





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 Epizootic disease prevails among Cattle; and the Agricultural condition of the district generally.

[illegible]

*Rain Gauge.*—As "Fleming's Rain Gauges" seem to possess several advantages over others, the Society gives the preference to them; but whatever form be employed, in order that all the Stations may yield comparable results, it is recommended that the Gauge be sunk in the ground, so that the top of the receiver is nearly on a level with the top blades of *clover* and *grass*, in a place as distinct as possible from trees, hedges, high walls, and irregular or broken ground, and the *quantity* of *Rain*, *should, if possible, be*

*registered dairy.* When more than one Rain Gauge is kept, they ought to be placed near each other, but at different heights above the ground, and their indications noted in the *general remarks*, mentioning their height above ground—the regular column in the Schedule being reserved for the ground Rain Gauge alone.

*Winds.*—Isolated Wind-ranges on Weather-cocks are apt to give false indications of the general direction of the wind, in consequence of the currents of air at the surface of the ground being so much influenced by the neighborhood of hills, valleys, buildings, etc. Where low clouds are seen drifting along their direction in reference to known objects, or as noted by means of a nutron on which a compass may be laid, or by means of a circular mirror fixed over the centre of a pocket compass, will in general give the true direction of the current of air near the earth's surface; if these clouds are near and immediately over head, that is, in or near the zenith of the observer. The motion of the higher strata of clouds varies so much in direction. Failing the clouds, the general direction of the smoke of a handker or of a tall chimney, gives a better indication of the general direction of the

wind thimby wind-*um*. The observer should state whether he has ascertained the direction by reflection or otherwise. For mode of estimating the force of the wind, see "Directions for Reading Instruments." The best Anemometer of moderate price yet in this country, is Professor Robinson's Cup Wind Gauge, which is advertised in Professor Robinson's *Cup Wind Gauge*, which registers the velocity of the wind—540 revolutions of the cups, as given by the instrument, being equal to one statute mile.

*Caution.*—The Society recommends observers to adopt the

Howard's nomenclature of clouds. The scale of cloud in the visible sky is reckoned from 0 to 10. Thus, a sky quite free from cloud is 0; a sky half covered with cloud is 5; and the whole visible sky covered with cloud is 10. Clouds often cover three-fourths or even more of the visible sky without obstructing the sunshine, so that the indications noted in the column for clouds would not necessarily express or agree with the column for sunshine. As the *Handbook*, so being as it is *done* *for* *the* *1922*, is thought by some eminent astronomers to have a powerful effect in dispelling clouds, it would be well to note in the General Remarks

*Sunshine*.—The number of hours the sun shines during the day should be entered in the proper column.

*Temperatures under ground*.—Although the temperature and hygrometric conditions of the air are those which chiefly influence the growth of crops, it is important for the health of the crop, and for the germination of the seed, that the soil itself should have a certain temperature. To collect these data, one must insert a ther-

it is recommended to have Thermometers sunk 3, 12, and 22 inches below the surface of the ground, to ascertain the temperature of what may be termed the agricultural soil; and the observer should, enter in the Schedule the *kind* of soil; whether drained or undrained; and whether naturally wet or dry.

*Temperature of the Sea*.—As the meteorology of the island is incomplete without a knowledge of the mean temperature of the Ocean which surrounds it, the Society strongly recommends taking the temperature of the Sea at a depth of 6 feet or 1 fathom

*Temperature of Springs.*—The temperature of Springs or Deep Wells is ascertained by means of a thermometer, which is lowered from the edge of the pier or rock round the coast, where free from the influence of river water, and as near as may be, about the time of high water. A Thermometer, with its bulb fixed in a small tin pichley covered with a sloping lid, and with a weight attached, is pushed to the required depth, and in ten minutes drawn up and read. The density of the sea water should, if possible, be taken at the same time. Convenient instruments are furnished by Messrs Ayle and Son.

Wells is recommended to be taken whenever practicable, mentioning whether Spring or Well, and its depth from the surface. *Meleagris, Ansera Borealis, Remicollis Depressus* or *Elevation of Backbone, Remicollis Falls of Rain, Hail or Snow, Thunder and Lightning*, etc., should be specially noticed, together with the exact hour at which they were first seen, their continuance, and direction.

