

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barrow Cottage, County of Will, in Lat. 53° 49' 50", Long. 5° 4' 5", Distance from Sea 70 miles.

Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 3 feet.

During the MONTH of January 1879

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.		Days of Month.
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulb, on Sun's rays, 4 feet above Ground.		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 at 1 fathom, and Density.		0—10.		As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevailing Diseases, etc.		
		Barometer. * No. —	Attached Thermometer No. —	Barometer. No. —	Attached Thermometer No. —	Max. No. —	Min. No. —	Max. in shade, on Sun's rays, 4 feet above Ground.	Min. in shade, 4 feet above Ground.	Dry bulb. No. —	Wet bulb. No. —	Dry bulb. No. —	Wet bulb. No. —	Direction. No. —	Force. No. —	Direction. No. —	Force. No. —	9 h. A.M.	No. —	Amount (0—6), and Direction. No. —	Amount (0—10), and Species. No. —	Velocity (0—10), and Direction. No. —	Amount (0—10), and Species. No. —	SUNSHINE. Hours.	No. 3 inches.	No. 12 inches.	No. 22 inches.	Temperature at 1 fathom, and Density.	0—10.	0—10.	Mention the hour at which Storms, including Thunder and Lightning, began and ended.					
		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°		
		°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°		
	1	29.624	40	29.694	37	43	24.5			30		26	NE	calm																			9 a.m. 9 P.m.			
	2	29.800	37	29.750	39	39.5	23.5			28.5		32	NW	W																			Clear & frosty			
	3	29.494	36	29.480	35	37	24.5			26		29	NW	W																			do show showers			
	4	29.664	36	29.890	36	39.5	28			34		30.5	NW	W																			1/2 clear do clear & frosty			
	5	29.968	36	30.034	36	42	28			30		28	NW	NW																			Clear do do			
	6	30.090	34	30.010	37	37	25			31		36	E	SE																			do do do			
	7	29.850	36	29.604	35	36.5	27			34		27.5	SE	SE																			onset heavy & cloudy & blowy			
	8	29.660	34	29.960	33	34.5	26.5			30.5		29	SE	SE																			Clear & blowy & fresh & new & Gale			
	9	30.008	34	29.800	34	36	29			35		32	SE	SE																			Clear & Gale clear & frosty			
	10	29.670	32	29.648	33	32.5	27.5			28		29.5	SE	E																			Cloudy & frosty & blowy & Gale			
	11	29.580	33	29.710	34	33.5	23			29		23	E	calm																			clear & frosty & heavy & dry			
	12	29.824	31	29.624	36	34	20			28		34	SE	SE																			blowdy & clear & frosty			
	13	29.660	38	29.850	41	47	33.5			43		43.3	SW	SW																			Heavy & dry & full & blowy & clear			
	14	29.500	42	29.360	43	44.5	39			40.3		40	SE	SW																			to clear & full & blowy			
	15	29.380	41	29.690	40	43	32			37.3		32	W	NW																			Dull & blowy & calm			
	16	29.846	40	30.016	38	42.5	30			32		30	W	NW																			blowdy & dull & do frosty			
	17	30.010	35	29.810	40	37.5	27.3			32		36	E	SE																			dry & overcast do do			
	18	29.800	37	30.100	38	38	27.5			33		35	E	E																			do Dull & blowy			
	19	30.210	35	30.210	34	36.5	30			34		30	SE	SE																			Dull & clear & new & full & blowy			
	20	30.100	32	29.910	30	32.5	28			30		28	E	E																			1/2 clear calm clear & blowy & frosty			
	21	29.940	34	30.030	36	35	26.5			32		33	E	E																			clear & blowy & clear do do			
	22	30.160	36	30.160	38	38	26			27		30	E	calm																			Dull do Dull & blowy			
	23	30.110	36	30.050	38	34	29			31		31	SE	SE																			Clear & frosty Dull & calm			
	24	30.050	35	30.100	34	35.5	25			26		27.3	W	SE																			Dull & new & shower do do			
	25	30.120	34	30.090	34	32.5	24.5			29		30.3	E	E																			dry & clouds & clear & frosty			
	26	30.090	34	30.210	35	35.5	30			32.3		32	NW	SW																			Heavy & dry & blowdy & dull			
	27	30.366	36	30.410	36	40.3	30.5			32		33.5	W	calm																			1/2 clear calm do			
	28	30.320	38	30.200	38	45	32			35		33.3	NW	NW																			clear & frosty clear & frosty			
	29	30.284	38	30.366	37	36	30			35		34.3	E	E																			blowdy & blowy & clear do			
	30	30.350	38	30.310	37	35	23			34		34	E	E																			do Dull, blowy & clear			
	31	30.260	37	30.144	36	35.5	32.5			33.5		32.5	SE	SE																			do do			
Sums.		13 13 5	14	13 11 4	15	15 7 4 5				12		14																						NOTATION USED IN GENERAL REMARKS.		
		28.786	185	29.140	198	238.8	152.8			62.4		52.0																						a. denotes aurora.		
Means.		29.929	36.0	29.940	36.4	37.7	28.1			32.0		31.7																						m. denotes meteor.		
† Total Corrections for Instrumental Errors.																																		ci. cirrus.		
‡ Corrections for Diurnal Range.																																		ci.-cu. cirro-cumulus.		
"Corrected Means."																																		ci.-s. cirro-stratus.		
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		cu. cumulus.			
																																		cu.-s. cumulo-stratus.		
																																		f. fog.		
																																		fr. frost.		
																																		h.-fr. hoar-frost.		
																																		h. haze.		
																																		h. d. heavy dew.		
																																		h. l. hail.		
																																		li. lightning.		
																																		li. cl. light clouds.		
																																		li. sh. light showers.		
																																		li. co. lunar coronæ.		
																																		li. ha. lunar halo.		

BAROMETER, “corrected Mean” at 9 A.M., <i>minus</i> the Correction $\left\{ \begin{array}{l} \text{for Temp. (Col. 2),} = 29.929 \end{array} \right.$ $\left. \begin{array}{l} \text{.....} = .020 \end{array} \right\}$	=	29.909
“Corrected Mean” of Barometer at 9 P.M., <i>minus</i> the Correction $\left\{ \begin{array}{l} \text{for Temp. (Col. 4),} = 29.940 \end{array} \right.$ $\left. \begin{array}{l} \text{.....} = .021 \end{array} \right\}$	=	29.929
Mean at Station, corrected, and at 32°,.....	=	29.919
Correction for height, feet above Mean Sea-level,.....	=	.127
Mean, reduced to 32°, and Sea-level,.....	=	30.046
Highest Reading, corrected for Index error, on the th,.....	=	30.410
Lowest Do. Do. on the th,.....	=	29.360
Difference, or Monthly Range ,.....	=	1.050

S.-R. THERMOMETER, (in shade, etc.), **Highest in Month,** (corrected for Index Errors), on the th..... = 47.0

Lowest in Month, corrected for Index errors, on the th, = 20.0

Difference, or **Monthly Range,** = 27.0

“ Corrected **Mean** ” of all the **Highest,** (Col. 5), = 37.7

“ Corrected **Mean** ” of all the **Lowest,** (Col. 6), = 28.1

Difference, or **Mean Daily Range,** = 9.6 22.4

**** Calculated Mean Temperature** of Month, = 32.9

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),	=	31.8
Mean (corrected) A.M. and P.M. Reading of Wet Bulb , (Cols. 10 and 12),	=	
‡ Computed Temperature of Dew-Point ,	=	
‡ Do. Elastic Force of Vapour ,	=	
‡ Do. Weight of Vapour in a Cubic Foot of Air , ...	=	
‡ Relative Humidity , (Saturation = 100),	=	
RAIN fell on 9 Days; Amount in Inches,	=	3.07

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	1	10	8	0	2	4	5	0		
P.M.	1	0	7	9	1	3	2	4	4		
Month.	1	0	9	8	1	3	3	4	2		

Observations made and
Return verified by

(Signed,

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SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barrow Cottage, County of Bute, in Lat. _____, Long. _____, Distance from Sea 3 miles.
Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 3 feet. During the MONTH of February 1879.

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.		No. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.		SUNSHINE. Hours.	9 h. A.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		Barometer. * No. _____	Attached Thermometer.	Barometer. No. _____	Attached Thermometer.	Max. No. _____	Min. No. _____	Max. in Shade, No. _____	Min. of Glow, No. _____	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.			9 h. A.M.	No. _____	Velocity (0-10), and Direction.	Amount, (0-10), and Species.		Velocity (0-10), and Direction.	Amount, (0-10), and Species.					No. _____	No. _____	No. _____																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°					°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°

NOTATION USED IN GENERAL REMARKS.

a.	aurora.	m.	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.	sol. h.	solar halo.
h. d.	heavy dew.	sq.	squall.
hl.	hail.	sq.	squalls.
l.	lightning.	t.	thunder.
li. cl.	light clouds.	t. s.	thunder storm.
li. sh.	light showers.	w.	wind.
lu. co.	lunar corona.	g.	gale of wind.
lu. lu.	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†† = 29.372
for Temp. (Col. 2), = 24.402

“Corrected Mean” of Barometer at 9 P.M., minus the Correction†† = 29.392
for Temp. (Col. 4), = 29.423

Mean at Station, corrected, and at 32° = 29.382

Correction for height, feet above Mean Sea-level, = 1.27

Mean, reduced to 32°, and Sea-level, = 29.509

Highest Reading, corrected for Index error, on the th, = 30.200

Lowest Do. Do., on the th, = 28.786

Difference, or Monthly Range, = 1.414

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 50.5

Lowest in Month, corrected for Index errors, on the th, = 24.5

Difference, or Monthly Range, = 26.0

“Corrected Mean” of all the Highest, (Col. 5), = 40.2

“Corrected Mean” of all the Lowest, (Col. 6), = 31.8

Difference, or Mean Daily Range, = 8.4

** Calculated Mean Temperature of Month, = 36.0

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), = 35.0

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

10 and 12), = 34.1

†† Computed Temperature of Dew-Point, = 32.6

†† Do. Elastic Force of Vapour, = 186

†† Do. Weight of Vapour in a Cubic Foot of Air, =

†† Relative Humidity, (Saturation = 100), = 91

RAIN fell on 17 Days; Amount in Inches, = 2.37

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.		2	2	14	3	1	2	3	1	0	
P.M.		0	1	10	2	2	2	3	3	4	
Mean.		1	2	12	2	1	3	3	2	2	

Observations made and
Return verified by

(Signed)

MA.

Thursday
 Feb. 7 1869

The Council of the Society recommended that the *Self-Registering Thermometers*, and the *Dry and Wet Bulb Hygrometers*, be kept in Stevenson's Louver-boarded Box for Thermometers, painted white inside and outside, and screened from the sun by a white cloth, and that the thermometer be screwed to four stout posts, also painted white, firmly fixed 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 four 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 grass, and in the open space to which the sun's rays have free access, and in the absence of surrounding conditions enable the Observers to secure the Thermometers in the position required for the purpose of the Box, and face the door, which must open to the north.

The Council regard the question of *HYGROMETRY* of great importance, and METHOD IN PRETECTING THE THERMOMETERS, as vital in every system of Meteorological Observation, since without it Observations made at different Stations are incomparable, thus rendering impossible to compare the climates of places with each other as regards their most important features.

WIND is better recorded, may be made to the direction of smoke, etc. in well-protected situations. (Careful observations are recommended in the case of changes in the direction of the wind; and during stormy weather, when the wind is blowing from the direction of the weather-vane, the wind is likely to give highly valuable and useful information.)

