

1886.

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April 9

at 10 hours upper joint fixed on to snow post R. (Rain gauge)  $59\frac{1}{2}$  inches long, making the total height of the post  $193\frac{1}{2}$  inches -  
at 17 hours top clearing at times; sunshine seen on Southern hills.

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April 10

Thermometer Box shifted at  $10^h.20^m$ . Dry 50852 = Wet 192677 and Min 138533 put out -

Height above snow not altered.

In the forenoon and middle of the day the fog rose gradually from the hills round and formed cum.

over them. No fog in valleys all day -

Soch Sinnke and Socheil calm all day - but surf breaking upon Fig.

No unusual colonies in sky.

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April 11

Goose Cumulus floating about all day but clearing entirely at night -

at 19 hours yellow column above sun and pink underneath -

Aurora seen at  $22^h$ ,  $23^h$  & Midnight. Single

arch, greatest height about  $9^\circ$  by Stephannie.

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April 12

Aurora described yesterday was observed till 2<sup>h</sup><sub>m</sub>.

at 5<sup>h</sup> dark shadow observed to W rising to about 14°; and at the same time faint glow in E<sup>2</sup> sky. Brown column round sun in forenoon, strongest underneath = none in afternoon, but only a faint glare round sun.

Today the first batches of Daily Weather Reports from the Meteorological Office London were received.

April 13 Icy fog crystals forming in early morning.

at 20 hours dense bank of cum. fog in northern valley rising to over 4000 ft but standing clear of the hill side.

April 14 at 10 hours fog low seen to N<sup>2</sup> rather broad and indistinct. at 17<sup>h</sup><sub>m</sub> glimpses of blue sky overhead.

all afternoon icy fog crystals were forming.

April 15 Misty corona at night.

April 16

Thermometer Box shifted at 0<sup>h</sup>. 12<sup>m</sup>.



886. Dry 192660 = Wet 192672 and Min. 138545 put  
out. Height above snow not altered.

Misty corona seen at times in early morning and  
at night. at 3<sup>h</sup> very faint brown column  
under Moon. No brown haze round Sun all day.

at 8<sup>h</sup> bank of fog at East on Ben Nevis  
flowing down & vanishing. at 10<sup>h</sup> ~~the~~ clouds  
over Glen Nevis at about 4000 feet height with  
a rotatory motion round horizontal axis, the  
southern or south eastern side rising and the  
north or north western side sinking.

at 19<sup>h</sup> haze in ~~the~~ valleys coloured yellow  
by Sun shining down on it from behind  
clouds.

after 23<sup>h</sup> clouds opened showing blue sky above  
the scud that was diving across the hill top.

April ~~16~~ 17

great masses of cumulus fog all round  
Ben Nevis in forenoon.

When the top cleared at 20<sup>h</sup> the southern hills  
were capped with dense cumulus which gradually  
disappeared.

Fragments of lunar halo seen at night, and  
faint brown column under Moon.







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No unusual colonies round Sun - Faint auroral arch at night.

Meteor as bright as first mag. star seen at 23<sup>h</sup> - 5<sup>m</sup> - It went from Pole star toward WNW horizon & left a train about 10° long at a height of about 50° which ~~it~~ remained visible for a second - No sounds heard.

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April 22

Faint brown column under Moon in early morning - and under Sun at 9<sup>h</sup> at 7<sup>h</sup> fog low down about 3000 feet & Strutt glass.

at 14<sup>h</sup> Pale glare round Sun - sky very blue.

This afternoon a new flexible shaft was put on the Robinson Anemometer, and the instrument got a general overhaul.

It was set going at 19<sup>h</sup> - 30<sup>m</sup>.

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April 23

Black Bull (old) was put out today on bucket stand at post R 58 inches above mm -

Double Solar Corona observed at 11 hours.

The following measurements were made.



