SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Duthie Park Aberdeen, County of Aberdeen, During the MONTH of January 1907.

Lat. 57.9 N, Long. 2.6 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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. 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	29.240	34	29.100	40	41.0	21.0	~~25.0~~	~~25.0~~	26.0	25.0	28.4	22.0	0.48	SW	2	S	2		cir	5	2mis	10							fair & frosty, some rain & sn	1
2	28.955	38	28.600	39	39.0	25.0	~~38.0~~		38.0	34.5	37.5	36.0	1.30	SW	4	NW	4		ci	2	ci	5			sl				fair heavy Gale all night Sleet &h	2
3	29.100	41	29.650	41	36.4	34.5			36.0	35.0	34.0	33.0	0.22	NW	4	NW	2		n	10	ci	10			sl				sleet frequent turning hard fr m	3
4	30.050	40	30.165	41	36.1	33.0			33.2	32.0	28.8	28.5	0.06	NW	2	NW	2		0		cu	8							fair hard frost all day dull fr	4
5	29.875	40	29.710	45	46.0	28.0			39.0	38.0	39.0	37.0	0.00	S	2	W	6		ci	8	0								fair dull, fresh breezy rain	5
6	30.000	41	30.280	46	42.2	28.0			40.0	36.4	39.0	36.0	0.04	N	4	W	2		0		0								fair & fine all day	6
7	30.200	44	30.300	46	50.0	37.0			39.2	38.0	40.5	40.0	0.00	SW	2	SW	2		ci	8	0								fair do do fr pm	7
8	30.870	44	30.155	46	38.0	30.5			33.4	32.6	33.5	32.0	0.00	SW	2	W	1		ci	3	ci	3							Do Do	8
9	30.050	38	30.055	41	44.8	32.2			36.0	35.0	44.0	43.0	0.00	SW	2	SW	1		ci	6	ci	3							Do Do	9
10	30.000	41	30.250	42	44.2	30.8			34.0	33.0	35.5	34.0	0.05	SW	1	SW	1		ci	2	ci	3							Do Do slt rain & sn pm	10
11	30.355	43	30.325	43	43.0	32.8			36.4	33.7	42.0	39.0	0.00	W	2	W	2		ci	2	ci	6							fair more Cool, soft afternoon	11
12	30.105	46	30.100	49	49.0	41.0			44.0	42.2	43.0	41.0	0.04	SW	2	NW	4		ci	3	ci	5							fair, rain after 11 Am	12
13	30.380	45	30.105	49	50.0	32.0			39.0	36.8	40.0	37.6	0.00	W	2	W	2		ci	5	ci	6							fair, slight frost, mild pm	13
14	30.000	48	30.140	51	49.0	34.0			48.5	45.0	47.0	45.0	0.03	S.W	4	SW	2		ci	6	hazy	10							fair frosty time fog pm	14
15	30.200	46	30.260	49	47.4	33.8			38.0	37.0	36.4	35.5	0.00	SW	2	SW	2		St ci	4	0								fair fine frost flatters	15
16	30.325	46	30.475	48	48.0	35.0			40.4	39.4	39.0	37.5	0.00	SW	2	SW	1		St ci	3	0								fair fine mild all day	16
17	30.550	44	30.650	46	44.5	29.5			35.0	34.2	34.0	33.0	0.00	SW	2	SW	2		0		0								white frost dull afternoon	17
18	30.650	43	30.525	42	38.0	27.0			28.0	27.0	36.0	33.6	0.00	SW	2	SW	2		0		0								fair hard frost all day	18
19	30.450	42	30.475	45	38.2	30.0			33.4	32.2	34.5	38.6	0.00	SW	2	SW	2		0		0								Do Do Do	19
20	30.440	42	30.440	42	39.5	32.0			38.0	36.0	36.0	35.4	0.03	SW	4	SW	2		ci	5	ci	3							Do Do Do	20
21	30.475	43	30.800	46	42.5	32.0			34.0	33.0	34.5	33.5	0.04	SW	2	SW	2		ci	1	0								Do Do Do	21
22	30.700	43	30.990	44	37.0	29.0			32.0	30.2	36.4	33.0	0.02	SW	4	S	2		n	10	ci	8							heavy dense rain, fair mostly	22
23	31.050	42	30.905	43	35.4	33.4			35.0	31.2	32.5	30.0	0.00	SE	2	W	2		ci	8	ci	4							hard black frost all day	23
24	30.555	39	30.350	40	38.0	26.0			30.8	28.0	30.5	29.0	0.06	SW	2	SW	2		ci	6	0								Do Do snow pm	24
25	30.160	41	30.300	39	42.0	29.0			30.8	30.0	29.5	26.0	0.16	SW	2	NW	2		ci	6	ci	4							snow showers fair & rain	25
26	30.400	36	30.360	41	29.4	23.8			25.2	24.0	29.0	25.0	0.02	NW	2	W	2		ci	2	ci	6							more snow with hard frost	26
27	30.050	39	29.650	43	44.0	24.0			32.2	31.0	39.0	36.6	0.00	W	2	W	2		ci	8	ci	0							fair softer, hard frost pm	27
28	29.250	40	29.075	42	46.0	34.0			29.2	39.0	36.5	35.0	0.16	W	4	W	4		ci	8	ci	5							dull sleet showers	28
29	29.060	36	29.060	38	38.4	30.0			31.4	29.6	32.0	33.0	0.19	W	4	N	2		ci	3	ci	2			S	9			snow showers frequent	29
30	29.750	38	30.000	39	39.0	31.0			34.4	32.2	32.0	31.0	0.05	N	4	N	4		ci	5	cu	8			A	-			do do	30
31	30.280	38	30.325	41	34.0	30.0			33.2	32.4	28.5	28.0	0.00	NW	4	NW	2		ci	5	ci	8			t	6			do do	31
Sums.	30.25	44	31.75	45	44.5	32.3			33.7	32.6	33.3	32.2	1.95					81				70									
Means.	30.977	41.4	30.102	43.5	41.4	30.7			35.033		35.1	33.9						2.6				2.3									
Corrections for Instrumental Errors.	.097		-.020																											
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. = ...—34.. = .063

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ...—40.. = .062

Mean at Station, corrected, and at 32°, ... = .042

Correction for height, feet above Mean Sea-level, ... = + 50

Mean, reduced to 32°, and Sea-level, ... = .092

Highest Reading, corrected for Index error, on the 23 th, ... = 31.050

Lowest Do. Do., on the 2 th, ... = 28.600

Difference, or **Monthly Range,** ..... = 2.450

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 7 th, 13 ..... = 50.0

Lowest in Month, corrected for Index errors, on the 31 th, ... = 21.0

Difference, or **Monthly Range,** ..... = 29.0

Mean of all the Highest, ... = 41.4

Mean of all the Lowest, ... = 30.7

Difference, or **Mean Daily Range,** ..... = 10.7

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 36.1

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

„ „ Mean, ... =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, ... = 35.0

Wet Bulb, Mean of A.M. and P.M. Readings, ... = 33.8

Computed **Temperature of Dew-Point,** ..... = 31.4

Do. **Elastic Force of Vapour,** ..... = .180

Do. **Relative Humidity** (Saturation = 100), = 88

RAIN fell on 17 **Days; Amount in Inches,** ..... = 1.95

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	2	-	-	1	1	18	5	4	-	2.6
P.M.	2	-	-	-	2	12	9	6	-	2.3
Sum.	4	-	-	1	3	30	14	10	-	2.5

Observations made and Return verified by Peter Hampson

(*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.

The amount of Cloud should be estimated on the scale, 0 to 10, 0 indicating a clear sky, 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 Buttie Park Aberdeen, County of Aberdeen, During the MONTH of February 190 4.

Lat. 57.9 N, Long. 2.6 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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	30.226	37.	30.225	37.	36.8	23.0			30.8	30.0	33.5	33.0	0.00	SW	2	SW	2		ci	4	ci	6							Fair & fine hard frost	1
2	30.335	39.	30.355	40.	42.6	24.9			34.0	33.4	32.0	31.0	0.00	SW	0	SW	2			0	ci	8							fair clear frost Dull PM	2
3	30.250	41	30.200	40	39.0	29.5			36.0	34.0	35.5	33.0	0.00	SW	2	SW	2			0	ci	6							Do Do	3
4	30.170	39.	30.350	40	36.0	28.0			32.0	31.0	34.5	33.6	0.04 S	SW	2	NW	2		ci	10		0					5		Rime Snow fair all day	4
5	30.545	39.	30.545	43.	41.4	29.0			32.4	31.6	29.0	28.0	0.00	SW	2	SW	2		ci	5		0							Do Do	5
6	30.270	39.	30.000	40.	37.0	22.5			31.0	29.0	32.5	31.0	0.00	SW	2	SW	2		ci	2	ci	5							fair hard frost	6
7	29.650	37.	29.655	42.	38.0	29.0			33.0	31.8	36.0	33.5	0.04	SW	4	SW	4		ci	5	ci	8							Do Do dull PM	7
8	29.740	40.	29.740	42	40.0	33.8			35.4	34.0	36.0	34.0	0.20	SW	2	SW	2		ci	6	ci	5							Soft clear hard frost	8
9	29.355	39.	29.400	39.	41.4	32.8			37.0	35.8	36.0	34.0	0.00	SW	4	SW	4		ci	8	ci	5								9
10	29.460	41.	29.400	42.	41.0	34.5			37.0	35.0	37.0	34.5	0.22	SW	2	S	4		ci	8	ci	5					A		Snow been rain Very light Aurora fair clear frosty PM	10
11	29.300	41.	29.375	44.	39.0	30.0			31.0	30.0	34.8	30.5	0.00	SW	2	SW	2			0		0							some rain again hard frost	11
12	29.300	41.	29.360	43.	39.2	30.2			34.8	33.4	34.5	33.0	0.33	S	2	NW	2		ci	6	ci	6					sl		fair dull sleet Showers	12
13	29.650	40	30.050	43.	38.8	33.0			36.4	34.5	33.0	32.5	0.20	NW	4	N	2		ci	6		0					sl		Sleet Showers fair & frosty fr 2 PM	13
14	30.000	40.	29.700	43.	38.8	28.4			33.8	31.0	36.5	35.5	0.09	SW	4	SW	4		ci	8	ci	6							fair dull some rain PM	14
15	29.550	45.	29.650	46.	51.2	33.0			48.0	45.4	47.8	46.0	0.50	SW	4	SW	2		ci	6	ci	6							frost fair dull	15
16	29.860	44.	29.500	44.	48.0	36.0			47.6	46.0	45.4	45.0	0.11	SW	2	SW	4		ci	6	ci	8							fair mild fine dull PM	16
17	29.500	46.	29.875	47.	46.4	34.0			36.4	46.8	45.0	43.0	0.00	NW	6	NW	6		ci	6		0							Stormy wild Showers frost PM	17
18	29.450	47.	29.350	42.	49.5	33.0			45.8	43.6	39.5	38.0	0.03 S	SW	4	SW	2		ci	6	ci	6							dull fair all day	18
19	29.150	44.	28.975	41.	43.5	33.0			33.0	31.0	34.0	33.0	0.26 S	SW	4	SW	8		ci	8	ci	6					G		dull fair, Severe gale PM	19
20	28.350	42.	28.960	40	39.1	28.0			37.0	36.0	35.0	33.0	0.16	NW	6	NW	6		ci	6	ci	6					sl		very stormy sleet Showers frequent	20
21	29.300	40.	29.560	42.	38.8	30.0			35.5	33.8	34.0	33.0	0.15 S	NW	6	NW	6		ci	6	ci	6							Do Do Do all day	21
22	29.650	39.	29.775	38.	32.6	26.5			28.8	27.5	29.0	28.5	0.13 S	NW	4	NW	2		cu	4	cu	4					S		snow all day frost PM	22
23	29.940	38.	30.006	40.	46.0	27.5			30.4	30.0	38.5	37.5	0.02	NW	4	NW	2		cu	6	cu	6					S		more snow very stormy	23
24	29.820	43.	29.975	46.	47.5	34.0			45.6	41.8	41.0	40.0	0.03	NW	4	W	2		ci	4	ci	8							frost fair all day Snow from	24
25	30.100	46.	30.105	49.	54.0	41.6			42.8	41.2	42.0	39.0	0.00	SW	2	SW	2		ci	6	ci	2							fair & fine mild all day	25
26	30.150	48.	30.250	47.	55.0	33.8			47.0	42.6	42.4	40.0	0.00	W	4	NW	2		ci	2	ci	5							White frost early fair & fine	26
27	30.390	47.	30.460	46.	56.4	39.6			47.8	46.0	43.5	41.0	0.00	W	4	W	2		ci	5	ci	4							fair & fine all day	27
28	30.500	46.	30.460	50	60.6	32.2			35.0	33.4	39.0	34.0	0.00	W	2	SW	2		ci	2	.	0					sb		fair & fine, Clear frost PM	28
29																											6	2		29
30																											0	0		30
31													+ .5														9	4		31
Sums.	21.790	48	22.425	76.	979	237			1942	1576	1469	1510	2.51	90		84			140		126									Sums.
Means.	29.778	41.7	29.801	42.7	43.5	30.8			36.9	35.6	37.0	35.4		3.2		3.0			5.0		4.5									Means.
Corrections for Instrumental Errors.	-.020		-.020																											Corrections for Instrumental Errors.
Corrections for Diurnal Range.																														Corrections for Diurnal Range.
Corrected Means	.758		.781																											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. ,, luuar 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. = —35 = .723

