SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid Lothian, During the MONTH of January 190 5.

Lat. 55°56'31"N, Long. 3°16'46"W, Distance from Sea 2 3/3 miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No. ___ Wet No. ___ 9 A.M. Dry bulb.	9 A.M. Wet bulb.	9 P.M. Dry bulb.	9 P.M. Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	9 A.M. Force. Scale of 0—12.	9 P.M. Direction.	9 P.M. Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	9 A.M. Amount (0—10).	9 P.M. Species and Direction.	9 P.M. Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.												°	°	°	°	°		
1	30338	476	29300	475	400	316	389	262	378	350	400	378	06	W	2	N	2		sl	10	sl	10			362	383	392	406	419		1
2	30200	468	30148	489	480	389	535	387	470	455	425	400	—	W	2-3	W	4		sl	10	sl	10			412	385	393	400	419		2
3	29978	487	29850	517	493	454	699	410	476	450	490	473	01	W	4	W	2		sl	8	ci	10			424	400	398	400	419		3
4	29724	499	29518	518	499	457	580	412	478	463	459	437	02	W	4	W	2		m	10	—	—			438	410	400	401	419		4
5	29460	498	29460	500	470	373	693	332	397	380	387	364	02	W	2	W	2		—	—	—	—			394	410	400	401	419		5
6	29176	488	29400	523	512	378	667	340	464	448	445	403	—	W	2	W	6		sl	8	—	—			412	402	403	402	420		6
7	29864	493	29940	521	489	352	540	255	373	368	473	454	—	NE	1	W	2-3		cist	5	cist	10			374	402	403	402	421		7
8	29628	496	29450	528	509	426	698	408	478	437	417	407	25	W	5	W	3		ci	4	m	10			426	408	404	403	421		8
9	29420	485	29900	494	430	258	552	304	364	348	298	285	13	W	4	N	2		—	—	—	—			382	408	406	403	421		9
10	30100	463	29884	492	462	289	675	195	373	340	460	434	03	W	2	W	6		cist	4	sl	8			343	394	403	403	422		10
11	29564	474	29378	480	473	362	730	368	396	378	374	368	33	W	5	W	4		—	—	m	10			402	403	402	403	422		11
12	29578	425	30032	448	411	340	682	292	362	348	366	350	—	W	3	W	2		—	—	—	—			363	398	401	402	421		12
13	30178	438	30150	468	453	315	736	241	324	313	332	325	—	E	1	E	2		—	—	—	—			339	385	394	401	421		13
14	30000	455	29884	472	417	311	738	241	397	345	393	352	—	E	2	E	3		ci	8	ci	4			343	399	394	401	421		14
15	29794	441	29618	487	429	316	838	306	383	358	309	287	02	sl	4	E	4		cist	6	sl	4			345	372	383	399	419		15
16	29476	475	28918	375	397	240	668	234	283	262	310	286	06	E	2	E	7		—	—	cist	6			324	365	379	395	418		16
17	28794	416	29050	449	416	263	758	230	325	308	378	358	02	E	2	W	4		cist	5	cist	5			322	350	368	381	416		17
18	29540	430	29876	450	395	320	685	289	357	340	330	318	—	W	2	W	2		ci	3	—	—			330	357	368	382	416		18
19	30036	434	30218	467	440	316	789	271	394	375	378	358	—	N	1	E	1		ci	5	cist	8			325	354	368	383	413		19
20	30200	438	30100	465	384	309	520	268	320	295	365	337	—	E	3	SE	3		—	—	cist	8			325	354	367	382	412		20
21	30072	440	30200	462	390	328	634	348	389	369	348	329	—	E	1	E	2		sl	8	—	—			354	354	368	386	413		21
22	30200	435	30136	450	350	254	352	218	297	276	350	331	—	N	1	W	2		ci	8	sl	10			334	353	364	378	403		22
23	29923	437	29843	462	420	343	618	327	388	370	418	388	—	W	3	W	4		—	—	ci	5			334	354	363	378	405		23
24	29874	446	29816	452	434	348	428	378	417	403	372	343	—	E	1	W	3		sl	10	—	—			376	356	362	378	405		24
25	30100	452	30396	475	439	335	788	298	363	342	328	308	—	N	1	W	2		—	—	—	—			363	355	363	378	405		25
26	30500	450	30530	465	413	273	788	213	272	251	375	348	—	N	1	W	3		—	—	—	—			325	356	364	378	402		26
27	30468	453	30528	483	480	365	788	317	440	415	470	443	—	W	3	W	4		cist	10	cist	8			355	355	363	376	401		27
28	30500	475	30582	505	489	454	652	420	475	438	468	434	—	W	4	W	5		ci	5	—	—			408	363	365	378	402		28
29	30550	485	30390	510	480	443	762	387	462	430	448	428	02	W	3	W	3		sl	8	—	—			412	384	375	378	401		29
30	30152	481	29668	512	510	417	678	400	464	448	412	380	06	W	4	W	5		sl	8	—	—			416	390	385	381	402		30
31	29988	475	29782	495	435	356	400	287	373	344	317	394	02	W	2	W	3		—	—	sl	8			385	385	386	381	401		31
Sums.																															
Means.	29.913	46.2	29.910	48.0	44.5	34.6	64.8	31.1	39.1	36.9	39.3	37.1			2.56		3.21								36.9	37.8	38.3	39.1	41.4		
Corrections for Instrumental Errors.	+020		+020																												
Corrections for Diurnal Range.																															
Corrected Means	29.933		29.930																												

NOTATION USED IN GENERAL REMARKS.

a. denotes aurora.
d. ,, drizzling rain.
f. ,, fog.
fr. ,, frost.
h.-fr. ,, hoar-frost.
h. ,, haze.
hl. ,, hail.
l. ,, lightning.
lu. co. ,, lunar corona.
lu. ha. ,, lunar halo.
m. ,, mist.
p. ,, passing showers.
r. ,, rain.
r.² ,, heavy rain.
sl. ,, sleet.
sn. ,, snow.
so. ha. ,, solar halo.
q. ,, squall.
q.² ,, violent squalls.
t. ,, thunder.
t. s. ,, thunder-storm.

CLOUDS.

High Clouds.

Cirrus, . . . cir.
Cirro-stratus, . . cir.-str.
Cirro-cumulus, . . cir.-cum.

Middle Clouds.

Strato-cirrus, . . str.-cir.
Cumulo-cirrus, . . cum.-cir.

Lower Clouds.

Strato-cumulus, . . str.-cum.
Cumulus, . . . cum.
Cumulo-nimbus. . . cum.-nim.
Nimbus, . . . nim.
Stratus, . . . str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = —4.7 = 29.886

Corrected Mean at 9 P.M., *minus* Correction for Temp. = —5.4 = 29.878

Mean at Station, corrected, and at 32°, = 29.882

Correction for height, feet above Mean Sea-level, = + 186

Mean, reduced to 32°, and Sea-level, = 30.067

Highest Reading, corrected for Index error, on the 26 th, = 30.592

Lowest Do. Do., on the 17 th, = 28.796

Difference, or **Monthly Range,** = 1.796

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 6 th, = 51.2

Lowest in Month, corrected for Index errors, on the 16 th, = 21.0

Difference, or **Monthly Range,** = 27.2

Mean of all the Highest, = 44.5

Mean of all the Lowest, = 34.6

Difference, or **Mean Daily Range,** = 9.9

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 39.6

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 16 = 19.5

,, ,, Mean, = 31.1

Black Bulb, Max. in Sun, Highest in Month, 15 = 83.8

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 39.2

Wet Bulb, Mean of A.M. and P.M. Readings, = 37.0

Computed **Temperature of Dew-Point,** = 34.1

Do. **Elastic Force of Vapour,** = .197

Do. **Relative Humidity** (Saturation = 100), = 82

RAIN fell on 14 Days; Amount in Inches, = 1.05

WIND. Direction.	SUMMARY. N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	4	1	7	—	1	—	18	—	—	2.56
P.M.	2	—	6	1	—	—	22	—	—	3.21
Sum.	6	1	13	1	1	0	40	0	0	2.9

Observations made and Return verified by Dr Johnston pro A Hume

(Signed) .....

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is written down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W. . .	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 *George Street,*
EDINBURGH.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid Lothian, During the MONTH of February 1905.

Lat. 55°56'31"N. Long. 3°16'26"W. Distance from Sea 2½ miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 1 ft

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No. ____ Wet No. ____ 9 A.M. Dry bulb.	Wet bulb.	9 P.M. Dry bulb.	Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	Force. Scale of 0—12.	9 P.M. Direction.	Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	Amount (0—10).	9 P.M. Species and Direction.	Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.											°	°	°	°	°		
1	29.650	478	29.432	498	460	365	705	348	410	388	374	348	0.02	W	4	W	5		—	—	—	—		381	388	395	385	402		1
2	29.576	493	29.782	490	459	320	670	287	360	334	347	333	—	N	2	W	2		—	—	—	c		374	384	385	385	402		2
3	30.026	462	29.932	486	451	338	585	227	318	295	448	431	19	E	1	W	3		—	—	ci	5		343	376	382	384	401		3
4	29.826	467	29.850	488	488	352	724	356	452	420	460	430	—	W	3	W	4		st	10	—	—		396	383	384	384	401		4
5	30.014	488	29.868	499	548	448	825	408	456	422	469	427	—	W	4	W	3		ci	8	cu	5		415	392	384	386	402		5
6	29.750	492	30.034	506	514	368	827	388	478	446	384	367	—	W	4	W	2		st	5	—	—		426	401	394	387	402		6
7	30.130	468	30.186	505	458	338	824	246	358	342	342	336	—	N	2	W	1		—	—	—	—		376	400	393	387	402		7
8	30.146	487	30.150	543	480	323	747	268	401	370	473	448	—	W	1	SW	3		st	8	—	—		378	402	394	387	402		8
9	30.050	523	30.032	541	530	425	788	388	456	421	478	447	—	W	3	W	3		—	—	st	10		411	398	398	387	402		9
10	30.030	518	30.092	556	535	341	754	334	382	363	348	329	—	W	2	W	2		cu	8	—	—		420	400	399	388	402		10
11	30.214	487	30.348	548	374	273	782	213	282	256	321	307	—	N	1	N	3		ci	4	st	8		337	385	392	390	403		11
12	30.388	488	30.248	521	390	248	468	213	279	248	387	356	0.8	W	1	W	1		ci	7	ci	10		330	384	392	390	403		12
13	30.150	502	30.294	534	553	348	787	307	455	428	465	448	0.2	N	2	W	2		st	10	ci	4		397	386	393	390	403		13
14	30.362	507	30.350	558	510	395	547	303	412	378	416	387	0.2	W	2	W	2		—	—	—	—		395	387	394	391	404		14
15	30.144	513	30.088	524	454	413	526	362	446	427	448	426	0.1	W	3	W	2		st	10	—	—		408	386	387	388	403		15
16	29.880	516	29.628	507	528	400	1048	392	480	473	415	387	1.1	W	3	W	2		st	8	cu	5		427	395	394	388	403		16
17	29.664	478	29.824	482	524	385	849	323	397	376	413	394	0.3	W	3	W	3		—	—	ci	8		418	386	395	388	403		17
18	29.500	479	29.300	487	548	384	973	381	482	474	384	375	3.6	W	4	W	5		N	10	st	5		423	401	388	392	403		18
19	29.350	470	29.614	488	432	331	899	311	382	360	334	307	0.4	W	2	W	3		ci	3	cu	7		370	403	401	392	403		19
20	30.032	435	30.382	488	435	284	855	223	332	315	334	315	—	N	2	W	1		cu	4	ci	5		343	402	401	392	403		20
21	30.500	426	30.500	432	417	308	810	253	350	318	384	343	—	N	2	E	2		ci	8	ci	8		342	382	393	392	403		21
22	30.500	428	30.398	435	400	313	663	235	337	326	314	298	—	W	2	E	2		cu	10	—	—		343	384	394	392	403		22
23	30.300	427	30.122	437	380	267	493	207	323	310	356	318	0.1	N	2	E	2		st	8	st	10		334	375	386	388	403		23
24	29.826	435	29.692	428	363	332	365	321	353	344	350	342	0.7	S	1	S	1		N	10	st	10		358	376	386	388	403		24
25	29.636	423	29.348	437	434	312	769	257	342	334	373	350	0.6	N	1	W	2		N	10	—	—		345	372	378	387	403		25
26	28.728	433	28.856	443	437	318	902	310	323	313	373	345	1.7	W	3	W	5		N	10	st	8		362	373	375	382	402		26
27	28.584	435	28.800	427	432	325	610	320	395	386	368	348	1.0	N	3	W	3		N	10	—	—		358	372	376	382	402		27
28	28.772	432	29.000	448	448	346	637	298	393	378	383	357	1.8	W	3	W	2		N	10	N	10		364	377	382	383	402		28
29																															29
30																															30
31																															31
Sums.	23728	1990	24200	2601	1784	1226	20833	130	2454	1845	2521	1870	1.47		66		71			173		116		2174	2458	2515	2458	70		
Means.	29.847	47.1	29.864	49.3	46.4	34.4	74.8	30.5	38.8	36.6	39.0	36.7			2.1		2.3							37.8	38.8	39.0	38.8	40.2		
Corrections for Instrumental Errors.	+.020		+.020																												
Corrections for Diurnal Range.																															
Corrected Means	.867		.884																												

NOTATION USED IN GENERAL REMARKS.

a. *denotes* aurora. d. ,, drizzling rain. f. ,, fog. fr. ,, frost. h.-fr. ,, hoar-frost. h. ,, haze. hl. ,, hail. l. ,, lightning. lu. co. ,, lunar corona. lu. ha. ,, lunar halo. m. ,, mist. p. ,, passing showers. r. ,, rain. r.² ,, heavy rain. sl. ,, sleet. sn. ,, snow. so. ha. ,, solar halo. q. ,, squall. q.² ,, violent squalls. t. ,, thunder. t. s. ,, thunder-storm.

CLOUDS.

HIGH CLOUDS: Cirrus, cir. Cirro-stratus, cir.-str. Cirro-cumulus, cir.-cum.

MIDDLE CLOUDS: Strato-cirrus, str.-cir. Cumulo-cirrus, cum.-cir.

LOWER CLOUDS: Strato-cumulus, str.-cum. Cumulus, cum. Cumulo-nimbus, cum.-nim. Nimbus, nim. Stratus, str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0–12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = ... — 49 = 29.818

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ... — 56 = 29.828

Mean at Station, corrected, and at 32°, ... = 29.803

Correction for height, feet above Mean Sea-level, ... = + .183

Mean, reduced to 32°, and Sea-level, ... = 29.986

Highest Reading, corrected for Index error, on the 21 th, 22 ..... = 30.500

Lowest Do. Do., on the th, ... = 28.584

Difference, or **Monthly Range**, ... = 1.916

S.-R. THERMOMETER, (in shade) **Highest in Month**, corrected for Index Errors, on the 13 th, ... = 55.3

Lowest in Month, corrected for Index errors, on the 12 th, ... = 24.8

Difference, or **Monthly Range**, ... = 20.5

Mean of all the Highest, ... = 46.4

Mean of all the Lowest, ... = 34.4

Difference, or **Mean Daily Range**, ... = 12.0

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 40.4

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 23rd ..... = 20.7

,, ,, Mean, ... = 30.5

Black Bulb, Max. in Sun, Highest in Month, 16th ..... = 104.8

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, ... = 38.9

Wet Bulb, Mean of A.M. and P.M. Readings, ... = 36.6

Computed **Temperature of Dew-Point**, ... = 33.5

Do. **Elastic Force of Vapour**, ... = .193

Do. **Relative Humidity** (Saturation = 100), = 83

RAIN fell on 16 **Days; Amount in Inches**, ... = 1.47

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	9	—	1	—	1	—	17	—	—	2.1
P.M.	1	—	3	—	1	1	22	—	—	2.3
Sum.	10	0	4	0	2	1	39	0	0	2.2

Observations made and Return verified by Dr Johnston per Andrew Hume

(*Signed*) .....

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W.	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.
Alder,				
Ash,				
Beech,				
Birch,				
Elm,				
Larch,				
Lime,				
Oak,				
Sycamore or Plane,				

CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Barley,				
Bere or Bigg,				
Oats,				
Wheat,				
Beans,				
Pease,				
Potatoes,				
Turnips,				
Rye Grass,				

SHRUBS, ETC.	First in Blossom.
Barberry,	
Bourtree or Elder,	
Broom,	
Hazel,	
Hawthorn,	
Holly,	
Laburnum,	
Lilac,	
Mezereon,	
Mountain Ash or Rowan,	
Red Flowering Currant,	
Rhododendron Ponticum,	
Whin,	

FRUITS.	First in Blossom.	Fruit Ripe, generally.
Apple,		
Black Currant,		
Cherry,		
Gean,		
Gooseberry,		
Peach,		
Pear,		
Plum,		
Strawberry,		

MIGRATORY BIRDS.	First Arrival.	Departure.
Cuckoo,		
Curlew,		
House-Swallow,		
Lapwing,		
Plover,		
Sand-Martin,		
Starling,		
Swan,		
Rail or Corn Crake,		

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 *George Street,*
EDINBURGH.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of March 1905.

