

## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Thurso, Sutherland, County of Sutherland, in Lat. 58° 40' N, Long. 10° 10' W, Distance from Sea 14 miles.  
Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground        feet. During the MONTH of January 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.  As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc.  Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.				
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. —	No. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.		9 h. A.M.									
		Barometer. * No. —	Attach- ed Ther- mometer	Barometer. No. —	Attach- ed Ther- mometer	Max. No. —	Min. No. —	Max. in Sun's rays No. —	Min. on Grass. No. —	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.				Velocity (0-5), and Direction.	Amount (0-10), and Species.	Velocity (0-5), and Direction.	Amount (0-10), and Species.	No. 8 inches.	12 inches.					No. 22 inches.			
																																Hours.	9 A.M.	9 P.M.
		inches. °	inches. °	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°		
	1	29.761	38	29.198	40	38	28			31	30	30	30	NE		NE				CU	CU											Snow showers & fresh breeze all day. Blowing hard. 3 PM. frost during night. Sharp frost throughout.	1	
	2	29.756	36	29.164	36	39	29			32	30			NE		NE				CU	CU											Light frost throughout. Snow began falling about 8 PM. Snow lay, by drifts this morning, but heavy showers at intervals throughout, melting as it falls. Slight snow showers, and rain.	2	
	3	29.745	34	29.151	36	38	10			32				NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	3	
	4	29.761	38	29.512	38	35	29			30	30	30	30	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	4	
	5	29.751	37	29.672	35	35	31			30	30	30	30	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	5	
	6	29.745	40	29.101	40	36	30			31	30	34	32	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	6	
	7	29.761	39	29.845	40	42	30			31	30	32	31	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	7	
	8	29.710	44	29.012	43	45	35			44	42	40	38	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	8	
	9	29.720	40	29.728	36	40	28			38	37	35	31	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	9	
	10	29.778	37	29.864	41	32	21			38				NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	10	
	11	29.725	38	29.570	40	31	28			38				NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	11	
	12	29.501	34	29.633	35	35	20			38				NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	12	
	13	29.630	40	29.620	40	37	22			37	35	36	34	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	13	
	14	29.417	41	29.165	42	41	34			40	39	39	38	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	14	
	15	29.420	40	29.564	41	39	26			37	35			NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	15	
	16	29.437	43	29.554	45	45	27			40	39	36	36	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	16	
	17	29.362	43	29.343	39	42	28			33	33			NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	17	
	18	29.162	43	29.117	45	43	24			40	38	38	37	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	18	
	19	29.102	43	29.112	43	45	30			40	39	39	36	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	19	
	20	29.712	43	29.909	44	42	27			33	32	41	39	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	20	
	21	29.856	46	29.920	40	46	34			44	39	42	39	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	21	
	22	30.106	45	29.964	42	42	27			35	33	42	39	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	22	
	23	29.809	44	29.481	45	44	30			39	37	33	31	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	23	
	24	29.430	44	29.542	37	42	34			35	33	34	30	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	24	
	25	29.012	43	29.204	45	42	30			37	35	37	35	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	25	
	26	29.609	44	29.662	43	40	28			36	33	37	35	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	26	
	27	29.410	44	29.612	43	45	24			40	39			NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	27	
	28	29.132	45	29.014	45	42	30			39	38	36	35	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	28	
	29	29.137	43	29.074	47	38	28			34	33	37	35	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	29	
	30	28.613	43	29.322	43	38	29			34	33	33	32	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	30	
	31	29.537	43	29.123	49	37	28			34	32	37	36	NE		NE				CU	CU											Snow melting slowly. Foggy throughout.	31	
	Sums.	910.10	13	912.12	13	12	13			916	912	914	910																					
	Means.	29.354	7	29.412	7	29.412	7			36.2	36.7	36.1	36.3																					
	+ Total Corrections for Instrumental Errors.	29.354	7	29.412	7	29.412	7			36.2	36.7	36.1	36.3																					
	+ Corrections for Diurnal Range.																																	
	"Corrected Means."																																	
	No. of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction for Temp. (Col. 2), = 29.277  
"Corrected Mean" of Barometer at 9 P.M., minus the Correction for Temp. (Col. 4), = 29.321  
Mean at Station, corrected, and at 32°, = 29.279  
Correction for height, feet above Mean Sea-level, = 31.6  
Mean, reduced to 32°, and Sea-level, = 29.615  
Highest Reading, corrected for Index error, on the th, = 30.106  
Lowest Do. Do., on the th, = 28.613  
Difference, or Monthly Range, = 1.493

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 16.0  
Lowest in Month, corrected for Index errors, on the th, = 10.0  
Difference, or Monthly Range, = 6.0  
"Corrected Mean" of all the Highest, (Col. 5), = 39.5  
"Corrected Mean" of all the Lowest, (Col. 6), = 28.0  
Difference, or Mean Daily Range, = 11.5  
\*\* Calculated Mean Temperature of Month, = 23.8

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), = 36.2 34.8  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 34.5 33.3  
Computed Temperature of Dew-Point, = 32.0 30.9  
Do. Elastic Force of Vapour, = 182 172  
Do. Weight of Vapour in a Cubic Foot of Air, =         
Relative Humidity, (Saturation = 100), = 85 85  
RAIN fell on 18 Days; Amount in Inches, = 2.70

WIND.										SUMMARY.		
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.	
A.M.	10	2	0	3	6	9	0	1	0			
P.M.	9	2	1	3	1	8	5	2	0			
Mean.	10	2	0	3	4	8	2	2	0			

Observations made and  
Return verified by

(Signed) Alexander Mc Donald

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# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at No. Surveys & Blunt Point, County of Merced, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 17<sup>1/2</sup> miles.

Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground \_\_\_\_\_ feet.

During the MONTH of February 1874

The Hours of Observation are of Greenwich Time.

[illegible]

BAROMETER, "Corrected Mean" at 9 A.M., <i>minus</i> the Correction <sup>††</sup>	=	29.300
for Temp. (Col. 2), = 24.380 ..... - 0.038		
"Corrected Mean" of Barometer at 9 P.M., <i>minus</i> the Correction <sup>††</sup>	=	29.340
for Temp. (Col. 4), = 29.276 ..... - 0.036		
Mean at Station, corrected, and at 32°,.....	=	29.327
Correction for height, feet above Mean Sea-level,.....	=	215
Mean, reduced to 32°, and Sea-level,.....	=	29.636
Highest Reading, corrected for Index error, on the 28th,.....	=	29.982
Lowest Do. Do. on the 25th,.....	=	28.683
Difference, or Monthly Range,.....	=	1.299

**S.-R. THERMOMETER**, (in shade, etc.), **Highest in Month**, (corrected for Index Errors), on the      th, ..... = 50.0

**Lowest in Month**, corrected for Index errors, on the      th, ..... = 18.0

Difference, or **Monthly Range**, ..... = 32.0

" Corrected **Mean** " of all the **Highest**, (Col. 5), ..... = 42.9

" Corrected **Mean** " of all the **Lowest**, (Col. 6), ..... = 30.1

Difference, or **Mean Daily Range**, ..... = 12.8

**\*\* Calculated Mean Temperature** of Month, ..... = 36.5

**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), ..... = 38.0

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

‡‡ Computed **Temperature of Dew-Point**, ..... = 33.1

†† Do. Elastic Force of Vapour, ..... = .788

‡‡ Do. **Weight of Vapour in a Cubic Foot of Air, ...** = \_\_\_\_\_

## Relative Humidity, (Saturation = 100), ..... = 82

RAIN fell on 18 Days; Amount in Inches, ..... = 3.00 in

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	10	1	1	0	6	5	4	1	0		
P.M.	8	0	1	0	6	1	4	4	1		
Mean.	9	0	1	0	6	3	6	3	0		

Observations made and  
Return verified by

(Signed)

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Observations taken at The Cascade Spring Station, County of Merced, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 17 miles.  
Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground \_\_\_\_\_ feet. During the MONTH of March  
The Hours of Observation are of Greenwich Time.