Corrected Mean at 9 P.M., *minus* Correction for Temp. = —36 = .743

Mean at Station, corrected, and at 32°, = .733

Correction for height, feet above Mean Sea-level, = + 50

Mean, reduced to 32°, and Sea-level, = .783

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

Lowest Do. Do., on the th, =

Difference, or **Monthly Range,** =

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 25th, = 57.0

Lowest in Month, corrected for Index errors, on the 6 th, = 22.5

Difference, or **Monthly Range,** = 34.5

Mean of all the Highest, = 43.5

Mean of all the Lowest, = 30.8

Difference, or **Mean Daily Range,** = 12.7

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 37.2

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

,, ,, Mean, =

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

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

Wet Bulb, Mean of A.M. and P.M. Readings, = 35.5

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

Do. **Elastic Force of Vapour,** = .191

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

RAIN fell on 16 **Days; Amount in Inches,** = 2.51

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	1	0	0	1	16	3	7	0	
P.M.	2	0	0	0	1	16	2	8	0	
Sum.	1	1	0	0	2	32	5	15	0	3.1

Observations made and Return verified by Peter Harper

(*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 Duthie Park, Aberdeen, County of Aberdeen, During the MONTH of March 1907.

Lat. 57.9 N, Long. 2.6 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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	30.300	47.	30.250	49.	43.0	33.0			41.4	39.6	43.0	41.0	0.00	SW	2	SW	2		Ci	10	Ci	10							Dull frost and fair all day	1
2	30.275	47.	30.310	48.	47.0	40.0			45.0	43.0	36.0	36.0	0.00	SW	2	SW	2		Ci	10		0							dull fair fog, frosty fog P.M.	2
3	30.300	46.	30.205	48.	48.0	36.6			40.0	38.8	39.0	36.0	0.00	SW	2	S	4			0		10							f fair White frost Do P.M.	3
4	30.200	47.	29.800	49.	48.0	38.0			42.8	40.0	42.0	40.0	0.03	SW	4	S	6		0	Large		0							fair cool all day	4
5	29.680	47.	29.850	48	50.0	39.0			41.8	40.0	43.0	42.1	0.00	SW	6	SW	2		Cu	10	Cu	0							fair dull, fine all day, clear P.M.	5
6	30.000	44.	30.125	48.	49.0	31.0			36.8	36.0	40.0	39.0	0.00	SW	2	SW	4		Ci	1		0							fair white frost Do Do	6
7	29.700	47.	29.455	49.	52.0	36.0			48.0	43.0	42.0	41.4	0.00	SW	4	SW	2		Ci	8		0							fair breezy, some, rain, clear P.M.	7
8	29.716	46.	29.800	44.	38.0	33.6			35.0	34.0	31.0	29.0	0.16 S	W	4	W	4		Ci	4	Cu	3							S Stormy, Snow Showers all day	8
9	30.165	40	30.000	43.	43.6	27.0			31.0	29.5	34.5	31.0	0.34	W	2	NW	2		Cu	8	N	10							S hard frost Slight Snow Showers	9
10	29.700	41.	29.900	41.	36.8	28.0			34.0	33.0	33.5	31.0	0.32	SE	4	SE	2		Ci	10	Cu	10							S steady Snow most of the day	10
11	30.325	39.	30.455	43.	40.6	21.0	M.O 23		32.0	30.0	34.0	33.0	0.00	NW	2	NW	2		0		Ci	8							hard frost, fair all day	11
12	30.176	40.	29.860	42.	39.8	20.0	? 26		33.0	30.5	34.5	32.0	0.00	SW	2	SW	4		Ci	8	—	0							keen frost, fair dull most of day	12
13	29.700	42.	29.480	45.	44.6	30.0			38.8	34.0	36.5	34.0	0.00	W	4	W	4		Ci	2		0							fair clear all day frost P.M.	13
14	29.750	42.	29.826	45	50.0	34.0			39.0	32.0	42.0	40.0	0.04	NW	4	W	2		Ci	2	Ci	6						S	hard frost, some snow, mild P.M.	14
15	29.400	45.	29.450	49.	56.0	35.8			600	45.0	48.0	44.0	0.00	SW	2	SW	2		Ci	2		0							fair fine frost fine clear P.M.	15
16	29.255	47.	29.050	50.	57.6	42.0			44.0	42.8	42.5	41.0	0.56	S	2	S	2		Ci	5	Cu	8							fair fine some rain P.M.	16
17	29.050	47.	29.300	49.	51.5	38.0			41.1	38.0	42.5	42.0	0.01	W	4	SW	2		Ci	6		0							fair heavy rain, fair clear	17
18	28.850	47.	29.400	47.	47.0	37.0			43.0	41.5	36.0	33.0	0.00	SW	2	NW	2		Ci	4		0							fair Cool	18
19	29.425	45.	29.375	47.	47.0	33.0			39.0	33.5	38.5	36.0	0.02	W	6	S	2		Ci	6	Cu	4							frost, fair all day fine dusk	19
20	29.700	45.	30.310	47.	46.4	36.5			40.0	38.0	44.4	43.0	0.02	NW	2	NW	4		Cu	5	Cu	0							cold showers, settling mild day	20
21	30.200	46	30.050	50	56.0	30.8			45.0	42.2	41.0	39.0	0.07	S	2	SW	2		Cu	6	Ci	2							white frost fair, some rain P.M.	21
22	30.250	46	30.300	50	51.8	39.4			43.2	39.4	45.0	42.8	0.00	W	2	W	2		Cu	8	Cu	8							fair unsettled, some rain	22
23	30.150	46	30.300	48	48.0	35.2			42.6	38.6	42.6	39.0	0.02	SW	4	W	2		Cu	6	Cu	8							fair fine all day	23
24	30.200	48	30.250	52	59.4	37.0			39.0	45.0	47.0	46.0	0.03	SW	2	W	2		Ci	2	Ci	8							Do Do some rain P.M.	24
25	30.300	49	30.300	52	61.0	41.8			48.0	45.2	43.8	41.0	0.00	SW	2	SW	2		Cu	4	Ci	2							Do Do	25
26	30.310	46	30.353	54	63.4	34.6			47.2	43.2	47.2	45.2	0.00	W	2	SW	2			0		0						S	white frost fair fine after	26
27	30.350	52	30.325	56	66.0	43.2			45.0	44.5	50.0	45.4	0.00	SW	2	SW	2		Ci	2		0						Δ	fair fine all day	27
28	30.300	49	30.150	55	62.0	35.0			47.8	44.0	43.0	41.0	0.00	SW	2	S	2			0		0						t	0	28
29	30.050	49	29.875	54	60.0	38.0			48.0	44.2	45.4	42.0	0.00	S	2	S	2			0	Large	10						L	6	29
30	29.940		.960		53.	40							—															f	3	30
31	.940	÷29	.900	÷29	52	36				÷	29		—															G	2	31
Sums.	28.591	16.1	28.905	24.2	11.9	15.05			36.9	25.86	27.9	25.29	1.80		82		70		13.9		10.7									
Means.	29.922	45.6	29.932	48.3	50.4	34.9			41.3	38.9	41.0	38.7			2.8		2.4		4.4		3.6									
Corrections for Instrumental Errors.	-.040		-.040																											
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. = ... — 46 } = .876

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ... — 53 } = .879

Mean at Station, corrected, and at 32°, ... = .868

Correction for height, feet above Mean Sea-level, ... = + .050

Mean, reduced to 32°, and Sea-level, ... = 29.918

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

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

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

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 27th, ... = 66.0

Lowest in Month, corrected for Index errors, on the 12 th, ... = 20.0

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

Mean of all the Highest, ... = 50.4

Mean of all the Lowest, ... = 34.9

Difference, or **Mean Daily Range,** ..... = 15.5

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 42.7

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

,, ,, Mean, ... =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, ... = 41.2

Wet Bulb, Mean of A.M. and P.M. Readings, ... = 38.8

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

Do. **Elastic Force of Vapour,** ..... = .210

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

RAIN fell on 12 **Days; Amount in Inches,** ..... = 1.80

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	0	0	1	3	15	7	3	0	2.8
P.M.	0	0	0	1	6	12	6	4	0	2.4
Sum.	0	0	0	2	9	27	13	7	0	2.6

S. = 62

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

See instructions on back of Schedule.

Observations made and Return verified by Peter Harper

(Signed) .....

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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Duthie Park, Aberdeen County of Aberdeen, During the MONTH of April 1904.

