13 23	3·7	20 0	12·9
10	Dull *a.* Fair *p.*	210	150	215	460	—	—	—	0	0	468	12 27	431	20 4	37	16·4	11 19	12·6	19 2	3·8
11	● 4 h.–8 h. Fine 11 h.–14 h.	325	555	340	390	—	—	—	1	1	458	18 2	424	23 40	34	16·8	12 30	8·1	21 49	8·7
12	⌣≡⁰ to c. ✳ 11 h. Fine *n.*	475	515	660	865	—	—	—	1	1	458	19 25	421	3 8	37	15·8	13 10	6·5	0 58	9·3
13	⌣ *a.* and *n.* Mostly fine.	380	715	515	675	470	280	0·55	0	0	470	12 50	446	1 40	24	17·0	12 36	12·1	3 23	4·9
14	⌣ early. Dull throughout.	620	675	230	205	—	—	—	1	1	475	22 38	413	18 29	62	19·5	14 55	8·6	22 10	10·9
15	● till 11 h. Dull all day.	-15	-80	215	135	—	—	—	2	2	479	6 2	380	18 0	99	20·0	13 8	1·4	21 23	18·6
16	Fine *a.* ● showers *p.* ⌒ 15 h.	325	215	0	785	—	—	—	1	1	471	23 51	426	14 33	45	18·0	12 0	12·4	23 36	5·6
17	≡ 9 h.–11 h. and 14 h. ◫ 19 h.	350	635	650	565	430	800	0·60	0	1	472	19 55	436	12 35	36	16·6	12 10	10·0	19 4	6·6
18	≡⁰ *a.* Dull to fair.	350	380	540	500	—	—	—	0	0	469	19 3	453	0 28	16	15·7	13 30	12·1	8 55	*n* 3·6
19	⌣≡⁰ *a.* Fine all day. ◫ 18 h.	555	700	755	795	—	—	—	0	1	476	22 53	436	18 16	40	17·3	13 29	8·3	22 48	9·0
20	Dull *a.*; finer later.	555	635	475	515	—	—	—	1	0	470	18 3	452	3 46	18	16·3	13 17	12·1	19 53	4·2
21	Dull all day.	-135	160	190	390	—	—	—	2	0	477	7 18	456	23 20	21	16·8	11 45	12·6	1 10	4·2
22	● 5 h.–9 h. Dull throughout.	430	295	95	475	1050	610	0·10	0	0	469	6 32	452	23 59	17	16·6	12 13	11·0	23 34	5·6
23	● early. Fine to c., and ●.	-120	525	*z* ±	565	500	380	—	2	1	478	8 5	423	20 23	55	17·8	9 20	7·7	20 32	10·1
24	o., with ● at intervals.	25	310	-110	110	—	—	—	2	1	471	20 10	445	0 48	26	16·7	16 30	9·1	20 0	7·6
25	o., with fine intervals. [20 h.	70	55	245	445	—	—	—	1	1	483	22 30	436	15 8	47	18·2	12 25	9·7	23 48	8·5
26	Fine till 14 h., then c. ● from	70	135	245	-135	—	—	—	2	2	475	4 55	403	12 33	72	21·0	13 20	6·9	1 30	14·1
27	● early. Mostly fine.	—	—	270	190	—	—	—	1	1	466	20 55	427	15 0	39	17·9	13 13	4·0	21 43	13·9
28	Fine till 12 h., then dull to fair.	110	380	475	610	—	—	—	0	0	468	17 15	439	10 43	29	16·7	12 8	11·1	20 32	5·6
29	Dull throughout.	460	295	430	350	—	—	—	1	1	475	1 1	446	2 3	29	18·6	0 43	9·4	22 23	9·2
30	Dull and o. from 11 h.	160	310	150	120	540	700	0·30	1	0	463	14 11	443	11 15	20	17·9	13 2	9·7	3 38	8·2
31	● 10 h.–13 h. Dull to fair.	90	120	190	340	—	—	—	2	1	476	22 15	438	11 5	38	16·8	12 48	9·6	21 30	7·2
M.		262*	382*	278*	389*	—	—	—	—	—	470	—	428	—	42	18·0	—	8·5	—	9·5

6. Atmospheric Electricity and Terrestrial Magnetism:—Eskdalemuir.

Day.	Potential Gradient, Volts per metre. Factor 6·43.				Charge per cc. ×10²⁰.		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. 4000 γ+.		Minimum. 4000 γ+.		Maximum. 45000 γ+.		Minimum. 45000 γ+.	
	3 h.	9 h.	15 h.	21 h.	+.	−.	*c.*			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.	Amp/cm².														
1	268	433	683	-796	520	390	—	1 *b*	0	21 33	1013	1000	9 17	12 55	1071	1048	0 12	0 35	164	157	13 20
2	381	519	337	182	—	—	—	1 *b*	0	20 15	1018	991	23 17	12 9	1076	1041	22 40	23 0	167	155	12 18
3	173	173	*z*	...	—	—	—	...	1	9 6	1029	992	0 19	13 35	1073	1025	23 3	23 0	168	153	5 12
4	...	...	199	822	—	—	—	...	0	{19 13, 19 45}	1016	998	11 25	12 0	1068	1044	0 16	0 15	166	159	15 0
5	87	943	*z*	424	—	—	—	2 *c*	0	{19 10, 20 56}	1019	1001	10 51	12 31	1073	1052	22 40	0 10	162	158	23 55
6	-1548	-113	251	381	—	—	—	2 *c*	2	22 41	*x* 1155	986	21 56	15 21	*x* 1169	*n* 838	22 30	‡	*x*>371	*n* 97	21 8
7	260	208	138	173	—	—	—	1 *a*	1	21 23	1058	930	3 33	3 57	1082	976	21 13	16 40	177	142	0 0
8	69	182	...	...	—	—	—	...	1	23 19	1034	969	2 8	12 30	1075	1030	0 17	15 30	175	150	3 2
9	...	...	606	*z*	—	—	—	...	1	20 15	1043	973	19 52	13 37	1067	982	19 58	20 4	177	162	23 28
10	*z*	-9	260	78	—	—	—	2 *c*	1	14 14	1019	980	20 3	12 48	1071	1045	19 6	20 10	182	149	12 22
11	52	*z*	-95	173	—	—	—	2 *b*	1	21 53	1011	972	22 29	14 12	1071	1019	21 50	20 5	173	159	11 20
12	216	311	467	632	—	—	—	0 *b*	1	0 4	1019	979	3 24	7 44	1065	1002	0 55	3 9	168	155	7 50
13	147	173	182	337	—	—	—	0 *a*	0	22 34	1012	996	9 25	13 10	1072	1046	2 46	18 45	167	160	9 10
14	242	-268	173	459	—	—	—	1 *b*	1	22 32	1036	952	18 27	12 41	1083	1015	22 13	18 40	199	155	9 55
15	355	407	-1644	43	—	—	—	2 *c*	2	16 53	1096	*n* 916	21 17	15 22	1090	949	21 21	18 6	220	148	6 10
16	138	*z*	407	830	—	—	—	1 *c*	1	23 50	1028	960	14 27	12 2	1071	1039	0 2	15 8	179	149	0 35
17	337	683	874	164	—	—	—	0 *a*	1	19 52	1029	974	12 36	0 17	1065	1029	19 7	16 10	172	151	1 45
18	164	87	363	683	70	260	—	0 *a*	0	19 46	1012	990	13 7	{12 47, 13 33}	1062	1043	9 18	10 12	166	160	4 45
19	225	277	484	606	—	—	—	0 *b*	1	22 45	1038	978	18 10	13 25	1071	1019	23 10	18 33	175	157	5 56
20	441	-389	692	-363	—	—	—	2 *b*	0	17 48	1011	986	3 44	12 53	1070	1040	19 56	20 20	164	156	12 8
21	-337	182	286	...	—	—	—	? 2 *b*	0	8 0	1018	1001	14 20	{11 45, 11 50}	1070	1044	0 29	14 9	164	155	7 16
22	...	753	1306	459	—	—	—	...	0	6 3	1015	995	11 54	10 57	1066	1028	23 57	13 20	163	155	6 20
23	-1055	-519	43	-242	—	—	—	2 *c*	1	20 56	1016	967	20 21	7 56	1080	1002	20 29	20 42	176	144	8 8
24	78	502	286	-1306	—	—	—	2 *c*	1	20 5	1036	991	0 49	12 10	1068	1017	20 0	{0 50, 19 58}	160	151	7 10
25	95	130	268	804	—	—	—	2 *c*	1	21 45	1042	975	7 37	22 32	1086	1017	23 50	20 10	165	140	22 48
26	459	*z*	251	329	—	—	—	1 *b*	1	4 54	1033	935	12 28	11 38	1086	1001	1 30	13 13	165	126	7 8
27	260	...	337	-43	390	330	—	? 2 *b*	1	21 44	1026	964	14 56	13 15	1073	984	21 44	21 57	159	147	8 56
28	-156	-78	78	260	—	—	—	2 *b*	0	20 40	1011	983	0 17	{13 19, 19 27}	1059	1029	20 32	2 37	156	150	22 48
29	-225	-87	-35	-830	—	—	—	2 *b*	1	0 36	1018	988	11 0	0 42	1084	1025	22 25	22 35	157	137	1 16
30	225	303	...	329	—	—	—	1 *b*	1	5 48	1010	984	15 37	13 5	1076	1033	3 38	20 10	155	147	6 53
31	-337	-199	173	-519	—	—	—	2 *c*	1	22 7	1035	982	11 11	12 46	1070	1029	2 21	13 44	158	144	23 30
M.	-6*	115*	212*	37*	—	—	—	—	—	—	1031	977	—	—	1076	1016	—	—	170†	131†	—

