

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Aberdeen County of Aberdeen, in Lat. 57° 9' N, Long. 2° 6' W, Distance from Sea 1 miles.Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2½ feet.During the MONTH of January 1886.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				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.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. —	9 A.M.		P.M.		9 h. A.M.				Temperature of WELL at depth of feet. No.	Temperature at 1 fathom, and Depth.		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.	Attach- ed Ther- mometer	Barometer. No. —	Attach- ed Ther- mometer	Max. No.	Min. No.	Max. in Sun's rays No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.			Direc- tion.	Force	Direc- tion.	Force		Velocity (0—6), and Direc- tion.	Amount, (0—10), and Species.	Velocity (0—6), and Direc- tion.	Amount, (0—10), and Species.	SUNSHINE. Hours.	No. 3 inches.								No. 12 inches.	No. 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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BAROMETER, "corrected Mean" at 9 A.M., minus the Correction^{††} for Temp. (Col. 2), = 29.481 — 0.031 = 29.450

Corrected Mean^{††} of Barometer at 9 P.M., minus the Correction^{††} for Temp. (Col. 4), = 29.474 — 0.032 = 29.442

Mean at Station, corrected, and at 32°, = 29.446

Correction for height, feet above Mean Sea-level, = 0.74

Mean, reduced to 32°, and Sea-level, = 29.520

Highest Reading, corrected for Index error, on the 11 th, = 30.012

Lowest Do. Do. on the 31 th, = 28.766

Difference, or Monthly Range, = 1.246

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 11 th, = 56.6 — 0.031 = 56.569

Lowest in Month, corrected for Index errors, on the 16 th, = 16.0 — 0.032 = 15.968

Difference, or Monthly Range, = 40.6 — 0.063 = 40.537

"Corrected Mean" of all the Highest, (Col. 5), = 39.8

"Corrected Mean" of all the Lowest, (Col. 6), = 30.9

Difference, or Mean Daily Range, = 8.9

** Calculated Mean Temperature of Month, = 35.4

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 11 th, = 56.6

"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 39.8

Lowest at Night, Black Bulb, (corrected for Index errors), on the 16 th, = 16.0

"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 30.9

Difference of above Means or Range ("exposed"), = 8.9

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 35.6

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 33.8

†† Computed Temperature of Dew-Point, = 31.1

†† Do. Elastic Force of Vapour, = .175

†† Do. Weight of Vapour in a Cubic Foot of Air, = 2.04

†† Relative Humidity, (Saturation = 100), = 83

RAIN fell on 23 Days; Amount in Inches, = 2.39

WIND.		SUMMARY.										
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	4	1	5	2	1	1	1	1	5	1	0.90	
P.M.	4	4	3	1	2	3	8	4	2	2	1.13	
Mean.	4	2	4	2	2	2	9	5	1	1	1.02	= 1.04

Observations made and Return verified by

James Dale Teacher
Robert Gordon's College, Aberdeen

(Signed)

G. Dy. Range on the 7th = 20.3

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, County of Aberdeen, in Lat. 57° 9' N, Long. 2° 6' W, Distance from Sea 1 mile.Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 24 feet.During the MONTH of February 1886.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				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.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. _____ 9 h. A.M.	9 A.M.		9 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 (0-10), and Direction.	Amount (0-10), and Species.	Velocity (0-10), and Direction.	Amount (0-10), and Species.	No. _____ 3 inches.	No. _____ 12 inches.					No. _____ 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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BAROMETER, “corrected Mean” at 9 A.M., minus the Correction†† = 30.070
for Temp. (Col. 2), = 30.040 — .030

Corrected Mean” of Barometer at 9 P.M., minus the Correction†† = 30.031
for Temp. (Col. 4), = 30.062 — .031

Mean at Station, corrected, and at 32°, = 30.020

Correction for height, feet above Mean Sea-level, = .074

Mean, reduced to 32°, and Sea-level, = 30.094

Highest Reading, corrected for Index error, on the th, = 30.448

Lowest Do. Do., on the th, = 28.846

Difference, or Monthly Range, = 1.602

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 49.4

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

Difference, or Monthly Range, = 24.9

“Corrected Mean” of all the Highest, (Col. 5), = 40.6

“Corrected Mean” of all the Lowest, (Col. 6), = 30.3

Difference, or Mean Daily Range, = 10.3

** Calculated Mean Temperature of Month, = 35.4

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), = 35.8

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 34.0

†† Computed Temperature of Dew-Point, = 31.3

†† Do. Elastic Force of Vapour, = .177

†† Do. Weight of Vapour in a Cubic Foot of Air, = 2.02

†† Relative Humidity, (Saturation = 100), = 84

RAIN fell on 19 Days; Amount in Inches, = 1.94

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.	2		1	5	4	4	5	6	1	0.80	
P.M.	1		7	2	4	4	6	4	0.82		
Mean.	1	1	0	6	3	4	5	6	2	0.81	0.66

* 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.

†† These “Hygrometric Deductions” are calculated from Glaisher’s Hygrometric 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.

Observations made and
Return verified by

James Dale Teacher
Robert Gordon's College

(Signed)

G. Dy. Range on the 11th = 20.1

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Aberdeen, County of Aberdeen, in Lat. 57° 4' N, Long. 2° 6' W, Distance from Sea 1 mile.Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2 1/2 feet.During the MONTH of March 1886.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 3 P.M.				HYGROMETER.				RAIN.		WIND.				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.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		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.	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.			Direction.	Force.	Direction.	Force.	Readings of the H. Cup Anemometer No.	9 h. A.M.	Velocity (0-10), and Direc- tion.	Amount (0-10), and Species.	Velocity (0-10), and Direc- tion.	Amount (0-10), and Species.	No.					No.	No.	
																																	3 inches.
		inches.	°	inches.	°	°	°	°	°	°	°	°																					
	1	30.012	35.0	29.754	33.5	35.0	39.0			32.0	30.8	30.1	30.0	.21	S.E.	1	E	2		10	St	10	Ca-St	—						Snow	1		
	2	29.598	38.5	29.584	41.0	33.0	28.2			32.0	31.0	33.0	32.1	.01	E	2	E	2		10	Ca-St	10	Ca-St	—						Snow	2		
	3	29.658	38.2	29.778	39.0	38.6	27.0			33.2	32.0	36.8	34.0	.04	N	1	N.W.	1		8	Ca-St	10	Ca-St	6							3		
	4	29.514	41.0	29.520	36.0	34.0	25.0			34.4	35.0	30.2	29.0	—	N.W.	1	—	—		9	Ca-St	—	—	4							4		
	5	29.436	39.0	29.412	39.4	34.0	25.0			33.1	31.0	30.4	29.0	.10	N.W.	1/2	N	1/2		8	Ca-St	—	—	2						Snow	5		
	6	29.698	38.4	29.960	40.0	34.0	25.0			29.8	28.4	29.0	28.0	.07	N	1	N	1/2		2	Ca-St	—	—	3						Snow	6		
	7	30.136	36.0	30.172	39.0	33.4	24.8			33.0	32.1	32.0	31.2	—	N.W.	1/2	—	—		5	Ca	1	St	4							7		
	8	30.192	38.5	30.226	42.5	38.8	30.0			33.7	34.1	35.4	33.7	—	S.W.	1/2	S	1/2		6	St	2	St	5							8		
	9	30.244	39.0	30.344	41.5	38.8	31.0			34.1	32.2	36.0	32.0	—	S	1	S.W.	1		—	—	—	—	10							9		
	10	30.504	41.0	30.530	38.0	41.0	27.3			37.2	34.1	36.0	33.0	—	S.	1/2	S.W.	1		6	Ca	10	St	6							10		
	11	30.528	38.4	30.454	36.0	40.1	30.4			35.1	32.0	30.4	29.5	—	—	—	—	—		1	St	2	St	10							11		
	12	30.440	34.0	30.372	38.0	39.0	19.5			25.0	23.2	36.0	34.3	.18	S	1/2	N.W.	1		10	Ca-St	10	St	4							12		
	13	30.464	40.0	30.446	41.0	37.6	31.0			35.5	34.0	35.4	34.0	.02	S	1/2	S.E.	1/2		10	Ca-St	10	Ca-St	—						Snow	13		
	14	30.280	41.0	30.148	40.6	39.0	31.6			35.1	36.2	35.2	34.0	.04	E	1	E	1/2		10	Ca-St	10	Ca-St	—						Snow	14		
	15	30.178	39.2	30.160	40.4	40.3	31.8			35.2	34.1	36.2	32.0	.12	S.E.	1	E	1		10	Ca-St	5	Cir	2						Snow	15		
	16	30.130	40.6	30.120	39.2	37.1	31.0			35.2	34.0	36.1	34.2	.21	E.	2	E.	1 1/2		10	Ca-St	10	Ca-St	—						Snow	16		
	17	30.136	39.4	30.108	37.5	37.0	32.4			35.1	33.2	34.3	33.0	.12	E.	2	E	1 1/2		10	Ca-St	10	St	—						Snow	17		
	18	30.048	41.0	29.972	40.8	37.3	32.5			36.1	34.3	37.3	36.1	.04	S	1	S	1		10	St	10	St	—							18		
	19	29.902	40.6	29.820	44.5	40.2	35.0			34.2	35.1	40.0	34.5	.67	S	1	S.W.	1 1/2		10	St	10	St	—							19		
	20	29.680	46.5	29.680	45.0	53.2	38.5			45.2	43.6	44.6	42.7	.02	S.	1	S.W.	1/2		9	Ca-St	8	Ca-St	8								20	
	21	29.694	48.0	29.790	47.0	61.6	35.5			45.2	46.3	45.0	46.2	.13	S.W.	1/2	S.W.	1/2		1	St	1	St	10								21	
	22	29.894	48.0	29.920	48.0	60.0	42.4			45.6	45.2	45.0	42.1	.12	W.	1/2	W	1/2		10	N.W.	4	Ca-St	8								22	
	23	29.820	49.2	29.824	50.0	53.0	42.5			45.2	45.4	50.2	45.0	.02	S.W.	1	S.W.	1		10	Ca-St	—	—	4								23	
	24	29.944	49.0	29.870	47.0	53.8	42.0			47.1	46.2	44.2	42.0	—	S.W.	1	S.W.	1/2		10	Ca-St	4	Cir	8								24	
	25	29.622	49.0	29.656	47.0	53.2	40.1			45.0	44.0	45.4	44.0	—	S.W.	1	S.W.	1		10	St	10	St	4								25	
	26	29.494	47.0	29.220	47.0	50.8	42.0			45.2	43.0	43.7	42.5	.23	S.W.	1	S.W.	2		10	St	5	Ca-St	2								26	
	27	29.404	48.0	29.360	48.0	46.4	41.8			44.2	42.0	43.4	42.0	.11	S.W.	2	—	—		10	St	5	Ca-St	—								27	
	28	29.724	46.8	29.616	47.6	49.2	36.1			45.0	34.2	42.2	39.0	—	S.W.	1/2	S.W.	1		5	Ca-St	5	Ca-St	5								28	
	29	29.402	46.0	29.304	46.5	52.0	37.5			43.3	40.1	41.0	37.8	—	S.	1	S	1/2		10	St	8	Cir	6								29	
	30	29.470	47.0	29.070	46.8	44.6	35.5			44.1	37.4	42.0	35.2	.16	S.W.	1	S.W.	2		5	Cir	5	Cir	4						Beautiful display of Aurora Borealis	30		
	31	29.050	41.6	29.410	42.0	43.8	33.2			36.1	34.0	37.1	34.2	.10	W	1	N	1/2		10	St	—	—	2						Snow	31		
Sums.		1458	185	1536	156	149	139			175	165	166	165	6		4		7		215	175	117											
Means.		29.883	42.1	29.857	42.3	43.3	32.9			38.5	36.4	38.0	36.1			0.98		0.90		7.9	5.6												
† Total Corrections for Instrumental Errors.		+0.06	1.7	+0.06	1.7	1.2				1.2	1.2	1.2	1.2			0.6		0.6		6.8													
† 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-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.	" sleet.		
fr.	" frost.	s.	" snow.		
h-fr.	" hoar-frost.	s.	" solar halo.		
h.	" haze.	so-ha.	" squall.		
h. d.	" heavy dew.	sq.	" squalls.		
h. l.	" 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. h.	" 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	Fresh breeze	2-	Very light air	5	Blowing a gale
1-	Light air	3-	Very fresh	6	Violent gale

