

## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Westgarth Villa Colinton County of Midlothian, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 6 miles.Height of Cistern of the Barometer above Mean Sea-Level 380 feet, above Ground 4 feet.During the MONTH of January 1897.

EDINBURGH COLINTON

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.		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 Density.		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 Ther- mometer	Barometer. No.	Attached 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 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.	9 A.M.		9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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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, = 48.0

Lowest in Month, corrected for Index errors, on the \_\_\_\_\_ th, = 21.0

Difference, or Monthly Range, = 27.0

"Corrected Mean" of all the Highest, (Col. 5), = 38.0

"Corrected Mean" of all the Lowest, (Col. 6), = 29.4

Difference, or Mean Daily Range, = 8.3

\*\* Calculated Mean Temperature of Month, = 33.8

S-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the \_\_\_\_\_ th, = 49.0

"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 39.2

Lowest at Night, Black Bulb (corrected for Index errors), on the \_\_\_\_\_ th, = 14.0

"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 24.5

Difference of above means or range ("exposed"), = \_\_\_\_\_

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 33.5

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 32.2

†† 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, = 0.93

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

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

Observations made and  
Return verified byJames Agnew  
Westgarth Villa Colinton

(Signed)



# OBSERVATIONS,

correct numbering of the scale, every instrument the rejection of Thermometers the frame-works of which are not likely to stand up to the weather, as shown in the past by repeated and annoying breakages of Thermometers of similar construction; and as we have seen, the observations of the Maximo Thermometers, either Negroetti and Zambini's or Phillips's, are not likely to be correct, whether they will set at the highest temperatures they may be required to register. By the last of the Society, Members of Obedience have no right to have their instruments corrected by the Secretary, and to do so, 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 right discussion of many of the more important problems of the science.

A Wind-Vane ought to be elevated at least 12 feet above surface, and the direction should be indicated by a flag.

1. As regards Direction. Wind is sometimes less than it is actually, and when the wind is feeble, especially when the Vane is stationary, and when the wind is strong, it sometimes may not be to the direction of the smole, etc., in well-exposed situations. Careful observations are recommended to be made on the changes in the direction of the wind; and during stormy, stormy, active observations as 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-plated Stations over a limited district now being brought into use, called SPOKED STATIONS, in the course of which, the observations are made by means of a

column of spirit breaking, and part of the spirit distilling by high temperature and lodging at the top of the tube. This designation is 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.

Unfortunately Spirit Thermometers may be easily set right by any one, when the column of spirit chances to separate. Let the thermometer be taken in the hand by the end farthest from the bulb, raised above the head and then forcibly swung down towards the feet; the object being on the principle of centrifugal force, to send down the detached portion of spirit till it unites with the column. A few throws, or swinging strokes, will generally be sufficient for the purpose; after which the thermometer should be

placed in a slanting position, to low the rest of the spirit still ad-  
hering to the sides of the tube to drain down the column. But  
another method must be adopted, if the portion of spirit in the top  
of the tube be small. Heat should be applied slowly and cautiously  
to the top end of the tube where the detached portion of spirit is,  
which, being turned into 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 of applying  
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 heated metal will serve instead.

The bulbs of the Thermometers for registering the greatest heat  
from the sun's rays, and the least from radiation  
**Black-Bulb**  
during night have a black coating, which may easily  
be made, or imbedded by the application of a mixture  
of lampblack and painter's ink. They are placed in shallow  
blackened boxes, whose sides protect the bulbs from the wind.  
The maximum should be freely exposed to the sun, and the Mini-  
mum should rest on wooden supports a few inches from the surface  
of the glass, in an open situation. Snow must not be allowed to  
cover either of these Thermometers, nor the bulb that ad-  
justs the Minimum Thermometer by distillation. Black-bulbs placed  
in glass jackets may also be used, being indeed preferable to the  
above. It must, however, be ascertained that the window of the

observation on Solar and Lunar and Luminous is not very far from a soundly advanced state to warrant the exclusive recommendation of any one of these methods at the Society's Stations consists of two. The Hygrometer and the Thermometer usually, but not necessarily mounted on one frame. As apparently slight deviations from **Dry and Wet bulb** have been observed, the approved form of this apparatus seriously vitiates the Hygrometrical Observations. Observers are specially requested to attend to the following conditions:—The bulbs must hang down by at least an inch free from the scales and frame to which they are attached; the frame must be such as will bring the tubes forward by an inch from any board on which it may be suspended; the water-cup must be covered, and altogether placed to the side, and a little below the level of the wet bulb, but no case under the bulbs; the muslin 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 by the Observer that the muslin is always clean and moist, and the water pure. In frosty weather, observation is a matter of much delicacy, and must be made with great care. The bulb must be moistened by immersion from 15 to 30 minutes before the hour of observation. From the film of ice thus formed evaporation will proceed as from the moist cloth in ordinary circumstances.

In reading the Thermometer *gat car* must be taken to bring

the eye, exactly opposite the tip of the index on column of mercury. The reading ought to be taken to tenths of a degree, and noted in decimals. Thus the Thermometer will be read—39°·4, 40°·0, or again, 40°·4, 40°·5, 40°·6, according as it indicates a little under, an exact coincidence with, or a little over 40°; respectively. So also 40°·7, and 40°·8, more or less, must be registered 40°·3, or 40°·33, and 40°·4, or 40°·43, respectively. In reading Rutherford's Minimum Thermometer the indication of that end of the index which next the surface of this spirit is to be taken. On opening the Thermometer Box, the *Wet* and *Dry* Bulb Thermometers must be first, and rapidly, read; and afterwards the *Wet* Bulb Thermometer is to be read from the person of the Observer. They are readily affected by heat and cold.

The Hygrometer is read at 9 A.M. and 9 P.M. The Self-Registering Thermometers are read at 9 P.M. only, as in Hour of observing declining the greatest and least degrees of temperature.

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 day. In the Society's schedules, the indications registered on the 24th are those of a series of phenomena commencing at 9 P.M. on the 24, and extending till 9 P.M. on the 3d.

No instrument ought to be used for Meteorological purposes till it has been carefully tested by comparison with a standard Thermometer. When such Thermometers 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 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 fin in air; the

correct numbering of the scale, every instrument the rejection of Thermometers the frameworks of which are not likely to stand up to the weather, as shown in this post by repeated and annoying breakages of Thermometers of similar construction; and as we have seen, the Maximo Thermometers, either Negretti and Zamboni's or Phillips's, which whether they will at all the highest temperatures they may be required to register. By the last of the Society, Members of Observatories have no right to have their instruments used by the Secretary and to deal 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 right discussion of many of the most important problems of the science.

A Wind-Vane ought to be elevated at least 12 feet above surrounding objects. Windmills oscillates incessantly the same direction should be taken. In all cases, but especially when the Vane is stationary, and when the wind is feeble,

1. As regards Direction.

in vol-reposed situations. Current observations are recommended to be made on the wind-treatment of smoke, and the changes in the direction of the wind; and during storms, extra observations should be made. Such a system of simultaneous observation, pursued at several Stations, is likely to give highly valuable and important results, particularly in connection with the system of thick-planted Stations, over the uninhabited district round Edinburgh, called STORM STATIONS, over the course of being established by the Society for the systematic investigation of the relation of the force of the wind to BAROMETRIC GRADIENTS, and other points connected with storms.

The Council would recommend the Hemispherical Cup Anemometer—a self-registering instrument which slows the amount of Wind that passes it in any day; from which the mean Velocity of the Wind at the time of the observation may be ascertained. On influencing the Forces of the Wind at any particular hour of observation, the Anemometers 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 observations.

**Rain gauges.**— perfectly undisturbable situation or observation. It should 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, in as even a situation as the Observer can procure for it. As it is often difficult to obtain a position so free and unobstructed by surrounding objects as is desirable, however, the gauge should be taken to place it at some distance from shrubs, trees, buildings or other obstructions, at least as many feet from the base as they are in height. The more important directions, towards which it is most desirable to have the gauge pointed, are, N., N.E., S.E., S., and W. 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 a level of one foot above the ground, over grass. In such gauges as Fleming's, which are furnished with a measuring glass, the gauge should be fixed to a wall, and attached to a float, the rod ought to be fixed to the top of the float, and the float to rise to the top of the instrument. It is said, it being found that a stem projecting above the rim of the gauge, and consequently interfering 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 10 A.M., and the reading entered in the Returns of the previous day. If the Gauge is read once a month, the reading to be made on the 1<sup>st</sup> 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:—W in a Snow-fall.

slower currents, a current no more than a few fathoms, and the letter S annexed to the depth of water received in Ganges. The depth of the spot may be measured in any other place where the current is strong, and the observation may be made in the afternoon, in addition to that in the forenoon, and as a check upon the observation of the height of the flood. The wind, and snow, and rain, and the state of the sky, must be noted, and the time of day, and the day of the month, and the year, must be written in the 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 obscuration 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 disappearance 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 Direction,

... will indicate that the upper strata of Clouds travel with a  
2. W. extreme velocity from S.W., and those in the lower regions from  
S.W., with one-third the speed of the former. Again, in the second  
4. st. Cloud column, an entry of  $\frac{1}{2}$  will indicate that the higher  
regions are covered to the amount of 4-tenths with stratus Clouds ;  
and that the stratus has been observed to the extent of 2-tenths in  
the lower Cloud column, and so on.