Lat. 55° 56' 31" N. Long. 3° 16' 46" W. Distance from Sea 2 2/3 miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.___	9 A.M. Attached Thermometer	9 P.M. Barometer. No.___	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max.	Min.	Black Bulb Max. in Sun.	Min. on Grass.	HYGROMETER. Dry No.___ Wet No.___ 9 A.M. Dry bulb.	Wet bulb.	9 P.M. Dry bulb.	Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	Force. Scale of 0—12.	9 P.M. Direction.	Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	Amount (0—10).	9 P.M. Species and Direction.	Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.											°	°	°	°	°		
1	29·216	43·5	29·322	45·5	43·5	35·4	91·7	31·9	37·8	36·5	40·2	38·0	·13	E.	3	N.	3		n	10	st.	10		35·8	37·6	38·2	38·4	40·2		1
2	29·992	43·7	29·926	46·8	44·0	34·8	92·3	33·8	39·5	36·3	34·7	31·2	—	N.	2	N.	2		—	—	st	8		38·2	38·4	38·4	38·5	40·2		2
3	30·084	42·5	29·886	44·8	43·7	31·8	60·5	26·9	36·7	34·8	43·7	31·8	·08	N.	3	W	5		st.	8	st.	8		36·2	38·5	38·7	38·6	40·3		3
4	29·782	45·3	29·828	47·0	49·0	37·8	90·7	36·8	44·9	43·6	42·3	40·9	·02	W.	2	E.	2		ci	5	—	—		36·8	38·9	38·6	38·7	40·3		4
5	29·520	46·5	29·342	46·8	48·2	39·1	59·3	32·7	45·5	43·5	33·4	37·6	·03	W.	4	N.	2		n.	10	—	—		41·5	39·7	39·3	38·8	40·3		5
6	29·680	43·8	29·748	46·0	47·9	34·9	88·4	23·1	39·6	37·7	41·7	39·5	·02	W.	3	N.	2		st.	10	—	—		37·2	39·5	39·3	38·9	40·3		6
7	29·494	45·2	29·500	46·3	50·8	39·5	95·9	29·3	44·2	41·5	38·3	36·5	—	W.	3	W.	4		st.	10	—	—		39·1	39·3	39·5	39·2	40·3		7
8	29·700	42·3	29·342	45·2	44·2	33·6	84·7	27·8	38·0	35·2	34·0	39·9	·04	N.	2	W.	4		ci	5	—	—		36·0	39·4	39·5	39·2	40·3		8
9	29·000	42·5	28·982	42·8	44·8	34·9	98·7	26·8	39·0	37·6	36·3	34·2	·14	S	3	W	4		n.	10	—	—		37·3	39·2	39·6	39·2	40·3		9
10	28·994	41·2	28·938	43·4	48·2	34·6	98·4	30·4	39·8	36·0	38·7	35·4	·05	W.	4	W.	2		st	7	st	10		36·5	38·7	39·0	39·1	40·3		10
11	28·628	42·3	28·496	44·3	48·2	34·1	52·2	34·2	39·8	39·0	40·3	39·8	·18	E	2	W.	3		st.	10	st.	8		38·5	39·2	39·3	39·1	40·4		11
12	28·518	43·5	28·750	44·0	47·4	36·3	99·0	30·9	39·8	36·8	39·0	37·5	·02	N.	2	E.	1		ci.	8	st.	8		37·5	38·8	39·0	39·1	40·3		12
13	28·922	42·8	28·950	46·2	48·5	36·0	101·2	30·0	40·2	37·4	40·7	37·8	·06	W.	3	E.	3		ci.	4	st.	10		37·6	39·2	39·4	39·1	40·3		13
14	28·786	45·6	28·892	49·3	53·2	38·8	109·4	31·9	43·8	41·6	39·4	36·7	·19	W.	3	S.	3		st.	10	—	—		37·8	39·5	39·6	39·2	40·3		14
15	28·230	45·3	28·550	48·7	48·2	34·5	103·4	30·7	41·3	38·9	39·0	37·8	·11	S.	8-10	S.W.	5		n.	10	st.	8		36·4	39·5	39·7	39·1	40·3	lowest reading Bar. 28.250. gale - q^2 - r.	15
16	28·782	46·2	28·972	49·8	51·3	34·2	107·8	33·7	45·0	40·4	44·3	41·6	·06	W.	2	E.	5		ci	3	cist.	8		39·8	39·9	40·0	39·5	40·4		16
17	29·150	47·5	29·332	50·8	52·0	39·8	105·0	33·2	43·8	41·4	40·4	38·9	·02	W.	3	E.	2		ci	4	—	—		41·9	41·0	40·3	39·7	40·6		17
18	29·370	47·4	29·550	50·6	53·7	32·9	107·6	27·9	45·3	42·9	41·2	38·4	—	W.	2	W.	3		cist.	5	—	—		40·7	41·2	40·7	39·8	40·7		18
19	29·326	48·2	29·950	50·9	55·0	39·2	110·9	34·2	44·8	42·3	39·9	37·6	—	W.	3	N.	1		cist.	8	—	—		41·3	41·3	41·5	39·9	40·9		19
20	29·732	46·5	29·642	48·3	51·0	30·3	83·5	22·5	42·9	38·6	43·9	40·7	—	W.	2	S.	2		—	—	st.	10		37·4	41·2	41·3	40·2	40·9		20
21	29·632	48·3	29·390	51·5	54·3	41·8	90·8	30·8	46·1	42·5	46·7	44·9	—	N.	1	W.	1		ci.	5	cist.	10		40·9	41·2	41·2	40·3	41·2		21
22	29·688	48·4	29·680	53·2	64·7	39·8	104·8	30·8	40·1	39·8	42·8	40·5	—	W.	2	W.	1		—	—	—	—		41·7	41·7	41·3	40·3	41·2		22
23	29·532	52·3	29·488	52·5	58·2	41·4	106·2	32·3	38·8	36·9	46·9	45·8	·92	S.	3	E.	2		cist.	5	n.	10		44·9	43·5	41·8	40·4	41·3	t.s. afternoon r^2	23
24	29·688	48·8	29·350	50·4	43·0	39·8	54·2	39·2	41·7	40·8	42·7	42·2	·04	N.	1	E.	2		st.	10	st	10		43·2	43·4	42·5	40·5	41·4		24
25	29·678	48·3	29·590	50·1	44·5	40·7	63·5	36·8	43·7	41·7	40·2	39·8	·50	S.	2	E.	1		st.	10	n	10		43·2	43·5	42·3	41·2	41·6		25
26	29·550	47·1	29·568	47·8	52·4	35·7	103·4	31·0	40·4	39·7	41·6	39·7	·10	N.	2	W.	3		ci.	5	—	—		41·2	42·5	42·5	41·2	41·7		26
27	29·400	48·0	29·402	48·6	51·2	37·7	94·2	32·7	43·2	41·9	40·1	38·6	·05	W.	2	W.	2		st.	8	—	—		42·9	42·8	42·5	41·4	41·7		27
28	29·400	48·2	29·380	50·0	52·8	38·5	105·9	31·9	48·0	44·3	41·0	39·0	·11	W.	3	W.	3		st.	5	—	—		42·8	42·8	42·5	41·8	41·9		28
29	29·400	49·5	29·524	51·2	51·4	39·7	103·4	30·7	46·0	42·0	42·0	39·7	·03	W.	4	W.	3		—	—	—	—		42·3	42·7	42·5	41·7	41·9		29
30	29·532	49·8	29·568	50·6	52·6	39·7	106·5	32·1	47·1	42·7	40·5	37·8	—	W.	3	W.	2		cist.	4	—	—		42·7	43·0	42·8	41·8	42·4		30
31	29·650	50·3	29·900	49·7	52·2	38·9	109·6	33·2	45·7	41·8	38·5	36·8	—	W.	4	N	1		cist	5	—	—		42·5	43·0	42·8	41·7	42·4		31
Sums.	17158	713	21 158	1414	1411	1017	1415·15	1117	1614	1417	1213	1918	2·95				87			99		194		128		1515	1814	1613	1813	213		
Means.	29·372	46·2	29·422	48·2	50·1	36·9	93·1	31·4	42·5	40·2	40·7	38·5					2·80			2·55		6·3		4·1		39·7	40·5	40·5	39·9	40·9		
Corrections for Instrumental Errors.	+032		+032																											
Corrections for Diurnal Range.																														
Corrected Means																														

NOTATION USED IN GENERAL REMARKS.

a. denotes aurora.
d. ,, drizzling rain.
f. ,, fog.
fr. ,, frost.
h.-fr. ,, hoar-frost.
h. ,, haze.
hl. ,, hail.
l. ,, lightning.
lu. co. ,, lunar corona.
lu. ha. ,, lunar halo.
m. ,, mist.
p. ,, passing showers.
r. ,, rain.
r^2 ,, heavy rain.
sl. ,, sleet.
sn. ,, snow.
so. ha. ,, solar halo.
q. ,, squall.
q^2 ,, violent squalls.
t. ,, thunder.
t. s. ,, thunder-storm.

CLOUDS.

High Clouds.
Cirrus, ... cir.
Cirro-stratus, . . cir.-str.
Cirro-cumulus, . . cir.-cum.

Middle Clouds.
Strato-cirrus, . . str.-cir.
Cumulo-cirrus, . . cum.-cir.

Lower Clouds.
Strato-cumulus, . . str.-cum.
Cumulus, ... cum.
Cumulo-nimbus, . . cum.-nim.
Nimbus, ... nim.
Stratus, ... str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. 29·372 —·048 = 29·324

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29·422 —·053 = 29·369

·378

Mean at Station, corrected, and at 32°, = 29·346

Correction for height, feet above Mean Sea-level, = + ·183

Mean, reduced to 32°, and Sea-level, = 29·529

Highest Reading, corrected for Index error, on the 3rd, = 30·084

Lowest Do. Do., on the 15th, = 28·270

Difference, or **Monthly Range,** = 1·814

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 22nd, = 64·7

Lowest in Month, corrected for Index errors, on the 3rd, = 31·8

Difference, or **Monthly Range,** = 32·9

Mean of all the Highest, = 50·1

Mean of all the Lowest, = 36·9

Difference, or **Mean Daily Range,** = 13·2

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 43·5

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 6th = 23·1

,, ,, Mean, = 62·2 31·4

Black Bulb, Max. in Sun, Highest in Month, 19 = 110·9

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 41·6

Wet Bulb, Mean of A.M. and P.M. Readings, = 39·3

Computed **Temperature of Dew-Point,** = 36·5

Do. **Elastic Force of Vapour,** = ·216

Do. **Relative Humidity** (Saturation = 100), = 82

RAIN fell on 22 **Days; Amount in Inches,** = 2·95

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	7	0	2	0	4	0	18	0	0	2·8
P.M.	6	0	8	0	2	1	14	0	0	2·6
Sum.	13	0	10	0	6	1	32	0	0	2·7

Observations made and Return verified by { J. N. Johnston. / A. Milne.

(Signed) _____

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
———
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W. . .	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

Constantine
March 1905

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 George Street,
EDINBURGH.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of April 1905.

Lat. 55° 56' 31" N. Long. 3° 16' 46" W. Distance from Sea 2 3/3 miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No. ___ Wet No. ___ 9 A.M. Dry bulb.	Wet bulb.	9 P.M. Dry bulb.	Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	Force. Scale of 0—12.	9 P.M. Direction.	Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	Amount (0—10).	9 P.M. Species and Direction.	Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.											°	°	°	°	°		
1	29.950	48.5	29.650	51.5	49.7	34.6	65.9	29.1	43.0	40.3	45.3	44.8	.16	W.	3	W.	4		St.	10	N.	10		41.3	43.0	43.0	41.8	42.4		1
2	29.760	48.5	29.898	51.3	53.4	38.7	108.5	32.8	39.3	38.0	39.3	36.7	—	N.	3	W.	2		Ci.	4	—	—		42.2	42.8	42.8	41.8	42.4		2
3	29.942	48.2	29.822	53.2	56.0	29.3	109.4	22.6	43.9	39.8	44.1	41.2	.02	W.	2	E.	1		—	—	St.	10		39.8	43.4	43.2	41.8	42.4		3
4	29.460	51.8	29.468	54.7	54.2	44.5	107.8	39.5	50.0	43.8	46.5	44.2	.02	W.	4	W.	3		St.	10	—	—		45.8	43.7	43.2	42.2	42.5		4
5	29.432	50.4	29.740	51.0	47.0	33.8	108.2	35.0	39.8	34.8	33.2	31.5	.02	W.	4	N.	2		St.	5	—	—		44.0	44.5	43.8	42.3	42.6		5
6	29.880	45.2	29.850	50.1	43.9	28.5	117.0	20.9	33.3	32.1	34.3	31.7	.04	N.	4	N.	2		Cist.	5	—	—		36.5	43.2	43.4	42.3	42.6	Sn. 1 in.	6
7	29.664	47.6	29.762	49.4	38.2	25.8	83.9	30.2	32.4	31.5	26.5	24.3	.15	E.	2	N.	2		N.	10	—	—		38.0	42.5	43.0	42.3	42.6	Sn. showers.	7
8	29.800	42.3	29.670	49.6	46.0	23.8	103.9	18.8	35.0	31.7	38.2	35.1	.02	W.	3	W.	4		Ci	4	St.	8		34.8	41.2	42.8	42.2	42.6		8
9	29.492	47.8	29.400	50.2	46.6	33.8	114.2	29.9	36.5	32.9	33.5	31.2	—	N.	3	E.	1		Cist.	4	—	—		39.2	41.5	42.3	42.2	42.8		9
10	29.264	47.5	29.144	50.8	44.2	28.8	81.3	24.8	40.0	36.2	39.8	37.4	—	W.	3	E.	2		Ci	5	St	10		37.5	41.6	42.2	41.9	42.8		10
11	29.194	48.2	29.400	51.0	46.1	36.9	65.5	34.6	41.7	39.4	38.8	37.4	—	W	1	—	—		Cist.	8	Cust.	8		40.6	41.6	42.1	41.9	42.8		11
12	29.596	47.8	29.600	50.5	52.1	33.5	93.8	29.4	36.8	36.0	42.5	40.0	—	W.	2	E.	4		St	10	Cist	8		40.2	41.6	42.0	41.8	42.7		12
13	29.500	51.2	29.540	54.9	53.0	42.5	104.3	38.6	51.7	48.0	52.1	49.8	—	S	4	E.	3		St.	10	St.	10		44.5	43.5	42.3	41.9	42.7		13
14	29.446	54.3	29.492	53.3	61.8	43.2	118.8	40.7	56.8	51.4	50.8	48.6	.12	S	4	S	1		St	5	n	10		46.9	44.8	43.2	42.2	42.8		14
15	29.550	53.2	29.600	53.8	51.2	43.8	94.7	42.8	48.5	44.9	44.8	43.2	—	E.	1	E	2		Cish	10	St	10		47.0	45.2	43.7	42.2	42.8		15
16	29.748	54.7	29.983	55.6	46.2	39.0	70.2	37.3	45.7	44.7	39.8	37.5	.03	E.	2	E.	4		St	10	n	10		46.2	45.5	44.5	42.6	42.8		16
17	30.070	56.5	30.138	51.5	43.1	37.8	65.9	36.3	41.0	37.9	38.6	38.8	.17	E.	3	E.	3		St	10	Ci	8		42.2	44.5	44.2	42.8	42.9		17
18	30.134	49.9	30.144	50.4	43.4	34.5	103.6	30.9	40.2	38.2	34.3	35.1	.11	E.	3	E	4		St	10	St.	10		40.4	43.5	43.8	42.9	43.2	Sn. showers.	18
19	30.100	49.6	30.088	51.5	47.2	38.5	110.3	33.4	42.8	38.9	40.7	38.8	—	E.	4	E.	3		St	5	Ci	5		41.8	43.2	43.7	42.9	43.2		19
20	30.000	48.4	29.936	51.8	47.6	36.8	99.4	25.5	41.6	35.8	38.7	35.4	—	N.	2	N.	1		Cish	8	—	—		42.2	43.5	43.8	42.9	43.3		20
21	29.934	49.7	30.032	53.0	48.1	34.2	113.2	31.8	43.5	39.5	35.6	33.0	—	W.	2	W.	1		St	8	Cist	8		42.3	44.6	44.5	42.9	43.3		21
22	29.950	49.7	29.884	53.8	54.7	29.8	126.2	30.2	43.0	38.9	42.8	40.5	—	W.	2	W.	1		St.	8	—	—		41.1	43.4	43.6	42.9	43.3		22
23	29.718	51.0	29.700	53.4	51.3	35.6	78.8	28.9	44.3	40.2	38.7	34.8	.09	W.	3	N.	1		Ci	4	Ci	5		42.9	44.1	43.8	43.0	43.4		23
24	29.664	49.9	29.720	51.7	58.5	34.7	108.2	27.5	41.0	39.6	42.8	37.9	—	N.	3	W.	3		—	—	Ci	5		42.0	43.9	43.8	43.2	43.5		24
25	29.724	50.3	29.778	50.7	52.0	31.3	117.0	23.5	40.8	38.4	41.6	38.5	—	W.	2	W.	2		Cish	10	Cist	8		42.7	43.9	43.9	43.2	43.5		25
26	29.792	48.7	29.750	50.1	51.5	31.9	74.8	26.5	45.0	42.8	40.1	38.7	.20	W.	2	W.	1		Cish	8	St.	10		42.8	43.9	43.9	43.2	43.6		26
27	29.542	50.3	29.456	51.7	55.7	40.9	102.2	36.4	48.8	43.3	49.8	47.3	.17	E	1	W.	2		n.	10	n.	10		45.2	44.3	44.0	43.3	43.6		27
28	29.200	51.2	29.136	53.4	56.5	42.3	87.5	38.9	50.5	48.0	48.5	46.7	.04	W.	3	S.	1		n.	10	St.	10		43.5	45.4	44.8	43.4	43.7		28
29	29.150	50.2	29.224	52.3	57.3	43.5	85.5	42.1	47.2	45.0	47.8	46.2	.07	S.	2	E.	2		St.	10	St	10		47.3	46.1	45.1	43.6	43.8		29
30	29.226	51.6	29.022	52.2	57.2	43.4	115.3	42.1	49.1	48.0	46.3	44.7	.19	E.	2	E.	3		n	10	n	10		48.2	47.3	45.8	43.9	43.9		30
31																														31
Sums.	29902	2942	20031	624	057	1797	29327	650	942	125	408	2680	1.65		79		65			221		193		731	1112	1062	775	905		
Means.	29.663	49.8	29.668	52.1	50.2	36.0	97.8	32.2	43.1	40.4	41.4	38.9			2.6		2.2			7.4		6.2		42.4	43.7	43.5	42.6	43.0		
Corrections for Instrumental Errors.	+.032 +.015		+.032																											
Corrections for Diurnal Range.																														
Corrected Means	29.695		29.700																											

NOTATION USED IN GENERAL REMARKS.

a. denotes aurora. d. ,, drizzling rain. f. ,, fog. fr. ,, frost. h.-fr. ,, hoar-frost. h. ,, haze. hl. ,, hail. l. ,, lightning. lu. co. ,, lunar corona. lu. ha. ,, lunar halo. m. ,, mist. p. ,, passing showers. r. ,, rain. r.² ,, heavy rain. sl. ,, sleet. sn. ,, snow. so. ha. ,, solar halo. q. ,, squall. q.² ,, violent squalls. t. ,, thunder. t. s. ,, thunder-storm.