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction†† for Temp. (Col. 2), = 29.854
Corrected Mean" of Barometer at 9 P.M., minus the Correction†† for Temp. (Col. 4), = 29.828
Mean at Station, corrected, and at 32°, = 29.841
Correction for height, feet above Mean Sea-level, = 0.74
Mean, reduced to 32°, and Sea-level, = 29.915
Highest Reading, corrected for Index error, on the 10 th, = 30.530
Lowest Do. Do. on the 30 th, = 29.010
Difference, or Monthly Range, = 1.520

* 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 "Hygrometrical Deductions" 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." Any Observations not taken under the conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 4 th, = 61.4
Lowest in Month, corrected for Index errors, on the th, = 19.5
Difference, or Monthly Range, = 41.9
"Corrected Mean" of all the Highest, (Col. 5), = 43.1
"Corrected Mean" of all the Lowest, (Col. 6), = 32.9
Difference, or Mean Daily Range, = 10.2
** Calculated Mean Temperature of Month, = 38.0

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), = 38.0

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 36.0

†† Computed Temperature of Dew-Point, = 33.3

†† Do. Elastic Force of Vapour, = 1.90

†† Do. Weight of Vapour in a Cubic Foot of Air, = 2.20

†† Relative Humidity, (Saturation = 100), = 83

RAIN fell on 21 Days; Amount in Inches, = 2.72

WIND.	SUMMARY.									
	Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.
A.M.	2		4	2	8	9	2	3	1	0.98
P.M.	3		6	1	3	11	1	2	4	0.90
Mean.	2	0	5	2	6	10	2	2	2	0.94 = 0.88

Observations made and Return verified by

James Dale, Teacher in
Robert's Gordon's College, Aberdeen

(Signed)

Greatest Daily Range = 25.9 on the 21st

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Aberdeen, County of Aberdeen, in Lat. 57° 9' N, Long. 2° 6' W, Distance from Sea 1 miles.

Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2½ feet.

During the MONTH of April 1886

The Hours of Observation are of Greenwich Time.

[illegible]

BAROMETER, “corrected Mean” at 9 A.M., <i>minus</i> the Correction $\uparrow \uparrow$	=	<u>29.784</u>
for Temp. (Col. 2), = 29.831 - .047 }		
Corrected Mean \uparrow of Barometer at 9 P.M., <i>minus</i> the Correction $\uparrow \uparrow$	=	<u>29.806</u>
for Temp. (Col. 4), = 29.852 - .046 }		
Mean at Station, corrected, and at 32°,	=	<u>29.795</u>
Correction for height, feet above Mean Sea-level,.....	=	<u>.074</u>
Mean, reduced to 32°, and Sea-level,	=	<u>29.869</u>
Highest Reading, corrected for Index error, on the 16 th,.....	=	<u>30.360</u>
Lowest Do. Do., on the 8 th,.....	=	<u>28.694</u>
Difference, or Monthly Range,	=	<u>1.666</u>

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th,	=	<u>60.3</u>
Lowest in Month, corrected for Index errors, on the th,	=	<u>31.1</u>
Difference, or Monthly Range,	=	<u>29.2</u>
" Corrected Mean " of all the Highest, (Col. 5),	=	<u>50.1</u>
" Corrected Mean " of all the Lowest, (Col. 6),	=	<u>36.0</u>
Difference, or Mean Daily Range,	=	<u>14.1</u>
** Calculated Mean Temperature of Month,	=	<u>43.0</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), = 43.3

Mean (corrected) A.M. and P.M. Reading of **Wet Bulb**, (Cols. 10 and 12), = 40.2

Computed **Temperature of Dew-Point**, = 36.5

Do. **Elastic Force of Vapour**, = 2.16

Do. **Weight of Vapour in a Cubic Foot of Air**, ... = 2.51

Relative Humidity, (Saturation = 100), = ~~77~~ 77

RAIN fell on 15 Days; Amount in Inches, = 1.42

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	6	5	5	1	2	3	6	2		1.08	
P.M.	3	5	3	1	1	4	6	2	5	0.77	
Mean.	5	5	4	1	1	4	6	2	2	0.92 = 0.85	ll

(Signed)

Observations made and
Return verified by

{ James Dale, Teacher in
Robert Gordon's College, Aberdeen

Greatest Daily Range on the 24th = 20.9

WITH REMARKS ON THE USE OF INSTRUMENTS



SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Aberdeen, County of Aberdeen, in Lat. 57°9' N., Long. 2°6' W., Distance from Sea 1 miles.

Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2 1/2 feet.

During the MONTH of May 1886.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				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.		Dry No. Wet No.		9 h. A.M.		9 h. P.M.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		Velocity (0-6), and Direction.	Amount, (0-10), and Species.	Velocity (0-6), and Direction.	Amount, (0-10), and Species.	9 h. A.M.						Temperature at 1 fathoms, and Density.	Temperature at 10 fathoms, and Density.	0-10.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		Barometer. * No.	Attached Thermometer.	Barometer. No.	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.	9 A.M.					Amount, (0-10), and Species.								Direction.	Amount, (0-10), and Species.	No. 3 inches.	No. 12 inches.	No. 22 inches.	9 A.M.	9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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BAROMETER, "corrected Mean" at 9 A.M., minus the Correction for Temp. (Col. 2), = 29.870 — .057 = 29.813
 Corrected Mean of Barometer at 9 P.M., minus the Correction for Temp. (Col. 4), = 29.871 — .058 = 29.813
 Mean at Station, corrected, and at 32°, = 29.813
 Correction for height, feet above Mean Sea-level, = .074
 Mean, reduced to 32°, and Sea-level, = 29.887
 Highest Reading, corrected for Index error, on the th, = 30.324
 Lowest Do. Do., on the th, = 29.126
 Difference, or Monthly Range, = 1.198

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 68.7
 Lowest in Month, corrected for Index errors, on the th, = 33.6
 Difference, or Monthly Range, = 35.1
 "Corrected Mean" of all the Highest, (Col. 5), = 54.5
 "Corrected Mean" of all the Lowest, (Col. 6), = 41.0
 Difference, or Mean Daily Range, = 13.5
 ** Calculated Mean Temperature of Month, = 47.7
 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), = 47.7
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 44.2
 ‡ Computed Temperature of Dew-Point, = 40.3
 ‡ Do. Elastic Force of Vapour, = .250
 ‡ Do. Weight of Vapour in a Cubic Foot of Air, = 2.87
 ‡ Relative Humidity, (Saturation = 100), = 76
 RAIN fell on 22 Days; Amount in Inches, = 4.08
 WIND. SUMMARY.
 Direction. N NE E SE S SW W NW
 A.M. 4 6 2 2 9 5 2 1 0.84
 P.M. 2 4 5 1 5 6 1 7 0.65
 Mean. 3 5 3 2 7 6 1 0 4 0.74 = 0.55

Observations made and Return verified by James Dale Leacher in Robert Gordon's College

Greatest daily Range on the 27th = 14.3
24.3

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Aberdeen, County of Aberdeen, in Lat. 57° 9' N, Long. 2° 6' W, Distance from Sea 1 mile.Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 25 feet.During the MONTH of June 1886.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				CLOUDS.				THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.		
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		9 A.M.		P.M.		9 h. A.M.										
		Barometer.	Attach- ed Ther- mometer.	Barometer.	Attach- ed Ther- mometer.	Max. No.	Min. No.	Max. in Sun's rays No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	No. of hours in which it fell.	Amount in inches.	Direction.	Force.	Direction.	Force.	Velocity (0-20), and Direction.	Amount (0-10), and Species.	Velocity (0-20), and Direction.	Amount (0-10), and Species.	No. 3 inches.	No. 12 inches.	No. 22 inches.						
		* No.	No.	* No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.					No.	No.
		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°					°	°
	1	30.080	48.5	29.960	50.2	51.1	40.0			47.8	45.0	46.2	45.0	.35	N.	1	N.E.	2	10	st.	10	Nim	—							1		
	2	30.056	49.5	30.116	49.8	52.3	43.0			48.2	46.0	45.8	42.3	.01	E.	1	N.E.	2	10	st.	6	ci-cu	8							2		
	3	30.150	49.0	30.124	50.0	54.0	35.2			47.1	41.8	45.0	42.6	—	E.	2	S.W.	1	8	cu	2	st	14							3		
	4	30.126	54.0	30.132	54.4	62.4	41.0			53.0	50.2	50.5	48.1	—	S.W.	2	—	—	2	ci-st	8	ci-cu	16							4		
	5	30.020	59.0	29.914	53.0	67.0	45.0			58.8	57.4	56.2	57.0	—	S.W.	1	N	2	1	ci	3	ci-st	16							5		
	6	29.904	54.5	29.808	54.2	69.8	48.2			54.1	48.2	53.2	57.0	—	N.E.	2	—	—	10	ci-st	10	st	5							6		
	7	29.874	59.0	29.980	56.0	64.2	48.2			53.2	57.3	49.0	46.3	—	S.E.	1	S.E.	1	3	cu	1	st	14							7		
	8	29.924	52.4	29.852	52.2	53.0	48.2			50.2	48.4	47.7	46.2	—	S	1	S	1	10	ci-st	10	st	—							8		
	9	29.808	57.5	29.812	52.0	53.1	45.0			49.2	48.6	48.5	47.2	.02	—	—	S	1	10	st	10	st	—							9		
	10	29.810	57.0	29.820	52.1	50.8	45.1			47.8	47.0	47.0	46.2	.01	S	2	—	—	10	st	10	st	—							10		
	11	29.770	57.5	29.654	54.2	53.0	44.8			49.2	48.2	52.2	50.8	.38	S	2	—	—	10	st	10	st	6							11		
	12	29.538	53.2	29.538	54.6	62.1	48.8			52.2	50.3	52.1	50.2	.09	S.W.	1 1/2	S.W.	2	9	ci-st	4	ci-st	10							12		
	13	29.662	54.4	29.782	55.0	62.4	49.1			53.8	50.0	53.4	49.2	.02	N.W.	2	—	—	10	st	9	ci-st	8							13		
	14	29.752	55.0	29.532	54.1	57.0	40.6			54.0	50.0	57.2	46.0	.04	S	1	N.W.	1	10	ci-st	—	—	4							14		
	15	29.540	57.0	29.608	56.8	62.3	45.2			53.2	49.4	52.4	46.8	—	N	2	N.W.	2	5	ci-cu	1	ci	13							15		
	16	29.804	55.0	29.972	55.2	60.2	47.5			53.2	48.1	52.1	47.2	.01	N.W.	1 1/2	N.W.	2	4	cu	9	ci-st	10							16		
	17	30.024	54.5	30.116	54.0	59.0	47.1			50.2	44.6	49.8	44.5	—	N.W.	2	N	1 1/2	8	ci-st	10	st	2							17		
	18	30.060	54.0	30.092	54.2	63.0	47.5			53.2	50.1	57.5	47.3	—	N	2	N	2	6	ci-cu	10	st	6							18		
	19	29.974	56.0	30.062	55.4	56.0	45.8			52.4	48.1	51.0	49.7	—	N	1 1/2	N	2	4	ci-st	3	st	15							19		
	20	30.108	57.5	30.072	56.4	62.1	46.4			53.0	48.8	53.0	49.2	—	N	1 1/2	N	1	2	ci	9	ci-st	14							20		
	21	29.996	53.3	29.868	56.8	61.1	49.2			53.0	50.1	53.6	52.8	—	N	1	N	2	10	ci-st	10	ci-st	4							21		
	22	29.740	59.0	29.568	58.4	69.3	49.1			58.7	57.2	53.4	49.3	.03	N.W.	1	N.W.	1	5	ci	2	st	16							22		
	23	29.372	53.0	29.574	53.7	62.6	47.2			52.2	45.0	49.0	45.7	.04	N.W.	2	N.W.	1	6	cu	—	—	12							23		
	24	29.640	57.4	29.580	57.4	63.0	43.8			57.2	48.8	53.8	49.0	—	N.W.	1	S.W.	2	6	ci-st	—	—	15							24		
	25	29.680	59.0	29.778	57.4	67.1	45.2			58.1	48.3	52.4	41.0	—	N	1	N	2	5	cu	2	cu	14							25		
	26	29.990	59.3	30.030	57.9	66.9	42.0			57.8	46.2	52.9	46.8	—	N.W.	1	N.W.	1	4	cu	1	st	15							26		
	27	30.132	58.6	30.102	59.0	61.9	43.0			59.4	52.2	53.1	48.2	—	N.W.	2	S	2	1	ci-st	5	ci-st	16							27		
	28	30.056	61.5	30.116	59.9	69.8	45.0			61.8	54.7	58.0	53.4	.09	S.W.	1	S.W.	2	8	ci-st	9	st	9							28		
	29	30.254	57.0	30.274	57.4	63.7	49.0			53.6	57.0	54.2	49.5	.01	N	2	—	—	10	st	10	st	—							29		
	30	30.296	60.4	30.278	60.0	68.7	52.7			63.1	58.9	57.8	53.0	—	S.W.	2	—	—	9	cu	10	ci-st	10							30		
	31																														31	
Sums.		17.160	158.7	27.054	155.3	13.9	164.9			15.8	171.9	50.0	134.5	1.10	30.5	23.0			206	184	272											
Means.		29.905	55.3	29.902	55.2	60.5	45.5			54.4	49.1	51.7	48.0		1.02	0.77			6.9	6.1												
† Total Corrections for Instrumental Errors.		+0.06	-.7	+0.06	-.7	-.2				-.2	-.2	-.2	-.2		0.6	0.6																
† Corrections for Diurnal Range.																																
"Corrected Means."		29.911	54.6	29.908	54.5	60.3	45.5			54.2	48.9	51.5	47.8																			
NOTATION USED IN GENERAL REMARKS.																																
a. denotes aurora. m. denotes meteor.																																
ci. cirrus. ms. meteors.																																
ci-cu. cirro-cumulus. n. nimbus.																																
ci-s. cirro-stratus. r. rain.																																
cu. cumulus. h. r. heavy rain.																																
cu-s. cumulo-stratus. c. h. r. continued heavy rain.																																
d. dew. s. stratus.																																
f. fog. sc. scud.																																
fr. frost. s. sleet.																																
h.-fr. hoar-frost. s. snow.																																
h. haze. so. h. solar halo.																																
h. d. heavy dew. sq. squall.																																
hl. hail. sqs. 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 0.5 1' Calm Very light air Light breeze Fresh breeze 4 5 Blowing hard Blowing a gale Violent gale																																

NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	cirrus.	mx.	meteo.
ci-cu.	cirro-cumulus.	n.	nimbus.
ci-s.	cirro-stratus.	r.	rain.
cu.	cumulus.	h. r.	heavy rain.
cu-s.	cumulo-stratus.	c. h. r.	continued heavy rain.
d.	dew.	s.	stratus.
f.	fog.	sc.	scud.
fr.	frost.	s.	sleet.
h. fr.	hoar-frost.	s.	snow.
h.	haze.	so. h.	solar halo.
h. d.	heavy dew.	sq.	squall.
h. l.	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.	w.	gale of wind.
lu. h.	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++ = 29.840
for Temp. (Col. 2), = 29.911... = 0.071
Corrected Mean++ of Barometer at 9 P.M., minus the Correction++ = 29.838
for Temp. (Col. 4), = 29.908... = 0.070
Mean at Station, corrected, and at 32°, = 29.839
Correction for height, feet above Mean Sea-level, = -0.74
Mean, reduced to 32°, and Sea-level, = 29.913
Highest Reading, corrected for Index error, on the 30th, = 30.296
Lowest Do. Do. on the 23th, = 29.372
Difference, or Monthly Range, = 0.924

S.-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, = 35.2
Difference, or Monthly Range, = 34.4
"Corrected Mean" of all the Highest, (Col. 5), = 60.3
"Corrected Mean" of all the Lowest, (Col. 6), = 45.5
Difference, or Mean Daily Range, = 14.8
** Calculated Mean Temperature of Month, = 52.9

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), = 52.8

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 48.4

†† Computed Temperature of Dew-Point, = 44.0

†† Do. Elastic Force of Vapour, = 288

†† Do. Weight of Vapour in a Cubic Foot of Air, = 330

†† Relative Humidity, (Saturation = 100), = 72

RAIN fell on 13 Days; Amount in Inches, = 1.10

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

Observations made and
Return verified by James Dale

(Signed) James Dale
P. R. C. Dale

Greatest Daily Range = 24.7 on the 26th

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS,

WITH REMARKS ON THE USE OF INSTRUMENTS

SCOTTISH METEOROLOGICAL OBSERVATIONS,

IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

1888

June

One of the chief objects that the SCOTTISH METEOROLOGICAL SOCIETY proposed to itself when the Society was established in 1855, was to secure PERFECT UNIFORMITY in the system of observation pursued at all its Stations. Uniformity in the observations is absolutely necessary to justify the publication of Monthly Results from different observations, it being found that differences between the Returns from two Stations, so very considerable as to render them quite incomparable, may arise from dissimilarity in the position or shelter of instruments, different hours of observation, or even from the use of differently constructed instruments. It is therefore hoped, that those who kindly furnish Reports to the Society will, by a scrupulous attention to the following Directions, secure for their Monthly Returns, an accuracy and value commensurate with the labour and pains involved in making them; and, for the Tables published by the Society, an entire completeness among the several Returns, without which the Society's Reports must inevitably fail in achieving one of the main objects of Meteorological Observation.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich or Railway Time only), as specified in the following remarks, or at the top of the nearest punctuality in the time of reading the instruments will be observed. Observers, in some few cases, may find this impossible; in such instances, they are specially requested to mark opposite every reading the time at which it was taken, if not at 9 A.M. or 9 P.M. Weather-Glasses and aneroids, though altogether unreliable as standards for scientific purposes, are not to be used for Meteorological Observations. No Barometer should be used for adjusting or comparing the instruments which will secure the height of the mercury in the tube is accurately measured from the fluctuating surface of the mercury in the cistern. The Barometer in which the error arising from the fluctuating surface of the mercury in the cistern is entirely got rid of is Fourn's Barometer. The arrangement consisting in applying pressure by means of a screw to the bottom of the cistern, which is made of flexible leather, thus raising or depressing the surface lid, it just meets the ivory point which forms the zero point of the fixed scale.

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

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

It is absolutely necessary that the Barometer which is to be used, shall have been compared with a Standard Barometer. The Barometer should be suspended in as good a light as can be secured, and to facilitate the reading, a piece of white paper may be put behind the tube. It must be hung truly perpendicular, and exposed to neither the sun's direct rays nor the heat of a fire, and must not be hung against a wall heated by a fire. The object being to secure that the whole instrument, including the brass fittings, the contained mercury, and the attached Thermometer, shall be, when read, at one uniform temperature, it is evident that the best position is that which is least liable to sudden changes of temperature.

In taking an Observation, the Attached Thermometer is first noted: the tube must then be gently tapped, and the cistern-rod (noted exactly) moved. The eye, by raising and lowering it, must be brought into the plane of the back and front of the index—usually the lower edge of the vernier, which must be carefully adjusted so as to be exactly tangent to the convex surface of the mercury in the tube. Observers must be taken quickly, so as to prevent heat from the observer's hand, and person from affecting the mercury. The use of a lens will facilitate an accurate adjustment and reading beginning to observe, consisting in setting the edge of the vernier to the level of the clear surface of the mercury, and then in direct contact with the glass tube, must be gently applied.

The errors most frequently made in using the Barometer are errors of 1.000 inch, 0.500 inch, and 0.050 inch; that is to say, instead of 29.365 inches, either of the following is sometimes given—viz., as 30.365 inches, 28.365 inches, or 29.815 inches. Experience having shown that even the very best Observers make these mistakes, particular attention is directed to the matters when a Barometer having adjustable surfaces has to be removed from its fastenings, the ivory peg must first be screwed so as to form a light plug to the cistern, thus preventing the escape of the mercury. Then screw up the mercury not quite to the top of the tube, but to within a quarter of an inch of it, and take down the instrument; it should then be carried with the cistern uppermost. 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 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 mercury to about half an inch from the top of the tube; and having slowly inverted 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 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 unfastening the float of the cistern, for, if this be not attended to, the mercury will flow out, and the instrument be seriously damaged.

The Council of the Society recommend that the Self-Registering Thermometers, and the Dry and Wet Bulb Hygrometers, be kept in Stevenson's Louvre-Barometer Box for the weather, as shown in the past by repeated and annoying breakages of Thermometers of similar construction; and as regards Maximum Thermometers, either Negretti and Zamboni's, or Phillips's, whether they will act at the highest temperatures they may be required to register. By the laws of the Society, Members and Observers have a right to have their instruments compared by the Secretary, and to advise with him regarding the purchase of instruments.

Very great care should be bestowed on the Observations of the Wind. Wind, the accuracy of which, both as regards Direction and Force, is of the more important problems of the science. A Wind-Vane ought to be elevated at least 12 feet above surrounding objects. When it oscillates incessantly, the mean direction should be taken. In all cases, but especially when the Vane is stationary, and when the wind is feeble, reference may be made to the direction of smoke, etc., in well-exposed situations. Careful observations are recommended to be made on the changes in the direction of the wind; and during storms, extra observations at every hour of Greenwich time. Such a system of simultaneous observation, pursued at different Stations, is likely to give highly valuable and important results, particularly in connection with the system of thickly-planted Stations over a limited district round Edinburgh called Storm Stations, in the course of being established by the Society for the systematic investigation of the relation of the force of the wind to Barometric Changes, and other points connected with storms.

The Council would recommend the Hemispherical Cup Anemometer,—a self-registering instrument which shows the amount of Wind that passes it per day; from which also the mean Velocity of the Wind at the time of observation may be ascertained. For indicating the Force of the Wind at any particular hour of observation, the Pressure Anemometer recently brought into notice of the Society by Mr. T. Stevenson, the Secretary, and Mr. R. Cunningham, the Secretary of Edinburgh, are recommended as likely to secure uniformity in making observations on the Force of the Wind. Many causes appear to prevent an accurate determination of the wind, and partly from the defective nature of the instrument, and partly from the defective nature of the observation. The Rain-Gauge should not be placed on a slope or terrace, but on a level piece of ground in an open situation, as the Observer can secure for it. As it is often difficult to obtain a position as free and unobstructed by surrounding objects as is desirable, care should be taken to place it at some distance from shrubs, trees, buildings, or other obstructions, at least as many feet from their base as they are in height. The more important directions, towards which it is most desirable to have a free exposure, are in the order of their importance, S.W., N.E., S.E., S., and W. The rim of the Gauge must be perfectly level, and fixed so that it will remain level in all weathers, and be at a height of one foot above ground over grass. In such gauges as Pluming's, which are furnished with a measuring rod attached to a float, the rod ought to be fixed down, and the float rise to its height only at the time the instrument is read, being found that a stem projecting above the rim of the gauge seriously interferes with the proper measurement of the Rain-fall. When a measuring glass is used, care should be taken to hold it quite perpendicular. The Rain Gauge ought to be read daily at 9 A.M., and the reading entered in the Returns of the previous day. If the Gauge is read once a month, the reading is to be made on the first of the month, and the amount entered for the previous month. Snow-falls may, for convenience, be registered in the rain columns, under the following conditions:—When a Snow-shedder shower occurs, it should be noted in the 'Remarks,' and the letter S affixed to the depth of water received in Gauge. The depth of the snow must be measured in some open place where no drift is observed, and registered in addition to, and as a check upon, the indications of the Rain-Gauge. For wind, rain, and snow, as indicated in every column, the Observer cannot be too careful to register observations only; and nothing that betakes of the nature of deduction or inference.