Remarks on peculiar Clouds, accompanied with drawings, will  
be inserted in the following number, and more exact measurements  
of Clouds, as well as those relating to 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  
sunshine.

As the germination and growth of crops and plants generally  
depend greatly on the Temperature of the soil—its  
amount and consistency—the Council recommend that  
Meteorologists. 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  
glass or 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 im-  
portant branch of Meteorology. The Council there-  
fore recommend that the Temperature of the Sea be  
ascertained 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 not influenced by that of river water, and as little  
possible, as possible by currents sweeping along the coast, and as little  
acquainting the temperature of the land, either greatly heated by the  
sun or cooled by nocturnal radiations. At or near the time of high

water, in cases where the observations cannot be taken daily, an observation may be made on the 5th, 10th, and 25th of each month. When convenient, extra Sea Observations might be taken for depths and greater depths, noting always the Temperature of the Air, and the Hour of Observation. It is also very desirable that observations on the daily Maxima and Minima by Thermometers continuously immersed be instituted at points along the coast, by the method proposed by Mr. T. Stevenson, and already commenced at Peterhead and Liverpool. The Temperature of the water at the bottom of Wells ought, whenever practicable, to be taken, both the depth of the Temperature Well and of the water being noted. Mention what Test-Papers are used, Schombert's or Moffat'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 S.W., as a Zone entry

in the schedule will indicate that the Ozone paper is tinted as 3 in the scale, that the wind is from the N.W. and that its force on the scale 0—5 is 4, or blowing fresh.

Too much importance cannot be attached to the electric condition of the atmosphere in connection with terrestrial magnetism, barometrical, thermostematal, 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 is given at the foot of the column. Besides special and extraordinary Observations, great prominence ought to be given in this column to Prevalent Diseases, differences in character, colour, velocity, and direction between the Lower and Upper Strata of clouds, the Colour of the Sky, &c. Remarks ought to be made on the occurrence of Meteors, A more beautiful, remarkable depressions, elevations, and fluctuations of the Barometrical, Thunder-Storms, and remarkable falls of Snow, Hail, or Rain, the Hour of Storm or Wind commencing,

maximum, and ending, as well as such Noes on Storms as have been hit 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 unoccupied, or ruled off for the purpose, from the column of 'Remarks.' Observations in connection with the Periodic Return of the Seasons, possess not only great scientific value, but in connection with a considerable importance in connection with the Periodic Re- 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 repeating 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. E.

(By Order)

[illegible]

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL REE					
	FOREST TREES.	In flower.	Last buds first appear.	In leaf.	Dressed or Leaves.
Sowd Plan	Alder,				Batley,
	Ash,				Bere or Bigg,
	Beech,				Oats,
	Birch,				Whens,
	Elm,				Beans,
	Larch,				Pears,
	Tine,				Potatoes,
	Oak,				Turnips,
	Sycamore or Plane,				Rye Grass,

To the *SECRETARY*

*Scottish*

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BOOK POST.

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Y  
*Meteorological Society,*  
 122 George Street,  
 EDINBURGH.

[illegible][illegible]

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This image shows a blank, aged, cream-colored page, likely an endpaper or flyleaf of a book. The paper has a slightly textured appearance with some faint smudges and discoloration, characteristic of old paper. The left edge of the page shows the binding of the book.

1990



# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Colinton, County of Midlothian, in Lat. 55° 55' N, Long. 3° 15' W, Distance from Sea 6 miles.

Height of Cistern of the Barometer above Mean Sea-Level 380 feet, above Ground 4 feet.

During the MONTH of February 1897.

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.  0-10.	GENERAL REMARKS.  As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc.  <i>Mention the hour at which Storms, including Thunder and Lightning, began and ended.</i>	Days of Month.			
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.			9 h. A.M.		9 h. P.M.		9 A.M.		P.M.			9 h. A.M.									
		Barometer.	Attached Thermometer	Barometer.	Attached Thermometer	Max.	Min.	Max.	Min.	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. 1.	No. 2.	No. 3.							
		* No.	No.	No.	No.	No.	No.	No.	No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.		No. of hours in which it fell.	No.	No.	No.	No.	9 h. A.M.	No.	No.		No.									
		inches.	°	inches.	°	°	°	°	°	°	°	°	°		°	°	°	°	°	°	°	°		°	°	°					°	°	°
	1	29.240	46	29.260	51	34.8	32	36	31.5	33.5	31.5	33.5	33.5		E. 1.	8.05	Overcast	None	1	Glasses at 8.30 am										1			
	2	29.220	45	29.420	50	34.8	27	40	23	32.3	31.8	33	32.5		Calm	8.05	Overcast	None												2			
	3	29.650	46	29.720	50	36	24	40	25	31	29	30	29		So	8.05	Overcast	None	2	Glasses at 10.30 am.											3		
	4	29.750	44	29.630	48	34.8	29	37.5	27	36.5	32.3	34	33		S. 1.5	8.15	Overcast	Overcast													4		
	5	29.970	44	29.420	48.5	37.5	32.3	45.5	31.5	36	35	34	34	.10		8.05		So	1												5		
	6	29.920	44.5	29.550	52	36.5	33	40	31	36.5	36	33.5	33.5		N. 0.5	8.05	Overcast	So													6		
	7	29.800	46	30.000	56	38	32.5	39.5	30	34	33.5	36.3	35.3		E. 0.5	8.05	So	So	1												7		
	8	29.900	48	29.600	53	42.5	35	44.5	33.5	38	37.5	42.5	40.5		S.W. 0.5	11.15	Hazy	So.	1	Glasses 9.30 am.												8	
	9	29.550	48	29.780	54	45.8	37	47	34	43	41.5	38	35.5	.10	N. 1.5	11.15	3/4 W. 10	None	3													9	
	10			29.970	53	41.5	34	47	31	36.5	34.5	37	35.5		N. 1.5	11.05	None	2 1/4 W. 10	2													10	
	11	29.970	47	30.050	57	40.5	28.5	64	24	34	31.5	34.5	31.5		N. 0.5	11.1	So	1 1/4 W. 10	4	Rf.												11	
	12	30.000	46	29.950	54	42	26.5	60	21.5	29	28	36.3	34.3		N. 0.5	8.05	So	2 1/4 W. 10	3	Rf.												12	
	13	29.780	48	29.730	55	44.5	33.5	47	33.5	37	37	44	43.5	.02	E. 0.5	11.05	Overcast	3/4 W. 10	1													13	
	14	29.800	52	29.990	57	44	37	47	37	43.5	43.5	38	38	.05	N. 0.5	Calm	So	Overcast	1	Drizzle at 9 am												14	
	15	30.050	51	30.200	57.5	46.5	37	70	32	43.5	42.5			.18	E. 2	11.05	2 1/4 W. 10	3														15	
	16	30.180	52	30.190	58	49.5	41	53	40	43	40.5	43	41		N. 1.5	11.11	2 1/4 W. 10	5														16	
	17	30.180	52	30.040	58	47	40.5	58	39	44	43.5	42.5	40.5		N. 0.5	11.2	Partly cloud	2 1/4 W. 10	5	Glasses at 10.15 am.													17
	18	29.890	53	29.800	57	47	41.5	54	38	41	39	43	41.5		N. 2.	11.15	2 1/4 W. 10	5														18	
	19	29.840	53	29.770	58	55.3	40.3	58.5	38	55	48.5	52	49.5		N. 1.5	11.2	1 1/4 W. 10	Overcast	1														19
	20	29.720	54	29.550	58	51.8	42	61	40			43.5	40.5		N. 1.5	11.3	1 1/4 W. 10	None	3													20	
	21	29.980	55	30.150	65	47.2	37.5	55	35	41	38	44	43	.04	N.W. 1.5	11.15	2 1/4 W. 10	Overcast	4													21	
	22			30.170	59	58	43	51.3	43			48	46.5			11.2		So	1													22	
	23	30.100	56	30.100	59	52.5	42.5	63.5	42	47.5	44.5	43.5	42		N. 2.	11.2	2 1/4 W. 10	None	4													23	
	24	30.040	54	29.770	58	48.5	41.5	53.5	36	45.5	44	45.5	42	.18	N. 1.	11.3	So	8 W. 10	2	Glasses at 10 am.													24
	25	29.420	55	29.450	58	54	45	52	44	49.5	47	53	51	.03	N. 3.	11.3	Overcast	None	1	Very stormy all night of 24-25 & during day with heavy rain & snow.													25
	26	29.560	56	29.740	60	55	41.5	62	40	54	50	42.5	40.5	.55		11.3	None	Overcast	2													26	
	27	29.820	54	29.980	58	45	35	64	33.5	43	39	38.5	36.5	.15	N. 0.5	11.15	1 1/4 W. 10	None	3													27	
	28	29.720	53	29.150	59	43	36	55.5	33	47	34.5	43	41	.04	N.W. 1.5	11.15	2 1/4 W. 10	2 1/4 W. 10	2													28	
	29																																29
	30																																30
	31																																31
Sums.						129	115	114	93	124	127	126	94	1.41		8		8		5		2											
Means.						1316	1086	1045	9470	1013	9511	11201	9516			285		375		211		160											
+ Total Corrections for Instrumental Errors.						14.7	1360	467	338	10.0	38.0	15.4	38.8			1.0		1.33		4.9		6.4											
+ 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.	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  $\ddagger$  =  
for Temp. (Col. 2), = .....  
"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  =  
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 12th, ..... = 56.0  
Lowest in Month, corrected for Index errors, on the 12th, ..... = 26.5  
Difference, or Monthly Range, ..... = 29.5  
"Corrected Mean" of all the Highest, (Col. 5), ..... = 44.7  
"Corrected Mean" of all the Lowest, (Col. 6), ..... = 36.0  
Difference, or Mean Daily Range, ..... = 8.7  
\*\* Calculated Mean Temperature of Month, ..... = 40.4  
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 15th, ..... = 40.0  
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, ..... = 46.7  
Lowest at Night, Black Bulb (corrected for Index errors), on the th, ..... = 21.5  
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, ..... = 33.8  
Difference of above means or range ("exposed"), .....

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), ..... = 40.2  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), ..... = 38.4  
Computed Temperature of Dew-Point, ..... = 36.1  
Do. Elastic Force of Vapour, ..... = 21.3  
Do. Weight of Vapour in a Cubic Foot of Air, ..... = 86  
Relative Humidity (Saturation = 100), ..... = 86  
RAIN fell on 1 Days; Amount in Inches, ..... = 1.41

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	-	3	-	1	6	8	1	5	1.02			
P.M.	3	-	4	-	1	5	11	-	1	1.33			
Mean.	4	0	5	0	1	5	9	1	3	1.18	1.39		

Observations made and Return verified by J. Murray Colinton

(Signed)







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Westgarth Villa, Colinton*, County of *Midlothian*, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea *6* miles.Height of Cistern of the Barometer above Mean Sea-Level *380* feet, above Ground *44* feet.During the MONTH of *March* 189*7*.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER. <i>Mercur.</i>				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.		9 P.M.		SUNSHINE. Hours.	9 h. A.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Barometer. * No.	Attached Ther- mometer	Barometer. No.	Attached Ther- mometer	Max. No.	Min. No.	Max. in Sun's rays No.	Min. on Grass. No.	Dry bulb. No.	Wet bulb. No.	Dry bulb. No.	Wet bulb. No.			Direction.	Force.	Direction.	Force.		Velocity (0-6) and Direction.	Amount (0-10), and Species.	Velocity (0-6) and Direction.	Amount (0-10), and Species.		No. 3 inches.						No. 12 inches.	No. 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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## 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.
li.	hail.	sq.	squalls.
li.	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	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  $\ddagger$  = \_\_\_\_\_  
for Temp. (Col. 2), = \_\_\_\_\_  
"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  = \_\_\_\_\_  
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, = *55.0*  
Lowest in Month, corrected for Index errors, on the \_\_\_\_\_ th, = *24.0*  
Difference, or Monthly Range, = *28.0*  
"Corrected Mean" of all the Highest, (Col. 5), = *45.4*  
"Corrected Mean" of all the Lowest, (Col. 6), = *37.3*  
Difference, or Mean Daily Range, = *8.1*  
\*\* Calculated Mean Temperature of Month, = *41.4*  
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the \_\_\_\_\_ th, = *91.0*  
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = *59.6*  
Lowest at Night, Black Bulb (corrected for Index errors), on the \_\_\_\_\_ th, = *23.0*  
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = *35.8*  
Difference of above means or range ("exposed"), = \_\_\_\_\_

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = *39.6*  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = *38.2*  
Computed Temperature of Dew-Point, = *36.4*  
Do. Elastic Force of Vapour, = *.215*  
Do. Weight of Vapour in a Cubic Foot of Air, = \_\_\_\_\_  
Relative Humidity (Saturation = 100), = *89*  
RAIN fell on \_\_\_\_\_ Days; Amount in Inches, = *3.34*

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

Observations made and Return verified by

*James Moncrey*  
*Westgarth Villa, Colinton.*

(Signed)



# INSTRUCTIONS

## 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 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 comparableness 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), of the following remarks, or at the top of the hour.

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 is FORTIN'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. Adie of London, and usually called the Board 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 not a few cases in setting the instrument to the zero point of the fixed scale when the light is not good. To show the accuracy with which these Barometers are made, it may be stated, that one was compared, during a whole year, with the Society's Standard Barometer, particular care being given to make the comparison when atmospheric pressure was rising or falling very rapidly, with the result that none of the readings differed from those of the Standard more than 0.003 inch.

A modification of Fortin'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 making 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 1.000 inch, 0.500 inch, and 0.050 inch; that is to say, instead of 29.365 inches, either of the following is sometimes set down—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 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 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 deranged 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.

# SCOTTISH METEOROLOGICAL OBSERVATIONS,

## WITH REMARKS ON THE USE OF INSTRUMENTS.

correct numbering 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 Philip'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 so essential towards the right discussion of many of the more important problems of the science. A Wind-Vane ought to be elevated at least 12 feet above surrounding objects. When it oscillates necessarily, 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 a course of being established by the Society for the systematic investigation of the relation of the force of the wind to BAROMETRIC 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 Fallabus, 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, 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 Fleming's, which are furnished with a measuring-rod attached to a float, the rod ought to be fixed down, and the float rise to its height only at the time the instrument is read, it being found that a stem projecting above the rim of the gauge seriously interferes with the proper measurement of the Rain-fall. When a measuring-glass is used, care should be taken to hold it quite perpendicular. The Rain Gauge ought to be read 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-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 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 obscuration 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 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 underground 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 on, where it is impracticable, from the ends of piers and rocks round the coast, and that it is not influenced by that of river water, and as little influenced as possible by currents sweeping along the coast, and thus acquiring the temperature of the land, either greatly heated by the sun or cooled by nocturnal radiation. At or near the time of high

# SCOTTISH METEOROLOGICAL OBSERVATIONS,

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

Mention what Test-Papers are used, Schönbein's or Mofat'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<sup>50</sup>, as an Ozone entry in the schedule will indicate that the Ozone paper is tinted as 3 on the scale, that the wind is from the N.W., and that its force on the scale 0—3 is 4, or blowing fresh.

Too much importance cannot be attached to the electric condition of the atmosphere in connection with terrestrial magnetism, barometrical, thermometrical, and electrical 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 room 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 is 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 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 the Seasons, possess not only great scientific value, but are of considerable importance in connection with Agriculture, Horticulture, and Nomenclature. The Periodic Return of the Seasons, vers 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.

(By Order)  
EDINBURGH, December 1891.

EDINBURGH.

122 George Street,

Scottish Meteorological Society,

To the SECRETARY

BOOK POST.

Mar 1891

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## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Nestgarth Villa, Clontarf, County of Middlesex, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 16 miles.Height of Cistern of the Barometer above Mean Sea-Level 380 feet, above Ground 44 feet.During the MONTH of April 1897.