A system of simultaneous observations, pursued at different Stations, is likely to give highly valuable and useful information.

Professor Phillips, and Negretti and Zambra's Maximum Thermometers, and Rudbarth's Minimum Thermometer are recommended. It is recommended that these thermometers be graduated on the glass stem. The Maximum Thermometer is liable to two derangements—viz., the rupture of spirit breaking, and part of the spirit distilling by high temperature and lying at the top of the tube. This derangement

columnarity, Spirit Thermometers may be easily set right by any one of the following methods. Let the spirit be drawn down to the bottom of the tube, and let the bulb, which is attached to the handle, be firmly swung downwards towards the bottom of the tube, so that the spirit may be completely expelled above the head of the column. Then, holding the thermometer by the handle, let the spirit be drawn up to the top of the tube, so that the detached portion of spirit will be raised to the top of the column. A few throws, or swinging strokes will generally be sufficient for the purpose; after which the Thermometer should be placed in a slanting position, to allow the rest of the spirit, still adhering to the sides of the tube to drain down to the column. But another method must be adopted, if the portion of spirit in the top tube be small. The Rain-Gauge should not be placed on slope or terrace, but

Many causes conspire to produce anomalies in Kan letters, arising partly from the difficulty of obtaining a perfectly unobscured situation for observation, and partly from the nature of the instruments used. The letter-Gauge should not be placed on a level piece of ground, as in open situations, but can secure for it. As it is often difficult to obtain a position as free and unobscured by surrounding objects as is desirable, care should be taken to place it at some distance from shrubs, buildings or other obstructions, at least as many feet from their base as they are in height. The most important directions,

[illegible]

mass particles may also be used, being noted preferable to the latter. It must, however, be added, that the whole subject of the observation of Solar and Terrestrial Radiation is not yet in a satisfactory state, and to warrant the exclusive recommendation of use of these symbols.

The Hygrometer in use at the Society's Stations consisted of two Thermometers usually, but not necessarily, mounted together on one frame. As apparently slight deviations from the approved form of this apparatus seriously vitiate Hygrometrical Observations, Observers are specially requested to record the following conditions:—The bulbs must hang down to the following conditions:—

Snow-falls may also be used, being noted preferable to the latter. It must, however, be added, that the whole subject of the observation of Solar and Terrestrial Radiation is not yet in a satisfactory state, and to warrant the exclusive recommendation of use of these symbols.

The Hygrometer in use at the Society's Stations consisted of two Thermometers usually, but not necessarily, mounted together on one frame. As apparently slight deviations from the approved form of this apparatus seriously vitiate Hygrometrical Observations, Observers are specially requested to record the following conditions:—The bulbs must hang down to the following conditions:—

ched; the frame must be such as will bring the tubes forward by such motion as will be necessary to observe the sky overhead (i.e. within 20° or 30° of the zenith). The strata of Clouds that appear near the horizon are viewed obliquely; and thus, being made to judge of their amount, we ought not to take them into account in the Clouds' column, though their appearance and changes may be noted among the Remarks. The amount of Cloud is entered from a scale of 0 to 10; thus, when the sky overhead is free from Clouds it is entered 0, when half covered by Clouds, wholly covered, 10, and so on.

Observations of the Clouds are made at 9 a.m. and at sunset, as

evaporation. From the film of ice thus formed evaporation will be observed as from the moist cloth in ordinary circumstances.

In reading the Thermometer great care must be taken to bring the eye exactly opposite the tip of the index or column of mercury. The reading ought to be taken to tenths of a degree, and noted in decimals. Thus, if the Thermometer will be read— $39^{\circ} \cdot 7$, $40^{\circ} \cdot 0$, or $40^{\circ} \cdot 1$; an exact 40° . Fahrenheit will be read— $39^{\circ} \cdot 4$, according as it indicates a little under, at, or above 40° , respectively. So also, if the thermometer shows a difference of $\frac{1}{8}$ of a degree, say $40^{\circ} \cdot 6$, more or less must be registered $40^{\circ} \cdot 2$, $40^{\circ} \cdot 3$, $40^{\circ} \cdot 4$, or $40^{\circ} \cdot 5$.

regions are covered to the amount of 14 tenths with stratus clouds; and that the sky is further obscured to the extent of 2-tenths by lower Clouds of the cumulo-stratus kind.

Remarks on peculiar Clouds, accompanied with drawings, will assist materially in the development of a more exact nomenclature of Clouds, as well as throw light on the electrical, and other of the more obscure phenomena of Meteorology.

The approximate number of Hours in which objects in the sun's rays cast shadows, should be noted in the proper

Sunshine.

on the Self-Registering Thermometers are read, since, in winter, the extremes may occur at any hour; and it is necessary to refer to their recurrence to their proper meteorological day. In the early schedules, the indications registered on the 3d are those of the 2d, and on the 4th of the 3d, and so on, until the 24th, and extending to the 31st.

At 9 P.M. on the 3d.

No instrument ought to be used for Meteorological purposes till it has been carefully tested by comparison with the Standard Thermometer. When such a comparison has been made, the indications of the Standard Thermometer are not graduated on the stem, but merely on the bulb, and the stem is graduated in the proper manner.

Sanitize the column.

As the germination and growth of crops and plants generally, depend greatly on the temperature of the soil,—its amount and constancy,—the Council recommend that Observations in this interesting department be made at 9 A.M., by Thermometers permanently fixed in the soil, their bulbs being sunk to depths of 3, 12, and 22 inches, and the stems above ground protected from the sun's rays, and fitted with sloping tin collars, to prevent rain water being conveyed to the bulbs by the stems or wooden frames.

A knowledge of the Temperature of the Sea is not only in itself, but in its relations to that of our island, a most important branch of Meteorology. The Council therefore recommend that the Temperature of the Sea be carefully taken by a properly constructed apparatus, on boats, or if this be impracticable, from the ends of piers and rocks round the coast, where it is not influenced by that of river water, and as little as possible by currents sweeping along the coast, and thus acquiring the temperature of the land, either greatly heated by the sun cooled by nocturnal radiation. At or near the time of high

The water, in cases where the observations cannot be taken daily, the observation may be made on the 5th, 10th, and 24th of each month. When such was the case at Olesund, the temperature of the air, and the depths, noted by the observers of the Air, or the Hour of Observation. It is also very desirable that observations be made daily 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 Wells ought, when practicable, to be taken both the depth of the

systems, extra observations at every hour of Greenwich time. Such systems of simultaneous observation, pursued at different Stations, are likely to give highly valuable and important results, particularly in connection of magnetic and meteorological Stations over a large district in the North and South Seas, in the investigation of the relation of the Solar and Lunar systems to the cause of being established by the Society for the systematic investigation of the effects of the force of the magnetism of the ELEMENTS 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 over a given surface, from which a certain amount of Wind that passes per day; from which

observation may be ascertained. For indicating the force of the Wind at any particular hour of observation, the Pressure barometers recently brought under the notice of the Society by Mr. J. Stevenson, the Secretary, and Mr. K. Ballingh, the Astronomer Royal, are recommended as likely to secure the greatest degree of accuracy in the observations. Many causes conspire to produce errors in the observations arising partly from the difficulty of obtaining a perfectly unobscured situation for observing, and partly from the defective nature of the instruments used. A Rain-Gauge should not be placed on a slope or terrace, but

of the Gauge must be perfectly level, and fixed so that it will stand at a level in all weathers, and be at a height of one foot above the ground, over grass. In such gauges as Fleming's are furnished in a measuring tin attached to a float the rod ought to be fixed in the float rise to its height only at the time the instrument is being used, and then, when proceeding above the rim of the Gauge, sinking forward, and then, when sinking below, rising up, so that a measuring glass is always at the level of the water quite perpendicular. The Rain Gauge ought to be run daily, and the reading entered in the Returns of the previous day. As the Gauge is read once a month, the Reading is to be made on the 1st of the month, and the rain falling in the month is to be entered in the Returns of the 1st of the month.

depth of the snow must be measured in some open place where drift is observed, and registered in addition to, and as a check on, the indications of the Rain-Gauge. For wind, rain, and snow, entered in any column, the Observer cannot be too careful to make his entries intelligible; and nothing that partakes of the nature of a selection or inference.

Convenient abbreviations for the nomenclature of Clouds will be found on the other side. The amount of Cloud cover to be estimated from the greater or less observation of sky overhead (*i.e.*, within 30° or 30° of the zenith). The strata of clouds that appear near the horizon are viewed obliquely; and

_____ will indicate that the upper strata of Clouds travel with _____ W.

_____ will indicate that the lower regions from S.W., and those in the lower regions from N.E., are moving at _____⁴, st. with one-third the speed of the former. Again, in the second column, an entry of _____, will indicate that the higher

ons are covered to the amount of 4-tenths with stratus clouds; it is estimated that the sky is further observed to the extent of 2-tenths by Cirrus Clouds of the cumulo-stratus kind.

Remarks on peculiar Clouds, accompanied with drawings, will materially aid in the development of a more exact nomenclature of clouds, as well as throw light on the electrical and other of the obscure phenomena of Meteorology.

The approximate number of Hours in which objects in the sun's rays cast shadows, should be entered in the proper column.

29, on-st-

	Barometer	Winds	Beaufort	Pearson	Thermometer
Divided of Leaves,					
Tall Forest,					

As the germination and growth of crops and plants generally depend greatly on the temperature of the soil—its amount and constancy—the Council recommend that observations in this interesting department be made a.s.b. by Thermometers permanently fixed in the soil, their bulbs at least 3, 12, and 22 inches, and the stems above ground and protected from the sun's rays, and fitted with sloping tubes, to prevent rain water being conveyed to the bulbs by the sun or wooden frames.

A knowledge of the Temperature of the Sea is not only in itself, but in its relations to that of our island, a most important branch of the Science of the Sea before recommended by the Council of the Admiralty. It is taken by a properly constructed apparatus, from boats, or is impracticable, from the ends of piers and rocks round the coast, where it is not influenced by that of river water, and as little changed as possible by currents sweeping along the coast, and thus affords the temperature of the land either greatly heated by the sun, or cooled by nocturnal radiation. At or near the time of high

[illegible]

The weather during the month with the exception of a sharp two day wind and another with wind & rain. The ground never has completely frozen, consequently fall and winter over the soil below will be greatly facilitated by the presence of snow for several months. Should good weather continue for several months, the ground will be greatly facilitated by the presence of snow for several months.

Whether Epizootic disease prevails among cattle, and the agricultural condition of the district generally.

The weather during the month with the exception of a sharp frost has been windy and somewhat with several of rain. The ground has never been completely frozen. The ground, consequently, still and under the surface is now for several. Should good weather continue will be greatly facilitated by the present weather.

