

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Forest of Glen Tanar, Aberdeenshire, in Lat. 57° 15' N, Long. 3° 55' W, Distance from Sea 35 miles.
 Height of Cistern of the Barometer above Mean Sea-Level 10 feet, above Ground 10 feet. During the MONTH of January 1895.
 The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.		WIND.				CLOUDS.				THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.	
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		Dry No.		Wet No.		9 h. A.M.		9 h. P.M.		Readings of the H. Cup Anemometer.		9 A.M.		P.M.		9 h. A.M.							
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max.	Min.	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.	No.	Velocity (0-10), and Species.	Amount (0-10), and Species.	Velocity (0-10), and Species.	Amount (0-10), and Species.	No.	No.					No.
		* No.	inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°					°
	1	29.96	57	29.63	41	32	22			31	30	37	34	0.15	H	2	H	2			10		10	1					Half inch of Snow	1	
	2	29.58	38	29.44	40	43	25			35	33	31	30	0.25	H	3	H	1			10	NW	4	1					Snow Showers drifting	2	
	3	29.54	39	29.91	41	32	29			33	31	41	40	0.07	N	2	N	1			10		10	2					" " "	3	
	4	30.12	39	30.14	34	42	39			39	39	23	22		N	1	H	1			10		10	1					" " "	4	
	5	29.99	36	29.86	39	33	20			31	30	40	37		S	1	S	2			10		10	1					" " "	5	
	6	29.69	40	29.57	39	37	22			34	33	27	25	0.60	N	2	N	4			10			2					Fall of Snow 3 1/2" deep	6	
	7	29.87	37	29.99	37	34	19			31	31	27	26	0.30	N	3	N	1			10			1					" " 1 1/2" deep	7	
	8	29.99	35	29.90	31	31	19			28	18	19	16		N	1	N	1		NE	6		2					" " "	8		
	9	29.92	29	29.81	35	30	16			18	14	24	21		N	1	N	1		E	3		2					" " "	9		
	10	29.85	33	29.80	27	31	19			13	10	18	15		N	1	N	1		NE	4		1					" " "	10		
	11	29.82	28	29.69	35	29	16			21	21	33	32		N	1	S	1					10	-				" " "	11		
	12	29.59	36	29.48	39	34	10			36	34	35	33		S	2	SE	1			10		10	1					" " "	12	
	13	29.31	38	29.19	40	37	26			34	33	34	33	1.15	N	1	NE	2			10		10	-					Snow 6" deep drifting with sleet	13	
	14	29.09	39	29.13	41	35	25			33	33	35	34	1.20	NE	2	NE	2			10		10	-					" " " " " "	14	
	15	29.11	42	29.10	40	39	26			35	34	33	32	0.25	NE	2	N	1			10		10	-					" " " " " "	15	
	16	29.06	41	29.00	40	36	25			33	33	33	33	0.40	SE	1	SE	1			10		10	1					" " " " " "	16	
	17	29.87	43	29.02	41	41	24			34	34	37	34	1.38	H	1	H	3		SE	8		10	2					" " " " " "	17	
	18	29.19	42	29.59	48	38	26			38	35	35	34	0.35	H	3	H	1			10		10	-					" " " " " "	18	
	19	29.72	45	29.79	43	40	25			32	32	40	38		NW	1	NW	1			10		10	-					" " " " " "	19	
	20	29.79	42	29.80	39	39	19			30	29	27	25		H	1	N	1			10		10	1					" " " " " "	20	
	21	29.90	40	29.93	39	38	15			28	27	27	25	0.45	N	2	N	2			10		10	2					Fall of Snow 3 1/2" deep	21	
	22	29.70	40	29.61	45	38	20			33	32	35	32		N	2	N	4			10		10	-					" " " " " "	22	
	23	29.59	42	29.62	40	40	21			29	28	33	31		N	4	NW	2			10		10	-					" " " " " "	23	
	24	28.94	42	29.25	43	36	20			36	34	32	30		NW	3	N	2			10		10	-					Fall of Snow 2" deep	24	
	25	29.49	40	29.59	41	37	18			25	25	30	29	0.20	N	3	N	2			10		10	-					" " " " " "	25	
	26	29.62	40	29.59	39	32	12			28	28	37	35		N	3	N	2			10		10	1					" " " " " "	26	
	27	29.61	35	29.49	37	36	13			19	17	29	27	0.30	N	3	N	2			10		10	-					Very stormy Snow Showers most of the day 3" deep	27	
	28	29.59	32	30.05	33	31	0.6			12	10	16	14		N	2	N	3		NE	9		10	1					" " " " " "	28	
	29	30.03	35	30.31	30	28	0.5			21	20	18	11		N	1	N	1			10			1					" " " " " "	29	
	30	30.59	32	30.31	33	30	0.6			25	24	20	20		S	1	N	1		NE	8		10	2					" " " " " "	30	
	31	30.54	34	30.29	38	34	0.7			20	19	26	25		N	1	N	1		NE	9		10	2					" " " " " "	31	
Sums.		1816	13	1813	12	13	15			13	12	14	11	5.53		57	51														
Means.		29.66	38.4	29.65	38.8	33.5	18.9			28.9	27.5	29.8	27.8		1.81		1.63														
+ Total Corrections for Instru- mental Errors.																															
+ Corrections for Diurnal Range.																															
"Cor- rected Means."																															
No. of Column.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

NOTATION USED IN GENERAL REMARKS.					
a.	denotes aurora.	m.	denotes meteor.		
ci.	cirrus.	ms.	meteors.		
ci.-cu.	cirro-cumulus.	n.	nimbus.		
ci.-s.	cirro-stratus.	r.	rain.		
cu.	cumulus.	h. r.	heavy rain.		
cu.-s.	cumulo-stratus.	c. h. r.	continued heavy rain.		
d.	dew.	s.	stratus.		
f.	fog.	sc.	sleet.		
fr.	frost.	s.	snow.		
h.-fr.	haze-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

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction $\frac{1}{100}$ for Temp. (Col. 2), 29.66 26 = 29.640
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction $\frac{1}{100}$ for Temp. (Col. 4), 29.683 26 = 29.657
 Mean at Station, corrected, and at 32' = 29.648
 Correction for height, feet above Mean Sea-level, = 0.000
 Mean, reduced to 32', and Sea-level, = 29.648
 Highest Reading, corrected for Index error, on the 30th, = 30.610
 Lowest Do. Do., on the 24th, = 28.940
 Difference, or Monthly Range, = 1.670

S-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 2th, = 43.0
 Lowest in Month, corrected for Index errors, on the 9th, = 9.0
 Difference, or Monthly Range, = 34.0
 "Corrected Mean" of all the Highest, (Col. 5), = 35.8
 "Corrected Mean" of all the Lowest, (Col. 6), = 22.9
 Difference, or Mean Daily Range, = 12.7
 ** Calculated Mean Temperature of Month, = 29.2
 S-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the th, = 57
 "Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = 57
 Lowest at Night, Black Bulb (corrected for Index errors), on the th, = 18
 "Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = 18
 Difference of above means or range ("exposed"), = 39

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 29.3
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 27.6
 ** Computed Temperature of Dew-Point, = 21.7
 ** Do. Elastic Force of Vapour, = 116
 ** Do. Weight of Vapour in a Cubic Foot of Air, = 72
 ** Relative Humidity (Saturation = 100), = 72
 RAIN fell on 14 Days; Amount in Inches, = 5.53

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	18	2		1	3		5	2		1.84	
P.M.	17	2		1	2		1	6		1.65	
Mean.	17.2	2.0		1.3	2.5		3.0	4.0		1.74	

303

Observations made and
 Return verified by

(Signed) Robert Warburton Glen Tanar

OBSERVATIONS,

correct numbering of the scale, every instrument of the rejection Thermometers the frame-work of which are not likely to stand exposure to the weather, as shown in the past by rejected and annoying breakages of Thermometers of similar construction; and as regards Maximum Thermometers, either Negretti and Zamboni's or Phillips's, whether they will act at the highest temperatures they may be required to register. By the laws of the Society, Members and Observers have a right to have their instruments compared by the Secretary, and to advise with him regarding the purchase of instruments. Very great care should be bestowed on the Observations of the Wind.