Lat. 57.9 N., Long. 2.6 W., Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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	29.850	49.	29.750	53.	60.0	40.9			48.0	45.0	42.2	40.0	0.00	SW	2	SW	1		ci	3	ci	0									fair & very fine all day.	1
2	29.650	51.	29.450	57.	47.6	34.0			41.6	40.8	43.0	41.0	0.01	SE	2	SE	2		fog	10	ci	10									f Dull thick fog, fair afternoon.	2
3	29.350	49.	29.330	51.	47.0	41.0			45.2	44.0	44.0	42.0	0.06	SE	2	SE	2		n	10	n	10									Dull slight rain, fair after.	3
4	29.425	49.	29.660	50	43.2	42.0			43.4	41.8	43.0	41.6	0.10	SE	4	SE	4		n	10	n	10									some rain, cool all day.	4
5	29.675	49.	29.420	49.	45.5	41.0			43.6	42.2	42.0	40.0	0.23	SE	2	SE	4		n	10	n	10									Dull. cool all day.	5
6	29.075	49.	29.250	51.	53.0	41.0			45.2	43.6	41.8	39.6	0.00	S	2	S	2		ci	4	ci	4									fair fine all day, rain AM.	6
7	29.200	49.	29.240	49.	46.2	36.0			44.8	41.5	35.0	34.0	0.16	n	2	NE	2		ci	6	ci	3									fair fine some rain, clear P.M.	7
8	29.380	46.	29.525	50.	48.0	39.2			43.4	42.6	39.0	37.8	0.02	SE	2	E	1		ci	8	ci	2									Been rain, no fine, dull most of the day.	8
9	29.675	50	29.830	50.	47.0	38.0			46.0	44.2	43.0	41.5	0.04	SE	2	SE	2		ci	4	Lapa	10									rain frequent all day.	9
10	30.000	47.	30.000	49.	46.0	42.0			44.0	43.0	42.0	41.0	0.11	E	2	E	2		n	10	n	10									Dull all day, rain P.M.	10
11	30.100	49.	30.100	49.	48.0	40.0			44.6	41.4	45.0	43.0	0.00	n	4	n	4		ci	4		0									fair cool all day.	11
12	30.000	45.	29.975	46.	50.6	39.3			46.0	40.4	41.0	36.0	0.00	E	4	E	2		ci	2	ci	2									Do Do	12
13	29.950	48.	29.900	49.	45.6	38.6			44.0	42.0	42.0	40.0	0.00	E	2	E	2		ci	8	ci	8									Dull fair all day.	13
14	29.890	47.	29.850	46.	53.0	30.6			41.2	39.8	37.0	36.0	0.00	SW	1	S	W		ci	5	ci	3									fair fine, been white frost.	14
15	29.775	48.	29.720	47.	52.0	36.0			47.0	44.0	38.4	36.0	0.00	S	2	S	2		ci	4	ci	5									Do Do	15
16	29.675	48.	29.625	48.	52.6	39.6			46.0	41.0	42.0	39.0	0.03	S	1	SW	2		ci	6	ci	8									white frost. some rain from 4 P.M.	16
17	29.745	49.	29.900	46.	49.1	39.0			42.0	38.0	34.2	32.0	0.08	N	6	NW	4		ci	6	ci	6									snow showers, very cold.	17
18	30.000	43.	30.026	49.	44.6	31.6			36.6	32.6	32.0	31.4	0.00	NW	2	SE	2		ci	6	ci	2									snow showers milder afternoon.	18
19	30.000	46.	29.990	48.	49.0	28.0			44.0	38.0	46.0	44.0	0.00	SW	4	SW	2		ci	4	ci	6									white frost fair all day.	19
20	29.800	48.	29.780	49.	50.0	37.5			49.0	45.0	48.0	46.0	0.26	SW	6	SW	4		ci	8	ci	6									fair breeze, some rain from noon	20
21	29.645	49.	29.625	52.	62.0	42.2	X		49.0	46.0	42.0	38.0	0.00	SW	2	W	1		ci	8		0									Dull fair all day.	21
22	29.455	50.	29.805	51.	56.2	33.6			50.0	44.8	43.0	41.0	0.00	S	8	W	4		ci	6		0									fair fine, gale from 9-5. day.	22
23	29.950	52.	30.052	46.	63.4	42.6			54.4	49.0	52.0	41.0	0.00	W	2	W	2		ci	4	ci	8									Do Do	23
24	30.000	54.	30.200	45.	54.8	36.8	?		55.6	41.0	47.0	41.0	0.00	W	6	W	4		ci	3	ci	4									fair, stormy breeze from 8. A.M.	24
25	30.200	33.	30.200	49.	56.0	38.0			48.4	42.0	42.0	38.0	0.00	W	4	NW	2		ci	6		0									breezy, some slight showers.	25
26	30.075	51.	29.850	49.	53.0	32.6			47.4	42.0	43.0	37.0	0.24	NW	4	SW	2		ci	4	ci	8									Sat 0 0 1 5 1 1 thick frost, heavy showers.	26
27	29.900	47.	29.884	49	59.1	34.2			39.2	39.0	41.3	37.2	0.18	NW	2	NW	2		ci	6	ci	5									Been slight showers all night-	27
28	29.765	41.	29.620	49.	62.0	36.1			40.0	38.5	40.5	39.0	0.03	SW	4	NW	4		ci	6	ci	4									some slight showers	28
29	29.661	49.	29.731	50.	50.1	41.4			45.4	43.3	42.9	40.1	0.08	NW	2	NE	2		ci	5		0									Do Do	29
30	29.602	48.	29.656	48.	57.0	30.0			40.6	40.0	43.0	41.8	0.10	SE	2	S	2		ci	6	n	10									fair frost. P.M. some rain from 6 P.M.	30
31																															31
Sums.	1411.6 22960	23.5	1794 23.062	15 368	1405 40.5	1337 223.7			1427	1117	1133	1103	1.56							90		77			1813		158					
Means.	29.765	47.8	29.769	48.9	51.4	37.5			45.1	41.8	42.1	39.5			3.0										6.0		5.1				
Corrections for Instrumental Errors.	-010		-010																												
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. = 29.755 — .055 = 29.703

Corrected Mean at 9 P.M., *minus* Correction for Temp. = 29.759 — .055 = 29.704

Mean at Station, corrected, and at 32°, = 29.704

Correction for height, 49 feet above Mean Sea-level, = + .049

Mean, reduced to 32°, and Sea-level, = 29.753

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

Lowest Do. Do., on the th, =

Difference, or **Monthly Range,** =

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 23 th, = 63.4

Lowest in Month, corrected for Index errors, on the 19th, = 28.0

Difference, or **Monthly Range,** = 35.4

Mean of all the Highest, = 51.4

Mean of all the Lowest, = 37.5

Difference, or **Mean Daily Range,** = 13.9

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 44.5

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

,, ,, Mean, =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 43.6

Wet Bulb, Mean of A.M. and P.M. Readings, = 40.7

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

Do. **Elastic Force of Vapour,** = .222

Do. **Relative Humidity** (Saturation = 100), = 78

RAIN fell on 15 Days; Amount in Inches, = 1.58

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	4	0	3	7	4	6	3	3	0	
P.M.	1	2	4	6	4	5	4	4	0	
Sum.	5	2	7	13	8	11	7	7	0	2.8

Observations made and Return verified by Peter Harper

(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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Dentric Park Aberdeen County of Aberdeen, During the MONTH of May 1907.

Lat. 57.9 N., Long. 2.6 W., Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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	29.655	49.	29.305	49.	50.4	38.0			44.8	41.8	46.5	42.0	0.29	W	4	SW	4		Cum	8	Cum	8							dull some rain, fair, then rain P.M.	1
2	28.950	49.	28.750	48.	52.8	38.0			46.8	42.0	44.0	41.0	0.07	SW	4	SW.	4		Cl	4	Cu	8							Fair cool raing	2
3	28.900	49.	29.025	50.	58.0	39.0			45.2	40.8	45.0	41.0	0.06	W	4	W	4		Cl.	8	Cl.	4							Fair, cool, slight showers	3
4	29.100	49.	29.455	58.	49.0	36.0			49.0	44.0	43.0	41.0	0.11	W	2	V			Cl.	3		0							Fair, cool, some showers	4
5	29.700	51.	29.890	49.	60.0	34.0			51.6	46.8	45.2	42.6	0.00	W	2	S	2		Cl.	3	Cl.	10							Fair very fine, mild dull p.m.	5
6	29.900	53.	29.900	51.	52.0	41.0			49.0	46.0	48.5	46.0	0.00	E	2	E	2		Cl	6	Cu	10							Fair, dull & cool all day	6
7	29.810	51.	29.725	52.	59.0	45.0			46.8	45.2	47.5	47.0	0.10	NE.	2	S.E	2		Cu	10	Fog.	10						f	Fair, dull, some rain, fog p.m.	7
8	29.725	53.	29.705	53.	59.0	44.6			53.0	49.8	49.0	47.0	0.11	SW.	4	S.	4		Cl	5	Cu	8						f	Fair, thunder p.m.	8
9	29.625	54.	29.660	52.	57.6	45.4			52.0	48.4	48.0	45.0	0.14	S.	1	S	4		Cu	6	Cu	3							Fair, like rain, cool.	9
10	29.650	54.	29.700	54.	56.2	44.4			48.2	47.4	49.6	47.0	0.07	S	4	S	2		Cu	8	Cu.	8							Some rain 6 to 9 A.M. wet frequently.	10
11	29.725	53.	29.850	55.	63.0	46.4			54.6	52.0	52.0	49.8	0.02	SE	2	SW	2		Cl	6	Cl	4							Rain now fair, very fine later.	11
12	30.000	54.	29.950	52.	53.0	47.0			49.6	47.4	47.0	45.5	0.00	NW	2	NE.	2		W	10	Fog	10						f	Dull some rain, very dull all day.	12
13	29.825	54.	29.900	54.	65.8	45.2			56.0	52.6	53.8	50.0	0.00	NW.	1	S.	1		Cl.	3	Cl	4							Fair & fine all day, extra mild.	13
14	29.900	56.	29.830	56.	67.2	44.0			59.0	52.0	57.0	47.4	0.00	NW.	2	N.E.	2		Cl.	2	Cl.	8							Fair & fine 8° 9°.	14
15	29.800	54.	29.890	56.	61.0	47.2			51.5	46.0	48.1	44.0	0.00	W	2	NW.	2		Cl.	8	Cl.	3							Dull, cool all day.	15
16	30.000	54.	30.150	57.	51.8	44.0			48.0	43.0	43.0	39.0	0.06	W	2	NW.	4		Cl	10	Cl	8							8°. 9°.	16
17	30.250	52.	30.325	50.	49.8	39.8			46.0	41.8	43.0	39.5	0.00	W.	6	NW.	2		Cl.	5	Cl.	6							Very cold, showers occassionally	17
18	30.300	51.	30.250	52.	48.6	39.0			46.0	41.0	45.0	43.0	0.00	W	2	W	2		Cl	8	Cl.	8							Cold, fair all day.	18
19	30.200	50.	30.200	52.	47.2	39.0			44.0	40.8	45.0	43.0	0.08	W	2	W	2		Cl	8	Cl	6							Cold fair, some slight showers	19
20	30.150	51.	30.150	50.	62.5	38.8			48.0	43.0	44.0	41.2	0.00	NE.	2	NE.	2		Cl.	6	Cl.	6							8°. 9°.	20
21	30.000	50.	29.750	51.	48.8	38.0			47.8	43.0	47.0	46.8	0.88	W	2	NW.	4		Cl	8	W	10							8°. 9°.	21
22	29.600	51.	29.756	51.	51.0	43.0			48.2	47.2	45.0	44.0	0.21	W	2	S	4		Cl Cu	8	W	10							Dull, slight rain frequently all day.	22
23	30.000	50.	29.900	51.	52.0	43.0			47.2	45.6	46.0	45.1	0.31	E	2	NE	2		Cl.	10	R	10							Dull, fair, rain from 6 p.m.	23
24	29.830	50.	30.000	51.	49.6	40.0			48.0	47.5	46.5	45.0	0.18	NE.	2	NE	2		R	10	W	10							Rain, very dull all day.	24
25	30.080	51.	30.200	52.	57.0	41.4			45.0	43.3	45.6	44.0	0.00	NE	1	SW	2		Cl.	10		0							Dull, fair all day, fine.	25
26	30.150	51.	30.080	54.	67.0	38.6			50.0	53.0	47.0	44.0	0.00	SW.	2	SW.	2			0		0							fair very fine all day.	26
27	30.100	52.	30.200	51.	49.0	39.5			47.8	45.0	46.0	42.0	0.00	E.	2	NE.	2		R.	10	Cl.	10						f	Dull fair cold all day	27
28	30.300	49.	30.360	49.	52.0	41.5			45.8	44.2	40.2	37.5	0.00	NE.	4	NE.	2		Cl.	8		0						g	8°. 9°.	28
29	30.325	50.	30.275	49.	53.0	36.0			46.9	41.8	42.0	38.8	0.00	NE.	2	S	2		Cl.	6	Cl.	4							Fair cool all day.	29
30	30.300	51.	30.000	48.	50.0	40.0			44.0	42.4	41.8	40.0	0.43	S	2	SE.	2		R	10	R	10							Dull, slight rain heavy towards night.	30
31	29.850	49.	29.800	49.	48.0	40.0			42.8	42.0	42.0	41.6	0.78	E	4	E	4		R	10	R	10							Dull, rain heavy most of this day.	31
Sums.	1453	10	15104	12	1416	1145			1897	1291	1651	1451	7																	
	26590	47	26941	50	1314	360			2673	1635	2024	1155	3.87		75		77			217		206								
Means.	29.858	51.5	29.869	51.6	54.2	41.2			48.6	45.3	46.5	43.7			2.4		2.5			7.0		6.5								
Corrections for Instrumental Errors.																														
Corrections for Diurnal Range.		-010																												
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. = ...—.062 = 29.796