10

10

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barone Cottage, County of Dumfries, in Lat. _____, Long. _____, Distance from Sea 10 miles.
 Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 4 feet.
 During the MONTH of March 1879.
 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 Bulb.		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. No. —	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- shade No. —	Min. on Grass. No. —	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force	Direction.	Force			Readings of the H. Cup Anemometer. No. —	Velocity (0-5). and Direction.	Amount (0-10). and Species.	Velocity (0-5). and Direction.	Amount (0-10). and Species.	No. 3 inches.	No. 12 inches.					No. 22 inches.
		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°			°	°	°	°	°	°	°					°
1	29.976	49	29.934	51	45.5	28.5			36	32.5	41	39	NW	W													1/2 clear, frosts	1			
2	29.764	51	29.586	51	48	40			41.5	41	40.3	40	SSW	W													cloudy & blowy	2			
3	29.600	46	29.750	54	41.5	34			36	35.3	39	37	W	WNW													Large hail storm	3			
4	29.480	58	29.616	51	51.5	37.5			48	46	42	41	S	SSW													pure snow & hail showers	4			
5	29.420	57	29.466	53	51	40.5			50	49	43	41	SW	WNW													Drill blowy & wet	5			
6	29.950	58	30.060	54	47	38.5			42	41	42	41	WSW	W													Net am. S.W. gale	6			
7	30.300	46	30.440	48	61.5	39			47.5	43.5	42	42	W	W													1/2 clear & showers	7			
8	30.386	45	30.230	45	60	37			39.5	39	43.5	42	SSE	S													1/2 clear fine. moon halo	8			
9	30.146	47	30.160	45	49.5	41			44	42	42	41	WSW	W													1/2 clear fine	9			
10	30.080	45	30.050	44	45	40			44	42	40	39	W	NW														1/2 clear Showers - gale afternoon	10		
11	30.210	44	30.110	45	46	32			42	40	40.5	39	W	SW														1/2 clear Showers	11		
12	29.650	46	30.172	41	49	31.5			47.5	46	31.5	30	WNW	NW														Showers	12		
13	30.240	39	30.200	37	44	26			35	34	29	28	NW	E														1/2 clear & showers	13		
14	30.324	33	29.768	35	35.5	24			27.5	27	30	30	ENE	E														1/2 clear cold 12 am snow	14		
15	29.416	40	29.470	35	42	29.5			42	41.8	32	31.5	NE	E														Heavy drizzle even till 12 am snow	15		
16	29.644	35	29.880	35	36.5	30.5			32	31	32.5	32	E	E														Snowy clouds Snowy P.M. 2 m	16		
17	29.460	35	29.780	35	35	31.5			32.5	32	32.5	32	ENE	ENE														Snowy all day 3 m	17		
18	29.710	36	29.586	39	42	32			36	35.5	36	36	ENE	ENE														Snowy P.M. 2 m & snow	18		
19	29.680	39	29.850	40	45	35.5			39.3	39	36.2	36	NE	calm														Drill & damp	19		
20	29.910	40	29.930	41	45.5	35.2			40	39	38	37.5	E	E														cloudy mild	20		
21	29.900	43	29.860	41	49	33			40	39	38.5	37	NW	E														1/2 clear mild	21		
22	29.994	39	30.000	39	42.5	32			35.5	34	32.5	30	E	ESE														1/2 clear mild	22		
23	30.076	40	30.040	38	42.5	31.5			36.3	36	32	29.5	ESE	ESE														1/2 clear fine	23		
24	30.062	32	30.054	36	34.6	32			33	32.5	32	32	ESE	ESE															1/2 clear blowy & cold	24	
25	29.974	35	29.834	36	35.5	31			32.5	32.5	32	32	E	E															cloudy blowy & cold	25	
26	29.750	36	29.770	35	39.5	30.5			34.5	33	30.5	31	E	E															do - full of snow	26	
27	29.714	35	29.700	36	40.5	28			32.3	32	31	30	E	E															1/2 clear blowy & cold full of snow	27	
28	29.620	36	29.290	37	41.5	29.5			33.5	32	33	33	E	SE															cloudy blowy & cold	28	
29	29.340	43	29.412	42	51	32			45	42	38.5	37	SW	S															do	29	
30	29.190	42	29.250	43	45	38			42.5	41.5	41	40.5	S	SSW															1/2 clear hail & showers	30	
31	29.290	43	29.244	45	48	35			42	41	41	40	S	SSW															cloudy & blowy showers	31	
Sums.	16 14 5	73	15 56 0	67	130 4	106 2			178 4	142 1	205 0	177 0																			
Means.	29.831	42.4	29.825	42.2	44.2	33.4			39.0	37.8	36.6	35.7																			
† 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	

NOTATION USED IN GENERAL REMARKS.					
a.	denotes aurora.	m.	denotes meteor.		
ci.	" cirrus.	ms.	" meteors.		
ci-cl.	" 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.		
ho-fr.	" hoar-frost.	s.	" snow.		
h.	" haze.	sol.h.	" solar halo.		
h. d.	" heavy dew.	sq.	" squall.		
hl.	" hail.	sq.s.	" squalls.		
l.	" lightning.	t.	" thunder.		
ll. cl.	" light clouds.	t. s.	" thunder storm.		
ll. 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

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction†† = 29.794
 for Temp. (Col. 2), = 29.793... - 0.037...
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction†† = 29.788
 for Temp. (Col. 4), = 29.787... - 0.037...
 Mean at Station, corrected, and at 32°... = 29.791
 Correction for height, feet above Mean Sea-level... = 1.27
 Mean, reduced to 32°, and Sea-level... = 29.918
 Highest Reading, corrected for Index error, on the th... = 30.440
 Lowest Do. Do., on the th... = 29.190
 Difference, or Monthly Range... = 1.250

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th... = 51.5
 Lowest in Month, corrected for Index errors, on the th... = 24.0
 Difference, or Monthly Range... = 27.5
 "Corrected Mean" of all the Highest, (Col. 5), = 44.2
 "Corrected Mean" of all the Lowest, (Col. 6), = 33.4
 Difference, or Mean Daily Range... = 10.8
 ** Calculated Mean Temperature of Month... = 38.8
 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), = 37.8
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 36.8
 ‡ Computed Temperature of Dew-Point, = 35.5
 ‡ Do. Elastic Force of Vapour, = 2.08
 ‡ Do. Weight of Vapour in a Cubic Foot of Air, ... =
 ‡ Relative Humidity, (Saturation = 100), = 92
 RAIN fell on 20 Days; Amount in Inches, = 3.90

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	0	2	12	0	5	2	7	3	0		
P.M.	0	0	14	1	5	1	7	2	1		
Mean.	0	1	13	0	5	2	7	3	0		

Observations made and Return verified by

James Hays

(Signed)

James Hays

M.

Y^o the day
Mar. 1899

To

Mr. ALEXANDER BUCHAN,

A circular library stamp from Edinburgh. The text "EDINBURGH" is written along the top inner edge. The date "15 W 1879" is stamped in the center, with "15 W" on the left and "1879" on the right.

EDINBURGH.

A circular library stamp from Edinburgh. The text "EDINBURGH" is written along the top inner edge. The date "15 W 1879" is stamped in the center, with "15 W" on the left and "1879" on the right.

There are several of a few days which were, in a way, very profitable, and of the
past week, the weather was very much improved, and the water was very much
and several falls of snow. Doctor had now a new bottom fitted, and the
boat had had all winter - ship on the ground now has got
difficultly in getting afloat. Upstart has made no progress
except following which was being purchased by the company of the ship to be
brought to steam by the firm from the 1st of the month
made a good number of boats, but no more is yet made.

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 Epizootic disease prevails among cattle; and the Agricultural condition of the district generally.

EDINBURGH, December 1877.

SHRUBS, ETC.	Barberry,	Apple,	First in Blossom.	Cuckoo,	Microclimatic Plants.	First Arrival.	Departure.
	Bourtree or Eldar,	Black Currant,		House-Swallow,			
	Broom,	Cherry,		Lapwing,			
	Hawthorn,	Craneberry,		Flower,			
	Holly,	Peach,		Sand-Martin,			
	Laburnum,	Pear,		Starling,			
	Life,	Plum,		Swan,			
	Mezereum,	Strawberry,		Hail or Corn Crake,			
	Mountain Ash or Rowan,						
	Rhododendron Ponticum,						
	With,						

FOREST TREES.		Flower.	First appear.	In full.	Leaves.	in fruit.	Barley,	Bere or Bigg,	Oats,	Wheat,	Beans,	Pease,	Potatoes,	Turnips,	Hay Grass,
Allyer,	Ash,	Beech,	Birch,	Elm,	Larch,	Oak,	Sycamore or Plane,								

Season	1st	Last	Planted	Crops	Sowing or	Harvesting	1st	Out
1900-1901	1st	1st	1st	1st	1st	1st	1st	1st
1901-1902	1st	1st	1st	1st	1st	1st	1st	1st
1902-1903	1st	1st	1st	1st	1st	1st	1st	1st
1903-1904	1st	1st	1st	1st	1st	1st	1st	1st
1904-1905	1st	1st	1st	1st	1st	1st	1st	1st
1905-1906	1st	1st	1st	1st	1st	1st	1st	1st
1906-1907	1st	1st	1st	1st	1st	1st	1st	1st
1907-1908	1st	1st	1st	1st	1st	1st	1st	1st
1908-1909	1st	1st	1st	1st	1st	1st	1st	1st
1909-1910	1st	1st	1st	1st	1st	1st	1st	1st
1910-1911	1st	1st	1st	1st	1st	1st	1st	1st
1911-1912	1st	1st	1st	1st	1st	1st	1st	1st
1912-1913	1st	1st	1st	1st	1st	1st	1st	1st
1913-1914	1st	1st	1st	1st	1st	1st	1st	1st
1914-1915	1st	1st	1st	1st	1st	1st	1st	1st
1915-1916	1st	1st	1st	1st	1st	1st	1st	1st
1916-1917	1st	1st	1st	1st	1st	1st	1st	1st
1917-1918	1st	1st	1st	1st	1st	1st	1st	1st
1918-1919	1st	1st	1st	1st	1st	1st	1st	1st
1919-1920	1st	1st	1st	1st	1st	1st	1st	1st
1920-1921	1st	1st	1st	1st	1st	1st	1st	1st
1921-1922	1st	1st	1st	1st	1st	1st	1st	1st
1922-1923	1st	1st	1st	1st	1st	1st	1st	1st
1923-1924	1st	1st	1st	1st	1st	1st	1st	1st
1924-1925	1st	1st	1st	1st	1st	1st	1st	1st
1925-1926	1st	1st	1st	1st	1st	1st	1st	1st
1926-1927	1st	1st	1st	1st	1st	1st	1st	1st
1927-1928	1st	1st	1st	1st	1st	1st	1st	1st
1928-1929	1st	1st	1st	1st	1st	1st	1st	1st
1929-1930	1st	1st	1st	1st	1st	1st	1st	1st
1930-1931	1st	1st	1st	1st	1st	1st	1st	1st
1931-1932	1st	1st	1st	1st	1st	1st	1st	1st
1932-1933	1st	1st	1st	1st	1st	1st	1st	1st
1933-1934	1st	1st	1st	1st	1st	1st	1st	1st
1934-1935	1st	1st	1st	1st	1st	1st	1st	1st
1935-1936	1st	1st	1st	1st	1st	1st	1st	1st
1936-1937	1st	1st	1st	1st	1st	1st	1st	1st
1937-1938	1st	1st	1st	1st	1st	1st	1st	1st
1938-1939	1st	1st	1st	1st	1st	1st	1st	1st
1939-1940	1st	1st	1st	1st	1st	1st	1st	1st
1940-1941	1st	1st	1st	1st	1st	1st	1st	1st
1941-1942	1st	1st	1st	1st	1st	1st	1st	1st
1942-1943	1st	1st	1st	1st	1st	1st	1st	1st
1943-1944	1st	1st	1st	1st	1st	1st	1st	1st
1944-1945	1st	1st	1st	1st	1st	1st	1st	1st
1945-1946	1st	1st	1st	1st	1st	1st	1st	1st
1946-1947	1st	1st	1st	1st				

On the indications of the Rain-Gauge. For wind, rain, and snow, we are indebted in every column, the Observer cannot be too careful to make his observations only; and nothing that partakes of the nature of deduction or inference.