Wind. The accuracy of which, both as regards Direction and Force, is 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 higgledy, the direction of the wind is feeble, especially when the Vane is stationary, and when the direction especially may be made to the direction of smoke, etc.

in well-posed situations. Careful observations 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 thinly-planted Stations over a large District round Edinburgh called Storm Stations, in the formation of which the Society for the systematic investigation of subjects connected with the winds, to Baron Adam GARDNER, 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 can also be obtained the mean Velocity of the Wind at the time of the observation may be ascertained. For indicating the

Force of the Wind at any particular hour of observation, the Pressures of the Air, and the Direction of the Wind, are observed by 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 Exhallabars, 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. Many causes arising partly from the difficulty of obtaining a perfectly unobjectionable 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 surface, and in an open situation. As the Observer can secure for it a GAZE, it is not liable to be obscured by trees, as free and unobstructed by obstructing objects as is a barometer. It 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 Fleming's, where there is a

with a measuring rod attached to a float, the rod ought to be fixed down, and the float rise to the 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-fall occurs, it should be noted in the Remarks, and the letters S.S. be entered in the snow-fall column.

and the letter S affixed to the path of water received in Gauge No. 1. 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, the observations must be made at the same hour, and the observations registered separately only; and nothing that pertains to the nature of the register observations 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 entirely covered, 10 is entered; 9, when half covered; 8, Clouds 5, wholly covered, 10.

Observations of the Clouds are made at 9 A.M. and at sunset, 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 of Direction,

6, S. W. _____ will indicate that the upper strata of Clouds travel with
2, W. _____ 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
4, S. _____

Cloud column, an entry of $\frac{2}{2}$ 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,—this being the most important factor in the production of 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, the 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 air collars, to prevent rain-water being conveyed to the bulbs by the stems.

A knowledge of the Temperature of the Sea is not only in itself, but in its relations to that of our island, a most important branch of Meteorology. The Council therefore recommend that the Temperature of the Sea be carefully taken by a properly constructed apparatus, from boats, or, if this be impracticable, from the ends of piers and rocks round the coast, where it is 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

WITH REMARKS ON THE USE OF INSTRUMENTS.

coasts, where it is not influenced by that of river water, and is 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

FORE
Alder,
Ash,
Beech,
Birch,
Elm,
Larch,
Lime,
Oak,
Sycamore.

SHRUBS, ETC.	FRUITS.	First in Blossom.	First in Fruit in generally.	MIGRATORY BIRDS.	First Arrive.	Departure.
Barberry,	Apple,			Cuckoo,		
Bourtree or Elder,	Black Currant,			Cunew,		
Broom,	Cherry,			House-Swallow,		
Hazel,	Gean,			Lapwing,		
Hawthorn,	Gooseberry,			Plover,		
Holly,	Peach,			Sand-Martin,		
Laburnum,	Pear,			Starling,		
Lilac,	Plum,			Swan,		
Mountain Ash or Rowan,	Strawberry,			Hall or Corn Cucko,		
Mezereon,						
Rhododendron Ponticum,						
Red Flowering Currant,						
Whin,						

[illegible]

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

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, S. S. W. — will indicate that the upper strata of Clouds travel with a 2, 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, *ss.*, will indicate that the higher Clouds, covered, an entry of 2, *cst.*, will indicate that the higher regions are covered to the amount of 4-fourths with strata Clouds; and that the sky is further obscured to the extent of 2-fourths 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 sunshine column.

As the germination and growth of crops and plants generally depend greatly on the temperature of the soil,—its amount and constancy,—the Council recommend that Thermometers be placed in the soil 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, important, but in its relations to that of our island, a most important branch of Meteorology. The Council therefore more recommend that the Temperature of the Sea be carefully taken, by 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 the heat of the sun's rays, and as far as possible, as is the case with the coast, by means of thermometers, thus acquiring the temperature of the land, and of the sea, and of the sun or cooled by nocturnal radiation. At or near the time of high

The Hygrometrical Observations.—Observers are specially requested to attend to the following conditions—The bulbs must hang down at least an inch free from the scales and frame which they are attached; the frame must be such as will bring the tubes forward so much as to make them nearly horizontal; the bulb nearest the thermometer must be covered, and altogether placed to the side, and a little below the level of the wet ball, but in no case under the bulbs; the tube containing 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 taken care that the muslin is always clean and moist, and open to the water pipe. In frosty weather, observation is a matter of great delicacy, and must be made with great care. The bulb must never be moistened by immersion from 15 to 30 minutes before the hour of observation. From the film of ice thus formed evaporation was proceeding as from the moist cloth in ordinary circumstances.

In reading the Thermometer great care must be taken to bring the eye exactly opposite the tip of the index or column of mercury. The reading ought to be taken tenths of a degree, and noted in decimals. Thus if the Thermometer will be read +39° 3, 40° 0, or again, +39° 6, +40° 0, according as the thermometric fluid expands more than one half, or less than one half, of its bulk between each whole degree respectively. In reading, Rutherford's Minimum Meteorometer, the indication of that end of the index which is next to the surface of the spirit is alone noted. On opening the Thermometer Box, the Dry and Wet Ball Thermometers are to be first, rapidly read, inasmuch as they are readily affected by heat on the person of the Observer.

The Hygrometer is read at 9 A.M. and 9 P.M. The Self-Registering Thermometers are read at 9 A.M. only, as instruments of observing fluctuating thermostat and least degrees of temperature variation during the day. It is not a matter of difference when the Self-Registering Thermometers are read, since, even winter at last, the extremes may occur at any hour; and it is unnecessary to refer their occurrence to their proper meteorological periods. In the Society's schedules, the indications registered on the dial are those of a series of phenomena commencing at 9 P.M. on the 3d, and extending till 9 P.M. on the 3d.

No instrument ought to be used for Meteorological purposes until it has been carefully tested by comparison with a standard Thermometer. When such Thermometers as are not graduated on the stem, but merely on an unattached scale, undergo repairs, they are very liable to be moved either upwards or downwards, and might never afterwards to be relied without being re-tested. The Self-Registering, especially the minimum Thermometers, ought frequently to be compared with other dry bulb and psychrometer Thermometers. The freezing-point of each Thermometer once ascertained by the method above mentioned on the tube, ought to be noted.

In selecting instruments, the following points require attention.—In divisions of the vernier of barometers in reference to their scales, and the perfect freedom of the Barometer from air; the

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, 29-265 inches, 29-315 inches, or 29-465 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 a fusible surface has to be removed from its fastenings, the ivory peg must first be screwed down so as to form a tight plug to the cistern, thus preventing the escape of the air which might follow the tube, and quite up to the top of the tube, but it should then be carried with the cistern atmosphere. Before sending the Barometer for use, it must be ascertained whether the space above the mercury in the tube is a complete vacuum; this is done as 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.

Air 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 cleanse 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 should be taken to screw down the ivory peg, and to observe that the mercury will flow out, and the instrument be thoroughly dried.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Forest of Glen Tarraglen, County of Aberdeenshire, in Lat. _____, Long. _____, Distance from Sea 35 miles.