* 18 days. *See* note above. † 30 days. ‡ Between 18·10 and 18·40.

7. Seismological Diary.

Earthquakes:—Eskdalemuir.

Day.	Phase.	Time, G.M.T.	Period.	Amplitudes. A_N.	Amplitudes. A_E.	Amplitudes. A_Z.	Δ.	Remarks.
		h m s	s	μ	μ	μ	km.	
3	P	2 50 40	...	...	...	...	...	
	i	2 59 50	...	...	...	...	...	
	e	3 7 30	...	...	...	...	...	
	L	3 13	...	...	...	...	...	
	M	3 16½	30	32	28	...	...	
	M	3 20	21	...	...	...	...	
	F	4½	...	...	...	...	...	
6		21½ to 22¼	...	...	...	...	...	Small disturbance.
7		11 to 11 10	...	...	...	...	...	Disturbance masked by microseisms.
9		14½ to 15	...	...	...	...	...	Small disturbance.
17	P	7 14 18	...	...	...	...	...	
	i	7 21 46	..	...	...	...	...	
	i	7 24 10	...	...	...	...	...	
	e	7 26 8	...	...	...	...	...	
	L	7 31	...	...	...	...	...	
	F	8¾	...	...	...	...	...	
18	P	18 36 33	...	...	...	...	...	
	e	18 45 3	...	...	...	...	...	
	F	20	...	...	...	...	...	
19	P (?)	20 37 46	...	...	...	...	...	
	e	20 44 2	...	...	...	...	...	
	e	20 56 36	...	...	...	...	...	
	L	20 59	...	...	...	...	...	
	M	21 6	30	3	...	...	...	
	F	22	...	...	...	...	...	
26	e S (?)	9 41 20	...	...	...	...	...	Subsequent disturbance masked by microseisms.
29	e	0 2 16	...	...	...	...	...	
	i	0 17 52	...	...	...	...	...	
	L	0 24	...	...	...	...	...	
	M	0 28	...	...	...	...	...	
	F	1	...	...	...	...	...	
31		12¾ to 13¼	...	...	...	...	...	Disturbance masked by wind and microseisms.

Microseisms of N. Component:—Eskdalemuir.

Date.	0 h. A_N.	0 h. T.	6 h. A_N.	6 h. T.	12 h. A_N.	12 h. T.	18 h. A_N.	18 h. T.
	μ	s	μ	s	μ	s	μ	s
1	2·2	5	2·0	6	1·5	6	1·6	5·5
2	1·2	5·5	0·8	5·5	0·5	5	0·9	5
3	1·0	5	1·9	5	2·5	5·5	2·7	5
4	3·0	5	2·5	5·5	1·7	5·5	1·8	5
5	2·3	5	1·7	5	1·8	5	1·9	4·5
6	2·4	5·5	2·0	5	2·2	5·5	2·7	5
7	2·8	5	3·0	5·5	4·7	6	3·5	5·5
8	3·6	5	2·5	6	2·3	6	1·6	6
9	1·8	5·5	1·7	5·5	1·8	5	2·0	5·5
10	2·3	6	2·7	6	3·3	5	2·6	6·5
11	3·3	6	3·2	6	2·2	6	1·4	5·5
12	1·6	6	1·9	6	2·4	7	2·0	7·5
13	2·9	7	2·8	7	No trace		2·1	7
14	3·3	6·5	2·4	6·5	3·0	6	2·5	5
15	1·6	6	No trace		1·4	6·5	1·7	5
16	1·4	6	0·9	5	0·9	5	1·6	5·5
17	1·2	5·5	0·9	5	1·0	5	0·8	4·5
18	1·1	4·5	0·4	5	0·3	4·5	0·3	4·5
19	0·4	4·5	0·6	5	0·2	4·5	0·3	4
20	0·4	5·5	0·6	5·5	0·8	5	0·9	5
21	0·8	5·5	0·9	5·5	0·8	5	0·8	5·5
22	0·7	5·5	0·7	5	0·6	5	0·9	5
23	1·6	5	2·5	5	3·2	6	7·0	6
24	7·0	6	4·7	6	3·9	6	4·4	6·5
25	3·1	7	3·4	5·5	2·9	7	1·8	6
26	2·5	5·5	1·8	6	1·9	5·5	1·2	5·5
27	0·9	6	1·8	5	3·0	5·5	2·7	5·5
28	3·0	6	3·1	5	2·5	5·5	2·5	4·5
29	1·7	5·5	1·5	5	1·8	5	1·5	5
30	1·2	5	1·1	5	1·9	5·5	2·6	5
31	2·5	5·5	2·5	5·5	2·8	5	2·5	7

Earthquakes:—Richmond (Kew Observatory).

Day.	Times, G.M.T. of Commencement.	Times, G.M.T. of Max. Phase.	Remarks.
	h m	h m	
3	2 59·0	3 26·5	Amplitude on trace 1·0 mm.
6	21 43·0	21 50·0	
7	...	11 7·9	
17	7 24·0	7 37·5	Amplitude on trace 1·0 mm.
,,	...	19 39	Very small.
18	18 50	18 56	Series of very small movements.
19	...	21 12·0	Very small.
26	9 49	9 52·5	
29	0 1·4	0 33·0	
31	...	12 51·5	Small.

8. WIND COMPONENTS: Metres per second at fixed hours, together with the greatest mean hourly velocity, or the greatest velocity attained in a gust, and the time of its occurrence.