CLOUDS.

High Clouds: Cirrus, cir. Cirro-stratus, cir.-str. Cirro-cumulus, cir.-cum.

Middle Clouds: Strato-cirrus, str.-cir. Cumulo-cirrus, cum.-cir.

Lower Clouds: Strato-cumulus, str.-cum. Cumulus, cum. Cumulo-nimbus, cum.-nim. Nimbus, nim. Stratus, str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = ... — 57 = 29.638

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ... — 62 = 29.638

Mean at Station, corrected, and at 32°, ... = 29.638 .621

Correction for height, feet above Mean Sea-level, ... = + .804

Mean, reduced to 32°, and Sea-level, ... = 30.259

Highest Reading, corrected for Index error, on the 18 th, ... = 30.144

Lowest Do. Do., on the 28 th, ... = 29.136

Difference, or **Monthly Range,** ..... = 1.008

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 14 th, ... = 61.8

Lowest in Month, corrected for Index errors, on the 8 th, ... = 23.8

Difference, or **Monthly Range,** ..... = 38.0

Mean of all the Highest, ... = 50.2

Mean of all the Lowest, ... = 36.0

Difference, or **Mean Daily Range,** ..... = 14.2

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 43.1

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, ... = 18.8

,, ,, Mean, ... = 32.2

Black Bulb, Max. in Sun, Highest in Month, 22nd ..... = 126.2

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, ... = 42.3

Wet Bulb, Mean of A.M. and P.M. Readings, ... = 39.7

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

Do. **Elastic Force of Vapour,** ..... = .217

Do. **Relative Humidity** (Saturation = 100), = 81

RAIN fell on 17 **Days; Amount in Inches,** ..... = 1.65

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	5	—	8	—	3	—	14	—	—	2.6
P.M.	5		12		2		10		1	2.2
Sum.	10	0	20	0	5	0	24	0	1	2.4

Observations made and Return verified by { J. N. Johnston, Andrew Hume.

(*Signed*) .....

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W.	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

THE SECRETARY,
Scottish Meteorological Society,
122 *George Street,*
EDINBURGH.

BOOK POST.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of May 1905.

Lat. 55° 56' 31" N. Long. 3° 16' 46" W., Distance from Sea 2 3/3 miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max.	Min.	Black Bulb Max. in Sun.	Min. on Grass.	HYGROMETER. Dry No. Wet No. 9 A.M. Dry bulb.	Wet bulb.	9 P.M. Dry bulb.	Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	Force. Scale of 0—12.	9 P.M. Direction.	Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	Amount (0—10).	9 P.M. Species and Direction.	Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. Mention the hour at which Storms, including Thunder and Lightning, began and ended.	Days of Month.
	inches.	°	inches.	°	°	°	°	°			°	°	inches.											°	°	°	°	°		
1	29.980	51.8	29.186	51.7	53.0	44.6	122.8	43.2	46.8	45.2	43.7	41.8	.02	E.	2	E.	2		N.	10	St.	10	Date	47.3	47.2	46.4	44.3	44.3	N.B. Please note dates of Underground Thermo. Readings.	1
2	29.278	51.9	29.378	52.4	50.8	37.8	103.4	40.9	45.5	42.9	45.9	43.6	.05	E.	2	E.	2		St	10	St	10	1	47.3	47.4	46.7	44.3	44.3		2
3	29.644	51.2	29.946	51.5	56.7	39.8	128.5	36.9	48.0	44.2	43.8	42.5	.11	N.E.	2	—	—		Cist	8	N	10	2	47.4	47.4	46.7	44.3	44.3		3
4	30.194	49.9	30.284	48.8	52.2	40.7	116.3	39.4	44.3	41.5	40.8	39.2	—	E.	1	E.	1		St	10	—	—	3	46.5	47.3	46.4	44.8	44.6		4
5	30.300	50.5	30.240	55.0	61.2	34.2	114.1	29.9	48.8	44.8	47.8	43.9	—	W	1	N.	1		—	—	—	—	4	47.0	47.8	46.9	44.9	44.7		5
6	30.144	50.2	30.030	56.0	59.9	42.1	110.2	37.3	52.5	47.8	46.2	44.7	—	W.	3	W	2		Ci	8	St	8	5	45.4	47.5	47.0	45.2	44.8		6
7	29.928	53.8	29.922	55.9	58.2	43.8	124.8	22.3	52.5	49.9	48.4	40.7	—	W	3	W	2		Ci	5	—	—	6	48.2	48.0	47.3	45.4	44.9		7
8	29.960	54.2	30.172	55.8	58.8	38.7	129.7	30.8	50.5	48.4	44.7	40.2	—	W	4	—	—		—	—	—	—	7	49.7	48.5	47.8	45.6	45.3		8
9	30.194	54.6	30.111	57.8	59.3	37.5	110.6	29.6	50.0	44.9	55.9	53.6	—	W	3	W	4		—	—	Ci	5	8	47.5	48.4	48.0	45.7	45.4		9
10	30.000	56.2	29.900	58.7	58.6	49.4	97.6	43.6	54.5	50.7	53.8	51.3	.07	W	4	W	4		St	8	St	10	9	48.8	49.2	48.5	46.1	45.5		10
11	29.976	56.8	30.076	57.8	59.3	44.5	121.0	44.2	52.7	46.7	49.3	41.6	—	W	2	W	2		Cist	8	—	—	10	51.5	49.7	48.5	46.2	45.6		11
12	30.150	56.1	30.250	56.8	60.2	39.8	129.2	34.8	51.4	44.9	48.2	43.8	—	W	2	W	1		Ci	5	—	—	11	51.0	49.8	49.2	46.6	45.8		12
13	30.270	56.8	30.244	59.8	65.8	43.2	121.9	36.5	50.0	46.4	55.2	54.0	—	W	1	W	1		St	10	Ci	5	12	48.9	50.2	49.5	46.7	46.1		13
14	30.266	58.5	30.298	59.8	68.9	45.8	114.2	41.8	56.9	52.3	51.5	49.2	—	W	2	W	2		—	—	St	8	13	50.2	50.5	49.5	46.9	46.3		14
15	30.300	57.3	30.280	59.5	61.5	48.3	122.3	47.1	54.2	50.8	48.9	46.8	—	W	1	W	1		Ci	4	—	—	14	52.8	51.3	49.8	47.3	46.4		15
16	30.262	57.8	30.272	58.5	62.5	40.9	120.7	37.5	54.0	50.4	46.3	44.8	—	W	1	W	2		—	—	—	—	15	52.8	51.5	50.3	47.6	46.7		16
17	30.288	56.2	30.250	58.8	61.9	41.4	117.2	40.8	49.6	45.9	42.3	41.8	—	W	2	—	—		—	—	—	—	16	51.9	52.3	50.8	47.8	46.8		17
18	30.250	57.5	30.242	58.8	57.3	36.1	112.3	33.1	52.3	49.2	45.9	44.8	—	W	3	W	4		—	—	St	10	17	54.6	52.5	51.3	48.2	47.2		18
19	30.150	55.4	30.094	57.3	54.3	37.9	110.8	45.0	48.0	45.3	40.9	38.7	—	W	4	W	2		St	10	St	10	18	51.9	53.2	51.6	48.6	47.3		19
20	30.014	56.4	30.050	55.7	54.7	43.8	99.8	44.9	51.7	46.8	43.6	39.4	—	W	2	W	3		Cist	8	Ci	4	19	51.9	53.2	51.7	48.8	47.6		20
21	30.032	53.8	30.018	54.3	49.7	34.5	110.5	29.4	48.3	39.8	42.9	37.8	—	W	1	W	2		Ci	8	St	8	20	52.4	53.3	52.1	49.2	47.8		21
22	30.020	52.1	29.976	53.5	50.9	31.9	116.8	25.3	40.7	39.1	39.8	37.2	—	W	2	W	1		Cist	8	—	—	21	52.5	53.3	52.1	49.2	47.8		22
23	28.810	51.8	29.700	54.8	55.3	34.6	109.8	26.1	49.5	44.3	48.7	44.8	.04	W	2	W	3		St	6	St	8	22	46.9	50.9	51.0	49.3	48.2		23
24	29.751	52.8	29.710	55.3	52.8	40.2	110.3	35.6	43.2	41.3	44.5	43.7	.14	W	2	W	1		N	10	Ci	3	23	46.8	50.0	51.5	49.3	48.2		24
25	29.700	54.9	29.772	56.5	59.8	33.4	117.9	38.9	52.8	49.9	51.3	49.2	.03	W	3	W	1		St	10	St	10	24	49.0	50.2	51.4	49.3	48.2		25
26	29.768	56.2	29.776	57.3	57.9	46.3	108.0	43.8	56.7	52.5	53.5	49.8	.04	W	2	W	2		St	8	St	8	25	50.3	50.3	51.0	48.8	48.3		26
27	29.828	56.4	29.850	58.8	60.2	51.3	95.7	46.9	56.0	50.9	55.1	53.1	.02	W	3	W	4		St	8	—	—	26	50.9	50.5	51.1	48.9	48.4		27
28	29.944	58.5	29.894	60.5	66.9	54.8	137.3	51.4	59.7	56.3	57.5	54.2	.20	W.	2	W.	3		Cist	7	Ci	5	27	53.3	51.4	51.0	48.8	48.4		28
29	29.838	58.8	29.860	61.2	64.8	52.1	129.7	52.2	55.6	53.7	54.9	51.3	.02	W.	3	W.	3		N.	10	Cist	5	28	56.1	52.4	51.3	49.2	48.6		29
30	29.930	59.2	29.976	59.8	62.4	34.9	116.5	42.7	59.0	52.9	50.8	48.2	—	W.	3	W.	1		Ci	4	Ci	4	29	55.3	53.5	51.8	49.3	48.6		30
31	29.958	59.2	29.800	58.9	64.8	40.2	122.5	35.4	60.5	53.4	48.0	46.9	—	W.	1	—	—		—	—	—	—	30	55.0	54.3	52.5	49.6	48.7		31
																							31	53.1	54.2	52.7	49.8	48.7		
Sums.		15 14 10	16 15		14 16 8	18 8	16 17	14 16	8 15 15	15 16	14 13	14 18	15 17	14 16	3				69		57			13	14 15	12 11	13 12	23 15	20 15		
	30.103	15 6 7		30.657	197.0	270.3	64.2	390.4	256.2	43.2	22 6 1	24 5 8	17 9 8		0.74					183		141	496	1 4 3	1 9 8	306.7	17	9 5		
Means.	29.971	55.0		29.989	56.4	58.7	42.0	116.1	38.3	51.4	47.3	47.9	45.8				2.23		1.84					50.5	50.4	49.9	47.5	46.8		
Corrections for Instrumental Errors.	+ 015			+ 015																										
Corrections for Diurnal Range.																														
Corrected Means	29.986			30.004																										

NOTATION USED IN GENERAL REMARKS.

a. denotes aurora.
d. ,, drizzling rain.
f. ,, fog.
fr. ,, frost.
h.-fr. ,, hoar-frost.
h. ,, haze.
hl. ,, hail.
l. ,, lightning.
lu. co. ,, lunar corona.
lu. ha. ,, lunar halo.
m. ,, mist.
p. ,, passing showers.
r. ,, rain.
r.² ,, heavy rain.
sl. ,, sleet.
sn. ,, snow.
so. ha. ,, solar halo.
q. ,, squall.
q.² ,, violent squalls.
t. ,, thunder.
t. s. ,, thunder-storm.

CLOUDS.

High Clouds.
Cirrus, ... cir.
Cirro-stratus, . . . cir.-str.
Cirro-cumulus, . . . cir.-cum.

Middle Clouds.
Strato-cirrus, . . . str.-cir.
Cumulo-cirrus, . . . cum.-cir.

Lower Clouds.
Strato-cumulus, . . . str.-cum.
Cumulus, ... cum.
Cumulo-nimbus, . . . cum.-nim.
Nimbus, ... nim.
Stratus, ... str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29.986 — .071 = 29.915

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 30.004 — .076 = 29.928

Mean at Station, corrected, and at 32°, = 29.921

Correction for height, feet above Mean Sea-level, = + .182

Mean, reduced to 32°, and Sea-level, = 30.103

Highest Reading, corrected for Index error, on the 15th, = 30.315

Lowest Do. Do., on the 1st, = 28.995

Difference, or **Monthly Range,** = 1.320

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 14th, = 68.9

Lowest in Month, corrected for Index errors, on the 22nd, = 31.5

Difference, or **Monthly Range,** = 37.4

Mean of all the Highest, = 58.7

Mean of all the Lowest, = 42.0

Difference, or **Mean Daily Range,** = 16.7

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 50.3

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, = 22.3

,, ,, Mean, = 38.3

Black Bulb, Max. in Sun, Highest in Month, = 137.3

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 49.6

Wet Bulb, Mean of A.M. and P.M. Readings, = 46.5

Computed **Temperature of Dew-Point,** = 43.2

Do. **Elastic Force of Vapour,** = .280

Do. **Relative Humidity** (Saturation = 100), = 80

RAIN fell on 11 **Days; Amount in Inches,** = 0.74

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	1	11	0	0	0	19	0	0	2.2
P.M.	1	0	10	0	0	0	16	0	4	1.8
Sum.	1	1	21	0	0	0	35	0	4	2.0

Observations made and Return verified by { .... }

(*Signed*) .....

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
———
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the inside of the Schedule.

At Stations where an Anemometer is used, the Miles at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day. Similar use of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W. . .	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

Corstorphine
May 1905

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 George Street,
EDINBURGH.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of June, 1905.

Lat. 55°56′31″N. Long. 3°16′46″W. Distance from Sea 2⅔ miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches.