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

During the MONTH of February 1895.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.	WIND.				CLOUDS.				THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. <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.			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.						SUNSHINE. Hours.	9 h. A.M.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
		Barometer. * No.	Attached Thermometer.	Barometer. No.	Attached Thermometer.	Max. No.	Min. No.	Max. in Sun-ray No.	Min. on Grass. No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.				Direction.	Force.	Direction.	Force.		9 h. A.M.	Velocity (0-10), and Species.	Amount (0-10), and Species.	Velocity (0-10), and Species.						Amount (0-10), and Species.	No. 3 inches.	No. 12 inches.	No. 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
																																			inches.	°	inches.	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°

NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	cirrus.	ms.	meteors.
ci-cu.	cirro-cumulus.	n.	nebula.
ci-s.	cirro-stratus.	r.	rain.
cu.	cumulus.	h. r.	heavy rain.
cu-s.	cumulo-stratus.	c. h. r.	continued heavy rain.
d.	dew.	s.	stratus.
f.	fog.	sc.	scud.
fr.	frost.	s.	snow.
h-fr.	hoar-frost.	so. ha.	solar halo.
h.	haze.	sq.	squall.
h. d.	heavy dew.	sq.s.	squalls.
hl.	hail.	t.	thunder.
l.	lightning.	t. s.	thunder-storm.
li. cl.	light clouds.	w.	wind.
li. sh.	light showers.	w.	wind.
li. co.	lunar corona.	g.	gale of wind.
li. 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 = 30.082
 for Temp. (Col. 2), = 30.095 - 13 = 30.082
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction \ddagger = 30.047
 for Temp. (Col. 4), = 30.067 - 20 = 30.047
 Mean at Station, corrected, and at 32° = 30.065
 Correction for height, feet above Mean Sea-level, = _____
 Mean, reduced to 32°, and Sea-level, = _____
 Highest Reading, corrected for Index error, on the 16th, = 30.590
 Lowest Do. Do., on the 28th, = 29.490
 Difference, or Monthly Range, = 1.100

S-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 11th, = 47.0
 Lowest in Month, corrected for Index errors, on the 11th, = 40
 Difference, or Monthly Range, = 39.0
 "Corrected Mean" of all the Highest, (Col. 5), = 34.7
 "Corrected Mean" of all the Lowest, (Col. 6), = 20.0
 Difference, or Mean Daily Range, = 14.7
 ** Calculated Mean Temperature of Month, = 27.4
 S-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 11th, = _____
 "Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = _____
 Lowest at Night, Black Bulb (corrected for Index errors), on the 11th, = _____
 "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), = 26.6
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 25.3
 Computed Temperature of Dew-Point, = 19.4
 Do. Elastic Force of Vapour, = _____
 Do. Weight of Vapour in a Cubic Foot of Air, = 105
 Relative Humidity (Saturation = 100), = 73
 RAIN fell on 5 Days; Amount in Inches, = _____

WIND.		SUMMARY.					
Direction.		N	NE	E	SE	S	SW
A.M.		13	1			2	8
P.M.		17				2	2
Mean.		15	0	0	0	2	3

Observations made and
 Return verified by

(Signed) Robert Warburton

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Forest of Glen Tana Alayne, County of Aberdeenshire, in Lat. _____, Long. _____, Distance from Sea 35 miles.
 Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of March 1895.
 The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.	WIND.				CLOUDS.				THERMOMETERS under Ground.	SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. <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.		Dry No.		Wet No.			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. 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 (0-10), and Species.	Amount (0-10), and Species.						No.	3 inches.	No.	12 inches.	No.	22 inches.
		* No.	inches.	°	inches.	°	°	°	°	°	°	°	°		°	No.	°	°	°	°	°	°						°	°	°	°	°	°
	1	29.38	41	29.60	42	44	29			38	36	35	33	0.07	H	3	H	4		NE	7	10	2						Shower of snow at intervals through the day	1			
	2	29.69	39	29.63	40	39	18			27	26	36	34		NH	2	H	1			10	10	3							2			
	3	29.61	38	29.56	37	40	17			29	27	32	31		N	1	NH	2				10									3		
	4	29.90	36	29.89	35	32	16			30	30	35	33		N	3	N	2			10	10									4		
	5	29.77	37	29.65	42	39	23			38	35	43	41		NH	2	H	2			10	10	3								5		
	6	29.53	40	29.50	43	43	30			40	38	37	35		SH	2	S	1			10	10	1								6		
	7	29.62	41	29.60	44	45	26			35	34	38	35		S	1	S	1			10	10	5								7		
	8	29.58	42	29.54	42	48	25			35	34	35	34		S	1	S	1	SW	9	10	1									8		
	9	29.53	40	29.52	47	38	28			36	36	37	34		N	1	N	1			10	10	5								9		
	10	29.45	45	29.49	45	46	28			35	35	35	34		N	1	N	2			10	10									Slight showers of snow	10	
	11	29.46	44	29.53	41	37	26			33	33	29	27	0.05	NE	2	N	1			10	10									Fall of snow 12" deep	11	
	12	29.69	38	29.81	43	36	14			22	21	34	33		H	1	H	1			10	10	2									12	
	13	29.92	41	29.95	46	39	15			30	30	40	38		SH	1	S	2			10	10	4									13	
	14	29.96	46	29.92	50	43	22			41	41	37	35		H	2	H	1			10	10										14	
	15	30.04	49	30.00	50	46	33			42	40	45	43		S	1	H	1	NE	3	10	4										15	
	16	30.05	49	30.09	52	50	33			46	46	43	41		H	1	H	2			10	10	5									16	
	17	30.04	49	30.10	45	51	34			47	46	37	37		H	2	H	1			10		6									17	
	18	30.04	42	29.72	49	57	20			28	28	40	38		H	1	H	2			10		5									18	
	19	29.74	46	29.50	50	50	22			44	41	40	39		H	2	H	1			10	10	2									19	
	20	29.75	48	29.80	50	51	30			37	37	47	46	0.20	N	2	N	2			10	10	1									20	
	21	29.64	48	29.55	57	46	30			45	45	45	43		H	1	N	3			10		5									21	
	22	29.69	52	29.78	53	53	37			47	42	47	46		H	2	S	2	NE	3	10	4										22	
	23	29.57	57	29.19	54	54	38			45	44	46	45		S	2	H	2			10	10	6									23	
	24	28.74	52	28.85	49	54	38			48	43	39	37		H	4	H	3					7									24	
	25	28.82	46	28.71	45	50	30			38	35	34	32		H	2	H	2			10		6									25	
	26	28.95	44	29.19	40	50	20			37	35	32	30		H	2	H	1			10		5									26	
	27	29.19	44	28.57	48	46	19			35	31	37	35	0.54	N	2	NE	2			10	10	4									27	
	28	28.52	46	28.81	46	44	21			33	33	34	33	1.20	NE	2	N	2			10	10										Fall of snow 4" deep	28
	29	28.97	44	29.18	48	38	26			35	33	37	36	0.50	N	3	N	1			10		1									29	
	30	29.40	46	29.49	50	38	28			37	37	39	38	0.17	NE	2	N	1			10											30	
	31	29.46	48	29.35	47	45	28			34	33	39	37	0.50	N	1	N	2			10	10										31	
Sums.		1915	1815	1812	1712	1513	1313			2115	1715	2511	2031	3551		51	52			272	230	87											
Means.		29.58	44.3	29.55	46.3	45.1	25.4			36.9	35.6	38.2	36.5		1.77	1.67																	
+ Total Corrections for Instru- mental Errors.																																	
+ Correc- tions for Diurnal Range.																																	
"Cor- rected 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-cn.	" 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.	" sleet.		
f.	" fog.	sc.	" squall.		
fr.	" frost.	s.	" snow.		
h-fr.	" hoar-frost.	so. ha.	" solar halo.		
h.	" haze.	sq.	" squall.		
h. d.	" heavy dew.	sqa.	" squalls.		
li.	" 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

