

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Loppa, County of Edinburgh, in Lat. _____, Long. _____, Distance from Sea _____ miles.
Height of Cistern of the Barometer above Mean Sea-level 20 feet, above Ground _____ feet.
During the MONTH of May 1883.
The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER. No. —				WIND.				RAIN.		CLOUDS.				SUNSHINE. Hours.	THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. <i>Mention the hour at which Storms, including Thunder and Lightning, began and ended.</i>	Days of Month.				
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		9 A.M.		P.M.		9 h. A.M.			9 A.M. 9 P.M.										
		Barometer. * No.	Attach- ed Ther- mometer	Barometer. No.	Attach- ed Ther- mometer	Max. No.	Min. No.	Max. in Sun's rays No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	Readings of the H. Cup Anemometer. No.	No. of hours in which it fell.	Amount in inches. No.	Velocity (0—6), and Direction.	Amount, (0—10), and Species.	Velocity (0—10), and Direction.		Amount, (0—10), and Species.	No. 3 inches.	No. 12 inches.					No. 22 inches.	Temperature of Well at depth of feet. No.	Temperature at 1 foot, above, and depth.	No. 9 A.M. 9 P.M.
		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°		°	°	°					°	°	°	°
	1																																1		
	2																																2		
	3																																3		
	4	30.040	41	30.094	43	44.5						42.0	39.0			16	mod						10			44.0	45.0	44.0					4		
	5	30.100	44	30.128	44	48.0	39.0			40.0	39.0	41.0	38.0	E	lt	6	mod					10	0	0		43.0	45.0	44.5					5		
	6	30.174	44	30.074	47	54.0	30.0			45.5	42.0	47.0	41.0	16	lt	16	lt					1	0	5		45.0	45.5	44.0					6		
	7	29.904	46	29.856	48	52.5	30.0	(47.0 43.5)		45.0	43.5	43.0	40.0	Z		Z										45.5	46.0	45.0					7		
	8	29.800	48	29.768	48	44.0	35.0			38.5	39.0	41.0	37.0	16	mod	16	mod					10				42.0	45.0	45.0					8		
	9	29.730	48	29.760	47	46.0	38.0			41.0	38.0	44.0	38.0	16	lt	16	lt					8		10		41.5	43.0	44.0					9		
	10	29.664	50	29.580	55	47.0	39.0			44.5	40.0	45.0	39.0	N	fresh	N	fresh					8		10		42.5	43.5	43.5					10		
	11	29.586	52	29.774	52	54.0	38.0			47.0	40.5	43.0	39.0	NW	fresh	NW	mod					2		1		44.5	43.5	43.5					11		
	12	29.570	52	29.550	56	59.0	36.0			43.0	42.0	52.0	48.0	SE	lt												43.0	45.0	44.0					12	
	13	29.636	57	29.684	60	61.5	42.0			59.0	53.0	52.0	48.0	SW	fresh	W	mod					2		0		50.5	46.5	45.0					13		
	14	29.838	61	29.902	61	63.0	48.0			56.0	49.0	53.0	48.0	S	lt							6				53.0	48.5	46.0					14		
	15	30.112	59	30.280	59	61.0	45.0			57.0	48.0	52.0	48.0	Z	fresh	SE	lt					8		4		52.5	48.5	47.0	48.0				15		
	16	30.426	58	30.456	59	62.0	40.0			52.0	47.0	51.0	47.0	NW	lt	2						7		4		57.0	50.0	47.5	48.2				16		
	17	30.430	58	30.340	59	63.0	38.0			55.0	44.5	57.0	45.0	N	lt							9		6		52.5	50.0	48.0	49.2				17		
	18	30.254	56	29.946	58	57.5	44.0			57.0	45.0	50.0	47.0	N	fresh	W	mod					6		9		50.0	50.5	48.5	48.1				18		
	19	30.022	56	30.036	57	59.0	45.0			52.0	47.0	48.0	46.0	Z		NE	lt							3		51.0	50.0	48.5	48.5				19		
	20	30.102	57	30.114	56	55.5	42.0			50.5	45.0	50.0	45.0	NE	lt	mod	lt					3		4		53.0	51.0	49.0	50.2				20		
	21	30.138	57	30.130	60	65.5	42.0			55.0	52.0	57.0	52.0	SW	lt							8		8		52.0	51.0	49.5	50.2				21		
	22	30.076	61	30.084	60	62.0	37.0			61.0	53.0	53.0	48.0	SW	lt	N	lt					7		7		55.5	52.0	50.0	49.5				22		
	23	30.042	60	29.996	59	61.0	48.0			56.0	49.0	52.0	48.0	W	mod	N	fresh					6		8		53.0	52.5	50.5	49.5				23		
	24	29.960	61	29.938	62	70.0	57.0			59.0	53.0	56.0	52.0	SW	fresh	SW	fresh					3				57.0	53.0	50.8	57.8				24		
	25	29.832	62	29.730	63	69.0	52.0			63.0	57.0	57.0	53.0	W	mod	SW	lt					4		4		59.0	55.0	52.0	57.0				25		
	26	29.738	61	29.810	60	58.5	48.0			52.0	48.0	57.0	44.0	W		lt						7		3		54.5	53.5	52.5	57.				26		
	27	29.940	58	29.936	60	60.5	39.0			57.0	46.0	52.0	45.0	W								3		2		56.0	53.5	52.5					27		
	28	29.764	60	29.788	60	62.0	47.0			55.0	52.0	57.0	52.0	W		W						9		6		53.0	52.0	52.0	50.0				28		
	29	29.696	61	29.728	62	63.0	57.0			56.0	49.0	50.5	46.0	SW	mod	SW	lt					4		2		53.0	53.5	52.0					29		
	30	30.134	69	30.222	61	62.0	46.0			53.0	47.0	53.0	48.0	W		Z						7		3		53.0	53.0	52.0					30		
	31	30.136	60	30.060	61	60.0	43.0			56.0	53.0	52.0		SW		Z						8		10		53.5	54.5	52.0					31		
Sums.		1211 9	11	1515 10	11	114	12			1672 131	9	15														105	106	123							
		2683 15	157	2702 4	17	450	680			390 105	05	156															120	150	128						
Means.		29.958	55.6	29.965	56.4	58.0	42.5			57.4	46.4	50.0	45.6														50	44.9	48.0						
† Total Corrections for Instrumental Errors.																																			
† Corrections for Diurnal Range.																																			
"Corrected Means."																																			
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction \ddagger for Temp. (Col. 2), = 29.958 7.3 = 29.885
Corrected Mean "of Barometer at 9 P.M., minus the Correction \ddagger for Temp. (Col. 4), = 29.965 7.5 = 29.890
Mean at Station, corrected, and at 32', = 29.888
Correction for height, feet above Mean Sea-level, = 22
Mean, reduced to 32', and Sea-level, = 29.910
Highest Reading, corrected for Index error, on the 16 th, = 30.456
Lowest Do. Do., on the 12 th, = 29.510
Difference, or Monthly Range, = 0.946

* Each instrument tested at the Office in Edinburgh bears the stamp "S.M.S." and a number to be entered in the Heading; or the Number and Initials of the Maker may be here given.
† Embryonic corrections for both capillarity and Index Errors.
‡ The Diurnal Range for Scotland is as yet unknown.
§ These "Hygrometrical Deductions" are calculated from Glasgow's Hygrometrical Tables, Second Edition only.
|| While the Diurnal Range is unknown, the Artificial Mean of Cols. 5 and 6 will be entered as the "Calculated Mean Temperature."
Any Observations not taken under the conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 24 th, = 40.0
Lowest in Month, corrected for Index errors, on the th, = 30.0
Difference, or Monthly Range, = 10.0
"Corrected Mean" of all the Highest, (Col. 5), = 58.0
"Corrected Mean" of all the Lowest, (Col. 6), = 42.5
Difference, or Mean Daily Range, = 15.5
** Calculated Mean Temperature of Month, = 50.2

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the th, =
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, =
Lowest at Night, Black Bulb, (corrected for Index errors), on the th, =
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, =
Difference of above Means or Range ("exposed"), =

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 50.7
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 46.0
† Computed Temperature of Dew-Point, = 41.0
† Do. Elastic Force of Vapour, = 2.58
† Do. Weight of Vapour in a Cubic Foot of Air, ... =
† Relative Humidity, (Saturation = 100), = 71
RAIN fell on Days; Amount in Inches, = 0.30

WIND.												SUMMARY.		
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.			
A.M.	1	4	1	1	1	8	5	3	8					
P.M.	1	4	1	2	1	3	5	1	12					
Mean.	1	4	1	1	1	5	5	2	10					

Observations made and
Return verified by

(Signed)

Robert Mincham

100 yds

Height of Cistern of the Barometer above Mean Sea-level 20 feet, above Ground 8 feet.

During the MONTH of June 1883

The Hours of Observation are of Greenwich Time.

Robert Mainwaring

Corrected Mean" of Barometer at 9 P.M., *minus* the Correction $\left. \begin{array}{l} \text{for Temp. (Col. 4),} \\ \text{= } 30.012 \dots - \dots 88 \dots \end{array} \right\} = \underline{29.924}$

Mean at Station, corrected, and at 32°,..... = 27.924

Correction for height, feet above Mean Sea-level,..... = 22

Mean, reduced to 32°, and Sea-level,..... = 29.946

Highest Reading, corrected for Index error, on the 13th,..... = 30-400.