<b>BAROMETER,</b> "corrected Mean" at 9 A.M., <i>minus</i> the Correction++	=	24.293
for Temp. (Col. 2), = 24.330 - .037...		
<b>"Corrected Mean" of Barometer at 9 P.M., <i>minus</i> the Correction++</b>	=	24.315
for Temp. (Col. 4), = 24.349 - .034...		
<b>Mean at Station, corrected, and at 32°</b>	=	29.304
Correction for height, feet above Mean Sea-level,.....	=	318
<b>Mean, reduced to 32°, and Sea-level,.....</b>	=	29.620
Highest Reading, corrected for Index error, on the th,.....	=	29.871
Lowest Do. Do., on the th,.....	=	28.913
Difference, or <b>Monthly Range,</b> .....	=	0.958

**S.-R. THERMOMETER**, (in shade, etc.), **Highest in Month**, (corrected for Index Errors), on the 3 th, ..... = 55.0

**Lowest in Month**, corrected for Index errors, on the ..... th, ..... = 0.9

Difference, or **Monthly Range**, ..... = 46.0

" **Corrected Mean** " of all the **Highest**, (Col. 5), ..... = 44.4

" **Corrected Mean** " of all the **Lowest**, (Col. 6), ..... = 27.5

Difference, or **Mean Daily Range**, ..... = 16.9

**\*\* 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"), ..... =

<b>HYGROMETER, Mean</b> (corrected) A.M. and P.M. Reading of <b>Dry Bulb</b> , (Cols. 9 and 11),	=	37.6
<b>Mean</b> (corrected) A.M. and P.M. Reading of <b>Wet Bulb</b> , (Cols. 10 and 12),	=	35.4
‡ Computed <b>Temperature of Dew-Point</b> ,	=	32.4
‡ Do. <b>Elastic Force of Vapour</b> ,	=	.184
‡ Do. <b>Weight of Vapour in a Cubic Foot of Air</b> ,	=	
‡ <b>Relative Humidity</b> , (Saturation = 100),	=	82
<b>RAIN</b> fell on <sup>18</sup> Days; Amount in Inches,	=	1.48

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

Observations made and  
Return verified by

(Signed

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# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at The Cairns of Dunstaffnage, County of Argyll, in Lat. 57° 17', Long. 7° 17', Distance from Sea 17 miles.  
 Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground        feet. During the MONTH of April 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.  As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc.  Mention the hour at which Storms, including Thunder and Lightning, began and ended.		Days of Month.																												
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		9 A.M.		P.M.		9 h. A.M.				0—10.																																				
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max. No.	Min. No.	Max. in Sun's rays.	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	Readings of the H. Cup Anemometer. No. —	No. of hours in which it fell.	Amount in inches.	Velocity (0—5) and Direction.	Amount (0—10), and Species.	Velocity (0—5) and Direction.	Amount (0—10), and Species.	No. 1. inches.	No. 2. inches.	No. 3. inches.	Temperature at 1 fathoms, and Depth.	9 A.M.	9 P.M.																																
		* No. —	°	No. —	°	No. —	No. —	No. —	No. —	°	°	°	°					9 h. A.M.																																												
		inches.	°	inches.	°	°	°	°	°	°	°	°																																																		
	1	29.429	45	29.329	46					40	39	413	112	S	414																Cold stormy day. Snow showers at intervals	1																														
	2	29.301	47	29.002	47	47	31			46	40	416	44	S	SE																Forecast—throughout air chilly drizzle, strong north breeze, and S. breeze about 4 P.M. Stormy, calm, from 5 P.M. until 10 P.M.	2																														
	3	28.998	49	28.803	49	47	39			47	44	418	112	SE	SE			0.33													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	3																														
	4	28.608	49	28.745	50	56	40			48	47	415	44	SE	SE			0.72													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	4																														
	5	28.798	49	29.098	49	54	41			44	43	414	43	S	S																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	5																														
	6	29.150	48	29.180	46	48	39			42	42	412	41	S	SE			0.01													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	6																														
	7	29.227	47	29.387	45	48	37			44	43	410	39	S	S																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	7																														
	8	29.410	44	29.479	45	45	37			42	40	412	41	S	S			0.18													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	8																														
	9	29.496	49	29.567	41	412	34			40	39	37	34	SE	SE			0.06													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	9																														
	10	29.366	44	29.303	37	37	30			34	34	35	34	SE	SE			0.30													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	10																														
	11	29.435	44	29.670	40	41	30			38	37	35	31	SE	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	11																														
	12	29.767	41	29.770	40	413	24			40	32	35	32	SE	SE			0.02													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	12																														
	13	29.747	39	29.820	40	48	23			40	35	32	31	S	W																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	13																														
	14	29.878	37	29.864	412	44	22			42	36	410	37	S	SE			0.02													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	14																														
	15	29.744	47	29.662	418	41	20			40	39	39	37	SE	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	15																														
	16	29.662	413	29.767	47	47	37			40	37	40	35	SE	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	16																														
	17	29.767	41	29.767	49	49	39			40	36	31	30	SE	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	17																														
	18	29.670	40	29.800	51	51	27			41	40	—	—	S	S																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	18																														
	19	29.839	42	29.914	57	57	24			418	41	35	34	S	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	19																														
	20	29.912	43	29.804	53	53	25			419	41	43	41	S	S																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	20																														
	21	29.662	43	29.462	413	413	26			413	412	38	37	S	SE			0.70													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	21																														
	22	29.462	413	29.470	410	39	35			39	38	38	34	SE	SE			0.38													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	22																														
	23	29.587	43	29.469	41	41	30			38	36	38	35	SE	SE			0.06													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	23																														
	24	29.512	43	29.609	44	44	35			42	39	39	37	SE	S																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	24																														
	25	29.709	44	29.804	46	49	37			44	39	40	38	SE	E																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	25																														
	26	29.856	45	29.856	45	49	29			47	40	40	38	SE	S																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	26																														
	27	29.839	42	29.804	46	50	28			46	40	40	37	SE	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	27																														
	28	29.756	45	29.771	49	51	30			44	43	39	37	SE	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	28																														
	29	29.751	45	29.856	46	51	31			45	40	42	39	SE	SE			0.02													Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	29																														
	30	29.912	43	30.061	43	43	35			39	32	36	33	SE	SE																Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	30																														
	31																															Partly clear, but present burst of rain, and day, com- menced clearing a while ago, about 9 P.M. S.E. breeze, calm about 10 P.M. out of the wind, fresh of thunder, and good lightning over east and showers, calm, and bright.	31																													
	Sums.	19.415	13	7.13	12	13	6			7.27	27.6	46.7	20.2					2.70														NOTATION USED IN GENERAL REMARKS.  a. denotes aurora. m. denotes meteor. ci. cirrus. ms. meteors. ci-cu. cirro-cumulus. n. nimbus. ci-s. cirro-stratus. r. rain. cu. cumulus. h. r. heavy rain. cu-s. cumulo-stratus. c. h. r. continued heavy rain. d. dew. s. stratus. f. fog. sc. scud. fr. frost. s. sleet. h.-fr. hoar-frost. s. snow. h. haze. so. ln. solar halo. h. d. heavy dew. sq. squall. h. l. hail. sq. squalls. l. lightning. t. thunder. l. cl. light clouds. t. s. thunder storm. l. sh. light showers. w. wind. lu. co. lunar corona. g. gale of wind. lu. lu. lunar halo.																														
	Means.	44.0	56.1							6	39.2	39.2	51.1																																																	
	† Total Corrections for Instrumental Errors.																																																													
	† Corrections for Diurnal Range.																																																													
	“Corrected Means.”																																																													
	No. of Column.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30																															