NORTH WALES:—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.			
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	9·2	...	...	...	2·6	...	...	6·4	...	...	...	5·2	...	2·7	...	1·8	14·8	2	50
2	...	5·5	...	2·3	1·2	...	...	0·5	...	...	...	2·6	...	...	...	6·9	12·5	23	55
3	...	...	...	8·2	1·3	...	...	6·5	0·3	...	...	1·3	...	1·1	...	2·8	12·0	0	0
4	0·4	...	...	0·9	...	1·0	...	4·8	...	1·4	...	7·1	...	3·7	...	5·5	13·3	17	40
5	1·8	...	...	2·7	6·8	...	...	4·6	9·5	...	...	...	2·4	...	...	1·0	15·3	14	35
6	2·0	...	...	3·0	...	...	9·2	...	2·6	...	3·8	...	...	...	5·9	...	18·5	6	30
7	4·4	...	6·6	...	3·5	...	8·5	...	2·9	...	6·9	...	2·2	...	10·9	...	23·0	24	0
8	...	...	13·1	...	...	6·0	9·0	...	...	6·6	4·4	...	...	1·3	0·9	...	19·3	4	20
9	...	1·3	0·9	...	1·2	...	...	6·1	2·2	...	...	11·3	4·0	...	6·0	...	17·2	14	15
10	5·3	...	5·3	...	7·6	...	3·1	...	2·5	...	12·6	...	3·5	...	8·5	...	23·0	10	45
11	1·8	...	9·0	...	...	5·4	13·0	...	...	9·8	14·7	...	...	6·7	10·1	...	26·0	12	40
12	...	6·8	4·6	...	...	10·1	...	6·7	...	12·8	5·3	...	...	10·0	2·0	...	20·5	16	40
13	...	11·8	4·9	...	...	7·9	5·3	...	...	6·7	6·7	...	...	...	3·6	...	18·3	1	45
14	6·8	...	4·6	...	5·1	...	7·6	...	1·0	...	5·1	...	0·4	...	2·3	...	18·6	6	50
15	2·1	...	...	0·9	2·8	...	...	6·7	2·4	...	3·6	...	4·0	...	4·0	...	12·0	23	45
16	3·5	...	8·5	...	2·4	...	3·6	...	3·8	...	...	0·8	3·8	...	...	0·8	15·6	0	45
17	4·8	...	1·0	...	2·2	...	...	1·4	...	1·8	...	2·7	...	5·5	...	3·7	9·2	2	25
18	...	4·0	...	4·0	...	4·9	...	4·9	...	4·2	...	4·2	...	1·3	...	3·0	11·2	10	15
19	...	0·4	...	2·0	...	0·3	...	1·3	3·6	...	...	...	...	...	4·6	...	7·9	18	25
20	...	1·3	6·5	...	...	2·1	5·2	...	...	1·6	8·0	...	...	1·5	7·7	...	12·7	23	45
21	3·1	...	7·6	...	...	2·0	10·3	...	...	3·1	7·6	...	...	2·7	4·1	...	16·6	6	40
22	1·7	...	8·3	...	3·3	...	4·9	...	7·1	...	...	1·4	8·2	...	...	...	21·1	23	40
23	11·6	...	11·6	...	7·4	...	7·4	...	5·8	...	8·7	...	5·1	...	5·1	...	27·2	3	10
24	2·7	...	...	1·8	...	1·1	...	5·5	3·8	...	0·8	...	5·1	...	...	1·0	10·9	24	0
25	5·6	...	5·6	...	6·2	...	...	...	5·1	...	...	1·0	4·0	...	...	1·6	14·4	3	25
26	2·6	...	13·1	...	1·7	...	8·3	...	4·9	...	4·9	...	1·6	...	1·6	...	21·7	4	45
27	...	...	...	7·9	11·9	...	...	2·4	8·6	...	8·6	...	5·7	...	13·7	...	26·0	11	40
28	...	...	11·5	...	...	...	5·9	...	...	1·4	...	2·2	...	3·6	...	8·8	19·2	0	10
29	...	4·6	...	11·2	...	...	...	15·4	...	3·2	...	16·1	6·7	...	...	10·1	23·6	23	25
30	11·2	...	...	4·6	9·1	...	...	3·8	8·0	...	...	1·6	9·1	...	...	3·8	22·0	0	10
31	12·4	...	...	5·1	9·8	...	...	...	13·8	...	2·7	...	9·0	...	6·0	...	27·4	7	0
S+N & W+E	128·7		177·3		126·9		178·3		140·5		161·9		114·9		147·8				
S−N & W−E	57·3		68·1		45·3		24·3		35·3		46·9		34·7		46·2				

SCOTLAND N.:—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.		
	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	hrs.
1	1·5	...	...	3·6	1·4	...	...	3·3	...	1·7	...	2·5	...	7·4	...	1·5	9·2	23
2	...	10·6	...	4·4	...	10·0	...	2·0	...	7·3	3·0	...	...	6·5	1·3	...	13·4	5
3	...	2·7	4·1	...	...	1·0	4·8	...	...	7·9	...	...	...	0·6	3·2	...	13·8	12
4	...	2·2	1·4	...	...	3·8	2·6	...	...	...	1·9	...	...	1·1	1·7	...	4·6	9
5	...	1·9	1·3	...	...	2·2	...	1·4	...	1·0	...	4·8	2·4	...	...	12·3	16·1	23
6	2·7	...	...	13·8	5·5	...	...	13·3	...	...	...	16·4	...	4·6	...	11·2	16·7	18
7	...	0·4	2·3	...	2·5	...	2·5	...	12·3	...	2·4	...	5·2	...	3·4	...	12·5	15
8	...	14·5	...	2·9	...	9·6	6·4	...	...	7·4	7·4	...	...	1·5	7·7	...	15·1	2
9	...	4·9	7·4	...	...	1·9	4·5	...	4·4	...	4·4	...	...	4·7	...	3·1	8·9	3, 4, 10
10	...	5·7	...	8·5	1·9	...	...	9·3	...	1·9	...	9·3	...	1·9	...	9·6	11·8	19
11	...	1·9	...	9·3	...	...	...	8·9	...	6·3	...	6·3	...	9·6	...	1·9	13·4	19
12	...	7·2	7·2	...	...	11·1	...	...	...	11·5	...	...	...	11·7	7·8	...	19·7	6
13	...	6·8	4·6	...	...	9·7	4·0	...	...	4·7	4·7	...	...	1·0	0·2	...	12·5	1
14	0·6	...	1·5	...	7·9	...	...	3·3	4·3	...	...	2·9	0·6	...	...	0·4	10·5	12
15	...	...	2·0	...	...	1·5	...	0·6	...	1·1	...	5·5	...	2·2	...	10·9	11·1	21, 22, 23
16	...	2·0	...	10·0	...	1·9	...	9·6	...	3·7	...	5·5	...	6·0	...	4·0	11·1	2, 4, 5, 7
17	...	10·3	...	4·3	...	11·8	...	...	...	8·3	1·7	...	...	10·0	...	2·0	13·4	4
18	...	6·1	1·2	...	...	4·5	1·9	...	...	1·8	2·7	...	...	...	9·2	...	10·8	22
19	...	1·1	...	1·1	2·3	...	...	...	...	...	8·9	...	...	1·9	4·5	...	9·2	16
20	...	0·8	...	3·8	0·8	...	...	4·2	4·9	...	...	3·3	9·8	...	...	6·6	12·5	24
21	10·3	...	...	4·3	1·4	...	...	1·4	...	1·8	2·7	...	1·7	...	...	8·3	13·1	1
22	1·3	...	...	6·5	5·8	...	...	5·8	7·6	...	...	7·6	8·3	...	...	8·3	14·1	24
23	9·3	...	...	13·9	7·8	...	...	18·8	4·0	...	...	20·3	3·4	...	...	17·1	22·0	8
24	3·1	...	...	15·8	3·2	...	...	16·1	...	...	...	15·4	2·9	...	...	14·5	16·4	9, 10
25	2·6	...	...	13·1	6·0	...	...	14·5	5·3	...	...	12·8	7·3	...	...	10·9	16·1	6
26	6·8	...	...	1·3	9·0	...	...	1·8	5·5	...	...	1·1	4·1	...	2·7	...	10·8	8
27	3·0	...	2·0	...	...	5·5	...	2·3	...	8·1	...	5·4	...	9·1	...	3·8	12·8	22
28	...	10·1	...	6·7	...	6·8	...	4·6	...	5·1	...	5·1	...	3·3	...	3·3	13·1	1, 5
29	...	1·8	...	4·3	...	...	...	7·2	2·9	...	...	6·9	6·4	...	...	9·6	13·4	24
30	5·3	...	...	12·8	8·6	...	...	12·8	12·0	...	...	8·0	13·0	...	...	5·4	15·4	9, 10
31	12·4	...	...	5·1	15·3	...	...	10·2	12·5	...	...	8·4	14·5	...	...	6·0	18·4	9
S+N & W+E	149·9		180·5		160·7		178·1		155·3		187·3		162·7		192·4			
S−N & W−E	−32·1		−110·5		−1·9		−124·7		−3·9		−107·7		−3·5		−109·0			