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction \ddagger = 29.539
 for Temp. (Col. 2), = 29.581 - 42 = 29.539
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction \ddagger = 29.509
 for Temp. (Col. 4), = 29.556 - 47 = 29.509
 Mean at Station, corrected, and at 32' = 29.524
 Correction for height, feet above Mean Sea-level, = _____
 Mean, reduced to 32', and Sea-level, = _____
 Highest Reading, corrected for Index error, on the 17th, = 30.180
 Lowest Do. Do., on the 28th, = 28.320
 Difference, or Monthly Range, = 1.780

S.R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 22th, = 55.0
 Lowest in Month, corrected for Index errors, on the 12th, = 16.0
 Difference, or Monthly Range, = 39.0
 "Corrected Mean" of all the Highest, (Col. 5), = 45.1
 "Corrected Mean" of all the Lowest, (Col. 6), = 29.4
 Difference, or Mean Daily Range, = 15.7
 ** Calculated Mean Temperature of Month, = 37.3
 S.R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the _____ th, = _____
 "Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = _____
 Lowest at Night, Black Bulb (corrected for Index errors), on the _____ th, = _____
 "Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = _____
 Difference of above means or range ("exposed"), = _____

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 37.6
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 36.0
 \ddagger Computed Temperature of Dew-Point, = 33.8
 \ddagger Do. Elastic Force of Vapour, = 19.4
 \ddagger Do. Weight of Vapour in a Cubic Foot of Air, = _____
 \ddagger Relative Humidity (Saturation = 100), = 86
 RAIN fell on 8 Days; Amount in Inches, = 3.55

WIND.		SUMMARY.			
Direction.	N	NE	E	SE	Mean Velocity in miles per day.
A.M.	8	3	-	-	1.77
P.M.	7	1	-	-	1.67
Mean.	7.5	2	-	-	1.72

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

Observations made and
 Return verified by

(Signed) Robert Warburton

Klemm
March. 95

As the germination and growth of crops and plants generally depend greatly on the temperature of the soil, it is of great importance to ascertain the temperature of the soil, its amount, and course;—the Council command that Thermometers be placed in the soil, and that Observations in this interesting department be made at intervals of 24 hours, at the following times, to wit:—viz. at 9 A.M., by Thermometers permanently fixed in the soil, these 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 collars, to prevent run-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 continually taken by a properly constructed apparatus, from boats, 9, 10, and 11 miles from the coast, and that the observations be made at the same times, where it is not influenced by that of river water; and as this is deemed 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 mouth of each

No instrument ought to be used for Meteorological purposes till it has been carefully tested by comparison with a standard Thermometer. When such Thermometers as are not graduated on the stem, but merely on an attached scale, undergo repairs, they are very liable to be moved from their position on the Scale, and ought never afterwards to be used without being re-tested. The Self-Registering, especially the Minimum Thermometers, ought frequently to be compared with one 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 on air; the

As the germination and growth of crops and plants generally depend greatly on the temperature of the soil, it is of great importance to ascertain the temperature of the soil, its amount, and course;—the Council command that Thermometers be placed in the soil, and that Observations in this interesting department be made at intervals of 24 hours, at the following times, to wit:—viz. at 9 A.M., by Thermometers permanently fixed in the soil, these 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 collars, to prevent run-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 continually taken by a properly constructed apparatus, from boats, 9, 10, and 11 miles from the coast, at the following times, to wit:—viz. at 9 A.M., by Thermometers permanently fixed in the sea, these being impalpable, from the ends of piers and rocks round the coast, where it is not influenced by that of river water; and as thus obtained 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

EDINBURGH, *December 1891.*
(By Order) A. B.

Have the goodness also to state any information you may be able to collect relative to the Crops of Grain, Hay, Potatoes, Turnips, Fruits, etc., whether plentiful, or in perfection; whether any have suffered from blight, disease, etc. Whether zootic disease prevails among cattle; and the Agricultural condition of the district generally.

SHRUBS, ETC.	Barberry,	Black Currant,	Apple,	First in Blossom.	First in Blossom.	First in generally.	CHICKENRY BIRDS.	Chickadee,	Curlew,	House-Sparrow,	Tapwing,	Plover,	Sand-Martin,	Starling,	Swan,	Trail or Corn Crike,	First in Blossom.	First in Blossom.	First in Blossom.	Departure.																	
	Whin,	Rhododendron Ponticum,	Mountain Ash or Hovan,	Mezerion,	Lilac,	Laburnum,	Holly,	Hawthorn,	Hazel,	Worm,	Black Currant,	Apple,	Strawberry,	Plum,	Pear,	Peach,	Gooseberry,	Cean,	Black Currant,	Apple,	First in Blossom.	First in Blossom.	First in generally.	CHICKENRY BIRDS.	Chickadee,	Curlew,	House-Sparrow,	Tapwing,	Plover,	Sand-Martin,	Starling,	Swan,	Trail or Corn Crike,	First in Blossom.	First in Blossom.	First in Blossom.	Departure.

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

EDINBURGH, *December 1891.*

(By Order) A. B.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Glen Tanar Wayne, County of Aberdeenshire, in Lat. _____, Long. _____, Distance from Sea 35 miles.
Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of May

The Hours of Observation are of Greenwich Time.

[illegible]

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction $\uparrow\uparrow$	=	29.947
for Temp. (Col. 2), 30.011..... 64.....		
"Corrected Mean" of Barometer at 9 P.M., minus the Correction $\uparrow\uparrow$	=	29.957
for Temp. (Col. 4), 30.024..... 67.....		
Mean at Station, corrected, and at 32°.....	=	29.952
Correction for height, feet above Mean Sea-level,.....	=	
Mean, reduced to 32°, and Sea-level,	=	
Highest Reading, corrected for Index error, on the 3 rd th,.....	=	30.480
Lowest Do. Do., on the 31 st th,.....	=	29.660
Difference, or Monthly Range,	=	0.820

S.-R. THERMOMETER, (in shade, etc.), **Highest in Month,** (corrected for Index Errors), on the 28th, = 73.0

Lowest in Month, corrected for Index errors, on the 4 th, = 27.0

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

"Corrected **Mean**" of all the **Highest,** (Col. 5), = 60.8

"Corrected **Mean**" of all the **Lowest,** (Col. 6), = 37.4

Difference, or **Mean Daily Range,** = 23.4

**** Calculated Mean Temperature** of Month, = 40.1

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),	=	48.1
Mean (corrected) A.M. and P.M. Reading of Wet Bulb , (Cols. 10 and 12),	=	45.5
†† Computed Temperature of Dew-Point ,	=	42.7
†† Do. Elastic Force of Vapour ,	=	273
†† Do. Weight of Vapour in a Cubic Foot of Air ,	=	
†† Relative Humidity (Saturation = 100),	=	82
RAIN fell on 5 Days; Amount in Inches,	=	1.09

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	8			2	1	2	16	2		1.42	
P.M.	6	1		1	1		21	1		1.35	
Mean.	7	1	0	1	1	1	18	2	0	1.38	

1-90

Observations made and Return verified by	}
---------------------------------------------	---