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ...—.062 = 29.807

Mean at Station, corrected, and at 32°, ... = 29.792

Correction for height, feet above Mean Sea-level, ... = + .049

Mean, reduced to 32°, and Sea-level, ... = 29.841

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

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

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

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 14th, ... = 67.2

Lowest in Month, corrected for Index errors, on the 29th, ... = 36.0

Difference, or **Monthly Range,** ..... = 31.2

Mean of all the Highest, ... = 54.2

Mean of all the Lowest, ... = 41.2

Difference, or **Mean Daily Range,** ..... = 13.0

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 47.7

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

,, ,, Mean, ... =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, ... = 47.6

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

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

Do. **Elastic Force of Vapour,** ..... = .258

Do. **Relative Humidity** (Saturation = 100), = 79

RAIN fell on 17 **Days; Amount in Inches,** ..... = 3.87

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	2	6	4	1	3	3	9	3	0	
P.M.	2	7	2	2	7	5	1	4	1	
Sum.	4	13	6	3	10	8	10	7	1	2.5

Observations made and Return verified by Peter Harper

(*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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Duthie Park Aberdeen, County of Aberdeen, During the MONTH of June 1904.

Lat. ____, Long. ____, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44. feet, above Ground 4 feet.

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

Bad!

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	29.705	49	29.675	49	45.4	41.0			45.0	44.8	45.0	44.8	0.33	SE 2	SE 4	10 m	10 m		N	10	N	10							Dull heavy rain most of the day	1
2	29.500	51	29.400	52	55.6	44.6			48.0	47.5	47.0	46.5	0.27	S 2	S 2	10			N	10	N	10							Rain dull fair then rain Rm.	2
3	29.550	51	29.850	49	48.2	43.6	×		48.0	47.5	45.5	45.0	0.12	NW 4	NW 4				N	10	CI	8							Dull rain fairing towards night	3
4	29.920	49	29.850	50	53.0	38.0			45.2	42.8	45.0	42.4	0.22	NW 2	SE 3				CI	6	CI	8							showers fair from 9 am	4
5	29.500	51	29.450	50	51.2	43.8			48.8	48.0	46.8	45.0	0.34	SE 2	SE 2				SE	2	S	4							Rain frequent heavy Rm.	5
6	29.400	55	29.488	55	63.0	45.7			51.8	53.4	50.2	47.0	0.02	S 2	NW 4				CI	4	CI	8							Fair throughout the forenoon rain later	6
7	29.710	55	29.845	54	51.80	46.6			52.2	51.6	47.0	45.0	0.00	NW 2	S 2				CI	5	CI	6							fair cool all day drop.	7
8	29.800	54	29.760	54	51.85	42.0	×		50.0	48.8	50.0	51.0	0.02	S 2	S 4				Fog	10	N	10						f	Dull fog Slight rain	8
9	29.720	53	29.650	58	67.0	49.0			60.0	56.0	53.0	51.2	0.46	S 2	SE 2				CI	3	CI	8						R	Fair & fine all day Thund Rain 9 pm	9
10	29.525	59	29.525	58	64.0	48.4			58.8	56.0	52.2	50.4	0.00	S 4	S 4				CI	4	CI	4						R	Thunder 2 am fair & fine & clear till	10
11	29.625	59	29.800	57	66.0	49.8			56.2	54.4	53.0	51.8	0.00	S 4	S 2				CI	3	CI	5							fair and ~~cloudless~~ fine all day	11
12	29.790	56	29.680	57	65.0	45.0			53.0	51.8	52.0	49.4	0.38	SE 2	SE 2				CI	8	N	10							dull rain from 12 noon rain to 6 Rm.	12
13	29.700	53	29.750	61	60.0	46.6			54.0	52.0	52.5	53.0	0.02	SE 2	SE 2				CI	8	CI	8							showers. fair after 10 am.	13
14	29.900	60	29.857	58	62.0	50.0		?	59.0	54.0	55.1	53.1	0.00	S 4	SW 2				CI	5	CI	6							fair & fine warmer mild all day	14
15	29.800	59	29.700	58	64.0	50.0			55.2	54.3	54.8	51.5	0.03	SW 2	SW 1				CI	5	CI	5							fair & fine Mild	15
16	29.800	60	29.969	59	63.4	49.4			52.2	48.5	51.9	46.5	0.02	NW 6	NW 4				CI	8	CI	10							fair high wind all day	16
17	30.040	47	30.065	48	64.5	48.5		×	48.5	46.8	48.5	47.6	0.00	NW 2	NW 2				CI	5	CI	3							fair & very fine all day	17
18	29.760	56	29.667	57	65.6	52.6	×		54.5	52.0	53.0	51.0	0.06	SW 2	SW 2				CW	8	CW	8							Dull & damp some slight rain.	18
19	29.700	57	29.600	58	56.8	44.0	×		56.5	49.9	53.5	51.8	0.00	SW 4	SW 4				CI	4	CI	2							Dull Clearing fair & fine	19
20	29.500	59	29.478	58	58.5	46.2			53.9	49.8	54.9	53.4	0.21	SW 2	S 2				CI	4	CI	8							fair dull coming on rain.	20
21	29.800	58	29.677	58	62.4	47.5			54.5	52.5	55.8	53.8	0.35	W 2	W 2				SW	8	SW	8							fair & fine heavy showers after 12 Rm	21
22	29.625	58	29.606	58	60.5	50.0			53.8	53.6	55.4	54.8	0.20	NW 2	W 2				SW	8	SW	8							frequent Rain all day	22
23	29.675	57	29.700	57	61.5	42.7			54.7	52.1	53.8	46.8	0.20	NW 2	NW 3				CI	6	CW	8							fair & fine rain from 11 am.	23
24	29.535	58	29.400	58	54.6	51.1	×		55.0	54.5	55.0	48.5	0.18	NE 2	NW 2				CI	6	CW	8							frequent showers	24
25	29.480	58	29.475	58	60.6	41.8			54.0	53.0	54.0	48.5	0.00	NW 2	NW 4				CI	6	CW	8							Changeable all day	25
26	29.545	59	29.375	59	56.7	51.0	×		55.0	54.0	54.6	46.9	0.20	SE 4	SW 4				CW	6	CI	8							Heavy showers at times	26
27	29.825	58	29.795	58	61.9	42.9			55.4	54.2	58.0	49.6	0.20	SW 2	SW 2				CI	6	CI	8							Dull some slight showers	27
28	29.760	59	29.825	59	64.0	48.2		?	58.0	49.5	55.4	52.5	0.00	NW 4	NW 2				CI	2	CI	8							Damp early part dull afternoon	28
29	29.955	59	30.000	59	62.0	47.9			57.5	48.5	55.0	53.0	0.00	SW 2	W				CI	6	CI	8							Dull fair.	29
30	30.075	58	29.960	58	58.5	47.0	×		55.2	53.0	53.1	51.4	0.00	NW 2	NW 2				CW	6	CW	8							Dull some rain afternoon	30
31																														31
Sums.	20.870		20.808						97.7	92.4	58.3	52.6	3.77							78		77								
Means.	29.696	55.8	29.694	52.4	59.2	46.1			53.3	51.0	51.9	49.8								2.6		2.6		5.7		7.4				
Corrections for Instrumental Errors.			— 0.010																											
Corrections for Diurnal Range.																														
Corrected Means																														

CLOUDS.	
9 A.M.	
S	0
△	0
t	2
L	0
0	6
f	1
9	0

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. = ...—72 = .624

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ...—63 = .631

Mean at Station, corrected, and at 32°, = .628

Correction for height, feet above Mean Sea-level, = + 49

Mean, reduced to 32°, and Sea-level, = 29.667

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

Lowest Do. Do., on the th, =

Difference, or **Monthly Range,** =

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 9 th, = 67.0

Lowest in Month, corrected for Index errors, on the 4 th, = 38.0

Difference, or **Monthly Range,** = 29.0

Mean of all the Highest, = 59.2

Mean of all the Lowest, = 46.0

Difference, or **Mean Daily Range,** = 13.2

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 52.6

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

„ „ Mean, =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 52.6

Wet Bulb, Mean of A.M. and P.M. Readings, = 50.4

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

Do. **Elastic Force of Vapour,** = .337

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

RAIN fell on 20 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.	1	1	0	5	7	6	1	9	0	2.6
P.M.	1	1	0	6	6	6	2	6	2	2.6
Sum.	2	2	0	11	13	12	3	15	2	2.6

Observations made and Return verified by Peter Harper

(*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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Cuthie Park Aberdeen County of Aberdeen, During the MONTH of July 1907.