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	I	II	III
Radius of Inner Red	3° 46'	3° 20'	3° 2'
" Outer Red	6° 41'	6° 18'	6° 41'

April 24

At 8<sup>h</sup> spot of light forming part of Solar halo was observed = colored Red, yellow Green & Blue = on North side of Sun.

Radius of Red 24° 20'.

At 9<sup>h</sup> a complete halo, red inside, blue outside.

Radius of Red 23° 30' : 23° 3' : 23° 30'.

also double Solar corona.

Radius of Inner Red 3° 21'

" Outer Red 7° 22'

at 10<sup>h</sup> it was found that the flexible shaft of the Robinson anemometer had got broken probably owing to having been frozen fast near the top & twisted up.

Today the Black Bull (old) was put out similarly to yesterday.

April 25

At 9<sup>h</sup> upper segment of halo seen on cirrus much higher than the general amount of cirrus at the time.

at 17<sup>h</sup> Solar halo seen. The following measurements were made.



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Inside of Red (Radius)  $23^{\circ} - 3' = 23^{\circ} \cdot 3' = 23^{\circ} \cdot 3'$

Outside of Red "  $24^{\circ} 28'$

The Red column was on the inside of the halo -  
Today the Black Bull was again put out as before  
60 inches above snow -

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April 26 Black Bull shifted one stage down at 3<sup>hr</sup>  
Very dark haze round horizon all day -

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April 28 This morning the sky under and around  
the Sun was singularly clear 2 feet from haze  
or glare -

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April 29 at 16<sup>hrs</sup> sun behind a cloud but  
sky underneath all brown in colour -

This afternoon readings of the crystal Hygrometer  
were taken with the instrument mounted on the  
ladder leading to top of tower at a height of  
50 inches above the roof -

Faint auroral streamers to NNW at 23<sup>hrs</sup> and  
distinct but low auroral arch at midnight -

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April 30 Thermometer Bore shifted at 23<sup>hr</sup> 15<sup>min</sup> Dg  
50852 : Wet ~~192666~~ 192677 and Min 138533 put  
out. Height above snow not altered -

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May 1886

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May 1 at 7<sup>h</sup> brown colour under sun -  
at 8<sup>h</sup> Solar corona on passing fog -  
at 14<sup>h</sup> no brown colour & glare round sun -  
No fog in valleys all day, but dense haze  
round horizon all afternoon & night -  
Faint auroral light seen at 23<sup>h</sup> & midnight.

May 2 Portion of Solar halo seen at 5<sup>h</sup> the part above  
sun white & illdefined but bright red & blue spot to  
southward of sun. Radius of this red  $22^{\circ} 49'$  -  
at 7<sup>h</sup> complete halo seen = red inside -  
Radius vertically  $23^{\circ} 3' : 21^{\circ} 48' : 22^{\circ} 49'$  -  
" horizontally  $22^{\circ} 36'$  -  
at 12<sup>h</sup> Black Bull taken in as it was shaking  
in the wind -  
Very thick dark haze all round during  
the day -

May 3 Long icy fog crystals forming in early morning -

May 5 Dry and Wet Bulbs shifted at 3<sup>h</sup> 5<sup>m</sup> Dry  
192660 and Wet 192672 put out. Box and  
Min not shifted -  
at 4<sup>h</sup> Black Bull (Old) put out on hatched stand  
on Post A. 56 inches above snow -

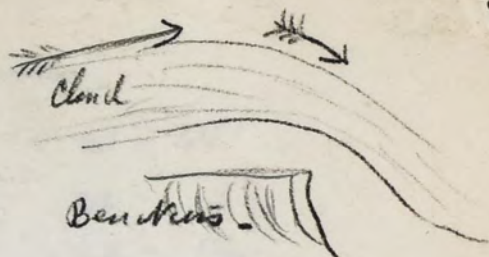


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May 6

at 11 <sup>h</sup> clouds passing  
over Ben Nevis from S.  
and passing down the N  
side into the valley -



at 22 <sup>h</sup> Black Ball put one stage lower on post A -  
This afternoon the low level door at coal-cellar was  
dug out -