Convenient abbreviations for the nomenclature of Clouds will be found on the other side. The amount of Cloud ought to be estimated from the greater or less observation of sky overhead ($\frac{1}{2}$, within 90° of the zenith). The strata of Clouds that appear to be present may be noted by the index of their amount, we ought not to take notice of changes made by the clouds' column, though their appearance and change may be noted as of 0 to 10; thus, when the sky overcast is met from from Clouds it is entered 0, when half covered by Clouds, 5, wholly covered, 10, and so on.

Observations of the Clouds are made at 9 a.m. and at sunset, as illustrating the condition and currents of the upper and lower regions of the atmosphere. The entries in the schedule are to be made in the following manner.—Thus, in the column Velocity and Direction, S.W. will indicate that the upper strata of Clouds travel with S.W. winds, and the lower strata of Clouds travel with W. winds, and the velocity from S.W., and those in the lower regions from W.; thus, if the wind blows from the N.E. at 10 miles per hour, with one-third the speed of the former. Again, in the second column, an entry of $\frac{1}{2}$, st. will indicate that the higher strata are covered to the amount of 2-leaths with stratus Clouds; and that the sky is further obscured to the extent of 2-leaths by the lower strata of the cumulus kind.

The Remarks peculiarly designed to be accompanied with drawings, will be generally descriptive of the development of a more exact nomenclature than has been hitherto used, such as the terms of the electrical, and other of the obscure phenomena of Meteorology.

The approximate number of Hours in which objects in the sun's rays cast shadows, should be entered in the proper column.

As the germination and growth of crops and plants generally, depend greatly on the temperature of the soil,—is indicated in the column Temperature of Soil, by the thermometer placed in the soil, and constantly—the Council recommend that Observations in this line should be taken at least twice daily, viz. at 9 a.m., by the thermometer fixed in the soil their bulbs being placed at depths of 3, 12, and 22 inches, and the stems above ground protruded from the holes of 3, 12, and 22 inches, and fitted with dopping tin canisters, to prevent rain water being conveyed to the bulbs by the canisters, or wooden frames.

A knowledge of the Temperature of the Sea is not only in itself, but in its relations to that of our island, a most important branch of Meteorology. The Council therefore recommend that the Temperature of the Sea be ascertained by means of a thermometer, and the same method already taken by a properly constructed apparatus, run buriy, or thrown, from the ends of piers and rocks, and that the result be entered in the column Temperature of the Sea, where it is not influenced by the surface current, and that the thermometer be always sweeping along the coast, and thus be able to ascertain the temperature of the land, either directly land by the

[illegible]

up behind the tube. It must hang truly perpendicular, and exposed to neither the sun's direct rays nor the heat of a fire, and the thermometer must be hung against a wall heated by a fire. The object being to secure the thermometer at a uniform temperature, the brass fittings, contained mercury, and the attached thermometer, shall be, when used, at one uniform temperature, it is evident that the best position is that which is least liable to sudden changes. The thermometer is first taken up, and the position is then changed. The thermometer is first brought into the position, and the eyepiece, and the eyepiece-adjustment, is then made. The eye is raised, and lowering it, must be brought into the plane of the back and front of the index—usually the lower edge of the venier, 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 level of the clear surface of the mercury, which is in direct contact with the mercury, and must be carefully avoided.

The tube most frequently made in reading the Barometer are the mercuries of 1'00 inch, 0'500 inch, and 0'250 inch; that is to say, instead of 29·365 inches, either of the following, is sometimes sent down—viz, as 29·365 inches, 29·365 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 matter.

When a Barometer having adjustable surfaces has to be removed from its fastenings, the ivory peg must first be screwed so as to secure a tight plug to the cistern, thus preventing the escape of the mercury. They screw up the mercury glass, and then take down the instrument; but should a tight plug be required, the ivory peg is used. 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 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 being roughly handled, it may be useful to Observers by screwing the ivory peg tight, so as to prevent the escape of the mercury, when screwing up the ivory peg, as a precautionary measure. The ivory peg is then slowly reversed, so as to take half an inch from the top of the tube; and, having placed the instrument, place the top of it on a yielding substance, such as the foot, and gently tap on the cistern with the palm of the hand, so as to induce the air to ascend through the column to the cistern, whence it may escape. Since there is the weight of two atmospheres—the pressure of the mercury in the Barometer, and the air outside—pressing on any air that may be inside the tube, it is usually a tedious operation to get it to rise and expelled. After repeated trials, however, it is generally found that the clear metallic surface will show when the ivory stannik against the top of the tube. On hanging up the Barometer, care must be taken to screw down the hanging in the tube before unfastening the

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barore Cottage, County of Bute, in Lat. _____, Long. _____, Distance from Sea 8/10 miles.
Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 4 feet. During the MONTH of March

The Hours of Observation are of Greenwich Time.

[illegible]

BAROMETER, "corrected Mean" at 9 A.M., <i>minus</i> the Correction \uparrow }		=	<u>29.611</u>
for Temp. (Col. 2), = 29.657..... - .046.....			
Corrected Mean " of Barometer at 9 P.M., <i>minus</i> the Correction \uparrow }		=	<u>29.616</u>
for Temp. (Col. 4), = 29.662..... - .046.....			
Mean at Station, corrected, and at 32°		=	<u>29.614</u>
Correction for height,	feet above Mean Sea-level,.....	=	<u>127</u>
Mean, reduced to 32°, and Sea-level		=	<u>29.741</u>
Highest Reading, corrected for Index error, on the	29th,.....	=	<u>30.256</u>
Lowest Do.	Do., on the	=	<u>28.840</u>
Difference, or Monthly Range		=	<u>1.416</u>

S.-R. THERMOMETER, (in shade, etc.), **Highest in Month**, (corrected for Index Errors), on the 20 th, = 57.0

Lowest in Month, corrected for Index errors, on the 16 th, = 30.3

Difference, or **Monthly Range**, = 26.5

"Corrected **Mean**" of all the **Highest**, (Col. 5), = 49.2

"Corrected **Mean**" of all the **Lowest**, (Col. 6), = 36.2

Difference, or **Mean Daily Range**, = 12.9

**** Calculated Mean Temperature** of Month, = 42.7

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),	=	41.0
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12),	=	39.2
# Computed Temperature of Dew-Point ,	=	36.9
# Do. Elastic Force of Vapour ,	=	219
# Do. Weight of Vapour in a Cubic Foot of Air , ...	=	
# Relative Humidity , (Saturation = 100),	=	86
RAIN fell on 18 Days; Amount in Inches,	=	2.21

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

Observations made and
Return verified by

(Signed)

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barron Cottage, County of Bute, in Lat. _____, Long. _____, Distance from Sea 70 miles.
 Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 3 feet. During the MONTH of May 1877.
 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.		Days of Month.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulb.		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.		SUNSHINE. Hours.	9 h. A.M.				Temperature of WIND at each of feet, 50.	Temperature and Direction.		9 A.M.	9 P.M.	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.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
		Barometer. * No. —	Attached Thermometer No. —	Barometer. No. —	Attached Thermometer No. —	Max. No. —	Min. No. —	Max. in Shade. No. —	Min. on Sun-ray. No. —	Dry bulb. No. —	Wet bulb. No. —	Dry bulb. No. —	Wet bulb. No. —	Direction. No. —	Force. No. —	Direction. No. —	Force. No. —			9 h. A.M. No. —	9 h. P.M. No. —	Velocity (0—10), and Direction.	Amount, (0—10), and Species.		Velocity (0—10), and Direction.	Amount, (0—10), and Species.									No. 8 inches.	No. 12 inches.	No. 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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BAROMETER, "corrected Mean" at 9 A.M., minus the Correction $\dagger\dagger$ = 29.885
 for Temp. (Col. 2), = 29.885 - 0.000 = 29.885
 "corrected Mean" of Barometer at 9 P.M., minus the Correction $\dagger\dagger$ = 29.879
 for Temp. (Col. 4), = 29.879 - 0.000 = 29.879
 Mean at Station, corrected, and at 32°, = 29.882
 Correction for height, feet above Mean Sea-level, = 127
 Mean, reduced to 32°, and Sea-level, = 30.009
 Highest Reading, corrected for Index error, on the 4th, = 30.494
 Lowest Do. Do., on the 26th, = 29.440
 Difference, or Monthly Range, = 1.054

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 29th, = 63.6
 Lowest in Month, corrected for Index errors, on the 2th, = 31.5
 Difference, or Monthly Range, = 32.1
 "Corrected Mean" of all the Highest, (Col. 5), = 55.5
 "Corrected Mean" of all the Lowest, (Col. 6), = 38.9
 Difference, or Mean Daily Range, = 16.6
 ** Calculated Mean Temperature of Month, = 47.2

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), = 46.6
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 43.7
 # Computed Temperature of Dew-Point, = 40.4
 # Do. Elastic Force of Vapour, = 2.59
 # Do. Weight of Vapour in a Cubic Foot of Air, = _____
 # Relative Humidity, (Saturation = 100), = 80
 RAIN fell on 19 Days; Amount in Inches, = 3.36

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	4	3	3	3	2	8	5	1						
P.M.	3	1	4	0	3	4	6	8	2						
Mean.	2	2	4	2	3	3	7	6	2						

Observations made and Return verified by

James May

(Signed)

James May

74

* 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.
 †† Enlarging corrections for both capillarity and Index Errors.
 The Diurnal Range for Scotland is as yet unknown.
 These "Hygrometrical Deductions" are calculated from Glaisher's Hygrometrical Tables, Second Edition only.
 While the Diurnal Range is unknown, the Arithmetic 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.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barone Cottage, County of Bute, in Lat. 55° 49' 50" N, Long. 5° 4' 5" W, Distance from Sea 10 miles.
Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 3 feet. During the MONTH of June

The Hours of Observation are of Greenwich Time.