Lowest Do. Do., on the 26th,..... = 19-55-0

Difference, or **Monthly Range**,..... = 0-850

† The Diurnal Range for Scotland is as yet unknown.

†† These "Hygrometrical Deductions" are calculated from Glaisher's Hygrometrical Tables, Second Edition only.

Lowest in Month, corrected for Index errors, on the 5th, = 9.50

Difference, or **Monthly Range**, = 35.5

"Corrected Mean" of all the Highest, (Col. 5), = 61-9

"Corrected **Mean**" of all the Lowest, (Col. 6), = 46.7

Difference, or **Mean Daily Range**, = 15.2

** Calculated **Mean Temperature** of Month, = 54.3

"Corrected **Mean,**" (Col. 7), of **Black Bulb, Max. in Sun,**..... =

Lowest at Night, Black Bulb, (corrected for Index errors), on the th, ...

"Corrected **Mean,**" (Col. 8), of **Black Bulb, Min.** on grass, =

Difference of above Means or Range ("exposed"),

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry

Bulb, (Cols. 9 and 11), = 54-0

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols.

10 and 12, = 5-1-1

Computed Temperature of Dew-Point, = 47.8

Do. **Weight of Vapour in a Cubic Foot of Air**

Relative Humidity. (Saturation = 100)	70
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RAIN fell on	Days; Amount in Inches.	
		1-5-8

WIND.	SUMMARY.									Mean Force.	Mean Velocity in miles per day.
	N	NE	E	SE	S	SW	W	NW	Calm or Variable.		
A.M.		3	0			6	6		9		
P.M.	1	2	6	3		6	2		10		
Mean.	0	3	6	2	0	6	4	0	9		

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Glasgow, County of Edinburgh, in Lat. 55° 45' N, Long. 4° 15' W, Distance from Sea 100 yds. miles.
Height of Cistern of the Barometer above Mean Sea-level 20 feet, above Ground 20 feet.
During the MONTH of July 1883.
The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER. No. _____				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the H.Cup Anemometer. No. _____	No. of hours in which it fell.	No. _____	9 A.M.		P.M.		9 h. A.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		Barometer. * No. _____	At- tached Ther- mometer	Barometer. No. _____	At- tached Ther- mometer	Max. No. _____	Min. No. _____	Max. in Sun's rays	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direc- tion.	Force	Direc- tion.	Force				Velocity (0-10), and Direc- tion.	Amount (0-10), and Species.	Velocity (0-10), and Direc- tion.	Amount (0-10), and Species.	No. _____	No. _____					No. _____																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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BAROMETER, “corrected Mean” at 9 A.M., minus the Correction†† = 29.753
for Temp. (Col. 2), = 29.847. — 9.4.
Corrected Mean” of Barometer at 9 P.M., minus the Correction†† = 29.739
for Temp. (Col. 4), = 29.835. — 9.6.
Mean at Station, corrected, and at 32°, = 29.746
Correction for height, feet above Mean Sea-level, = 22
Mean, reduced to 32°, and Sea-level, = 29.768
Highest Reading, corrected for Index error, on the 27 th, = 30.026
Lowest Do. Do., on the 12 th, = 29.284
Difference, or Monthly Range, = 1.042

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 2 th, = 73.5
Lowest in Month, corrected for Index errors, on the 8 th, = 35.0
Difference, or Monthly Range, = 38.5
“Corrected Mean” of all the Highest, (Col. 5), = 64.7
“Corrected Mean” of all the Lowest, (Col. 6), = 49.0
Difference, or Mean Daily Range, = 15.7
* Calculated Mean Temperature of Month, = 56.8
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the th, =
“Corrected Mean,” (Col. 7), of Black Bulb, Max. in Sun, =
Lowest at Night, Black Bulb, (corrected for Index errors), on the th, =
“Corrected Mean,” (Col. 8), of Black Bulb, Min. on grass, =
Difference of above Means or Range (“exposed”), =

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 56.6
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 53.2
†† Computed Temperature of Dew-Point, = 49.9
†† Do. Elastic Force of Vapour, = 362
†† Do. Weight of Vapour in a Cubic Foot of Air, = 78
†† Relative Humidity, (Saturation = 100), = 78
RAIN fell on Days; Amount in Inches, = 3.40

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.		1	3	2	1	1	2	4	17		
P.M.		1	2	6	3	1	2	3	13		
Mean.		0	2	5	2	0	1	2	4	15	

(Signed)

Robert Muirhead.

Observations made and
Return verified by

Distance of _____

Height of Cistern of the Barometer above Mean Sea-level 20 feet, above Ground 4 feet.

During the MONTH of August 18883

The Hours of Observation are of Greenwich Time.

NOTATION USED IN GENERAL REMARKS.			
a.	<i>denotes aurora.</i>	m.	<i>denotes meteor.</i>
ci.	<i>denotes cirrus.</i>	ms.	<i>" meteors.</i>
ci.-cm.	<i>" cirro-cumulus.</i>	n.	<i>" nimbus.</i>
ci.-s.	<i>" cirro-stratus.</i>	r.	<i>" rain.</i>
cu.	<i>" cumulus.</i>	h. r.	<i>" heavy rain.</i>
cu.-s.	<i>" cumulo-stratus.</i>	c. h. r.	<i>" continued heavy rain.</i>
d.	<i>" dew.</i>	s.	<i>" stratus.</i>
f.	<i>" fog.</i>	sc.	<i>" send.</i>
fr.	<i>" frost.</i>	s.	<i>" sleet.</i>
fr.-fr.	<i>" hoar-frost.</i>	s.	<i>" snow.</i>
h.	<i>" haze.</i>	s. h. m.	<i>" solar halo.</i>
h. d.	<i>" heavy dew.</i>	s.	<i>" squall.</i>
hl.	<i>" hail.</i>	sgs.	<i>" squalls.</i>
l.	<i>" lightning.</i>	t.	<i>" thunder.</i>
l. c.	<i>" light clouds.</i>	t. s.	<i>" thunder storm.</i>
l. sh.	<i>" light showers.</i>	w.	<i>" wind.</i>
lu. co.	<i>" lunar corona.</i>	g.	<i>" gale of wind.</i>
lu. halo.	<i>" lunar halo.</i>		

S.-R. THERMOMETER, (in shade, etc.),	Highest in Month, (corrected for Index Errors), on the 20 th,.....	= 42.5
Lowest in Month, corrected for Index errors, on the 20 th,		= 45.0
Difference, or Monthly Range,		= 27.5
" Corrected Mean " of all the Highest, (Col. 5),		= 66.0
" Corrected Mean " of all the Lowest, (Col. 6),		= 50.5
Difference, or Mean Daily Range,		= 15.5
** Calculated Mean Temperature of Month,		= 58.2

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb , (Cols. 9 and 11),	=	57.2
Mean (corrected) A.M. and P.M. Reading of Wet Bulb , (Cols. 10 and 12),	=	53.9
## Computed Temperature of Dew-Point ,	=	50.8
## Do. Elastic Force of Vapour ,	=	372
## Do. Weight of Vapour in a Cubic Foot of Air , ...	=	
## Relative Humidity , (Saturation = 100),	=	79
RAIN fell on 9 Days ; Amount in Inches ,	=	2.45

Robert Minhead

Observations made and
Return verified by

(Signed)

ppp
Aug 1883

BOOK POST.

Secretary of the Meteorological Society of Scotland,
122 George Street
EDIN.

ppp
Aug 1883

ppp
Aug 1883

One of the chief objects that the *Scotsman Meteorological Society* proposed to itself when the Society was established in 1855, was to secure reports to compare with the system of observations pursued at all its Stations, and to make the observations as absolutely uniform as possible. Monthly Results from different Stations necessarily vary, it being found that differences between the Reports from two Stations, so very considerable as to render them almost incomparable, may arise from dissimilarity in the position or the character of the instruments, different hours of observation, or even from the use of differently constructed instruments. It is therefore hoped, that those who kindly furnish Reports to the Society will, by attracting the Society's attention to the following Directions, secure for their Monthly Returns, an accuracy and value commensurate with the labour and pains involved in making them; and, for the Tables published by the Society, an entire comparableness among the several Returns, without which the Society's Reports must inevitably fail in achieving one of the main objects of Meteorological Observation.

9 A.M. and 9 P.M. (Greenwich or Railway, time only) as specified in the following remarks, or at the top of the columns of the Schedule. It is hoped that the uniform punctuality in the time of reading the instruments will be observed. Observers, in some few cases, may find this impossible; in such instances, they are specially requested to mark opposite every reading the time at which it was taken, if not at 9 A.M. or 9 P.M. Weather-Glasses and Anemeters, though not used, are not to be omitted. Roughly variations of atmospheric height, barometric pressure, and wind, should be noted. The use of the aneroid is not recommended. No Barometer should be used for Magnetic Observation that is not supplied with a scale of adjustments or compensation which will assure that the height of the mercury in the tube is accurately measured from

The Barometer in which the error arising from the fluctuating surface of the mercury in the cistern is neglected, the height of the mercury in the tube is accurately measured from the fluctuating surface of the mercury in the cistern.

The Barometer in which the error arising from the fluctuating surface of the mercury in the cistern is entirely got rid of is Fourni's Barometer, the arrangement consisting in applying pressure by means of a screw to the bottom of the cistern, which is made of flexible leather, thus raising or depressing the surface till it just meets the zero point which forms the zero point of the fixed scale.