May 7

Solar halo in forenoon - A rough measurement  
at 10 <sup>h</sup> gave Radius =  $22^{\circ} 36'$  (Red inside.)  
A better set of measurements at 12 <sup>h</sup> gave -

I { Radius of Red (a)  $22^{\circ} 36'$   
" " (b)  $22^{\circ} 36'$   
" " (c)  $22^{\circ} 0'$

II { " " (d)  $22^{\circ} 42\frac{1}{2}'$   
" " (b)  $22^{\circ} 36'$   
" " (c)  $22^{\circ} 36'$

III { " " (a)  $21^{\circ} 36'$   
" " (b)  $21^{\circ} 2'$

IV { Radius of Blue (a)  $24^{\circ} 28'$   
" " (b)  $24^{\circ} 28'$   
" " (c)  $24^{\circ} 13'$

Measurements in II and  
III were taken alternately;  
II being radius of red  
on upper side of halo  
and III on lower -  
Red in III not well defined.

Ia and IV b were measurements of same portions of arc  
II b and IV c " " " " "



at 13<sup>h</sup> measurements got were

Radius of Red	upper side	21° 48'
"	"	23 " 3
"	"	22 " 12

Shortly after the measurements were made at 13<sup>h</sup> the cir-s clouds on which the halo was formed changed into cir-c and it disappeared ~~7~~ but soon came into view again on some filmy cir-s

This afternoon the flexible shaft of the Robinson Anemometer was repaired (see p. 6) and the instrument set going -

May 8 Robinson Anemometer was tied up at 7<sup>h</sup> but set going again at 10<sup>h</sup> at 17<sup>h</sup> however it was found that the flexible shaft had broken again -

May 9. Snow flakes at 7<sup>h</sup> were very large, from  $\frac{3}{4}$  inch to 1 inch in diameter -

May 10 Thermometer Box shifted at 1<sup>h</sup> 12<sup>m</sup>. No 50852 = Wet 192677 and Min 138545 put in. Height above snow not altered.

At 9<sup>h</sup> small bird, not a bunting, seen on roof.

May 11 Dense rolling Cum. all round in afternoon -



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May 12 Thermometer Box shifted at 1<sup>h</sup> 20<sup>m</sup>  
 Dry 192660 : Wet 192672 and Min 138533 put out -  
 Height above snow not altered -  
 Faint upper arc of halo seen at 5<sup>h</sup>  
 No fog in valleys, but Cum. on hills round most of  
 the day -

May 13 at 21<sup>h</sup> it was found that the cyne paper  
 which had been put out at 9<sup>h</sup> was blown away -  
 No Black Bulb was put out today -

May 14 Thermometer Box shifted at 10<sup>h</sup> 30<sup>m</sup> Dry  
 50852 = Wet 192677 and Min 138545 put out -  
 Height above snow not altered -  
 at 17<sup>h</sup> the wind was E<sup>s</sup> (2-3) but the sky was  
 covered with cumulus at no great height moving  
 from NNW -

May 15 Thermometer Box shifted at 14<sup>h</sup> 15<sup>m</sup>  
 Dry 192660 = Wet 192672 and Min 138533 put  
 out. Height above snow not altered.  
 No Black Bulb out today -

May 16 Double Sunar corona at 2<sup>h</sup> on low  
 clouds : too faint to measure -



at 3 hours cum-fog on hills all round -  
 at 4 hours level - topped all over Western hills -  
 On the this fog the shadow of Ben Nevis was  
 clearly seen at 4<sup>h</sup> - 10<sup>m</sup> - Fog also on hills far  
 to E & NE -

Fragment of Solar halo at 5 hours  
 at 11 hours the Black Bull was taken in -  
 The snow which fell at night was small & hard.