BAROMETER, “corrected Mean” at 9 A.M., minus the Correction†† = 29.495  
 for Temp. (Col. 2), = 29.526... - .041...  
 “Corrected Mean” of Barometer at 9 P.M., minus the Correction†† = 29.517  
 for Temp. (Col. 4), = 29.561... - .044...  
 Mean at Station, corrected, and at 32°, = 29.506  
 Correction for height, feet above Mean Sea-level, = 312  
 Mean, reduced to 32°, and Sea-level, = 29.818  
 Highest Reading, corrected for Index error, on the th., = 30.061  
 Lowest Do. Do., on the th., = 28.648  
 Difference, or Monthly Range, = 1.413

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th., = 57.0  
 Lowest in Month, corrected for Index errors, on the th., = 22.0  
 Difference, or Monthly Range, = 35.0  
 “Corrected Mean” of all the Highest, (Col. 5), = 46.6  
 “Corrected Mean” of all the Lowest, (Col. 6), = 32.8  
 Difference, or Mean Daily Range, = 13.8  
 \*\* Calculated Mean Temperature of Month, = 39.7  
 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), = 40.9  
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 38.2  
 †† Computed Temperature of Dew-Point, = 34.8  
 †† Do. Elastic Force of Vapour, = 202  
 †† Do. Weight of Vapour in a Cubic Foot of Air, =         
 †† Relative Humidity, (Saturation = 100), = 79  
 RAIN fell on 12 Days; Amount in Inches, = 2.70

WIND.	SUMMARY.									
	Direction.	N	NE	E	SE	S	SW	W	NW	Mean Force.
A.M.		6	0	0	9	14	0	1	0	0
P.M.		5	1	2	11	7	3	1	0	0
Mean.		6	0	1	10	10	2	1	0	0

\* 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.  
 † Embracing corrections for both capillarity and Index Errors.  
 ‡ The Diurnal Range for Scotland is as yet unknown.  
 †† Practically, though not absolutely a minus correction.  
 †† These “Hygrometric Deductions” are calculated from Glaisher’s Hygrometric Tables, Second Edition only.  
 †† While the Diurnal Range is unknown, the Arithmetical Mean of Cols. 5 and 6 will be entered as the “Calculated Mean Temperature.”  
 Any Observations not taken under the conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

Observations made and  
 Return verified by

(Signed)

*Alfred Macdonald*



Sherry  
Apr. 1897.

To

Mr ALEXANDER BUCHAN.

*Secretary of the Meteorological Society of Scotland,*

EDINBURGH.

Ulmias, L'ruinis, etc., whether plentiful, or in perfection; and the Agricultural condition of the district generally.

*Gump.* From 4 May almost up to the month  
of June, considerably from Middle and upper part  
of July. The first brown date is about August.  
The first green date is about September.

By Order) A. B.

Percentage of total effort	A. balearicum (%)	A. mediterraneum (%)
0	0	0
10	10	15
20	25	35
30	45	55
40	60	70
50	70	80
60	65	75
70	55	65
80	40	50
90	20	30
100	0	0

SHRUBS, ETC.		First in Blossom.	FRUITS.	First in Blossom generally.	First Ripen.	MOGRAPHY BIRDS.	First Arrival.	Departure.
Barberry, . . . . .	Apple, . . . . .	Black Currant, . . . . .	Cherry, . . . . .	Gen., . . . . .	House-Swallow, . . . . .	Cuckoo, . . . . .		
Broom, . . . . .								
Bouquet or Elder, . . . . .								
Hazel, . . . . .								
Hawthorn, . . . . .								
Holly, . . . . .								
Laburnum, . . . . .								
Lilac, . . . . .								
Mezerion, . . . . .								
Mountain Ash or Hovan, . . . . .								
Red Flowering Currant, . . . . .								
Rhododendron Ponticum, . . . . .								
Whin, . . . . .								

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.



## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Port Arthur, Argyllshire, County of Argyll, in Lat. 57° 17', Long. 8° 17', Distance from Sea 17 miles.  
Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground        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 & test 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. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.		9 h. A.M.					Temperature of Wet Bulb, and of Air, at 5 P.M.	Temperature of Air, at 5 P.M., and Direction.	9 A.M. 9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Barometer. No. —	Attached Thermometer No. —	Barometer. No. —	Attached Thermometer No. —	Max. No. —	Min. No. —	Max. in Sunrays 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. No. —	Velocity (0-10), and Direction. No. —			Amount, (0-10), and Species. No. —	Velocity (0-10), and Direction. No. —	Amount, (0-10), and Species. No. —	No. —	12 inches. No. —								No. —																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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1	30.108	44	30.074	44	49	36			39	35	37	34	90		90				Ca	Ca																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction<sup>††</sup> for Temp. (Col. 2), = 29.516  
"Corrected Mean" of Barometer at 9 P.M., minus the Correction<sup>††</sup> for Temp. (Col. 4), = 29.479  
Mean at Station, corrected, and at 32°, = 29.498  
Correction for height, feet above Mean Sea-level, = 308  
Mean, reduced to 32°, and Sea-level, = 29.806  
Highest Reading, corrected for Index error, on the th, = 30.150  
Lowest Do. Do., on the th, = 28.460  
Difference, or Monthly Range, = 1.690

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 60.0  
Lowest in Month, corrected for Index errors, on the th, = 28.0  
Difference, or Monthly Range, = 32.0  
"Corrected Mean" of all the Highest, (Col. 5), = 63.4  
"Corrected Mean" of all the Lowest, (Col. 6), = 38.7  
Difference, or Mean Daily Range, = 24.7  
\*\* Calculated Mean Temperature of Month, = 50.0

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), = 45.9  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 42.2  
†† Computed Temperature of Dew-Point, = 38.0  
†† Do. Elastic Force of Vapour, = 230  
†† Do. Weight of Vapour in a Cubic Foot of Air, =         
†† Relative Humidity, (Saturation = 100), = 74  
RAIN fell on 4 Days; Amount in Inches, = 1.94

WIND.	SUMMARY.											
	Direction.	N	NE	E	SE	S	SW	W	NW	Calms or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.		9	4	5	5	2	4	0				
P.M.		7	5	1	5	1	7	5	0			
Mean.		8	5	0	3	4	6	1	4	0		

Observations made and  
Return verified by

(Signed)

*Alfred Macdonald*



Henry Wenden May

*To*

Mr ALEXANDER BUCHAN.

*Secretary of the Meteorological Society of Scotland,*

EDINBURGH.

part lands and backsome for all agricultural & horticultural production. The agricultural condition of the district generally, is not so good as it was some years ago. The soil is in general very good, but the crops are not so good as they were some years ago. The soil is in general very good, but the crops are not so good as they were some years ago. The soil is in general very good, but the crops are not so good as they were some years ago.

[illegible]

FOREST TREES.		In Flower.		In Leaf.		Divided of Leaves.		Others mentioning variety.	
Alder.	.	.	.	.	.	.	.	Barley.	.
Beech.	.	.	.	.	.	.	.	Oats.	.
Birch.	.	.	.	.	.	.	.	Wheat.	.
Elm.	.	.	.	.	.	.	.	Beans.	.
Larch.	.	.	.	.	.	.	.	Peas.	.
Time.	.	.	.	.	.	.	.	Potatoes.	.
Oak.	.	.	.	.	.	.	.	Turnips.	.
Sycamore or Plane.	.	.	.	.	.	.	.	Stye Grass.	.

EDINBURGH. December 1874.



# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Highland, Shetland, County of Shetland, in Lat. 59° 00', Long. 1° 00', Distance from Sea 14 miles.

Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground        feet.

During the MONTH of June 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 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.								Temperature of WELL at depth of feet. No.	Temperature at 1 foot, and at surface.	9 A.M.	9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		Barometer. * No. —	Attached thermometer.	Barometer. No. —	Attached thermometer.	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. —	9 h. A.M.			Velocity (0—5) and Direction.	Amount (0—10), and Species.	Velocity (0—5) and Direction.	Amount (0—10), and Species.	No. —	3 inches.	12 inches.	No. —									22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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BAROMETER, "corrected Mean" at 9 A.M., minus the Correction  $\ddagger$  = 29.546  
 for Temp. (Col. 2), = 29.546 - 0.05 = 29.496  
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  = 29.576  
 for Temp. (Col. 4), = 29.576 - 0.076 = 29.500  
 Mean at Station, corrected, and at 32°, = 29.561  
 Correction for height, feet above Mean Sea-level, = 303  
 Mean, reduced to 32°, and Sea-level, = 29.864  
 Highest Reading, corrected for Index error, on the th, = 29.941  
 Lowest Do. Do., on the th, = 28.860  
 Difference, or Monthly Range, = 1.081

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 15.0  
 Lowest in Month, corrected for Index errors, on the th, = 37.0  
 Difference, or Monthly Range, = 22.0  
 "Corrected Mean" of all the Highest, (Col. 5), = 63.5  
 "Corrected Mean" of all the Lowest, (Col. 6), = 45.7  
 Difference, or Mean Daily Range, = 17.8  
 \*\* Calculated Mean Temperature of Month, = 54.6

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), = 55.6  
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 51.2  
 ‡ Computed Temperature of Dew-Point, = 47.0  
 ‡ Do. Elastic Force of Vapour, = 325  
 ‡ Do. Weight of Vapour in a Cubic Foot of Air, =         
 ‡ Relative Humidity, (Saturation = 100), = 73  
 RAIN fell on 14 Days; Amount in Inches, = 4.15

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.		1	0	2	3	20	4	0	0		
P.M.		3	0	3	5	15	3	1	0		
Mean.		2	0	2	4	18	4	0	0		

\* 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 Tester may be here given.  
 † Enabling corrections for both capillarity and Index Errors.  
 ‡ The Diurnal Range for Scotland is as yet unknown.  
 †† Practically, though not absolutely a minus correction.  
 ‡‡ These "Hygrometrical Deductions" are calculated from Glaisher's Hygrometrical Tables, Second Edition only.  
 ††† While the Barometrical Range is unknown, the Arithmetical Mean of Cols. 5 and 6 will be entered as the "Calculated Mean Temperature."  
 Any Observations not taken under the conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

Observations made and Return verified by       

(Signed)        27.







# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Edinburgh (Glasgow), County of North Ayrshire, in Lat. 55° 55' N, Long. 4° 45' W, Distance from Sea 17 miles.  
 Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground        feet. During the MONTH of July 1877.  
 The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETER. Read Daily, at 9 P.M.				HYGROMETER. No. —				WIND.				RAIN.				CLOUDS.				SUNSHINE. Hours.	THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS.  As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc.  Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. —		No. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.			9 h. A.M.							Temperature of WELL at depth of feet. No. —	Temperature at 1 fathom, and Density.	9 A.M.	9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max. No. —	Min. No. —	Max. in Sun's rays No. —	Min. on Grass. No. —	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	9 h. A.M.	Velocity (0—5), and Direction.			Amount (0—10), and Species.	Velocity (0—5), and Direction.	Amount (0—10), and Species.	No. — 3 inches.		12 inches.	No. — 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
cl.	cirrus.	ms.	meteoric shower.
cl-cu.	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.	sn.	snow.
h.	haze.	so. h.	solar halo.
h. d.	heavy dew.	sq.	squall.
hl.	hail.	sqe.	squalls.
li. cl.	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	3	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†† = 29.341  
 for Temp. (Col. 2), = 29.420 - 0.079 = 29.341  
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction†† = 29.373  
 for Temp. (Col. 4), = 29.455 - 0.082 = 29.373  
 Mean at Station, corrected, and at 32°, = 29.357  
 Correction for height, feet above Mean Sea-level, = 30.1  
 Mean, reduced to 32°, and Sea-level, = 29.659  
 Highest Reading, corrected for Index error, on the th. 29.813  
 Lowest Do. Do., on the th., = 28.943  
 Difference, or Monthly Range, = 0.870

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 10th, = 73.6  
 Lowest in Month, corrected for Index errors, on the 8th, = 37.0  
 Difference, or Monthly Range, = 36.6  
 "Corrected Mean" of all the Highest, (Col. 5), = 63.8  
 "Corrected Mean" of all the Lowest, (Col. 6), = 49.6  
 Difference, or Mean Daily Range, = 14.2  
 \*\* Calculated Mean Temperature of Month, = 56.7  
 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), = 56.8  
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 53.4  
 † Computed Temperature of Dew-Point, = 50.2  
 † Do. Elastic Force of Vapour, = 364  
 † Do. Weight of Vapour in a Cubic Foot of Air, =         
 † Relative Humidity, (Saturation = 100), = 79  
 RAIN fell on 16 Days; Amount in Inches, = 3.70