*Balding, Leafing, and Flowering of Trees*.—It is necessary to give in mind that varieties of the same species of tree often widely

in their time of leaping and hovering. *Individual* (Pices or Shrimps) of each kind should therefore be chosen (if possible early kinds), and their indications should be alone noted—always the same apart from year to year being noticed.

*Grasses*.—Mention whether Scotchhearts or Moffat's scale and rappers are used. Scotchhearts are preferred. They may be had at Messrs. Aitch and Sons, 50, Princess Street, and at Mr. Brysons, 60, Princess Street, Edinburgh.

*Vermin*.—If a rat has been suspended by a linen thread, in connec-

design and convenient Electrometer. Exposed glass or sealing wax ascertainment the nature of the electricity.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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# SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Inverness, County of Inverness, in Lat.  $57^{\circ}$  N, Long.  $4^{\circ}$  W, Height above Sea about 20 feet.  
after the 7<sup>th</sup> at Produce, Isle of Aran, previously.  
Distance from Sea 2 miles. During the MONTH of June, 1852

Days of Month.	BAROMETER.				SELF-REGISTERING THERMOMETERS.				HYGROMETER.				WIND.				RAIN.		GLOUND. 0 to 10	SUNSHINE. Hours.	THERMOMETERS. under Ground.			Temperature of SURFACE OF WELL.	SEA.		OZONE. 0 to 10	ELECTRICITY.	GENERAL REMARKS. As to occurrence of Thunder, Lightning, Storms, Hail, Meteors, Remarkable Depression or Elevation of Barometer, etc. Mention the hour at which these began and ended.	Days of Month.		
	9 <sup>h</sup> . A.M.		9 <sup>h</sup> . P.M.		PROTECTED.		EXPOSED.		9 <sup>h</sup> . A.M.		9 <sup>h</sup> . P.M.		9 <sup>h</sup> . A.M.		9 <sup>h</sup> . P.M.		Days on which it fell.	Amount.			h. A.M.				Temperature.	Density.						
	Barometer.	Attached Thermometer.	Barometer.	Attached Thermometer.	Highest in Air.	Lowest in Air.	Max. Black bulb in Sun.	Min. White bulb during Night.	Dry bulb.	Wet bulb.	Dry bulb.	Wet bulb.	Direction.	Force ↑↑	Direction.	Force ↑↑					3 inches.	12 inches.	22 inches.									
																															inches.	inches.
1	29.98	67½	29.965	62½	68½	56	128½	52	59½	56½	58½	56½	E.N.E.		E.N.E.		0.00	9.5									Three peaks of distant thunder in P.M. between 2.30 & 3.45.	1				
2	29.985	62½	29.99	59¼	61	54	77½	52	57	54	55½	51¼	E		E		0.00	9.5											2			
3	29.955	57½	29.92	57¼	62½	51	99½	47¼	54½	50¼	53	50¼	E		E		0.00	9.5											3			
4	29.91	62½	29.98	61	63½	53½	68½	57	59¼	57¼	58½	57	E		E		1 0.10	9.5											4			
5	30.045	63				546		57	60	56			E		Calm		0.00	3.5											5			
6													E		Calm															6		
7													E		Calm															7		
8													E.S.E.		E.S.E.															8		
9													N.E.		N.E.																9	
10													E.N.E.		E.N.E.		1														10	
11													N.E.		N.E.																11	
12													S.E.		N.E.														Solar halo at 12.30 P.M.		12	
13					61								N.E.		E.N.E.																13	
14					62								N.W.		N.W.																14	
15					63½	52							N.W.		N.																15	
16						43½							N.		N.N.W.																16	
17													N.N.W.		N.E.																17	
18													N.N.W.		N.																	18
19													N.		N.		1															19
20													N.		N.N.W.		1															20
21													N.N.W.		N.N.E.		1															21
22													N.W.		S.W.		1															22
23													N.		N.W.		1															23
24	29.765	68½	29.75	60½	71°	50¼	98½	48	67½	60½	60½	577	N.N.W.	(24°)	N.W.		0.18	8.5													24	
25	29.99	61½	29.875	52½	64¼	43½	94½	41¼	60		52½		N.W.	(25°)	N.W.		0.00	10.0	(24°)												25	
26	29.75	70½	29.82	63¼	73½	546	75½	50	69¼	64½	636	60¼	S.W.		S.W.		0.02	9.0	(25°)												26	
27	29.875	65	30.10	542	724	61	97½	58½	642	56½	54	50	N.W.		N.		0.00	7.0													27	
28	30.24	641	30.115	54¼	732	40½	90½	36½	62½	54½	55½	51¼	N.W.		E.N.E.		0.00	4.0													28	
29	29.825	569	30.235	532	632	519	90½	50	57	53¼	54	519	N.W.		N.W.		0.98	9.0													29	
30	30.268	63	30.28	55¼	65	42½	100	38½	607	56¼	55½	532	N.		E.N.E.		0.00	4.0													30	
31																																31
Sums.	359.588	738.5	330.030	634.08	930.18	709.6	1018	576.25	730.95	622.75	620.6	543.3					12	130	162													
Means.	29.965	63.2	30.003	57.64	66.44	50.7	92.54	48.02	60.91	56.61	56.42	54.23							7.0													
Index Errors.																																
Correction 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					
Barometer mean/corrected reading of Column No. 1 (A.M.) 29.965																																