May 17 Barograph stopped at 6<sup>h</sup> Cause of stoppage  
 not known -

at 21<sup>h</sup> found that the ozone paper  
 was blown away off the catch -

No Black Bull at today -

May 18 at 21<sup>h</sup> it was found that the ozone  
 paper was blown away -

The snow that fell at ~~the~~ night was hard  
 and icy in texture -

May 19 Thermometer Box shifted at 22<sup>h</sup> - 20<sup>m</sup> - Dry  
 50852 = Wet 192677 and Min 138545 put  
 out - Height above snow not altered -

at 23<sup>h</sup> the Wet Bulb read 31.8 - It had evidently  
 not frozen after being wet - The air was



evidently saturated, so the Wet Bull on  
 Daily sheet was entered the same as Dry - 277.  
 At Midnight the Northern horizon was faintly  
~~it~~ tinged with red by the Sun.

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May 20

Faint brown colour under Moon at 2 <sup>hrs</sup>  
 Brown colour under Sun at 5 <sup>hrs</sup>  
 Solar halo at 7 <sup>hrs</sup> Colours faint: red inside.  
 At 10 <sup>hrs</sup> Triple Solar corona on Scud; too  
 fleeting to measure -  
 Air very clear to SW in early morning -

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May 21

Dark but not thick haze in valleys at  
 night. No Black Bull out.

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May 22

Faint brown colour under Moon at 1 <sup>hrs</sup>  
 Brown colour under Sun at 6 <sup>hrs</sup> and low fog  
 on Loch Lochy -  
 At 7 <sup>hrs</sup> cloud above Sun coloured red & blue in  
 patches (about  $5^{\circ}\frac{1}{2}$  above the Sun). When it came  
 nearer to the Sun the colours vanished. There was  
 no trace of arrangement in the colours. The  
 cloud was of the cir-c type.  
 At 8 <sup>hrs</sup> 3<sup>m</sup> a similar cloud showed the



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same colors, but as this cloud approached the sun the the colors formed a more regular corona; being arranged as in diagram -



Another cloud passed at 8<sup>h</sup> - 6<sup>m</sup> giving similar colors - the violet and blue in this one were very bright.

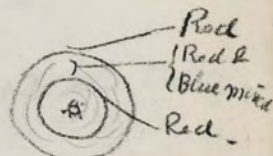
a third cloud passed at 8<sup>h</sup> - 10<sup>m</sup> also with bright violet, blue & green - a measurement of the inner red of this last gave for Radius 3° 31'.

at 10<sup>h</sup> Ben Wayre's seen distinctly and looking very high -

May 23

at 4<sup>h</sup> the Sun was behind a thick bank of haze & its disc scarcely discernable; a faint upper glow at about 45° above the Sun was seen -

Solar corona at 12<sup>h</sup> colors as in diagram - inner & outer Red distinct but space between very mixed in color.



Radius of inner Red	3° 25'	3° 25'	3° 18'	3° 25'
" Outer Red	6° 41'	6° 35'	6° 41'	6° 41'



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Very thick haze all round last night and all today - At 16<sup>hr</sup> both cir-c and cir-s were observed - The cir-s was distinctly below the cir-c but was ~~apparently~~ apparently moving in the same direction ; SSW -

at 20<sup>hr</sup> the high Cumulus appeared to meet the haze all round leaving no clear sky -

The rainfall at 21<sup>hr</sup> is filled in by interpolation - The rain came on in short sharp showers while the air was dry -

May 24

At 18<sup>hr</sup> 10<sup>m</sup> Dry 2 Wet shifted - Dry 192660 and Wet 192672 put out - Min and Box not shifted - During the dry fog today the air felt very close and warm -

William Stewart came up to the Observatory today and played overnight -

May 26

Thermometer Box shifted at 16<sup>hr</sup> 10<sup>m</sup> Dry 50852 = Wet 192677 and Min 138533 put out -

Height above snow not altered -

The Black Bulb was only put out at 13<sup>hr</sup> today -

May 27

at 6<sup>hr</sup> faint brown colour under sun -



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At 9<sup>h</sup> ascending currents from Glen Nevis forming cum. clouds.