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 Bolls.		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.				Temperature of Well, at depth of feet. No.		Temperature at 1 fathom and Drusky.		0—10.				
	Barometer. * No.	Attached Thermometer No.	Barometer. No.	Attached Thermometer No.	Max. No.	Min. No.	Max. in Sun rays No.	Min. on Grass No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	No. of hours in which it fell.	Amount in inches.	Velocity (0—5), and Direction.	Amount, (0—10), and Direction.	Velocity (0—5), and Direction.	Amount, (0—10), and Direction.	SUNSHINE. Hours.	No. 3 inches.	12 inches.	No. 22 inches.	Temperature of Well, at depth of feet. No.	Temperature at 1 fathom and Drusky.	0 A.M.	9 P.M.			
	inches.	"	inches.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			
1	29.480	51	29.464	51	65	37	X	51.2	44.5	45	41.5	NW	NW				165												Hail showers	1			
2	29.460	54	29.550	52	57	42.5		51.2	46.5	46.3	44.3	NW	NE				160												do	2			
3	29.590	54	29.650	53	57	38.5		51.2	45.3	44.8	43	NW	NW				020												Showers	3			
4	29.722	55	29.818	54	58	44		53	47.2	45	43	NW	NW				~												Clear calm	4			
5	29.820	52	29.760	58	57	41		49	43.3	45	42	NW	SE				~												Clear fine Brn	5			
6	29.710	54	29.730	52	50	42.5		49.3	47	49	47	E	E				065												Dull below & cold damp	6			
7	29.674	51	29.620	52	55	46		50	47.5	47	46.5	E	E				1625												Wet Brn	7			
8	29.410	50	29.500	55	64	44.5		48	47.3	53.3	52	E	SE				313												Showers mild	8			
9	29.600	55	29.740	56	59.5	48		51	50.5	52.5	51.5	ESE	S				900												This & day with heavy rain	9			
10	29.880	55	29.980	58	63.5	49.5		55	53.3	50	49.5	SE	SE				008												fine Brn	10			
11	30.006	60	29.940	59	69.6	42		60	53.5	55	53	SE	ESE				205												fine warm	11			
12	29.922	55	30.000	55	58	49		52	50	53	51	E	E				080												Dull, Showers	12			
13	30.082	58	30.070	58	64.3	47.5		59	55	54	51	E	NW				~												Blaudy & mild	13			
14	30.020	60	29.900	60	65	46		59	55	54	51.5	E	calm				180												to mild & warm	14			
15	29.760	58	29.722	60	64.3	47.5		54.3	53.5	55	53.6	ESE	NW				~												do	15			
16	29.624	59	29.522	58	63.3	48.5		56	54	53.5	51.5	ENE	E				210												Dull & heavy	16			
17	29.444	58	29.540	56	57	50		50	55	51	49.3	NE	NW				070												Dull & wet	17			
18	29.700	58	29.770	60	64.3	48		54	50	53.3	52.3	NW	calm				~												c am Dull Brn	18			
19	29.700	59	29.540	59	62.3	51		57.3	54	56.2	55.5	SE	SSE				485												Dull & belowy. wet Brn	19			
20	29.532	61	29.530	60	64	51.5		59	56.6	56	54	S	SW				123												to warm	20			
21	29.532	58	29.360	58	57	50		53	52.3	53.3	53	SE	NE				340												Dull & wet	21			
22	29.546	56	29.710	56	57.5	50		54	52	51	48.5	NW	W				080												to belowy showers	22			
23	29.640	56	29.532	57	61.3	47.5		52.3	50.3	54	51	S	SE				225												to c Showers	23			
24	29.430	57	29.420	56	54.6	48		54	53	51	50.5	SE	SE				590												Dull & wet	24			
25	29.450	56	29.510	58	60	47.5		52	51	51	50	E	W				~												to fine	25			
26	29.488	57	29.362	57	58.5	44		53.5	52	53	52.5	SE	SSE				485												Dull & wet	26			
27	29.370	57	29.364	57	56	48.5		53.5	52	53.5	52	SE	SSE				510												do	27			
28	29.346	55	29.580	56	63.5	49		54	52	52	50	S	S				305												Blaudy showers	28			
29	29.644	56	29.680	58	61	48.5		57.3	54	52	50.5	S	W				240												Heavy showers	29			
30	29.760	59	29.700	57	61.5	48.5		59	54	51	50.5	SW	SSE				500												do	30			
31																																31	
Means.	29.645	561	29.652	564	600	465		53.8	51.0	51.5	49.7																						
Total corrections for instru- mental errors.																																	
Estimated Force, 0—6.																																	
Common Designation.																																	
Estimated Force, 0—6.																																	
Common Designation.																																	
0																																	
0.5																																	
1																																	
1.5																																	
2																																	
2.5																																	
3																																	
3.5																																	
4																																	
4.5																																	
5																					</												

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction ⁽⁺⁾ for Temp. (Col. 2),	=	29.572
corrected Mean " of Barometer at 9 P.M., minus the Correction ⁽⁺⁾ for Temp. (Col. 4),	=	29.578
Mean at Station, corrected, and at 32° ,.....	=	29.575
Correction for height, feet above Mean Sea-level,.....	=	.127
Mean, reduced to 32°, and Sea-level ,.....	=	29.702
Highest Reading, corrected for Index error, on the th,.....	=	30.082
Lowest Do. Do., on the 28th,.....	=	29.346
Difference, or Monthly Range ,.....	=	0.736

5.-R. THERMOMETER, (in shade, etc.), **Highest in Month**, (corrected for Index Errors), on the th, = 69.6

Lowest in Month, corrected for Index errors, on the th, = 37.0

Difference, or **Monthly Range**, = 32.6

“ **Corrected Mean** ” of all the **Highest**, (Col. 5), = 60.0

“ **Corrected Mean** ” of all the **Lowest**, (Col. 6), = 46.5

Difference, or **Mean Daily Range**, = 13.5

**** Calculated Mean Temperature** of Month, = 53.2

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),	=	52.6
Mean (corrected) A.M. and P.M. Reading of Wet Bulb , (Cols. 10 and 12),	=	50.4
## Computed Temperature of Dew-Point ,	=	48.2
## Do. Elastic Force of Vapour ,	=	338
## Do. Weight of Vapour in a Cubic Foot of Air , ... =		
## Relative Humidity , (Saturation = 100),	=	85
RAIN fell on 24 Days; Amount in Inches,	=	7.88

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	0	2	10	7	4	1	0	8			
P.M.	0	2	5	5	6	1	4	6	3		
Mean.	0	2	8	6	5	1	2	6	0		

Observations made and
Return verified by

(Signed)

WITH REMARKS ON THE USE OF INSTRUMENTS.

The Council of the Society announced that the *Soft Register Thermometer*, be kept in Stevenson's Lower-boarded Box for *Thermometers*, painted white inside and outside, and sawn to four stout posts, also painted white, firmly fixed in the ground. The posts must be of such a length that when the Thermometers are hung in position the Balls of the Minimum Thermometer, and of the Dry and Wet Bulb Thermometers, will be exactly at the same height of four feet above the ground; the Maximum Thermometer being hung immediately above the Minimum Thermometer. The Thermometer Ball to be placed over a plot of ground, free from trees, and the site being as level as possible during as much of the day as surrounds the Observatory, suitable the Observer to secure. The Thermometers are suspended on cross-laths in the centre of the Box, and face the door, which should open to the north.

The Council regard the question of *EXTRAORDINARY* of HEIGHT ABOVE GROUND, and METHOD in PROTECTING the THERMOMETERS, as vital in every 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 regards their physical features.

Philip James, Secretary.

Salicylic-acid Thermometers, and Infrared, Minimum Thermometers are recommended. It is recommended that these Minimum Thermometers be graduated on the glass stem. The thermometer is liable to two derangements—viz, the column of spirit breaking and part of the spirit distilling by high heat, and the thermometer toppling over the tube. This derangement is of occasional occurrence, but the latter part of the frequent occurrence with exposed thermometers. Hence a systematic examination of Minimum Thermometers ought to be a regular part of the work carried on by each Observer. Fortunately, Spirit Thermometers may be easily set right by any

one, when the column of spirit rises to separate. Let the inner tube be taken in the hand and the tube farthest from the bulb, and then forcibly swing down towards the other tube, so that the tube being raised, on the principal of centrifuging, the gas, sent down the detached spiral will be united with the column of spirit.

A few days or sometimes three or four will be sufficient for a passage, after which the thermometer will be applied to a standing position, to allow the rest of the spirit, still adhering to the sides of the tube to drain down to the column. But another method must be adopted, if the portion of spirit in the top of the tube be small. Heat should be applied slowly and continuously to the top end of the tube where the detached portion of spirit is, which, being turned into vapor by the heat, will condense on the surface of the unbroken column 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 instrument be destroyed. The best way to apply the requisite amount of heat, is by bringing the end of the tube slowly down towards a minute flame from a gas-burner; or if gas be not at hand, a piece of ignited metal will serve instead.

The bulbs of the Thermometers for registering the greatest heat from the sun's rays, and the least from radiation during nights have a black coating, which may easily be made, or mended, by the application of a mixture of lampblack and printer's ink. They are placed in shallow blackened boxes, whose sides protect the bulbs from the wind. The maximum should be freely exposed to the sun, and the minimum should rest on wooden supports a few inches from the surface of the grass in an open situation. Snow must not be allowed to cover either of these Thermometers; nor the sun's heat to affect the minimum Thermometer by dissilation. Black-bulbs enclosed in "glass jackets" may also be used, being indeed preferable to the above. It must, however, be added, that the whole subject of the preservation of Solar and Terrestrial Radiation is not yet in a suffi-

recently advanced state to warrant the exclusive recommendation of any one of these methods.

The Hygienum in use at this Society's Stations consists of two cylindrical vessels, one of iron and the other of wood, each 15 inches in diameter and 25 inches high. They are usually slightly deviated from the vertical position, and are furnished with a stopper at the top.

Also, the approved form of this apparatus seriously vitiates the Hygienum.

The Hygienometrical Observations, Observers are specially directed to attend to the following conditions:—The bulls must hang down by at least an inch free from the scales and frame to which they are attached; the frame must be such as will bring the tubes forward by an inch from any board on which it may be suspended; the water-pump must be covered, not altogether placed to the side, and a little below the level of the water bulb, but in no case under the neck of the water bulb; the water bulb, but in no case under the neck of the water bulb; the observer, which also supplies it with water. It must be supplied by the Observer, that the muslin is always clean and moist, and the water pure. In frosty weather, observation is a matter of much delicacy, and must be made with great care. The bulb must be moistened by immersion from 15 to 30 minutes before the hour of observation. From the film of ice thus formed evaporation will proceed as from the moist cloth in ordinary circumstances.

In reading the Thermometer, great care must be taken to

Reading of the thermometer. The reading of the thermometer is taken to tenths of a degree, and noted in decimals. Thus the thermometer will be read—39.9, 40.0, or 40.1; or again, 40.0, 40.1, 40.2, 40.3, 40.4, etc., according as it indicates a little under, an exact coincidence with, or a little over 40°, or 40.1°, respectively. So also 40.0, 40.1, 40.2, 40.3, 40.4, etc., according as it indicates a little over, an exact coincidence with, or a little less than 40°, or 40.1°, respectively. 40.0, 40.1, 40.2, 40.3, 40.4, etc., according as it indicates a little over, an exact coincidence with, or a little less than 40°, or 40.1°, respectively. In reading Rutherford's Minimum thermometer the indication of that end-of-the index which is next to the surface of the spirit is alone noted. On opening the thermometer the bulb is held in the hand, and the thermometer is held in the other hand, the dry and wet bulb being held in the same position as they are readily acted upon by heat from the breath of the Observer. The Self-registering Hygrometer is read at 4 A.M. and 9 P.M. The Self-registering

Thermometers are read at 9 p.m. only indicating the greatest and least degrees of temperature in the 24 hours preceding. It is not a matter of inference from the Self-Registering Thermometers are read, since, in winter at least, the extremes may occur at any hour; and it is necessary to refer their occurrence to their proper meteorological day. In the Society's publications, the indications registered on the 31st are those of a series of phenomena commencing at 9 p.m. on the 31st and extending until 9 p.m. on the 31st.

No instrument has been exactly tested by comparison with a Standard Thermometer. When such Thermometers as are not graduated on the stem, but merely on an attached scale, undergo repairs, they are very liable to be moved from their position on the Scale, and might never afterwards to be tested without being re-tested. The Self-Registering, especially the Minimum Thermometers, ought frequently to be compared with the dry bulb of the Hygrometer. The freezing-point of each Thermometer, marked by a scratch on the tube, ought to be tested once a year, in snow or melting ice.

In selecting instruments, the following points require attention:—The divisions of the venier of Barometers in reference to their scales, and the perfect freedom of the barometer from any, the most minute

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 always 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 aid of the proposed Mr L. S. Muller, and Mr J. H. Mearns, to be employed by the Government. The Temperature of the water at the bottom of Wells ought, when practicable, to be taken both the depth of the Temperature of the Well and of the water being noted.

The Test-Papers are used, Schönléhn's or Moffat's, etc. The Paper is affixed by a pin to a board in the nommer 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 3^{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.