The Barometer originally constructed by Mr. Atlee of London, and usually called the Board of Trade Barometer, has the great convenience of requiring no adjustment of the column. Its scale-inches are not true inches, but so much shorter as to compensate the error which would otherwise arise from the fluctuations of the surface of mercury in the cistern. This is an excellent Barometer for ordinary Observers, inasmuch as it entirely eliminates the error of observation likely to arise in a few cases in setting the instrument to the zero point of the fixed scale when the light is not good. To show the accuracy with which these Barometers are made, it may be stated, that one was compared, during a whole year, with the Society's Standard Barometer, particular care being given to make the comparison when atmospheric pressure was rising or falling very rapidly, with the result, that none of the readings differed from those of the Standard more than 0.003 inch.

The comparison with atmospheric pressure was rising or falling very rapidly, with the result that none of the readings differed from those of the Standard more than 0.003 inch.

A modification of Fortin's Barometer is used at a number of the Society's Stations, by which the coincidence of the zero point, whose surface of the mercury is indicated by a little ivory float, whose stem passes freely through the lid and ease of the column. When the index-line on this little piston-rod is brought, by the adjusting screw, to form one straight line with those on its ivory frame, the surface of the mercury is then at the exact height from which the scale is graduated. In taking an observation, this preliminary setting must be made with scrupulous accuracy; as a slight error here will vitiate the readings from the vernier.

It is absolutely necessary that the Barometer which is to be used,

In taking an observation, the Attached Thermometer is first noted: the tube must then be gently tapped, and the thermometer carefully made. The eye, by raising and bringing it must be brought into the plane of the barack and from the thermometer to the lower edge of the venier, thus the surface of the mercury in the tube is exactly a tangent must be taken quickly, so as to prevent heat from the observer's hands and person from affecting the mercury. This of a lens will facilitate an accurate adjusting and reading of the Barometer. A mistake not infrequently made by those beginning to observe, consisting in setting the edge of the venier to the level of the clear surface of the mercury which is in direct contact with the glass tube, must be carefully avoided.

the level of the clear surface of the mercury which is in direct contact with the glass tube, must be carefully avoided.

The errors most frequently made in reading the Barometer are, errors of 1-1000 inch, 0-500 inch; that is to say, instead of 29-365 inches, either of 29-865 inches is sometimes set down—viz., as 30-365 inches, 28-365 inches, 29-865 inches, or 29-815 inches. Experience having shown that even the very best Observers make these mistakes, particular attention is directed to the reader:

When a Barometer having adjustable surfaces has to be removed from its fastenings, the ivory peg must first be screwed so as to form a tight plug to the stem, thus preventing the escape of the mercury. Then screw up the mercury not quite to the top of the tube, but to within a quarter of an inch of it, and take down the instrument; it should then be carried with the stem upmost. Before suspending the Barometer for use, it must be ascertained whether the space above the mercury in the tube is a complete vacuum; this is the case if, on inclining the instrument, a sharp tap is produced when the mercury strikes the top of the tube. If a full tap is heard, there is air in the tube, which must be got rid of.

ing the Barometer for use, it must be ascertained whether the space above the mercury in the tube is a complete vacuum; in this case if, on inclining the instrument, a sharp tap is produced when the mercury strikes the top of the tube. If a dull tap is heard, there is air in the tube, which must be got rid of.

As Barometers are liable to be damaged by the introduction of air into their tubes, on removal from place to place, or on being roughly handled, it may be useful to Observers to know how the instrument may be expelled. First close up the cistern by screwing the ivory plug tight, so as to prevent the escape of mercury; then serve up the mercury to about half an inch from the top of the tube, and by vigorously slowly inverted the instrument, place the top of the tube in a substance, such as the book and gently tap on the second through the palm of the hand, so as to incline the mercury. Since there is the column to the cistern, whenever it passes the escape. Above this is the weight of two atmospheres outside pressing on any air that may be admitted. After repeated trials, however, it is generally accomplished to get the clear metallic sound of the mercury, when gently struck against the top of the glass tube, will show when the whole of the air has been expelled. On banging up the Barometer, care must be taken to screw down the mercury in the tube before unscrewing the top of the cistern, for if this be not attended to, the mercury will flow out, and the instrument be seriously damaged.

[illegible]

Professor Phillips, and Negretti and Zambra a maximum of 100° C. and a minimum of 10° C. The Thermometers, and Rutherford's Minimum Thermometers are recommended. It is recommended that these Thermometers be graduated on the glass stem. The minimum Thermometer is liable to two derangements—viz, the rupture of the bulb, and the escape of the liquid from the tube of spirit breaking, and part of the spirit distilling by high temperature and boiling at the top of the tube. This derangement may be avoided by the use of Protected Thermometers, but on account of occasional occurrence with Protected Thermometers, a system of frequent examination with exposed Thermometers. Hence a systematic examination of Minimum Thermometers ought to be a regular part of the work carried on by each Observer.

[illegible][illegible]

where the detached portion of spirit is, which, being turned to vapour by the heat, will condense on the surface of the unbroken tube, and will be drawn up into the tube, and will be drawn up into the tube of spirit. Care must be taken that the heat is not applied too quickly; for, if this be done, the tube will break and the apparatus must be destroyed. The best way to apply the requisite amount of heat is by bringing the end of the tube slowly down towards the flame from a gas-burner; or, if gas be not at hand, a piece of heated metal will serve instead.

The bulbs of the Thermometers for registering the greatest heat from the sun's rays, and the least from radiations from the earth, must be made of the same material as the other bulbs.

The bulbs of the Thermometers for registering the greatest heat from the sun's rays, and the least from radiation during night, have a black coating, which may easily be made, or mented, by the application of a mixture of lampblack and printer's ink, to the white enamelled boxes, whose sides, exposed to the sun, and the surface must rest on wooden supports a few inches from the sun, and the glasses, of open siphons. Snow must not be allowed to grow on the sides of these Thermometers; nor the sun's heat to affect the bulbs, or the sides of the Thermometer by distillation. Black-bulbs enclosed in glass jackets may also be used, being indeed preferable to the open ones. It must, however, be added, that the whole subject of the observation of Solar and Terrestrial Radiation is not yet in a sufficiently advanced state to warrant the exclusive recommendation of any one of these methods.

[illegible]

In reading the Thermometer great care must be taken to bring the eye exactly opposite the tip of the index, and to read the column of mercury. The reading ought to be taken to within a tenth of a degree, and noted in decimals. Thus, if the Thermometer scale be read— 39° , 40° , or $40^{\circ} \frac{1}{10}$; or again, 40° , $40^{\circ} \frac{1}{10}$, $40^{\circ} \frac{2}{10}$, according as a little under, an exact, or a little over 40° , respectively. So also, if the Thermometer be read— 40° , or $40^{\circ} \frac{1}{10}$, or $40^{\circ} \frac{2}{10}$, or $40^{\circ} \frac{3}{10}$, or $40^{\circ} \frac{4}{10}$, or $40^{\circ} \frac{5}{10}$, or $40^{\circ} \frac{6}{10}$, or $40^{\circ} \frac{7}{10}$, or $40^{\circ} \frac{8}{10}$, or $40^{\circ} \frac{9}{10}$, respectively. In reading Rutherford's Minimum Thermometer, the indication of that end of the index which is nearest the bulb, and which is marked with the number 10, is the true temperature of the surface of the spirit is alone noted. On opening the Thermometer the bulb is to be first, and the Dry and Wet Bulb Thermometers are to be first, and the other Thermometers last. The bulb of the Thermometer should be read inasmuch as they are readily affected by heat from the hand of the Observer.

The Hydrometer is read at 9 A.M. and 9 P.M. The Self-Registering Thermometers are read at 9 P.M. only, as indicated in the accompanying table. The greatest and least degrees of temperature are noted every 24 hours preceding. It is not a matter of course to observe the wind direction and force, since this will be noted by the observer when the Self-registering Thermometers are read at 9 P.M. At least, the extreme to their proper meteorological day. In those cases where the Self-registering Thermometers are not used, the observer will note the direction and force of the wind, and the nature of the sky, at the time of the observations. The observations of the barometer are made at 9 A.M. on the 24th, and extend to 9 P.M. on the 31st.

When the Self-Registering Thermometers are read, since, in winter, the least extremes may occur at any hour; and it is necessary to observe their occurrence to their proper meteorological day. In order to conform to the instructions of the Board, the Self-Registering Thermometers are read at 9 p.m. on the 24, and extended till 9 p.m. on the 31.

No instrument ought to be used for Meteorological purposes if it has been carefully tested by comparison with the Standard Thermometer. When such Thermometers are not graduated on the stem, but merely on the attached scale, undergo repairs, they are very liable to be more or less out of order, and ought never afterwards to be used without being re-tested. The Self-Registering especially and the Minimum Thermometers, ought frequently to be compared with the Standard Thermometer, and the freezing-point of each Thermometer ascertained by a scratch on the tube, ought to be tested once a year, now or melting ice.

In selecting instruments, the following points require attention. The divisions of the venter of Barometers in reference to their scales, should be uniform, and the divisions of the Stem of the Barometer free from the perfect freedom of the Barometer from air; be correct and

bering of the scale of every instrument; the rejection of Thermometers of various kinds, and the purchase of new ones; the weather, as shown in the past by repeated and annoying breakages of Thermometers of similar construction; and as regards Maximum and Minimum Thermometers, either Negretti and Zambra's, or Phillips's, whether they will act at the highest temperatures they may be required to register. By the laws of the Society, Members and Observers have a right to have their instruments purchased by the Secretary, and to advise with him regarding the purchase of instruments.