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.  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.		9 P.M.			9 h. A.M.								
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max. No.	Min. No.	Max. in Sunray 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 (0-10), 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.																							
	1	28.900	50	29.230	56	41.5	26	81.5	21	38	35	34	30.5	1.07	N.	0.5	N.	1.5	2	8	none	4	Hail in p.m. Snow throughout the day.				1					
	2	29.430	51	29.500	57	40.5	37.5	92	24	37	32	32	30.5	1.02	N.	1.5	N.	1.5	1	5	do	8	Clouds + collected in flowers.				2					
	3	29.350	52	29.400	52	39.5	27	67.5	24	38	32.5	32.5	32		SE.	1.5	SE.	1.5	2	4	do	6	Light snow during day. Frost in morning. Poplar & Birch in leaf in field.				3					
	4	29.400	51	29.650	56	40.5	30.5	68	27.5	38	32	33	32				SE.	0.5	2	10	oct.	6				4						
	5	29.700	50	29.600	55	46	25.5	93	21.5	41.3	34	33	31				SE.	1.5	2	5	none	8	Frost in morning				5					
	6	29.460	50	29.400	53	45	?	75	28	42	35.5	38	36.5		SE.	1.5			2	5	oct.	2				6						
	7	29.400	49	29.680	54	44	31	72.5	29.5	38	36	37	36.5		SE.	1.5	SE.	1.5	2	10	do	5				7						
	8	29.590	50	29.550	54	52.5	27.3	98	24.5	37	36	39	35	0.6	Calm		SE.	1.5	2	5	none	6				8						
	9	29.500	51	29.550	56	50	39	66	36	47	44	40	38.5		N.	1.5	N.	0.5	2	5	do	6				9						
	10	out of order				53	34	95	31	47	39	38.5	34.5		Calm				2	5	none	8	Glass at 10.15 am				10					
	11	do				49.5	33.5	69	28	47	41	42	40		SE.	1.5	SE.	2	2	5	do	6				11						
	12	do				55.3	40.	89	39	47.5	43.5	45	44		SE.	1.5	SE.	2	2	5	do	6				12						
	13	do				53		65		45	43			0.12	Calm				2	5	oct.					13						
	14	do		29.210	54	45.5	34.5	75	33.5	40.5	37.5	36.5	34.5	0.02	N.	1.5	N.	2	2	5	do	8				14						
	15	29.450	53	29.450	54	51	34.5	75	32	42.5	39.5	40.5	38.5		N.	1.5	N.	2	2	5	do	8				15						
	16	29.250	53	29.400	55	49.8	39	74.5	38	44	41.5	41.5	38.5	0.35	N.	2	N.	1.5	2	5	do	6	Glass at 9.40 am.				16					
	17	29.300	52	29.150	55	48	37	54	35	44	41	39	37.5	0.04	N.	1.5	N.	1.5	2	5	do	6	9.20 am.				17					
	18	29.420	52	29.500	57	54.3	36	91	33	46.5	42	43.5	40.5	0.11	N.	1.5	N.	1.5	2	5	do	6				18						
	19	29.350	54	29.070	56	43	39	58	36.5	46	42	41	40		N.	1.5	N.	1.5	2	5	do	1				19						
	20	29.130	53	29.300	56.5	57	38.5	92	39	41	39.5	42.5	42	0.12	N.	0.5	Calm		2	5	do	2				20						
	21	29.450	52.5	29.600	55	46	35	70.5	32.5	44	41	36.5	35.5	0.22	Calm		SE.	1.5	2	5	do	8				21						
	22	29.700	51.5	29.750	53	47.5	32	81	29	43	40	39	37.5		N.	1.5	N.	1.5	2	5	do	8	Glass at 11.30 am.				22					
	23	29.700	50.5	29.640	54	44	37	59	37	42	40	39.5	37	0.01	SE.	1.5	SE.	1.5	2	5	do					23						
	24	29.650	51	29.620	52	48.5	32	98	28	43	40	39.5	38.5		N.	1.5	N.	1.5	2	5	do	6	Glass at 11.30 am.				24					
	25	29.560	52	29.480	57	48	33.5	90.5	31.5	41.5	39.5	42	40.5		SE.	1.5	SE.	1.5	2	5	do	6				25						
	26	29.520	53	29.620	55	52	38	102	36	50	48	39.5	38		SE.	1.5	SE.	1.5	2	5	do	8				26						
	27	29.550	52	29.550	56	43	37	46	36	44.5	44.5	43	42.5	0.02	Calm		Calm		2	5	do		Hick on hills but disagreeable all day				27					
	28	29.550	53.5	29.590	56	55	37.5	82.5	37	55	50	48.5	42.5	0.05			N.	1.5	2	5	do	8				28						
	29	29.440	55	29.260	58	56.5	40.5	75	37	50.5	45.5	46	43		N.	1.5	N.	2	2	5	do	6				29						
	30	29.150	55	29.320	56.5	57.8	39.5	78	38	48	43	41.5	40.5		N.	1.5	N.	1.5	2	5	do	6	Hail at 7 am.				30					
	31																											31				
Sums.						137	355	143	104	133	115	146	119	121																		
Means.						44.2	35.8	45.5	32.0	40.6	38.0	41.0	37.0	0.90																		
+ Total Corrections for Instrumental Errors.																																
+ Corrections for Diurnal Range.																																
"Corrected Means."																																
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

## NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	cirrus.	ms.	meteors.
ci-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. h. r.	snow.
h.	haze.	so. la.	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 corpus.	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  $\ddagger$  =  
for Temp. (Col. 2), = \_\_\_\_\_"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  =  
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, = 56.5Lowest in Month, corrected for Index errors, on the \_\_\_\_\_ th, = 25.5Difference, or Monthly Range, = 31.0"Corrected Mean" of all the Highest, (Col. 5), = 48.1"Corrected Mean" of all the Lowest, (Col. 6), = 34.7Difference, or Mean Daily Range, = 13.4\*\* Calculated Mean Temperature of Month, = 41.4S-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the \_\_\_\_\_ th, = 102.0"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 44.8Lowest at Night, Black Bulb (corrected for Index errors), on the \_\_\_\_\_ th, = 21.0"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 31.8

Difference of above means or range ("exposed"), = \_\_\_\_\_

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 41.4Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 38.5†† Computed Temperature of Dew-Point, = 35.0†† Do. Elastic Force of Vapour, = 2.03

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

†† Relative Humidity (Saturation = 100), = 49RAIN fell on 13 Days; Amount in Inches, = 1.21

WIND.		SUMMARY.				
Direction.		N	NE	E	SE	S
A.M.		2	4	4	2	9
P.M.		2	4	4	2	5
Mean.		2	0	5	4	3

\* Each instrument tested at the Office in Edinburgh bears the stamp "S.M.S.," and a number to be entered in the Heading; or the Number and Initials of the Maker may be here given.  
† Embracing corrections for both capillarity and Index Errors.  
‡ The Diurnal Range for Scotland is as yet unknown.  
†† Practically, though not absolutely a minute correction.  
‡‡ 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 byJ. Moncur  
Nestgarth Villa, Clontarf.

(Signed)







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Colinton, County of Edinburgh, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea \_\_\_\_\_ miles.Height of Cistern of the Barometer above Mean Sea-Level 380 feet, above Ground 4 feet.During the MONTH of May 1897.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER. <i>Anemoid</i>				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.			9 h. A.M.		9 h. P.M.		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.					
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max. No.	Min. No.	Max. in Sun's rays No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.		No. of hours in which it fell.	Amount in inches.	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. 3 inches.			No. 12 inches.	No. 22 inches.		Temperature of Well at depth of feet, No.	Temperature at 1 fathom, and Density.	9 A.M.	3 P.M.	Mention the hour at which Storms, including Thunder and Lightning, began and ended.	
		* No.	inches.	°	inches.	°	°	°	°	°	°	°	°		°	°	No.																				
	1			29.770	57	53	34.5	77	30.5	48	43	47	43		2	W	2		2	5	2	5	6										1				
	2	29.110	45	29.200	57	53.5	40	78	37.5	47.5	43	42	38.5	11	W	1.5	W	2	2	5	2	5	6										2				
	3	29.320	56	29.450	56	48	37	76	35	48	42	38	36		W	1							6										3				
	4	29.500	58	29.240	57	51.5	37	76	32	43	38.5	43.5	42	09	W	1.5	W	2	4	2	5	3											4				
	5	29.240	54	29.400	56	51	37	76	35	39	38	38	36.5	14	W	0.5	W	1	4	2	5	6											5				
	6	29.520	55	29.550	55	52.5	34.5	82	32	44.5	39.5	41.5	39.5	03	W	0.5	W	1	4	2	5	3											6				
	7	29.550	55	29.520	56	49.3	35.5	83	32	44	40.5	46	43.5	05	W	0.5	W	1.5	4	2	5	4											7				
	8	29.400	58.5	29.520	57	55	41	67	37	53	50	42	39	01	W	1.5	W	1.5	4	2	5	6											8				
	9	29.580	56	29.700	59	58.5	39	87	36	49	42	42.5	38.5		W	1.5			2	5	2	8											9				
	10	29.530	57	29.500	57	49.3	35.5	78	33	48.5	42.5	46	43.5		W	1	W	1.5	2	5	2	8											10				
	11	29.570	55	29.600	55	46.5	33	72	30	44.5	38.5	38	33		W	1	W	1	4	2	5	4											11				
	12	29.640	52	29.720	54	45	33.5	84	31.5	40	32.5	39	35				W	0.5	4	2	5	4											12				
	13			29.660	58	55.5	30.5	105	27	43	40	48	43				Caln					6												13			
	14	29.650	55	29.710	57	53.3	42.3	68	35	49.5	47.5	50	48	12	W	0.5	W	1	4	2	5													14			
	15	29.800	56	29.850	56	60.3	48	68	44	51	47	50	45		W	1.5	W	1	4	2	5	8												15			
	16	29.920	56	29.900	57	64.8	46	105	43.5	58.5	51.5	47	44.5		W	1	W	0.5	4	2	5	10												16			
	17	29.890	57	29.900	57	60.3	34	115	37.5	57	48	47	45		W	1	W	1	4	2	5	10												17			
	18	29.900	55	29.850	55	53.5	41.5	101	39.5	44	42.5	42.5	40.5		W	1.5	W	2	4	2	5	6												18			
	19	29.850	53	29.800	55	51.5	29	95	38	43.5	40	42.5	40		W	1	W	1	4	2	5	6												19			
	20	29.750	55	29.750	55	53.3	37.5	101	40	44.5	42.5	43	43		W	0.5	W	1	4	2	5	6												20			
	21	29.740	58	29.620	55	60.3	40	113	41	43	43	46	44		W	1	W	0.5	4	2	5	8												21			
	22	29.570	53.5	29.570	53.5	52	38	112	38	46	44	43	41		W	0.5	W	1	4	2	5	6												22			
	23	29.570	53	29.600	53	60.3	41	106.5	41	46	44.5	43	41		W	1.5	W	1	4	2	5	6												23			
	24	29.600	53	29.500	53	53.5	41	101	41	46	41.5	46	42		W	0.5	W	1	4	2	5	6												24			
	25	29.370	52.5	29.200	54	50.5	43.5	59	43.5	46	45.5	43.5	43	02	W	0.5	W	1	4	2	5													25			
	26			29.000	52	52.5	41	71	40	42	40	43	40	24	W	1	W	1	4	2	5	2													26		
	27	29.000	53	29.040	53	53.0	38.5	83.5	36	49	45	46	46	11	W	0.5	Caln		4	2	5	2												27			
	28	29.030	53	29.540	54	47.3	35.5	84.5	37	46.5	46.5	46.5	46.5	07	W	0.5	W	1	4	2	5													28			
	29	28.850	55	29.030	54	58	42	95	41	49	47	51	46.5	40	W	2	W	2	4	2	5	4												29			
	30	29.220	54	29.400	56	62.3	47	96	45	54	49	55	49.5	03	W	1.5	W	1	4	2	5	6												30			
	31	29.470	57.5	29.580	58	67	52	105	49	58	52	53	49	12	W	0.5	W	0.5	4	2	5	10													31		
Sums.						1310	145	1614	123	127	133	145	164																								
Means.						54.3	39.4	87.0	37.2	47.3	43.5	44.7	47.3																								
+ Total Corrections for Instrumental Errors.																																					
+ Corrections for Diurnal Range.																																					
"Corrected Means."																																					
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction  $\ddagger$  =  
for Temp. (Col. 2), = \_\_\_\_\_