At 13<sup>h</sup> bright halo seen. Red inside, then yellow, and blue outside. The following measurements were made.

Radius of	Red	= Yellow	= Blue	
1 <sup>st</sup>	21° 24'	23° 44'	24° 43'	↗
2 <sup>d</sup>	22" 0	22" 49	24" 43	↔
3 <sup>d</sup>	22" 12	23" 30	24" 13	↕
4 <sup>th</sup>	22" 0	23" 3	24" 43	↘

The double arrows represent the diameters along which the 4 measurements were made.

Dorm and windows a good deal blocked with drift at night.

May 28 Ozone test paper was shifted at 22<sup>h</sup> instead of at 21<sup>h</sup>. No Black Bull out. Barograph stopped about 12 hours = cause unknown.

May 29 Thermometer Box shifted at 4<sup>h</sup> 12<sup>min</sup> Dry 192660 = Wet 192677 and Min 138545 put out. Height above snow not altered. Fog rising from Glen Nevis in forenoon. Huge masses of cum all round at 13<sup>h</sup> Snow at 14<sup>h</sup> hard and dry. Air may have been dry. The Black Bull was put out at 10<sup>h</sup>



May 31

No colour round Sun in forenoon, but at 15<sup>hr</sup> a faint brownish glow was observed. A very faint afterglow was seen at 21<sup>hr</sup>.  
 at 9<sup>h</sup> 50<sup>m</sup> the Thermograph clock which was on Barograph was taken off and its own clock replaced.

The door and windows were a good deal blocked up during the last week of May. They were dug out on May 31<sup>st</sup> after being closed for 4 days.

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June 1

Brown colour under Sun at 5 and 6 hours.  
 Fragment of halo, Red inside seen at 13<sup>hrs</sup>  
 Haze to N<sup>o</sup> of a curious green colour at 22<sup>hr</sup>.  
 Today Mr Wm Whyte and another came up and dug open the Hotel.

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June 2

at 7<sup>hr</sup> Volunteer Rifle shooting heard distinctly.  
 Wm Stewart came up today and spent the night at the observatory.

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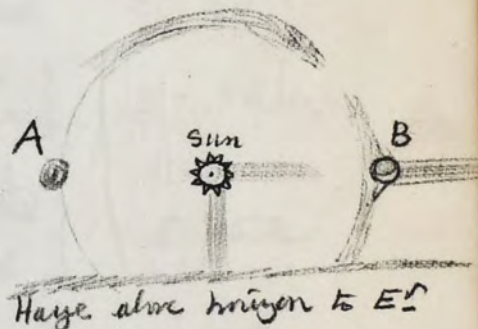


June 3

Wet bulb reading at 9<sup>h</sup> rather doubtful as it may not have had time to rise past  $32^{\circ}$ .  
At Midnight the higher cirrus clouds to N<sup>w</sup> were bright, apparently with sunlight, but the lower ones were quite dark.

June 4

At 5<sup>h</sup> - 10<sup>m</sup> Halo and Mock Suns observed.  
Halo Red inside and Blue outside. Mock Suns at A and B so bright as to be dayling - B the brightest.



Radius from Centre of Sun to Centre of Mock Suns  $23^{\circ} 17'$ .  
Vertical white segment below Sun, and horizontal segment passing through Mock Suns - This horizontal segment was  $12^{\circ} 32'$  above the level topped haze -  
at B. the red of the halo was not broken, the white Mock Sun being outside it.  
The following measurements of the halo were made.

Radius of Red	$22^{\circ} 36'$	:	$22^{\circ} 36'$
" " yellow	$23^{\circ} 3$	:	$23^{\circ} 30$
" " Blue	$23^{\circ} 44$	:	$23^{\circ} 46$

The Mock Sun at A. was coloured Red, yellow, & Blue in same order as the halo -



at 8<sup>hr</sup> Halo seen again; rather faint.

Radius of inside of Red	22° - 0'	} