

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Pelto College, County of Columbia, in Lat. _____, Long. _____, Distance from Sea 15 miles.
Height of Cistern of the Barometer above Mean Sea-level _____ feet, above Ground _____ feet. During the MONTH of March 1876.
The Hours of Observation are of Greenwich Time.

[illegible]

BAROMETER, “corrected Mean” at 9 A.M., <i>minus</i> the Correction +†	=	_____
for Temp. (Col. 2), = _____		_____
“Corrected Mean” of Barometer at 9 P.M., <i>minus</i> 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 th,_____	=	_____
Lowest Do. Do., on the th,_____	=	_____
Difference, or Monthly Range, _____	=	_____

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

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

Difference, or **Monthly Range**, = _____

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

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

Difference, or **Mean Daily Range**,** Calculated **Mean Temperature** of Month,

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"), =

100

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), =

AIN fell on **Days; Amount in Inches,** =

WIND.	SUMMARY.
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[illegible]

Each instrument tested at the OHS 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 Error.

The *Durnal Range* for Scotland is as yet unknown.

Practically, though not *absolutely* a *minus* correction.

For the *Barometrical* and *Thermometrical* Tables, see Glaisher's *Hygrometrical Tables*, Second Edition *only*.

While the *Durnal Range* is unknown, the *Arithmetical Mean* of Cols. 5 and 6 will be entered as the "Calculated Mean Temperature."

Any *Remarks* concerning the instrument, or the Direction on the other side, or noted at the Top of each Column, may be marked as such by the observer, in each Schedule. See *over*.

Observations made and }
Return verified by }

(Signed)

Rejected
AN

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Jetty Collee, County of Edinburgh, in Lat. _____, Long. _____, Distance from Sea 2 miles.

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

During the MONTH of May 1874.

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, * 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.	Direc- tion.	Force.	Readings of the H. Cup Anemometer. No. ———	No. of hours in which it fell.	Amount in inches.	No. ———	Velocity (0—6), and Direction.	Amount, (0—10), and Species.	Velocity (0—6), and Direction.	Amount, (0—10), and Species.	No. ———	No. ———					No. ———	No. ———	Temperature of Well at Sun's No. ———	Temperature at 10 fathoms and Density.	9 A.M.	9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	" cirrus.	ms.	" meteor.
ci-cu.	" cirro-cumulus.	n.	" nimbus.
ci-s.	" cirro-stratus.	r.	" rain.
cu.	" cumulus.	h. r.	" heavy rain.
cu-s.	" cumulo-stratus.	c. h. r.	" continued heavy rain.
d.	" dew.	s.	" stratus.
f.	" fog.	sc.	" scud.
fr.	" frost.	s.	" sleet.
h-fr.	" hoar-frost.	s.	" snow.
h.	" haze.	so. h.	" solar halo.
h. d.	" heavy dew.	sq.	" squall.
hl.	" hail.	sg.	" 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 _____ th, = _____
Lowest Do. Do., on the _____ th, = _____
Difference, or Monthly Range, = _____

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

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

Difference, or Monthly Range, = _____

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

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

Difference, or Mean Daily Range, = _____

** Calculated Mean Temperature of Month, = _____

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	W	NW	Calm or Variable.	Mean Force.
A.M.											
P.M.											
Mean.											

* 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. 5 and 6 will be entered as the "Calculated Mean Temperature."
Any Observations not taken under the conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

Observations made and
Return verified by _____

(Signed) _____

WITH REMARKS ON THE USE OF INSTRUMENTS.

Hour of Observation.—The Council recommend that Observations be made precisely at 9 o'clock (Greenwich or Railway Time) only twice a-day for some, and once (morning or evening) for other instruments, as specified, in the following remarks, or at the top 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 at what time it was taken, if not at 9 o'clock.

Two moderate-priced Barometers have been approved of by the Council; if properly tested and attended to, they are both well adapted to Meteorological purposes.

surface of mercury in the cistern. This form of instrument has been adopted by the Board of Trade, and has received the approval of the Meteorological Committee of the British Association. In another form of the barometer, the sides of the *cistern* are of leather, and thus, by aid of a screw acting on the bottom, the surface of the contained mercury can be adjusted to the *zero-point* of the fixed scale; their coincidences being indicated by a little ivory rod, whose stem passes freely through the lid and case of the cistern. When the *index-line* on this little *pen-rod* is brought, by the adjusting screw, to form *one straight line* with those on its ivory frame, the surface of the 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*.

The Barometer should be suspended in a good light, which may be improved by putting a piece of white paper behind the tube. It must be perfectly perpendicular, and exposed to neither the sun's direct rays nor the heat of a fire.

In taking an *Observation*, the attached Thermometer is first noted : the tube must then be gently tapped and the disengagement carefully made. By raising and lowering the eye, 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 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 greatly facilitate an accurate adjustment and reading of the Barometer.

Self Rectifying Thermometers.—Professor Phillip's and Negretti and Zambri's Patent "*Mininum*," Thermometers are recommended: printed directions for their use may be obtained with each instrument. The "*Mininum*," Thermometer of Rutherford is recommended and should be affixed to a frame separate from the "*Maxinum*," It is recommended that these Thermometers be graduated on the glass stem. The "*Mininum*," Thermometer is liable to two derangements, both of which must be guarded against, and may be easily remedied by an observer. When the *column* of spirit breaks it may be re-unioned by striking the instrument repeatedly against the palm of the hand; when part of the spirit distils by high temperature, it will found in the upper lobes must be

The above remarks apply equally to the Thermometers for registering the greatest heat from the sun's rays, and the least from radiation during night. Their bulbs have a black coating, which may easily be made, or mended, by the application of a mixture of lamp black and printer's ink. They are placed in shallow louvered boxes, whose sides protect the bulbs from the wind. The "*Maximum*" should be freely exposed to the sun, and the "*Minimum*" should rest on wooden supports a few inches from the surface of the grass, in an open situation. Snow must not be allowed to cover either of these Thermometers; nor the sun's heat to affect the Minimum Thermometer by dissipation.

The Hygrometer consists of two Thermometers usually, but not necessarily, mounted on one frame. As apparently slight

the frame must be such as will bring the ribs forward by an inch, from any board on which it may be suspended; and the water-cap must be covered, and placed to the side, and a little below the level of the vest bulb, — in no case under the bulbs; — the mulin must be of medium fineness, and fastened at the neck of the bulb by the cotton, which also supplies it with water. It must be seen to by the observer that the mulin is always *clean* and *moist*, and the water pure. In frosty weather observation is a matter of much delicacy, and must be made with great care. The bulb must be moistened by immersion from 15 to 30 minutes before the hour of observation. From the film of ice thus formed evaporation will proceed as from the moist cloth in ordinary circumstances.

Hour of observing Temperature.—The Hygrometer is read at 9 A.M. and 9 P.M. The self-registering Thermometers are read at 9 P.M. only, as indicating the greatest and least degrees of temperature in the 24 hours preceding. It is not a matter of indifference when the self-registering Thermometers are read, since, in winter at least, the extremes may occur at any hour; and it is necessary to refer their occurrence to their proper meteorological *date*. The Society's series of phenological indications registered at 9 P.M. on the 29th, and extending till 9 A.M. on the 30th.

Careful observations ought to be made on the changes in the direction of the wind; and during storms, extra observations ought to be made at every hour of Greenwich time. Such a system of simultaneous observation, pursued at different Stations, would be likely to give highly interesting and important results.

Run-gauges.—Many causes conspire to produce anomalies in rain returns. They arise, partly, from unfavorable situations for observation and partly from the defective nature of the instruments used. It is, indeed, difficult to obtain an unexpected position for the rain-gauge; but in all cases the gauge must be sunk in the ground till its edges are on a level with the close cut grass around its mouth. The rain-gauge ought to be read daily at 9 A. M., and the readings entered in the returns of the day previous.