"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  =  
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 31 th, = 67.0

Lowest in Month, corrected for Index errors, on the 13 th, = 30.5

Difference, or Monthly Range, = 36.5

"Corrected Mean" of all the Highest, (Col. 5), = 54.3

"Corrected Mean" of all the Lowest, (Col. 6), = 39.4

Difference, or Mean Daily Range, = 14.9

\*\* Calculated Mean Temperature of Month, = 46.8

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 9 th, = 113.0

"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 87.0

Lowest at Night, Black Bulb (corrected for Index errors), on the 13 th, = 27.0

"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 37.2

Difference of above means or range ("exposed"), = \_\_\_\_\_

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 46.0

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 45.4

†† Computed Temperature of Dew-Point, = 44.7

†† Do. Elastic Force of Vapour, = 297

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

†† Relative Humidity (Saturation = 100), = 96

RAIN fell on 14 Days; Amount in Inches, = 1.64

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

Observations made and  
Return verified byWm. Kennedy  
Westgarthville Colinton

(Signed)















# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Portguthrie, County of Perthshire, in Lat. 56° 15' N, Long. 3° 15' W, Distance from Sea 6 miles.  
Height of Cistern of the Barometer above Mean Sea-Level 380 feet, above Ground 4 feet. During the MONTH of July 1897.

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.  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.		9 P.M.			9 h. A.M.										
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max.	Min.	Max. in Sun-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.	Velocity (0-6) and Direction.	Amount (0-10), and Species.		Velocity (0-6) 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	29.660	61	29.680	62	61	52		59	57	55.5	57	01	N. 0.5																1				
	2	29.680	61	29.500	63	71	58		58	65	57.5	60	56		N. 1.	0.2														2				
	3	29.400	62	29.480	61	61.5	48.5	110	47.5	54.5	49.5	50.5	47.5		N. 2.	1.5														3				
	4	29.480	60	29.530	60	62	47.3	97	47.3	52.5	53	51.5	48.5		N.W. 2.	1.5														4				
	5	29.300	60.5	28.950	60	65	52	70	52	61.5	58.5	53.5	50.5		N. 2.	1.5														5				
	6	29.000	60	29.030	49	60	47		47	53	49	48	45	11	N. 2.	1.5															6			
	7	29.150	58	29.350	47	60	46		46	51	48	48	44	0.5	N.W. 1.	1.															7			
	8	29.450	57	29.300	58	56	51		50	52	47	53	50		N. 1.	2.5															8			
	9	29.350	58	29.570	59	63	52		50	58	54.5	53	49	0.5	N. 1.5	Calm															9			
	10	29.800	60	29.850	59	65	51		49	63	58	53	52		N. 0.5	1.5															10			
	11	29.900	61	29.870	62	74	45	114	44	64	55	57	52.5		Calm	Calm															11			
	12	29.880	63	29.870	64	76	52	107	52	62	55	55	52.5			2.5															12			
	13	29.850	63	29.800	60	58	51		52	54	54	52			Calm	Calm															13			
	14	29.750	62	29.670	63	66	48		48	63	55	50	47.5		N.E. 0.5	2.5															14			
	15	29.620	63	29.700	63	81	58	114	56	69	57	55	52		N. 0.5	1.5															15			
	16	29.720	65			67	53		57	67	56	54.5	52		0	0															16			
	17	29.750	64			63	53	89		60	55	57	53		0	2															17			
	18	29.680	62	29.150	64	70	47	102	47.5	60	54	53.5	51		N. 1.	1.															18			
	19	29.500	65	29.400	63	72	44	116	55	65.5	66	52.5	52		N. 0.5	1.															19			
	20	29.370	62	29.480	62	51	51	54.5	51	53	52	52	51.3	0.5	N.E. 1.	1.5															20			
	21	29.400	62	29.500	60	55.5	49	53	50	52.5	57.5	54.3	53.3	0.5	Calm																21			
	22	29.530	60	29.580	61	68.8	57.5	52	57.5	53.5	60	56.3		1.0	N. 0.5	1.5															22			
	23	29.650	61	30.650	64	74.8	51.		51	65	57	62	59.5		N.W. 1.	1.5															23			
	24	29.500	64	29.450	66	72	60		60	65	60	62	60		N. 1.	Calm															24			
	25	29.330	65	29.240	65	66.5	53		52.5	64	68	58.5	51.5	0.27	N. 1.5	1.5															25			
	26	29.250	64	29.350	64	64	54		53	60	56	55	53	0.20	N. 2.	1.5															26			
	27	29.380	64	29.450	65	64	52		53	61	55	53.5	50.5		N. 2.	1.5															27			
	28	29.550	64	29.630	63	66	49		54	60	54	57	55.5		N. 1.	1.5															28			
	29	29.750	64	29.830	65	69.5	56		54	65	62	60.5	58	0.06		1.															29			
	30	29.870	64	29.900	66	72	55		55	67	62	58.5	55		1.5	0															30			
	31	29.820	65	29.740	65	69	54		54	58	55.5	59	57		N. 0.5	0															31			
Sums.						123	131			143	163	127	126	1.64		5		6																
Means.						660	573			607	53.6	549	52.3			90		89																
+ Total Corrections for Instrumental Errors.																																		
+ Corrections for Diurnal Range.																																		
"Corrected Means."																																		
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			

## NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	" cirrus.	ms.	" meteors.
ci-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. ha.	" solar halo.
h. d.	" heavy dew.	sq.	" squall.
hl.	" hail.	sq.	" squalls.
l.	" lightning.	t. s.	" 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  $\ddagger$  for Temp. (Col. 2), = 29.660  
"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  for Temp. (Col. 4), = 29.680  
Mean at Station, corrected, and at 32°, = 29.680  
Correction for height, feet above Mean Sea-level, = 380  
Mean, reduced to 32°, and Sea-level, = 29.500  
Highest Reading, corrected for Index error, on the 61th, = 29.680  
Lowest Do. Do., on the 63th, = 29.500  
Difference, or Monthly Range, = 0.180

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 15th, = 81.0  
Lowest in Month, corrected for Index errors, on the 7th, = 44.0  
Difference, or Monthly Range, = 37.0  
"Corrected Mean" of all the Highest, (Col. 5), = 66.0  
"Corrected Mean" of all the Lowest, (Col. 6), = 51.3  
Difference, or Mean Daily Range, = 14.7  
\*\* Calculated Mean Temperature of Month, = 58.6  
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 15th, = 81.0  
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 66.0  
Lowest at Night, Black Bulb (corrected for Index errors), on the 7th, = 44.0  
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 51.3  
Difference of above means or range ("exposed"), = 37.0

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 57.8  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 54.0  
Computed Temperature of Dew-Point, = 50.6  
Do. Elastic Force of Vapour, = 368  
Do. Weight of Vapour in a Cubic Foot of Air, = 77  
Relative Humidity (Saturation = 100), = 77  
RAIN fell on 10 Days; Amount in Inches, = 1.54

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.		1	1	3	1		2	15	2	6	90
P.M.			2	2			2	13	2	10	89
Mean.		0	1	2	2		2	14	2	8	90

Observations made and Return verified by James Munro  
Portguthrie, Perthshire

(Signed)

0.81







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Westport Villa, Edinburgh*, County of *Midlothian*, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea *6* miles.Height of Cistern of the Barometer above Mean Sea-Level *380* feet, above Ground *4* feet.During the MONTH of *August* 189*7*.