Wind, the accuracy of which, both as regards Direction and Force, is so essential towards the right discussion of many of the more important problems of the science.

A Wind-Vane ought to be elevated at least 12 feet above surrounding objects. When it oscillates incessantly, the mean direction should be taken. In all cases, however, especially when the Vane is stationary, and smoko, or breeze, is feeble, reference may be made to the direction of smoke, clouds, or vapours, in well-exposed situations. Careful observations are recommended, particularly to be made on the changes in the direction of the wind; and during storms, extra observations at every hour of Greenwich time. Such a system of simultaneous observation, pursued at different Stations over the country, is likely to give highly valuable and important results, particularly in connection with the system of thickly-planted Stations over the unimproved district round Edinburgh called STOW STATIONS, in the course of being established by the Society for the systematic investigation of the relation of the force of the wind to BAROMETRIC DEPRESSIONS and other points connected with storms.

to be made on the changes in the direction of the wind; and observations, extra observations at every hour of Greenwich time. Since the system of simultaneous observation, pursued at different stations, is likely to give a general result, it is not probable that the limited district round Edinburgh called Snowy Strathmore, in the course of being established by the Society for the systematic investigation of the relation of the force of the wind to BAROMETRIC GRAVITIES and other points connected with storms. The Council would recommend the Hemispherical Cup Anemometer,—a self-registering instrument which shows the amount of Wind that passes it per day; from which can also be mean Velocity of the Wind in the direction of the

GRADIENTS, and other points connected with storms. The Council would recommend the Henslowian Cup Anemometer, a self-registering instrument which shows the amount of Wind that passes it per day; from which, also, the mean Velocity of the Wind at the time of observation may be ascertained. For indicating the Force of the Wind at any particular hour of observation, the Pressure Anemometer recently brought under the notice of the Society by Mr. T. Stevenson, the Honorary Secretary, and Mr. R. Ballingh, Mr. T. Stevenson's Secretary, are recommended as likely to secure uniformity in making observations on the Force of the Wind. Many causes concur to produce anomalies in the Re-

uniformity in making observations on the F side of the WHM.

Many causes conspire to produce anomalies in data recorded arising partly from the difficulty of obtaining perfectly unobscured views of the instruments, and partly from unavoidable errors in the observations.

Thin Gauges. The thin gauges should not be placed on a slope or terrace, but on a level ground, and the level ground should be open, so that the observer can see free and unobstructed by surrounding objects as desirable places to be taken to place it at some distance from shrubs, trees, buildings or other obstructions, at least as many feet from their base as they are in height. The more important directions towards which it is most desirable to have a free exposure, are in the order of their importance, S.W., N.E., S.E., S., and W. The thin of the Gauge must be perfectly level, and fixed so that it will

as free and unobstructed by surrounding objects as to obtain a position as secure for it. As it is often difficult to obtain a position as free as should be taken to place it at some distance from streets, trees, buildings or other obstructions, at least as many feet from their base as they are in height. The more important directions towards which it is most desirable to have a free exposure, are towards the order of their importance, S.W., N.E., S.E., and W. The rim of the Gauge must be perfectly level, and fixed so that it will remain level in all weathers, and be at a height of one foot above the ground, over grass. In such gauges as Fleming's, which are furnished with a measuring rod attached to a float, the rod ought to be fixed down, and the float rise to its height only at the time the instrument is read; it being found that a stem projecting above the rim of the gauge seriously interferes with the proper measurement of the Rain-fall. When a measuring glass is used, care should be taken to hold it quite perpendicular. The Rain Gauge ought to be read only 9 A.M., and the reading entered in the Returns of the previous day. If the Gauge is read once a month, the reading is to be made on the first of the month, and the amount entered for the previous month. Show-falls may, however, be registered in the Rain column.

is read, it being found that a stem projecting above the rim of the glass seriously interferes with the proper measurement of the Rain gauge. When a measuring glass is used, care should be taken to hold it quite perpendicular. The Rain Gauge ought to be read daily at 9 A.M., and the reading entered in the Returns of the previous day. If the Gauge is read once a month, the reading is to be made on the first of the month, and the amount entered for the previous month. Snow-falls, for convenience, be registered in the rain column under the following conditions:—When a Snow-fall occurs, the letter S should be noted in the Remarks column, and the letter S affixed to the depth of water received in Gauge. The depth of the snow must be measured in some open place where

under the following conditions:—When a Snow-fall may, for convenience, be registered in the rain column.

Snow-falls. When a snow shower occurs, it should be noted in the 'Remarks' and the letter 'S' affixed to the depth of water received in Gauge.

The depth of the snow must be measured in some open place where

under the following conditions:—When a Snow-fall may, for convenience, be registered in the rain column.

Snow-falls. When a snow shower occurs, it should be noted in the 'Remarks' and the letter 'S' affixed to the depth of water received in Gauge.

The depth of the snow must be measured in some open place where

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Yppan, County of Edinburgh, in Lat. 55° 55' N, Long. 3° 10' W, Distance from Sea 10 miles.Height of Cistern of the Barometer above Mean Sea-level 20 feet, above Ground 20 feet.During the MONTH of September 1883.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER. No. —				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.				SEA.	OZONE.		GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.				
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. —		No. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.		9 h. A.M.			Temperature of WELL at depth of feet. No.	Temperature at 1 fathom, and Density.			9 A.M.	9 P.M.		
		Barometer. * No.	Attached Ther- mometer	Barometer. No.	Attach- ed Ther- mometer	Max. No.	Min. No.	Max. in Sun's rays No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direc- tion.	Force	Direc- tion.	Force	9 h. A.M.	Velocity (0—6), and Direc- tion.			Amount (0—10), and Species.	Velocity (0—6), and Direc- tion.	Amount (0—10), and Species.	No. 8 inches.	No. 12 inches.	No. 22 inches.									
																																			Hours.	No.
		inches.	°	inches.	°	°	°	°	°	°	°	°																								
	1																															1				
	2	29.440	62	28.960	63	61.0	52.0			59.0	54.0	53.0	53.0	SE					8.4				10		55.0	56.0	55.5									
	3	29.122	63	29.340	63	66.0	52.0							W																						
	4	29.600	62	29.418	63	61.5	50.0			57.0	56.0	50.0	44.0	SE					8.6				10		55.5	56.0	55.0						4			
	5	29.928	61	29.930	60	63.0	44.0			53.0	49.5	51.0	44.0	SE												54.0	55.0	53.0						5		
	6	29.674	60	29.630	61	61.0	46.0			53.0	51.0	52.0	49.0	SE												54.5	55.0	53.0						6		
	7	29.530	59	29.430	63	61.5	48.0			53.0	51.0	52.5	49.5	W												54.0	55.0	53.0						7		
	8	29.800	59	30.090	63	63.0	48.0			54.0	52.0	52.0	49.0	W												54.5	54.5	53.5						8		
	9	30.102	60	30.110	64	63.5	43.5			54.0	50.0	51.5	49.0	SE					8.7				4		5	57.0	54.0	53.0						9		
	10	29.920	61	30.060	64	64.0	50.0			54.0	52.0	54.0	52.0	W												52.0	53.0	53.0						10		
	11	30.250	58	30.340	62	61.0	45.0			53.0	48.0	46.0	44.0	SE												52.0	53.5	53.0						11		
	12	30.382	59	30.318	62	60.5	34.0			51.0	48.0	52.0	57.5	W												49.0	52.5	53.0						12		
	13	30.361	61	30.366	61	58.5	48.0			52.0	53.0	53.0	52.5	W												52.5	52.5	52.5						13		
	14	30.344	61	30.262	63	58.0	49.0			55.0	52.0	53.0	52.0	SE												53.5	53.5	52.5						14		
	15	30.134	62	30.038	63	60.0	50.0			56.0	53.5	56.0	—	SE												54.5	53.5	53.0						15		
	16	30.152	62	30.234	65	69.0	53.0			60.0	58.0	58.0	53.0	W					8.8				8		3	53.5	54.0	53.5						16		
	17	30.252	62			50.0				57.0	54.0			W												52.0	55.0	53.5						17		
	18																		8.8															18		
	19																																		19	
	20																																			20
	21																																			21
	22																																			22
	23																																			23
	24																																			24
	25	29.588	58	29.456	60	65.0	53.0			61.0	54.0			SE					9.9															25		
	26	29.440	58	29.120	63		49.0			52.0	53.0	55.0	52.0	SE					10.0				2			53.5	52.0	51.5						26		
	27	29.242	60	29.400	64	63.5	57.0			61.0	52.0	56.0	57.0	SE													52.5	53.0	52.5						27	
	28	29.530	64	29.430	64	63.0	57.0			53.0	52.0	48.0	46.0	SE													52.0	52.5	53.0						28	
	29	29.440	58	29.660	62	53.0	46.0			53.0	50.0	51.0	44.0	SE													52.0	52.5	52.0						29	
	30	29.460	55	29.830	53	57.0	44.0			50.0	45.0	49.0	45.0	SE					10.0				8		6	54.5	52.5	52.0						30		
	31																																			31
Sums.		10104	8	984	5	63	9			1190	510	570	185													85	84	74								
		17644	65	1352	48	290	1865																			710	815	745								
Means.		29.802	60.2	29.826	62.2	61.4	48.5			53.8	54.3	52.8	49.9													53.7	53.9	52.6								
† Total Corrections for Instru- mental Errors.		+ 35		+ 35																																
† Correc- tions for Diurnal Range.																																				
“Correc- ted Means.”																																				
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					

NOTATION USED IN GENERAL REMARKS.					
a.	denotes aurora.	m.	denotes meteor.		
ci.	" cirrus.	ms.	" meteor.		
ci-cu.	" cirro-cumulus.	n.	" nimbus.		
ci-s.	" cirro-stratus.	r.	" rain.		
cu.	" cumulus.	h. r.	" heavy rain.		
cu-s.	" cumulo-stratus.	c. h. r.	" continued heavy rain.		
d.	" dew.	s.	" stratus.		
f.	" fog.	sc.	" scud.		
fr.	" frost.	s.	" sleet.		
h.-fr.	" hoar-frost.	s.	" snow.		
h.	" haze.	so. ha.	" solar halo.		
h. d.	" heavy dew.	sq.	" squall.		
hl.	" hail.	sq.	" squalls.		
l.	" lightning.	t.	" thunder.		
h. cl.	" light clouds.	t. s.	" thunder storm.		
h. sh.	" light showers.	w.	" wind.		
lu. co.	" lunar corona.	g.	" gale of wind.		
lu. ha.	" lunar halo.				

TABLE FOR ESTIMATING FORCE OF WIND.					
Estimated Force, 0—6.	Common Designation.	Estimated Force 0—6.	Common Designation.	Estimated Force, * 0—6.	Common Designation.
0	Calm	1.5	Light breeze	4	Blowing hard
0.5	Very light air	2	Fresh breeze	5	Blowing a gale
1	Light air	3	Very fresh	6	Violent gale

NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	cirrus.	ms.	meteors.
ci-cu.	cirro-cumulus.	n.	nimbus.
ci-s.	cirro-stratus.	r.	rain.
cu.	cumulus.	h. r.	heavy rain.
cu-s.	cumulo-stratus.	c. h. r.	continued heavy rain.
d.	dew.	s.	stratus.
f.	fog.	sc.	scud.
fr.	frost.	s.	sleet.
h. fr.	hoar-frost.	s.	snow.
h.	haze.	so. h.	solar halo.
h. d.	heavy dew.	sq.	squall.
hl.	hail.	sq. s.	squalls.
l.	lightning.	t.	thunder.
li. cl.	light clouds.	t. s.	thunder storm.
li. sh.	light showers.	w.	wind.
li. co.	lunar corona.	g.	gale of wind.
li. ha.	lunar halo.		

TABLE FOR ESTIMATING FORCE OF WIND.

Estimated Force, 0-6.	Common Designation.	Estimated Force, 0-6.	Common Designation.	Estimated Force, 0-6.	Common Designation.
0	Calm	1.5	Light breeze	4	Blowing hard
0.5	Very light air	2	Fresh breeze	5	Blowing a gale
1	Light air	3	Very fresh	6	Violent gale

BAROMETER, “corrected Mean” at 9 A.M., minus the Correction††
for Temp. (Col. 2), = 29.751
Corrected Mean” of Barometer at 9 P.M., minus the Correction††
for Temp. (Col. 4), = 29.780
Mean at Station, corrected, and at 32°, = 29.760
Correction for height, feet above Mean Sea-level, = 22
Mean, reduced to 32°, and Sea-level, = 29.782
Highest Reading, corrected for Index error, on the 12 th, = 30.382
Lowest Do. Do., on the 2 th, = 28.960
Difference, or Monthly Range, = 1.422

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for
Index Errors), on the 16 th, = 69.0
Lowest in Month, corrected for Index errors, on the 12 th, = 37.0
Difference, or Monthly Range, = 32.0
“Corrected Mean” of all the Highest, (Col. 5), = 61.4
“Corrected Mean” of all the Lowest, (Col. 6), = 48.5
Difference, or Mean Daily Range, = 12.9
** Calculated Mean Temperature of Month, = 54.9

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for
Index Errors), on the th, =
“Corrected Mean,” (Col. 7), of Black Bulb, Max. in Sun, =
Lowest at Night, Black Bulb, (corrected for Index errors), on the th, =
“Corrected Mean,” (Col. 8), of Black Bulb, Min. on grass, =
Difference of above Means or Range (“exposed”), =

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry
Bulb, (Cols. 9 and 11), = 54.3
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols.
10 and 12), = 52.1
†† Computed Temperature of Dew-Point, = 49.9
†† Do. Elastic Force of Vapour, = 3.59
†† Do. Weight of Vapour in a Cubic Foot of Air, =
†† Relative Humidity, (Saturation = 100), = 85
RAIN fell on Days; Amount in Inches, = 1.65 inches

WIND.		SUMMARY.					
Direction.	N	NE	E	SE	S	SW	W
A.M.	1	4	3		5	2	6
P.M.	2	2	1		7	3	
Mean.	1	3	1	2	0	3	5

(Signed)

Robert Minshead

Observations made and
Return verified by

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Yppa, County of Edinburgh, in Lat. _____, Long. _____, Distance from Sea _____ miles.
Height of Cistern of the Barometer above Mean Sea-level 20 feet, above Ground _____ feet. During the MONTH of October 1883.
The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M.				HYGROMETER.				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.				SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		No. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.		9 h. A.M.							
		Barometer. * No.	Attach- ed Ther- mometer	Barometer. No.	Attach- ed Ther- mometer	Max. No.	Min. No.	Max. in Sun's rays No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direc- tion.	Force	Direc- tion.	Force			9 h. A.M.	Velocity (0-10), and Direction.	Amount, (0-10), and Species.	Velocity (0-10), and Direction.	Amount, (0-10), and Species.	No. 3 inches.	No. 12 inches.	No. 22 inches.				
		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°																	
	1	29.820	52	30.034	52	57.5	43.0			47.5	44.0	44.0	40.0	N	N			10.5		5	3			48.5	52.5	52.0				1	
	2	30.024	51	29.830	51	54.0	36.0			47.0	43.5	47.0	46.0	NW	N					7	10			47.0	51.0	51.0				2	
	3	29.660	54	29.760	51	52.0	41.0			46.0	44.0	47.0	44.0	N	N					10	8			45.0	49.0	51.0				3	
	4	29.912	52	30.000	52	52.0	44.0			50.0	46.0	47.0	44.0	N	N					7	6			46.0	48.5	50.0				4	
	5	30.134	54	30.180	61	56.5	38.0			48.0	46.0	47.0	46.0	N	N					10	10			47.0	48.0	49.0				5	
	6	30.368	53	30.402	62	56.0	37.5			50.0	46.0	48.0	45.0	N	N					9	8			46.0	48.0	49.0				6	
	7	30.360	60	30.432	64	66.0	44.0			55.0	52.0	57.0	55.0	NW	NW			10.5			4			48.0	48.0	48.5				7	
	8	30.506	61	30.430	64	61.5	57.0			53.0	53.0	54.0	52.0	N	N					3	2			52.0	50.0	48.0				8	
	9	30.236	61	30.216	64	62.0	53.0			62.0	54.0	55.0	53.0	SW	2					7				53.0	51.0	50.0	52.5			9	
	10	30.166	54	30.018	58	50.0	46.0			49.0	44.0	49.0	48.0	N	N			10.4		7	9			51.0	52.0	50.5	52.3			10	
	11	29.958	54	30.060	54	54.5	43.0			47.0	45.0	49.0	44.0	N	N					2	4			48.0	50.5	50.5	52.0			11	
	12	30.152	56	30.082	53	53.5	38.0			46.0	43.0	47.0	44.0	2	8					0	1			46.0	48.5	50.0	52.0			12	
	13	29.930		29.800	56	58.0	44.0			52.0	48.0	54.0	53.0	N	N					8				47.0	48.5	48.5	52.2			13	
	14	29.684	54	29.580	62	60.0	51.0			54.0	54.0	57.0	56.0	N	N					7	8			51.5	48.5	48.0				14	
	15	29.608	58	29.332	54	57.5	45.0			50.0	44.0	50.0	45.0	N	N			10.9		1				48.0	51.0	50.5				15	
	16	29.966	58	29.074	54	54.0	44.0			50.0	42.0	50.0	47.0	N	N			10.9		5	7			48.0	48.5	48.5	52.0			16	
	17	29.110	56	29.250	60	50.5	41.0			46.0	43.0	42.0	40.0	N	N			11.0		4	2			45.5	48.5	48.0	50.2			17	
	18	29.502	56	29.408	54	47.5	39.0			42.0	40.0	43.0	41.0	N	N			11.2		4	8			43.0	46.5	48.0	48.5			18	
	19	29.610	52	29.508	56	50.5	38.0			43.0	41.0	43.0	39.0	N	N			11.4		2	1			42.5	45.0	44.0	49.5			19	
	20	29.474	53	29.554	56	50.0	39.0			44.0	42.0	44.0	42.0	N	N			11.7		6				42.0	46.5	46.0	48.5			20	
	21	29.486	54	29.942	58	44.0	40.0			46.0	43.0	41.0	38.0	N	N			11.8			2			43.0	44.5	46.0				21	
	22	29.972	52	29.614	56	50.0	32.0			42.0	38.0	44.0	44.0	N	N			11.9		1	8			39.5	43.5	46.0	48.5			22	
	23	29.450	54	29.430	53	50.5	40.0			46.0	43.0	45.0	43.0	N	N					8	10			44.0	45.0	45.5				23	
	24	29.548	51	29.398	54	54.0	39.5			45.0	42.0	48.0	44.0	N	N					9				42.0	44.0	45.0				24	
	25	29.376	53	29.450	61	52.5	43.0			50.0	45.0	46.0	43.0	N	N					8				46.5	45.5	45.5	49.5		Heavy gale during night. Squalls from N.	25	
	26	29.988	54	29.822	66	54.5	41.0			45.0	43.0	47.0	46.5	N	N			12.0		6				42.5	45.0	45.5	48.8			26	
	27	29.924	56	30.164	62	54.0	44.0			50.0	44.0	44.0	42.0	N	N			12.5		7				46.5	45.5	45.5	50.0			27	
	28	30.204	53	30.160	62	59.0	40.0			48.0	44.0	46.5	46.0	2	2					6	5			44.5	45.5	46.0				28	
	29	30.240	53	30.400	53	56.5	39.0			44.0	43.0	48.0	44.0	2	2					10	8			44.0	46.0	46.0				29	
	30	30.450	53	30.460	56	57.0	34.0			44.0	-			2	2					10	10			43.0	46.0	46.0				30	
	31	30.328	52	30.250	60	57.0	37.5			47.0	46.0	48.0	46.0	N	2			12.5		8	10			44.0	45.0	45.5				31	
	Sums.	1513	11	1213	7	13	85	11		13	5	13	5											1223	1149	1200					
	Means.	29.886	55.3	29.894	58.1	54.2	41.3			48.2	45.5	48.0	45.8											45.9	47.7	48.0	50.5				
	† Total Corrections for Instrumental Errors.	29.988																													
	† Corrections for Diurnal Range.																														
	* "Corrected Means."																														
	No. of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction $\dagger\dagger$ for Temp. (Col. 2), = 29.816
Corrected Mean" of Barometer at 9 P.M., minus the Correction $\dagger\dagger$ for Temp. (Col. 4), = 29.816
Mean at Station, corrected, and at 32°, = 29.816
Correction for height, feet above Mean Sea-level, = 22
Mean, reduced to 32°, and Sea-level, = 29.838
Highest Reading, corrected for Index error, on the 8th, = 30.526
Lowest Do. Do., on the 16th, = 28.966
Difference, or Monthly Range, = 1.540