ENGLAND S.W.:—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.			
	m/s	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	h	m
1	7·0	...	10·4	...	...	...	18·8	...	...	2·8	14·3	...	...	2·3	11·5	...	25·5	10	30
2	...	...	8·3	...	3·0	...	1·3	...	1·9	...	...	9·4	1·7	...	1·2	...	16·7	16	20
3	3·8	...	2·6	...	2·6	...	13·0	...	3·5	...	8·5	...	3·5	...	3·5	...	16·7	9	45
4	...	1·1	...	2·7	10·4	...	7·0	...	10·0	...	10·0	...	...	...	13·8	...	24·7	18	45
5	5·8	...	2·4	...	7·4	...	...	1·5	7·1	...	...	...	6·9	...	...	4·6	16·0	22	40
6	...	7·0	10·4	...	3·5	...	5·2	...	5·6	...	13·5	...	11·1	...	16·6	...	24·5	20	45
7	5·1	...	7·6	...	6·9	...	2·9	...	6·2	...	2·6	...	...	3·7	8·9	...	18·9	17	25
8	...	4·0	9·6	...	...	1·9	4·6	...	0·0	0·0	0·0	0·0	2·1	...	...	5·0	14·7	2	5
9	3·8	...	...	9·2	9·8	...	...	2·0	5·8	...	8·6	...	5·9	...	5·9	...	16·7	11	55
10	8·5	...	3·5	...	...	...	18·0	...	3·4	...	8·1	...	2·6	...	3·8	...	21·9	7	40
11	...	...	7·1	...	...	...	10·0	...	...	6·2	4·2	...	...	7·4	7·4	...	24·0	23	20
12	...	9·4	9·4	...	...	10·0	...	...	...	14·6	...	...	...	11·7	...	...	21·7	1	0
13	...	9·0	1·8	...	...	5·0	2·1	...	...	2·8	4·2	...	2·8	...	4·2	...	14·6	0	50
14	6·2	...	6·2	...	9·4	...	6·3	...	6·8	...	6·8	...	9·4	...	1·9	...	18·5	23	55
15	10·2	...	...	2·0	2·8	...	4·2	...	...	...	10·4	...	3·0	...	7·3	...	21·0	11	5
16	1·1	...	5·7	...	...	...	5·0	...	3·5	...	2·3	...	0·9	...	0·9	...	11·2	0	40
17	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	...	1·7	1·2	...	...	2·9	...	...	8·5	23	40
18	...	3·5	...	2·3	...	3·8	...	3·8	...	3·5	...	5·2	...	3·4	...	8·1	13·9	21	45
19	...	1·3	...	6·6	...	...	...	4·2	...	1·4	...	2·1	...	0·6	...	3·2	13·6	2	50
20	...	1·5	...	1·5	...	3·8	...	...	...	5·9	3·9	...	...	6·5	6·5	...	12·9	21	15
21	...	4·0	9·6	...	...	4·8	11·6	...	...	5·1	12·3	...	...	3·7	8·9	...	18·3	15	15
22	...	...	8·8	...	1·6	...	8·1	...	9·4	...	6·3	...	10·6	...	10·6	...	23·1	20	30
23	3·1	...	15·5	...	4·8	...	11·6	...	4·2	...	6·2	...	5·4	...	13·1	...	22·6	11	45
24	7·0	...	10·4	...	7·7	...	11·5	...	5·9	...	14·2	...	5·7	...	13·9	...	24·6	15	20
25	5·3	...	5·3	...	6·5	...	6·5	...	...	2·8	13·9	...	...	6·1	14·6	...	21·9	23	40
26	...	6·1	14·6	...	...	...	8·3	...	4·3	...	1·8	...	8·3	...	5·6	...	22·2	1	20
27	14·7	...	...	2·9	13·9	...	20·8	...	...	...	25·0	...	...	...	14·2	...	39·5	9	20
28	...	...	5·4	...	1·8	...	...	1·8	2·9	...	...	6·9	5·9	...	...	3·9	12·4	14	0
29	5·3	...	...	12·8	13·1	...	...	5·4	20·4	...	...	4·5	10·3	...	10·3	...	30·0	17	10
30	8·8	...	...	...	5·7	...	...	1·1	5·7	...	1·1	...	11·7	...	...	...	21·5	23	45
31	19·6	...	...	...	11·5	...	7·7	...	5·1	...	12·3	...	9·7	...	6·5	..	27·6	4	5
S+N & W+E	162·2		194·6		151·7		204·3		158·5		219·8		165·8		215·9				
S−N & W−E	68·4		114·6		93·1		164·7		64·9		163·6		69·2		166·3				

ENGLAND E.:—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.			
																	m/s.	h	m
1																	14·6	12	50
2																	10·1	3	55
3																	12·8	?	
4																	18·2	21	25
5																	18·9	12	5
6																	22·9	11	55
7																	15·9	0	45
8																	16·4	14	15
9																	21·6	18	45
10																	18·9	17	5
11																	19·3	17	0
12																	16·0	13	10
13																	13·3	2	30
14																	17·9	16	35
15																	18·0	16	20
16																	10·5	0	35
17																	9·0	0	35
18																	13·2	20	0
19																	11·7	1	10
20																	6·4	15	15
21																	8·2	4	5
22																	8·0	22	30
23																	11·2	5	5
24																	12·8	24	0
25																	12·7	11	10
26																	17·0	12	35
27																	28·7	21	35
28																	22·3	1	50
29																	13·5	17	5
30																	14·9	22	55
31																	20·0	10	35
S+N & W+E																			
S−N & W−E																			

Direction recorder out of order.

9. Soundings with Kites.

None.

10. Soundings with Pilot Balloons.

Benson. No. 1571. December 2, 1915. 10 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Clear sky except for cirrus clouds coming from W.N.W. Balloon lost in cirrus. A registering balloon was used for this ascent. The instrument was not returned.
	5000	290	17	+16	−6		
	4500	290	14	+13	−5		
	4000	290	12	+11	−4		
	3500	295	10	+ 9	−4		
	3000	300	8	+ 7	−4		
	2500	295	9	+ 8	−4		
	2000	295	8	+ 7	−3		*Pressure Distribution* (7 h.).
	1750	295	5	+ 5	−2		
	1500	290	2	+ 2	−1	4·0 approx.	Col, with depressions S.W. of Ireland and over North Sea. Anticyclones over Spain and beyond Iceland. Col drifting slowly eastward during day.
	1250	305	4	+ 3	−2		
	1000	300	7	+ 6	−3		
	750	320	3	+ 2	−2		
	500	310	2	+ 2	−1		
100 m. above ground.	157	275	3	+ 3	0		
Anemometer.	82	270	1	+ 1	0		
Geostrophic wind.	(at 7 h.) 270		7	+ 7	0	...	Weight of balloon 350 gm., free lift 420 gm.
	(at 13 h.)	*Indeterminate*			...	...	