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No.___ Wet No.___ 9 A.M. Dry bulb.	9 A.M. Wet bulb.	9 P.M. Dry bulb.	9 P.M. Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	9 A.M. Force. Scale of 0—12.	9 P.M. Direction.	9 P.M. Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	9 A.M. Amount (0—10).	9 P.M. Species and Direction.	9 P.M. Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.												°	°	°	°	°		
1	29.724	58.5	29.714	59.2	63.8	48.3	119.9	41.4	53.6	50.0	54.5	50.0	.06	W.	1	W.	3		st	10	st	10		54.0	54.2	52.6	49.9	48.3		1
2	29.550	59.3	29.600	60.5	64.9	50.4	128.3	48.2	59.3	55.0	57.3	48.4	.04	W.	4	W.	4		st	8	—	—		55.2	53.8	52.3	50.6	49.3		2
3	29.700	58.3	29.750	58.1	62.2	47.3	130.4	43.8	54.5	49.0	50.8	43.5	.02	W.	4	W.	3		—	—	—	—		53.5	54.0	53.0	50.4	49.3		3
4	29.382	59.8	29.836	58.3	64.6	46.0	130.5	40.1	58.5	51.9	52.8	43.9	—	W.	3	W.	2		ci	5	ci	3		53.6	54.2	53.0	50.5	49.3		4
5	29.918	58.2	29.950	58.5	58.9	43.3	107.2	34.3	51.0	45.3	49.0	47.4	—	W.	2	E.	3		cist	5	st	8		54.1	54.3	53.3	50.3	49.3		5
6	29.950	57.5	29.950	58.3	55.9	45.3	124.3	38.8	53.8	43.4	43.9	45.0	—	E.	3	E.	3		ci	4	st.	10		53.5	54.2	54.2	50.9	49.8		6
7	29.950	56.6	30.064	57.8	59.3	43.9	107.3	38.6	48.9	43.3	46.9	41.3	—	E.	2	E.	4		st	8	st	8		52.4	54.3	54.2	50.9	49.8		7
8	30.150	56.5	30.150	56.2	56.8	37.9	115.3	43.0	50.3	45.0	39.3	34.0	—	E.	3	E.	3		ci	5	st.	10		53.0	53.8	53.3	51.2	50.1		8
9	30.116	56.2	30.050	56.9	56.2	45.8	109.4	45.4	47.9	43.1	47.3	45.0	—	E.	3	E.	2		st	10	cist	5		52.8	54.5	54.1	51.2	50.2		9
10	30.016	56.3	29.992	54.9	53.8	45.4	119.2	40.9	49.4	46.6	48.3	45.4	—	E	1	E.	2		st	10	ci	5		53.2	54.3	54.1	51.3	50.2		10
11	29.936	57.1	29.900	54.3	60.0	44.8	118.2	40.1	51.8	47.8	49.6	48.4	—	E	2	E.	2		st	10	—	—		54.8	54.8	53.3	51.4	50.4		11
12	29.900	58.2	29.940	59.5	64.5	41.3	125.4	35.6	56.2	52.0	50.0	48.6	—	E.	3	E.	3		—	—	—	—		55.3	55.3	54.6	51.8	50.6		12
13	29.950	57.0	29.934	57.5	56.8	43.0	119.2	43.6	51.0	47.3	48.9	47.1	—	E.	4	E.	3		cist.	8	—	—		55.3	55.9	54.3	51.8	50.3		13
14	29.882	57.3	29.838	59.8	63.5	43.4	115.9	42.6	51.5	49.8	50.0	46.8	—	E.	3	E.	1		st	10	—	—		54.2	55.3	54.3	52.0	50.8		14
15	29.800	58.5	29.800	60.8	64.5	44.3	120.6	33.9	58.8	52.8	51.9	48.3	—	E.	2	E.	1		—	—	—	—		55.5	55.5	55.0	52.8	51.0		15
16	29.388	59.3	29.374	59.9	60.5	45.1	116.6	35.8	53.2	51.9	51.1	47.8	.03	E.	2	E.	3		ci	4	St.	8		56.2	56.0	55.1	52.9	51.3		16
17	29.338	58.4	29.300	59.4	55.8	50.0	75.3	48.9	51.9	48.9	53.0	52.3	.04	E.	3	E.	2		n	10	St	10		56.0	56.1	55.1	52.8	51.2	misty - East haar.	17
18	29.600	58.9	29.682	49.3	61.8	51.3	122.8	51.4	55.3	54.5	55.0	54.8	.05	E.	3	E.	2		st.	10	St	10		56.5	56.4	56.3	52.8	51.5		18
19	29.596	60.1	29.664	61.9	63.9	51.0	123.0	47.2	60.0	54.5	53.8	53.8	—	W.	2	W.	2		ci	4	ci	3		58.6	57.0	56.8	52.9	51.3		19
20	29.564	60.8	29.700	60.0	64.0	52.8	120.5	46.3	58.9	54.0	50.0	48.8	.30	S.	3	W.	2		st	8	—	—		58.3	57.2	55.8	52.8	51.3		20
21	29.728	58.5	30.048	59.4	63.3	49.3	124.8	45.8	55.6	52.0	53.3	48.9	—	W.	3	W.	4		cist	5	—	—		55.5	56.3	55.8	53.3	51.8		21
22	30.214	60.5	30.232	62.8	53.8	48.9	119.0	40.2	62.5	55.6	57.3	55.5	—	W	1	—	—		cist	8	—	—		56.3	56.8	55.9	53.3	51.9		22
23	30.320	62.2	30.296	62.5	69.9	49.3	122.6	42.5	63.8	57.5	54.3	51.8	—	E.	1	S	1		—	—	ci	5		59.2	57.8	56.2	53.4	52.3		23
24	30.250	60.5	30.170	61.5	69.0	60.4	121.5	43.3	54.0	52.0	52.8	51.2	—	S	1	—	—		—	—	—	—		58.0	68.2	56.8	53.6	52.4		24
25	30.110	63.0	30.070	63.0	71.9	51.2	126.5	48.4	65.0	59.8	51.8	51.2	—	—	—	E.	3		—	—	mist			60.5	59.2	57.8	54.5	52.5	misty E. haar sunny	25
26	29.962	63.5	29.842	62.5	67.8	48.9	128.5	51.1	59.2	54.9	53.2	52.2	—	E.	2	—	—		cicu	8	mist			60.8	60.0	58.5	54.5	52.6	misty E. haar sunny	26
27	29.730	63.8	29.654	63.5	78.1	50.6	129.0	52.2	68.0	62.1	60.8	59.0	.16	N.W.	2	—	—		cicu	6	cist	8		62.8	60.5	58.8	54.8	52.9	t.s. 3.30 to 6 p.m.	27
28	29.616	63.5	29.576	65.8	70.1	52.0	125.0	47.4	64.0	58.8	55.4	54.6	.01	W.	2	—	—		cust	6	cicu	4		62.5	60.0	59.0	55.1	53.2	t. 4 to 6 p.m.	28
29	29.638	65.0	29.430	63.0	70.2	54.8	121.0	47.0	65.2	59.0	55.2	54.1	—	E.	2	E.	2		ci an	8	—	—		65.8	60.5	59.2	55.5	53.5		29
30	29.870	60.8	29.946	63.5	64.5	52.6	126.2	52.7	57.0	54.0	55.9	54.1	—	E	2	E	4		st	10	ci	4		60.2	60.3	59.3	53.6	53.6		30
31																														
Sums.	19 11 8	17 13	18 14 7	16 15	14 17	13 13	6 16 12	13 14	15 12	15 12	13 15	16 12	0.71				69		64		180		137	198·0	191·5	2·0	72·3	34·0		
Means.	29.869	59.5	29.884	59.6	63.9	47.9	119.9	43.7	56.5	51.9	51.8	49.4					2.30		2.13		6		4.6	56.6	56.4	55.4	52.4	51.1		
Corrections for Instrumental Errors.	+.015		+.015																							6 4 0 4				
Corrections for Diurnal Range.																														
Corrected Means	29.884		29.899																											

NOTATION USED IN GENERAL REMARKS.

a. *denotes* aurora.
d. ,, drizzling rain.
f. ,, fog.
fr. ,, frost.
h.-fr. ,, hoar-frost.
h. ,, haze.
hl. ,, hail.
l. ,, lightning.
lu. co. ,, lunar corona.
lu. ha. ,, lunar halo.
m. ,, mist.
p. ,, passing showers.
r. ,, rain.
r.² ,, heavy rain.
sl. ,, sleet.
su. ,, snow.
so. ha. ,, solar halo.
q. ,, squall.
q.² ,, violent squalls.
t. ,, thunder.
t. s. ,, thunder-storm.

CLOUDS.

HIGH CLOUDS.
Cirrus, ... cir.
Cirro-stratus, . . cir.-str.
Cirro-cumulus, . . cir.-cum.

MIDDLE CLOUDS.
Strato-cirrus, . . str.-cir.
Cumulo-cirrus, . . cum.-cir.

LOWER CLOUDS.
Strato-cumulus, . . str.-cum.
Cumulus, ... cum.
Cumulo-nimbus, . . cum.-nim.
Nimbus, ... nim.
Stratus, ... str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29.884 − .084 = 29.800

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29.899 − .084 = 29.815

Mean at Station, corrected, and at 32°, = 29.807

Correction for height, feet above Mean Sea-level, = + 180

Mean, reduced to 32°, and Sea-level, = 29.987

Highest Reading, corrected for Index error, on the 23rd, = 30.335

Lowest Do. Do., on the 2nd, = 29.565

Difference, or **Monthly Range,** = 0.770

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 27th, = 78.1

Lowest in Month, corrected for Index errors, on the 8 th, = 37.9

Difference, or **Monthly Range,** = 40.2

Mean of all the Highest, = 63.9

Mean of all the Lowest, = 47.9

Difference, or **Mean Daily Range,** = 16.0

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 55.9

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 15 = 33.9

,, ,, Mean, = 43.7

Black Bulb, Max. in Sun, Highest in Month, 4th = 130.5

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 54.2

Wet Bulb, Mean of A.M. and P.M. Readings, = 50.6

Computed **Temperature of Dew-Point,** = 47.1

Do. **Elastic Force of Vapour,** = .322

Do. **Relative Humidity** (Saturation = 100), = 77

RAIN fell on 9 Days; Amount in Inches, = 0.71

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	0	17	0	2	0	9	1	1	2.3
P.M.	0	0	17	0	1	0	7	0	5	2.1
Sum.	0	0	34	0	3	0	16	1	6	2.2

Observations made and Return verified by { J. N. Johnston, Andrew Stuart.

(*Signed*) .....

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example, | Cir. W. . | 4 | Cum. Str. S.W. | 2 | would indicate

that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.
Alder,				
Ash,				
Beech,				
Birch,				
Elm,				
Larch,				
Lime,				
Oak,				
Sycamore or Plane,				

CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Barley,				
Bere or Bigg,				
Oats,				
Wheat,				
Beans,				
Pease,				
Potatoes,				
Turnips,				
Rye Grass,				

SHRUBS, ETC.	First in Blossom.
Barberry,	
Bourtree or Elder,	
Broom,	
Hazel,	
Hawthorn,	
Holly,	
Laburnum,	
Lilac,	
Mezereon,	
Mountain Ash or Rowan,	
Red Flowering Currant,	
Rhododendron Ponticum,	
Whin,	

FRUITS.	First in Blossom.	Fruit Ripe, generally.
Apple,		
Black Currant,		
Cherry,		
Gean,		
Gooseberry,		
Peach,		
Pear,		
Plum,		
Strawberry,		

MIGRATORY BIRDS.	First Arrival.	Departure.
Cuckoo,		
Curlew,		
House-Swallow,		
Lapwing,		
Plover,		
Sand-Martin,		
Starling,		
Swan,		
Rail or Corn Crake,		

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 *George Street,*
EDINBURGH.

Constitution June 1905

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of July 1905.

Lat. 55° 56′ 31″ N, Long. 3° 16′ 46″ W., Distance from Sea 2⅔ miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches.

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No. ___ Wet No. ___ 9 A.M. Dry bulb.	9 A.M. Wet bulb.	9 P.M. Dry bulb.	9 P.M. Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	9 A.M. Force. Scale of 0—12.	9 P.M. Direction.	9 P.M. Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	9 A.M. Amount (0—10).	9 P.M. Species and Direction.	9 P.M. Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.											°	°	°	°	°		
1	29.920	61.5	29.854	63.0	63.9	53.1	128.2	49.2	56.3	52.5	54.8	54.2	.05	E	3	E	2		cist	5	mist			60.1	60.3	59.4	55.3	53.3	mist E. Lear. wsw.	1
2	29.778	62.8	29.778	62.5	71.4	54.2	125.5	54.0	61.9	59.2	57.0	55.6	.16	W	1	W	2		cicu	8	cicu	4		61.4	59.8	59.3	56.2	55.8	t 2.30 & 4.30 p.m.	2
3	29.984	60.8	30.096	61.8	65.4	52.1	120.2	47.3	61.0	53.4	52.8	50.6	—	W	3	W	1		ci	4	cicu	6		60.3	60.1	59.3	56.2	55.5		3
4	30.026	61.5	29.940	63.5	66.4	50.0	129.6	40.7	57.8	52.2	56.8	53.4	—	W	4	W	2		st	10	st	8		58.4	59.5	59.6	56.2	55.3		4
5	29.824	60.5	29.824	60.0	61.1	49.5	108.2	44.3	56.5	50.9	49.4	47.8	.10	W	3	W	2		st	8	cicu	6		57.6	58.8	58.7	56.1	54.5	h.r. till 2 p.m.	5
6	29.898	58.9	29.950	60.8	62.5	44.9	110.0	37.6	58.0	52.2	54.3	51.2	—	W	3	W	2		cist	8	ci	5		56.5	58.5	58.4	56.1	54.6		6
7	29.950	61.4	30.000	61.2	66.3	53.7	121.8	48.2	64.0	57.2	57.0	52.1	—	W	3	W	3		ci	5	—	—		56.7	58.6	58.4	56.2	54.6		7
8	30.028	62.5	30.024	62.7	74.9	49.2	123.4	41.4	64.7	56.1	59.8	56.1	—	W	2	W	1		—	—	—	—		59.4	58.6	58.3	55.9	54.6		8
9	29.968	64.2	29.910	61.9	70.0	54.2	119.8	46.2	64.8	58.7	67.8	56.9	.59	W	3	S	1		—	—	st	10		62.0	59.7	58.9	55.9	54.8	bright forenoon L.S. 1 to 6 p.m. h.r.	9
10	29.850	62.2	29.864	65.5	70.8	55.7	112.3	52.9	59.7	57.9	61.0	58.6	—	W	2	W	1		st	10	—	—		60.8	58.7	58.6	55.8	54.9		10
11	29.892	64.5	29.884	66.2	76.3	54.8	124.0	46.7	67.0	61.4	60.7	58.1	.20	W	2	W	3		—	—	st	10		61.7	60.3	59.0	56.2	54.9		11
12	29.850	64.1	29.932	64.1	67.3	56.5	94.7	50.7	59.1	58.2	58.9	56.0	.06	W	1	W	2		m	10	—	—		62.6	62.0	59.5	56.3	54.9		12
13	30.000	63.8	30.050	63.7	70.7	53.4	116.4	46.0	63.7	58.5	59.8	57.1	—	W	1	—	—		ci	4	—	—		63.3	62.1	59.7	56.5	54.9		13
14	29.986	65.6	29.872	67.5	75.6	55.3	130.8	47.8	68.5	62.5	65.8	61.3	—	W	2	W	1		ci	5	st	10		63.0	62.4	59.8	56.8	55.4		14
15	29.818	64.3	29.786	65.6	65.0	57.6	120.2	51.4	61.0	54.7	59.0	54.8	.02	W	2	W	2		st	8	st	8		63.1	62.3	59.8	56.8	55.5		15
16	29.662	64.5	29.688	64.3	66.9	52.0	129.6	44.9	56.8	54.8	55.2	51.5	—	W	2	W	2		n	10	cist	4		59.5	60.1	60.1	56.9	55.4		16
17	29.750	63.8	29.732	63.5	62.3	50.8	117.3	48.8	58.8	53.9	57.8	56.5	.06	W	3	W	2		ci	8	n	10		59.7	60.0	60.2	56.9	55.4		17
18	29.834	62.5	30.100	62.5	67.6	48.8	139.0	53.0	59.2	53.1	49.8	47.9	—	W	1	—	—		cist	8	cicu	4		60.2	60.1	60.3	57.0	55.4		18
19	30.120	62.3	30.070	65.4	73.8	41.1	123.8	35.6	58.7	53.5	60.2	56.4	—	NW	1	W	2		—	—	st	6		57.6	59.8	60.1	57.0	55.3		19
20	30.030	65.5	29.974	67.5	73.3	58.1	135.8	54.2	68.0	62.6	63.2	60.8	—	W	3	—	—		ci	8	st	8		63.2	60.4	59.9	57.4	55.8		20
21	29.950	66.3	29.932	68.5	76.1	61.5	134.2	59.3	66.7	62.7	63.0	60.3	.20	W	2	—	—		cist	5	cust	6		63.3	60.5	59.9	57.5	55.9		21
22	29.788	66.5	29.680	66.2	68.2	59.0	105.1	58.3	63.8	61.9	60.0	58.5	.10	W	1	—	—		st	10	st	10		63.1	60.4	59.9	57.5	55.9		22
23	29.626	64.4	29.816	66.0	66.9	55.2	118.2	54.9	64.0	59.5	55.8	51.9	.01	N	2	E	2		cist	8	st	8		62.9	62.4	61.0	57.8	56.3		23
24	29.816	63.8	29.700	66.5	70.1	54.6	126.8	53.0	62.7	58.1	61.0	58.9	.02	W	2	NE	3		St	8	Cust	8		60.9	61.8	60.8	58.0	56.4		24
25	29.798	64.0	29.806	64.8	69.3	55.7	125.3	50.4	61.2	55.0	58.5	55.4	.13	W	2	W	2		ci	5	cust	5		62.6	62.9	61.0	58.2	57.1		25
26	29.800	64.3	29.850	63.0	67.5	55.1	119.6	52.0	63.0	56.7	55.1	52.0	.01	W	2	—	—		cist	4	cicu	8		62.2	63.1	62.0	58.4	54.2		26
27	29.890	61.3	29.896	60.0	62.6	44.3	112.4	34.6	59.4	53.1	50.0	47.9	—	W	2	—	—		st	8	—	—		62.1	63.2	62.1	58.4	57.2		27
28	29.932	60.8	29.900	61.5	66.3	44.2	123.8	37.8	59.0	52.0	53.1	50.0	.03	W	2	—	—		ci	4	cicu	6		57.5	60.0	60.1	58.2	56.8		28
29	29.686	59.5	29.462	63.0	64.5	40.7	120.4	34.9	54.2	50.7	59.5	56.6	.36	W	1	W	2		n	10	cist	8		55.4	68.6	59.2	57.8	56.7	h.r. forenoon	29
30	29.476	61.8	29.674	64.5	67.1	51.2	126.6	48.8	60.8	54.3	51.2	48.9	.02	N	4	W	2		ci	4	—			58.5	58.8	58.9	57.7	56.7		30
31	29.728	61.8	29.756	63.0	63.9	49.5	124.7	41.4	60.2	53.8	57.3	50.0	—	W	3	W	2		cist	5	cust	6		58.2	59.3	59.0	57.4	56.7		31
Sums.	31 15 11	11 15	20 15 9	12 12	14 14	14 12	7 15 13	15 14	17 12	14 14	16 12	14 14	2.12		68		44			190		174		13 12	13 13	20 13	21 14	17 17		
	26 · 658	92.9	26 · 800	0.2	254.0	66.0	376.7	236.3	140.9	191.4	230.6	137.3												128	137	301.6	50	36		
Means.	29.859	62.9	29.864	63.9	68.2	52.1	121.5	47.6	61.3	56.2	57.4	54.4			2.19		1.42			6.1		5.6		60.4	60.4	59.7	56.9	55.6		
Corrections for Instrumental Errors.	+.015		+.015																											
Corrections for Diurnal Range.																														
Corrected Means	29.874		29.879																											

NOTATION USED IN GENERAL REMARKS.

a. *denotes* aurora.
d. ,, drizzling rain.
f. ,, fog.
fr. ,, frost.
h.-fr. ,, hoar-frost.
h. ,, haze.
hl. ,, hail.
l. ,, lightning.
lu. co. ,, lunar corona.
lu. ha. ,, lunar halo.
m. ,, mist.
p. ,, passing showers.
r. ,, rain.
r.² ,, heavy rain.
sl. ,, sleet.
sn. ,, snow.
so. ha. ,, solar halo.
q. ,, squall.
q.² ,, violent squalls.
t. ,, thunder.
t. s. ,, thunder-storm.