(Signed) H Warburton

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Forest of Glen Tana Aboyne* County of *Abertshire*, in Lat. _____, Long. _____, Distance from Sea *35* miles.
 Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of *June* 189*5*.
 The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.		Rain.	WIND.				CLOUDS.				SUNSHINE. Hours.	THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. <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 h. A.M.												
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max.	Min.	Max. in Sun's rays.	Min. on Grass.	Dry bulb.	Wet bulb.		Dry bulb.	Wet bulb.	Direction.	Force.	Direction.	Force.	Velocity (0-10), and Species.	Amount (0-10), and Species.		Velocity (0-10), and Species.	Amount (0-10), and Species.	No. 3 inches.					No. 42 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.
		inches.	°	inches.	°	°	°	°	°	°	°		°	°	°	°	°	°	°	°		°	°	°					°	°	°
	1	29.72	57	29.82	54	70	38			47	44	55	52		S	2	S	1		10	10	10								1	
	2	29.92	56	30.01	60	63	33			62	56	54	51		H	1	N	1			10	9								2	
	3	30.10	58	30.10	60	70	44			51	50	52	49		NE	1	S	1		10	10	10								3	
	4	30.11	57	30.10	53	68	38			55	53	53	48	0.430	N	1	N	1		10	10	3								4	
	5	30.35	56	30.31	54	65	35			56	50	51	49		N	1	W	1	NE	9		9								5	
	6	30.34	55	30.30	63	68	32			61	55	60	57		H	1	H	1				10								6	
	7	30.28	59	30.16	64	74	38			68	60	59	56		H	1	N	1			10	11								7	
	8	30.09	62	29.99	59	78	46			61	55	59	56		NW	1	NW	1		10	10	11								8	
	9	29.91	61	29.32	60	75	37			62	56	57	54		N	1	N	1		10	10	3								9	
	10	29.83	58	29.77	57	66	40			55	48	49	47		N	1	NH	1	NE	9		7								10	
	11	29.71	55	29.70	52	64	36			47	45	45	41		N	1	N	2		10	10	4								11	
	12	29.90	57	29.90	49	60	31			44	40	39	37		N	3	N	2		10	NE	6	5							12	
	13	30.03	57	30.02	52	52	28			45	41	40	38		H	2	H	1		10	10	3								13	
	14	30.06	50	30.13	50	54	30			45	43	43	41		N	1	H	2		10	10	6								14	
	15	30.13	51	30.06	53	55	30			46	43	52	49		N	1	N	1		10	10	6								15	
	16	29.97	57	29.90	55	57	40			51	46	45	43		N	2	N	1		10	10	5								16	
	17	29.90	53	29.85	64	65	32			50	48	45	45		NW	2	S	1		10	10	4								17	
	18	29.63	52	29.70	50	57	34			43	42	44	43	1.50	N	1	N	1		10	10									18	
	19	29.63	52	29.69	49	47	36			46	45	50	47	0.954	NE	1	N	2		10	10	1								19	
	20	29.82	52	29.98	50	57	28			52	49	50	49	0.915	NW	2	N	1	NE	8		10	3							20	
	21	29.98	58	30.11	54	61	36			49	48	51	49		NE	1	W	2		10	10	6								21	
	22	30.11	57	30.10	59	61	42			58	56	57	65		H	2	N	2	NE	7		10	10							22	
	23	30.15	61	30.34	58	70	46			58	57	50	48		N	3	N	1		10		11								23	
	24	30.38	54	30.17	59	66	30			58	57	59	57		S	1	W	1		10		11								24	
	25	30.12	58	29.89	62	63	33			58	52	59	53	0.07	NE	1	N	1				12								25	
	26	29.81	64	30.65	60	71	42			61	56	55	53		W	1	W	2		10		10								26	
	27	29.80	59	29.76	61	76	42			57	55	57	56	0.15	H	1	W	2				10	10							27	
	28	29.72	59	29.76	62	71	40			60	55	59	57	0.15	H	1	H	1	NE	8		10	6							28	
	29	29.48	57	29.49	53	66	39			60	56	53	50	0.35	NE	1	H	1	NE	5		10	8							29	
	30	29.45	55	29.58	57	65	35			59	57	53	50	0.25	N	1	N	1		10		10	3							30	
	31																														31
	Sums.	1370	141	1411	11	12	11			13	13	13	13	23																	
	Means.	29.946	56.1	29.935	56.1	64.5	36.1			54.0	50.4	51.8	49.3																		
	+ Total Corrections for Instru- mental Errors.																														
	+ Corrections for Diurnal Range.																														
	"Cor- rected 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
										</																					

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Forest of Glen Tama Abeyne* County of *Aberdeenshire*, in Lat. _____, Long. _____, Distance from Sea *35* miles.
Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of *July*

The Hours of Observation are of Greenwich Time

[illegible]

BAROMETER, "corrected Mean" at 9 A.M., <i>minus</i> the Correction $\uparrow\uparrow$	=	29.633
for Temp. (Col. 2), = 29.108 75	=	
"Corrected Mean" of Barometer at 9 P.M., <i>minus</i> the Correction $\uparrow\uparrow$	=	29.625
for Temp. (Col. 4), = 29.696 71	=	
Mean at Station, corrected, and at 32°	=	29.629
Correction for height, feet above Mean Sea-level,	=	
Mean, reduced to 32°, and Sea-level,	=	
Highest Reading, corrected for Index error, on the A th,	=	30.140
Lowest Do. Do., on the 19 th,	=	29.300
Difference, or Monthly Range,	=	0.840

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 8 th,.....	=	75.0
Lowest in Month, corrected for Index errors, on the 7 th,.....	=	34.5
Difference, or Monthly Range,	=	41.0
"Corrected Mean" of all the Highest, (Col. 5),	=	62.0
"Corrected Mean" of all the Lowest, (Col. 6),.....	=	42.7
Difference, or Mean Daily Range,	=	19.3
** Calculated Mean Temperature of Month,	=	52.4
<hr/>		
S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the th,.....	=	
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun,	=	
Lowest at Night, Black Bulb (corrected for Index errors), on the th,.....	=	
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass,.....	=	
Difference of above means or range ("exposed"),	=	

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11),	=	52.6
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12),	=	49.8
‡ Computed Temperature of Dew Point,	=	47.1
‡ Do. Elastic Force of Vapour,	=	323
‡ Do. Weight of Vapour in a Cubic Foot of Air,	=	81
‡ Relative Humidity (Saturation = 100),	=	81
RAIN fell on 13 Days; Amount in Inches,	=	3.12

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	12	1	-	-	4	-	9	5		0	137
P.M.	12	-	-	-	5	-	11	3			142
Mean.	12	0	0	0	4	0	10	4	0	1	140

(Signed) R. L. Carburton

Observations made and
Return verified by

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Forest of Glen Tanar, Aberdeenshire*, County of *Aberdeenshire*, in Lat. _____, Long. _____, Distance from Sea *35* miles.
 Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of *August* 189 *5*.
 The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.	WIND.				CLOUDS.				THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. <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. in Sun/shade.	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.		No. of hours in which it fell.	Amount in inches.	Direction.	Force.	Direction.	Force.	Readings of the H. Cup Anemometer No.	Velocity (0-6) 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.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction \ddagger = *29.604*
 for Temp. (Col. 2), = *29.682* - *.078* = *29.604*
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction \ddagger = *29.586*
 for Temp. (Col. 4), = *29.667* - *.081* = *29.586*
 Mean at Station, corrected, and at 32° = *29.595*
 Correction for height, feet above Mean Sea-level, = _____
 Mean, reduced to 32°, and Sea-level, = _____
 Highest Reading, corrected for Index error, on the 15th, = *30.090*
 Lowest Do. Do., on the 3th, = *29.210*
 Difference, or Monthly Range, = *0.880*