Too much importance cannot be attached to the electric condition of the atmosphere in connection with terrestrial magnetism, barometrical, thermometrical, and meteorological phenomena generally. A proper Electrometer is, in truth, necessary to every complete meteorological observatory. The Remarks column is unavoidably too narrow. Some of the most valuable Observations that can be taken are those for which no rules can be given nor hours assigned. The use of contractions, ought, therefore, to be given every advantage of, and a list of such as, 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 character, colour, velocity, and direction between the Lower and Upper Strata of Clouds, the Colour of the Sky, &c. Remarks ought to be made on the occurrence of Meteors, Auroræ Boreales, remarkable depressions, elevations, and fluctuations of the Barometer, Thunderstorms, and remarkable falls of Snow, Hail, &c. Rain, the Height of Storms of Wind commencing, attaining their

maximum, and ending, as well as such notes as have been printed at above. When lofty hills are 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 3 P.M. should be registered, either in two columns, otherwise unoccupied, or rolled off for the purpose, from the columns of "Remarks."

Observations in connection with the "Periodic Return of the Seasons," possess not only great scientific value, but are of considerable importance to the agriculturist. The Periodic Return of Agriculture, and the Periodic Return of the Seasons.

published Summaries may fairly represent the whole of Scotland. Observations ought to be confined to individual trees and shrubs; to particular species of birds; and, in the case of eggs, and eggs sorted 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.

FORWARDED December 1877

FINISHED December 1ST.

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

[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 Epizootic disease prevails among cattle; and the Agricultural condition of the district generally.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barone Cottage, County of Bute, in Lat. 55° 40' 50", Long. 5° 45' W, Distance from Sea 10⁸ miles.
Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 3 feet. During the MONTH of July
The Hours of Observation are of Greenwich Time.

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, after above Ground.		Exposed to Sun's rays, on Grass.		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 h. P.M.								
	Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max.	Min.	Max.	Min.	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 Direction.	No. 3 inches.	12 inches.	22 inches.	Temperature of Air.	Temperature of Water at surface of feet. No.	Temperature of Air and Density.					
	* No.		No.		No.	No.	No.	No.																							
1	29.134	54	28.910	55	58	48		50.2	49.2	51	50	SE	SE			6.15											1				
2	29.024	54	29.160	54	51.5	48		50	48.5	49.5	47.5	W	W			35.6											2				
3	29.172	54	29.220	55	56.3	47.5		52	50	50	49	SW	W			21.0											3				
4	29.364	53	29.563	54	55.3	48		50	49	50	49	WNW	W			15.0											4				
5	29.654	54	29.820	54	57	46		50	48	51	49	WNW	WNW														5				
6	29.810	56	29.580	56	60.5	46.6		57.5	54	51	51	WNW	SE			30.0											6				
7	29.440	54	29.240	56	61.5	49		50	48.5	51	50	W	S			41.3											7				
8	28.980	51	29.028	56	58	48.5		51.2	50.5	51.5	50	SSW	NW			19.6											8				
9	29.306	57	29.570	57	61.6	49		55.2	52	55	52	NW	NW			04.5											9				
10	29.260	58	29.870	56	58.5	48		56.2	51	49.5	46.5	NW	NW														10				
11	29.880	56	29.820	57	60	47		52	47.3	51.5	47.5	WNW	NE			01.0											11				
12	29.710	55	29.634	55	57	45.5		52	50	51	48	ENE	ENE			10.3											12				
13	29.608	52	29.540	56	60	47		51	48.2	52	50	NE	NW			08.0											13				
14	29.660	55	29.684	55	60	50.5		54	52.3	54	51.5	E	NE			02.0											14				
15	29.850	56	29.874	58	61	49.5		54	51	55	53.5	NW	E														15				
16	29.850	54	29.844	55	58	48.5		51	49	50.3	48	E	E														16				
17	29.880	54	29.940	56	64.5	47		51.2	49	55	51.5	NE	NW														17				
18	29.986	59	29.940	61	60.5	51		60.3	57	57.5	56	NE	calm			34.5											18				
19	29.800	60	29.680	57	57.3	53.3		56	56	54.5	54.3	SE	S			40.5											19				
20	29.356	59	29.384	60	66	52.5		59	57.3	58	47	NE	WNW			16.0											20				
21	29.532	60	29.670	60	64	54		60.6	58	58	54	NE	NW			09.5											21				
22	29.760	60	29.880	61	67.5	52		62	56	53.5	51	W	W														22				
23	29.940	59	29.924	61	63.5	44.5		54.5	50	54.5	53	W	SW			19.0											23				
24	29.910	59	29.924	59	63.5	52		55	52.5	54	52	WNW	W			08.0											24				
25	29.900	59	29.900	59	62	50		56.3	53.5	53	52	W	calm			06.5											25				
26	29.830	59	29.846	58	63	49.3		55	53.6	54	52	S	NW			09.0											26				
27	29.942	60	29.908	59	62	45		58	53	54	51.5	W	SE			45.0											27				
28	29.830	59	29.916	62	63.5	52.5		57	57	57	56.3	WNW	W			06.0											28				
29	29.864	60	29.760	60	63	52		58.3	56.6	58	56	S	SE			02.5											29				
30	29.872	61	29.932	60	64.5	49		59	55	58.6	57	W	WNW														30				
31	29.794	57	29.616	59	57.5	44		55	52	54	54	E	SW			20.0											31				
ms.	19.898	208	20.566	233	2.63	27.44		14.35	6.53	10.93	4.41					5.253															
ans.	29.642	367	29.663	57.5	60.9	48.9		54.6	52.1	53.3	51.1																				
Total ctions instru- mental errors																															
rection for thermal age.																															
ordered ns."																															
of	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. " meteora. ci.-cu. " cirro-cumulus. n. " nimbus. ci.-s. " cirro-stratus. r. " rain. cu. " cumulus. h. z. " heavy rain. cu.-s. " cumulo-stratus. c. h. r. " continued heavy rain. d. " dew. s. " stratus. f. " fog. sc. " squall. fr. " frost. s. " sleet. h.-fr. " hoar-frost. s. " snow. h. " haze. sol. h. " solar halo. h. d. " heavy dew. sq. " squall. h. l. " hail. sqs. " squalls. l. " lightning. t. s. " thunder storm. li. cl. " light clouds. w. " wind. lu. co. " lunar coronae. 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 2-3 Fresh breeze 5 Blowing gale 1-2 Light air 3-4 Very fresh 6 Violent gale																															

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction††	=	29.568
for Temp. (Col. 2), = 29.667..... - 0.099.....		
corrected Mean" of Barometer at 9 P.M., minus the Correction††	=	29.585
for Temp. (Col. 4), = 29.683..... - 0.098.....		
Mean at Station, corrected, and at 32°,.....	=	29.576
Correction for height, feet above Mean Sea-level,.....	=	1.27
Mean, reduced to 32°, and Sea-level,.....	=	29.703
Highest Reading, corrected for Index error, on the 18 th,.....	=	29.986
Lowest Do. Do. on the 1 th,.....	=	28.910
Difference, or Monthly Range,	=	1.076

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the <i>18</i> th,	=	<u>68.5</u>
Lowest in Month, corrected for Index errors, on the <i>31</i> th,	=	<u>44.0</u>
Difference, or Monthly Range,	=	<u>24.5</u>
" Corrected Mean " of all the Highest, (Col. 5),	=	<u>60.9</u>
" Corrected Mean " of all the Lowest, (Col. 6),	=	<u>48.9</u>
Difference, or Mean Daily Range,	=	<u>12.0</u>
** Calculated Mean Temperature of Month,	=	<u>54.9</u>
<hr/>		
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),	=	54.0
Mean (corrected) A.M. and P.M. Reading of Wet Bulb , (Cols. 10 and 12),	=	57.6
‡ Computed Temperature of Dew-Point ,	=	49.2
‡ Do. Elastic Force of Vapour ,	=	3.50
‡ Do. Weight of Vapour in a Cubic Foot of Air , ...	=	
‡ Relative Humidity , (Saturation = 100),	=	87.1
RAIN fell on <u>24</u> Days; Amount in Inches,	=	5.25

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	0	5	4	2	3	1	13	3			
P.M.	0	2	3	4	2	2	8	2			
Mean.	0	3	4	3	2	2	10	6	1		

Observations made and
Return verified by

(Signed)

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barrow Cottage, County of Dumfries, in Lat. 55° 40', Long. 4° 10' W, Distance from Sea 10 miles.Height of Cistern of the Barometer above Mean Sea-level 116 feet, above Ground 3 feet.During the MONTH of August 1879.

The Hours of Observation are of Greenwich Time.

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.				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 h. A.M.		9 h. P.M.		9 h. A.M.				9 h. P.M.		Temperature of WELL, at depth of feet. No.			Temperature at 1 fathom, and possibly, at greater depths.		0—10.		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.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	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. No. —	Wet bulb. No. —	Dry bulb. No. —	Wet bulb. No. —	Direction. No. —	Force. No. —	Direction. No. —	Force. No. —	9 h. A.M.	9 h. P.M.	Velocity (0—10), and Direction.	Amount (0—10), and Species.	Velocity (0—10), and Direction.	Amount (0—10), and Species.	Hours.	No. 3 inches.	No. 12 inches.	No. 22 inches.			9 h. A.M.	9 h. P.M.	9 h. A.M.	9 h. P.M.		9 h. A.M.	9 h. P.M.	9 h. A.M.	9 h. P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	inches. °	inches. °	inches. °	inches. °	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°			°	°	°	°		°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°

NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	cirrus.	ms.	meteor.
ci-en.	cirro-cumulus.	n.	nebula.
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.	sol.h.	solar halo.
h.d.	heavy dew.	sq.	squall.
h.l.	hail.	sq.s.	squalls.
l.	lightning.	t.	thunder.
li.cl.	light clouds.	t.s.	thunder storm.
li.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

Barometer, "corrected Mean" at 9 A.M., minus the Correction++ = 29.580
for Temp. (Col. 2), = 0.009 ... - 0.009
Corrected Mean of Barometer at 9 P.M., minus the Correction++ = 29.594
for Temp. (Col. 4), = 0.009 ... - 0.009
Mean at Station, corrected, and at 32° = 29.587
Correction for height, feet above Mean Sea-level, = 127
Mean, reduced to 32°, and Sea-level, = 29.714
Highest Reading, corrected for Index error, on the 31st th, = 30.130
Lowest Do. Do., on the 28th th, = 28.732
Difference, or Monthly Range, = 1.398

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 11th, = 70.0
Lowest in Month, corrected for Index errors, on the 11th, = 38.3
Difference, or Monthly Range, = 31.7
"Corrected Mean" of all the Highest, (Col. 5), = 62.3
"Corrected Mean" of all the Lowest, (Col. 6), = 49.4
Difference, or Mean Daily Range, = 12.9
** Calculated Mean Temperature of Month, = 55.8

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 11th, = 70.0
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 62.3
Lowest at Night, Black Bulb, (corrected for Index errors), on the 11th, = 38.3
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 49.4
Difference of above Means or Range ("exposed"), = 12.9

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 55.1

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 52.7

Computed Temperature of Dew-Point, = 50.4

Do. Elastic Force of Vapour, = 366

Do. Weight of Vapour in a Cubic Foot of Air, = 85

RAILY fell on 22 Days; Amount in Inches, = 5.81

WIND.	SUMMARY.									
	Direction.	N	NE	E	SE	S	SW	W	NW	Mean Force.
A.M.		1	1	8	4	4	3	5	5	0
P.M.		1	0	6	2	3	6	5	4	4
Mean.		1	0	7	3	4	4	5	2	2

Observations made and
Return verified by

James May

(Signed)

James May

Booth Estate
Rothbury

77

As Barometers are liable to be damaged by the introduction of air into their tubes, on removal from place to place, or in being roughly handled, it may be useful to observers to know how the air may be expelled. First, close up the Cistern by screwing the ivory Peg tight, so as to prevent the escape of mercury; then screw up the leg right, so as to put half an inch from the top of the tube; and having slowly lowered the instrument, place the top of it on a yielding surface, such as the book, and gently up on the cistern with the palm of the hand, so as to induce the air to ascend through the column to the cistern, whence it may escape. Since there is the weight of two atmospheres—the pressure of the mercury in the Cistern, and the air outside—pressing on any air that may be inside the tube, it is usually a tedious operation to get it wholly expelled. After repeated trials, however, it is generally accomplished; and 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 hanging 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 float of its own weight, and the tube will be seriously damaged.