Barometer, mean (corrected) reading of Column No. 1 (A.M.), ..... = 29.965

Diameter of tube \_\_\_\_\_ inch; correction for capillarity to be added.....+ 0.014

Sum..... 20.070

Correction for Temperature from Column No. 2 to be deducted. — 0.003

Sum 20.886

Mean of the above .....

Barometer corrected and reduced to 32° and Sea-level, .....

Dry bulb Thermometer (mean of Cols. 9 and 11), \* ..... 58.665

Wet bulb Thermometer (mean of Cols. 10 and 12),\* ..... 55.17

† Dew-point Temperature, ..... 59.5°/5

† Elastic Force of Vapour,..... 0.307

† Weight of Vapour in a Cubic Foot of Air.....	1.428
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† Additional Weight required to Saturate a Cubic Foot.....	6.195
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† Degree of Humidity (Saturation 100)..... 80.11%

Column No. 3 (P.M.),.....= 30.003

Capillarity, ..... = + 0.014

Sum,..... 30.017

Temp. from Col. 4, ..... = — 0.077

Sum,..... 20-940

Highest Reading Self-Registering Thermometer in Air and Protected, ..... 77° on the 95<sup>th</sup>

on the  $\frac{L_0}{\rho}$

Lowest      do.                  do.                  do.

$L_0 \frac{3}{4}$

$\frac{\rho L_0^2}{g}$

Difference, being Monthly Range,..... 40% on the 28  
36%

Mean of Self-Registering Thermometers in Air and Protected, 58.54

Mean Daily Range in Air and Protected, .....  $15.4^{\circ}$

Greatest Daily Range, do.,  $39^{\circ} 15'$  90 <sup>th</sup>

Highest Reading Self-Registering Black Bulb Thermometer in Sun 52.40 on the 28  
1902 1st

Lowest do. do. from Radiation during Night  $31\frac{1}{4}$  on the  $7^{\text{th}}$

from Radiation during Night, 56/4 on the 28<sup>th</sup>

†† In the above columns for the registration of the Force of the Wind, may be entered the *number of revolutions*, by Professor Robinson's Cup Wind Gauge, which registers the velocity of the Wind—540 revolutions being equal to one statute mile.

† All these calculated from Glaisher's Hygrometric Tables, Second Edition *only*.  
‡ The Diurnal Range for Scotland is as yet unknown.

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(Signed) A. M. Douglass

100 100 100 100 100

*N.B. — This Schedule should be returned (post-paid) as early as possible after the completion of the Month, with the Sums correctly added, and the Means deducted.*

No Wax or Wajers ever to be employed in closing the Schedule—the Gummed Corner to be alone used.



[illegible]

OBSERVATIONS IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

These persons who kindly furnish Monthly Tables of the Weather to the Scottish Meteorological Society are requested to attend to the following Instructions, seeing that one of their most important ends of Meteorological Observations is their being comparable with one another; and for this purpose it is requisite that all should, if possible, observe at a like hour, and in a like manner, and have their instruments placed, in so far as circumstances allow, in a like position:

*Hour of Observation.*—All instruments which are observed twice a-day, should be read at the same hour; morning and evening, in order to furnish mean results. The Society recommends a quarter before nine o'clock morning and evening, as the most convenient hour; but should this be inconvenient for the observer, another hour may be chosen, attending, however, to the above rule, that the evening and morning readings be taken at the same hour; and this hour entered on the Schedule.