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.		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.					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. No.	Barometer. No.	Attached Thermometer. No.	Max. No.	Min. No.	Max. No.	Min. 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. 1. inches.	No. 2. inches.			No. 3. inches.	Temperature of Wet bulb, No.			Temperature and Density.	9 A.M.	9 P.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
1	29.700	64	29.690	65	70	53	53	55	55	55	56	—	0	1	1	—	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	h	Mac	5	

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction  $\frac{1}{100}$  for Temp. (Col. 2), = \_\_\_\_\_

"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\frac{1}{100}$  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, = *77.0*

Lowest in Month, corrected for Index errors, on the \_\_\_\_\_ th, = *43.5*

Difference, or Monthly Range, = *33.5*

"Corrected Mean" of all the Highest, (Col. 5), = *64.2*

"Corrected Mean" of all the Lowest, (Col. 6), = *50.0*

Difference, or Mean Daily Range, = *17.2*

\*\* Calculated Mean Temperature of Month, = *58.6*

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the \_\_\_\_\_ th, = *115.0*

"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = *94.6*

Lowest at Night, Black Bulb (corrected for Index errors), on the \_\_\_\_\_ th, = *45.0*

"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = *51.5*

Difference of above means or range ("exposed"), = \_\_\_\_\_

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = *58.8*

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = *55.2*

†† Computed Temperature of Dew-Point, = *52.0*

†† Do. Elastic Force of Vapour, = *3.89*

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

†† Relative Humidity (Saturation = 100), = *48*

RAIN fell on \_\_\_\_\_ Days; Amount in Inches, = *2.42*

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Caln or Variable.	Mean Force.
A.M.		—	—	3	3	3	4	7	2	9	0.77
P.M.		—	—	2	6	5	4	5	4	5	1.00
Mean.		0	0	3	4	4	4	6	3	7	0.88

= 0.77

Observations made and  
Return verified by







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Northguthrie Hill, Edinburgh*, County of *Midlothian*, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea *6* miles.Height of Cistern of the Barometer above Mean Sea-Level *380* feet, above Ground *4* feet.During the MONTH of *September* 189*7*.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS.				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.			9 h. A.M.		9 h. P.M.		9 A.M.		P.M.			9 h. A.M.				0-10.								
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max.	Min.	Max.	Min.	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.		Temperature of Wet Bulb at depth of feet, No.	Temperature and Density.				9 A.M.	9 P.M.		
		* 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.	No.
		inches.	°	inches.	°	°	°	°	°	°	°	°	°		°	°	°	°	°	°	°	°		°	°	°		°	°				°	°	°	°
	1	29.150	60	29.957	60	63	49.5	76	50	59.5	55	58	54.5			N. 1.	0			2.10	10	0	0								1					
	2	29.050	59	29.200	58	55	47.5	58	47.5	53	52	50	47.5	29	0	8.	0.5			0	0	0	0								2					
	3	29.350	56	29.290	56	55	42	92	42	51	46	43.5	42	12	0	N. 1.5	NW 1.5			fine	0	0	0	1	Slight shower of snow during day						4					
	4	29.390	55	29.500	56	58	37	77	38	47	44	47	45.5	37	0	N. 1.	N. 1.5				0	0	0	3								5				
	5	29.250	54	29.150	54	56.5	42	65	42.5	47	46.5	50.5	48.5		0	Calm	NW 1.5			2.10	10	0	0	3								6				
	6	29.210	54	29.480	54	61.5	45	85	45	52.5	49.5	49.5	46	03	0	N. 1.5	NW 1.			2.10	10	0	0	2								7				
	7	29.600	54	29.570	54	57.5	35	95	36	47.5	44.5	46	44.5	01	0	NW 0.5	N. 0.5			2.10	10	0	0	6	flashes at 11. 20 Pm						8					
	8	29.560	54	29.570	53	59	37	97	38	51	47	40	39		0	0	N. 0.5				2.10	10	0	0	5	Dr. 9. 45						9				
	9	29.700	53	29.850	53	54	35.5	73.5	37	48	46	46.5	44.5		0	NW 0.5				1.10	10	0	0	5								10				
	10	29.900	53	29.900	53	55.5	33.5	92	35	51.5	46.5	43	41.5			N. 1.	NW 0.5			1.10	10	0	0	8								11				
	11			29.920	54	62.5	33.3	99.5	34	55	53	52	49							2.10	10	0	0	8								12				
	12	30.000	55	29.980	59	63	39	80	39	54.5	52.5	57	53.5			NW 1.	N. 1.			1.10	10	0	0	8								13				
	13	30.000	60	30.020	61	62.5	53.5	99.5	54	61	58.5	52	49		0	0	N. 1.				1.10	10	0	0	2								14			
	14	29.900	60	30.030	61	65	52	76	53	60	59	54.3	52.3		0	0	NW 1.5				2.10	10	0	0	3								15			
	15	29.830	59	29.730	59	60	47.5	79	49	51	49	51	49.5	20	0	NW 0.5	N. 1.5			2.10	10	0	0	2								16				
	16	29.450	57	29.360	56	60	44	86	45	49	47	47.5	47							0	0	0	0	2								17				
	17	29.200	57	29.330	58	57	40	99	40	47	46.5	42	42	26	0	N. 0.5	NW 1.			2.10	10	0	0	4	Thunder about 11 am - killed fire at night 9-10 Pm						18					
	18	29.270	58	29.370	57	55	36	98	37	49.5	47	41.5	41	01	0	NW 0.5				1.10	10	0	0	5	Misty day						19					
	19	29.460	54	29.600	60	55.5	36.5	89	35	57.3	55.3	42	41.3			N. 0.5	N. 0.5			2.10	10	0	0	8								20				
	20	29.500	57	29.300	55	62	48.5	96	38	58.5	56	50	49.5			NW 0.5	N. 1.			2.10	10	0	0	8								21				
	21	29.150	57	29.370	58	60	45	92	45	59	56	48.5	47.5			1.5	N. 1.5			2.10	10	0	0	6								22				
	22	29.250	57	29.100	60	53	44	60	44	51.5	49.5	47	46	12	0	N. 1.5				0	0	0	0	1								23				
	23	29.000	58	28.950	60	61	43	79.5	42	57.5	50	55.5	52.5			N. 2.	2			0	0	0	0									24				
	24	29.000	58	29.280	61	58	45.5	59	45	56	53	48.5	46.5	13	0	2	2			0	0	0	0									25				
	25			29.500	61	60	43	92	43	52	51	53	52							0	0	0	0	4								26				
	26	29.590	58	29.620	61	62	45	86.5	45	54.5	52.5	47.5	46.5	09	0	N. 1.5	N. 1.5			2.10	10	0	0	6								27				
	27	29.700	57	29.740	62	62	44	76	44	52	49	55	52			N. 1.				2.10	10	0	0	4								28				
	28	29.640	58.5	29.500	59	66	46	100	47	58	53	58	55			N. 2.	2				0	0	0	6								29				
	29	29.420	58	29.350	62	61	46	64	47	58	56	51	49	03	0	N. 1.	N. 0.5			0	0	0	0		Mist all day.						30					
	30	29.420	58	29.530	62	61	38	92	39	52	50	50	45.5	09	0	N. 0.5	N. 0.5			0	0	0	0	6	flashes at 11 Pm.						31					
	31																																			
Sums.						113	154	162	151	145	164	125	167	175		5	8																			
Means.						2815	736	30	760	953	208	537	246			215	260																			
+ Total Corrections for Instrumental Errors.																																				
+ Corrections for Diurnal Range.																																				
"Corrected Means."																																				
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction ++ = \_\_\_\_\_  
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 28th, = 66.0  
Lowest in Month, corrected for Index errors, on the 11th, = 33.3  
Difference, or Monthly Range, = 32.7  
"Corrected Mean" of all the Highest, (Col. 5), = 59.4  
"Corrected Mean" of all the Lowest, (Col. 6), = 42.5  
Difference, or Mean Daily Range, = 16.9  
\*\* Calculated Mean Temperature of Month, = 51.0  
S-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 11th, = 100.0  
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 83.8  
Lowest at Night, Black Bulb (corrected for Index errors), on the 11th, = 34.0  
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 42.5  
Difference of above means or range ("exposed"), = \_\_\_\_\_

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 51.2  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 49.1  
Computed Temperature of Dew-Point, = 46.9  
Do. Elastic Force of Vapour, = 323  
Do. Weight of Vapour in a Cubic Foot of Air, = \_\_\_\_\_  
Relative Humidity (Saturation = 100), = 86  
RAIN fell on 13 Days; Amount in Inches, = 1.75

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

Observations made and  
Return verified by*James McHenry*  
*Northguthrie Hill, Edinburgh*

(Signed)







Observations taken at Nest 9 mi. E. of Lake Umbagog, County of Middlesex, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 6 miles.