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 18th, = *76.0*
 Lowest in Month, corrected for Index errors, on the 15th, = *38.0*
 Difference, or Monthly Range, = *38.0*
 "Corrected Mean" of all the Highest, (Col. 5), = *64.7*
 "Corrected Mean" of all the Lowest, (Col. 6), = *46.9*
 Difference, or Mean Daily Range, = *17.8*
 ** Calculated Mean Temperature of Month, = *55.8*
 S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the _____th, = _____
 "Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, = _____
 Lowest at Night, Black Bulb (corrected for Index errors), on the _____th, = _____
 "Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, = _____
 Difference of above means or range ("exposed"), = _____

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = *55.6*
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = *53.2*
 ** Computed Temperature of Dew-Point, = *51.0*
 ** Do. Elastic Force of Vapour, = *375*
 ** Do. Weight of Vapour in a Cubic Foot of Air, = _____
 ** Relative Humidity (Saturation = 100), = *84*
 RAIN fell on *17* Days; Amount in Inches, = *1.28*

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.		7	1	-	1	9	3	9	1		1.16
P.M.		5	-	-	6	2	17	1			1.26
Mean.		6	1	0	1	7	2	13	1	0	1.21

1-46

Observations made and
 Return verified by

(Signed) *R. Warburton Glen Tanar*

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Forest of Glen Tana above County of Aberdeen Shire, in Lat. _____, Long. _____, Distance from Sea 35 miles.

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

During the MONTH of September 1895

The Hours of Observation are of Greenwich Time.

[illegible]

BAROMETER, "corrected" Mean "at 9 A.M., minus the Correction $\uparrow\uparrow$		}	29-822
for Temp. (Col. 2), = 29-960 - 78			
"Corrected Mean" of Barometer at 9 P.M., minus the Correction $\uparrow\uparrow$		}	29-829
for Temp. (Col. 4), = 29-969 - 80			
Mean at Station, corrected, and at 32°,			29-826
Correction for height,	feet above Mean Sea-level,	=	
Mean, reduced to 32°, and Sea-level,		=	
Highest Reading, corrected for Index error, on the	20 th,	=	30-270
Lowest Do.	Do., on the	=	29-580
Difference, or Monthly Range,		=	1-190

S.-R. THERMOMETER, in shade, etc., Highest in Month, (corrected for Index Errors), on the 18th, = 75.0

Lowest in Month, corrected for Index errors, on the 20th, = 33.0

Difference, or Monthly Range, = 42.0

"Corrected Mean" of all the Highest, (Col. 5), = 65.3

"Corrected Mean" of all the Lowest, (Col. 6), = 43.2

Difference, or Mean Daily Range, = 22.1

** Calculated Mean Temperature of Month, = 54.2

S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the 18th, =

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

Lowest at Night, Black Bulb (corrected for Index errors), on the 18th, =

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

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

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11),	=	52.2
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12),	=	49.8
‡‡ Computed Temperature of Dew-Point,	=	47.4
‡‡ Do. Elastic Force of Vapour,	=	328
‡‡ Do. Weight of Vapour in a Cubic Foot of Air,	=	
‡‡ Relative Humidity (Saturation = 100),	=	84
RAIN fell on { Days; Amount in Inches,	=	7.7

WIND.		SUMMARY.									
Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.	Mean Velocity in miles per day.
A.M.	5	-	-	2	8	6	7	2		140	
P.M.	6	-	-	-	11	3	10	-		130	
Mean.	6	0	0	1	9	5	8	1	0	135	

Observations made and
Return verified by

(Signed)

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Forest of Glen Tanaka County of Aberdeenshire, in Lat. _____, Long. _____, Distance from Sea 35 miles.
Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of October 1895.

The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.	WIND.				CLOUDS.				SUNSHINE. Hours.	THERMOMETERS under Ground.			SEA.	OZONE.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, Prevalent Diseases, etc. <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. in Sun's rays.	Min. on Grass.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.		No. of hours in which it fell.	No.	Direction.	Force.	Direction.	Force.	Velocity (0-6) and Direction.	Amount (0-10), and Direction.		Velocity (0-10), and Direction.	Amount (0-10), and Direction.	No. 3 inches.					No. 12 inches.	No. 22 inches.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		* No.		No.		No.	No.	No.	No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	cirrus.	ms.	meteor.
ci-cu.	cirro-cumulus.	n.	nimbus.
ci-s.	cirro-stratus.	r.	rain.
cu.	cumulus.	h. r.	heavy rain.
cu-s.	cumulo-stratus.	c. h. r.	continued heavy rain.
d.	drizzle.	s.	sleet.
f.	fog.	sc.	scud.
fr.	frost.	s.	sleet.
h.-fr.	hoar-frost.	so. ha.	solar halo.
h. d.	haze.	h. d.	heavy dew.
hl.	hail.	sq.	squall.
li.	lightning.	sq.	squall.
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 = 29.607
for Temp. (Col. 2), = 29.662 - 0.055
"Corrected Mean" of Barometer at 9 P.M., minus the Correction \ddagger = 29.615
for Temp. (Col. 4), = 29.675 - 0.060
Mean at Station, corrected, and at 32' = 29.611
Correction for height, feet above Mean Sea-level, =
Mean, reduced to 32', and Sea-level, =
Highest Reading, corrected for Index error, on the 17 th, = 30.410
Lowest Do. Do., on the 3 th, = 28.800
Difference, or Monthly Range, = 1.610

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 1 th, = 73.0
Lowest in Month, corrected for Index errors, on the 29 th, = 19.0
Difference, or Monthly Range, = 54.0
"Corrected Mean" of all the Highest, (Col. 5), = 48.8
"Corrected Mean" of all the Lowest, (Col. 6), = 27.3
Difference, or Mean Daily Range, = 21.5
** Calculated Mean Temperature of Month, = 38.0

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

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = 38.2
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = 36.4
Computed Temperature of Dew-Point, = 33.9
Do. Elastic Force of Vapour, = 195
Do. Weight of Vapour in a Cubic Foot of Air, =
Relative Humidity (Saturation = 100), = 83
RAIN fell on 14 Days; Amount in Inches, = 3.98

WIND.		SUMMARY.					
Direction.		N	NE	E	SE	S	SW
A.M.	13	1	-	-	1	2	9
P.M.	14	-	-	-	1	1	11
Mean.	13	1	0	0	1	2	10

3-10

Observations made and
Return verified by

(Signed) Robert Lamberton Glen Tana

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at *Glen Tana Abertayne*, County of *Abertayne*, in Lat. _____, Long. _____, Distance from Sea *35* miles.
Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of *November* 1895.