Lat. 57.9 N, Long. 2.6 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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	29.956	57.	29.980	58.	57.6	46.4			50.2	48.3	[illegible]	53.2	0.05	NW	2	SE	2		Cu	8	Cu	10							Occasional Showers	1
2	29.925	57	820	58	57.2	48.0							0.04	SE	2	SE	2		Ci	8	Ci	8							Dull, some showers	2
3	29.723	58	29.676	57.	57.9	49.1			57.8	52.8	53.0	52.1	0.10	S.E	4	SE	2		Cu	8	Ci	8							Fair, dull all day.	3
4	29.560	57	29.500	57.	60.4	49.0			49.0	47.0	49.0	48.0	0.06	SW.	2	SW.	2		Ci	8	Ci	8							Dull, slight rain after 2 p.m.	4
5	29.500	57.	29.550	57.	59.2	47.0			53.0	51.5	51.5	53.0	0.28	SW.	2	SW.	2		Ci	8	Ci	8							Dull, some rain, showers frequent p.m.	5
6	29.675	57.	29.850	58.	53.6	46.0			48.2	45.4	47.5	45.0	0.03	SW.	2	NW.	4		Cu	8	Ci	5							Dull, rain am. clearing afternoon.	6
7	29.850	56	29.800	56.	57.0	42.0			53.0	51.6	53.0	47.5	0.36	N.W.	2	S	2		Ci	5	Ci	8							Fair clear, dull after 12 noon.	7
8	29.530	56.	29.645	56.	56.0	46.0			52.5	52.0	53.5	50.0	0.10	NW	2	N.W	2		Cu	10	Ci	6							Heavy rain, clearing off from 12 noon	8
9	29.848	55.	29.790	56.	58.5	46.0			52.0	47.0	51.0	49.2	0.04	S	2	SW	2		Ci	5	Ci	6							Fair, some slight rain afternoon.	9
10	30.195	56.	30.205	56.	59.4	46.4			53.0	50.0	54.0	49.2	0.00	NW	2	NW	2		Ci	8	Ci	8							Dull, fair.	10
11	30.245	57.	30.325	60.	66.0	42.6			53.8	54.0	58.0	55.0	0.11	S	2	SW	1		Ci	2	Ci	6							Fair & very fine all day.	11
12	30.295	59.	30.195	60.	66.0	53.0			60.0	57.2	58.0	56.0	0.07	SE	2	S	2		Ci	8	Ci	8							Fair, some slight showers, rain afternoon	12
13	30.102	61.	30.225	60.	64.0	53.0			61.0	58.0	62.5	60.0	0.00	S	2	S	2		Ci	6	Ci	8							Fair v fine, dull mild.	13
14	30.325	61.	30.385	65.	71.6	55.2			68.8	64.0	66.5	65.0	0.00	SW.	1	SW.	1		Ci	6	Ci	5							Fair v fine all day, very mild.	14
15	30.305	64.	30.324	65.	64.4	58.2			67.0	64.0	70.5	68.0	0.60	SW.	1	SW.	1		Ci	8	Ci	8							Fair mild very fine all day.	15
16	30.350	69.	30.300	67.	77.0	52.9			74.0	67.0	64.0	62.0	0.00	NW.	2	NE.	3												Fair v fine, warm all day.	16
17	30.425	63.	30.350	64.	73.0	49.6			65.0	60.0	57.0	53.0	0.00	NE.	3	NE.	2												Do Do	17
18	30.250	61.	30.210	58.	57.2	49.0			56.0	53.0	52.0	49.0	0.00	NW.	2	NE.	2		Ci	8	Ci	8							Fair, dull all day cool.	18
19	30.150	57.	30.200	57.	63.0	48.6			57.2	53.0	52.0	49.4	0.00	NE.	1	E	1		Ci	5	Ci	6							Fair v fine, dull all day, very mild.	19
20	30.280	58.	30.230	57	63.4	48.6			53.0	51.5	51.0	49.0	0.00	E	1	E	1		Ci	8	Ci	8							Fair v fine, dull p.m.	20
21	30.138	60.	30.130	56.	64.0	46.5			60.0	54.5	51.5	48.0	0.00	E	1	NE.	2		Ci	4	Ci	8							Fair very fine mild p.m.	21
22	30.075	57.	30.050	56.	61.0	45.0			56.5	52.0	51.0	47.2	0.00	NW.	4	W	2		Cu	6	Cu	8							Fair dull, cool all day.	22
23	29.975	57.	30.000	56.	57.0	48.5			52.6	48.5	51.0	49.0	0.00	NW	2	NW	2		Ci	8	Ci	8							Do Do showing rain p.m.	23
24	30.025	56.	30.100		54.	47.1			52.2	50.0				E	1				Ci	8									Fair, dull all day.	24
25	30.050	57.	29.940	56	53.0	49.0			49.5	48.0	49.0	48.7	0.00	NE.	2	SE	4		Ci	8	Ci	8							Dull cold much milder through afternoon	25
26	29.922	60.	29.675	59	65.0	49.8			64.5	59.1	57.6	53.5	0.00	SW	5	SW	2		Ci	4	Ci	6							Very fine rain afternoon, continued all night	26
27	30.230	62	30.320	61	69.5	51.0			59.9	55.0	57.0	52.1	0.12	SW.	3	NW.	1		Ci	8	Ci	8							Very fine warm, showers afternoon, warm night	27
28	30.120	59	30.360	59	63.0	45.6			55.2	52.0	59.5	51.0	0.00	NE.	1	NE	1		Ci	5	Ci	5							Dull cold, much milder through afternoon	28
29	30.000	58.	29.950	58.	64.0	47.0			55.0	53.8	52.0	49.0	0.11	NE.	1	N.E.	3		Ci	5	Ci	6							Fair v fine some rain, then fair p.m.	29
30	29.610	58.	29.550	58.	58.0	48.7			53.0	49.0	50.5	48.0	0.08	NW	4	NW	2		Ci	3	Ci	8							Fair slight showers frequent	30
31	29.715	57.	29.775	57	57.0	47.0			50.0	48.0	49.5	48.0	0.00	NW.	4	NW.	4		Cu	5	Cu	5							All stormy dull all day.	31
Sums.					605 207 499 261				30 136 1949	30 135 975	29 125 1362	29 163 571	1.72 5		66		59		191		202									
Means.					61.6	48.4			56.5	53.2	54.7	52.0			2.1		2.0		6.2		6.7									
Corrections for Instrumental Errors.	29.971		.965																											
Corrections for Diurnal Range.			-.010																											
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. = ____ = ____

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ____ = ____

Mean at Station, corrected, and at 32°, ... = .920

Correction for height, ____ feet above Mean Sea-level, ... = + .048

Mean, reduced to 32°, and Sea-level, ... = .968

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

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

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

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 16 th, ... = 77.0

Lowest in Month, corrected for Index errors, on the 7 th, ... = 42.0

Difference, or **Monthly Range,** ..... = 35.0

Mean of all the Highest, ... = 61.6

Mean of all the Lowest, ... = 48.4

Difference, or **Mean Daily Range,** ..... = 13.2

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 55.0

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

,, ,, Mean, ... = ____

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, ... = 55.6

Wet Bulb, Mean of A.M. and P.M. Readings, ... = 52.6

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

Do. **Elastic Force of Vapour,** ..... = 360

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

RAIN fell on 14 **Days; Amount in Inches,** ..... = 1.72

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	5	3	3	3	7	0	10	0	2.1
P.M.	0	6	3	4	3	7	1	7	0	2.0
Sum.	0	11	6	7	6	14	1	17	0	2.1

Observations made and Return verified by Peter Harper

(*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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Aberdeen Duthie Park County of Aberdeen, During the MONTH of August 1907.

Lat. 57.9 N, Long. 2.6 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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	29.900	57.	30.015	56	58.5	46.0			51.0	47.4	52.0	50.0	0.00	W	4	W	2		Ci	8	Ci	6								Fair cool dull all day	1
2	30.050	56.	30.010	56.	60.8	46.0			53.0	52.4	50.4	48.0	0.37	NW.	2	S	2		Ci	8	Ci	8								Fair, milder, dull pm.	2
3	29.825	57.	29.830	57.	58.0	50.0			52.5	52.0	54.0	53.5	0.00	E.	2	E	1		N	10	Ci	8								Been heavy rain all day, fair	3
4	29.700	60.	29.605	59.	60.8	52.8			57.8	56.6	54.0	52.0	0.04	SE.	2	SW.	2		N	10	Ci	2								Some slight rain dull, clear rain after 3 pm	4
5	29.700	57.	29.700	59.	65.0	48.0			53.0	54.0	56.8	52.0	0.00	S	2	S	2		Ci	6	Ci	2								Fair fine all day	5
6	29.600	60.	29.525	59.	67.2	47.9			57.0	54.4	54.8	51.5	0.02	SW.	2	S	2		Ci	6	Ci	6								Fair fine, some slight rain, distant thunder	6
7	29.700	60.	29.600	60.	64.2	49.0			58.0	53.5	60.2	58.5	0.18	NW.	4	NW.	2		Ci	5	Cu	10								Fair, dull afternoon, rain later	7
8	29.560	62.	29.660	62.	70.4	50.0			64.5	57.0	57.4	52.8	0.00	SW.	4	SW.	4		Ci	4	Ci	6								Fair fine hazy all day	8
9	29.628	62.	29.700	59.	69.0	51.8			61.6	50.8	57.3	54.0	0.00	W.	4	W.	2		Co	4	Co	4								Do. Do.	9
10	29.600	59.	29.760	57.	64.5	53.0	×		59.0	57.5	57.3	53.0	0.00	NW.	4	NW.	2		Ci	4	Ci	2								Do. Do.	10
11	29.760	59.	29.700	58.	53.5	47.5			53.7	49.0	57.9	48.5	0.05	SW.	2	SW.	2		Ci	6	Ci	4								Do Do.	11
12	29.730	59.	29.800	59.	56.8	48.8			53.0	50.0	52.0	51.0	0.02	NE.	2	N.	2		N	10	Ci	8								Rain to 12 noon, then fair	12
13	30.000	57.	29.600	58.	57.0	39.0			53.0	51.0	56.0	54.0	0.20	SW.	2	SW.	4		Ci	8	Ci	8								Dull fair, some rain afternoon	13
14	29.650	61.	29.733	57.	66.8	52.0			61.4	54.6	57.0	53.0	0.08	NW.	4	W.	2		Ci	6	Ci	8								Breezy fine all day	14
15	29.625	57.	29.750	56.	60.0	49.6			53.8	52.0	51.6	48.0	0.00	NE.	2	NE.	1		Ci	8	Ci	8								Been rain, now fair pm. Fair rest of day	15
16	29.825	56.	26.660	56.	58.5	43.0			54.8	49.0	53.0	52.0	0.21	NW.	1	S.	2		Ci	4	N	10								Fair fine, rain after 7 pm.	16
17	29.600	56.	29.705	57.	59.5	48.0			52.4	51.7	53.1	51.4	0.06	E.	1	S.	1		N	10	Cu	6								Dull wet frequent showers all day.	17
18	29.650	58.	29.605	59.	66.0	46.8			57.0	53.2	53.0	52.0	0.46	SW.	2	SW.	2		Ci	2	N	10								Fair fine, thunder rain after 2 pm.	18
19	29.533	56.	29.760	56.	56.0	50.4	×		57.0	50.4	57.0	54.0	0.07	W.	6	W.	4		N	10	—								Rain through forenoon, dry afternoon	19
20	29.900	57.	30.130	56.	59.4	44.8			53.5	51.0	57.0	48.0	0.00	NW.	2	NW.	1		N	10	Ci	5								Dull wet. Fair from 10 am.	20
21	30.100	57.	30.200	57.	63.0	46.0		×	56.8	53.4	54.5	52.0	0.08	SW	2	SW.	2		Ci	8										Dull. fair mild all day.	21
22	30.175	59.	29.900	58.	62.4	50.5			54.5	50.6	53.0	54.6	0.07	W.	2	SW.	2		N	10	Ci	8								Rain from 7 am. fair most of day	22
23	30.010	57.	30.145	56.	57.4	47.5			53.0	47.0	49.0	47.4	0.02	NW.	4	NW	2		Ci	5	Ci	6								Some slight rain, fair afternoon	23
24	21.125	55.	29.950	57.	52.4	41.2			52.0	47.0	53.8	50.0	0.26	NW.	2	SW.	2		Ci	6	Cu	8								Fair fine, cool mild pm.	24
25	29.750	57.	29.675	56.	57.0	46.5			54.5	49.5	47.0	43.2	0.19	SW.	2	NW.	2		N	10	Ci	6								Rain to 12 pm. then fair	25
26	30.050	56.	29.925	56.	60.0	46.0			54.2	50.0	53.0	51.0	0.00	SW.	4	SW.	2		Ci	8										Fair all day. fair slight pm.	26
27	29.950	57.	30.010	56.	64.0	43.5			55.0	51.0	57.1	54.1	0.00	W.	4	NW	1		Ci	4	Ci	2								Fair very fine all day.	27
28	30.000	56.	29.880	57.	66.8	46.8			51.1	49.0	57.0	53.0	0.16	NW.	1	SE.	4		Ci	8	N	10								Fair dull wet from 10 am.	28
29	29.940	57.	30.005	57.	57.0	46.8			57.0	52.4	53.0	52.0	0.50	SW.	2	SW.	2		Ci	8	Ci	6								Fair dull mild all day.	29
30	30.060	56.	29.975	57.	62.0	37.0		×	52.0	47.8	55.5	47.0	0.00	SE.	2	S.W.	4		Ci	2	Ci	8								Fair clear fine all day.	30
31	29.800	53.	29.900	55.	63.0	47.6		×	54.5	51.0	48.5	45.0	0.20	SW	2	W	2		Cu	6	Cu	5								Fair clear. thunder some rain from 2 pm.	31
Sums.	1683 25320	17 232	1885 25535	20 228	168 409	1510 2158			1278 1546	1258 415	1356 1055	1244 3044	2.68		78		67			214		177									
Means.	827	57.5	824	57.4	61.3	50.0 47.0			55.0	51.3	53.4	51.0			2.5		2.2			6.9		5.7									
Corrections for Instrumental Errors.	−.010		−.010																												
Corrections for Diurnal Range.																															
Corrected Means	.807		.814																												