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 7th, = 66.0
Lowest in Month, corrected for Index errors, on the 22th, = 32.0
Difference, or Monthly Range, = 34.0
"Corrected Mean" of all the Highest, (Col. 5), = 54.2
"Corrected Mean" of all the Lowest, (Col. 6), = 41.3
Difference, or Mean Daily Range, = 12.9
** Calculated Mean Temperature of Month, = 47.8

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the _____ th, = _____
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = _____
Lowest at Night, Black Bulb, (corrected for Index errors), on the _____ th, = _____
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = _____
Difference of above Means or Range ("exposed"), = _____

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 48.1
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 45.6
†† Computed Temperature of Dew-Point, = 42.2
†† Do. Elastic Force of Vapour, = 2.75
†† Do. Weight of Vapour in a Cubic Foot of Air, = _____
†† Relative Humidity, (Saturation = 100), = 82
RAIN fell on 13 Days; Amount in Inches, = 1.65 inches

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.		1	2	4	1	5	13	1	4		
P.M.		1	3	1	2	1	5	8	1	9	
Mean:		1	3	0	3	1	5	11	1	6	

(Signed)

Robert MuirheadObservations made and
Return verified by

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Glasgow, County of Edinburgh, in Lat. _____, Long. _____, Distance from Sea 44 miles.
Height of Cistern of the Barometer above Mean Sea-level _____ feet, above Ground 20 feet. During the MONTH of November 1883.
The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER. No. —				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.			SUNSHINE. Hours.	SEA. Temperature at 1 fathom, and 10 fathoms.	OZONE. 9 A.M. 9 P.M.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.		
		9 h. A.M.		9 h. P.M.		Protected in Shade 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. —		No. of hours in which it fell.		9 A.M.		P.M.		9 h. A.M.							
		Barometer.	Atta- ch- ed Ther- mometer	Barometer.	Atta- ch- ed Ther- mometer	Max. No.	Min. No.	Max. in Sun rays	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force	Direction.	Force	No.	No.	Velocity (0—6), and Species.	Amount (0—10), and Species.	Velocity (0—6), and Species.	Amount (0—10), and Species.	No. 8 inches.	No. 12 inches.	No. 22 inches.							
		* No.		No.		No.	No.	No.	No.																								
		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°											°	°							
2	30.50	56	28.956	63	48.0	45.0			48.0	45.0	48.0	46.0	2								8			46.0	46.0	46.0				1			
3	28.960	56	28.960	62	52.5	44.0			50.0	45.0	48.0	40.0	14	2							4	6		46.0	46.0	46.0				2			
4	30.330	55	30.300	61	52.0	45.0			50.0	45.0	48.0	48.0	5	2	R						4	8		45.5	45.0	45.0				4			
5	29.390	56	28.302	60	48.0	41.0			48.0	44.0	43.0	40.0	14	14							8	10		45.5	45.5	45.5				5			
6	29.366	56	28.328	54	48.5	40.0			46.0		42.0	39.	14	14							1			42.0	44.5	45.5	44.			6			
7	29.260	52	28.452	52	45.0	33.0			34.0	36.0	40.0	34.0	16	16	2						4	10		39.0	43.0	45.0	44.			7			
8	29.532	53	28.552	55	42.5	30.0			34.0	33.0	38.0	36.0	16	16							6			38.0	42.5	44.0	43.3			8			
9	29.560	50	28.610	54		32.0			40.0	34.0											4			38.0	41.0	43.3				9			
10	29.410	50	28.570	53	46.0																8			38.0	40.5	42.3				10			
11	28.294	45	28.614	50	45.0	33.0			40.0	38.0	45.0	38.0	14	14							1							45.5			11		
12	28.802	47	28.442	53	43.5	36.0			37	—	31.0	30	14	14	2						1	0		34.5	40.5	42.0				12			
13	28.804	52	30.052	32	43.0	24.			30.0	28.	38	34	2	2							0			34.5	39.0	41.5	45.0				13		
14	30.200	49	30.292	57	45.0	30.0			38.0	37.0	40.0	38		2	2					8	2		34.5	38.5	41.0	45.0				14			
15	30.288	48	30.242	52	41.5	36.0			39.0	35.0	40.0	34.0	14	14							9			38.0	39.0	40.5	45.0				15		
16	30.060	49	28.800	52	43.0	35.0			39.0	36.0	34.0	35.0	14								10	6		38.5	39.5	40.5	45.0				16		
17	28.430	50	28.420	50	46.0	33.			34.0	36.0	52.0	40.0	14								10	6		34.0	39.0	41.0	46.0				17		
18	28.476	50	28.646	54	45.0	36.0			46.0	44.0	38.0	36.0	14	14							10	1		40.0	39.5	40.5	45.5				18		
19	28.800	46	28.662	53	48.5	34.0			38.0	36.0	44.0	40.0	14	14							8	1		34.0	39.5	40.5					19		
20	28.540	48	28.552	48	40.0	34.0			39.0	34.0	38.0	36.0	14	14							10	8		39.0	40.0	41.0					20		
21	28.464	45	28.642	52	43.0	36.0			43.0	42.0	37.0	35.0	14	14							4	4		34.0	39.0	40.5	43.5				21		
22	28.460	46	28.502	48	43.5	36.0			44.0	42.0	39.0	34.0	14	14							4	2		38.0	38.5	40.0	44.0				22		
23	28.424	46	28.422	52	42.5	34.0			39.0	37.0	40.0	37.0	14	14							9	2		34.0	38.5	39.5	43.5				23		
24	28.570	47	28.490	50	45.0	34.0			44.0	42.0	40.0	39.0	14	14							8	8		36.5	38.5	39.5	42.5				24		
25	28.132	48	28.108	50	57.0	38.0			44.0	42.0	39.0										4	10		34.5	38.5	39.5	43.5				25		
26	28.620	51	28.460	56	49.0	40.0			49.0	44.0	42.0	40.0	14	14							5	9		42.5	39.5	40.0					26		
27	28.832	50	28.128	58	44.0	32.0			42.0	40.0	44.0	42.0	14	14							6	4		39.0	40.5	40.5	45.0				27		
28	28.600	50	28.462	54	56.0	41.0			45.0	42.0	44.0	46.0	14	14							4	10		40.0	40.5	41.0					28		
29	28.880	54	30.030	60	54.5	44.0			56.0	52.0	54.0	53.0	14	14							8	2		46.0	41.0	41.0	45.5				29		
30	30.102	56	30.048	60	54.5	52.0			52.0	44.0	54.0	50.0	14	14							4	7		44.0	44.5	42.5	46.0				30		
31	30.148	54	30.232	60	48.0	45.0			46.0	44.0	43.0	40.0	2	2							1.0	8		45.0	45.0	43.0					31		
Sums.		13135	13	13127	2	13	30		12740	10840	11450	11010									2.02 inches			184	165	87							
Means.		29.651	50.1	29.696	54.6	49	37.7		402	401	420	392												40	24.1	420	45.1						
† Total Corrections for Instru- mental Errors.		626		638																													
‡ Correc- tions for Diurnal Range.																																	
“Cor- rected Means.”																																	
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Glasgow, County of Edinburgh, in Lat. _____, Long. _____, Distance from Sea _____ miles.
Height of Cistern of the Barometer above Mean Sea-level _____ feet, above Ground 20 feet. During the MONTH of December 18883.
The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER. No. _____				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.		
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		9 A.M.		P.M.		9 h. A.M.										
		Barometer.	Attach- ed Ther- mometer	Barometer.	Attach- ed Ther- mometer	Max.	Min.	Max. in Sunrays	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	No. of hours in which it fell.	Amount in inches.	Velocity (0-10), and Direction.	Amount (0-10), and Species.	Velocity (0-10), and Direction.	Amount (0-10), and Species.	No. 3 inches.	No. 12 inches.	No. 22 inches.						
		* No.	inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°					°	°
		No.	inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°					°	°
	1	30.380	56	30.250	60	42.0	38.0			42.0	39.0	46.0	46.0	N	N			1.00						41.0	43.5	42.0			1			
	2	30.180	59	30.050	55	46.0	38.0			42.0	38.0	44.0	42.0	N	N									40.0	42.0	43.0			2			
	3	29.600	56	29.530	53	44.0	40.0			44.0	44.0	40.0	35.0	N	N									37.0	41.0	42.0			3			
	4	29.410	45	30.150	56	42.5	33.0			42.0	38.0			N	N									37.0	40.0	41.0			4			
	5	30.232	43	30.250	50	40.0	34.0			38.0	34.0	38.0	35.0	N	N									36.5	39.0	40.5			5			
	6	30.350	46	30.592	50	40.0	34.0			40.0	34.0	34.0	34.0	N	N									35.0	38.0	40.0			6			
	7	30.600	41	30.532	51	42.0	29.0			35.0	33.0	34.0	34.0	N	N														7			
	8	30.396	45	30.256	54	45.0	34.0			42.0	40.0	40.0	34.0	N	N														8			
	9	29.980	48	29.946	54	44.0	38.0			46.0	43.0	38.0	36.0	N	N														9			
	10	29.714	48	29.320	56	46.0	36.0			42.0	38.0	44.0	45.0	N	N														10			
	11	29.440	47	28.904	54	48.0	38.0			38.0	36.0	48.0	46.0	N	N														11			
	12	29.226	47	28.832	52	52.0	36.0			38.0	35.0	38.0	35.0	N	N														12			
	13	29.426	50	29.468	52	53.0	38.0			32.0	30.0	44.0	43.0	N	N														13			
	14	29.346	48	29.300	48	43.0	43.0			43.0	40.0	40.0	38.0	N	N														14			
	15	29.530	43	29.310	46	36.0				38.0	36.0			N	N														15			
	16	29.590	40	30.260	44									N	N														16			
	17	30.140	39	30.500	40	42.0				38.0	34.0	38.0	35.0	N	N														17			
	18	30.240	41	30.230	57	44.5	34.0			43.0	41.0	43.0	38.0	N	N														18			
	19	30.232	44	29.980	57	50.0	40.0			42.0	38.0	44.0	43.0	N	N														19			
	20	29.800	56	29.452	57	44.0	40.0			44.0	44.0	42.0	40.0	N	N														20			
	21	29.594	47	29.532	52	49.0	39.0			43.0	40.0	45.0	42.0	N	N														21			
	22	29.490	52	29.620	53	50.5	43.0			48.0	42.0	41.0		N	N														22			
	23	30.040	47	30.296	53	51.0	36.0			34.0	34.0	38.0	36.0	N	N														23			
	24	30.228	50	30.346	52	54.0	35.0			57.0	48.0	52.0	50.0	N	N														24			
	25	30.506	53	30.520	58	49.0	39.0			49.0	44.0	45.0	—	N	N														25			
	26	30.508	52	30.516	53	48.0	43.0			43.0	—	45.0	44.0	N	N														26			
	27	30.446	49	30.308	52	43.0	34.0			38.0	34.0	42.0	—	N	N														27			
	28	30.242	48	30.210	56	50.0	38.0			43.0	42.0	45.0	—	N	N														28			
	29	30.496	52	30.196	58	50.0	43.0			50.0	44.0	44.0	45.0	N	N														29			
	30	30.448	51	30.604	56	42.5	41.0			42.0	41.0	40.0	39.0	N	N														30			
	31	30.634	48	30.612	52	40.0	35.0			35.0	—	32.0	—	N	N														31			
	Sums.	13138	15	13117	10	112	14			765	12	13	10																			
	Means.	30.054	48.3	30.056	53.1	46.7	37.4			42.6	39.8	42.3	39.9																			
	+ Total Corrections for Instrumental Errors.																															
	+ Corrections for Diurnal Range.																															
	"Corrected Means."																															
	No. of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction^{††} for Temp. (Col. 2), = 30.048 ... 63 = 29.985
Corrected Mean" of Barometer at 9 P.M., minus the Correction^{††} for Temp. (Col. 4), = 30.054 ... 66 = 29.988
Mean at Station, corrected, and at 32°, = 29.992
Correction for height, feet above Mean Sea-level, = 22
Mean, reduced to 32°, and Sea-level, = 30.014
Highest Reading, corrected for Index error, on the 31st th, = 30.634
Lowest Do. Do., on the 11th, = 28.904
Difference, or Monthly Range, = 1.730

* Each instrument tested at the Office in Edinburgh bears the stamp "S.M.S.," and a number to be entered in the Heading; or the Number and Initials of the Maker may be here given.
† Embouring corrections for both capillarity and Index Errors.
†† The Diurnal Range for Scotland is as yet unknown.
‡ Practically, though not absolutely a minus correction.
‡‡ These "Hygrometrical Deductions" are calculated from Glaisher's Hygrometrical Tables, Second Edition only.
‡‡‡ While the Diurnal Range is unknown, the Arithmetical Mean of Cols. 5 and 6 will be entered as the "Calculated Mean Temperature."
Any observations not taken under the conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 24th, = 54.0
Lowest in Month, corrected for Index errors, on the 7th, = 29.0
Difference, or Monthly Range, = 25.0
"Corrected Mean" of all the Highest, (Col. 5), = 46.7
"Corrected Mean" of all the Lowest, (Col. 6), = 37.4
Difference, or Mean Daily Range, = 9.3
** Calculated Mean Temperature of Month, = 42.0
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the _____ th, = _____
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = _____
Lowest at Night, Black Bulb, (corrected for Index errors), on the _____ th, = _____
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = _____
Difference of above Means or Range ("exposed"), = _____

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 42.4
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 39.9
†† Computed Temperature of Dew-Point, = 36.8
†† Do. Elastic Force of Vapour, = 1.220
†† Do. Weight of Vapour in a Cubic Foot of Air, = 82
†† Relative Humidity, (Saturation = 100), = 82
RAIN fell on Days; Amount in Inches, = 0.06

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	2	2		4		5	10	2	8		
P.M.	1					8	7	4	10		
Mean.	2	1	0	2	0	7	8	3	8		

Observations made and
Return verified by

(Signed)

OBSERVATIONS,

The Council of the Society recommend that the Self-Registering Thermometers, and the Dry and Wet Bulb Hygrometers, be kept in Stevenson's Louvre-boarded Box for Meteorological Observations, painted white inside and outside, and covered with a sheet of white paper, and the Thermometers reserved to foot slant posts, also painted white, firmly secured in the ground. The posts must be of such a length that when the Thermometers are hung in position the Bulbs of the Minimum Thermometer, and of the Dry and Wet Bulb Thermometers will be exactly at the same height of foot feet above the ground, the maximum Thermometer being hung immediately above the Minimum thermometer. The Thermometer box is to be placed over a plot of ground, and in a free open space to which the wind can blow from any quarter, and the Thermometers are to be mounted on cross laths in the air, so as to be free from surrounding obstructions. The Observations are to be made at the same time, and the observations of the Box and the Thermometers should open to the north. The Council regard the question of UNIFORMITY OF HEIGHT ABOVE GROUND, AND METHOD IN PROTECTING THE THERMOMETERS, AS VITAL IN THE ESTABLISHMENT OF A SYSTEM OF METEOROLOGICAL OBSERVATION, SINCE WITHOUT IT OBSERVATIONS MADE AT DIFFERENT STATIONS ARE INCOMPARABLE, THUS RENDERING IT IMPOSSIBLE TO COMPARE THE CLIMATES OF PLACES WITH EACH OTHER AS WELL AS THEIR MOST IMPORTANT FEATURES.