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 Deposition 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 h. A.M.		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.	Readings of the H. Cap Anemometer. No.	9 h. A.M.		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.
		* No.		No.		No.	No.	No.	No.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	No.	No.	Direction.	Force.	Direction.	Force.	No.	9 h. A.M.	Velocity (0-10), and Direction.	Amount (0-10), and Species.	Velocity (0-10), and Direction.	Amount (0-10), and Species.	Hours.	No. 8 inches.	No. 12 inches.	No. 22 inches.		°	°	9 A.M.	2 P.M.
		inches.	°	inches.	°	°	°	°	°	°	°	°																						
	1	30.38	44	30.45	42	44	18			26	25	28	26		H	1	N	1		NE	5			5									1	
	2	30.37	39	30.17	40	46	15			25	22	25	23		NH	1	N	1						3									2	
	3	30. —	42	29.90	45	40	15			30	28	35	34		SH	1	SH	1			10		10	5									3	
	4	29.79	43	29.71	49	43	22			33	33	37	34		SW	1	S	1			10		10	2									4	
	5	29.54	47	29.41	48	48	35			47	46	45	48		SE	1	S	4			10		10	0									5	
	6	29.68	50	29.41	52	48	39			47	44	36	35	0.20	S	1	H	1			10		10	0									6	
	7	29.41	54	29.67	49	53	30			36	36	37	34	0.10	H	3	S	2			10		10	0									7	
	8	29.58	49	29.70	51	54	25			33	33	37	35		H	1	H	1			10		10	4									8	
	9	29.54	49	29.59	51	52	20			30	30	29	27		S	1	SH	1			10		0	3									9	
	10	29.40	50	28.98	47	53	22			46	44	39	38	1.30	S	1	S	4			10		10	0									10	
	11	28.60	49	28.41	50	49	20			44	41	37	36		S	3	SH	1			10		10	0									11	
	12	28.77	48	28.80	45	48	26			36	35	29	26		S	1	H	1			10		10	4									12	
	13	29.06	47	29.31	50	43	21			41	39	40	39		H	2	H	1			10		10	4									13	
	14	29.24	48	29.30	45	47	30			42	39	39	37		SH	2	S	2			10		0	2									14	
	15	29.56	46	29.01	47	46	29			41	37	39	36	0.30	N	1	S	4			10		10	0									15	
	16	29.28	50	29.12	48	49	27			40	39	43	41		N	1	S	4			10		10	2									16	
	17	29.50	51	29.80	49	53	24			39	36	41	40		N	2	S	2			10		0	5									17	
	18	30.08	47	30.13	48	49	21			59	31	35	33		N	1	S	2			0		10	4									18	
	19	30.12	47	30.11	49	46	21			38	37	47	45		S	2	S	4			10		10	0									19	
	20	29.92	47	29.89	50	41	31			44	43	47	46	0.25	S	3	S	4			10		10	0									20	
	21	29.94	57	29.89	52	46	38			45	43	42	41	1.30	S	3	S	3			10		10	0									21	
	22	29.51	50	29.89	50	50	34			41	39	37	35		NH	2	N	2			10		10	3									22	
	23	30.07	47	30.10	49	47	27			35	34	37	35	0.17	N	2	NH	2			10		11	0									23	
	24	30.46	47	30.49	48	37	27			36	36	38	37		NH	1	H	1			10		10	2									24	
	25	30.47	45	30.41	42	40	28			36	36	39	38		S	1	S	1			10		10	0									25	
	26	30.32	46	30.17	49	41	29			37	37	40	39		H	1	S	1			10		10	0									26	
	27	30.05	48	29.95	45	40	30			39	38	40	38		S	1	S	1			10		10	0									27	
	28	29.94	47	29.83	46	42	32			42	41	43	41		S	1	S	2			10		10	0									28	
	29	29.72	48	29.70	49	45	35			43	42	47	45		S	2	S	1			10		10	0									29	
	30	29.66	48	29.61	50	46	36			44	44	42	40		NW	1	S	1			10		10	0									30	
	31																																	31
Sums.		1313	16	1510	14	13	13			253	205	250	195	2.62		47	55																	
Means.		29.73	147.5	29.69	47.8	46.2	26.8			38.4	36.8	38.3	36.5			1.57	1.83																	
+ 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.	minibus.		
ci.-s.	cirro-stratus.	r.	rain.		
cu.	cumulus.	h. r.	heavy rain.		
cu.-s.	cumulo-stratus.	c. h. r.	continued heavy rain.		
d.	dew.	s.	stratus.		
f.	fog.	sc.	scud.		
fr.	frost.	s.	sleet.		
h.-fr.	hoar-frost.	s.	snow.		
h.	haze.	so. ha.	solar halo.		
h. d.	heavy dew.	sq.	squall.		
hl.	hail.	sq.	squalls.		
l.	lightning.	t.	thunder.		
l. cl.	light clouds.	t. s.	thunder-storm.		
l. sh.	light showers.	w.	wind.		
lu. co.	lunar corona.	g.	gale of wind.		
lu. ha.	lunar halo.				

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

NOTATION USED IN GENERAL REMARKS.

a.	denotes aurora.	m.	denotes meteor.
ci.	" cirrus.	ms.	" meteor.
ci-cu.	" cirro-cumulus.	n.	" nimbus.
cl-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.
li. cl.	" light clouds.	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 \pm = *29.681*
for Temp. (Col. 2), = *29.731* \pm *50*
"Corrected Mean" of Barometer at 9 P.M., minus the Correction \pm = *29.644*
for Temp. (Col. 4), = *29.694* \pm *50*
Mean at Station, corrected, and at 32' = *29.662*
Correction for height, feet above Mean Sea-Level, =
Mean, reduced to 32', and Sea-level, =
Highest Reading, corrected for Index error, on the *24*th, = *30.490*
Lowest Do. Do., on the *11*th, = *28.410*
Difference, or Monthly Range, = *2.080*

S.R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the *8*th, = *54.0*
Lowest in Month, corrected for Index errors, on the *2*th, = *15.0*
Difference, or Monthly Range, = *39.0*
"Corrected Mean" of all the Highest, (Col. 5), = *46.2*
"Corrected Mean" of all the Lowest, (Col. 6), = *28.8*
Difference, or Mean Daily Range, = *19.4*
** Calculated Mean Temperature of Month, = *26.5*

S.R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the th, =
"Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun, =
Lowest at Night, Black Bulb (corrected for Index errors), on the th, =
"Corrected Mean," (Col. 8), of Black Bulb, Min. on grass, =
Difference of above means or range ("exposed"), =

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11), = *38.4*
Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12), = *36.6*
Computed Temperature of Dew-Point, = *34.2*
Do. Elastic Force of Vapour, = *197*
Do. Weight of Vapour in a Cubic Foot of Air, =
Relative Humidity (Saturation = 100), = *86*
RAIN fell on Days; Amount in Inches, = *2.62*

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.	4				1	2	4	5	4		1.57
P.M.	3				1	3	5	1			1.83
Mean.	3	0	0	1	1	3	4	3	2	0	1.70

289

(Signed) *Robt. Warburton*

Observations made and
Returns verified by

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Forest of Glen Tanar, County of Aberdeenshire, in Lat. _____, Long. _____, Distance from Sea 35 miles.
 Height of Cistern of the Barometer above Mean Sea-Level _____ feet, above Ground _____ feet. During the MONTH of Decr 1895.
 The Hours of Observation are of Greenwich Time.