CLOUDS.

High Clouds.
Cirrus, ... cir.
Cirro-stratus, . . cir.-str.
Cirro-cumulus, . . cir.-cum.

Middle Clouds.
Strato-cirrus, . . str.-cir.
Cumulo-cirrus, . . cum.-cir.

Lower Clouds.
Strato-cumulus, . . str.-cum.
Cumulus, ... cum.
Cumulo-nimbus, . . cum.-nim.
Nimbus, ... nim.
Stratus, ... str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29.874 — .092 = 29.782

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29.879 — .095 = 29.784

Mean at Station, corrected, and at 32°, = 29.783

Correction for height, feet above Mean Sea-level, = + .179

Mean, reduced to 32°, and Sea-level, = 29.962

Highest Reading, corrected for Index error, on the 19th, = 30.135

Lowest Do. Do., on the 29th, = 29.477

Difference, or **Monthly Range,** = 0.658

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 11th, = 76.5

Lowest in Month, corrected for Index errors, on the 29th, = 40.7

Difference, or **Monthly Range,** = 35.8

Mean of all the Highest, = 68.2

Mean of all the Lowest, = 52.1

Difference, or **Mean Daily Range,** = 16.1

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 60.1

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 27th = 34.6

,, ,, Mean, = 47.6

Black Bulb, Max. in Sun, Highest in Month, 18th = 139.0

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 59.3

Wet Bulb, Mean of A.M. and P.M. Readings, = 55.3

Computed **Temperature of Dew-Point,** = 51.8

Do. **Elastic Force of Vapour,** = .385

Do. **Relative Humidity** (Saturation = 100), = 76

RAIN fell on 17 **Days; Amount in Inches,** = 2.12

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	2	0	1	0	0	0	27	1	0	
P.M.	0	1	3	0	0	0	19	0	8	
Sum.	2	1	4	0	0	0	46	1	8	

Observations made and Return verified by J. N. Johnston

(*Signed*) _____

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.
See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
———
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W. . .	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of August 1905.

Lat. 55° 56' N, Long. 3° 16' W, Distance from Sea 2 2/3 miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 3" inches. Height of Rim of Gauge above Ground 12 inches

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max.	Min.	Black Bulb Max. in Sun.	Min. on Grass.	HYGROMETER. Dry No. ____ Wet No. ____ 9 A.M. Dry bulb.	Wet bulb.	9 P.M. Dry bulb.	Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	Force. Scale of 0—12.	9 P.M. Direction.	Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	Amount (0—10).	9 P.M. Species and Direction.	Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.												°	°	°	°	°		
1	29.648	61.4	29.582	63.2	66.1	49.0	129.8	41.2	59.4	51.7	52.6	50.1	.04	W	2	W	4		Cust	8	Cust	4		57.2	58.8	58.9	57.6	56.7		1
2	29.628	60.9	29.610	62.5	65.9	50.6	128.1	45.0	62.4	55.0	54.1	51.1	—	W.	2	—	—		ci	5	St	4		58.0	58.4	58.4	57.4	56.6		2
3	29.482	61.4	29.230	63.0	64.2	48.1	103.1	43.4	58.9	53.4	58.0	56.5	.09	S.	2	E.	3		St	10	St	8		57.3	58.4	58.6	57.2	56.5		3
4	29.200	62.5	29.084	63.5	67.9	48.0	109.8	45.8	62.4	58.8	59.0	57.3	.15	SW	2	E	2		St	8	n	10		58.1	58.3	58.5	57.2	56.3		4
5	29.262	61.2	29.636	62.5	64.3	49.4	130.1	53.5	56.8	54.4	51.8	48.9	.01	W.	3	N.W	2		n	10	—	—		57.9	58.4	58.5	56.9	56.4		5
6	29.772	61.0	29.832	63.0	65.8	47.1	133.2	41.3	59.8	53.4	52.2	49.0	.01	W.	2	—	—		Cist	3	Cust	6		56.3	58.0	57.9	56.8	55.4		6
7	29.800	61.5	29.752	60.0	61.6	52.0	105.0	48.6	58.4	53.7	52.9	52.2	.07	W	1	—	—		n	10	St	5		57.8	58.4	58.0	56.8	56.4		7
8	29.774	59.7	29.842	61.0	65.8	46.3	128.1	39.4	58.0	52.5	49.7	47.3	.14	W	2	—	—		Cist	3	Cicu	3		55.3	57.6	58.0	56.7	56.3		8
9	29.800	59.5	29.676	61.9	68.1	44.0	140.0	37.8	56.3	52.4	53.2	52.2	.78	W	2	E	2		Cist	5	n	10		55.2	57.6	57.8	56.6	56.3		9
10	29.628	59.4	29.682	60.2	63.9	48.9	127.1	45.0	56.2	53.6	54.0	53.2	.28	W	1	—	—		St	5	St	10		56.8	57.4	57.8	56.7	56.2	t. 11 a.m. & during afternoon - h.r.	10
11	29.684	60.2	29.948	61.7	64.2	48.1	134.1	46.4	57.6	51.8	53.5	49.7	.02	W	3	W	2		St	7	St	8		56.2	57.6	57.6	56.4	56.2		11
12	29.990	59.8	29.998	60.8	60.8	50.9	128.3	48.0	56.8	53.0	55.8	52.4	—	W	2	W	2		St	8	Ci	4		56.0	57.4	57.5	56.4	56.1		12
13	30.016	60.3	30.028	61.7	64.0	50.8	110.9	46.3	58.7	55.2	58.2	54.2	—	W	3	W	1		St	10	Ci	4		56.1	57.4	57.6	56.3	56.0		13
14	30.076	60.8	30.049	62.3	63.9	48.2	109.0	42.8	61.7	56.1	57.8	52.7	—	W	2	W	1		Ci	5	Ci	4		57.6	57.9	57.6	56.4	56.1		14
15	30.056	59.3	30.042	60.8	62.3	46.8	122.5	44.6	57.1	53.8	55.0	50.1	—	S	1	S	2		—	—	—	—		56.8	57.9	57.7	56.5	56.1		15
16	30.064	60.5	30.050	62.8	64.4	53.2	122.1	48.7	57.5	54.0	57.8	52.9	—	S	2	—	—		St	10	St	8		56.9	58.0	57.8	56.5	56.1		16
17	29.962	60.8	29.700	63.0	64.3	45.0	104.0	42.4	57.8	55.0	59.8	57.0	.17	S	1	SW	3		Cist	8	St	10		56.7	57.9	57.8	56.6	56.0		17
18	29.544	60.3	29.292	60.5	66.4	57.3	121.9	57.0	57.0	53.8	51.9	48.5	.16	W	2	W	3		—	—	—	—		56.8	58.0	57.8	56.5	56.0		18
19	29.250	60.5	29.644	62.0	65.1	50.6	125.4	44.2	56.8	52.6	53.3	50.9	.02	W	6	W	1		St	4	Cust	8		54.9	57.6	57.8	56.3	55.9	Gale during night.	19
20	29.600	59.8	29.886	62.5	63.9	50.0	127.0	48.2	54.8	52.0	50.0	47.9	—	S.	1	N	1		Cist	8	—	—		55.8	57.4	57.6	56.3	55.9		20
21	29.788	60.0	29.606	62.0	60.9	44.8	91.0	39.1	57.4	52.7	55.0	52.7	.06	—	—	—	—		St	8	St	8		55.6	57.2	57.5	56.3	55.8		21
22	29.614	59.6	29.614	59.5	65.8	47.2	127.0	40.6	57.0	51.9	50.6	48.8	.35	W	2	W	1		—	—	Cust	8		55.7	57.2	57.5	56.2	55.8		22
23	29.584	58.4	29.696	61.0	65.1	50.5	118.9	48.0	53.1	52.2	52.0	50.0	.03	S	1	—	—		St	10	Cust	5		55.8	57.4	57.6	56.2	55.8		23
24	29.732	59.2	29.756	61.8	66.5	46.2	128.0	37.8	57.0	50.7	49.9	48.0	—	W	2	—	—		—	—	—	—		54.2	57.3	57.4	56.1	55.8		24
25	29.730	58.9	29.654	61.5	59.3	41.2	95.3	35.5	54.2	50.2	54.8	53.5	.27	N	1	S.	2		—	—	Sh	10		54.1	57.2	57.4	56.1	55.8		25
26	29.634	58.7	29.628	60.5	55.9	52.5	60.2	58.6	54.2	53.4	54.4	53.5	.34	E.	3	E.	3		N	10	n	10		54.0	57.3	57.4	56.0	55.7	h.r. all day	26
27	29.600	58.8	29.540	62.0	61.2	52.6	72.5	51.5	54.5	53.8	55.9	54.7	.03	E.	1	—	—		St	10	St	10		55.6	56.3	56.2	55.9	55.8		27
28	29.328	59.5	29.258	61.5	59.1	52.2	84.0	51.2	52.9	52.0	54.7	53.9	.59	E.	1	E.	4		n	10	n	10		55.5	56.3	56.3	55.8	55.7	V.h.r. Warning	28
29	29.394	59.7	29.612	61.8	55.6	52.0	69.4	51.8	53.5	52.7	53.3	51.2	.22	E.	2	E.	2		n	10	St.	10		54.9	56.1	56.0	55.7	55.6		29
30	29.750	59.4	30.036	61.0	59.1	46.9	108.1	49.5	55.0	49.1	46.9	45.0	—	E.	2	—	—		St	8	—	—		54.8	56.2	56.3	55.6	55.5		30
31	30.130	57.0	30.068	62.0	64.9	39.6	124.9	32.0	55.6	49.7	52.8	50.9	.04	W.	2	N.W	2		—	—	Cust	5		51.0	55.5	56.2	55.5	55.4		31
Sums.	16 14 10	16 15	16 15 13	6 11	15 15	13 11	10 15 9	15 12	18 14	11 14	14 14	13 12	9											18 14	22 13	23 16	19 14	18 14		
	21 · 500	1260 3	22 · 061	53·4	109·1	256·0	3519 6	1241·2	2191	952	1179	955	3·09		59		43			193		182		4·8	3·0	5·3	9·5	6·4		
Means.	29·690	60·0	29·712	61·7	63·5	48·3	113·5	40·0	57·0	53·0	53·7	51·5			1·90		1·39			6·2		5·9		55·9	57·5	57·6	56·4	56·0		
Corrections for Instrumental Errors.	+015		+015																							6 3 / 0 8				
Corrections for Diurnal Range.																														
Corrected Means																														

NOTATION USED IN GENERAL REMARKS.

a. denotes aurora. d. ,, drizzling rain. f. ,, fog. fr. ,, frost. h.-fr. ,, hoar-frost. h. ,, haze. hl. ,, hail. l. ,, lightning. lu. co. ,, lunar corona. lu. ha. ,, lunar halo. m. ,, mist. p. ,, passing showers. r. ,, rain. r.² ,, heavy rain. sl. ,, sleet. sn. ,, snow. so. ha. ,, solar halo. q. ,, squall. q.² ,, violent squalls. t. ,, thunder. t. s. ,, thunder-storm.

CLOUDS.

High Clouds: Cirrus, cir. Cirro-stratus, cir.-str. Cirro-cumulus, cir.-cum.

Middle Clouds: Strato-cirrus, str.-cir. Cumulo-cirrus, cum.-cir.

Lower Clouds: Strato-cumulus, str.-cum. Cumulus, cum. Cumulo-nimbus, cum.-nim. Nimbus, nim. Stratus, str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29.690 — .083 = 29.607

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29.712 — .089 = 29.623

Mean at Station, corrected, and at 32°, = 29.615 630

Correction for height, feet above Mean Sea-level, = + 180

Mean, reduced to 32°, and Sea-level, = 29.795 810

Highest Reading, corrected for Index error, on the 31st, = 30.130

Lowest Do. Do., on the 4th, = 29.084

Difference, or **Monthly Range,** =

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 4th, 7.20th = 64.9

Lowest in Month, corrected for Index errors, on the 31st = 37.6

Difference, or **Monthly Range,** = 30.3

Mean of all the Highest, = 63.5

Mean of all the Lowest, = 48.3

Difference, or **Mean Daily Range,** = 15.2

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 55.9

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 31st = 32.0

,, ,, Mean, = 40.0

Black Bulb, Max. in Sun, Highest in Month, 11th = 134.1

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 55.3

Wet Bulb, Mean of A.M. and P.M. Readings, = 52.2

Computed **Temperature of Dew-Point,** = 49.2

Do. **Elastic Force of Vapour,** = .351

Do. **Relative Humidity** (Saturation = 100), = 80

RAIN fell on 21 Days; Amount in Inches, = 3.09

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	1	0	9	0	2	1	17	0	1	1·9
P.M.	1	0	8	0	0	1	8	2	11	1·4
Sum.	2	0	17	0	2	2	25	2	12	1·7

Observations made and Return verified by J. N. Johnston.

(Signed)

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negrétti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
———
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example, | Cir. W. . . | 4 | / | Cum. Str. S.W. | 2 | would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

Constable
August 1905

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 *George Street,*
EDINBURGH.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Carlops Pumping House, County of Mid-Lothian, During the MONTH of September 1905.

Lat. 55° 56' N., Long. 3° 16' W., Distance from Sea 2½ miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5" inches. Height of Rim of Gauge above Ground 12 inches.

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No. ___ Wet No. ___ 9 A.M. Dry bulb.	9 A.M. Wet bulb.	9 P.M. Dry bulb.	9 P.M. Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	9 A.M. Force. Scale of 0—12.	9 P.M. Direction.	9 P.M. Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	9 A.M. Amount (0—10).	9 P.M. Species and Direction.	9 P.M. Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.												°	°	°	°	°		
1	29.950	58.5	29.656	62.6	60.8	52.1	93.2	48.6	54.8	51.8	58.0	56.0	.07	W	3	W	4		St	10	R.	10		54.4	55.5	55.6	55.4	55.4		1
2	29.600	60.8	29.616	62.0	62.1	51.9	105.1	47.2	60.5	56.7	54.2	52.4	.02	W	3	W	2		Ci	4	St	8		55.4	55.7	56.0	55.3	55.4		2
3	29.424	60.7	29.744	60.0	66.2	53.8	123.9	52.0	61.4	57.0	54.6	52.8	.01	W	4	W	2		St	8	Cust	4		57.5	56.1	56.2	55.3	55.4		3
4	29.746	61.7	29.786	64.0	65.3	53.2	121.0	49.0	60.5	57.5	56.8	53.7	.07	W	2	W	1		Cist	8	Cust	8		57.4	56.3	56.3	55.2	55.3		4
5	29.650	61.5	29.614	64.0	64.8	53.4	112.8	47.0	59.2	55.7	57.2	55.0	.03	W	2	W	2		St	10	—	—		57.0	56.2	56.3	55.1	55.2		5
6	29.572	61.3	29.386	63.0	62.1	53.2	78.8	47.8	57.5	56.0	55.8	54.8	.03	—	—	—	—		St	10	Cust	6		57.1	56.2	56.2	55.0	55.1		6
7	29.100	60.3	29.054	63.8	64.2	50.9	120.1	43.3	56.5	54.1	53.0	50.7	.03	SW	2	W	4		R	10	Cust	4		56.2	57.0	56.3	55.1	55.1		7
8	29.296	60.7	29.238	62.5	61.2	49.9	119.3	42.7	55.3	49.5	50.0	46.1	.28	SW	4	SW	3		—	—	—	—		53.4	55.5	56.0	55.1	55.1		8
9	29.342	60.3	29.276	60.4	59.8	46.7	115.7	41.1	57.3	52.0	48.0	45.8	.23	W	4	W	3		—	—	—	—		53.1	55.4	56.1	55.1	55.2		9
10	29.200	58.5	29.364	60.4	58.2	46.1	122.3	39.9	54.0	49.6	49.1	47.7	.21	W	4	W	4		St	8	R	10		57.2	54.4	55.4	55.2	55.3		10
11	29.634	58.8	29.892	60.7	62.8	46.0	120.5	40.6	56.3	51.2	46.3	44.1	—	W	3	R	1		—	—	—	—		58.7	54.0	53.3	55.2	55.2		11
12	29.880	58.2	29.878	60.1	63.1	44.5	122.8	35.0	55.8	50.4	44.6	40.9	.07	W	4	W	3		Ci	3	St	5		57.0	54.2	55.2	55.1	55.2		12
13	29.842	58.7	29.888	60.7	63.8	43.6	120.7	39.8	55.0	50.0	48.9	41.6	—	W	4	W	2		—	—	Ci	3		58.1	54.0	55.0	55.0	55.3		13
14	30.170	57.0	29.884	56.7	60.8	41.5	124.0	41.6	53.9	48.0	47.8	42.5	—	W	1	W	3		—	—	St	8		48.9	53.8	55.1	55.0	55.3		14
15	30.000	58.3	29.876	58.9	57.0	40.2	97.9	40.9	50.3	46.5	41.5	37.9	—	W	4	W	2		Cist	8	—	—		49.3	53.8	54.5	54.3	55.0		15
16	30.096	57.5	30.106	57.8	63.2	38.2	115.8	31.8	54.8	50.2	46.5	41.3	—	W	3	W	2		Ci	4	—	—		48.9	53.7	54.3	54.3	54.9		16
17	30.200	57.4	30.178	60.0	61.2	42.3	113.3	46.7	55.1	52.4	53.5	51.6	—	W	3	W	2		Cist	8	St	8		57.6	53.7	53.6	54.0	54.5		17
18	30.100	58.5	29.954	60.5	59.8	51.5	86.2	45.4	55.2	52.1	52.2	50.5	—	W	2	—	—		St	8	Cist	5		57.4	53.7	53.7	54.0	54.4		18
19	29.800	56.9	29.850	57.0	58.1	44.6	98.0	38.4	52.8	51.2	46.1	45.0	—	S	1	—	—		Ci	5	—	—		57.3	54.0	54.0	53.8	54.3		19
20	30.024	54.7	30.216	60.0	60.8	40.8	121.2	33.0	50.0	47.4	41.3	40.1	—	W	1	—	—		—	—	—	—		47.9	53.3	53.8	53.8	54.2		20
21	30.214	54.3	30.116	57.8	60.2	30.9	120.7	27.5	48.0	45.3	42.6	40.3	—	W	1	E	2		—	—	St	8		44.7	53.2	53.5	53.5	53.2		21
22	30.050	57.2	30.026	60.0	62.3	45.6	122.0	37.6	54.0	50.9	48.8	47.3	—	S	1	E	1		St	8	—	—		50.3	52.4	53.3	53.4	54.1		22
23	29.964	57.0	29.926	58.5	56.1	45.3	69.8	36.8	53.4	49.0	45.5	44.8	—	S	2	—	—		St	10	—	—		51.4	52.7	53.1	53.2	53.9		23
24	29.862	56.0	29.824	58.5	56.8	38.0	110.8	32.5	47.3	45.8	37.1	44.6	.17	S	1	E	2		Ci	3	—	—		46.9	52.0	52.9	53.1	53.4		24
25	29.880	57.5	29.884	59.2	54.1	47.4	92.3	40.7	51.3	50.1	50.2	48.6	.11	SE	2	NW	2		St	8	St	6		46.9	52.0	52.8	53.0	53.2		25
26	29.774	53.5	29.688	59.5	54.4	38.0	93.4	38.0	48.5	45.8	50.9	50.0	.28	R	1	—	—		—	—	R	10		48.9	51.6	52.3	52.8	53.2		26
27	29.700	56.8	29.812	60.0	57.8	48.9	67.6	47.0	50.0	48.4	51.3	49.8	.50	W	2	E	2		St	10	St	10		46.0	51.5	52.2	51.9	53.1		27
28	29.900	56.2	29.984	59.0	53.6	49.0	110.0	46.2	50.4	47.3	51.0	49.7	.02	S	3	E	2		St	8	St	10		48.2	51.4	52.1	52.0	53.1		28
29	30.068	56.3	29.938	60.0	55.7	44.0	105.2	47.0	50.4	48.2	44.4	43.2	—	SE	3	—	—		St	10	—	—		50.8	51.9	53.0	52.4	53.2		29
30	29.958	52.1	29.924	58.2	51.8	40.0	110.7	36.8	47.3	41.9	45.5	42.1	—	W	2	R	1		—	—	—	—		50.2	51.8	53.0	52.3	53.2		30
31																															
Sums.	24040	2372	23848	598	2941	1715	3249	2421	1178	1163	2989	2324	2·07							161		103		3356	1176	1321	1249	1364		
Means.	29.801	57.9	29.795	60.3	59.8	45.7	114.4	41.4	53.9	50.5	50.0	47.7																			
Corrections for Instrumental Errors.	+015		+015																												
Corrections for Diurnal Range.																								67 04							
Corrected Means																															