Eskdalemuir. No. 1585 December 17, 1915. 12 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2300	...	...	...	...		Misty. A.-Cu., A.-St., St.-Cu. all from N.N.W. Sky five-tenths covered. St.-Cu. Components (at 1000 m.). W.-E., + 0·7 m/s.; S.-N., − 1·1 m/s. Balloon entered cloud.
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	...	...	...	...	...		
	2000	325	2·5	+1·5	−2·0		
	1750	295	1·1	+1·0	−0·5	2·4	*Pressure Distribution* (7 h.).
	1500	305	2·4	+1·9	−1·4		
	1250	305	2·5	+2·1	−1·4		
	1000	260	1·0	+1·0	+0·2		Large shallow depression, Scotland to Spain. During day Anticyclone spreading down over Scotland.
	750	40	1·4	−0·9	−1·1		
	500			0·0?	0·0?		
	340	Balloon almost overhead.		0·0?	0·0?		
	250			0·0?	0·0?		
(at 13 h.)		? 40	? 5	? −3	? −4	...	Weight of balloon 10·7 gm., free lift 48·2 gm.

Falmouth. No. 100. December 8, 1915. 12 h. 0 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2810	...	...	...	...		Atmosphere clear. Cu. and St.-Cu., 8.
	2500	280	19·0	+18·5	− 4·0		
	2000	275	9·5	+ 9·5	− 0·5		
	1750	270	9·5	+ 9·5	+ 0·5		*Pressure Distribution* (7 h.).
	1500	275	6·5	+ 6·5	− 0·5		
	1250	295	8·0	+ 7·5	− 3·5		
	1000	315	10·0	+ 7·0	− 7·0	2·1	Depression over North Sea and Southern Norway. A second depression out over Atlantic. Both systems moving E. during day.
	750	315	8·5	+ 6·5	− 6·0		
	500	295	7·5	+ 7·0	− 3·0		
100 m. above ground.	151	280	4·9	+ 4·8	− 0·8		
Anemometer.	63	280	2·0	+ 2·0	− 0·4		
Geostrophic wind.	(at 7 h.) 270		14	+ 14	0	...	Weight of balloon 5·5 gm., free lift 21·4 gm.
	(at 13 h.)	?270	? 4	? +4	? 0	...	

South Farnborough. No. 446. December 2, 1915. 7 h. 40 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E., 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
	2725	290	13·5	+12·5	− 4·5		Slight fog in hollow of ground. Balloon lost while taking a reading. The balloon got into sunshine at the 15th minute.
	2500	285	14·0	+13·5	− 3·5		
	2000	300	13·0	+11·5	− 6·5		
	1750	310	11·5	+ 9·0	− 7·5		
	1500	305	11·0	+ 9·0	− 6·5		
	1250	305	10·5	+ 8·5	− 6·0		
	1000	300	9·5	+ 8·0	− 5·0	2·4	*Pressure Distribution* (7 h.).
	750	295	10·0	+ 9·0	− 4·0		
	500	300	9·0	+ 8·0	− 4·5		
	170	265	6·0	+ 6·0	+ 0·5		Col, with depressions S.W. of Ireland and over North Sea. Anticyclones over Spain and beyond Iceland.
	105	250	light	...	...		
(at 7 h.)		270	7	+ 7	0	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 447. December 2, 1915. 12 h. 25 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90°=E. 180°=S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	4725	280	16·5	+16·0	− 3·0		Misty. Bank of Ci.-St., and probably also A.-St. moving from S.W. Balloon lost while taking a reading.
	4500	280	13·5	+13·5	− 2·5		
	4000	275	12·0	+12·0	− 1·0		
	3500	280	9·0	+ 9·0	− 1·5		
	3000	270	7·5	+ 7·5	0·0		
	2500	275	7·0	+ 7·0	− 0·5		
	2000	270	7·5	+ 7·5	0·0		
	1750	280	8·0	+ 8·0	− 1·5	2·4	*Pressure Distribution* (7 h.).
	1500	280	5·5	+ 5·5	− 1·0		
	1250	280	3·5	+ 3·4	− 0·6		See preceding ascent. Col drifting slowly eastward during day.
	1000	295	4·5	+ 4·1	− 1·9		
	750	295	4·5	+ 4·1	− 1·9		
	500	300	3·5	+ 3·0	− 1·8		
100 m. above ground.	170	275	1·0	+ 1·0	− 0·1		
Anemometer.	105	calm	...	...	...		
Geostrophic wind.	(at 13 h.)	*Indeterminate*				...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 449. December 8, 1915. 7 h. 35 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2575	275	21·0	+21·0	− 2·0		Atmosphere clear. Balloon lost in distance.
	2500	275	22·0	+22·0	− 2·0		Balloon showed up dark against the sunrise.
	2000	270	26·5	+26·5	0·0		Maximum velocity at 1850 m., 30·5 m/s. (+30·5 W.-E. ; 0·0 S.-N.).
	1750	265	27·0	+27·0	+ 2·5		
	1500	265	23·0	+23·0	+ 2·0		
	1250	275	19·5	+19·5	− 1·5		
	1000	275	18·5	+18·5	− 1·5	2·4	*Pressure Distribution* (7 h.).
	750	270	24·0	+24·0	0·0		Depression over North Sea and Southern Norway.
	500	265	21·5	+21·5	+ 2·0		A second depression out over Atlantic.
100 m. above ground.	170	245	8·0	+ 7·5	+ 3·5		
Anemometer.	105	235	9·0	+ 7·5	+ 5·0		
Geostrophic wind.	(at 7 h.)	260	20	+20	+ 3	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 451. December 13, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Atmosphere clear. Small piece of Ci. in zenith.
	2300	325	14·5	+ 8·5	−12·0		Some Ci. in E. later in ascent.
	2000	325	14·0	+ 8·0	−11·5		Balloon lost while taking a reading.
	1750	335	14·5	+ 6·0	−13·0		
	1500	335	14·5	+ 6·0	−13·0		
	1250	350	15·0	+ 2·5	−15·0		*Pressure Distribution* (7 h.).
	1000	340	17·5	+ 6·0	−16·5	2·4	Anticyclone W. of Bay of Biscay.
	750	335	15·5	+ 6·5	−14·0		Depression over Gulf of Finland.
	500	330	15·0	+ 7·5	−13·0		
100 m. above ground.	170	300	7·0	+ 6·0	− 3·5		
Anemometer.	105	270	light	...	...		
Geostrophic wind.	(at 7 h.)	330	11	+ 6	−10	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 452. December 14, 1915. 7 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3575	265	11·5	+11·5	+ 1·0		Misty.
	3500	265	12·0	+12·0	+ 1·0		A.-Cu. moving slowly from about N.W.
	3000	265	13·5	+13·5	+ 1·0		Local minimum in velocity at 1850 m., 8·0 m/s. (+8·0 W.-E. ; +1·5 S.-N.).
	2500	270	13·0	+13·0	0·0		
	2000	255	10·0	+ 9·5	+ 2·5		
	1750	265	9·5	+ 9·5	+ 1·0		*Pressure Distribution* (7 h.).
	1500	245	14·5	+13·0	+ 6·0		
	1250	240	18·0	+15·5	+ 9·0	2·4	Depression S. of Iceland.
	1000	235	18·0	+15·0	+10·5		Anticyclone over Spain and France.
	750	225	15·5	+11·0	+11·0		
	500	215	14·0	+ 8·0	+11·5		
100 m. above ground.	170	200	10·0	+ 3·5	+ 9·5		
Anemometer.	105	180	5·5	0·0	+ 5·0		
Geostrophic wind.	(at 7 h.)	230	15	+11	+10	...	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 453. December 16, 1915. 7 h. 45 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	...	...	...	...	...		Misty.
	3425	215	15·5	+ 9·0	+12·5		Cu.-Nb.
	3000	215	14·0	+ 8·0	+11·5		Balloon lost either behind low clouds or in distance.
	2500	210	12·5	+ 6·5	+11·0		A shower fell just before ascent.
	2000	210	14·0	+ 7·0	+12·0		
	1750	215	12·0	+ 7·0	+10·0		*Pressure Distribution* (7 h.).
	1500	220	13·0	+ 8·5	+10·0		
	1250	215	12·5	+ 7·0	+10·0	2·4	Depression over Scotland and Ireland.
	1000	215	12·0	+ 7·0	+10·0		
	750	215	11·0	+ 6·5	+ 9·0		
	500	215	11·5	+ 6·5	+ 9·5		
100 m. above ground.	170	185	8·0	+ 0·5	+ 8·0		
Anemometer.	105	170	3·0	− 0·5	+ 3·0		
Geostrophic wind.	(at 7 h.)	220	12	+ 8	+ 9	..	Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 455. December 20, 1915. 7 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2150	320	10·0	+ 5·5	− 6·5		Somewhat hazy.
	...	...	...	...	...		A.-St. 10, but evidently some lower cloud St.-Cu. 1.
	2000	330	9·0	+ 4·5	− 8·0		Balloon entered cloud.
	1750	320	9·0	+ 6·0	− 7·0		Maximum velocity at 1450 m., 11·0 m/s (+7·0 W.-E. ; −8·5 S.-N.).
	1500	320	9·5	+ 6·0	− 7·5		
	1250	310	7·0	+ 5·5	− 4·5		
	1000	315	7·5	+ 5·5	− 5·5		
	750	315	10·0	+ 7·0	− 7·0	2·4	
	500	330	8·5	+ 4·5	− 7·5		*Pressure Distribution* (7 h.).
100 m. above ground.	170	290	4·5	+ 4·2	− 1·5		Anticyclone S.W. of Ireland.
Anemometer.	105	290	light	...	...		
Geostrophic wind.	(at 7 h.)	360	6	0	− 6		Approx. weights: balloon 12 gm., free lift 45 gm.

South Farnborough. No. 457. December 23, 1915. 7 h. 55 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	2875	255	17·5	+17·0	+ 4·5		Atmosphere clear.
	2500	250	16·0	+15·0	+ 5·5		Ci. moving from W. by S.
	2000	255	13·0	+12·5	+ 3·5		Ascent abandoned in order to get the result finished in time.
	1750	250	13·0	+12·0	+ 4·5		Sudden decrease in velocity at about 1625 m.
	1500	255	20·0	+19·5	+ 5·0		
	1250	260	20·0	+19·5	+ 3·5		
	1000	260	19·0	+18·5	+ 3·5		Maximum velocity at 600 m., 24·0 m/s. (+23·0 W.-E. ; +6·0 S.-N.).
	750	255	21·5	+21·0	+ 5·5	2·4	
	500	255	20·5	+20·0	+ 5·5		
100 m. above ground.	170	235	10·5	+ 8·5	+ 6·0		*Pressure Distribution* (7 h.).
Anemometer.	105	225	7·5	+ 5·5	+ 5·5		Depression N.W. of Ireland.
Geostrophic wind.	(at 7 h.)	250	17	+16	+ 6	...	Approx. weights: balloon 12 gm., free lift 45 gm.

10. Soundings with Pilot Balloons—*continued.*

South Farnborough. No. 459. December 28, 1915. 7 h. 50 m. G.M.T.

	Height above M.S.L.	Wind. Direction. (90° = E., 180° = S.)	Wind. Velocity.	Wind. Components. W.-E.	Wind. Components. S.-N.	Vertical Velocity of Balloon.	Cloud Observations and Remarks.
	metres.	Degrees from N.	m/s.	m/s.	m/s.	m/s.	
Greatest height.	3150	255	18·0	+17·5	+4·5		Atmosphere clear.
	3000	255	21·0	+20·5	+5·5		Ci. moving from S.W., and some low cl… Balloon lost in distance.
	2500	255	21·5	+21·0	+5·5		
	2000	260	16·5	+16·0	+3·0		*Pressure Distribution* (7 h.).
	1750	270	15·5	+15·5	0·0		Depression over Denmark. A second … pression W. of Bay of Biscay.
	1500	250	20·5	+19·5	+7·0		
	1250	265	19·5	+19·5	+1·5	2·4	
	1000	280	17·5	+17·0	−3·0		
	750	275	15·0	+15·0	−1·5		
	500	270	15·0	+15·0	0·0		
100 m. above ground.	170	240	8·0	+7·0	+4·0		
Anemometer.	105	215	7·5	+4·5	+6·0		
Geostrophic wind.	(at 7 h.)	270	14	+14	0	…	Approx. weights: balloon 12 gm., free lift 45 gm.

Note.—In addition to the ascents recorded above, pilot balloons, which were lost sight of before reaching a height of 2 kilometres, were sent up during the month at the various stations as follows:—Eskdalemuir, 2; South Farnborough, 14.

11. Soundings with Registering Balloons.

None.

12. Nephoscope Observations.

Aberdeen. Taken at 13 h. (1 p.m.) G.M.T.

Date.	Type of Cloud.	Direction. (90° = E., 180° = S.)	Computed for 1000 m. Velocity V.	Components. W.-E.	Components. S.-N.	Remarks.
		°	m/s.	m/s.	m/s.	
1	St.-Cu.	118	3·0	−2·6	+1·4	Very thin, small cloudlets.
2	Ci.-Cu.	263	2·0	+2·0	+0·2	Fine wavelet type. *Observation at 12 h. 30 m.* B… the Ci.-Cu. was Fr.-Nb. from North.
3	Ci.	265	5·5	+5·5	+0·5	Coarse Ci. to Ci.-Cu. and Ci.-St. *Observatio… 11 h. 30 m.*
4	Ci.	260	6·3	+6·2	+1·1	Coarse Ci. to Ci.-St.
7	Ci.-Cu.	196	2·5	+0·6	+2·4	Ci.-Cu. to thin flat A.-Cu.
8	Ci.-Cu.	276	2·5	+2·5	−0·3	Ci.-Cu. in lenticular sheets.
9	Ci.	268	5·0	+5·0	+0·2	Coarse Ci. to Ci.-Cu.
16	Cu.-Nb.	165	2·8	−0·7	+2·7	Apex of cloud measured.
18	St.-Cu.	3	5·0	−0·3	−5·0	St.-Cu. in thin flakes. Probably remains of Cu. apices.
21	Ci.	276	2·0	+2·0	−0·2	Coarse "false" Ci., becoming A.-Cu. in places.
28	St.-Cu.	10	0·5	−0·1	−0·5	St.-Cu. hardly moving; type normal.

Note.—From the 9th onwards the month was characterised by Nb. type of cloud almost entirely.

METEOROLOGICAL OFFICE OBSERVATORIES.

GEOPHYSICAL JOURNAL, 1915.

ANNUAL SUPPLEMENT.

Summary of the Records of Registering Balloon Ascents.