*Barometer.*—Barometers of Messrs. Adie and Son's construction are recommended; but any instruments may be used which have adjustable surfaces, and have been compared. Before this instrument is suspended for use it should be examined, in order to ascertain whether the space above the mercury is free from air. This is done by inclining the instrument, somewhat from the vertical position, when, if free from air, the mercury will settle against the upper end of the tube with a sharp tap. The mercury should then completely fill the tube. If any air has got admittance, it should be driven out by the piston by reversing the instrument, and tapping it gently with the hand. If it cannot be thus expelled, the instrument is useless till repaired.

The Barometer should be hung in a good light, and perfectly perpendicular, as ascertained by the plumb line; and it ought always to be gently tapped before taking the reading, to prevent adhesion of the mercury to the tube. In reading the eye ought to be placed on the exact level of the top of the column of mercury. The reading of the attached Thermometer ought always to be the first taken, as the heat of the breath, or the proximity of the person, are apt to influence its readings.

The corrections necessary to be applied to the Barometric readings depend on the form of the instrument. The mode of making these corrections, and the tables employed for the purpose, will be found in the "Report of the Committee of the Royal Society on Physics and Meteorology," 1840, plate 1s. The daily readings of the Barometer ought to be entered on the Schedule as read off, and the corrections only applied to the mean for the month.

*Self-registering Thermometers and Hygrometers.*—These should be placed alongside of each other, in a place freely exposed to the air, but protected from sunshining, and from reflected heat, as well as from radiation from rain, and as near as may be, *just raised* from the general surface of the ground. Different contrivances are used for this purpose, either a double ventilated box with louver-boarded sides, fixed at a north window, and projecting 12 inches from the wall, so as to allow a free current of air to pass between the box and the wall; or in a double west-side ventilated box with louver-boarded sides, fixed in an exposed place, and if possible over grass. Wherever means are finally decided on, the position of the instruments should be mentioned, and should not be changed (without due notice being given to the Secretary), in order that the results of one month's observations may be strictly comparable with those of another.

The *Self-registering Thermometers* should be placed exactly horizontal. In the case of the ordinary *maximum Thermometers*, with clay, glass, or steel indices, the bulb may be very slightly elevated, in order that the mercurial column may be somewhat indicated by the force of gravity in pushing forward the float or index; and in the case of the *minimum Thermometers*, the bulb must be slightly depressed, to prevent a draining of the spirit to the top of the tube, and also that any part raised in vapour may return to the column. These Thermometers, if read once a-day, should always be read on the *evenings*, so that the temperatures marked by the floats indicate the minimum and the maximum of the day on which the reading is taken. N.B.—The readings of these instruments are taken from that extremity of the float which is nearest the head of the column of mercury or of spirit.

The *maximum Registering Thermometer*, for taking the extreme heat of the sun's rays, should have its bulb blackened, and the surface rendered dull, and it should be mounted in a blackened box, whose sides should be so high as to protect the bulb from wind. It should be so placed that the sun's rays have free access to it during the heat of the day.

The *minimum Registering Thermometer*, for ascertaining the lowest temperature during the night from radiation, should have its bulb similarly blackened and rendered dull, and be similarly mounted. It should be laid out, about sunset, over grass, in a place freely exposed to the sky, but raised on wooden supports a few inches above the surface, and removed during the day.

*Hygrometer.*—The wet bulb requires the same covering as the other is changed. In towns once a month, or oftener, if the weather is dusty, and the mistin gets foul; in the country wherever the mistin seems to be foul. The mistin should always be thoroughly wetted, and freed from starch, before being used; and the cotton wick which conducts moisture to it should be thoroughly wetted, else it will conduct the moisture imperfectly, and yield false results. The cotton wick is best attached by passing its extremity through an aperture in the centre of the mistin, spreading that portion out so as to apply equally round the bulb, and then tying the mistin over the wick. In frosty weather, water must be poured over the wick, until, so as to form a thin film of ice on the mistin, the evaporation from the ice going on as from the simply wetted bulb.