S 0 △ 0 t 3 h 0 o 3 f 0 g 0

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. = ... − 77 = 730

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ... − 77 = 737

Mean at Station, corrected, and at 32°, ... = 734

Correction for height, feet above Mean Sea-level, ... = + 49

Mean, reduced to 32°, and Sea-level, ... = 29.783

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

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

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

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 8 th, ... = 70.4

Lowest in Month, corrected for Index errors, on the 30 th, ... = 37.0

Difference, or **Monthly Range**, ... = 33.4

Mean of all the Highest, ... = 61.3

Mean of all the Lowest, ... = 47.0

Difference, or **Mean Daily Range**, ... = 14.3

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 54.2

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

,, ,, Mean, ... =

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

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

Wet Bulb, Mean of A.M. and P.M. Readings, ... = 51.2

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

Do. **Elastic Force of Vapour,** ..... = 337

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

RAIN fell on 19 **Days; Amount in Inches,** ..... = 2.68

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	2	2	2	1	10	5	9	0	2.5
P.M.	1	1	1	1	5	11	5	6	0	2.2
Sum.	1	3	3	3	6	21	10	15	0	2.4

Observations made and Return verified by Peter Hawkes

(*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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Duthie Park, Aberdeen, County of Aberdeen, During the MONTH of September 1907.

Lat. 57.9 N, Long. 2.6 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 feet.

Diameter of Rain Gauge 12.5 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	30.000	54	29.750	54	58.2	34.5			48.0	43.6	48.0	47.0	0.11	NW	2	SW	1		Ci	3	N	10									fair & clear, some slight rain about P.M.	1
2	29.550	55	29.450	55	54.0	46.3			50.5	49.6	46.5	46.0	0.38	SE	2	N	4		N	10	W	10									fair rain most of the day.	2
3	29.627	53	29.750	52	53.0	38.0			44.0	39.0	40.5	38.0	0.00	NW	2	NW	1		Ci	4		0									fair breeze, cool all day mild P.M.	3
4	29.800	52	29.875	52	55.0	38.0			45.0	42.0	48.0	46.0	0.43	NW	2	S	4		Ci	3	Ci	6									fair white frost, cool dry all day.	4
5	29.565	54	29.650	54	65.0	44.0			50.3	49.6	56.0	54.0	0.00	S	4	SW	1		Cu	4	Cu	4									been heavy rain, fair 6 A.M. fine all day.	5
6	29.750	55	29.800	56	63.0	45.0			55.0	52.0	53.5	51.5	0.00	SW	4	SW	2		Ci	8	Ci	4									fair & fine all day.	6
7	30.000	55	30.245	57	65.8	48.0			52.5	49.0	54.8	53.0	0.01	SW	2	NE	2		Ci	3	Ci	6									Do Do. slight rain 4 P.M. fair.	7
8	30.430	57	30.645	57	63.8	41.6			53.5	49.5	57.5	49.5	0.00	SW	2	SW	1		Ci	8	Ci	6									fair very fine all day.	8
9	30.500	57	30.470	57	67.5	51.0			54.4	52.5	53.5	51.0	0.00	SW	2	SW	1			0		0									fair & fine all day.	9
10	30.250	58	30.225	60	70.3	48.0			56.2	55.0	59.0	56.0	0.00	SW	2	SW	2			0		0									fine & clear all day.	10
11	30.200	59	30.200	60	63.6	48.0			57.5	57.0	53.0	51.0	0.00	SW	4	SW	1			0		0									Do. Do.	11
12	30.150	59	30.125	61	67.3	51.0			58.2	56.0	55.6	54.2	0.00	SW	2	SW	2		Ci	6		0									Do. Do.	12
13	30.125	59	30.100	58	67.0	46.0			55.5	54.0	55.0	53.0	0.06	SW	2	W	2		.	0	Ci	6									Do. Do.	13
14	30.000	57	30.250	56	60.3	41.0			54.2	46.8	51.5	48.8	0.00	W	4	W	2		Ci	5		0									Do. Do.	14
15	30.300	57	30.275	59	67.3	35.0			52.4	47.7	53.0	50.2	1.05	W	2	W	1		Ci	4	Ci	8									Do. Do.	15
16	30.025	57	30.190	60	72.0	51.0			57.0	54.6	51.5	47.3	0.00	SW	2	W	2		Ci	6		0									Do. Do.	16
17	30.315	57	30.350	60	62.0	47.8			53.0	49.0	53.0	50.0	0.00	W	2	SW	2		Ci	4	Ci	8									fair & fine dull cool fine dull P.M.	17
18	30.400	58	30.400	59	71.0	45.0			57.8	54.0	56.0	55.0	0.00	SW	2	SW	2			0		0									Do. Do clear very fine all day.	18
19	30.400	56	30.450	62	71.2	44.8			62.8	48.0	52.0	44.0	0.00	SW	2	SW	2			0		0									Do Do.	19
20	30.435	58	30.450	59	67.0	46.6			54.7	50.0	56.0	54.0	0.12	S	2	SW	1		Ci	10	Ci	8									Do. Do. dull after 2 P.M.	20
21	30.450	56	30.600	52	53.0	51.5			52.0	50.0	53.0	48.0	0.00	NE	2	N	1		Ci	4	Ci	6									fair, dull cool all day.	21
22	30.475	56	30.500	56	58.0	39.0			54.2	54.0	49.5	46.5	0.00	SW	2	NE	4		Ci	8	Ci	6									fair & fine all day cool.	22
23	30.120	56	30.008	60	64.4	41.5			56.0	54.0	54.0	51.0	0.07	SW	2	SW	2		Ci	6		0									Do. Do. warm	23
24	29.900	58	29.872	61	62.2	51.4			56.8	51.6	53.0	53.0	0.07	SW	2	SW	2		Ci	4		0									Do Do	24
25	29.825	56	29.825	60	66.2	46.5			58.6	54.0	54.0	52.0	0.00	SW	2	SW	2		Ci	6	haze	10									Do Do	25
26	29.770	58	29.870	61	63.0	40.7			58.4	53.4	56.0	54.0	0.01	S	2	SW	2		fog	10	Ci	5									some fog some slight rain then fair.	26
27	29.875	57	29.975	60	55.5	53.5			53.4	48.0	54.0	52.0	0.00	SE	1	SE	2		fog	10	fog	10									heavy damp fog all day.	27
28	30.000	53	30.000	58	59.2	45.0			50.0	46.0	53.0	50.0	0.00	S	1	S	2		Ci	6		0									fog clearing fair fine clear P.M.	28
29	30.000	58	29.953	57	59.4	49.8			53.0	51.0	56.0	54.0	0.00	S	2	S	2		Ci	6		0									fair fine all day fog to me	29
30	29.850	55	29.950	58	52.0	48.8			50.0	48.0	50.0	47.4	0.00	SW	2	S	1		fog	10	fog	10									fog more or less all day	30
31																															31
Sums.	28.5 2.132	19 191	29.106 2.582	12 233	1794	1755			1036	986	1119		1.05		66		59			145		123										
Means.	30071	564	30086	578	62.6	45.9			53.5	50.2	53.0	50.4			2.2		2.0			4.8		4.1										
Corrections for Instrumental Errors.	-010		-010																												
Corrections for Diurnal Range.																															
Corrected Means	061		076																												

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. = ...—.74... = 29.987

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ...—.78... = 29.998

Mean at Station, corrected, and at 32°, ... = 29.993

Correction for height, feet above Mean Sea-level, ... = + 48

Mean, reduced to 32°, and Sea-level, ... = 30.041

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

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

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

S.-R. THERMOMETER, (in shade) **Highest in Month**, corrected for Index Errors, on the 10 th, ... = 75.3

Lowest in Month, corrected for Index errors, on the 4 th, ... = 33.0

Difference, or **Monthly Range**, ... = 42.3

Mean of all the Highest, ... = 62.6

Mean of all the Lowest, ... = 45.9

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

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), ... = 54.3

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

„ „ Mean, ... =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, ... = 53.3

Wet Bulb, Mean of A.M. and P.M. Readings, ... = 50.3

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

Do. **Elastic Force of Vapour**, ... = .326

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

RAIN fell on 7 **Days; Amount in Inches**, ... = 1.05

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	–	1	–	2	5	16	2	4		2.2
P.M.	1	3	–	1	4	15	4	2		2.0
Sum.	1	4	0	3	9	31	6	6		2.1

=60

Observations made and Return verified by Peter Harper

(*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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Ruthrie Park, Aberdeen, County of Aberdeen, During the MONTH of October 1907.