During the MONTH of October 1897

During the MONTH of October 1897

<b>BAROMETER</b> , "corrected Mean" at 9 A.M., <i>minus</i> the Correction $\ddagger$ = for Temp. (Col. 2), = .....  "Corrected Mean" of Barometer at 9 P.M., <i>minus</i> the Correction $\ddagger$ = for Temp. (Col. 4), = .....  <b>Mean at Station, corrected, and at 32°</b> , ..... =  Correction for height,      feet above Mean Sea-level, ..... =  <b>Mean, reduced to 32°, and Sea-level</b> , ..... =  Highest Reading, corrected for Index error, on the      th, ..... =  Lowest      Do.      Do.,      on the      th, ..... =  Difference, or <b>Monthly Range</b> , ..... =	<b>S.-R. THERMOMETER</b> , (in shade, etc.), <b>Highest in Month</b> , (corrected for Index Errors), on the      th, ..... = <u>65.0</u>  <b>Lowest in Month</b> , corrected for Index errors, on the      th, ..... = <u>26.0</u> Difference, or <b>Monthly Range</b> , ..... = <u>39.0</u> "Corrected <b>Mean</b> " of all the Highest, (Col. 5), ..... = <u>55.3</u> "Corrected <b>Mean</b> " of all the Lowest, (Col. 6), ..... = <u>39.3</u> Difference, or <b>Mean Daily Range</b> , ..... = <u>16.0</u> ** Calculated <b>Mean Temperature</b> of Month, ..... = <u>47.3</u>  <b>S.-R. THERMOMETER, Black Bulb in Sun, Highest</b> , (corrected for Index Errors), on the      th, ..... = <u>95.0</u> "Corrected <b>Mean</b> ," (Col. 7), of <b>Black Bulb, Max. in Sun</b> , ..... = <u>66.6</u> Lowest at Night, Black Bulb (corrected for Index errors), on the      th, ..... = <u>26.0</u> "Corrected <b>Mean</b> ," (Col. 8), of <b>Black Bulb, Min. on grass</b> , ..... = <u>39.2</u> Difference of above means or range ("exposed"), .... =	<b>HYGROMETER, Mean</b> (corrected) A.M. and P.M. Reading of <b>Dry Bulb</b> , (Cols. 9 and 11), ..... = <u>47.8</u>  <b>Mean</b> (corrected) A.M. and P.M. Reading of <b>Wet Bulb</b> , (Cols. 10 and 12), ..... = <u>46.3</u> $\ddagger$ Computed <b>Temperature of Dew-Point</b> , ..... = <u>44.6</u> $\ddagger$ Do. <b>Elastic Force of Vapour</b> , ..... = <u>296</u> $\ddagger$ Do. <b>Weight of Vapour in a Cubic Foot of Air</b> , ..... = $\ddagger$ <b>Relative Humidity</b> (Saturation = 100), ..... = <u>89</u> <b>RAIN</b> fell on <u>8</u> Days; Amount in Inches, ..... = <u>1.12</u>
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\* 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 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,

{ J. Murray  
Westport Villa, Colorado

(Signed)







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Colinton*, County of *Midlothian*, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea *6* miles.Height of Cistern of the Barometer above Mean Sea-Level *380* feet, above Ground *4* feet.During the MONTH of *November* 189*7*.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER. <i>Anoid</i>				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.	WIND.				CLOUDS.				SUNSHINE. Hours.	THERMOMETERS under Ground.			SEA. Temperature at 1 fathom, and Density.	OZONE. 0-10.	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.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max.	Min.	Max.	Min.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.		No. of hours in which it fell.	Amount in inches.	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. 3 inches.					No. 12 inches.	No. 22 inches.
		* No.	inches.	* No.	inches.	No.	No.	No.	No.	No.	No.	No.	No.		No.	No.	No.	No.	No.	No.	No.	No.		No.	No.	No.					No.	No.
	1	29.900	53	29.930	56	55.37.5	51.36	48.47	46.54.3						Calm	8.05			Stdy	1st	brct	2								1		
	2	29.900	54	29.900	56	48.54.5	52.37	48.48	42.41.5						do	do			Fog		huc									2		
	3	29.750	53	29.850	55	47.31	46.50	42.41	37.36.5						St. 1.	do			huc		brct	3								3		
	4	29.850	53	29.800	55	46.34	49.35	29.38.5	43.42						St. 0.5	0			brct		do	2								4		
	5	29.800	54			45.41		42.40	44.43						0				do												5	
	6	29.850	55	29.800	57	46.53.5	50.41	41.40.5	44.43.5						0	0			do		brct									6		
	7	29.870	55	29.790	57	47.34.1	48.41	45.54.5	45.44.5						St. 1.	8.1			brct		do										7	
	8	29.700	53	29.780	56	50.84.5	52.43	49.54.5	50.48						St. 1.				St. 1.		do										8	
	9	29.850	55	29.850	57	53.45	57.38	47.54.7	43.54.3						0	8.05			0		30. brct	3								9		
	10	29.800	55	29.700	58	51.34.0	55.38	50.54.5	51.49.5						0.2	0			brct		brct										10	
	11	29.700	56	29.530	59	53.45	55.45	49.47	52.54.9.5						0	St. 1.5			do		St. 1.5										11	
	12			28.950	59	56.54	57.54.7	55.53	56.53.5						7.5	St. 2.5	5.15		do		St. 2.5										12	
	13	28.950	59	29.130	60	51.34.2.5	58.44	50.49.5	50.47						Calm	St. 1.			St. 1.		brct										13	
	14	29.140	58	29.600	60	49.53.3	49.33	48.54.5	35.53.3						do	8.15			Fog		do										14	
	15	29.700	55	29.900	56	40.25.5	36.24	32.53.0	28.52.7						St. 1.	St. 1.			huc		huc	3									15	
	16	29.750	51	29.500	54	47.30	47.22	37.33.5	46.43						St. 2.	St. 3.			do		brct										16	
	17	29.400	52	29.450	56.5	55.44	57.54.5	55.52.5	49.84.8						St. 1.				St. 1.		do										17	
	18	29.570	55.5	29.670	57	50.34.2.3	50.41	46.42.5	47.44.5						St. 1.5	St. 2.			St. 1.5		St. 2.	1									18	
	19	29.700	58.5	29.800	56	53.44	55.43	51.54.8.5	51.50						St. 2.	St. 2.			St. 2.		brct	1									19	
	20	29.950	55.5	30.000	59	53.47	53.46.5	52.48.5	57.54.9.8						St. 0.5	St. 1.			0		do										20	
	21	30.000	57	30.000	60	51.43	53.42	49.54.7.5	46.54.4.5						St. 0.5	St. 1.5			St. 0.5		huc										21	
	22			30.000	58.5	49.54.2	50.41	48.47	44.54.2.5						St. 1.5	St. 1.5					do	3									22	
	23	29.930	57	30.000	57	51.38	55.29	47.54.6.3	40.40						St. 1.	St. 1.5			St. 1.		brct										23	
	24	29.900	54	29.800	56	44.37.3	45.38	40.40	41.64.1.5						St. 0.5	Calm			brct		brct										24	
	25	29.900	51	29.900	54	42.53.7	44.36	39.38	42.53.9.5						St. 1.	St. 1.			St. 1.		do										25	
	26	29.670	52	29.650	55	47.54.0	48.40	46.45	43.41.5						St. 2.	St. 1.5			do		huc										26	
	27	29.460	53	29.870	56	47.36	48.53.5	47.45	39.37						St. 1.5	St. 1.5			huc		do	2									27	
	28	28.750	52	29.390	56	42.32	42.31.5	41.53.8.5	34.53.5						St. 1.5	St. 1.5			brct		do	1									28	
	29	29.200	51	29.250	54	41.30		40.39	35.32						St. 0.5	St. 1.5			huc		huc										29	
	30	28.900	51	28.820	52	45.33	45.28	41.39	36.34.5						St. 1.5	St. 1.			brct		huc										30	
	31																															31
Sums.						125 11.3	132 12.1	145 16.7	126 13.8	224					5																	
Means.						25.93	26.57	27.02	25.05	1650	1198	1169	1496		240																	
+ Total Corrections for Instrumental Errors.						48.6388	50.3379	45.3440	43.9423						.80																	
+ 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.	enotes meteor.		
ci.	" cirrus.	ms.	" meteors.		
ci.-en.	" cirro-cumulus.	h.	" nimbus.		
ci.-s.	" cirro-stratus.	r.	" rain.		
cu.	" cumulus.	c. 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.	so. ha.	" solar halo.		
h.	" haze.	sq.	" squall.		
h. d.	" heavy dew.	sq.	" squalls.		
hl.	" hail.	t.	" thunder.		
l.	" lightning.	t. s.	" thunder-storm.		
li. cl.	" light clouds.	w.	" wind.		
li. sh.	" light showers.	g.	" gale of wind.		
lu. co.	" lunar corona.				
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.	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.	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  $\ddagger$  = \_\_\_\_\_  
for Temp. (Col. 2), = \_\_\_\_\_  
"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  = \_\_\_\_\_  
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 12th, = 56.5-  
Lowest in Month, corrected for Index errors, on the 15th, = 25.5-  
Difference, or Monthly Range, = 31.0-  
"Corrected Mean" of all the Highest, (Col. 5), = 48.6-  
"Corrected Mean" of all the Lowest, (Col. 6), = 38.8-  
Difference, or Mean Daily Range, = 9.8-  
\*\* Calculated Mean Temperature of Month, = 43.7-  
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 17th, = 77.5-  
"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), = 44.6-  
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 43.2-  
 $\ddagger$  Computed Temperature of Dew-Point, = 41.5-  
 $\ddagger$  Do. Elastic Force of Vapour, = .263-  
 $\ddagger$  Do. Weight of Vapour in a Cubic Foot of Air, = \_\_\_\_\_  
 $\ddagger$  Relative Humidity (Saturation = 100), = 90-  
RAIN fell on 12 Days; Amount in Inches, = 2.24