The Hygrometer is read at 9 A.M. and 9 P.M. The Self-Registering Thermometers are read at 9 P.M. only, as indicating the greatest and least degrees of temperature in the 24 hours preceding. It is not a matter of indifference whether the Self-registering Thermometers are read first, since, in winter, their continuance to report at one hour; secondly, if they have already so settled, the readings registered on the 3d are those of the morning commencing at 9 P.M. on the 2d, and extending to 9 P.M. on the 3d.

No instrument ought to be used for Meteorological purposes till it has been carefully tested by comparison with a Standard Barometer. When such Thermometers as are not graduated on the stem but merely on an index, undergo repairs, they are very liable to be moved from their position on the Scale, and ought never afterwards to be used without being re-tested.

In selecting thermometers, the following points must be considered. First, the thermometer itself only to be compared with the standard, which may be done by placing the bulb of each thermometer in contact with the freezing-point of each thermometer. The freezing-point of each thermometer, having been established by stretching on the tube, ought to be tested once a year, in case of any derangement occurring.

In selecting instruments, the following points require attention —

(1.) That the scale of the thermometer be referred to its scales, divisions of the Verrier's Barometer in reference to their scales, and that the division of the Verrier's Barometer be referred to the perfect freedom of the Barometer from air; the correct number of inches or millimètres indicated by the barometer.

As the germination and growth of crops and plants generally depend greatly on the temperature of the soil, its amount and constancy,—the Council recommend that Observations in this interesting department be made by Thermometers permanently fixed in the stem, their bulbs sunk to depths of 3, 12, and 22 inches, and the stems above ground protected from the sun's rays, and fitted with sloping tin rollers to prevent rain water being conveyed to the bulbs by the stems or broken frames.

A knowledge of the Temperature of the Sea is not only in itself important in its relations to that of our island, a most important branch of Meteorology. The Council therefore recommended that the Temperature of the Sea be ascertained by properly constructed apparatus, from boats or ships, at intervals of five miles along the coast, so that it be impracticable from the ends of rivers and rocks round the coast, where it is not influenced by that of river water, and as little interfered with as possible by currents sweeping along the coast; thus acquiring the temperature of the land, either greatly heated by the sun, or cooled by nocturnal radiation. At or near the time of high

FOREST TREES.	In	Flower.	Leaf buds.	First appear.
Alder.	.	.	.	.
Asch.	.	.	.	.
Beech.	.	.	.	.
Birch.	.	.	.	.
Elm.	.	.	.	.
Larch.	.	.	.	.
Lim.	.	.	.	.
Oak.	.	.	.	.
Sycamore or Plane.	.	.	.	.

SHRUBS, ETC.	Plum in Blossom.
Barberry,	
Bourtree or Elder,	
Broom,	
Hazel,	
Hawthorn,	
Holly,	
Laburnum,	
Lilac,	
Mezereum,	
Mountain Ash or Rowan,	
Red Flowering Currant,	
Rhododendron Ponticum,	
Whin,	

The weather does not favor the raising of poultry well, and the birds are not ready for cutting. In fact, the weather is so cold that the birds are not ready for cutting.

...fields are a 20

The Hours of Observation are of Greenwich Time.

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	1	2	1	5	8	5	4	3		
P.M.	0	0	0	5	1	9	8	3	4		
Mean.	1	0	1	3	3	8	6	4	4		

James May M.

Mr ALEXANDER BUCHAN,

Secretary of the Meteorological Society of Scotland.

EDINBURGH.

~~The weather during the month has been a combination of cold and wet with heavy rainfalls. The rainfall being by inches above the average. However it generally good and is about $\frac{2}{3}$ inch. more heavy than average. It has one security half a snap and one truly very pleasant.~~

[illegible][illegible]

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

EDINBURGH, December 1877.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barone Cottage, County of Bute, in Lat. _____, Long. _____, Distance from S. $\frac{8}{10}$ miles.
 of Cistern of the Barometer above Mean Sea-level 110 feet, above Ground 3 feet. During the MONTH of October

The Hours of Observation are of Greenwich Time.

SELF-REGISTERING THERMOMETERS. Read Daily at 9 P.M.										HYGROMETER. No. ———				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.				SEA.		OZONE.		GENERAL REMARKS.		Page of Month.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
9 h. P.M.		Projected in Shade at level above Ground.		Exposed Black Bulb.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer.		No. of hours in which it fell.		9 A.M.		P.M.		9 h. A.M.		Temperature at 1 fathom, and Density.		0—10.		As to occurrence of Thunder, Lightning, Storms, Hs. Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
No.	Barometer.	Max.	Min.	Max.	Min.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	No.	Amount.	Velocity (0—10), and Direction.	Amount (0—10), and Direction.	Velocity (0—10), and Direction.	Amount (0—10), and Direction.	Hours.	No. 3 inches.	No. 12 inches.	No. 22 inches.	Temperature at 1 fathom, and Density.	0 A.M.	9 P.M.	Mention the hour at which Storms, including Thunder and Lightning, began and ended.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
inches.	inches.	No.	No.	No.	No.	inches.	inches.	inches.	inches.						inches.	inches.	inches.	inches.	inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
101	55	29.690	54	54.5	46	53.3	53	118	43	S	SW				250													Heavy wet air, clear blue	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
552	54	29.672	51	54.5	43	51	45.3	146	44	SW	W				285													Shower: Sun halo: moon halo	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
730	54	29.800	53	55	45	48	45.5	149.3	49	SW	SW				160													Dull. Showers	7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
880	54	30.174	54	54	47.5	53.3	51	52	51.5	WNW	calm				015													Dull & damp	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
108	53	30.244	54	54.5	43.5	51.6	51	45	44.6	SE	calm				—													Clear fine	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
270	51	30.320	52	52.5	39.5	46.6	46	41.6	41.6	calm	calm				—													Foggy	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
376	51	30.442	53	48.5	40	45.5	45.3	45.5	45.3	calm	calm				—													Thick fog	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
482	51	30.468	52	53	41	43	42.5	45.2	45	calm	calm				040													Foggy	12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
442	49	30.420	53	55	38	47	46	51	50	NW	NW				—													Cloudy mild	13																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
410	53	30.412	54	55	47.5	52.6	51.3	50.5	49	NW	NW				—														fine	14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
440	53	30.454	52	53.5	45	51	49	45.6	44	NW	NW				—														Cloudy fine	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
454	50	30.408	52	50	40	47	45	48	47	NW	W				—														Cloudy	16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
310	51	30.200	53	51.5	46	50	47	50.6	48.6	W	W				020														Cloudy & heavy	17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
054	54	30.244	48	53	34	53	51	34	32	NW	NW				070														Cloudy Showers Air: Breeze	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
250	44	30.246	44	48	31	41	38.2	34.3	32.5	NW	NW				—														Clear	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
276	43	29.810	47	49	30.5	40	37.5	43.2	47	SE	SW				090														Cloudy Air: Dull Cloudy	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
680	50	29.850	47	42.5	39	49	46	40.5	38	NW	NW				—														gale light night clear & frosty	21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
850	45	29.500	48	52.5	33	42	40	52	51.5	calm	SW				633														Cloudy	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
86	51	29.020	49	56.5	42.5	51	49.3	44	42	W	W				433														Gale Showers: Lightning	23																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
166	48	29.590	48	51	38	46.2	42.2	40.3	38	NW	NW				040														Showers	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
714	47	29.820	48	49.5	34	46	43	45	44	NW	calm				150														Cloudy	25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
706	51	29.880	50	55	43	52	51.5	50	50	W	W				040														Cloudy mild	26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
820	54	29.674	54	57.5	48.5	53.2	52	55	51	W	W				075														Cloudy: met P. m.	27																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
44	55	29.530	51	56	43	49	47.5	44	43	W	W				133														Showers	28																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
50	47	29.740	49	53	36.5	47	42.3	42	41.5	W	calm				015														Showers	29																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
110	46	30.148	46	50	35	45.5	41	42.5	41.5	E	E				—														Clear	30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
120	45	30.246	46	52	38.5	43	41.5	42	40	E	E				—														Clear mild fine	31																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
222	45	30.222	48	53	38.5	42.5	40.8	46.5	45.8	ESE	NW				—														Clear. Dull P. m.	32																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
040	49	30.314	50	56	42	47	46.2	47	45	calm	SE				—														Cloudy	33																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
160	49	30.354	47	48.5	42.5	45	41.6	43	40	ESE	SE				—														Cloudy	34																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
190	47	30.162	46	48.5	40	42	40	41.5	39.6	calm	calm				—														Cloudy	35																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
137	412	13 127 5	14 5 14 7 4	15 5	16 5	17 5	18 5	19 5	20 5	21 5	22 5	23 5	24 5	25 5	26 5	27 5	28 5	29 5	30 5	31 5	32 5	33 5	34 5	35 5	36 5	37 5	38 5	39 5	40 5	41 5	42 5	43 5	44 5	45 5	46 5	47 5	48 5	49 5	50 5	51 5	52 5	53 5	54 5	55 5	56 5	57 5	58 5	59 5	60 5	61 5	62 5	63 5	64 5	65 5	66 5	67 5	68 5	69 5	70 5	71 5	72 5	73 5	74 5	75 5	76 5	77 5	78 5	79 5	80 5	81 5	82 5	83 5	84 5	85 5	86 5	87 5	88 5	89 5	90 5	91 5	92 5	93 5	94 5	95 5	96 5	97 5	98 5	99 5	100 5																																																																																																																																																																																																																																																																																																																																																																																																																																						
10	809	0.944	5	57.5	61.33	22.3	70.5	70.1	11.67																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