Convenient abbreviations for the nonattendance of Clouds will be found on the other side. The amount of Cloud ought to be estimated from the greater or less observation of 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 unable 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, 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, 9, S. W. will indicate that the upper strata of Clouds travel with an extreme velocity from S.W., and those in the lower regions from W., with one-third the speed of the former. Again, in the second Cloud column, an entry of 2, east, will indicate that the higher regions are covered to the amount of 4-tenths with stratus Clouds; and that the sky is further obscured to the extent of 2-tenths by lower Clouds of the cirrus and stratus kind.

Remarks on the Clouds, accompanied with drawings, will assist materially in the development of a more exact nomenclature of Clouds, as all as shown light on the elevated, and other of the non-obscure phenomena of Meteorology, 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, its amount and constancy—the Council recommend that the Self-Registering Thermometers, 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, its amount and constancy—the Council recommend that the Self-Registering Thermometers, which objects in the sun's rays cast shadows, should be entered in the proper column.

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No instrument ought to be used for Meteorological purposes till it has been carefully tested by comparison with a Standard Thermometer. When such Thermometers are attached 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 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 vernier of Barometers in reference to their scales, and the perfect freedom of the Barometer from air; the correct num-

bering of the scale of every instrument; the rejection of Thermometers, the frameworks of which are not likely to stand exposure to the weather, as shown in the past by repeated and annoying breakages of Thermometers of similar construction; and as regards Maximum Thermometers, either Negretti and Zamboni's, or Phillips's, whether they will act at the highest temperatures they may be required to register. By the laws of the Society, Members and Observers have a right to have their instruments compared by the Secretary, and to advise with him regarding the purchase of instruments.

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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 insisted 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 Walls ought, when practicable, to be taken, both the depth of the Water, and of the water being noted.

Mention what Test-Papers are used, Schönbein's or Mofitt's, etc. The Paper is affixed by a pin to a board in the Thermometer Box, and the indications registered at 9 A.M. and 9 P.M. It is desired that these indications be registered in connection with the force and direction of the wind at the time of observation, in the following manner:—thus 3 1/2, as an Ozon entry in the schedule will indicate that the Ozon paper is tinted as 3 on the scale, that the wind is from the N.W., and that its force is 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, biometrical, 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 hints assigned. The use of continuations, ought, therefore, to be taken every advantage of, and a list of such as are in general use are given at the foot of the column. Besides special and extraordinary Observations, great prominence ought to be given in this column to Prevalent Diseases, differences in character, colour, velocity, and direction between the Lower and Upper Strata of Clouds, the Colour of the Sky, etc. Remarks ought to be made on the occurrence of Meteors, Aurora Borealis, remarkable depressions, elevations, and fluctuations of the Barometer, Thunder-Storms, and remarkable falls of Snow, Hail, or Rain, the Hour of Storms of Wind commencing, attaining their maximum, and ending as well as such notes on Storms as have been limited 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 9 P.M. should be registered under in two columns, otherwise uncoupled, or ruled off for the purpose, from the column of 'Remarks' Observations in connection with the Periodic Return of the Seasons.

Observations in Seasons, possess not only great scientific value, but connection with the Agriculture, Horticulture, and Natural History. The Periodic Return of the Seasons should attract the special attention of Observers. Published Summaries are fairly supplied with the whole of Scotland. Observations ought to be confined to individual trees and strictly to particular species of birds, and in the case of crops, to special sorts reared from year to year on a selected piece of ground or farm. The Annual Table, published yearly in the Society's Journal, will indicate the species of plants and animals to which special attention is more particularly directed.

The Council recommend Observers, before purchasing new instruments, and in repairing old ones, to communicate with the Meteorological Secretary, in order that every instrument may be examined and improved before being used; and they consider it necessary that he should have full power to reject any instrument which, on being presented for comparison, does not afford him satisfaction. (By Order) A. B. ENSCHUTEN, December 1884.

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

Alder,	Ash,	Beech,	Birch,	Blm,	Larch,	Lime,	Oak,	Sycamore or Plane,
Flower,								
In								
Leaf Buds								
First appear.								
In Leaf.								
Divested of								
Leaves.								
Barley,	Berne or Bigg,	Oats,	Wheat,	Beans,	Pears,	Potatoes,	Rye Grass,	
Planting or sowing or more ground.								
Appearing or more ground.								
In Ear								
First Cut								

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Robert Gordon's College, Aberdeen, in Lat. 57° 6' N, Long. 2° 9' W, Distance from Sea 1 miles.
Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2 1/2 feet. During the MONTH of July 1886.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				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.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		9 A.M.		P.M.		9 h. A.M.								
		Barometer. * No.	Attached Thermometer	Barometer. No.	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.	Velocity (0—10), and Direction.	Amount (0—10), and Species.	Velocity (0—10), and Direction.	Amount (0—10), and Species.	No. 3 inches.	No. 12 inches.	No. 22 inches.						
		inches.	°	inches.	°	°	°	°	°	°	°	°	°											°	°	°						
		1	30.158	63.0	30.164	60.2			71.1	50.9	64.8	59.3	56.1	54.0	—	S.W.	1/2	S.W.	1/2	5	ci-cl	3	cu	12								
2	30.160	68.0	30.260	60.5			79.0	52.3	77.1	44.2	56.1	54.9	.05	S.W.	1	N.E.	1/2	9	cu	10	ci-cl	10								2		
3	30.244	57.0	30.268	59.0			58.3	51.1	55.2	54.9	54.0	52.6	.01	N.E.	1	N.E.	1	6	ci-cl	2	ci-cl	12									3	
4	30.120	60.2	30.148	62.0			78.0	51.9	66.3	60.2	64.8	55.1	—	S	1/2	N	1 1/2	10	cu	10	st	—									4	
5	30.120	63.1	29.942	62.8			73.1	52.0	66.0	58.0	64.0	53.5	.03	S	1/2	S.E.	1/2	6	ci-cl	2	ci-cl	15									5	
6	29.856	60.0	29.874	61.5			66.1	56.0	58.4	52.2	57.2	51.6	—	N.E.	1	N.W.	1	5	ci-cl	5	ci-cl	6									6	
7	29.784	59.8	29.706	59.7			67.0	48.2	60.8	53.5	56.1	50.0	—	S.W.	1	S.W.	1/2	8	cu	2	cu	10									7	
8	29.764	59.4	29.916	58.0			62.0	47.3	58.5	53.1	49.4	44.1	.01	S.W.	1	N.E.	2	9	ci-cl	8	ci-cl	7									8	
9	29.984	56.2	29.986	58.4			62.4	42.4	56.2	51.0	52.4	47.1	.01	N.W.	2	N.W.	1	8	ci-cl	7	ci-cl	9									9	
10	30.076	57.0	30.006	58.2			61.1	44.0	58.0	53.3	54.0	52.5	.03	N.E.	1	S.W.	1/2	5	ci-cl	6	ci-cl	14									10	
11	29.780	58.5	29.690	60.8			70.8	49.1	58.6	56.9	63.3	62.7	.15	S.W.	1/2	—	—	3	ci-cl	9	ci-cl	7									11	
12	29.720	63.2	29.702	60.4			69.0	49.0	67.1	56.2			.09	W	1/2	N.W.	1/2	10	ci-cl	8	st	8									12	
13	29.678	57.4	29.500	59.4			66.0	51.0					.04	S.W.	1/2	S.W.	1	5	cu	7	ci-cl	12									13	
14	29.106	57.4	29.268	56.1			57.0	47.0					.45	N.W.	1	N.W.	2	9	cu	—	—	3									14	
15	29.394	57.0	29.484	58.1			63.0	47.0					—	N.W.	1 1/2	N.W.	1	10	cu	7	ci-cl	5									15	
16	29.580	57.0	29.732	57.8			65.0	43.0					.01	N.W.	1/2	N.W.	1/2	8	cu	9	cu	7									16	
17	29.868	60.1	29.876	58.5			65.0	45.0					.00	S.W.	2	S.E.	1/2	7	ci-cl	4	ci-cl	5									17	
18	29.770	57.5	29.690	59.4			62.0	47.0					.04	S.W.	1/2	S.W.	1/2	5	ci-cl	—	—	15									18	
19	29.576	59.8	29.664	62.3			70.0	52.0					.08	S	1/2	S.W.	1	8	ci-cl	10	ci-cl	10									19	
20	29.790	62.8	29.908	62.5			72.0	53.0					—	S.W.	1/2	S.W.	1/2	9	ci-cl	5	ci-cl	14									20	
21	29.912	61.5	29.736	60.6			65.0	54.0					—	S	1	S	1/2	5	ci-cl	10	cu	13									21	
22	29.560	63.1	29.440	59.4			64.0	43.0					.29	S.W.	1	S.W.	1	4	ci-cl	9	ci-cl	10									Thunder heard at 1.30 A.M.	22
23	29.488	60.2	29.476	60.4			65.0	45.0					.02	—	—	S.W.	1/2	—	—	7	ci-cl	8									23	
24	29.468	56.8	29.496	57.8			57.0	53.0					.57	S.	1	S.E.	1/2	10	ci-cl	10	ci-cl	—										24
25	29.566	57.0	29.606	58.8			56.0	50.0					.06	E	1	E	1/2	10	st	10	st	—										25
26	29.550	57.6	29.588	56.8			56.0	45.0					.21	N.E.	1	N.E.	1	9	ci-cl	10	ci-cl	—										26
27	29.696	53.8	29.860	56.3			54.0	46.0					.03	N	1/2	N	1/2	10	st	5	ci-cl	5										27
28	29.936	57.1	29.952	58.1			61.0	48.0					—	N	1	N	1	6	ci-cl	8	ci-cl	6										28
29	29.972	58.4	29.814	56.4			58.0	49.0					—	S	1/2	S.E.	1	9	ci-cl	10	st	—										29
30	29.662	54.5	29.634	54.0			54.0	46.0					.36	N.E.	1	N.E.	1/2	10	ci-cl	10	st	—										30
31	29.600	57.0	29.566	56.5			61.0	46.0					.03	N.W.	1	N.W.	1	8	ci-cl	2	ci-cl	7										31
Sums.		17810 23908	179 134	18513 23952	1712 125		132 125	143 26					256			265		245														
Means.		29.771	59.1	29.773	59.1		64.2	48.5																								
† Total Corrections for Instrumental Errors.																																
† Corrections for Diurnal Range.																																
"Corrected Means."																																
No. 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.	" 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.		
h.-fr.	" hoar-frost.	sn.	" snow.		
h.	" haze.	so.ha.	" solar halo.		
h. d.	" heavy dew.	sq.	" squall.		
hl.	" hail.	sqs.	" 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

NOTATION USED IN GENERAL REMARKS.

a.	aurora.	m.	denotes meteor.
cl.	cirrus.	ms.	denotes meteor.
ci-cu.	cirro-cumulus.	n.	nimbus.
ci-s.	cirro-stratus.	r.	rain.
cu.	cumulus.	h.r.	heavy rain.
cu-s.	cumulo-stratus.	c.h.r.	continued heavy rain.
d.	dew.	s.	stratus.
f.	fog.	sc.	scud.
fr.	frost.	s.	sleet.
h-fr.	hoar-frost.	s.	snow.
h.	haze.	so.ha.	solar halo.
h.d.	heavy dew.	sq.	squall.
hl.	hall.	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†† =
for Temp. (Col. 2), =
Corrected Mean" of Barometer at 9 P.M., minus the Correction†† =
for Temp. (Col. 4), =
Mean at Station, corrected, and at 32°, =
Correction for height, feet above Mean Sea-level, =
Mean, reduced to 32°, and Sea-level, =
Highest Reading, corrected for Index error, on the 3 th, = 30.268
Lowest Do. Do., on the 14 th, = 29.106
Difference, or Monthly Range, = 1.162

* 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.
†† 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.