DURING the year 1915 thirteen registering balloons were sent up, of these ten were found, but three failed to reach the stratosphere. The average height was rather under 12 km. and this is lower than in previous years.

The more salient features of each ascent are given in the usual form in Table I.

Place.	Date.	Time, G.M.T.	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.	°
Benson, Oxfordshire.	Jan. 6	7 5	...	...	...	7·4	240	...	...	...	155	80
Lat., 51° 37′ N.	Feb. 4	15 50	...	...	...	8·2	228	1007	...	...	209	15
Long., 1° 7′ W.	Mar. 3	16 40	1	11·7	205	12·0	208	1012	301	251	78	75
Height above M.S.L., 57 m.	Apr. 1	7 5	1	10·2	210	13·3	220	1025	297	245	34	144
	June 1	19 25	...	...	...	7·1	240	1010	...	...	17	106
	,, 3	7 10	1	11·3	216	14·3	...	1018	313	259	186	70
	Aug. 5	19 10	1	10·4	215	13·8?	219	1013	308	257	69	60
	Sept. 1	18 40	1	8·5	221	13·4	223	1004	293	248	88	93
	Oct. 7	7 0	1	11·1	213	12·4	218	1025	309	255	72	160
	Nov. 4	16 0	1	9·3	218	10·0	219	1015	293	246	74	216

H_c denotes the height in kilometres 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 measured through east.
Type, *see* page viii.

The ascents are well distributed over the year and it has seemed worth while computing the means, which, considering the paucity of the observations, agree well with the average.

Wt. 43708/421—400—9/17.—N. & Co., Ltd. Gp. XV.

ANNUAL MEANS OF TEMPERATURE AT DIFFERENT HEIGHTS.

(Excess of Absolute Temperature above 200 a.)

Years.	Ground Level.	Heights in Kilometres above Mean Sea Level.											
		1	2	3	4	5	6	7	8	9	10	11	12
1908 to 1914	82·1	77·0	72·4	67·4	61·3	54·9	48·1	40·7	33·9	27·6	21·9	19·2	19·4
1915 . .	82·3	76·0	71·8	66·4	59·9	52·7	45·4	38·1	30·2	23·7	18·4	16·9	18·0

The average in question is given for comparison and is that for the period 1908 to 1914 inclusive, but the figures for 1915 refer to Benson only, whereas the average refers to the British Isles. The more southerly station has in general a higher temperature up to about 10 km. and a lower temperature above 10 km.

The mean value of H_c, viz. 10·4 km., is about the normal.

Seismology at Eskdalemuir, 1915.

The Galitzine instruments were standardised with the following results. The notation is that employed by Prince Galitzine in his *Vorlesungen über Seismometrie* and reproduced by G. W. Walker in his *Modern Seismology*.

	North-South Seismograph.	East-West Seismograph.	Vertical Seismograph.
Date . . .	May 28	May 25	March 5
T_1 . . .	...	...	13·05 secs.
T . . .	23·1 secs.	23·9 secs.	10·7 secs.
μ^2 . . .	$+0·03_2$	$-0·01_5$	+0·50
$2Ak$ . . .	88200	86800	43500

The following constants were assumed to have suffered no change since previous standardisations—

T_1 . . .	24·7 secs.	24·8 secs.	...
l . . .	118 mm.	118 mm.	359 mm.

The magnification for long-continued sinusoidal waves was computed for the horizontal seismographs by means of Galitzine's formula

$$\frac{AkTp}{\pi l} \frac{1}{(1+u^2)(1+u_1^2)\sqrt{1-\mu^2 f(u)}}$$

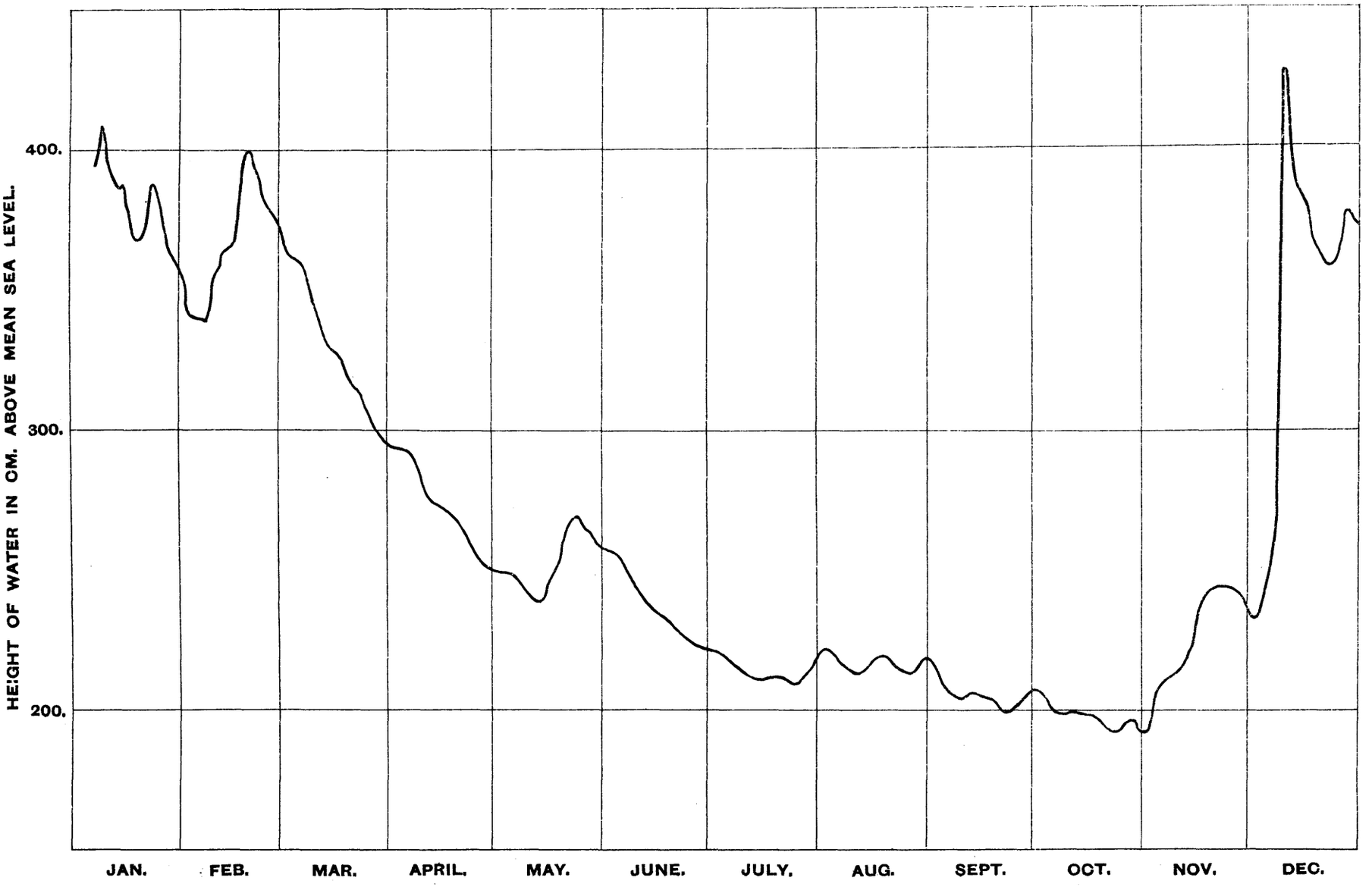
with the results given in the table below. The lag in the time of the maximum on the paper behind the maximum in the ground was calculated from a pair of formulæ given by Galitzine ("Seismometrische Tabellen," formulæ 17 and 26) and applying only to long-continued sinusoidal waves. The results are set out in the table below.