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	2	1	5	19	3					
P.M.	2	2	1	3	16	2	2				
Mean.	2	2	1	4	17	2	2				

(Signed) Alfred M. Donald

Observations made and Return verified by







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at St Andrews, Fife, County of Merace, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 17 miles.  
Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground \_\_\_\_\_ feet. During the MONTH of August 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 & Test 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. of hours in which it fell.	No. of inches. No. —	9 A.M.		P.M.		9 h. A.M.							Temperature of Wet Bulb at End of Day.	Temperature at End of Day.	9 A.M.	9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		Barometer. * No. —	Attached Thermometer No. —	Barometer. No. —	Attach- ed Ther- mometer No. —	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. No. —	Velocity (4-6) and Direction. No. —			Amount (0-10) and Species. No. —	Velocity (0-5) and Direction. No. —	Amount (0-10) and Species. No. —	No. —	3 inches.	12 inches.										22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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BAROMETER, "corrected Mean" at 9 A.M., minus the Correction†† = 29.421  
for Temp. (Col. 2), = 29.494... - 0.073 = 29.421  
"Corrected Mean" of Barometer at 9 P.M., minus the Correction†† = 29.445  
for Temp. (Col. 4), = 29.520... - 0.075 = 29.445  
Mean at Station, corrected, and at 32°, = 29.433  
Correction for height, feet above Mean Sea-level, = 302  
Mean, reduced to 32°, and Sea-level, = 29.735  
Highest Reading, corrected for Index error, on the 12 th, = 29.964  
Lowest Do. Do., on the 8 th, = 28.941  
Difference, or Monthly Range, = 1.023

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 16 th, = 59.16  
Lowest in Month, corrected for Index errors, on the 24 th, = 35.0  
Difference, or Monthly Range, = 24.16  
"Corrected Mean" of all the Highest, (Col. 5), = 60.3  
"Corrected Mean" of all the Lowest, (Col. 6), = 34.9  
Difference, or Mean Daily Range, = 25.4  
\* Calculated Mean Temperature of Month, = 54.6  
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 16 th, = 59.16  
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 59.16  
Lowest at Night, Black Bulb, (corrected for Index errors), on the 24 th, = 35.0  
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 35.0  
Difference of above Means or Range ("exposed"), = 24.16

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 53.9  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 51.6  
† Computed Temperature of Dew-Point, = 49.4  
† Do. Elastic Force of Vapour, = 3.52  
† Do. Weight of Vapour in a Cubic Foot of Air, = 85  
† Relative Humidity, (Saturation = 100), = 85  
RAIN fell on 23 Days; Amount in Inches, = 0.69

WIND.		SUMMARY.					
Direction.	N	NE	E	SE	S	SW	W
A.M.	13	1	4	8	3	3	
P.M.	14	2	5	1	3	3	
Mean.	15	0	1	3	6	2	2

Observations made and  
Return verified by

(Signed)

*James McDonald*







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at the Garden of the House of Commons, County of Midlothian, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 17 miles.Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground \_\_\_\_\_ feet.During the MONTH of September 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.				SUNSHINE. Hours.	THERMOMETERS under Ground.			SEA.	OZONE. 0—10.	GENERAL REMARKS.  As to occurrence of Thunder, Lightning, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc.  Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.				
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. —		No. of hours in which it fell.	Amount in inches. No. —	9 A.M.			P.M.		9 h. A.M.					Temperature of Wind at feet. No.	Temperature at 1 fathom and Density.		
		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. No. —	Wet bulb. No. —	Dry bulb. No. —	Wet bulb. No. —	Direction. No. —	Force No. —	Direction. No. —	Force No. —	9 h. A.M.	Velocity (0—5), and Direction.			Amount (0—10), and Species.	Velocity (0—5), and Direction.		Amount (0—10), and Species.	No. 8 inches.	No. 12 inches.							No. 22 inches.	
1	29.573	52	29.566	51	57	43			56	48	43	42	Se	S																Thin throughout, in Chilly	1				
2	29.592	52	29.654	46	57	35			54	48	48	46	S	S																Thin in Chilly	2				
3	29.694	49	29.797	58	58	34			48	46	48	42	Ne	Ne			0.01													Shower at 1 P.M. and till	3				
4	29.876	49	29.870	59	61	36			55	49	49	47	Ne	Ne																	Thin in Chilly	4			
5	29.735	53	29.638	52	58	45			56	51	48	47	Ne	Ne			0.66														Overcast in Chilly	5			
6	29.573	50	29.679	46	56	42			50	48	40	37	Ne	Ne			0.06														Very fine	6			
7	29.628	50	29.618	50	54	36			55	49	40	39	Ne	Ne																	Overcast in Chilly	7			
8	29.791	51	29.873	50	62	45			50	48	47	46	Ne	Ne																	Thin	8			
9	29.898	48	29.843	50	52	34			50	48	46	44	Ne	Ne			0.02														Overcast in Chilly	9			
10	29.788	52	29.668	50	53	37			50	49	48	47	Se	Se																	Overcast & Wind	10			
11	29.530	55	29.226	57	62	50			58	54	50	48	Se	Se			0.42														Overcast & fresh breeze	11			
12	28.985	53	29.004	56	62	52			59	55	56	55	Se	Se			0.05														Thin	12			
13	29.256	53	29.046	59	59	48			58	55	52	51	Se	Se			0.24														Overcast all day, heavy T.M.	13			
14	28.963	60	29.472	58	64	56			68	59	59	57	Ne	Ne																	Passing Clouds and blowing a gale	14			
15	29.523	56	29.780	58	58	48			53	50	52	48	Ne	Ne																	Thin, blowing hard	15			
16	29.705	55	30.337	50	61	50			57	53	49	47	Ne	Ne																	Generally overcast	16			
17	30.134	53	30.165	57	55	47			57	49	49	46	Ne	Ne																	Thin blowing hard	17			
18	30.246	56	29.951	56	65	47			57	53	52	51	Ne	Ne																	Overcast, Chilly & blowing hard	18			
19	29.750	57	29.777	56	59	48			56	52	47	46	Ne	Ne			0.10														Overcast, Chilly & blowing hard	19			
20	29.577	50	29.593	50	49	41			45	44	42	41	Ne	Ne			0.13														Overcast and showery	20			
21	29.603	50	29.698	48	47	42			47	45	43	41	Ne	Ne			0.13														Overcast & showers	21			
22	29.583	48	29.530	45	55	44			49	48	47	46	Ne	Ne			0.05														Thin, blowing a gale	22			
23	29.798	50	29.696	49	54	45			49	48	45	43	Ne	Ne			0.02														Overcast and showers	23			
24	29.721	48	29.856	45	53	39			50	46	40	39	Ne	Ne																	Overcast	24			
25	29.912	49	29.843	50	54	40			50	49	44	43	Se	Se																	Overcast	25			
26	30.057	50	29.984	53	50	39			50	45	50	48	S	S																	Overcast and fine	26			
27	29.759	54	30.037	54	61	50			54	52	50	50	Se	S																	Overcast and genial	27			
28	29.840	53	29.937	54	57	49			50	45	52	48	S	S																	Overcast—genial	28			
29	29.984	53	30.075	50	54	47			52	50	47	46	S	S																	Overcast, showers at intervals	29			
30	30.042	57	29.912	50	56	42			50	48	45	44	S	S																	Thin	30			
31	29.491	63	22.075																															31	
Sums.		29.653		29.653		1508	1208	1301		1380	418	446	1372				190																		
Means.		29.716		29.716		51.9	56.8	43.0		52.7	44.5	47.7	45.8																						
+ Total Corrections for Instrumental Errors.																																			
+ Corrections for Diurnal Range.																																			
+ Corrected Means.																																			
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction  $\frac{1}{10}$  for Temp. (Col. 2), = 29.716 ..... - 06.3 = 29.653