NOTATION USED IN GENERAL REMARKS.

a. *denotes* aurora. d. ,, drizzling rain. f. ,, fog. fr. ,, frost. h.-fr. ,, hoar-frost. h. ,, haze. hl. ,, hail. l. ,, lightning. lu. co. ,, lunar corona. lu. ha. ,, lunar halo. m. ,, mist. p. ,, passing showers. r. ,, rain. r.² ,, heavy rain. sl. ,, sleet. sn. ,, snow. so. ha. ,, solar halo. q. ,, squall. q.² ,, violent squalls. t. ,, thunder. t. s. ,, thunder-storm.

CLOUDS.

High Clouds: Cirrus, cir. Cirro-stratus, cir.-str. Cirro-cumulus, cir.-cum.

Middle Clouds: Strato-cirrus, str.-cir. Cumulo-cirrus, cum.-cir.

Lower Clouds: Strato-cumulus, str.-cum. Cumulus, cum. Cumulo-nimbus, cum.-nim. Nimbus, nim. Stratus, str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29·816 − ·79 = 29·737

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29·810 − ·84 = 29·726

Mean at Station, corrected, and at 32°, = 29·732

Correction for height, feet above Mean Sea-level, = + ·181

Mean, reduced to 32°, and Sea-level, = ·913

Highest Reading, corrected for Index error, on the 20 th, = 30·216

Lowest Do. Do., on the 7 th, = 29·054

Difference, or **Monthly Range,** = 1·162

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 3 th, = 66·2

Lowest in Month, corrected for Index errors, on the 21 th, = 30·9

Difference, or **Monthly Range,** = 35·3

Mean of all the Highest, = 59·8

Mean of all the Lowest, = 45·7

Difference, or **Mean Daily Range,** = 14·1

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 52·8

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 21 = 27·5

,, ,, Mean, = 41·4

Black Bulb, Max. in Sun, Highest in Month, 3 = 123·9

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 52·0

Wet Bulb, Mean of A.M. and P.M. Readings, = 49·1

Computed **Temperature of Dew-Point,** = 46·1

Do. **Elastic Force of Vapour,** = ·313

Do. **Relative Humidity** (Saturation = 100), = 81

RAIN fell on 16 **Days; Amount in Inches,** = 2·07

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	2		1	1	5	1	19		1	2·4
P.M.	2		5			1	14	1	7	1·7
Sum.	4	0	6	1	5	2	33	1	8	2·0

Observations made and Return verified by ____

(*Signed*) ____

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's, pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs, and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W.	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

THE SECRETARY,
Scottish Meteorological Society,
122 George Street,
EDINBURGH.

BOOK POST.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of October 1906.

Lat. 55° 56′ N; Long. 3° 16′ W., Distance from Sea 2 2/3 miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches.

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max.	Min.	Black Bulb Max. in Sun.	Min. on Grass.	HYGROMETER. Dry No. ___ Wet No. ___ 9 A.M. Dry bulb.	Wet bulb.	9 P.M. Dry bulb.	Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	Force. Scale of 0—12.	9 P.M. Direction.	Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	Amount (0—10).	9 P.M. Species and Direction.	Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Aurroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.											°	°	°	°	°		
1	29·310	55·4	29·308	58·5	59·1	44·9	112·9	39·9	52·3	49·1	44·9	40·8	—	W.	1	N.W.	1		—	—	—	—		48·2	51·0	52·5	52·2	53·2		1
2	29·668	52·4	29·788	53·5	53·1	35·5	109·5	32·8	47·2	43·9	38·3	35·8	—	W.	2	—	—		—	—	—	—		46·4	50·4	51·4	52·1	53·2		2
3	29·750	53·5	29·230	53·5	53·2	32·9	65·8	26·3	42·2	40·0	53·3	51·5	·23	N.	1	S.W.	4		ci	5	n	10		43·5	49·6	51·0	51·8	52·8		3
4	28·950	54·0	28·880	53·8	54·6	43·2	107·3	39·4	49·0	45·0	46·0	43·8	·02	W.	2	N.	1		st.	8	st.	10		42·7	49·4	51·0	51·2	52·9		4
5	29·476	54·2	29·876	55·4	50·9	37·8	108·2	34·6	43·5	41·2	41·3	38·6	—	N.	4	N.	3		—	—	—	—		46·3	49·5	50·3	51·2	52·3		5
6	30·028	51·3	30·082	55·9	51·8	35·3	112·3	33·8	42·3	36·5	40·2	38·2	·05	N.	4	—	—		—	—	—	—		43·1	48·2	50·0	51·0	52·2		6
7	30·050	53·5	30·096	56·5	51·0	40·3	64·2	35·8	47·9	47·0	47·0	46·1	·24	W.	1	E.	1		n.	10	st	10		43·0	48·1	50·0	50·9	52·2		7
8	30·200	55·4	30·208	58·5	53·2	44·9	93·1	41·5	43·5	46·8	53·6	52·4	·02	W.	1	N.W.	2		st.	10	cu st.	8		43·5	48·6	49·3	50·5	50·9		8
9	30·250	56·2	30·332	60·0	63·4	48·0	112·2	42·9	54·0	51·6	48·3	43·2	—	W.	2	—	—		—	—	—	—		49·2	49·5	50·0	50·5	50·2		9
10	30·350	55·8	30·410	61·0	61·3	45·0	101·2	35·8	52·3	50·5	47·3	46·8	—	W.	1	—	—		—	—	cu st.	8		49·4	49·5	50·1	50·4	50·6		10
11	30·400	55·5	30·338	59·0	53·8	43·0	72·8	45·6	50·0	48·9	50·0	49·0	—	W.	1	N.W.	1		a st	8	st.	8		49·2	50·0	50·2	50·5	50·6		11
12	30·130	53·1	29·904	60·5	54·6	48·4	35·4	46·5	52·8	50·4	51·1	49·2	·04	W.	2	N.W.	3		st.	7	ci st.	6		49·5	50·1	50·3	50·4	50·5		12
13	30·000	54·3	30·062	56·5	51·2	33·8	103·6	36·0	41·5	36·2	34·4	30·9	—	W.	3	N.	1		st	6	—	—		46·1	50·2	50·3	50·4	50·5		13
14	29·852	49·5	29·334	58·0	53·4	33·1	74·8	26·8	41·3	38·6	53·4	50·8	·70	W.	2	N.W.	4		ci st	4	st.	10		43·1	50·0	50·1	50·3	50·3		14
15	29·350	50·5	29·644	53·8	53·3	33·0	76·9	33·4	39·2	38·6	36·1	33·4	·06	N.	2	N.	2		a st.	5	—	—		45·2	48·2	49·0	50·2	51·0		15
16	29·824	49·1	29·926	54·0	45·1	28·8	106·6	24·0	35·9	33·2	30·1	29·0	—	N.	1	N.	1		—	—	—	—		38·0	46·5	48·9	49·8	50·6		16
17	29·832	50·1	29·882	50·0	50·2	29·5	95·5	23·8	41·2	37·6	33·2	32·0	·05	N.W.	2	N.E	1		—	—	—	—		38·0	45·2	48·3	49·5	50·5		17
18	29·974	49·5	30·092	51·5	46·3	26·8	97·4	22·8	32·9	31·1	34·1	32·2	—	N.	1	N.	2		—	—	—	—		36·9	44·2	46·5	48·7	50·4		18
19	30·200	46·2	30·202	50·1	47·8	27·6	98·5	19·8	34·0	32·2	36·4	33·9	—	N.	1	N.	2		—	—	—	—		34·8	44·2	45·8	48·6	50·4		19
20	30·200	44·3	30·068	50·2	45·9	26·2	94·6	20·7	33·8	32·3	31·5	30·9	—	N.	1	N.	1		st.	8	—	—		35·2	44·5	45·4	47·5	50·3		20
21	29·980	46·4	29·998	51·2	47·3	31·2	98·2	25·9	36·9	35·6	32·7	31·8	—	E	1	N.	1		ci st	5	—	—		35·4	44·4	45·2	47·4	50·0		21
22	30·032	48·5	30·100	52·0	47·6	27·6	100·2	24·2	32·7	30·5	39·3	38·4	·02	N.	1	—	—		—	—	ci st	5		34·5	42·0	44·6	46·8	48·4		22
23	30·128	47·5	30·164	55·0	48·9	33·9	74·3	27·6	41·3	39·0	39·2	37·8	·01	N.	1	—	—		ci.	5	—	—		35·8	42·1	44·5	46·7	48·4		23
24	30·144	47·8	30·162	51·5	46·7	33·2	54·3	25·8	40·6	38·5	35·9	35·0	—	N.	1	N.	1		ci.	4	—	—		38·6	42·4	44·4	46·2	47·8		24
25	30·150	47·1	30·040	53·5	52·1	35·4	94·8	28·2	39·8	37·6	44·4	41·6	—	W.	1	N.W.	2		ci	5	cu st.	6		38·5	41·9	44·3	46·1	47·4		25
26	29·774	50·8	29·956	55·5	48·6	42·9	65·3	39·2	46·7	42·8	43·2	41·2	·15	W.	3	W.	3		st.	10	—	—		42·5	42·1	43·8	45·4	47·3		26
27	29·776	51·7	29·928	54·0	52·2	40·0	95·9	32·7	43·6	44·5	40·3	38·4	—	W.	2	N.W.	2		ci st.	4	—	—		42·3	43·0	43·4	45·4	47·2		27
28	29·850	44·9	29·534	52·5	47·3	32·8	68·9	31·8	33·9	32·1	46·0	44·1	·08	W.	1	S.	2		ci.	5	st.	10		38·6	41·3	43·2	45·3	47·2		28
29	29·312	49·3	29·102	53·8	53·6	38·1	97·3	29·2	40·9	38·8	43·2	41·8	·03	N.	1	E.	1		—	—	cu st.	8		40·6	43·0	43·8	45·6	46·8		29
30	29·016	50·8	28·944	54·3	45·9	38·4	49·5	33·0	42·9	40·8	39·5	38·8	·18	E.	3	E.	2		st.	10	ci st.	5		40·1	42·8	43·7	45·4	46·5		30
31	28·950	51·7	29·084	54·1	45·7	33·1	59·4	28·7	38·7	38·0	42·3	41·9	·31	E.	1	E.	1		st.	10	st.	10		40·0	42·6	43·7	45·5	46·5		31
Sums.	14 12 6	15 13	13 11 12	12 10	14 14	16 16	17 7 14	17 7	13 16	14 13	13 10	14 15	2·19				51		45		129		114	17 11	13 9	10 11	12 14	8 13		
Means.	29·849	51·1	29·835	55·1	51·4	36·5	88·6	31·9	42·8	40·3	41·5	40·1					1·64		1·45					42·0	46·3	47·5	48·8	49·9		
Corrections for Instrumental Errors.	+·015		+·015																		4·2		3·7							
Corrections for Diurnal Range.																														
Corrected Means	29·864		29·850																											

NOTATION USED IN GENERAL REMARKS.

a. denotes aurora. d. ,, drizzling rain. f. ,, fog. fr. ,, frost. h.-fr. ,, hoar-frost. h. ,, haze. hl. ,, hail. l. ,, lightning. lu. co. ,, lunar corona. lu. ha. ,, lunar halo. m. ,, mist. p. ,, passing showers. r. ,, rain. r.² ,, heavy rain. sl. ,, sleet. sn. ,, snow. so. ha. ,, solar halo. q. ,, squall. q.² ,, violent squalls. t. ,, thunder. t. s. ,, thunder-storm.

CLOUDS.

High Clouds: Cirrus, cir.; Cirro-stratus, cir.-str.; Cirro-cumulus, cir.-cum.

Middle Clouds: Strato-cirrus, str.-cir.; Cumulo-cirrus, cum.-cir.

Lower Clouds: Strato-cumulus, str.-cum.; Cumulus, cum.; Cumulo-nimbus, cum.-nim.; Nimbus, nim.; Stratus, str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29·864 − ·060 = 29·804

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29·850 − ·071 = 29·779

Mean at Station, corrected, and at 32°, = 29·791

Correction for height, feet above Mean Sea-level, = + ·184

Mean, reduced to 32°, and Sea-level, = 29·975

Highest Reading, corrected for Index error, on the 10th, = 30·425

Lowest Do. Do., on the 4th, = 28·895

Difference, or **Monthly Range,** = 1·530

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 9th, = 63·4

Lowest in Month, corrected for Index errors, on the 18th, = 26·8

Difference, or **Monthly Range,** = 36·6

Mean of all the Highest, = 51·4

Mean of all the Lowest, = 36·5

Difference, or **Mean Daily Range,** = 14·9

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 43·9

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 19th = 19·8

,, ,, Mean, = 31·9

Black Bulb, Max. in Sun, Highest in Month, 1st = 112·9

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 42·1

Wet Bulb, Mean of A.M. and P.M. Readings, = 40·2

Computed **Temperature of Dew-Point,** = 37·9

Do. **Elastic Force of Vapour,** = ·228

Do. **Relative Humidity** (Saturation = 100), = 85

RAIN fell on 16 **Days; Amount in Inches,** = 2·19

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	12	0	3	0	0	0	15	1	0	1·6
P.M.	10	1	4	0	1	1	1	7	6	1·4
Sum.	22	1	7	0	1	1	16	8	6	1·5

Observations made and Return verified by J. R. Johnston, Andrew Heume

(Signed) _____

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring-glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or Hail is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W. . .	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

Comrie Perthshire October 1905

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 George Street,
EDINBURGH.

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of November 1905.