Hour of Observation. The Council recommend that Observations be made precisely at 9 a.m. and 9 p.m. (Greenwich or Railway Time only), as specified in the following remarks, or at the top of the columns of the Schedule. It is hoped that the utmost punctuality in the time of reading the instruments will be observed. Observers, in some few cases, may find this impossible; in such instances, they are specially requested to report every reading the time at which it was taken. At 9 a.m. every Weather-Glass should be read, and each well suited to indicate Barometric pressure, are not fitted for scientific purposes. No Barometer should be used for Meteorological Observation that is not supplied with some means of adjustment or compensation which will secure that the height of the mercury in the tube is accurately measured from the fluctuating surface of the mercury in the cistern.

the fluctuating surface of the mercury in the cistern. The Barometer in which the error arising from the fluctuating surface of the mercury in the cistern is entirely got rid of is Fournet's Barometer, the arrangement consisting in applying pressure by means of a screw to the bottom of the cistern, which is made of flexible leather, thus rising or depressing the surface till it just meets the ivory point which forms the zero point of the fixed scale. The Barometer originally constructed by Fournet, and usually of the same form, was made in the year 1800, at London, and has since been improved. The Barometer, however, does not require any adjustment of the cistern. Its scale-indices are not true inches, but so much shorter as to compensate the error that would otherwise arise from the fluctuations of the surface of mercury in the cistern. This is an excellent Barometer for ordinary Observers, inasmuch as it entirely eliminates the error of observation likely to arise in not a few cases in setting the instrument to the zero point of the fixed scale when the light is not good. To allow the accuracy with which these Barometers are made, it may be stated, that one was compared, during a whole year, with the Society's Standard Barometer, particularly during the time when the mercury was rising or falling very rapidly. With the result that none of the readings differed from those of the Standard more than 0.003 inch.

one comparison when the difference between the readings differed from those of the Standard more than 0.003 inch. The Parameter is used at a number of the Stations, by which the coincidence of the zero point with the surface of the mercury is indicated by a little ivory disk, whose set-screws freely touch the lid and base of the cistern. When the index-line on this little piston-rod is brought, by the adjusting screw, to form one straight line with those on its ivory frame, the surface of the mercury is then at the exact height from which the scale is graduated. In taking an observation, this preliminary setting must be made with scrupulous accuracy; as a slight error here will vitiate the readings from the vernier.

It is absolutely necessary that the Parameter which is to be used, shall have been compared with a Standard Parameter.

The Barometer should be suspended in as good light as can be secured, and to facilitate the reading, a piece of white paper may be put behind the tube. It must be hung truly perpendicular, and exposed to neither the sun's direct rays nor the heat of a fire, and must not be hung against a wall heated by a fire. The object being to secure that the whole instrument, including the base, hangings, the tube, and the attached thermometer, be in a position free from contained mercury, and the attached thermometer in a position in which it is least liable to sudden changes of temperature.

In taking an Observation, the Attached Thermometer is first noticed: the tube must then be gently tapped, and the column adjusted carefully made. The eye, by raising and lowering it, must be brought into the plane of the back and front of the index—usually the lower edge of the venter, which must be carefully adjusted so as to form exactly a tangent to the convex surface of the mercury in the tube. Observations must be taken quickly, so as to prevent heat from the observer's hands and person from affecting the mercury. The use of a lens will facilitate an accurate adjustment and reading of the Barometer. A mistake may be made in setting the edge of the venter to the level of the clear surface of the mercury which is in direct contact with the glass tube, must be carefully avoided.

The level of the clear surface of the mercury which is in direct contact with the glass tube must be carefully avoided.

The errors most frequently made in reading the Barometer are errors of 1-1000 inch, 0-500 inch, and 0-400 inch; that is to say, instead of 29-365 inches, either of the following is sometimes given down—29-36, 29-35, 29-34 inches, 29-35, 29-36, 29-37, 29-38, 29-39, 29-40 inches. Experience having shown that even the most careful observers make these mistakes, particular attention should be taken to the method.

When a Barometer having a glass tube first to be removed from its fastenings, the following precautions must be observed so as to form a tight plug in the neck of the tube, and thus prevent the escape of the mercury.

First, the screw stop of the mercury will quite to the top of the tube, but to avoid the danger of its falling out, it should be carried with the instrument; it will then be found that the mercury will not fall down the tube; if it should fall, the Barometer for use, it must be ascertained whether the space above the mercury in the tube is a complete vacuum; this is the case if on inclining the instrument, a sharp tap is produced when the mercury strikes the top of the tube. If a dull tap is heard, there is air in the tube, which must be got rid of.

As barometers are liable to be damaged by their introduction into their tubes, on removal they are generally placed, or being roughly handled, it may be useful to the Observer to know how the mercury may be expelled. First place the column by drawing the ivory peg tight, so as to prevent any escape of mercury; then screw the mercury to about half an inch below the top of the tube, and slowly invert the instrument, place the top of it on a yielding substance, such as the book, and gently tap on the stem with the palm of the hand, so as to incline the air to ascend through the column to the stem, whence it may escape. Since there is the weight of two atmospheres outside—pressure on any air that may be in the tube, it is usually a tedious operation to get it wholly expelled. After repeated blows, however, it is generally accomplished, and the elastic sound of the mercury when gently struck against the top of the glass tube, will allow when the whole of the air has been expelled. On hanging up the Barometer, care must be taken to screw down the mercury in the tube before unscrewing the front of the system, for if this be not attended to, the mercury will rise at the tube, while the glass is hanging, and by their introduction into their tubes, on removal they are generally placed, or being roughly handled, it may be useful to the Observer to know how the mercury may be expelled. First place the column by drawing the ivory peg tight, so as to prevent any escape of mercury; then screw the mercury to about half an inch below the top of the tube, and slowly invert the instrument, place the top of it on a yielding substance, such as the book, and gently tap on the stem with the palm of the hand, so as to incline the air to ascend through the column to the stem, whence it may escape. Since there is the weight of two atmospheres outside—pressure on any air that may be in the tube, it is usually a tedious operation to get it wholly expelled. After repeated blows, however, it is generally accomplished, and the elastic sound of the mercury when gently struck against the top of the glass tube, will allow when the whole of the air has been expelled. On hanging up the Barometer, care must be taken to screw down the mercury in the tube before unscrewing the front of the system, for if this be not attended to, the mercury will rise at the tube, while the glass is hanging, and by their introduction

air has been exposed. On making up the instrument, take care to screw down the mercury in the tube before unfastening the top of the cistern, for, if this be not attended to, the mercury will float of the cistern, and the instrument be seriously damaged.

water, in cases where the observations cannot be taken daily, the observation may be made on the 5th, 15th, and 25th of each month. When convenient, extra Sea Observations might be taken for other and greater depths, noting also the Temperature of the Air, and the Hour of Observation. It is also very desirable that Observations on the daily Maxima and Minima by Thermometers continuously immersed be instituted at points along the coast, by the method proposed by Mr. T. Stevenson, and already commenced at Peterhead and Liverpool. The Temperature of the water at the bottom of the depth of the Well, when practicable, to be taken, both the depth of the Temperature of the Well and of the water being noted.

Mention what Test-Papers are used, Schönböem's or Mofatt's, &c.

The Paper is affixed by a pin to a board in the Thermometer Box, and the indications registered at 9 A.M. and 9 P.M. It is desired that these indications be registered in connection with the force and direction of the wind at the time of observation, in the following manner—thus 95° N.W. as an Ozone entry in the schedule will indicate that the Ozone Paper is tinted as 3 on the scale, that the wind is from the N.W., and that its force on the scale 0—5 is 4, or blowing fresh.

assigned. The use of metaphors, ought, therefore, to be taken every advantage of, and a list of such as are in general use are given at the foot of the column. Besides special and extraordinary Observations, great prominence ought to be given in this column to Prevalent Diseases, differences in climate, colour, velocity, and direction between the Lower and Upper Strata of Clouds, the Colour of the Sky, &c. Remains ought to be made on the occurrence of Meteors, Auroræ Boreales, remarkable depressions, elevations, and fluctuations of the Barometer, Thunder-storms, and remarks the fall of Snow, hail, or Rain, the Howler of Storms of Wind commencing, attaining their

maximum, and ending as well as such notes on Storms as have been hinted at above. When Jetty falls in the vicinity of a Station, the Height of Clouds and of the Snow-line in winter should be recorded. By the use of abbreviations, the state of the weather at 9 a.m. and 9 p.m. should be registered either in two columns, otherwise uncoupled, or ruled off for the purpose from the column of 'Remarks.' Observations in connection with the Periodic Return of the Seasons, possess not only great scientific value, but are of considerable importance in connection with Agriculture, Horticulture, and Natural History. The Council would direct the special attention of Observers to the registration of such phenomena, so that the published Summaries may fairly represent the whole of Sweden. Observations ought to be confined to individual trees and shrubs :

to particular species of birds, and, in the case of crops, to specified sorts reared from year to year on a selected piece of ground or farm. The Annual Table, published yearly in the *Society's Journal*, will indicate the species of plants and animals to which special attention is more particularly directed.

The Council recommend Observers, before purchasing new instruments, and in repairing old ones, to communicate with the Meteorological Secretary, in order that every instrument may be examined and improved before being used; and they consider it necessary that he should have full power to reject any instrument which, on being presented for comparison, does not afford him satisfaction.

(By Order) A. B.

ENNBURGH, December 1852.

[illegible][illegible]

PERIODICALS
GROUPS,
containing variety.

With the	Divested of Leaves.	nn	Ba	Pb	Ob	W	Ba	Pb	Tl	Ra
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NOI

In Leaf,

[illegible]

Observation	Forest trees.	Alder,	Ash,	Beech,	Birch,	Elm,	Larch,	Lime,	Oak,	Sycamore or Plane,
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To

Mr. A. D.

BOOK POST.

ALEXANDER L
Secretary of

otland,
EDINBURGH,

48
RECEIVED
JAN 10 1891

Let

[illegible]

Have the goodness also to state any information you may be able to collect relative to the crops of Grain, Hay, Potatoes, Turnips, Fruits, etc., whether plentiful, or in perfection; whether any have suffered from blight, disease, etc. Whether zoonotic disease prevails among cattle; and the Agricultural condition of the district generally.

 T_0

Mr ALEXANDER BUCHAN.

ALEXANDER BUCHAN,
Secretary of the Meteorological Society of Scotland

Scotland,
EDINBURGH

BOOK POST.