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 2 th, = 79.6
Lowest in Month, corrected for Index errors, on the 9 th, = 42.4
Difference, or Monthly Range, = 37.2
"Corrected Mean" of all the Highest, (Col. 5), = 64.2
"Corrected Mean" of all the Lowest, (Col. 6), = 48.5
Difference, or Mean Daily Range, = 15.7
** Calculated Mean Temperature of Month, = 56.4

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), =

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 Days; Amount in Inches, =

WIND.		SUMMARY.					
Direction.		N	NE	E	SE	S	SW
A.M.		2	5	1		6	10
P.M.		3	5	1	4	1	9
Mean.		3	5	1	2	3	9

Observations made and
Return verified by

Wm. C. Dale, Med. Ct. Aberdeen

(Signed)

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Aberdeen County of Aberdeen, in Lat. 57° 9' N, Long. 2° 6' W, Distance from Sea 1 miles.
Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2½ feet. During the MONTH of August 1886.
The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER. No. —				WIND.				RAIN.		CLOUDS.				THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		9 A.M.		P.M.		9 h. A.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		Barometer.	Attach- ed Ther- mometer	Barometer.	Attach- ed Ther- mometer	Max. No.	Min. No.	Max. in Sun-rays	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	No. of hours in which it fell.	Amount in inches.	Velocity (0-10) and Direction.	Amount (0-10), and Species.	Velocity (0-10) and Direction.	Amount (0-10), and Species.	No. 8 inches.	No. 12 inches.	No. 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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BAROMETER, "corrected Mean" at 9 A.M., minus the Correction†† for Temp. (Col. 2), = 29.763
Corrected Mean" of Barometer at 9 P.M., minus the Correction†† for Temp. (Col. 4), = 29.770
Mean at Station, corrected, and at 32°, = 29.766
Correction for height, feet above Mean Sea-level, = .074
Mean, reduced to 32°, and Sea-level, = 29.840
Highest Reading, corrected for Index error, on the th, = 30.216
Lowest Do. Do., on the th, = 29.468
Difference, or Monthly Range, = 0.748

* 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.
† Enhancing corrections for both capillary and Index Errors.
†† The Diurnal Range for Scotland is as yet unknown.
‡ These "Hygrometrical Deductions" are calculated from Glashier's Hygrometrical Tables, Second Edition only.
‡‡ Practically, though not absolutely a mean correction.
‡‡‡ 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.

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 74.7
Lowest in Month, corrected for Index errors, on the th, = 37.8
Difference, or Monthly Range, = 36.9
"Corrected Mean" of all the Highest, (Col. 5), = 64.3
"Corrected Mean" of all the Lowest, (Col. 6), = 48.9
Difference, or Mean Daily Range, = 15.4
** Calculated Mean Temperature of Month, = 56.6
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), =

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 /2 Days; Amount in Inches, = 1.04

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Variable.	Mean Force.
A.M.	3					6	9	4	9		0.89
P.M.	2					3	10	6	5		0.66
Mean.	3	0	0	1	2	8	8	4	7	0	0.78

Observations made and
Return verified by

James Dale

(Signed)

H.R.
H.R.

TAKING METEOROLOGICAL

The Council of the Society resumed the Self-Registering Thermometers, and the Dry and Wet Bulb Hygrometer, he kept in Stevenson's Louvre-mounted Box for Thermometers, painted white inside and outside, and secured to four stout posts, also painted white, firmly attached 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 Minimum Thermometer being hung immediately above the Minimum Thermometer Box to be placed over a plot of grass, and in a free open space to which the sun's rays have free access, and as much of the day as surrounding conditions enable 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 UNIFORMITY 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 incompatible, thus rendering it impossible to compare the Climates of places with each other as they are their most important features.

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

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

The Barometer should be sundried in a good light as may be secured, and to facilitate the reading, a piece of white paper can be put behind the tube. It must be hung truly perpendicular, and pushed to neither the east nor west point of the horizon; it must not be hung against wall heated by the sun, or above a fire, so as to secure that the whole instrument, being free from heat, shall be at uniform temperature. The thermometer should be taken out of its case, and exposed to the air, till it has become equalized to the ambient temperature, it is evident that the best position for which it is least liable to sudden changes of temperature.

In taking an Observation, the Attached Thermometer is first noted: the tube must then be gently tapped, and the column adjusted carefully made. The eye of the barometre 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. By those who are unacquainted with the use of the Venier, it may be made by touching the level of the clear surface, consisting in setting the edge of the venier to the level of the clear surface of the mercury which is in direct contact with the glass tube, must be regitly avoided.

As Barometres 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 to know how the air may be expelled. First close up the cistern, by screwing the top tight so as to prevent the escape of mercury; then screw up the pump till it is about half an inch from the top of the tube, and having slowly inverted the instrument, place the top of it on a yielding substance, such as the book, 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—pressing on the mercury in the Barometre, and the air outside—pressing on any air that may be in the tube, it is usually a tedious operation to get it wholly expelled. After repeated trials, however, it is generally accomplished by 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 Barometre, care must be taken to screw down the mercury in the tube before unscrewing the top of the cistern, for, if this be not attended to, the mercury will flow out, and the instrument be seriously damaged.

Position of Thermometers.—The thermometers are served to four stout posts, inside and outside, and painted white, also painted white, firmly attached to the ground. The posts must be of such a length that when the Bulbs of the Minimum Thermometer, and of the Day and Wet Bulb Thermometers will be exactly at the same height of four feet above the ground, the Minimum 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; and as much of the day as surrounding conditions enable 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 UNIFORMITY OF HEIGHT ABOVE GROUND, AND METHOD IN PROTECTING THE THERMOMETERS, as vital in the system of Meteorological Observation, since without it Observations made at different Stations are incompatible, thus rendering it impossible to compare the Climates of places with each other as they are, and to make any reliable generalization as to the Climates and their most important features.

Fortunately, Spirit Thermometers may be easily set right by any one, when the column of spirit clamors to separate. Let the thermometer be taken in the hand by the end furthest from the bulb, and the bulb itself being held in the palm of the other hand, swing down towards the object being on the principle of centrifugal force, to send down the detached portion of spirit till it unites with the column. When the column is again in its proper position, a few slow 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 thin down to the column. But another method must be adopted, if the portion of spirit in the top of the tube be small. The thermometer should be applied slowly and cautiously to the top end of the vessel, and the bulb being held in the palm of the other hand, be where the detached portion of spirit is, which, being turned round, will be drawn down to the bulb, and the column will be vapour 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 red-hot metal will serve instead.

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 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; the frame must be such as will bring the tubes forward by an inch from any bowl on which it may be suspended; the vapour must be covered, and altogether placed to the side, and a little below the level of the wet bulb, but in no case under the bulbs; the muslin must be of medium fineness, and fastened at the neck of the wet bulb by the cotton, which also supplies it with water. It must be held in place by the Observer that the muslin is always clean and moist, and that the water pure. In frosty weather, observation is a matter of much delicacy, and must be made with great care. The bulb must be immersed by immersion from 15 to 30 minutes before the hour of observation. Even the film of ice thus formed evaporation will proceed as from the moist cloth in ordinary circumstances.

The Hygrometer is read at 9 a.m. and 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 when the Self-Registering Thermometers are read, since, in winter at least, the extremes may occur at any hour; and it is necessary to register their occurrence to their proper meteorological day. In the officer's schedules, the indications registered on the 3d are those of a series of phenomena commencing at 9 p.m. of the 2d, and extending till 9 p.m. of the 3d.

No instrument ought to be used for Meteorological purposes till it has been carefully 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 ought never afterwards to be trusted without being re-tested. The Self-Registering, especially the Minimum Thermometers, ought frequently to be compared with the true 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 vernier of Barometers in reference to their scales, and the perfect freedom of the Barometer from air; the correct numbering of the scales of the Hygrometer; the freedom of the

As regards direction, the Wind-Vane ought to be elevated at least 12 feet above surrounding objects. When it oscillates unnecessarily, the mean direction should be taken. In all cases, but especially when the Vane is stationary, and when the direction may be made to the direction of smoke, etc., it is feasible, reference may be made to the direction of the smoke, etc., as a check on the Vane observations. Careful observations are recommended.

The Council would recommend the *Hemispherical Cup Anemometer*,—a self-registering instrument which shows the amount of Wind that passes it per day; from which also the mean Velocity of the Wind at the time of observation may be ascertained. For indicating the Force of the Wind at any particular hour of observation, the *Pressure Anemometer* recently brought under the notice of the Society by Mr. T. Stevenson the Honorary Secretary, and Mr. R. Ballingall, the Engineer at Ellalubus, are recommended as likely to secure a continuity in making observations on the Force of the wind.

ings, bindings or other obstructions, are raised as nearly level from the base as they are in height. The more important directions, in which it is most desirable to have a free exposure, are in the order of their importance, S., N.E., S.E., S., and W. The order of the Ganges must be perfectly level and fixed so that it will remain in that level in all weathers, and be of its height of one foot above the level of the sea, and over grass. In such cases as Feniing's, which are furnished with a measuring rod attached to a float, the rod ought to be fixed to the float, and the float raised as high only at the time the instrument is used, as it is necessary to prevent the float from projecting above the surface of the water, and thus disturbing the surface. The principle of the instrument is, being found that the water is raised above the surface of the

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 (i.e., within 30° or 30° of the zenith). The strata of Clouds that appear near the horizon are viewed obliquely; and *s*, being unable to judge of their amount, we ought not to take them into account in the Cloud's column, though their appearance in *m* changes may be noted among the Remarks. The amount of *s* is entered from a scale of 0 to 10; thus, when the sky overcast is free from Clouds it is entered 0, when half covered by Clouds,

W. , and those in the lower regions from S.W., with one-third the speed of the former. Again, in the second and column, an entry of $\frac{2. \text{ cm-st}}{4, \text{ st}}$ will indicate that the higher

As the germination and growth of crops and plants generally, depend greatly on the temperature of the soil,—this is the point on which the Council recommend that the most important and constant attention should be bestowed, and on which the observations in this interesting department be made.

Observations in this department by the use of 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 plates, to prevent rain water being conveyed to the bulbs by the stems, or to wooden frames.

A knowledge of the Temperature of the Sea is not only in itself important, but in its relations to that of our island, a most important one. The Council therefore has been anxious to procure a more accurate and complete account of the Temperature of the Sea bearing on the subject of Meteorology. The Council therefore recom-
mended that a properly constructed apparatus, from boats, or from the shore, be sent to the various parts of the coast, and that the Temperature of the Sea be ascertained at the same time, and at the same place, and that the results be reported to the Council. The Council has accordingly resolved that a properly constructed apparatus, from boats, or from the shore, be sent to the various parts of the coast, and that the Temperature of the Sea be ascertained at the same time, and at the same place, and that the results be reported to the Council.

1.66 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 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

storms, etc. Remarks ought to be made on the occurrence of Meteoric showers, comets, aurora borealis, remarkable depressions, and fluctuations in the barometre, Thunder-Storms, and remarkable fells of Snow, Hail, Rain, the Hoar of Sturges of Wind, concurring, attaining their maximum, and ending, as well as such notes on Storms as have been taken at above. When lofty fells 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 P.M. should be registered either in two columns, otherwise uncoded, or ruled off for separate purposes, from the column of remarks.

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.

EDINBURGH, December 1882.

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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	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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OBSERVATIONS.	
Alder,	1
Aspen,	1
Beech,	1
Birch,	1
Elm,	1
Larch,	1
Limbe,	1
Oak,	1
Sycamore or Plane,	1

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Abdn. County of Aberdeen, in Lat. 57.9 N, Long. 2.6 W, Distance from Sea 1 miles.

Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2 1/2 feet.