Lat. 55°56'N., Long. 3°16'W., Distance from Sea 2⅔ miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No.	9 A.M. Attached Thermometer	9 P.M. Barometer. No.	9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No. ___ Wet No. ___ 9 A.M. Dry bulb.	Wet bulb.	9 P.M. Dry bulb.	Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	Force. Scale of 0—12.	9 P.M. Direction.	Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	Amount (0—10).	9 P.M. Species and Direction.	Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.												°	°	°	°	°		
1	29.148	52.5	29.090	53.5	46.1	41.8	51.6	39.6	43.8	43.2	45.1	43.8	.70	E.	2	E.	3		n	10	n.	10		41.2	42.6	43.3	45.3	46.4		1
2	29.300	52.1	29.332	53.5	48.8	44.3	54.1	42.1	47.8	46.2	44.8	43.0	.08	E.	3	E.	2		n	10	—	—		42.3	43.1	43.5	45.2	46.4		2
3	29.500	52.3	29.630	51.0	51.1	39.5	48.0	31.2	45.0	43.3	45.2	44.4	.58	E.	2	E.	2		—	—	n.	10		42.5	44.3	44.6	45.2	46.4		3
4	29.550	54.4	29.588	53.8	49.8	31.8	51.5	42.1	44.2	43.8	40.5	39.8	.09	E.	1	E.	2		st.	10	—	—		42.4	44.4	44.5	45.2	46.3		4
5	29.408	54.2	28.968	54.0	47.3	39.4	50.2	35.0	47.0	46.8	40.0	38.8	.53	E	2	W	2		n	10	cust	4		43.7	44.2	44.7	45.3	46.1		5
6	29.034	50.3	29.084	54.5	50.2	38.9	51.1	34.6	43.2	41.5	45.1	42.7	.01	W	1	W	3		—	—	cist	6		42.3	44.0	44.5	45.2	46.4		6
7	29.218	49.9	29.524	54.0	49.9	41.8	54.4	36.2	43.8	41.4	42.0	41.1	—	W	3	—	—		cist	5	—	—		42.6	44.0	44.4	45.2	46.0		7
8	29.768	51.5	29.994	56.0	48.1	34.5	53.8	34.9	43.0	41.8	39.8	33.8	—	N	1	—	—		st	8	—	—		42.5	43.9	44.2	45.2	46.1		8
9	30.000	47.0	29.956	53.2	48.1	29.0	61.8	26.8	31.2	30.9	37.1	36.4	—	N	1	E	1		ci	5	—	—		38.7	42.5	44.1	45.1	46.1		9
10	29.800	47.2	29.578	54.7	47.6	31.2	59.1	25.5	37.3	36.6	42.8	41.5	.12	E	1	E	2		st	8	n	10		36.9	42.0	43.5	44.9	46.1		10
11	29.192	52.5	28.976	55.1	49.2	43.1	50.7	40.1	47.3	45.0	46.0	44.2	.13	E	3	S	1		st	10	st	8		39.8	42.0	43.4	44.6	46.2		11
12	29.160	51.9	29.052	54.0	50.1	39.2	56.2	32.3	40.0	39.2	44.5	43.6	.08	W	1	E	2		—	—	st	10		41.3	43.8	43.5	44.5	46.3	Fog afternoon.	12
13	29.176	51.4	29.450	53.6	44.7	40.5	50.9	38.7	42.0	40.3	42.7	39.8	.26	E	2	E	2		st	10	st	8		42.3	43.2	43.5	44.3	46.3		13
14	29.562	51.5	29.644	51.7	42.8	37.6	50.7	33.7	42.5	39.8	38.0	36.7	.40	E	2	E	2		cist	5	n	10		42.1	43.1	43.5	44.2	46.2		14
15	29.760	49.3	29.834	51.0	41.2	34.5	66.9	27.8	34.0	33.5	37.3	34.9	.02	W	1	NE	2		st	8	cust	8		39.7	42.3	43.5	44.2	46.2		15
16	29.816	48.7	29.858	46.0	40.8	29.1	79.4	25.8	38.8	34.7	29.5	28.9	—	N	1	—	—		cist	5	—	—		37.4	40.	42.3	44.2	46.1		16
17	29.968	46.3	30.122	49.0	39.8	28.0	88.9	25.5	33.6	32.0	28.5	28.0	—	W	1	N	1		—	—	—	—		34.5	40.0	42.8	43.7	45.8		17
18	30.124	44.5	29.988	49.0	39.1	22.2	65.4	22.7	23.8	22.5	24.0	23.4	—	N	1	N	1		—	—	—	—		32.0	38.0	40.0	43.3	45.6	Fog evening.	18
19	29.790	45.8	29.628	48.5	35.1	18.9	45.2	20.0	23.8	22.4	30.0	33.9	.01	N	1	N	1		—	—	—	—		33.0	37.8	40.0	42.8	45.3		19
20	29.784	46.5	29.892	48.8	42.0	31.3	70.9	28.7	32.3	31.8	35.6	34.0	—	N	1	—	—		—	—	—	—		32.8	37.5	39.6	42.5	45.2		20
21	29.880	45.3	29.996	49.0	48.2	33.6	72.4	27.6	37.3	36.2	42.8	40.5	—	W	1	SW	3		—	—	—	—		32.7	37.4	39.6	42.3	45.0		21
22	29.560	48.5	29.180	52.0	53.2	40.4	72.5	31.7	46.8	44.0	52.5	50.0	.15	W	2	SW	1		st	8	n	10		38.5	38.5	39.2	41.7	45.0		22
23	29.328	49.8	29.244	52.2	52.8	38.8	81.2	30.9	44.0	42.3	39.2	37.3	.04	W	1	NW	2		cist	8	—	—								23
24	29.412	48.9	29.428	51.5	50.7	36.4	70.6	30.5	37.5	36.3	37.9	35.6	.02	W	1	W	3		—	—	—	—								24
25	29.400	49.3	29.142	52.1	46.4	40.3	52.5	35.6	41.7	39.4	45.0	42.3	.02	W	1	S.	1		ci	4	st	8		43.1	40.1	40.0	41.2	43.8		25
26	28.838	51.8	28.600	51.8	46.3	41.5	45.3	40.1	45.0	43.7	43.9	41.8	.30	S	2	NW	2		N	10	N	10								26
27	29.046	47.3	29.308	51.0	47.9	35.0	73.4	31.2	35.0	33.5	35.2	34.0	—	NW	2	N	1		—	—	—	—								27
28	29.284	48.5	29.644	49.8	39.8	31.2	58.2	33.0	35.7	34.5	36.3	33.2	.02	S	2	NE	2		ci	4	—	—		37.4	38.9	39.8	41.3	44.1	SN. light fall during night.	28
29	29.850	4.76	29.688	51.2	46.8	30.9	60.2	27.8	32.4	31.7	40.8	37.6	.16	S	1	SW	3		ci st	4	cust	6		37.3	38.7	39.7	41.1	44.1		29
30	29.816	4.82	29.624	50.0	46.8	36.0	55.9	33.7	43.8	40.7	44.7	42.1	.03	SW	3	SW	4		st	10	st	4		38.7	38.2	39.5	41.3	44.2		30
31																															31
Sums.		13 12 10	16 14		16 16 13	12 8	14 13	14 12	11 14	12 14	13 11	11 13	14 10	13 14	7												15 15	16 10	15 13	10 10	16 6		
	14·872	285·7	14·852	555·5	569·2	465·7	703·6	406·8	583·1	539·9	595·9	547·4	3·77		47		57			152		122		270·3	329	606	46	57		
Means.	29.496	49.5	29.495	51.8	45.6	35.5	67.9	32.2	39.4	37.9	39.9	38.2			1.56		1.90			5.1		4.1		39.0	41.0	42.0	43.5	45.5		
Corrections for Instrumental Errors.	+ 015		+ 015																												
Corrections for Diurnal Range.																															
Corrected Means	29.511		29.510																												

7 1
6 7
0 6
1·2
9 1

NOTATION USED IN GENERAL REMARKS.

a. denotes aurora. d. ,, drizzling rain. f. ,, fog. fr. ,, frost. h.-fr. ,, hoar-frost. h. ,, haze. hl. ,, hail. l. ,, lightning. lu. co. ,, lunar corona. lu. ha. ,, lunar halo. m. ,, mist. p. ,, passing showers. r. ,, rain. r.² ,, heavy rain. sl. ,, sleet. sn. ,, snow. so. ha. ,, solar halo. q. ,, squall. q.² ,, violent squalls. t. ,, thunder. t. s. ,, thunder-storm.

CLOUDS.

HIGH CLOUDS.
Cirrus, ... cir.
Cirro-stratus, . . cir.-str.
Cirro-cumulus, . . cir.-cum.

MIDDLE CLOUDS.
Strato-cirrus, . . str.-cir.
Cumulo-cirrus, . . cum.-cir.

LOWER CLOUDS.
Strato-cumulus, . . str.-cum.
Cumulus, . . . cum.
Cumulo-nimbus, . . cum.-nim.
Nimbus, . . . nim.
Stratus, ... str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0–12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29·511 − ·057 = 29·454

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29·510 − ·062 = 29·448

Mean at Station, corrected, and at 32°, = 29·451

Correction for height, feet above Mean Sea-level, = + ·185

Mean, reduced to 32°, and Sea-level, = 29·636

Highest Reading, corrected for Index error, on the 18th, = 30·139

Lowest Do. Do., on the 26th, = 28·615

Difference, or **Monthly Range,** = 1·524

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 22nd = 53·2

Lowest in Month, corrected for Index errors, on the 19th, = 18·9

Difference, or **Monthly Range,** = 34·3

Mean of all the Highest, = 45·6

Mean of all the Lowest, = 35·5

Difference, or **Mean Daily Range,** = 10·1

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 40·5

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 19th = 20·0

,, ,, Mean, = 32·2

Black Bulb, Max. in Sun, Highest in Month, 7th = 94·4

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 39·6

Wet Bulb, Mean of A.M. and P.M. Readings, = 38·0

Computed **Temperature of Dew-Point,** = 35·9

Do. **Elastic Force of Vapour,** = ·211

Do. **Relative Humidity** (Saturation = 100), = 87

RAIN fell on 21 **Days; Amount in Inches,** = 3·77

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	6	0	12	0	0	0	11	1	0	
P.M.	4	2	9	0	2	4	3	2	4	
Sum.	10	2	21	0	2	4	14	3	4	1·8

Observations made and Return verified by J. N. Johnston. Andrew Keene.

(Signed) .....

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER. — In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
———
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys, or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the readings at 9 A.M. each day should be put down in the column provided, the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W. . .	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

Constitutional
Nov. 1903

THE SECRETARY,
Scottish Meteorological Society,
122 George Street,
EDINBURGH.

BOOK POST.

EDINBURGH OCT 8 15 AM 03

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Corstorphine House, County of Mid-Lothian, During the MONTH of December, 1905.

Lat. 55° 56' N., Long. 3° 16' W., Distance from Sea 2⅓ miles. Height of Cistern of the Barometer above Mean Sea-Level 165 feet, above Ground 6 feet.

Diameter of Rain Gauge 5 inches. Height of Rim of Gauge above Ground 12 inches.

The Hours of Observation are of Greenwich Time.

Days of Month.	BAROMETER. 9 A.M. Barometer. No. ___	BAROMETER. 9 A.M. Attached Thermometer	BAROMETER. 9 P.M. Barometer. No. ___	BAROMETER. 9 P.M. Attached Thermometer	SELF-REGISTERING THERMOMETERS, Read Daily, at 9 P.M. Protected in Screen, 4 feet above Ground. Max. No.	Min. No.	Black Bulb Max. in Sun. No.	Min. on Grass. No.	HYGROMETER. Dry No. ___ Wet No. ___ 9 A.M. Dry bulb.	9 A.M. Wet bulb.	9 P.M. Dry bulb.	9 P.M. Wet bulb.	RAIN. Amount at 9 A.M.	WIND. 9 A.M. Direction.	9 A.M. Force. Scale of 0—12.	9 P.M. Direction.	9 P.M. Force. Scale of 0—12.	Anemometer. 9 A.M.	CLOUDS. 9 A.M. Species and Direction.	9 A.M. Amount (0—10).	9 P.M. Species and Direction.	9 P.M. Amount (0—10).	SUNSHINE. Hours.	THERMOMETERS under Ground. 9 A.M. No. 3 ins.	No. 12 ins.	No. 22 ins.	No. 36 ins.	No. 48 ins.	GENERAL REMARKS. Occurrence of Snow, Hail, Thunder, Lightning, Fog, Gales, Meteors, Auroras, Remarkable Depression or Elevation of Barometer, etc. *Mention the hour at which Storms, including Thunder and Lightning, began and ended.*	Days of Month.
	inches.	°	inches.	°	°	°	°	°	°	°	°	°	inches.												°	°	°	°	°		
1	29.834	47.0	29.904	51.0	49.4	39.6	62.2	31.4	42.4	39.8	49.4	47.2	—	W	2	SW	5		Ci St	8	St	6		38.4	38.1	39.4	41.3	44.2		1
2	29.964	51.3	30.036	54.0	53.3	49.7	79.1	44.9	50.5	47.5	50.3	47.1	—	W	2	W	3		Ci	4	St	8		43.7	40.1	40.0	41.2	43.9		2
3	30.050	52.3	30.032	55.5	52.2	49.5	61.2	45.0	50.7	48.2	50.2	47.4	—	W	1	SW	4		St	8	Str-cum	10		46.5	42.7	41.0	41.2	43.4		3
4	29.950	51.8	29.738	56.0	52.9	46.8	82.5	41.8	48.8	45.7	47.2	45.0	—	W	1	W	3		Ci	5	St	4		46.2	42.8	41.1	41.2	43.3		4
5	29.450	53.5	29.278	58.2	49.5	39.2	74.9	40.3	47.6	44.7	40.2	38.1	.24	W	3	W	3		St	5	—	—		43.8	42.8	42.1	41.7	43.4	r.h.r. p.m.	5
6	29.250	51.8	29.304	54.5	48.8	36.9	73.6	32.5	41.0	39.0	49.7	46.0	.05	W	3	SW	7		—	—	St	8		40.3	42.2	42.1	41.9	43.5	S.W. gale 9 p.m.	6
7	29.362	51.3	29.534	54.0	53.3	44.7	70.6	39.8	45.4	42.0	45.8	41.8	.08	W	4	W	6		St	5	—	—		40.2	42.3	42.0	41.9	43.5		7
8	29.628	52.8	29.740	52.8	46.1	36.0	75.4	37.1	42.0	39.8	41.9	38.8	.30	W	3	W	3		—	—	Str-Cum	4		39.7	40.6	41.8	41.8	43.4		8
9	29.800	51.2	30.240	52.3	42.8	37.8	60.9	38.0	39.3	38.0	38.9	37.6	.02	W	3	NW	1		N	10	—	—		39.4	40.6	41.7	41.9	43.4		9
10	30.350	49.9	30.320	53.0	45.8	37.0	74.9	30.8	38.3	37.6	44.9	41.8	—	W	1	W	2		—	—	St	6		37.0	40.2	41.1	42.1	43.7		10
11	30.296	50.7	30.606	53.5	48.2	39.8	60.3	36.9	45.8	42.0	40.8	39.9	.07	W	3	—	—		St	5	St	8		37.1	40.2	41.0	42.0	43.6		11
12	30.726	49.8	30.634	51.0	46.1	30.6	56.9	28.6	32.3	31.8	39.4	37.6	.02	N	1	NW	2		—	—	—	—		36.4	39.8	40.8	42.0	43.6		12
13	30.530	51.4	30.428	50.8	48.5	38.6	52.8	32.7	45.9	44.8	46.7	44.8	—	W	2	W	1		—	—	St	8		38.9	39.8	40.7	41.9	43.5		13
14	30.348	50.8	30.274	54.2	47.9	44.4	59.2	39.1	46.3	44.9	45.8	43.2	—	W	2	W	3		Ci St	8	Str-cum	10		41.9	40.3	40.7	41.5	43.4		14
15	30.086	51.5	30.096	55.5	48.8	44.3	61.8	42.8	45.0	43.2	48.3	44.1	—	W	3	W	2		St	8	St	10		43.1	41.2	40.8	41.5	43.4		15
16	30.070	49.8	30.128	54.8	48.9	42.4	64.7	37.2	43.0	42.0	46.0	43.8	.02	N	2	—	—		—	—	St	10		40.8	41.0	40.7	41.4	43.4		16
17	30.118	52.8	30.058	54.0	45.4	40.8	58.3	38.7	41.6	40.9	41.9	39.4	—	N	1	W	2		Ci-St	8	St	10		41.7	42.0	41.5	41.4	43.2		17
18	29.942	50.9	29.620	52.8	44.3	38.0	50.2	37.3	40.7	38.2	41.2	38.3	—	W	2	E	3		Ci	4	Str-cum	5		40.7	41.8	41.4	41.4	43.2		18
19	29.372	51.3	29.654	52.0	43.2	37.0	61.4	37.0	42.0	39.5	42.1	39.8	.03	W	4	W	4		St	5	—	—		39.8	41.0	41.4	41.3	43.1		19
20	29.850	51.1	29.744	54.5	49.3	39.9	67.8	35.8	44.2	42.5	45.7	43.2	.01	W	4	N	3		Ci-St	5	Ci-St	4		40.5	40.8	41.3	41.4	43.2		20
21	29.850	52.4	29.938	53.8	51.7	44.0	52.5	39.2	47.2	45.1	49.1	44.8	.04	W	3	W	3		Ci	4	Ci-St	8		40.7	40.9	41.3	41.5	43.2		21
22	30.036	52.0	30.032	53.5	52.4	43.1	57.2	42.5	47.3	44.0	46.8	45.3	—	W	3	W	2		St	10	—	—		41.4	41.0	41.2	41.5	43.2		22
23	29.494	51.3	29.942	52.5	51.3	34.5	79.4	35.8	48.5	43.6	37.3	34.2	—	W	2	—	—		—	—	Ci	5		42.9	42.5	42.0	42.0	43.4		23
24	29.924	50.8	29.900	51.1	44.6	34.6	48.7	29.9	43.7	44.5	45.1	42.3	.18	W	3	SW	3		St	10	N	10		39.8	42.3	42.0	42.0	42.3		24
25	29.832	50.9	29.962	51.8	48.1	40.7	47.6	39.6	45.2	44.1	41.3	40.8	.26	W	1	W	2		N	10	N	10		41.8	42.5	42.3	42.1	42.3		25
26	29.916	49.4	29.784	50.4	48.7	36.5	46.8	32.5	47.8	47.2	40.7	39.5	—	W	1	SE	2		St	10	—	—		42.5	42.5	42.2	42.3	43.0		26
27	29.618	48.7	29.504	49.0	46.2	27.0	50.1	19.8	29.8	28.2	28.6	28.4	.03	N	1	N	1		—	—	fog	10		35.3	41.5	41.9	42.1	43.0	fog evening.	27
28	29.408	43.8	29.304	49.5	41.9	27.1	42.2	23.1	36.4	35.3	41.9	40.8	.03	E	2	E	2		St	10	St	10		35.2	39.6	41.4	42.0	43.0		28
29	29.312	48.5	29.582	49.0	43.9	37.1	45.1	37.3	42.4	40.9	39.0	35.0	.09	E	2	E	2		St	10	St	10		39.7	39.6	41.3	41.9	43.1		29
30	29.964	46.4	30.114	49.2	30.1	29.2	69.4	20.0	33.0	30.5	33.0	30.0	—	E	2	E	2		—	—	—	—		34.8	39.5	40.5	41.4	43.1		30
31	30.050	45.5	29.924	49.5	33.1	29.1	47.2	23.9	32.0	29.5	30.0	29.8	—	E	3	SE	4		—	—	St	4		33.7	38.2	40.0	41.2	43.2		31
Sums.		16 13 10	11 17		15 11 12	12 10	16 14	19 12	13 4	17 15	14 12	16 13	14 14	18 13	6										14 16	10 13	4 10	5 12	10 10		
	27·880		1 3·0		28·354	7 7·9	22 6·1	26 3·9	1886·9	164·3	8 6·4	2 5·0	87 62 1·8		1·47		70		80		152		188		242·8	30·4	38·7	2·0	102·1		
Means.	29·899		50·4		29·915		52·5		47·2	38·5	60·9	35·3	42·8	40·8	42·8	40·7			2·26		2·58		4·9		5·7		40·0	40·9	41·2	41·7	43·3		
Corrections for Instrumental Errors.	+ 015				+ 015																									
Corrections for Diurnal Range.																														
Corrected Means	29·914				29·930																									