"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\frac{1}{10}$  for Temp. (Col. 4), = 29.736 ..... - 06.3 = 29.673

Mean at Station, corrected, and at 32°, ..... = 29.663

Correction for height, feet above Mean Sea-level, ..... = 30.5

Mean, reduced to 32°, and Sea-level, ..... = 29.968

Highest Reading, corrected for Index error, on the  $\frac{1}{10}$  th, ..... = 30.337

Lowest Do. Do., on the  $\frac{1}{10}$  th, ..... = 28.968

Difference, or Monthly Range, ..... = 1.369

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the  $\frac{1}{10}$  th, ..... = 64.6

Lowest in Month, corrected for Index errors, on the  $\frac{1}{10}$  th, ..... = 24.0

Difference, or Monthly Range, ..... = 40.6

"Corrected Mean" of all the Highest, (Col. 5), ..... = 56.4

"Corrected Mean" of all the Lowest, (Col. 6), ..... = 43.0

Difference, or Mean Daily Range, ..... = 13.4

\*\* Calculated Mean Temperature of Month, ..... = 49.7

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the  $\frac{1}{10}$  th, ..... =

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

Lowest at Night, Black Bulb, (corrected for Index errors), on the  $\frac{1}{10}$  th, ..... =

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

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

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), ..... = 50.2

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), ..... = 47.7

Computed Temperature of Dew-Point, ..... = 45.1

Do. Elastic Force of Vapour, ..... = 3.00

Do. Weight of Vapour in a Cubic Foot of Air, ..... = 83

Relative Humidity, (Saturation = 100), ..... = 190

RAIN fell on  $\frac{1}{10}$  Days; Amount in Inches, ..... = 1.90

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	13			7	5	1	1	3			
P.M.	14			5	7	1	3				
Mean.	13			6	6	1	3				

\* 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.

† The Diurnal Range for Scotland is as yet unknown.

‡ These "Hygrometrical Definitions" are calculated from Glaisher's Hygrometrical Tables, Second Edition only.

§ While the Diurnal Range is unknown, the Arithmetical Mean of Cols. 9 and 10 will be entered as the "Calculated Mean Temperature."

|| 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.

Observations made and  
Return verified by

(Signed)

*James M. Donald*







SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at The Gardens, Plum Grove, County of Marion, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 17 miles.  
Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground \_\_\_\_\_ feet. During the MONTH of Oct 1877  
The Hours of Observation are of Greenwich Time.

[illegible]

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction ++)		=	29.419
for Temp. (Col. 2), =	29.466	...	0.047
"Corrected Mean" of Barometer at 9 P.M., minus the Correction ++)		=	29.356
for Temp. (Col. 4), =	29.410	...	0.054
Mean at Station, corrected, and at 32°, .....		=	29.389
Correction for height, .....		=	308
Mean, reduced to 32°, and Sea-level, .....		=	29.697
Highest Reading, corrected for Index error, on the 5 <sup>th</sup> , .....		=	30.184
Lowest Do. Do., on the 15 <sup>th</sup> , .....		=	28.793
Difference, or Monthly Range, .....		=	1.891

<b>S.-R. THERMOMETER</b> , (in shade, etc.), <b>Highest in Month</b> , (corrected for Index Errors), on the 19 <sup>th</sup> .....	=	59.8
<b>Lowest in Month</b> , corrected for Index errors, on the 25 <sup>th</sup> .....	=	59.0
Difference, or <b>Monthly Range</b> , .....	=	58.6
"Corrected <b>Mean</b> " of all the <b>Highest</b> , (Col. 5), .....	=	52.2
"Corrected <b>Mean</b> " of all the <b>Lowest</b> , (Col. 6), .....	=	50.1
Difference, or <b>Mean Daily Range</b> , .....	=	17.1
** Calculated <b>Mean Temperature</b> of Month, .....	=	43.9
<hr/>		
<b>S.-R. THERMOMETER</b> , <b>Black Bulb in Sun</b> , <b>Highest</b> , (corrected for Index Errors), on the 19 <sup>th</sup> .....	=	
"Corrected <b>Mean</b> ," (Col. 7), of <b>Black Bulb</b> , <b>Max. in Sun</b> , .....	=	
<b>Lowest at Night</b> , (Black Bulb, corrected for Index errors), on the 25 <sup>th</sup> , ..	=	
"Corrected <b>Mean</b> ," (Col. 8), of <b>Black Bulb</b> , <b>Min.</b> on grass, .....	=	
Difference of above Means or Range ("exposed"), .....	=	

<b>HYGROMETER, Mean</b> (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), .....	=	46.0
<b>Mean</b> (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), .....	=	43.6
## Computed <b>Temperature of Dew-Point</b> , .....	=	40.9
## Do. <b>Elastic Force of Vapour</b> , .....	=	.257
## Do. <b>Weight of Vapour in a Cubic Foot of Air</b> , ...	=	
## <b>Relative Humidity</b> , (Saturation = 100), .....	=	83
<b>RAIN</b> fell on <u>14</u> Days; Amount in Inches, .....	=	1.91

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

Observations made and  
Return verified by

(Signed) Alexander McQuarrie







The Hours of Observation are of Greenwich Time.

(Signed)

Myanna McDonald







# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at The Gardens Runy fault, County of Maricopa, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 17 miles.

Height of Cistern of the Barometer above Mean Sea-level 280 feet, above Ground \_\_\_\_\_ feet.