During the MONTH of September 1886.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				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.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer. No. _____	9 A.M.		P.M.		9 h. A.M.							
		Barometer. * No. _____	Attached Thermometer.	Barometer. No. _____	Attached Thermometer.	Max. No. _____	Min. No. _____	Max. in Sun rays.	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.			Direction.	Force.	Direction.	Force.		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.
1		29.444	61.0	30.032	61.4	70.4	51.0																									1
2		30.094	58.8	30.194	60.0	63.4	47.2																									2
3		30.232	62.0	30.198	60.0	64.9	37.1																									3
4		30.178	61.0	30.074	59.2	67.2	40.1																									4
5		29.940	60.0	29.774	59.8	61.5	48.0																									5
6		29.676	58.5	29.624	59.5	63.1	51.2																									6
7		29.702	59.0	29.724	58.0	61.3	48.8																									7
8		29.442	59.0	29.506	58.2	62.7	52.0																									8
9		29.572	55.0	29.376	58.5	59.5	42.7																									9
10		29.460	55.0	29.608	56.0	63.1	48.2																									10
11		29.572	57.0	29.476	59.0	59.2	46.8																									11
12		29.680	60.0	29.896	58.4	68.5	50.2																									12
13		29.999	55.0	29.932	57.0	54.7	45.8																									13
14		30.008	54.0	30.332	56.0	61.2	47.8																									14
15		30.564	54.0	30.604	54.8	53.2	41.0																									15
16		30.528	51.0	30.442	54.0	59.7	35.0																									16
17		30.380	55.0	30.334	54.0	58.1	32.6																									17
18		30.308	54.2	30.242	55.0	58.4	37.2																									18
19		30.194	54.0	30.092	55.3	55.2	37.0																									19
20		30.060	54.0	29.956	53.0	54.3	45.0																									20
21		29.936	52.5	29.924	53.0	53.2	47.3																									21
22		29.986	52.0	30.056	52.0	57.3	42.7																									22
23		30.066	51.0	30.094	52.0	53.2	41.8																									23
24		30.080	52.0	30.040	53.1	51.7	44.6																									24
25		29.960	54.0	29.878	54.2	57.3	40.0																									25
26		29.860	54.6	29.832	55.0	62.8	44.6																									26
27		29.328	55.0	29.350	52.0	58.7	46.2																									27
28		29.530	54.0	29.680	53.0	59.2	44.8																									28
29		29.666	54.0	29.844	55.0	52.3	44.1																									

NOTATION USED IN GENERAL REMARKS.

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

TABLE FOR ESTIMATING FORCE OF WIND.

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

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction†† = 29.858
for Temp. (Col. 2), = 29.929 — 0.071
Corrected Mean" of Barometer at 9 P.M., minus the Correction†† = 29.849
for Temp. (Col. 4), = 29.929 — 0.072
Mean at Station, corrected, and at 32°, = 29.854
Correction for height, feet above Mean Sea-level, = 0.074
Mean, reduced to 32°, and Sea-level, = 29.928
Highest Reading, corrected for Index error, on the 15 th, = 30.604
Lowest Do. Do., on the 1 th, = 29.328
Difference, or Monthly Range, = 1.276

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 15 th, = 70.4
Lowest in Month, corrected for Index errors, on the 1 th, = 32.6
Difference, or Monthly Range, = 37.8
"Corrected Mean" of all the Highest, (Col. 5), = 59.8
"Corrected Mean" of all the Lowest, (Col. 6), = 44.3
Difference, or Mean Daily Range, = 15.5
** Calculated Mean Temperature of Month, = 52.0
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 15 th, = 70.4
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 70.4
Lowest at Night, Black Bulb, (corrected for Index errors), on the 1 th, = 32.6
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 32.6
Difference of above Means or Range ("exposed"), = 37.8

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 54.9
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 55.4
† Computed Temperature of Dew-Point, = 54.9
† Do. Elastic Force of Vapour, = 0.74
† Do. Weight of Vapour in a Cubic Foot of Air, = 0.74
† Relative Humidity, (Saturation = 100), = 74.9
RAIN fell on 13 Days; Amount in Inches, = 1.97

WIND.	SUMMARY.									
	Direction.	N	NE	E	SE	S	SW	W	NW	Mean Force.
A.M.		3	2	2		10	7	4	1	0.92
P.M.		1	4	1		6	9	7	2	0.80
Mean.		2	3	2		8	8	5	2	0.86

Observations made and Return verified by James Dale, Teacher, Gordon's College, Aberdeen

(Signed)

Greatest daily Range = 27.8 on the 15 th

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Abertree, County of Aberdeen, in Lat. 57°9'N, Long. 2°6'W, Distance from Sea 1 miles.Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2½ feet.During the MONTH of October 1886

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				CLOUDS.				SUNSHINE.	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.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		Readings of the Cup Anemometer. No. —	9 A.M.		P.M.		9 h. A.M.					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.	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.		Velocity (0—6), and Direction.	Amount, (0—10), and Species.	Velocity (0—6), and Direction.		Amount, (0—10), and Species.	No. 8 inches.	No. 12 inches.			No. 22 inches.	Temperature of Well at depth of 18 in. at No. —			Temperature at station, and 5 feet.	9 A.M. 9 P.M.
inches.	°	inches.	°	°	°	°	°	°	°	°	°	°																							
	1	29.530	57.6	29.474	56.2	59.6	53.2							11	S	1	S	1			5	ci	10	Nim	6						1				
	2	29.636	57.4	29.902	58.0	67.3	46.1								W	1	W	1			—	—	—	—	11						2				
	3	30.090	56.4	30.076	56.0	57.4	46.8								W	1	W	1			10	st	6	cu-st	5						3				
	4	30.138	55.6	30.092	56.4	55.3	50.8								S	1	S	1			10	st	10	st	—						4				
	5	30.020	56.2	29.884	56.2	55.0	51.4								S.E.	½	S.E.	1			10	st	10	st	—						5				
	6	29.822	56.0	29.774	56.0	56.2	52.0								S.E.	1	S.E.	—			10	st	10	st	—						6				
	7	29.716	56.0	29.890	57.0	59.5	52.8								S.E.	½	S	1			10	st	5	st	4						7				
	8	29.920	55.4	29.924	56.0	56.3	51.8								S	½	S	1			10	st	10	st	2						8				
	9	29.752	53.0	29.402	56.0	52.1	48.8								S	1	S	2			10	st	10	st	—						9				
	10	29.348	56.0	29.456	55.2	58.1	46.2								S.W.	1	W	1			3	cu	5	ci-cu	10						10				
	11	29.584	57.0	29.360	54.0	58.2	36.7								W.	1	W	2			—	—	10	Nim	8						11				
	12	29.098	56.5	28.996	52.5	56.2	39.7								S.W.	2½	S.W.	2			10	cu-st	5	ci-cu	—						12				
	13	29.064	51.0	29.202	53.5	55.8	39.2								W	½	N.W.	1			5	ci	2	ci	6						13				
	14	29.346	50.0	29.458	49.2	59.3	37.1								N.W.	½	N.W.	½			—	—	5	ci	10						14				
	15	29.220	53.0	28.958	54.0	53.2	34.1								S.E.	½	S.E.	2½			10	cu-st	10	cu-st	—						15				
	16	29.136	54.0	29.148	55.0	54.3	49.5								E	½	E	—			10	cu-st	10	st	—						16				
	17	29.334	54.0	29.594	54.5	53.0	50.0								E	2	N.E.	1			10	cu-st	10	st	—						17				
	18	29.724	52.4	29.908	54.0	52.4	47.1								N	½	—	—			10	st	10	st	—						18				
	19	29.958	53.0	29.816	52.4	50.1	47.0								N	1	N.E.	1			10	st	10	Nim	—						19				
	20	29.740	52.0	29.758	54.0	53.2	46.8								E	1	E	1			10	cu-st	10	cu-st	½						20				
	21	29.840	53.0	29.872	52.3	52.1	48.2								S.E.	1	S.E.	1			10	st	10	st	—						21				
	22	29.876	49.0	30.010	48.0	53.5	41.2								S	1	S	1			1	ci-st	—	—	9						22				
	23	30.232	57.0	30.234	52.5	57.6	36.8								W	1	W	½			10	cu	10	st	—						23				
	24	30.504	48.0	30.572	51.0	51.7	41.6								S.E.	1	S.E.	1			7	ci-st	4	ci	4						24				
	25	30.532	51.4	30.452	57.0	50.4	45.7								S	1	S	½			10	st	—	—	4						25				
	26	30.414	50.5	30.336	57.0	50.3	38.5								S	½	S	1½			6	ci	8	st	2						26				
	27	30.196	52.0	30.106	53.4	49.8	38.2								S.E.	1	S.E.	1			10	st	10	st	—						27				
	28	30.120	52.0	30.164	51.5	52.5	46.8								S.E.	½	S.E.	1			10	st	10	st	—						28				
	29	30.040	53.0	30.152	54.0	54.6	47.8								S	1	S	1			10	st	10	cu-st	1						29				
	30	30.198	53.5	30.148	55.0	54.3	48.2								W	1	W	1			10	cu-st	10	st	—						30				
	31	29.874	52.0	29.848	53.2	56.4	49.1								S	1	S	1			10	st	—	—	6						31				
Sums.		13.16.11	12.4	15.15.13	13.5	14.10	17.13							5			5		2			24.7	230	88½											
Means.		29.804	53.4	29.805	53.8	54.7	45.5										1.05		1.02			8.0	7.4	88½ day											
+ Total Corrections for Instrumental Errors.		+666	-7	+666	-7	-3											06		06			77													
+ Corrections for Diurnal Range.																																			
"Corrected Means."			52.7		53.1	54.8																													
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-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.	" squall.		
fr.	" frost.	s.	" sleet.		
h. fr.	" hoar-frost.	s.	" snow.		
h.	" haze.	so. h.	" solar halo.		
h. d.	" heavy dew.	sq.	" squall.		
hl.	" hail.	sq.	" squall.		
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 for Temp. (Col. 2), = 29.745
Corrected Mean of Barometer at 9 P.M., minus the Correction for Temp. (Col. 4), = 29.745
Mean at Station, corrected, and at 32°, = 29.745
Correction for height, feet above Mean Sea-level, = 0.74
Mean, reduced to 32°, and Sea-level, = 29.819
Highest Reading, corrected for Index error, on the th, = 30.572
Lowest Do. Do., on the th, = 28.758
Difference, or Monthly Range, = 1.614

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 62.0
Lowest in Month, corrected for Index errors, on the th, = 34.1
Difference, or Monthly Range, = 27.9
"Corrected Mean" of all the Highest, (Col. 5), = 54.4
"Corrected Mean" of all the Lowest, (Col. 6), = 45.5
Difference, or Mean Daily Range, = 8.9
** 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), =
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 21 Days; Amount in Inches, = 2.59
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 32 8 9 2 6 1 1.05
P.M. 2 27 10 16 2 1 1.02
Mean. 1 1 2 8 9 2 6 1 1.04 = 1.08

Observations made and Return verified by James Dale, Teacher in Gordon's College

(Signed)

Greatest daily Range = 21.9 on the 14th



SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Gordon's College, Abdu, County of Aberdeen, in Lat. 57° 9' N, Long. 2° 6' W, Distance from Sea 1 miles.

Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2 1/2 feet.