Clouds.—Convenient abbreviations for Luke Howard's nomenclature of clouds will be found on the other side. The amount of cloud in the atmosphere ought to be estimated from

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;—In the column "Velocity

6, S.W.

column, an entry of $\frac{1}{2}$, (e.g.) will indicate that the higher $2n-1$ regions are covered to the "amount" of $\frac{1}{2}$ 4-tenths with *stratus* clouds; and that the sky is further obscured to the extent of $\frac{1}{2}$ 2-tenths by lower clouds of the *cumulo-stratus* kind.

Temperature of the Sea.—A knowledge of the temperature of the sea is not only in itself, but in its relations to that of our island, a very important branch of Meteorology. The Council

Ozone.—Mention whether Schönbem's or Moffat's papers are used. The paper is affixed by a pin to a board in the thermometer case. The observations are 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 5.2, as an ozone entry in the schedule, will indicate that the ozone paper is tinted as "5" on the scale, that the wind is from the N.W., and that its force on the scale is 0—6 is "4.3"; i.e., that it is *blowing fresh*.

avoidably so. 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

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 unoccupied, or in two ruled off for the purpose, from that headed "Remarks." It is intended that observations by the Electrometer should be entered in this manner on the side-margins. Additional remarks may be made on the margin.

Full directions for the use of the instruments mentioned above have been printed, and may be had along with them from the makers.

(By Order) A. B.

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.					
Alder,	.	.	.	.	.
Ash,	.	.	.	.	.
Beech,	.	.	.	.	.
Birch,	.	.	.	.	.
Elm,	.	.	.	.	.
Larch,	.	.	.	.	.
Pine,	.	.	.	.	.
Oak,	.	.	.	.	.
Sycamore or Plane,	.	.	.	.	.
In flower.					
In first buds.					
In first appear.					
In leaf.					
Dressed of leaves.					
Barley,	.	.	.	.	.
Oats,	.	.	.	.	.
Wheat,	.	.	.	.	.
Beans,	.	.	.	.	.
Pease,	.	.	.	.	.
Potatoes,	.	.	.	.	.
Tumpps,	.	.	.	.	.
Rye Grass,	.	.	.	.	.
CROPS.					
Growing or planting.					
Rearing or above ground.					
In bud.					
In flower.					
First bud or raised.					

SHRUBS, ETC.		FRUITS.		MIGRATORY BIRDS.	
First in Blossom.	First in Fruit.	First in Blossom.	First in Fruit.	First in Blossom.	First in Fruit.
Barberry,	Apple,	Chokeberry,	Chokeberry,	Chokeberry,	Chokeberry,
Bouree or Elder,	Cherry,	House-Swallow,	House-Swallow,	House-Swallow,	House-Swallow,
Hazel,	Gean,	Lapwing,	Lapwing,	Lapwing,	Lapwing,
Hawthorn,	Roseberry,	Plover,	Plover,	Plover,	Plover,
Holly,	Teach,	Sand-Martin,	Sand-Martin,	Sand-Martin,	Sand-Martin,
Laburnum,	Pear,	Starling,	Starling,	Starling,	Starling,
Lincoln,	Plum,	Swan,	Swan,	Swan,	Swan,
Alexander,	Strawberry,	Rail or Corn Crane,	Rail or Corn Crane,	Rail or Corn Crane,	Rail or Corn Crane,
Rhododendron Ponticum,					
Red Flowering Currant,					
Mountain Ash or Rowan,					
Win,					

BOOK POST

Mr ALEXANDER BUCHAN.

Secretary of the Meteorological Society of Scotland

EDINBURGH.

on the scale, that the wind is from the N. W., and that its force on the scale 0—6 is “4”: i.e., that it is *blowing fresh*.

avoidably so. 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 *Remarks*.—The *Remarks* column is too narrow, but un-

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, or three, if space permits. The first column should be filled with the weather, as observed, and the second and third columns, if used, should be filled with the weather as predicted, or in two ruled off for the purpose, from that which is observed. The weather should be recorded in the same manner as in the "Remarks." It is intended that observations by the Electrometer should be entered in this manner on the side of the page. Additional remarks may be made on the margin.

Full directions for the use of the instruments mentioned above have been printed, and may be had along with them from the makers.

(By Order) A. B.