During the MONTH of December 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.  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, &c. above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		Readings of the Cup Anemometer.		No. of hours in which it fell.	Amount in inches.	9 A.M.		P.M.		9 h. A.M.						Temperature and Density.	9 A.M.	3 P.M.																		
		* No.	Barometer.	Attach- ed Ther- mometer	No.	Max.	Min.	No.	No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direc- tion.	Force.	Direc- tion.	Force.	No.	No.			Velocity (0—6), and Direc- tion.	Amount (0—10), and Species.	Velocity (0—6), and Direc- tion.	Amount (0—10), and Species.	No.	No.								No.	No.																
																																					9 h. A.M.		9 h. P.M.		No.		No.		No.		No.		No.		No.	
																																					inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°
1	28.873	43	29.506	45	42	33			41	40	38	37	Ro	Ro								Ni	Cu									Precast & Showery Fine	1																			
2	29.864	42	30.033	46	39	27			35	35	32	31	S	S			0.05					Cu	Cu									Overcast	2																			
3	30.042	37	29.937	43	43	23					43	42	S	S								Cu	Cu									Live	3																			
4	29.764	40	29.659	44	45	31			40	39	40	38	S	S								Cu	Cu									Slightly overcast, and frost.	4																			
5	29.670	45	29.484	46	43	27					44	42	S	S			0.21					Cu	Ni									very fresh wind during the night	5																			
6	29.057	44	28.751	47	45	37			41	40	45	44	So	So			0.22					Ni	Cu									overcast and showery, fresh breeze	6																			
7	29.185	39	29.328	37	45	28			35	34	34	32	S	S								Cu											Slight frost all. overcast. T. Me.	7																		
8	29.472	43	29.506	45	42	33			37	35	38	37	So	So								Ni	Cu										Slight frost all. generally overcast	8																		
9	29.556	45	29.473	48	49	37			46	43	45	44	W	W								Cu	Ni										generally overcast, fresh gusty winds	9																		
10	29.501	47	29.506	45	45	38			44	43	42	41	W	S			0.16					Cu	Ni									Overcast	10																			
11	29.508	44	29.055	46	45	25					45	43	S	S			0.19						Ni										Slight frost all. overcast. T. Me.	11																		
12	28.883	45	29.207	45	46	27			40	40	35	32	Ro	Ro			0.25					Ni											Misty showers, hills covered with snow	12																		
13	29.165	42	29.456	45	38	27			33	32	39	36	S	Ro								Cu											Frosty all. overcast. T. Me.	13																		
14	29.709	44	29.814	42	40	26			35	33	39	38	W	W								Cu											Frosty & Fine	14																		
15	29.912	43	29.687	43	41	29			36	34	42	40	So	W			0.24					Cu	Cu											Frosty & overcast	15																	
16	29.656	45	29.876	47	47	36			45	44	44	43	Ro	Ro			0.29					Ni	Ni											Showery	16																	
17	29.720	40	29.920	40	48	27			33	33	42	40	So	Ro								Cu	Ni											Live	17																	
18	29.121	43	29.099	40	42	24			34	33	29	28	Ro	Ro								Cu	Cu											Live	18																	
19	30.081	41	30.189	42	44	22			39	38			Ro	Ro								Ni	Cu											Showery	19																	
20	30.044	40	30.006	45	45	22			39	37	40	40	So	So								Cu												Overcast	20																	
21	30.014	42	29.887	43	50	26					50	48	S	S								Cu	Cu											Frosty & overcast	21																	
22	29.376	45	29.317	45	53	25			45	40	38	35	S	S								Cu	Cu											Blowing a gale, weather improving by frost. & mild for the season	22																	
23	29.481	45	29.435	44	39	28					25	23	S	S			0.08					Ni	Cu											Snow showers	23																	
24	28.889	42	29.259	45	38	27			36	34	36	34	W	W								Cu	Cu												Misty showers.	24																
25	29.280	36	29.275	39	40	23					28	27	W	W								Cu	Cu												Frosty & Fine	25																
26	28.683	35	28.478	38	33	07							Ro	Ro								Cu	Cu												Frosty	26																
27	28.906	38	29.305	36	34	12							Ro	Ro								Cu	Cu												Frosty	27																
28	29.543	31	28.923	39	36	16							W	S			0.25					Cu	Ni											Frosty	28																	
29	29.165	42	29.020	40	42	24			33	32	36	35	S	S			0.05					Ni	Cu											Showery	29																	
30	29.017	41	29.205	36	42	27			38	38	37	33	S	So								Cu	Cu												Fine	30																
31	29.572	39	29.808	37	40	24			37	34			Ro	Ro								Cu	Cu												Frosty	31																
Sums.	1454	48	1557	79	81	285			1842	1518	2368	2293					199																		NOTATION USED IN GENERAL REMARKS.																	
Means.	29.469	41.2	29.502	42.6	42.6	26.9			38.3	36.9	37.1	37.4																								a. denotes aurora.																
† Total Corrections for Instru- mental Errors.	29.75	41.5	29.81	37	41.5	26.3			37.5	36.5	37.5	37.5																							ci. cirrus.																	
† Correc- tions for Diurnal Range.																																				ci-cu. cirro-cumulus.																
“Cor- rected Means.”																																				cu. 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-s. cumulus.																	
																																				cu-s. cumulo-stratus.																
																																				der. dew.																
																																				d. fog.																

<b>BAROMETER,</b> "corrected Mean" at 9 A.M., minus the Correction ++		=	29.439
for Temp. (Col. 2), = 29.469 - 0.034			
"Corrected Mean" of Barometer at 9 P.M., minus the Correction ++		=	29.465
for Temp. (Col. 4), = 29.502 - 0.037			
<b>Mean at Station, corrected, and at 32°</b> ,.....		=	29.450
Correction for height, feet above Mean Sea-level.....		=	313
<b>Mean, reduced to 32°, and Sea-level</b> ,.....		=	29.763
Highest Reading, corrected for Index error, on the 19 th,.....		=	30.189
Lowest Do. Do., on the 26 th,.....		=	28.078
Difference, or <b>Monthly Range</b> ,.....		=	4.881

**S.-R. THERMOMETER**, (in shade, etc.), **Highest in Month**, (corrected for Index Errors), on the      th, ..... = 52.6

**Lowest in Month**, corrected for Index errors, on the      th, ..... = 27

Difference, or **Monthly Range**, ..... = 24.6

"Corrected **Mean**" of all the **Highest**, (Col. 5), ..... = 42.2

"Corrected **Mean**" of all the **Lowest**, (Col. 6), ..... = 26

Difference, or **Mean Daily Range**, ..... = 16

**\*\* Calculated Mean Temperature** of Month, ..... = 34

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

<b>HYGROMETER, Mean</b> (corrected) A.M. and P.M. Reading of <b>Dry Bulb</b> , (Cols. 9 and 11), .....	=	38.7
<b>Mean</b> (corrected) A.M. and P.M. Reading of <b>Wet Bulb</b> , (Cols. 10 and 12), .....	=	37.2
## <b>Computed Temperature of Dew-Point</b> , .....	=	35.2
## <b>Do. Elastic Force of Vapour</b> , .....	=	.206
## <b>Do. Weight of Vapour in a Cubic Foot of Air</b> , ...	=	
## <b>Relative Humidity</b> , (Saturation = 100), .....	=	88
<b>RAIN</b> fell on // <b>Days</b> ; <b>Amount in Inches</b> , .....	=	1.99

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	7	1		1	12	2	3	2			
P.M.	10			3	12		6				
Mean.	9	0	0	3	12	2	4	1			

Observations made and  
Return verified by

(Signed)



Cluny  
Dec 1877

The Council of the Society recommend that the Self-Respecting Thermometers, and the Dry and Wet Bulb Hygrometers, be kept in Stevenson's Log-house, outside the Observatory, and that the Self-Respecting Thermometers be served to forenoon posts, and the painted white fimbriae be changed in the ground. The points of such a length that the Thermometers are hung in position the Bulbs of the Minimum Thermometer, and of the Dry and Wet Bulb Thermometers, will be 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 a free open space to which the sun's rays have free access, so that the thermometer may be exposed to the sun's rays during as much of the day as surrounding conditions enable the Observer to secure. The Thermometers are suspended on cross-rails in the centre of the Box, and face the door, which should open to the north. The Council regard the question of UNIFORMITY OF HEIGHT ABOVE GROUND, and METHOD IN PROTECTING THE THERMOMETERS, as vital in their system of Meteorological Observation, since without it Obser-

temperatures made at different Stations are incomparable, thus rendering it impossible to compare the climates of places with each other as they are now. The *Thermometer* is the most important feature.