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.	2			2	1	2	3	10		10	.80
P.M.				2		1	3	11	2	6	1.03
Mean.	10	4	1	2	3	10	1	8			.92

0.85-

Observations made and  
Return verified by*James Macnair*  
*Westgarth villa, Colinton.*

(Signed)







## SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Colinton, County of Midlothian, in Lat. \_\_\_\_\_, Long. \_\_\_\_\_, Distance from Sea 6 miles.Height of Cistern of the Barometer above Mean Sea-Level 380 feet, above Ground 4 feet.During the MONTH of December 1897.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER. <i>Baroid</i>				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.	WIND.				CLOUDS.				SUNSHINE. Hours.	THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS.	Days of Month.			
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.			9 h. A.M.		9 h. P.M.		9 A.M.		9 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.	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.	
		* No.	inches.	°	inches.	°	°	°	°	°	°	°	°		No.	°	°	°	°	°	°	°		°	°	°					°	°	°
	1	29.000	48	29.530	51	45	27	35	25.5	32	32	30.5	29		Calm	8.1			over	8.1											1		
	2	29.750	48	29.960	51	39.5	25.5	37	22	33	32	31	29.5		W. 0.5	1.1			none	none											2		
	3	29.750	47	29.570	50	40	27.5	39.5	26	37	36	39.5	37.5		Calm	1.1	1.5		do	2.1											3		
	4	29.570	47.5	29.650	48	42	36	44	37	41	40	40	39.3		do	6.05			do	2.1												4	
	5	29.580	51	29.490	52	53	32	47	30.5	41.5	41	45.5	43.5		Variable	1.25			3.1	2.1											5		
	6	29.300	51	29.300	55	46.8	34	46	34	41	39	38	37		W. 0.5	1.1	2.5		2.1	1.1											6		
	7	29.150	51	28.600	56	57.5	37	45.5	32.5	42.5	40.5	43.5	41.5		W. 2.5	2.5	2		2.1	1.1											7		
	8	29.500	51	28.250	55	48.5	30	44	31	33.5	32.5	37	36		W. 1.5	1.1	2.5		2.1	1.1											8		
	9	28.430	51	28.760	54	42.5	35	44	34	40.5	38.5	39.5	37.5		W. 1.5	1.1	1.5															9	
	10			28.500	54	40	34	42	34	38	37	38	37.5			6.05																10	
	11	28.750	51	28.970	54	41	33.5	42	31	37.5	36.5	35	33.5		W. 1.1	1.1	1		2.1	1.1												11	
	12	29.130	49	29.180	53	40	28	38	29	36.5	35.1	32	31.3		W. 1.1	1.1	1		2.1	1.1												12	
	13	28.870	48	28.850	53	43.5	29.5	44	27	38.5	36.5	42.5	41.5		W. 2.1	1.5	1.5		2.1	1.1												13	
	14	28.820	48	28.870	53	50.3	34	48	34	38.5	36	37	36		W. 1.1	1.1	1		2.1	1.1												14	
	15			29.200	54	45	34	45	34	41	40	41.5	39			1.5	2.5		2.1	1.1												15	
	16	28.970	51	29.120	55	53	35.5	51	38	51	48.8	51.5	49.5		W. 1.5	2.5	2		2.1	1.1												16	
	17	29.400	53	29.500	56	52	45	51	46	50	48	47	46		Calm	2			2.1	1.1												17	
	18	29.600	52			48	30			43	42	31	30		do				2.1	1.1												18	
	19	29.750	51	29.850	58	48	27	32	25	29.5	29.5	35	35		do	Calm			2.1	1.1												19	
	20	29.800	58	30.030	56	37.5	34	40	31.5	38	36.5	37	36.5		do	6.05			2.1	1.1												20	
	21	29.950	57	30.000	47	39	26.5	40	27	31	30.5	32.3	31		W. 0.5	2			2.1	1.1												21	
	22	30.000	47	29.940	42	36	22.5	28	20	25.5	25.5	25.5	25		W. 0.5	none			2.1	1.1												22	
	23	29.920	39	29.870	37	31	27.5	22.5	22	27.5	28	25	24		W. 1.1	0.5			2.1	1.1												23	
	24	29.850	37			36	24			29	29	28	27		Calm				2.1	1.1													24
	25	29.700	44	29.750	53	45	22	46	40	43	42	44	43		W. 1.5	1.1	1		2.1	1.1												25	
	26	29.400	47	29.270	47	50	36			46	44	51	50		W. 1.1	1.1	1		2.1	1.1												26	
	27	29.100	47	29.050	47	45	37	44.5	32	43	40.5	39	38		W. 0.5	1.1	1.5		2.1	1.1												27	
	28	29.050	47	29.000	47	45	37	44.5	32	43	40.5	39	38		W. 0.5	1.1	1.5		2.1	1.1												28	
	29	28.600	45	28.650	51	50	47	52	47	49.5	48	51	47		W. 0.5	1.1	2		2.1	1.1												29	
	30	28.250	49	28.450	50	54	40	55	41	45	40	42	39		W. 0.5	1.1	2		2.1	1.1												30	
	31	28.350	48	28.600	54	46	36.5	50	37	40	38	43	41		W. 0.5	1.1	1.5		2.1	1.1												31	
Sums.						124	154	121	112	146	146	134	166	310		5	6																
Means.						1621	845	900	730	18.5	23.96	18.8	22.31			28.5	38.5																
+ Total Corrections for Instrumental Errors.						452	327	432	326	391	377	387	372			92	124																
+ 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.	cirrus-cumulus.	n.	nimbus.		
ci.-s.	cirrus-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.		
li. cl.	lightning.	t.	thunder.		
li. sh.	light showers.	t. s.	thunder-storm.		
lu. co.	lunar corona.	w.	wind.		
lu. ha.	lunar halo.	g.	gale of wind.		

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  $\ddagger$  for Temp. (Col. 2), = \_\_\_\_\_

"Corrected Mean" of Barometer at 9 P.M., minus the Correction  $\ddagger$  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 30th, = 54.0

Lowest in Month, corrected for Index errors, on the 22nd, = 22.5

Difference, or Monthly Range, = 31.5

"Corrected Mean" of all the Highest, (Col. 5), = 45.2

"Corrected Mean" of all the Lowest, (Col. 6), = 32.2

Difference, or Mean Daily Range, = 12.5

\*\* Calculated Mean Temperature of Month, = 39.0

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), = 38.9

Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 37.4

†† Computed Temperature of Dew-Point, = 35.5

†† Do. Elastic Force of Vapour, = 208

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

†† Relative Humidity (Saturation = 100), = 89

RAIN fell on 18 Days; Amount in Inches, = 3.10

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.	1		1			3	8	7		9	92
P.M.				5	1		2	8	1	4	124
Mean.		1	0	3	1	2	2	8	1	6	1.08

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Observations made and  
Return verified byJames Munro  
Westgate Road, Colinton.

(Signed)