During the MONTH of November 188 6.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.				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.		Dry No. — Wet No. —		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		9 A.M.		P.M.			9 h. A.M.									
		Barometer.	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.	No. of hours in which it fell.	Amount in inches.	Direction.	Force.	Direction.	Force.	Readings of the H. Cup Anemometer. No. —	Velocity (0—10), and Direction.	Amount (0—10), and Species.	Velocity (0—10), and Direction.		Amount (0—10), and Species.	No. — 3 inches.	No. — 12 inches.					No. — 22 inches.		
		* No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —	No. —		No. —	No. —	No. —					No. —	No. —	No. —
		inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°		°	°	°					°	°	°
	1	29.690	52.0	29.748	53.0	52.3	44.8														Am spec	Am. spec	Am. spec	Am. spec						1				
	2	29.846	51.0	29.880	52.0	53.4	47.2			.01	S.W.	1	S.W.	1							—	—	2	st	8					2				
	3	29.870	53.0	29.874	47.0	51.2	41.7			.36	S.W.	2 1/2	S.W.	1							10	st	—	—	—					3				
	4	29.440	48.0	29.430	46.0	47.1	35.8			—	W	1	W	1							4	ci-14	5	ci-14	6					4				
	5	29.402	45.0	29.298	51.0	49.8	32.7			.04	W	1	N	1 1/2							5	ci-14	8	ci-14	6					5				
	6	29.172	48.0	29.224	49.0	45.8	33.2			.36	N.E.	2	N.E.	2							10	st	10	ci-14	—					6				
	7	29.424	47.0	29.570	48.0	43.2	37.6			.01	N.W.	1 1/2	N.W.	1							2	st	10	st	6					7				
	8	29.440	46.4	29.336	51.0	47.2	33.8			.01	S.W.	1	S.W.	1 1/2							10	ci-14	9	ci	—					8				
	9	29.456	50.5	29.624	48.0	49.3	36.8			.20	S.W.	1	N.W.	1							10	st	8	ci	—					9				
	10	29.592	47.0	29.688	49.2	48.4	41.7			.08	N	1 1/2	N	1							10	st	10	ci	1					10				
	11	29.760	47.0	29.450	46.1	48.6	29.9			.03	N	1	N.W.	1 1/2							8	ci	10	st	3					11				
	12	29.442	48.0	29.402	47.2	46.2	38.2			.01	N	1	N	1 1/2							8	ci-14	6	ci-14	2					12				
	13	29.262	47.0	29.258	48.0	43.2	37.8			.08	N.W.	1 1/2	N.W.	1							8	ci-14	10	ci	—					13				
	14	29.360	46.5	29.370	48.0	40.7	38.5			.11	S.W.	1	S.W.	1							5	ci-14	10	ci	4					14				
	15	29.280	44.0	29.104	52.0	50.3	38.2			.22	S	1	S.W.	2							10	st	3	ci	—					15				
	16	29.308	48.0	29.280	49.5	44.4	39.8			—	N.W.	1	S.W.	1							10	st	10	st	6					16				
	17	29.248	46.4	29.352	46.0	41.4	35.2			.11	W	1	S.W.	1 1/2							1	st	10	st	4					17				
	18	29.754	46.5	29.968	43.0	46.3	35.1			.29	N	2	N	1							5	ci-14	6	ci-14	4					18				
	19	29.922	50.0	29.924	54.0	49.1	32.2			.03	N.W.	1	S.W.	2							10	st	10	st	—					19				
	20	29.952	52.4	30.064	51.6	53.3	42.0			.10	S.W.	1 1/2	W	2							10	ci-14	10	Nine	—					20				
	21	30.334	47.6	30.368	48.4	45.2	34.8			—	W	1	—	—							1	st	—	—	3					21				
	22	30.296	46.0	30.240	45.0	45.5	33.6			—	S.W.	1	S.W.	1							5	ci-14	—	—	5					22				
	23	30.390	43.0	30.490	47.1	46.4	32.7			.01	S.W.	1 1/2	S	1 1/2							2	st	1	st	4					23				
	24	30.548	48.0	30.536	47.4	52.4	32.5			—	S.W.	1	S	1 1/2							5	ci-14	2	st	5					24				
	25	30.564	49.0	30.490	49.8	53.3	34.8			—	N.W.	1	N.W.	1 1/2							6	st	—	—	4					25				
	26	30.458	57.8	30.408	49.0	49.8	39.7			—	W	1 1/2	N.W.	1							10	st	10	st	st					26				
	27	30.358	47.2	30.160	46.5	46.4	41.2			.07	W	1 1/2	W	1 1/2							9	ci-14	2	st	1					27				
	28	29.974	49.0	29.570	49.8	47.8	34.2			.02	W	1 1/2	W	2 1/2							4	ci	5	ci-14	3					28				
	29	29.212	49.5	29.170	46.2	46.3	40.8			—	W	1 1/2	W	1 1/2							2	st	—	—	14					29				
	30	29.334	45.8	29.572	46.0	41.1	37.2			.14	N.W.	1 1/2	N.W.	2							2	ci	8	ci	3					30				
	31																													31				
Sums.		1415.9	175	1316.10	185	16.11	15.15							7	6	5																		
Means.		21.788	242.6	21.464	255.1	230.4	223.7			21.231	35.0	37.5		187	177	88																		
† Total Corrections for Instrumental Errors.		29.726	48.1	29.715	48.5	47.7	37.5				1.17	1.25		6.2	5.9																			
† Corrections for Diurnal Range.		+0.06	-7	+0.06	-7	-2					0.6	0.6		6.0																				
"Corrected Means."		17.4		47.8	47.5																													
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.	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.	so. ha.	solar halo.		
h. d.	heavy dew.	sq.	squall.		
hl.	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. ha.	lunar halo.				

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

NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	" cirrus.	ms.	" meteors.
ci-cu.	" cirro-cumulus.	n.	" nimbus.
ci-s.	" cirro-stratus.	r.	" rain.
cu.	" cumulus.	h. r.	" heavy rain.
cu-s.	" cumulo-stratus.	c. h. r.	" continued heavy rain.
d.	" dew.	s.	" stratus.
f.	" fog.	sc.	" scud.
fr.	" frost.	s.	" sleet.
h.-fr.	" hoar-frost.	s.	" snow.
h.	" haze.	so.ha.	" 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. 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†† = 29.682
 for Temp. (Col. 2), = 29.732 - .050.
 Corrected Mean" of Barometer at 9 P.M., minus the Correction†† = 29.670
 for Temp. (Col. 4), = 29.721 - .051.
 Mean at Station, corrected, and at 32°, = 29.676
 Correction for height, feet above Mean Sea-level, = .074
 Mean, reduced to 32°, and Sea-level, = 29.750
 Highest Reading, corrected for Index error, on the th, = 30.564
 Lowest Do. Do., on the th, = 29.104
 Difference, or Monthly Range, = 1.460

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the th, = 55.1
 Lowest in Month, corrected for Index errors, on the th, = 32.2
 Difference, or Monthly Range, = 22.9
 "Corrected Mean" of all the Highest, (Col. 5), = 47.5
 "Corrected Mean" of all the Lowest, (Col. 6), = 37.5
 Difference, or Mean Daily Range, = 10.0
 ** Calculated Mean Temperature of Month, = 42.5

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), =
 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 21 Days; Amount in Inches, = 2.31

WIND.		SUMMARY.					
Direction.		N	NE	E	SE	S	SW
A.M.		4	1			2	9
P.M.		4	1	1		2	9
Mean.		4	1	1	0	2	9

* 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.
 § These "Hygrometric Deductions" are calculated from Glaisher's Hygrometric Tables, Second Edition only.
 ¶ While the Diurnal Range is unknown, the Artificial Mean of Cols. 5 and 6 will be entered as the "Calculated Mean Temperature."
 Any Observations not taken under the conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

Observations made and Return verified by { James Dale, Teacher in
R. Gordon's College Abdu

(Signed)

H.R.
H.R.

INSTRUCTIONS

FOR TAKING METEOROLOGICAL

OBSERVATIONS,

WITH REMARKS ON THE USE OF INSTRUMENTS.

One of the chief objects that the Scottish Meteorological Society proposed to itself when the Society was established in 1855, was to secure perfect uniformity in the system of observation pursued at all its Stations. Uniformity in the observations is absolutely necessary to justify the publication of Monthly Results from different Stations. It is also very desirable that the observations should be taken in the same manner at all the Stations, so that the results from different Stations may be compared with each other. It is therefore hoped, that those who kindly furnish Reports to the Society will, by a scrupulous attention to the following Directions, secure for their Monthly Returns, an accuracy and value commensurate with the labour and pains involved in making them; and, for the Tables published by the Society, an entire comparableness among the several Returns, without which the Society's Reports must inevitably fall in achieving one of the main objects of Meteorological Observation.

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

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

The Barometer originally constructed by Mr. Atle of London, and usually called the Board of Trade Barometer, has the great convenience of requiring no adjustment of the cistern. Its scale-marks are not true inches, but so much shorter as to compensate the error that would otherwise arise from the fluctuations of the surface of mercury in the cistern. This is an excellent Barometer for ordinary Observers, inasmuch as it entirely eliminates the error of observation likely to arise in not a few cases in scaling the instrument to the zero point of the scale. In the case of the Barometer, it is not so much the accuracy with which the Barometer is made, as the manner in which it is used. The Barometer should be kept in a dry place, and the glass should be kept perfectly clean. The Barometer should be kept in a dry place, and the glass should be kept perfectly clean. The Barometer should be kept in a dry place, and the glass should be kept perfectly clean.

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

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

The Barometer should be suspended in as good a light as can be secured, and to facilitate the reading, a piece of white paper may be put behind the tube. It must be hung truly perpendicular, and exposed to neither the sun's direct rays nor the heat of a fire, and must not be hung against a wall heated by a fire. The object being to secure that the whole instrument, including the brass fittings, the contained mercury, and the attached Thermometer, shall be, when read, at one uniform temperature; it is evident that the best position is that which is least liable to sudden changes of temperature.

In taking an Observation, the Attached Thermometer is first noted: the tube must then be gently tapped, and the cistern-adjustment carefully made. The eye, by raising and lowering it, must be brought into the plane of the back and front of the index—usually the lower edge of the vernier, which must be carefully adjusted so as to form exactly a tangent to the convex surface of the mercury in the tube. Observations must be taken quickly, so as to prevent heat from the observer's hands and person from affecting the mercury. The use of a lens will facilitate an accurate adjustment and reading of the Barometer. A mistake not unfrequently made by those beginning to observe, consisting in setting the edge of the vernier to the level of the clear surface of the mercury which is in direct contact with the glass tube, must be carefully avoided.

The errors most frequently made in reading the Barometer are errors of 1/1000 inch, 0/500 inch, and 0/600 inch; that is to say, instead of 29/365 inches, either of the following is sometimes set down—viz., as 30/365 inches, 29/365 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 form a tight plug to the cistern, thus preventing the escape of the mercury. Then screw up the mercury not quite to the top of the tube, but to within a quarter of an inch of it, and take down the instrument; it will then be carried with the cistern uppermost. Before suspending the Barometer for use, it must be ascertained whether the space above the mercury is in this tube a complete vacuum; this is the case if, on holding 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 sets it out of use.

As Barometers are liable to be damaged by the introduction of air into their tubes, on removal, place a piece of paper, or in being roughly handled, it may be useful to Observers to cover the ivory Peg tightly, so as to prevent the escape of mercury; then screw up the mercury to about half an inch from the top of the tube, and, holding slowly inverted the instrument, place the top of it on a riding substance, such as the book, and gently tap on the cistern with the palm of the hand, so as to induce if any escape. Since there is the column to the cistern, when 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 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 unfastening the float of the cistern, for, if this be not attended to, the mercury will flow out, and the instrument be seriously damaged.

The Council of the Society recommend that the Self-Registering Thermometers, and the Dry and Wet Bulb Hygrometers, be kept in Stevenson's Louver-boarded Box for Thermometers, of similar construction; and as a maximum of Thermometers, either Negretti and Zamboni's, or Phillips's, whether they will act at the highest temperatures, they may be required to register. By the laws of the Society, Members and Observers have a right to have their instruments compared by the Secretary, and to advise with him regarding the purchase of instruments. Very great care should be bestowed on the Observations of the Wind, the accuracy of which, both as regards Direction and Force, is so essential towards the success of the discussion of many of the more important problems of the science.

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

The Council would recommend the Hemispherical Cup Anemometer—a self-registering instrument which shows the amount of Wind that passes it per day; from which also the mean Velocity of the Wind at the time of observation may be ascertained. For indicating the Force of the Wind at any particular hour of observation, the Pressure Anemometer recently brought under the notice of the Society by Mr. T. Stevenson, the Honorary Secretary, and Mr. R. Ballingall, the Society's Observer at Edinburgh, are recommended as likely to secure uniformity in making observations on the Force of the Wind.

Many causes conspire to produce anomalies in Rain Returns, arising partly from the difficulty of obtaining a perfectly unobstructed situation for observation, and partly from the defective nature of the instruments used. The Rain-Gauge should not be placed on a slope or terrace, but on a level piece of ground. It is often difficult to obtain a position as free and unobstructed by surrounding objects as is desirable, care should be taken to place it at some distance from shrubs, trees, buildings, or other obstructions, at least as many feet from their base as they are in height. The more important directions, towards which it is most desirable to have a free exposure, are in the order of their importance, S.W., N.W., S.E., S., and W. The rain of the Gauge must be perfectly level, and fixed so that it will remain level in all weathers, and be at a height of one foot above ground, over grass. In such gauges as Fleming's, which are furnished with a measuring rod attached to a float, the rod ought to be fixed down, and the float rise to its height only at the time the instrument is read; it being found that a stem projecting above the rim of the gauge mostly interferes with the proper measurement of the Rain.