Lat. 57.9 N, Long. 2.16 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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.	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	29.655	56	29.500	59	55.2	49.2			54.2	53.8	53.8	50.0	0.20	SE	2	SE	2		~~SE~~ 209	~~2~~	N	10									fog most of the day Rain Pm	1
2	29.365	57	29.410	58	57.0	53.2	×		54.2	53.8	49.2	47.2	0.00	S	2	S	1		N.	10	—									Rain dull fm 7 a.m. then fine	2
3	29.500	55	29.740	58	56.5	40.8			52.0	50.8	45.0	44.0	0.00	S	2	S	1		Ci	8	Ci	2									fair cold last — fine all day.	3
4	29.925	53	30.048	55	58.5	31.6			43.3	42.6	50.4	49.0	0.00	S	1	S	1		—		Nage	10									white frost on grass. Fine fine all day.	4
5	29.825	55	29.775	59	61.0	47.0			50.0	48.8	53.2	52.2	0.10	S	4	S	1		N	10	—									Dull some showers. Fair all day	5
6	29.700	57	29.450	57	57.0	44.5	×		53.8	53.0	49.5	49.0	0.80	Sw.	1	S	2		Ci	6	N	10									fair & fine. Rain from 4 pm very heavy	6
7	29.310	54	29.470	59	52.0	39.0			43.0	43.3	37.0	36.2	0.00	W.	2	W.	1		—		—									fair & fine cool all day	7
8	29.670	51	29.850	54	52.7	30.6			34.8	34.4	48.0	48.2	0.00	N	2	E	2		Ci	4	Cu	8									White frost fair all day. Dahlias damaged.	8
9	29.890	52	29.950	55	52.8	38.0			49.8	48.8	51.5	50.2	1.12	NE.	4	NE.	2		Ci	8	N	10									fair dull slight rain, with hage pm.	9
10	29.725	53	29.775	56	53.0	30.4			54.6	54.4	52.4	51.0	0.22	E	2	E	2		N	10	Ci	5									Dull most of the day.	10
11	29.700	53	29.585	57	52.0	37.0			52.4	52.0	57.8	50.0	0.03	S	2	S	2		N	10	Ci	6									Rain very dull, clear from 10 a.m.	11
12	29.600	57	29.626	54	55.4	47.0			53.0	52.8	52.6	51.0	0.00	SW.	2	SW.	2		Ci	8	Ci	6									fair dull, fine all day	12
13	29.600	55	29.500	53	53.6	43.0			48.8	46.8	46.0	43.0	0.35	SW	1	SW.	2		Ci	5	Ci	4									D°	13
14	29.760	52	29.255	56	53.0	42.2			47.0	46.6	44.2	42.0	0.00	SW	2	S	2		Ci	5	Ci	8									Heavy rain to 8 am then fair, dull fine.	14
15	29.200	54	29.075	57	49.0	36.0			41.5	40.0	45.0	44.0	0.47	S	1	SE.	2		Ci	2	N.	10									fair fine heavy rain from 4 pm.	15
16	29.350	52	29.675	52	47.8	41.4			44.3	42.8	44.0	42.0	0.00	NW.	2	N	2		Ci	8	Ci	5									Rain rain now fair, dull all day	16
17	29.600	49	29.330	52	55.4	33.5			46.4	43.7	45.0	44.0	1.18	NE.	4	NE	4		N	10	N	10									fair dull heavy rain from 10 a.m.	17
18	29.200	53	29.110	54	52.0	44.8			50.0	49.6	51.0	50.0	0.32	SE	2	S	2		N.	10	N	10									fair dull, showers frequent all day & pm	18
19	29.205	54	29.548	56	56.0	50.1			52.8	51.0	52.0	50.0	0.00	S	4	S	2		Ci	3	—	—									Fair drying breeze, clear fine all day	19
20	29.760	55	29.575	57	56.8	47.3			51.0	50.0	51.5	51.0	0.07	S	2	SE.	2		Ci	8	N	10									fair & fine. then rain	20
21	29.660	56	29.870	56	53.0	46.4			52.0	51.8	52.0	50.4	0.03	SW.	4	SW.	2		Cu	8	Cu	8									fair dull slight showers most of day & pm.	21
22	29.825	55	29.853	57	55.0	42.8			46.4	45.8	50.0	49.0	0.13	S	1	S	1		~~Fog~~	10	~~Fog~~	10									Dull heavy rain 3 pm. then fair.	22
23	29.920	53	29.745	57	55.6	40.0			48.2	47.6	49.2	48.4	0.03	SE.	1	SE	1		Ci	6	Ci	8									fair fine all day, no sunshine	23
24	29.825	52	29.800	56	48.0	42.0			47.2	45.6	46.0	45.0	0.00	S	1	S	1		Ci	4	Ci	6									fair fine, some sunshine	24
25	29.750	48	29.820	53	50.5	34.0			37.0	36.5	38.0	36.7	0.00	SW	1	SW	1		Ci	8	~~Fog~~	~~10~~									Fair white frost, hage pm.	25
26	29.875	48	29.903	53	47.0	35.8			41.2	40.8	45.0	44.0	0.10	SW.	1	NE.	1		Ci	8	Dmp	10									fair dull damp rain frequent.	26
27	29.825	57	29.825	52	50.6	42.8			47.8	44.0	48.0	44.0	0.03	SW	1	SW.	1		Ci	8	Cu	6									fair dull damp rain frequent	27
28	29.750	57	29.625	52	50.0	40.4			46.0	44.8	48.0	47.0	0.03	NE	1	NE	1		Cu	10	Cu	10									fair dull damp all day	28
29	29.500	51	29.500	53	49.2	43.8			46.4	45.2	46.5	45.2	0.08	NW.	2	NE.	2		Ci	10	Cu	10									Dull damp, slight rain all day	29
30	29.525	50	29.725	54	51.0	39.0			46.0	44.0	47.0	45.4	0.03	NW	1	NE.	2		Cu	10	Cu	10									Dull damp slight showers all day	30
31	29.780	51	30.155	53	50.0	46.4	13	12	47.6	44.5	46.6	43.8	0.00	NE	2	NE.	2		Ci	10	Ci	6									Dull drying wind fine all day	31
Sums.	19.105 / 19.545	13 / 100	18.128 / 20.236	16 / 161	186 / 99.484.5	13.10	9	4	149 / 24.17 / 217	12.15 / 20.5.8 / 186	13.16 / 247.4	11.10 / 19.7 / 186	3.7 / 5.30		60		52		2.19		2.16											
Means.	.630	53.2	.653	55.2	53.2	42.7			47.8	46.6	48.0	46.4			1.9		1.7		7.1		7.0										
Corrections for Instrumental Errors.	-.010		-.010																												
Corrections for Diurnal Range.																															
Corrected Means	.620		.643																												

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. = ...6.5.. = .555

Corrected Mean at 9 P.M., *minus* Correction for Temp. = ...7.1.. = .572

Mean at Station, corrected, and at 32°, = .564

Correction for height, feet above Mean Sea-level, = + 49

Mean, reduced to 32°, and Sea-level, = 613

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

Lowest Do. Do., on the th, =

Difference, or **Monthly Range,** =

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 5th, = 61.0

Lowest in Month, corrected for Index errors, on the 8th, = 30.6

Difference, or **Monthly Range,** = 30.4

Mean of all the Highest, = 53.2

Mean of all the Lowest, = 42.7

Difference, or **Mean Daily Range,** = 10.5

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 48.0

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

,, ,, Mean, =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 47.9

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

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

Do. **Elastic Force of Vapour,** = .299

Do. **Relative Humidity** (Saturation = 100), = 91

RAIN fell on 19 Days; Amount in Inches, = 5.30

WIND. SUMMARY. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.		4	1	3	10	8	2	3		
P.M.	1	8	2	3	11	5	1			
Sum.	1	12	3	6	21	13	3	3	0	1.8

Observations made and Return verified by { Peter Harper

(*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.

Will you kindly send me a few Schedules
I must have missed next Monthly one P.H.

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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Duthie Park Aberdeen, County of Aberdeen, During the MONTH of November 1906.

Lat. 57.9 N, Long. 2.6 W., Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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. (inches)	Attached Thermometer 9 A.M. (°)	Barometer 9 P.M. (inches)	Attached Thermometer 9 P.M. (°)	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 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. (inches)	Wind 9 A.M. Direction	9 A.M. Force (0–12)	9 P.M. Direction	9 P.M. Force (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.	12 ins.	22 ins.	36 ins.	48 ins.	General Remarks	Days of Month
1	30.245	50.	30.175	54.	49.5.	44.0.		X	45.0	42.6	47.7	45.0	0.16	Sw.	1	SE.	2		Ci	8	Cu	8							Fair & fine all day, slight rain P.M.	1
2	30.000	52.	29.960	56.	53.2.	45.5.			57.4	50.0	51.3	50.0	0.62	SE	4	SE	4		Ni	10	Cu	8							Showers, fair, Dull most of Day.	2
3	29.960	48.	29.900	54.	50.9.	36.0.			50.9	48.0	46.4	41.0	0.00	SE.	2	SE	4		Ni	10	Ni	10							Dull, fair most of Day Damp P.M.	3
4	29.930	55.	30.050	57.	53.5	49.5			50.5	50.2	51.0	50.0	0.00	SE.	2	SE.	1		Ni	10	Ci	8							Dull fair all day Haze P.M.	4
5	30.075	53.	30.260	55.	52.2	46.0			47.0	46.5	46.3	45.0	0.05	S	1	NE	1		Ci	8	—								Dull fair some slight Showers 3. P.M.	5
6	30.350	57.	30.340	57.	47.8	37.4	X		43.8	42.2	38.5	37.2	0.00	Nw	2	Nw.	2		Cu	6	—								Fair & fine all day cold P.M.	6
7	30.225	47.	30.075	52	47.0	35.6			38.6	37.0	42.0	39.0	0.00	W	1	W	1		Ci	8	Ci	8							Fair fine all day.	7
8	29.900	49.	29.850	52.	48.0	33.5			41.2	40.0	46.0	43.0	0.18	Sw.	1	Sw.	2		Ci	8	Ni.	10							Dull Haze cloudy all day rain P.M.	8
9	29.700	51.	29.840	54.	51.0	44.0			50.2	49.8	46.2	45.2	0.07	Sw.	1	Nw	1		Ni	10	Ni	10							Dull fair very damp all day	9
10	29.975	50.	29.950	57.	45.8	38.1			52.8	41.0	38.6	37.0	0.08	W.	1	W.	1		Ci	6	Ci	8							Fair & fine all day. more sunshine.	10
11	29.660	50.	29.660	52.	51.9	37.0			48.0	46.8	42.0	40.0	0.00	Sw	2	Sw	2		Cu	8	Ci	8							fair. been rain dull most of day	11
12	29.610	48.	29.175	51.	46.2	34.0			34.[illegible]	33.2	44.0	41.0	0.09	Sw	1	Sw	4		—		Ci	2							White Frost fair all day Clear P.M.	12
13	29.425	49.	29.925	48.	46.8	39.0		X	46.0	44.0	46.0	44.0	0.62	Nw.	6	Nw.	1		Ci	5	—								Heavy rain 4 A.M. fair latter cool & clear P.M.	13
14	29.835	48.	29.785	53.	53.0	32.0			44.2	41.0	47.0	43.0	0.00	Sw	1	W.	2		Ci	8	Cu	8							fair dull all day fine P.M	14
15	30.260	46.	30.260	50.	45.4	30.6			33.0	32.0	33.2	32.0	0.00	W.	1	W.	1		—		Ci	6							fair. White frost fine all day.	15
16	30.025	46.	29.900	50.	48.0	30.5			43.8	41.2	47.0	45.0	0.28	Sw	4	Sw.	2		Ci	6	Cu	2							fair. frost heavy rain 10–2 fair fine P.M.	16
17	30.000	47.	30.035	50.	43.8	33.0			35.8	35.0	38.0	37.0	0.00	Sw.	2	Sw.	1		Ci	4	Ci	8							fair white frost fine bright sun all day.	17
18	30.300	47.	30.400	43.	43.5	33.5		X	37.0	35.0	39.0	37.2	0.00	W.	2	W	1		—		—								Do Do	18
19	30.150	44.	30.000	47.	47.2	26.0			44.6	37.7	38.5	37.0	0.00	S.	6	S	4		Ci	8	Ci	6							fair drying wind all day	19
20	30.090	43.	30.175	41.	43.3	31.8			33.0	32.0	32.0	31.0	0.00	Sw	1	Sw	1		Ci	3	Ci	5							White frost, clear all day frost P.M.	20
21	30.200	45.	30.110	49.	47.0	30.0			36.8	36.0	47.0	45.0	0.00	Sw.	1	Sw	4		Ci	8	Ci	8							Do Do	21
22	29.825	48.	29.710	50.	47.0	36.0			46.6	43.8	45.5	45.0	0.46	S	8	S	2		Ci	10	Ni	10							fair, gale, heavy rain from 12 noon to 10 P.M.	22
23	29.590	43.	29.590	44.	48.8	35.0			36.0	35.4	35.0	34.0	0.00	Sw.	1	Sw	2		Ci	8	Cu	8							fair dull & fine all day	23
24	29.505	44.	29.500	57.	39.0	32.0			38.0	34.8	37.0	35.0	0.00	W.	2	W.	2		Ci	5	Ci	5							fair & fine cool all Day	24
25	29.475	44.	29.500	46.	42.0	30.2			35.8	34.8	35.5	34.0	0.00	Nw.	2	Nw	2		Cu	8	Ci	8							White Frost fine all day	25
26	29.360	44.	29.110	46.	42.0	28.0		X	41.0	38.0	43.0	40.8	0.69	SE.	2	SE.	2		Cu	8	Ni	10							White Frost, morning cool fine P.M.	26
27	29.240	43.	29.360	46.	41.5	31.0		X	43.0	42.5	43.5	42.0	0.00	Sw	1	Sw	2		Ci	4	Cu	5							Do Do fine all day	27
28	29.700	45.	30.045	47.	42.5	32.0			41.2	40.0	35.5	34.0	0.18	NE.	4	NE.	2		Ni	10	Ci	5.							heavy rain from 9 A.M. fair afternoon	28
29	30.275	43.	30.350	45.	43.0	25.6			34.7	32.0	36.5	35.0	0.00	Nw	2	W.	2		Ci	3									frost fair. fine all day frost P.M	29
30	30.425	45.	30.450	47.	42.5	35.0			40.0	38.4	38.5	37.5	0.00	W.	1	Sw.	1		Ci	2									frost fair. & very fine all Day.	30
31																														31
Sums.	1311 6 / 27.325	13 / 218	1324 / 27.690	12 / 04	1410 / .0.3	12 5 / 49.8			12 9 / 66.9	12 7 / 00.9	16 6 / 57.7	12 / 6.9	7 / 2.28		66		59			192		164								
Means.	29.911	47.3	29.923	50.1	46.7	~~34.9~~ 35.0			42.2	40.0	41.9	40.2			2.2		1.9 / 2.0			6.4		5.5								
Corrections for Instrumental Errors.	-.010		-.010			+1.0																								
Corrections for Diurnal Range.	-.030																													
Corrected Means	.901		.913																											