Complete Period of Earth-Wave.	Microns in Ground, per Millimetre on Paper.		Lag of Maximum on Paper behind Maximum in Ground.
Sec.	N.—S. Component.	E.—W. Component.	Sec.
0	...	...	0
3	2·89	2·93	3·6
5	1·83	1·86	5·7
7	1·41	1·43	7·5
10	1·15	1·17	10·2
12	1·09	1·10	11·5
15	1·08	1·09	13·5
17	1·11	1·11	14·7
20	1·20	1·20	16·3
25	1·45	1·45	18·6
30	1·84	1·82	20·8
40	...	...	24·1

To face p. 127.

KEW OBSERVATORY. WATER-LEVEL RECORD, 1915.

HEIGHT ABOVE MEAN SEA LEVEL OF GROUND ON WHICH RAIN-GAUGE STANDS=5·5 METRES.



Wyman & Sons, Ltd., M.O. Press, London, S.W. 7.

Ps. 3693. 26130. S.O.P. 463. 400. 8/17.

In July 1915 Mr J. J. Shaw set up a seismograph of his design (No. 3) on the deep pillar which formerly supported the Milne instrument. The new seismograph records the E.-W. component. An account of this instrument, of its standardisation and of a comparison between it and the Galitzine E.-W. instrument, will be found in the British Association Report for 1915.

The monthly earthquake bulletin has been brought into the form recommended by the International Seismological Congress held at Manchester in 1911.

Tables of Monthly Means of Electrical and Magnetic Data for Richmond (Kew Observatory) and Eskdalemuir, 1915.

Kew.

Month.	Charge per cc. $\times 10^{20}$.		Horizontal Force.			West Declination.			Declination Range, Equivalent Force.
	+ .	− .	Max. 18000 γ + .	Min. 18000 γ + .	Range.	Max. 15° + .	Min. 15° + .	Range.	
	E.-m. U.	E.-m. U.	γ	γ	γ	′	′	′	γ
January . .	445	425	487	451	36 *n*	26·5	18·9	7·6 *n*	41 *n*
February . .	545	410	488	447	41	27·0	16·6	10·3	56
March . . .	465	285 *n*	495	435	60	28·2 *x*	14·4	13·7	74
April . . .	545	410	496	440	56	27·1	12·7	14·3	77
May . . .	730	380	503 *x*	446	57	26·0	13·3	12·6	68
June . . .	465	315	495	417	78 *x*	25·9	10·7	15·2	82
July . . .	695	610 *x*	491	426	65	25·1	11·1	14·1	76
August . .	595	420	486	422	64	25·1	10·3	14·8	79
September . .	750 *x*	510	479	419	60	24·1	9·2	15·0	80
October . .	425	325	478	412	65	23·5	6·2 *n*	17·3 *x*	93 *x*
November . .	380 *n*	310	477	411 *n*	67	21·3	6·2 *n*	15·1	81
December . .	510	460	470	428	42	18·0	8·5	9·5	51
Year . . .	545	405	487	430	58	24·8	11·5	13·3	72

Eskdalemuir.

Month.	Charge per cc. $\times 10^{20}$.		North Component.			West Component.			Vertical Component.		
	+ .	− .	Max. 15000 γ + .	Min. 15000 γ + .	Range.	Max. 5000 γ + .	Min. 5000 γ + .	Range.	Max. 45000 γ + .	Min. 45000 γ + .	Range.
	E.-m. U.	E.-m. U.	γ	γ	γ	γ	γ	γ	γ	γ	γ
January . .	590	285 *n*	1029	982	47 *n*	120	73	47 *n*	197	177	20
February . .	775	605	1031	976	55	122	61	61	202	172	30
March . . .	650	390	1042	963	79	126	49	77	195	150	45
April . . .	815	440	1048	966	82	128 *x*	45	83	192	146	46
May . . .	580	425	1050 *x*	974	76	120	47	73	189	151	38
June . . .	715	390	1042	953	89	127	22	105 *x*	187	148	39
July . . .	875	455	1041	960	81	112	34	78	187	147	40
August . .	885	690 *x*	1036	954	82	108	23	85	187	142	45
September . .	1090 *x*	615	1035	951	84	105	20	85	195	150	45
October . .	690	295	1040	943 *n*	97	101	−3 *n*	104	189	133 *n*	56
November . .	690	620	1043	944	99 *x*	93	2	91	203 *x*	144	59 *x*
December . .	325 *n*	325	1031	977	54	76	16	60	170	151	19 *n*
Year . . .	725	460	1039	962	77	112	32	79	191	151	40

The two foregoing tables give the mean monthly values of the plus and minus electrical charges in the atmosphere per c.c., as observed with the Ebert apparatus at Richmond and Eskdalemuir.

The table also gives the mean monthly values of the daily maximum and minimum, and the corresponding daily range, of the magnetic elements at the two Observatories, as deduced from the curve measurements. There are vertical force data only for Eskdalemuir. To facilitate comparison with the Eskdalemuir data the range at Richmond of the force at right angles to the normal magnetic meridian has been calculated. The formula used is $R = H\delta D$ in which H is the mean horizontal force and δD is the circular measure of the range in declination.

As usual, x and n denote the highest and lowest of the monthly means. The traces at Eskdalemuir got beyond the limits of registration on one day in June and one day in October, the value accepted for the maximum in either case representing the upper edge of the photographic sheet. The mean values of the maximum and of the daily range of vertical force for these two months are thus underestimates, but the differences from the true values are probably small.

It will be observed that the ranges of declination at Richmond and of the west component at Eskdalemuir follow a very similar course throughout the year; while the Eskdalemuir range is invariably the larger, the excess in eight months out of the twelve does not exceed 6γ. The range of horizontal force at Richmond also follows a similar course to that of the north component at Eskdalemuir, but the former is only about three-fourths of the latter. At both Observatories January was decidedly the month of lowest daily range, a position generally held at Richmond by December. Every range both at Richmond and Eskdalemuir, with the single exception of the August value for the north component at Eskdalemuir, is in excess of the corresponding range for 1914, the mean excess for the elements in the horizontal plane being about 30 per cent. of the 1914 value.

The extreme values for the year and the corresponding annual ranges were as follows:—

		Maximum.	Minimum.	Range.
Richmond (Kew Observatory)	Horizontal Force .	18618γ (June 17)	18159γ (June 17)	459γ
	Declination . .	15° 42′·8 (June 17)	14° 31′·0 (June 17)	1° 11′·8
Eskdalemuir	North Component	>16426γ (June 17)	<15575γ (June 17)	>851γ
	West ,,	5388γ (June 17)	4681γ (June 17)	707γ
	Vertical ,,	>45486γ (June 17)	44986γ (Oct. 24)	>500γ

The Water-Level Recorder at Richmond, Kew Observatory.

A description of the apparatus employed will be found in the Annual Supplement for 1914.

Regular observations commenced in July 1914. The values of the mean height—$\frac{1}{2}$ (maximum + minimum)—for each day have appeared in the monthly numbers of the Journal, along with the extreme values recorded during the month, and the dates on which these presented themselves. The general nature of the variation will be most readily derived from the diagram facing page 127.

A Memoir dealing with the causes of the fluctuations in the level of the water is being prepared by Mr. E. G. Bilham.

Errata in the Geophysical Journal for the Year 1915.

Page 9.—Table 1.—South Kensington, Mean Daily Total Radiation, *for* "132" *read* "401."

Page 50.—Table 3.—Humidity Normals, *for* "20 years" *read* "25 years."

Page 67, 79, 87.—Table 6.—Vertical Component, at head of column, for "Min. Max." *read* "Max Min"

Page 97.—Table 2.—30th, Magnetism, *for* "19° 55′·5" *read* "19° 59′·5."