When a self-registering glass is used, care should be taken to hold it quite perpendicularly, and the Rain-Gauge ought to be read daily at 9 a.m. and 9 p.m. The reading entered in the Returns is to be made on the first of the month, and the amount entered for the previous month. Snow-falls may for convenience be registered in the Rain column, under the following conditions:—When a Snow-fall occurs, it should be noted in the Remarks, and the letter S affixed to the depth of water received in a Gauge. The depth of the snow must be measured in some open place where no drift is observed, and registered in addition to, and checked upon, the indications of the Rain-Gauge. For wind, rain and snow, as indicated in every column, the Observer cannot be too careful to register 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 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 unable 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, 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, 6, S.W.

will indicate that the upper strata of Clouds travel with extreme velocity from S.W., and those in the lower regions from W., with one-third the speed of the former. Again, in the second column, an entry of $2 \frac{1}{4}$ st. will indicate that the higher regions are covered to the amount of 4-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 entered in the proper 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, from boats, or if this be impracticable, from the ends of piers and rocks round the coast, where it is less influenced by that of river water, and as little influenced by the temperature of the wind, either greatly heated by the sun or cooled by nocturnal radiation. At or near the time of high

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 fair Maxima and Minima by Thermometers carefully immersed be instituted at points along the coast by the method proposed by Mr. T. Stevenson, and already commenced at Pakeham and Liverpool.

The Temperature of the water at the bottom of Wells ought, when practicable, to be taken both the depth of the Well, and of the water being tested.

Mention what Test-Papers are used, Schlotheim's or Moffat's, etc.

The Paper is fastened by a pin to a board in the Ther-

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Too much importance cannot be attached to the electric condition of the atmosphere in connection with terrestrial magnetism, magnetical, 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 taken every advantage of, and a list of such as are in general use 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, etc. Remarks ought to be made on the occurrence of Meteors, Aurora Borealis, remarkable depressions, deviations, and fluctuations of the Barometer, Thunder-Storms, and remarkable falls of Snow, Hail, or Rain, the Hour of Storms of Wind commencing, attaining their maximum, and ending, as well as such notes on Storms as have been hinted 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 9 p.m. should be registered either in two columns, otherwise uncoupled, or ruled off for the purpose, from the column of Remarks.

Observations in connection with the Periodic Return of Seasons, possess not only great scientific value, but are of considerable importance in connection with the Agriculture, Horticulture, and Natural History. The Council would direct the special attention of Observers to the registration of such phenomena, so that the published Summaries may fairly represent the whole of Scotland.

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

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

A. B. (By Order)

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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 fair Maxima and Minima by Thermometers carefully immersed be instituted at points along the coast by the method proposed by Mr. T. Stevenson, and already commenced at Pakeham and Liverpool.

The Temperature of the water at the bottom of Wells ought, when practicable, to be taken both the depth of the Well, and of the water being tested.

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OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf buds.	In Leaf.	Decayed of Leaves.	Barley.	Oats.	Wheat.	Beans.	Peas.	Potatoes.	Turnips.	Rye Grass.
Alder.												
Beech.												
Blm.												
Elm.												
Larch.												
Lime.												
Oak.												
Sycamore or Plane.												

FRUIT TREES.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.	First in Blossom.
Apple.												
Bourtree or Elder.												
Broom.												
Hazel.												
Hawthorn.												
Holly.												
Lilac.												
Mezereum.												
Mountain Ash or Rowan.												
Red Flowering Currant.												
Rhododendron Ponticum.												
Whm.												

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 plentifully or in perfection; whether any have suffered from blight, disease, etc. Whether the disease prevails among cattle; and the Agricultural condition of the district generally.



EDINBURGH.

122 George Street,

Scottish Meteorological Society,

To the SECRETARY

BOOK POST.

OBSERVATIONS,

FOR TAKING METEOROLOG

11

Height of Cistern of the Barometer above Mean Sea-level 66 feet, above Ground 2½ feet.

During the MONTH of Dec 1886

Observations made and
Return verified by { James Dale, Teacher in
Robert Gordon's College Aberdeen

(Signed).

Greatest Daily Range = 20.4 on the 4th

ELECTRICITY.	Days of Month.	BAROMETER.						SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				RAIN.		WIND.								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.		No. of hours in which it fell.	Amount in inches.	9 h. A.M.		9 h. P.M.		Readings of the H. Cap Anemometer.		9 A.M.		P.M.		SUNSHINE. Hours.																		
		Barometer. * No.	Attach- ed Ther- mometer No.	Barometer. No.	Attach- ed Ther- mometer No.	Max. No.	Min. No.	Max. in Sun/rays No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.			Dirrec- tion.	Force	Dirrec- tion.	Force	No.	Dirrec- tion.	Force	Velocity (0—5), and Dirrec- tion.	Amount, (0—10), and Species.	Velocity (0—5), and Dirrec- tion.		Amount, (0—10), and Species.																	
																												9 h. A.M.							9 h. P.M.		9 h. A.M.		9 h. P.M.					
																												inches.							inches.		inches.		inches.		inches.		inches.	
																												°							°		°		°		°		°	
1	29.550	42.8	29.538	38.0	35.1	30.4							.45	N.W.	1½	N.W.	2				10	st	—	—	—								Snow	1										
2	29.754	39.0	29.836	34.0	32.1	27.3							.03	N.W.	1½	N.W.	1				10	st	2	st	4								Snow	2										
3	29.768	35.5	29.616	36.0	37.2	17.6							—	W	½	W	1				—	—	10	cu-st	1																			
4	29.530	42.0	29.790	40.2	39.4	18.8							.02	N.W.	1	N.W.	1				6	cu	3	cir	2								Partial Thaw	4										
5	29.580	41.5	29.304	44.8	43.2	32.5							.08	S.W.	1	S.W.	1½				10	cu-st	10	st	—								Decided Thaw	5										
6	29.254	46.2	29.074	41.2	43.3	34.8							.01	W	1	W	1				10	Nim	—	—	—																			
7	29.048	41.2	29.044	48.6	42.8	33.1							.04	W	1	W	½				—	—	—	—	4																			
8	28.280	46.0	29.774	45.0	40.6	28.1							.73	S.S.E.	3	S.	1				10	Nim	5	ci-cu	3																			
9	28.086	44.2	28.588	46.8	40.2	33.7							.36	N.W.	2	N.W.	1				10	Nim	4	cu	—																			
10	28.826	43.0	29.152	42.0	39.5	32.7							.01	N.W.	2	N.W.	1				3	ci-st	5	ci-st	—																			
11	29.102	41.5	29.078	43.2	42.4	31.8							.16	W	1	N.W.	1				10	st	10	st	—								Fog,	11										
12	29.050	42.6	29.334	40.8	40.6	32.2							.19	N	1	N.W.	1½				5	ci-st	2	st	2																			
13	29.654	41.0	29.690	39.5	39.2	33.8							.01	N	1½	N	1				5	ci-st	8	ci-cu	2																			
14	29.606	38.5	29.468	36.4	36.3	31.7							.02	N	1	N	1½				9	cu-st	8	cu-st	—								Snow	14										
15	29.414	40.0	29.240	41.4	38.1	31.5							.32	N	1	N.E.	2				10	cu	10	Nim	3								Snow and Rain	15										
16	29.354	39.0	29.464	50.0	36.1	33.2							.11	N.E.	1½	N	1				10	st	—	—	4									Snow	16									
17	29.532	37.1	29.440	33.2	35.4	26.8							.09	N	1½	N.W.	1½				10	st	—	—	4									Snow	17									
18	29.464	34.0	29.626	41.0	33.8	24.2							.60	N.W.	2	N.W.	2				10	st	10	st	—									Snow	18									
19	29.780	28.1	29.890	38.0	26.1	12.2							—	W	1	—	—				2	st	—	—	5																			
20	30.104	32.0	30.164	30.4	23.1	11.3							—	W	½	—	—				1	st	1	st	5																			
21	30.074	35.0	29.786	41.4	39.7	27.3							.05	S.W.	2	S.W.	2½				2	cir	10	st	4																			
22	29.520	41.2	29.330	42.0	40.4	33.2							.90	S	1½	S	1				10	st	10	st	—									Rapid Thaw	22									
23	29.530	41.0	29.480	34.0	38.2	32.5							.11	N.W.	1	N.W.	1				4	st	2	st	4																			
24	29.428	39.5	29.376	42.0	39.3	29.5							.02	N.W.	1	N.W.	½				9	cu-st	—	—	—																			
25	29.608	39.0	29.450	42.0	36.2	29.8							—	W	1	W	1½				—	—	—	—	5																			
26	29.626	34.5	29.610	35.6	33.0	23.2							—	W	½	W	½				5	st	2	st	4																			
27	29.740	36.2	29.424	41.2	32.8	20.7							.03	S.W.	½	S.W.	2				—	—	10	cu-st	2																			
28	29.376	41.0	29.334	42.0	34.4	21.8							—	S.W.	½	W	1				2	st	10	st	—																			
29	29.736	39.0	30.224	43.0	37.4	23.2							—	N.W.	—	N.W.	½				4	cu-st	1	st	2																			
30	30.274	39.5	30.406	41.0	39.2	27.3							—	N.W.	—	W	½				—	—	1	st	5																			
31	30.304	38.0	30.194	40.2	37.5	23.8							.02	S.W.	—	S.W.	1½				4	ci-st	10	st	4																			
Sums.	14.828	289.1	14.564	7.6	22.6	232.0							436				345			350				181		144						69												
Means.	29.478	39.3	29.470	40.2	37.2	27.5											1.1			1.13				58		46																		
† Total Corrections for Instru- mental Errors.	x006	.7	x006	.7	.2												06			06				52																				
‡ Corre- ctions for Diurnal Range.																																												
“Cor- rected Means.”	29.484	38.6	29.476	39.5	37.0	27.5																																						
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.	ma.	macro.		
ci-cu.	cirro-cumulus.	n.	nimbus.		
ci-s.	cirro-stratus.	r.	rain.		
cu.	cumulus.	h. r.	heavy rain.		
cu-s.	cumulo-stratus.	c. h. r.	continued heavy rain.		
d.	dew.	s.	stratus.		
f.	fog.	sc.	scud.		
fr.	frost.	s.	sleet.		
h-fr.	hoar-frost.	s.	snow.		
h.	haze.	so.ha.	solar halo.		
h. d.	heavy dew.	sq.	squall.		
li.	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. 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	Fresh breeze	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 ++	=	29.457
for Temp. (Col. 2), = 29.484 - .027		
Corrected Mean " of Barometer at 9 P.M., minus the Correction ++	=	29.447
for Temp. (Col. 4), = 29.476 - .029		
Mean at Station, corrected, and at 32° ,.....	=	29.452
Correction for height, feet above Mean Sea-level,.....	=	.074
Mean, reduced to 32°, and Sea-level ,.....	=	29.526
Highest Reading, corrected for Index error, on the 50 th,.....	=	30.406
Lowest Do. Do., on the 8 th,.....	=	27.774
Difference, or Monthly Range ,.....	=	2.632

S.-R. THERMOMETER, (in shade, etc.), **Highest in Month**, (corrected for Index Errors), on the 6th, = 43.1

Lowest in Month, corrected for Index errors, on the th, = 11.3
Difference, or Monthly Range, = 31.8

"Corrected Mean" of all the Highest. (Col. 5), = 37.0

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

Difference or Mean Daily Range = 8.5

$$\# \text{ of } 1 \text{ s } + 1 \text{ SE} = \text{Temperature Index of Month} = 32.2$$

.. Calculated Mean Temperature of Month, - 52.2

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") =

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), =

RAIN fell on 23 Days; Amount in Inches, = 4.36

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Error.	Mean Velocity in miles per day.
A.M.	5	1			2	5	8	10		1.11	
P.M.	3	1			2	4	7	12	2	1.13	
Mean.	4	1	0	0	2	4	8	11	1	1.12 = 1.25	

* 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.

§ Predictably, though not absolutely a *minus* correction.

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

¶ While the Diurnal Range is unknown, the 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, are marked as such by the observer, in each Schedule. See over.