ER, "corrected Mean" at 9 A.M., minus the Correction††)	=	29.973
For Temp. (Col. 2), = 30.007 - 0.034}		
ean" of Barometer at 9 P.M., minus the Correction††)	=	29.972
For Temp. (Col. 4), = 30.030 - 0.058}		
at Station, corrected, and at 32",.....	=	29.972
on for height, feet above Mean Sea-level,.....	=	127
reduced to 32", and level,.....	=	30.099
Reading, corrected for Index error, on the 8 th ,.....	=	30.482
Do. Do., on the 19 th ,.....	=	29.020
Do. Do., on the 20 th ,.....	=	1.462
Do. Do., on the 21 st ,.....	=	
Do. Do., on the 22 nd ,.....	=	
Do. Do., on the 23 rd ,.....	=	
Do. Do., on the 24 th ,.....	=	
Do. Do., on the 25 th ,.....	=	
Do. Do., on the 26 th ,.....	=	
Do. Do., on the 27 th ,.....	=	
Do. Do., on the 28 th ,.....	=	
Do. Do., on the 29 th ,.....	=	
Do. Do., on the 30 th ,.....	=	
Do. Do., on the 31 st ,.....	=	
Do. Do., on the 1 st ,.....	=	
Do. Do., on the 2 nd ,.....	=	
Do. Do., on the 3 rd ,.....	=	
Do. Do., on the 4 th ,.....	=	
Do. Do., on the 5 th ,.....	=	
Do. Do., on the 6 th ,.....	=	
Do. Do., on the 7 th ,.....	=	
Do. Do., on the 8 th ,.....	=	
Do. Do., on the 9 th ,.....	=	
Do. Do., on the 10 th ,.....	=	
Do. Do., on the 11 th ,.....	=	
Do. Do., on the 12 th ,.....	=	
Do. Do., on the 13 th ,.....	=	
Do. Do., on the 14 th ,.....	=	
Do. Do., on the 15 th ,.....	=	
Do. Do., on the 16 th ,.....	=	
Do. Do., on the 17 th ,.....	=	
Do. Do., on the 18 th ,.....	=	
Do. Do., on the 19 th ,.....	=	
Do. Do., on the 20 th ,.....	=	
Do. Do., on the 21 st ,.....	=	
Do. Do., on the 22 nd ,.....	=	
Do. Do., on the 23 rd ,.....	=	
Do. Do., on the 24 th ,.....	=	
Do. Do., on the 25 th ,.....	=	
Do. Do., on the 26 th ,.....	=	
Do. Do., on the 27 th ,.....	=	
Do. Do., on the 28 th ,.....	=	
Do. Do., on the 29 th ,.....	=	
Do. Do., on the 30 th ,.....	=	
Do. Do., on the 31 st ,.....	=	
Do. Do., on the 1 st ,.....	=	
Do. Do., on the 2 nd ,.....	=	
Do. Do., on the 3 rd ,.....	=	
Do. Do., on the 4 th ,.....	=	
Do. Do., on the 5 th ,.....	=	
Do. Do., on the 6 th ,.....	=	
Do. Do., on the 7 th ,.....	=	
Do. Do., on the 8 th ,.....	=	
Do. Do., on the 9 th ,.....	=	
Do. Do., on the 10 th ,.....	=	
Do. Do., on the 11 th ,.....	=	
Do. Do., on the 12 th ,.....	=	
Do. Do., on the 13 th ,.....	=	
Do. Do., on the 14 th ,.....	=	
Do. Do., on the 15 th ,.....	=	
Do. Do., on the 16 th ,.....	=	
Do. Do., on the 17 th ,.....	=	
Do. Do., on the 18 th ,.....	=	
Do. Do., on the 19 th ,.....	=	
Do. Do., on the 20 th ,.....	=	
Do. Do., on the 21 st ,.....	=	
Do. Do., on the 22 nd ,.....	=	
Do. Do., on the 23 rd ,.....	=	
Do. Do., on the 24 th ,.....	=	
Do. Do., on the 25 th ,.....	=	
Do. Do., on the 26 th ,.....	=	
Do. Do., on the 27 th ,.....	=	
Do. Do., on the 28 th ,.....	=	
Do. Do., on the 29 th ,.....	=	
Do. Do., on the 30 th ,.....	=	
Do. Do., on the 31 st ,.....	=	
Do. Do., on the 1 st ,.....	=	

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 23 th	=	<u>57.5</u>
Lowest in Month, corrected for Index errors, on the 16 th ,	=	<u>30.5</u>
Difference, or Monthly Range,	=	<u>27.0</u>
"Corrected Mean " of all the Highest, (Col. 5),	=	<u>52.14</u>
"Corrected Mean " of all the Lowest, (Col. 6),	=	<u>40.4</u>
Difference, or Mean Daily Range,	=	<u>12.0</u>
** Calculated Mean Temperature of Month,	=	<u>46.4</u>
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the	=	
"Corrected Mean, " (Col. 7), of Black Bulb, Max. in Sun,	=	
Lowest at Night, Black Bulb, (corrected for Index errors), on the	=	
"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),	=
Mean (corrected) A.M. and P.M. Reading of Wet Bulb , (Cols. 10 and 12),	=
†† Computed Temperature of Dew-Point ,	=
†† Do. Elastic Force of Vapour ,	=
†† Do. Weight of Vapour in a Cubic Foot of Air , ..	=
†† Relative Humidity , (Saturation = 100),	=
RAIL fell on / 6 Days; Amount in Inches,	=

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per hour.
A.M.	0	0	4	2	1	2	7	9	6		
P.M.	0	0	2	2	1	4	7	8	7		
Mean.	0	0	3	2	1	3	7	8	7		

Observations made at
Return verified by

(Signed)

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Barro Colorado, County of Bolivia, in Lat. 5° 40' 50", Long. 78° 55' 50", Distance from Sea 10 miles.
Height of Cistern of the Barometer above Mean Sea-level 1116 feet, above Ground 5 feet. During the MONTH of December 1879

BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER. No.				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.				SEA.		OZONE.		GENERAL REMARKS.		Days of Month.
9 h. A.M.		9 h. P.M.		Protected in Shade & Free from 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. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.		9 h. A.M.				As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevailing Diseases, etc.				
Barometer. No.	Attach- ment.	Barometer. No.	Attach- ment.	Max. No.	Min. No.	Max. in Shade.	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	9 h. A.M.	No.	Velocity (0-5). and Direction.	Amount (0-10). and Species.	Velocity (0-5). and Direction.	Amount (0-10). and Species.	SUNSHINE. Hours.	No. 1 inches.	No. 2 inches.	No. 3 inches.	Temperature of Air, Surface of Water, and Dewy Point.	Ozone.	Remarks.				
inches.		inches.																														
29.680	34	29.796	35	26.5	26.5			34	33.3	27	26.5	NW	N																Clear & frosty	1		
29.796	35	29.820	36	40.5	25			26.5	26	27	25	NE	E																do	2		
29.830	36	29.750	34	36	5	21.5		26.5	25.5	22	21.6	SE	N																do	3		
29.680	31	29.522	35	35	18.5			22	21.3	33.2	33	calm	SW																do	4		
29.420	35	29.562	35	40	29.5			36.2	35	30	30	WNW	NW																Cloudy	5		
29.080	34	30.122	34	37	26			27	25.8	30	29	NW	calm																Clear & frosty	6		
29.264	35	30.560	38	41	27.5			26.5	35.2	36	37.5	NW	NW																Cloudy & damp	7		
29.400	39	30.382	38	44.5	32			35.3	35	37	36.5	SW	SW																Clear & frosty	8		
29.260	40	30.340	42	43	32.5			42	40.5	39	37	W	NE																Cloudy & damp	9		
29.420	39	30.430	37	42.6	28			34	32	29	28	W	NW																Clear & frosty	10		
29.420	37	30.474	37	38	27			34	33	30	29	calm																	do	11		
29.440	38	30.560	41	40.3	29.5			34	33.5	34.5	36.5	NW	S																Dull & foggy	12		
29.440	40	30.350	41	43	36			34.5	38.5	41	40	SW	S																Dull & misty	13		
29.260	43	30.210	48	49.5	40.5			44	45	39	47.3	SW	SW																do	14		
29.260	48	30.310	47	49.6	41.5			47	45.5	45	42	SW	SW																Cloudy & mild	15		
29.240	41	30.220	47	48	42			48	42	46	44	S	W																do & cold	16		
29.390	47	30.530	50	47.6	38.5			44.5	43.5	41.5	41.5	SW	calm																do & mild	17		
29.546	44	30.550	45	43.5	34			35.5	36	34.5	36	W	SW																Clear & frosty	18		
29.564	43	30.514	42	41.5	34			35	36.6	36	35	W	E																Cloudy & frosty	19		
29.410	39	30.250	39	37	30			36	30.5	34	35	ENE	E																do	20		
29.070	38	29.630	42	46	34			35.5	34	46	44.3	SE	SW																Cloudy & frosty	21		
29.200	43	30.270	45	48	37.5			39	37.5	47	45.5	W	SW																Cloudy & damp	22		
29.380	48	30.180	48	52	45			40.2	46	44	44	SSW	SSW																Cloudy	23		
29.02		30.180	46	47	37			42	40.3	44.6	40	SW	NW																Showers	24		
29.370	46	30.342	43	43	37			40	38.6	40	39	SW	SW																Clear & fine	25		
29.260	46	29.370	48	52.6	39			41	40	42	39	SW	SW																Cloudy & frosty & cold	26		
29.260	46	29.200	50	54.5	42			44.5	41	45	41	SW	W																Dull, Gale, wet	27		
29.432	45	45	46	36				42	40.3	35	35	SW	NW																do	28		
29.324	41	42	36					40.5	38	33.5	33	S	NW																Heavy, but showed	29		
29.254	46	46	42.5					37	36.6	38.3	38	SE	SW																do	30		
29.254	46	46	42.5					37	36.6	38.3	38	SE	SW																Dull & wet	31		
NOTATION USED IN GENERAL REMARKS.																																
a. denotes aurora. m. denotes meteor.																																
ci. " cirrus. n. " nebula.																																
ci-cu. " cirro-cumulus. n. " nimbula.																																
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. d. " heavy dew. so.ia. " solar halo.																																
h. l. " hail. sq. " squall.																																
l. " lightning. t. " thunder.																																
li. cl. " light clouds. t. s. " thunder storm.																																
li. sh. " light showers. w. " wind.																																
lu. co. " lunar coronae. 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 0-5 1- Very light air Light air Very fresh																																
4 5 6 Blowing hard Blowing a gale Violent gale																																
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 ^{††} for Temp. (Col. 2), = <u>30.043</u>		
"Corrected Mean" of Barometer at 9 P.M., minus the Correction ^{††} for Temp. (Col. 4), = <u>30.015</u>		
Mean at Station, corrected, and at 32°,.....	=	<u>30.029</u>
Correction for height, feet above Mean Sea-level,.....	=	<u>.127</u>
Mean, reduced to 32°, and Sea-level,.....	=	<u>30.156</u>
Height Reading, corrected for Index error, on the	th,.....	= <u>30.564</u>
Lower Do.	Do., on the	th,..... = <u>29.080</u>
Difference, or Monthly Range,.....	=	<u>1.484</u>

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th,.....	=	<u>54.5</u>
Lowest in Month, corrected for Index errs, on the th,	=	<u>18.5</u>
Difference, or Monthly Range,	=	<u>36.0</u>
"Corrected Mean " of all the Highest, (Col. 5),	=	<u>43.8</u>
"Corrected Mean " of all the Lowest, (Col. 6),	=	<u>33.3</u>
Difference, or Mean Daily Range,	=	<u>10.5</u>
** Calculated Mean Temperature of Month,	=	<u>38.6</u>

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),	=	37.8
Mean (corrected) A.M. and P.M. Reading of Wet Bulb , (Cols. 10 and 12),	=	36.7
## Computed Temperature of Dew-Point ,	=	35.2
## Do. Elastic Force of Vapour ,	=	206
## Do. Weight of Vapour in a Cubic Foot of Air , ...	=	
## Relative Humidity , (Saturation = 100),	=	91
RAIN fell on 13 Days; Amount in Inches,	=	3.12

WIND.	SUMMARY.											
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day	
A.M.	0	1	2	4	5	6	6	6	1			
P.M.	2	0	3	0	3	11	2	6	3			
Mean.	1	0	3	2	4	8	4	6	2			

Observations made and
Return verified by

(Signed)