Professor Phillips, and Negretti and Zambra's Maximum Thermometer, and the *Thermometer*, and Rutherford's Minimum Thermometer are recommended. It is recommended that these Thermometers be graduated on the glass stem. The *Thermometer* is liable to two derangements—viz., the *Thermometer* spirit, and part of the spirit distilling by high temperature, and the top of the tube, this derangement may be ascertained by the thermometer being exposed to a constant 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 sought by any

...e, when the column of spirit chances to separate. Let the thermometer be taken in the hand by the end farthest from the bulb, and swung above the head, and then forcibly swung down towards the feet; the object being, on the principal of centrifigal force, to send down the detached portion of spirit till it unites with the column. A few throws, or swinging strokes, will generally be sufficient for the

process, 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 of the tube be small. It is to draw the bulb of the Thermometer into the neck of the tube, so that the detached portion of spirit is, which, being turned round, will be in contact with the surface of the unbroken column of spirit. Care must be taken that the heat is not applied to the bulb of the Thermometer, the tube will break, and the instrument be destroyed. The second method is to apply a vacuum to it, by bringing the end of the tube into contact with a vacuum pump, or by sucking it into the mouth, and drawing it out, so that the detached portion of spirit will serve instead.

The bulbs of the Thermometers for registering the greatest heat from the sun's rays, and the least from the ground, are made of glass, and are not at hand, a piece of

**Thick-Balls**—The balls of the Thermometer should be covered with a black coating, which may easily be done, or made, by the application of a mixture of lampblack and printer's ink. They are placed in cardboard boxes, to protect the bulbs from wind and rain. Maximum should be freely exposed to the sun. The maximum should rest on open stationers a few inches from the surface of the grass, in an open situation. Snow must not be allowed to rest on either of these Thermometers; nor the sun's heat to affect the bulb of the maximum Thermometer by distillation. Thick-balls enclosed in glass, and placed in a box, are not used. It is not necessary to observe of Solar and terrestrial Radiation is not yet a sufficient

The Hygrometer in use at the Society's Stations consists of two Thermometers usually, but not necessarily, mounted on one frame. As apparently slight deviations from the approved form of this apparatus seriously vitiate the Hygrometrical Observations. Observers are specially requested to attend to the following conditions:- The bulbs must hang down at least an inch free from the scales and frame to which they are attached.

ached, the frame must be such will bring the tubes forward by the weight of the water, and the water must be covered, and altogether placed to the side, and the water level of the wet bulb, but in no case under the bulbs; the tubes must be of medium thickness, and fastened at the neck of the bottle with a cord, and the water must be of medium temperature. By the Observer that the insula is always clean and moist, and the water pure. In frosty weather, observation is a matter of 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. The reading of the thermometer must be taken as the thermometer is raised, and the greatest reading of the index or

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 inference 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 Thermometers will read—39.3, 40.0, or 40.1; or again, 41.4, 40.3, 40.6, according as the index is a little more, or a little less than the next whole number, 40, 40.3, and 40.6 respectively. In reading Rutherford's Minimum Thermometer, the indication of that end of the index which is next the bulb is to be noted. The Thermometers are to be first, and last, read, inasmuch as they are readily affected by heat from the observer.

in the Self-Registering Thermometers are read, since, in winter, the extremes may occur at any hour; and it is necessary to note their recurrence to their proper meteorological day. In the thermometer of every's schedules, the indications registered on the 3d are those of the phenomena 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 all the Standard Thermometer. When such Thermometers are used, as are not graduated on the stem, but merely on a graduated scale, 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. The Self-Registering, especially the minimum Thermometers, ought frequently to be compared with the standard bulb of the Hygrometer. The freezing-point of each Thermometer, if it is not marked on the tube, ought to be tested once a year, in order to ascertain its exact position on the Scale.

In selecting instruments, the following points require attention:—(1.) The divisions of the vernier of Barometers in reference to their scales, and the perfect freedom of the Barometer from air; the correct marking of the scales.

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 purposes, such as determining the direction and force of the wind at greater depths, noting always the Temperature of the Air, and the surface of the Water, and the Direction and Force of the Current. The maximum and minima by Thermometers continuously immersed, are to be instituted at points along the coast, by the method proposed by Mr. Stevenson, and already commenced at Fleethead and Liverpool.

The Temperature of the water at the bottom of Wells ought, if practicable, to be noted, to be taken, both the depth of the Temperature of Well of the day, and the temperature of the water of the day.

Mention will also be made of the appearance of Molluscs, etc.

Denton. The Paper is affixed by a pin to be sent in the enclosed named Box and the indications registered at 9 o'clock 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 32°w., as an Ozonic entry in the schedule will indicate that the Ozonic Power is deficient as 32°

the conductor, will indicate that the Ozone paper is thinner at 50° than at 30° and that the N.W. and that is force on the

To much importance cannot be attached to the electric condition of the atmosphere in connection with terrestrial magnetic, barometrical, thermometrical, and meteorological phenomena generally. A proper Electrometer in the hands, 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 taken advantage of, and a list of such as are in general use are given at the foot of the column. Besides special and extraordinary observations, the following are such as are of general importance. Diseases, differences in the colour velocity of the

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, Thunder-storms, and remarkable falls of Snow, Hail, &c. The Hour of Storms of Wind commencing, attaining their maximum, and ending, as well as such notes on Storms as have been

[illegible]

are particularly threatened. Observers, before purchasing new instruments and in replying to communications with the Society, should be reminded to consider the needs of the communities in which they live, and they should be urged to consider it necessary that they should have full power to reject any instrument which, being presented for comparison, does not afford him satisfaction.

A. R.  
(By Order)

EMERSON, *December 1877.*

[illegible][illegible][illegible]

OBSERVATIONS IN CONNECTION		FOREST TREES.	
Tree Buds	Flower.		
			Alder.
			Ash.
			Beech.
			Birch.
			Elm.
			Larch.
			Time,
			Oak,
			Sycamore or Plane,

[illegible][illegible]

Turnips, Kraits, etc., whether plentiful, or in perfection; and the Agricultural condition of the district generally.

His month has been most successful in all matters  
 financial and with conspicuous display in being favored  
 with surveys. How in planned it with reality.

BOOK POST.

ALEXANDER BUCHAN

*Secretary of the Meteorological Society of Scotland.*

EDINBURGH.

THE UNIVERSITY OF CHICAGO