ELECTRICITY.	Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS. Read Daily, at 9 P.M.				HYGROMETER.				Rain.	WIND.				CLOUDS.				THERMOMETERS under Ground.				SEA.	OZONE.	GENERAL REMARKS.	Days of Month.						
		9 h. A.M.		9 h. P.M.		Protected in Shade, 4 feet above Ground.		Exposed Black Bulbs.		9 h. A.M.		9 h. P.M.			9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.		9 h. A.M.		9 h. P.M.											
		Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Max.	Min.	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.	9 h. A.M.	9 h. P.M.	9 h. A.M.	9 h. P.M.	No. 3 inches.	No. 12 inches.					No. 32 inches.	Temperature of air, surface of earth, and at depth of feet.	Temperature at surface of earth and at depth.	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.	No.
		inches.	°	inches.	°	°	°	°	°	°	°	°	°		°	°	°	°	°	°	°	°	°	°	°	°					°	°	°	°	°	°
	1	29.62	49	29.79	45	41	29			40	39	33	32		S	1	H	2			10	0	6								1					
	2	29.66	47	29.41	46	46	26			39	37	37	36	0.15	W	1	H	3			10	0	1								2					
	3	29.51	45	29.55	43	49	28			35	34	31	29		H	4	H	2			0	0	3								3					
	4	29.48	45	29.19	51	40	29			39	36	41	39		H	1	H	3			10	10	0								4					
	5	28.85	52	28.98	46	51	32			40	37	36	35		W	4	H	4			10	10	0								5					
	6	28.92	43	28.99	44	43	23			34	33	34	33		N	3	NW	4			10	10	0								6					
	7	29.26	42	29.64	40	35	20			32	30	38	37		N	4	H	4			10	10	0								7					
	8	29.81	41	29.89	43	43	24			33	30	37	35		N	1	H	2			0	10	1								8					
	9	29.42	45	29.39	47	42	20			42	40	41	40		H	2	H	4			10	0	1								9					
	10	29.08	46	29.76	48	47	32			39	36	35	33		W	3	H	1			10	0	3								10					
	11	29.73	44	29.79	44	42	21			34	33	36	35		H	1	H	1			NE	9	10	3							11					
	12	29.47	42	28.82	45	43	15			35	34	33	32		SH	2	H	1			10	10	1								12					
	13	29.10	44	29.47	46	38	26			36	35	39	37		N	4	SH	2			10	10	0								13					
	14	29.46	44	29.21	45	38	33			38	35	40	38	0.50	S	3	H	2			10	10	0								14					
	15	29.10	42	28.80	47	43	18			28	27	40	39	0.40	H	1	G	2			10	10	0								15					
	16	29.01	45	29.21	44	40	20			39	38	40	40	0.25	S	2	S	3			10	10	0								16					
	17	29.62	46	29.81	44	45	30			41	40	52	50	0.35	S	2	H	1			10	10	0								17					
	18	29.85	45	29.89	47	45	25			34	34	36	35	0.22	S	1	S	1			10	10	0								18					
	19	29.89	45	29.89	46	37	26			34	34	35	32		W	1	N	1			10	10	0								19					
	20	29.95	45	29.91	43	35	25			33	33	43	40		SH	1	N	1			0	0	9								20					
	21	29.85	42	29.90	43	34	18			30	30	35	33		S	1	S	1			0	10	8								21					
	22	29.85	41	29.80	42	30	11			32	32	30	30		NW	1	H	2			10	0	1								22					
	23	29.22	44	29.80	47	38	20			35	34	36	34		N	2	N	1			0	10	0								23					
	24	29.82	45	29.79	40	39	19			38	37	35	33		N	1	SH	2			10	10	1								24					
	25	29.84	42	29.94	45	40	20			35	35	40	38	0.20	SE	2	S	1			10	10	9	0							25					
	26	30.03	44	30.04	43	39	27			34	33	34	33		SE	1	N	1			0	10	0								26					
	27	30.25	40	30.29	43	35	24			31	31	34	33		N	1	S	2			10	10	0								27					
	28	30.21	42	29.87	39	35	24			33	33	34	33		S	3	S	2			10	10	0								28					
	29	29.65	46	29.60	49	40	21			35	33	39	38		NE	1	SH	1			10	10	0								29					
	30	29.49	46	29.59	47	43	26			37	37	39	38	1.30	W	1	S	1			10	10	1								30					
	31	29.76	45	29.89	48	39	30			37	37	45	43	0.15	S	1	S	2			10	10	0								31					
	Sums.	1712	12	2016	15	73	12			172	135	206	163	2.22		55	60			+	+	+														
	Means.	29.608	443	29.610	448	405	239			35.5	34.4	36.6	35.3			1.77	1.94																			
	+ 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.

ci. cirrus.

ci-cu. cirro-cumulus.

ci-s. cirro-stratus.

cu. cumulus.

cu-s. cumulo-stratus.

d. dew.

f. fog.

fr. frost.

h-fr. hoar-frost.

h. haze.

h.d. heavy dew.

hl. hail.

l. lightning.

li. light clouds.

li.sh. light showers.

lu.co. lunar corona.

lu.ha. lunar halo.

m. denotes meteor.

ms. meteors.

n. nimbus.

r. rain.

h.r. heavy rain.

c.h.r. continued heavy rain.

s. stratus.

sc. scud.

s. sleet.

s. snow.

so.ha. solar halo.

sq. squall.

sqs. squalls.

t. thunder.

t.s. thunder-storm.

w. wind.

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

0.5

1

Calm

Very light air

Light air

1.5

2

3

Light breeze

Fresh breeze

Very fresh

4

5

6

Blowing hard

Blowing a gale

Violent gale

BAROMETER, "corrected Mean" at 9 A.M., minus the Correction \ddagger = 29.566
 for Temp. (Col. 2), = 29.608.....42..
 "Corrected Mean" of Barometer at 9 P.M., minus the Correction \ddagger = 29.567
 for Temp. (Col. 4), = 29.610.....43..
 Mean at Station, corrected, and at 32°,..... = 29.566
 Correction for height, feet above Mean Sea-level,..... =
 Mean, reduced to 32°, and Sea-level,..... =
 Highest Reading, corrected for Index error, on the 27th,..... = 30.290
 Lowest Do. Do., on the 15th,..... = 28.800
 Difference, or Monthly Range,..... = 1.490

S.-R. THERMOMETER, (in shade, etc.), Highest in Month, (corrected for Index Errors), on the 5th,..... = 51.0
 Lowest in Month, corrected for Index errors, on the 22th,..... = 11.0
 Difference, or Monthly Range,..... = 40.0
 "Corrected Mean" of all the Highest, (Col. 5),..... = 40.5
 "Corrected Mean" of all the Lowest, (Col. 6),..... = 29.3
 Difference, or Mean Daily Range,..... = 11.2
 ** Calculated Mean Temperature of Month,..... = 34.9
 S.-R. THERMOMETER, Black Bulb in Sun, Highest, (corrected for Index Errors), on the th,..... =
 "Corrected Mean," (Col. 7), of Black Bulb, Max. in Sun,..... =
 Lowest at Night, Black Bulb (corrected for Index errors), on the th,..... =
 "Corrected Mean," (Col. 8), of Black Bulb, Min. on grass,..... =
 Difference of above means or range ("exposed"),..... =

HYGROMETER, Mean (corrected) A.M. and P.M. Reading of Dry Bulb, (Cols. 9 and 11),..... = 36.0
 Mean (corrected) A.M. and P.M. Reading of Wet Bulb, (Cols. 10 and 12),..... = 34.8
 †† Computed Temperature of Dew-Point,..... = 33.0
 †† Do. Elastic Force of Vapour,..... = 189
 †† Do. Weight of Vapour in a Cubic Foot of Air,..... =
 †† Relative Humidity (Saturation = 100),..... = 89
 RAIN fell on 9 Days; Amount in Inches,..... = 2.32

WIND.		SUMMARY.									
Direction.		N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force.
A.M.	7	1	-	2	8	2	10	1			1.77
P.M.	4	-	-	-	9	3	14	1			1.94
Mean.	5	1	0	1	8	3	12	1	0		1.86

336

(Signed) Robt Warburton, Glen Tanar

Observations made and
 Return verified by {

* Each instrument tested at the Office in Edinburgh bears the stamp "S.M.S.," and a number to be entered in the Heading: or the Number and Initials of the Maker may be here given.
 † Enlarging corrections for both capillary and Index Errors.
 ‡ The Diurnal Range for Scotland is as yet unknown.
 †† Practically, though not absolutely a mean correction.
 ‡ These "Hygrometrical Deductions" are calculated from Glaisher's Hygrometrical Tables, Second Edition only.
 ‡ While the Diurnal Range is unknown, the Arithmetical Mean of Cols. 5 and 6 will be entered as the "Calculated Mean Temperature."
 Any observations not taken under the Conditions specified in the Directions on the other side, or noted at the Top of each column, must be marked as such by the observer, in each Schedule. See over.