s. 0
d. 0
5. 0
b. 3
o. 7
f. 2
g. 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. = —49 = .852

Corrected Mean at 9 P.M., *minus* Correction for Temp. = —56 = .857

Mean at Station, corrected, and at 32°, = .835

Correction for height, feet above Mean Sea-level, = + 50

Mean, reduced to 32°, and Sea-level, = .885

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

Lowest Do. Do., on the th, =

Difference, or **Monthly Range,** =

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 4 th, = 53.5

Lowest in Month, corrected for Index errors, on the 19 th, = 27.0

Difference, or **Monthly Range,** = 26.5

Mean of all the Highest, = 46.7

Mean of all the Lowest, = 36.0

Difference, or **Mean Daily Range,** = 10.7

Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 41.4

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

" " Mean, =

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

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 42.1

Wet Bulb, Mean of A.M. and P.M. Readings, = 40.1

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

Do. **Elastic Force of Vapour,** = .226

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

RAIN fell on 12 **Days; Amount in Inches,** = 2.28

WIND. Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	1	0	4	3	12	6	4	0	2.2
P.M.		2		5	2	10	7	4	0	2.0
Sum.	0	3	0	9	5	22	13	8	0	2.1

Observations made and Return verified by Peter Harper

(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.

BOOK POST.

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

SCOTTISH METEOROLOGICAL SOCIETY.

Observations taken at Dutfus Park, Aberdeen, County of Aberdeen, During the MONTH of December 1907.

Lat. 57.9 N, Long. 2.6 W, Distance from Sea 2 miles. Height of Cistern of the Barometer above Mean Sea-Level 44 feet, above Ground 4 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	30.260	42	29.950	45	45.0	29.0			35.8	34.7	37.5	35.5	0.03	SW	1	SW	2		Ci	9	Ci	5							fair & very fine all day, dull P.M.	1
2	29.700	46	29.400	48	48.5	34.4			39.0	37.8	37.6	36.0	0.17	SW	1	SW	4		Ci	2	Ci	5							Do. Do.	2
3	29.100	48	29.200	47	48.4	37.0			41.9	39.5	38.5	36.8	0.00	SW	2	SW	2		Ci	5	Ci	6							fair dull most of the day	3
4	29.100	44	28.650	48	48.0	29.3			38.0	36.4	37.0	35.0	0.31	SW	2	S	4		Ci	8	Ci	4							fair some frost rain from 2 P.M.	4
5	28.725	45	28.980	49	41.0	34.0			38.8	36.5	39.8	33.0	0.00	SW	1	SW	2		Ci	6									fair & fine all day. frost P.M.	5
6	29.375	44	29.449	41	39.8	31.2			33.0	31.0	34.0	33.0	0.13	SW	1	SW	1												fair white frost, clear P.M.	6
7	29.400	43	29.345	40	42.0	31.1			33.8	33.0	34.5	34.0	0.24	SW	2	SW	2		Ci	2									Do. Do.	7
8	28.880	45	28.710	47	42.0	30.0			37.7	37.2	38.5	37.0	0.00	SW	2	SW	2		Ci	2	Cu	8							fair then heavy rain dull P.M.	8
9	28.850	45	29.000	47	42.2	35.0			41.5	40.0	41.0	39.0	0.00	S	1	SW	1		Ci	6									fair & fine all day	9
10	28.925	44	28.930	47	45.0	40.6			42.2	40.8	45.0	43.0	0.02	S	2	S	1		Ci	8									Do. Do.	10
11	29.050	46	29.250	46	48.2	41.4			42.0	41.4	44.8	43.0	0.00	SW	2	SW	2		Ci	8									Do. Do.	11
12	29.350	45	29.400	45	38.0	30.0			33.0	32.5	33.5	32.0	0.00	SW	1	SW	1		Ci	2									Do. Do.	12
13	29.853	43	28.700	46	43.4	26.4			34.7	34.8	38.0	34.5	1.04	SW	2	SW	2		Ci	8	R	1.1							Dull white frost, heavy rain from dusk	13
14	29.050	45	29.530	46	43.6	36.0			43.0	41.2	36.5	34.5	0.02	NE	4	NE	1		Cu	8	Cu	8							Dull, wild, stormy, settling down P.M.	14
15	29.860	45	30.050	48	43.0	35.0			35.6	37.0	38.5	36.0	0.00	SW	1	SW	1		Ci	8									fair dull all day.	15
16	30.050	46	30.040	44	48.2	34.6			43.0	40.2	46.0	44.0	0.00	SW	4	SW	2		Cu	6	Cu	6							Do. Do.	16
17	30.030	48	29.080	50	50.0	38.0			48.2	46.5	45.0	43.0	0.07	SW	4	SW	2		Ci	6	Ci	6							fair fresh breeze all day.	17
18	29.830	48	29.800	52	50.0	42.0			43.6	42.2	42.0	41.0	0.00	SW	2	SW	2		Ci	8	Ci	2							Do. Do.	18
19	29.725	48	29.700	50	45.4	32.0			48.0	41.8	39.0	36.8	0.09	SW	2	NW	2		Ci	8	Ci	4							fair dull rain 10 to 2 then fair.	19
20	29.950	46	29.745	49	48.0	37.0			39.8	38.6	40.0	39.0	0.38	NE	2	E	2		R	10	R	10							Dull rain frequent all day, heavy P.M.	20
21	29.500	48	29.670	48	46.0	38.0			41.8	41.0	44.0	43.0	0.07	NE	2	S	2		R	10	Ci	8							Dull, rain, fair fine afternoon.	21
22	29.605	48	29.858	49	47.4	39.0			47.2	46.6	45.4	44.0	0.00	SW	2	SW	2		Ci	8	Ci	4							Do. Do.	22
23	30.000	44	30.180	44	37.2	32.1			30.0	30.0	30.0	28.5	0.00	SW	2	SW	1		Ci	2									fair white frost hard all day fair P.M.	23
24	30.325	43	30.375	45	32.2	28.0			29.2	28.8	32.2	31.0	0.00	SW	1	SW	1		Ci	2									Do. Do.	24
25	30.350	48	30.300	46	43.0	31.5			43.0	39.2	40.6	38.0	0.06	SE	4	SE	4		Ci	8	Cu	8							Cold showers frequent all day.	25
26	30.200	43	30.125	47	45.1	38.0			39.8	37.0	36.0	34.0	0.10	S	4	SE	4		Ci	8	Ci	6							Fresh frequent showers all day.	26
27	30.000	41	29.975	42	40.2	35.1			37.0	34.4	38.0	34.5	0.09	SE	6	SE	4		Cu	8	Cu	6							Slight showers frequent all day	27
28	29.995	42	30.050	44	37.4	34.0			36.0	32.1	34.0	33.5	0.04	SE	4	E	2		Cu	8	Cu	8							Do. Do.	28
29	30.125	42	30.200	45	39.0	33.0			35.0	34.0	33.5	31.5	0.00	SW	1	NE	1		Cu	8	Ci	4							fair dull all day.	29
30	30.250	40	30.260	39	32.8	26.0			28.2	27.8	33.5	32.0	0.04	SW	2	NE	2		Ci	6	Ci	8							some rain showers, slight afternoon	30
31	30.150	41	30.155	44	38.0	31.1			34.0	33.0	34.5	33.0	0.24	SW	1	E	2		Cu	6	Cu	8							fair some showers till late.	31
Sums.	1294	44	1403	46	1455	1331			1588	1210	1467	1355	2.76		68		63			193		134		13	10	05	03	00		
Means.	29.654	43.6	29.649	46.0	42.7	33.9			38.3	36.6	37.9	36.4			2.2		2.0			6.2		4.3								
Corrections for Instrumental Errors.	-.030		+.030			+10																								
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. = 39 — = 576 — .565
Corrected Mean at 9 P.M., *minus* Correction for Temp. = 46 — = 603 .573
Mean at Station, corrected, and at 32°, = 589 .569
Correction for height, feet above Mean Sea-level, = +60 5.0
Mean, reduced to 32°, and Sea-level, = 649 .619
Highest Reading, corrected for Index error, on the th, =
Lowest Do. Do., on the th, =
Difference, or **Monthly Range,** =

S.-R. THERMOMETER, (in shade) **Highest in Month,** corrected for Index Errors, on the 17 th, & 18 = 50.0
Lowest in Month, corrected for Index errors, on the 30 th, = 27.0
Difference, or **Monthly Range,** = 23.0
Mean of all the Highest, = 42.7
Mean of all the Lowest, = 34.9
Difference, or **Mean Daily Range,** = 7.8
Mean Temperature of Month, ½ (Mean Max. + Mean Min.), = 38.8
S.-R. THERMOMETER, Min. on Grass, Lowest in Month, =
,, ,, Mean, =
Black Bulb, Max. in Sun, Highest in Month, =

HYGROMETER, Dry Bulb, Mean of A.M. and P.M. Readings, = 38.2
Wet Bulb, Mean of A.M. and P.M. Readings, = 36.5
Computed **Temperature of Dew-Point,** =
Do. **Elastic Force of Vapour,** = .197
Do. **Relative Humidity** (Saturation = 100), = 86
RAIN fell on 18 **Days; Amount in Inches,** = 3.46

WIND. SUMMARY.

Direction.	N	NE	E	SE	S	SW	W	NW	Calm or Variable.	Mean Force 0—12.
A.M.	0	3	0	3	3	21	0	1	0	2.2
P.M.	0	3	3	3	3	18	0	1	0	2.0
Sum.	0	6	3	6	6	39	0	2	0	2.1

Observations made and Return verified by Peter Harper

(*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.

Aberdeen
1907