NOTATION USED IN GENERAL REMARKS.

a.	*denotes* aurora.	
d.	,,	drizzling rain.
f.	,,	fog.
fr.	,,	frost.
h.-fr.	,,	hoar-frost.
h.	,,	haze.
hl.	,,	hail.
l.	,,	lightning.
lu. co.	,,	lunar corona.
lu. ha.	,,	lunar halo.
m.	,,	mist.
p.	,,	passing showers.
r.	,,	rain.
r.²	,,	heavy rain.
sl.	,,	sleet.
sn.	,,	snow.
so. ha.	,,	solar halo.
q.	,,	squall.
q.²	,,	violent squalls.
t.	,,	thunder.
t. s.	,,	thunder-storm.

CLOUDS.

High Clouds.

Cirrus, ...	cir.
Cirro-stratus, . .	cir.-str.
Cirro-cumulus, . .	cir.-cum.

Middle Clouds.

Strato-cirrus, . .	str.-cir.
Cumulo-cirrus, . .	cum.-cir.

Lower Clouds.

Strato-cumulus, . .	str.-cum.
Cumulus, ...	cum.
Cumulo-nimbus, . .	cum.-nim.
Nimbus, ...	nim.
Stratus, ...	str.

BEAUFORT SCALE FOR ESTIMATING FORCE OF WIND—(0—12).

FORCE.		FORCE.		FORCE.	
0	Calm.	5	Fresh Breeze.	9	Strong Gale.
1	Light Air.	6	Strong Breeze.	10	Whole Gale.
2	Light Breeze.	7	Moderate Gale.	11	Storm.
3	Gentle Breeze.	8	Fresh Gale.	12	Hurricane.
4	Moderate Breeze.				

BAROMETER. Corrected Mean at 9 A.M., *minus* Correction for Temp. = 29·914 − ·060 = 29·854

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29·930 − ·060 = 29·870

Mean at Station, corrected, and at 32°, = 29·862

Correction for height, feet above Mean Sea-level, = + 184

Mean, reduced to 32°, and Sea-level, = 30·046

Highest Reading, corrected for Index error, on the 12 th, = 30·741

Lowest Do. Do., on the 6 th, = 29·265

Difference, or **Monthly Range,** = 1·476

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 2nd ~~th~~, 7th = 53·3

Lowest in Month, corrected for Index errors, on the 27 th, = 27·0

Difference, or **Monthly Range,** = 26·3

Mean of all the Highest, = 47·2

Mean of all the Lowest, = 38·5

Difference, or **Mean Daily Range,** = 8·7

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 42·8

S.-R. THERMOMETER, Min. on Grass, Lowest in Month, 27 = 19·8

,, ,, Mean, = 35·3

Black Bulb, Max. in Sun, Highest in Month, = 82·5

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 42·8

Wet Bulb, Mean of A.M. and P.M. Readings, = 40·3

Computed **Temperature of Dew-Point,** = 38·2

Do. **Elastic Force of Vapour,** = ·231

Do. **Relative Humidity** (Saturation = 100), = 84

RAIN fell on 16 **Days; Amount in Inches,** = 1·47

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	3	0	4	0	1	0	23	0	0	
P.M.	2	0	4	2	0	4	14	2	3	
Sum.	5	0	8	2	1	4	37	2	3	2·4

Observations made and Return verified by { J. N. Johnston / Andrew Hume

(Signed) ___

N.B.—**Rain** to be measured at 9 A.M. and the amount entered to the previous day.

See instructions on back of Schedule.

INSTRUCTIONS FOR TAKING METEOROLOGICAL OBSERVATIONS.

In order to insure uniformity in the observations made at the Observing Stations of the Scottish Meteorological Society, the Council request the Observers to adopt the methods described below.

HOURS OF OBSERVATION.

The Council recommend that Observations be made precisely at 9 A.M. and 9 P.M. (Greenwich Time). At both hours the Barometer and Dry and Wet Bulb Thermometers should be read, and notes made of the Wind, Cloud, and general weather. The Rain Gauge should be read at 9 A.M. only, and the Maximum and Minimum Self-registering Thermometers at 9 P.M. only.

It is hoped that every effort will be made to insure punctuality. When, however, an observation is taken not at the usual hours, it is requested that this be stated in a note on the Schedule.

All instruments used should be compared with a certified standard; Observers are requested to communicate with the Secretary before purchasing new or repairing old instruments.

BAROMETER.

The Barometer should be hung in a good light and in a room not exposed to sudden changes of temperature. The upper part of the scale must not be higher than the level of the observer's eye, and the instrument must hang vertically. Barometers should not be moved from their places except by persons accustomed to the work, as they are very liable to get air into the mercury column when improperly handled. Mercurial barometers mounted in metal cases are the only sort suitable for the accurate measurement of atmospheric pressure.

FORTIN BAROMETER.—In setting this instrument the level of the mercury in the glass cistern has first to be adjusted by turning the screw below the cistern till the surface of the mercury just touches the ivory point which projects downwards from the cover of the cistern. A modification of the Fortin pattern is used at several of the Society's Stations, in which the adjustment is made by turning the screw until the zero line on an ivory rod which projects through the cover of the cistern is brought to coincide with the lines on the uprights beside it. In either pattern this cistern adjustment must be made before the Vernier at the top of the mercury column is set.

In the BOARD OF TRADE pattern of barometer no adjustment of the cistern is required, and the Observer can at once proceed to set the Vernier, which in all three classes of instrument is done as follows:—

First see that the Vernier is raised above the mercury, then lower it till its front and back edge both just touch, that is, form a tangent to, the highest part of the mercury column. The top of the mercury is usually slightly convex, and care must be taken not to bring the Vernier down to where the front of the mercury touches the glass, which is below the real top of the column.

The attached thermometer should be read and noted before setting the barometer, as its readings may be affected by heat from the Observer's body while handling the instrument.

The errors most frequently made in reading the barometer are mistakes of 1·000 inch, 0·100 inch, and 0·050 inch; that is to say, instead of 29·365 one of the following is sometimes set down—viz. 30·365, 29·265, or 29·315. Experience having shown that even the best Observers occasionally make these mistakes, the reading, after it is writen down, should be compared again with the scale.

STEVENSON SCREEN.

The Maximum, Minimum, Dry Bulb, and Wet Bulb Thermometers should be placed in a louvred Stevenson Screen standing over grass and with its door facing north. The Dry and Wet Bulb Thermometers may be conveniently attached to upright laths near the front of the Screen, and the Maximum and Minimum Thermometers to others farther back. The height of the Screen should be such that the bulbs of the Dry and Wet Thermometers are four feet above the ground. The Screen should be painted white inside and out.

MAXIMUM AND MINIMUM THERMOMETERS.

In order that the MAXIMUM THERMOMETER may register the highest temperature of the day, the column of mercury is disconnected from the mercury in the bulb either by an air-bubble in the column (Phillip's pattern), or by the narrowing of the tube near the bulb (Negretti and Zambra's pattern). In either case the instrument is set by holding it vertically, bulb downwards, and gently shaking and tapping it so as to send the portion of the column that remained at the highest point attained back towards the bulb.

The MINIMUM THERMOMETER registers the lowest temperature by an index enclosed in the column of spirit which is drawn towards the bulb as the temperature falls, but remains stationary during any rise of temperature. The lowest reading is therefore the position of the end of the index furthest from the bulb. The instrument is set by inclining it bulb upwards till the index slips down to the end of the column of spirit. Care must be taken not to force any part of the index beyond the end of the spirit. Should this occur, however, or should portions of the spirit get detached and lodge in the upper part of the tube, it is generally possible to set the instrument right again by grasping it near the end furthest from the bulb and giving several rapid vertical swings at arm's length, so as to drive the spirit and index towards the bulb by centrifugal force.

Both Maximum and Minimum should be read and set at 9 P.M. The readings should be written down before the Thermometers are touched; and after setting, both should agree very nearly with the Dry Bulb temperature at that hour. Any difference from the Dry Bulb of more than a degree may be regarded by the Observer as an indication either that the instrument is not properly set, or that it is out of order.

DRY AND WET BULB THERMOMETERS.

The Hygrometer in use at the Society's Stations consists of two thermometers—a Dry and a Wet Bulb—of similar form, and usually mounted on one frame. The bulbs should project at least an inch from the frame, and the Wet Bulb be covered with muslin and connected by strands of cotton with the water cistern. This cistern should be placed an inch or two below the level of the bulbs and at the side of the Wet Bulb furthest from the Dry Bulb; it should not stand directly under the Wet Bulb. Muslins and strands are supplied to most stations from the Society's office, and should be renewed at least once a month. In putting on a fresh muslin care should be taken to touch it as little as may be with the fingers. In frosty weather the strands do not convey water to the muslin, but an accurate observation can generally be insured by soaking the Wet Bulb in water a quarter of an hour before the observation, as from the film of ice thus formed on the muslin evaporation goes on in the same way as from the wet muslin under ordinary circumstances.

RAIN GAUGE.

The Rain Gauge should be read at 9 A.M. each day, and the amount entered to the *previous day on the Schedule*: thus the quantity measured at 9 A.M. on the 5th should be put down on the line containing the observations of the 4th of the month, since out of the twenty-four hours ending at 9 A.M. on 5th, fifteen belong to the 4th and only nine to the 5th, so that the amount may more properly be credited to the former day. The monthly total for, say, January is thus what falls between 9 A.M. on 1st January and 9 A.M. on 1st February.

The measuring glass is divided to hundredths of an inch—the highest line indicating ·50, that is fifty hundredths or half an inch. The amount should be entered on the Schedule thus: if up to say the sixth line in the glass as ·06, if up to the twenty-third line as ·23, if up to the thirtieth line as ·30, and so on, there being always two figures put down to the right of the decimal point. Care should be taken to avoid entering ·08 as simply 8, or ·30 as ·3, as this may cause confusion when adding the figures to get the total for the month.

When the fall exceeds one fill of the measuring glass it is necessary to measure it in portions, and each successive reading should be jotted down on the flyleaf of the note-book or other convenient place before the glass is emptied. Thus after heavy rain the amounts measured might be:—

·47
·42
·38
1·27

The total, 1·27, would be entered on the Schedule.

The glass must be held vertically or placed on a level surface when reading. A little uncertainty is sometimes caused by the upward curvature of the water where it touches the side of the glass, but the true reading is half way between the two apparent edges of the water surface. When there is nothing in the gauge a stroke (——) should be entered on the Schedule rather than the figure 0.

Snow or **Hail** is counted as Rainfall, and should be melted and measured as such. The upper part of the gauge may be taken indoors, and what is lying in it thawed. To save time, especially if snow or rain be then falling, it is convenient to add a measured quantity of warm water to the snow in the gauge, this quantity being afterwards deducted from the total to get the amount that has fallen. The depth of snow lying on the ground should be noted in the Remarks column.

In gauges, such as Flemings, in which a float and measuring rod is used, the rod should be removed or tied down below the level of the rim, except when a measurement is being taken, because if allowed to project above the gauge, it would prevent it catching the true amount of fall.

If a gauge is only read once a month this should be done on the morning of the 1st, and the amount entered to the previous month.

The Rain Gauge should be placed in an open situation, if possible with no elevated objects close to it, in any case trees, walls, etc., should never be nearer to the gauge in horizontal distance than their own height. The gauge should be firmly fixed with its rim 12 inches above ground; if surrounded by grass, care must be taken that it is never allowed to grow as high as the rim. The gauges at most Stations are five inches in diameter, though a few of larger or smaller size are also in use. A convenient way of fixing a gauge in position is to drive four stout wooden pegs from 12 to 18 inches long into the ground, one at each side of the gauge.

WIND, CLOUD, SUNSHINE, ETC.

WIND.

The direction and force of the Wind should be noted at 9 A.M. and 9 P.M. In confined situations where the true direction cannot be easily observed, it is best to ascertain this by watching the movement of smoke from chimneys or even of the lower clouds. The force of the wind should be noted according to the scale given on the other side of the Schedule.

At Stations where an Anemometer is in use, the reading at 9 A.M. each day should be put down in the column [illegible] the values being entered to the previous day, as in the case of the Rainfall.

CLOUDS.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear and 10 an overcast sky. Only the part of the sky over 30° above the horizon should be taken into account, as it is impossible to estimate the space covered by Clouds nearer the horizon. A convenient table for noting briefly the species of Cloud will be found on the other side of the Schedule. It is desirable to note, if possible, the direction from which the Clouds are moving. If there is more than one layer of clouds on the sky, they should be noted.

Thus, for example,

Cir. W.	4
Cum. Str. S.W.	2

would indicate that four-tenths of the sky was covered with cirrus moving from the West, and two-tenths with cumulus moving from the S.W.

SUNSHINE.

This column is primarily for those Stations where a Sunshine Recorder is kept; at other Stations, however, the Observer may note in it the number of hours each day that the sun shines with sufficient clearness to cast a distinct shadow.

RADIATION THERMOMETERS.

A MAXIMUM THERMOMETER, with its bulb blackened and enclosed in an outer glass bulb exhausted of air, is used at many stations to register the highest temperature in the sun. It should be mounted horizontally about four feet above ground with its bulb pointing south, and should be read and set at 9 P.M.

A MINIMUM THERMOMETER on grass is used to register the lowest radiation temperature at night. It should be placed on wooden supports a few inches above the surface of the grass. It may be read and set at 9 P.M., but in warm weather, as the spirit in this instrument is liable to evaporate when exposed to bright sunshine and to condense again in the upper part of the tube, it is better to read it at 9 A.M., to put it inside the screen during the day, and to set and replace it at 9 P.M.

THERMOMETERS UNDER GROUND.

These should be read at 9 A.M., and the readings entered on the day on which they are made.

REMARKS.

In the Remarks column should be noted all occurrences of Snow, Hail, or Heavy Rain; of Thunder, or Lightning, or both together; of all Auroras, Meteors, or Halos round the sun or moon; Fogs, Gales or Storms, and generally of all noteworthy Weather phenomena.

The table and additional lines on the back of the Schedule are for the use of those Observers who wish to record Notes connected with the changes of the Seasons, such as the growth of Crops, Fruit, etc., and the migrations of Birds; also the prevalence of Diseases in man, in the lower animals, and in plants. Such observations are often of great interest and utility when taken in conjunction with the ordinary Meteorological records.

DATES IN CONNECTION WITH THE PERIODICAL RETURN OF THE SEASONS.

FOREST TREES.	In Flower.	Leaf Buds first Appear.	In Leaf.	Divested of Leaves.	CROPS, mentioning variety.	Sowing or Planting.	Appearing above Ground.	In Ear or Flower.	First Cut or Raised.
Alder,					Barley,				
Ash,					Bere or Bigg,				
Beech,					Oats,				
Birch,					Wheat,				
Elm,					Beans,				
Larch,					Pease,				
Lime,					Potatoes,				
Oak,					Turnips,				
Sycamore or Plane,					Rye Grass,				

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

The Society will be glad to receive any portions of the information indicated in this table that may come under the Observer's notice.

ADDITIONAL REMARKS.

Contoplains December 1906

BOOK POST.

THE SECRETARY,
Scottish Meteorological Society,
122 George Street,
EDINBURGH.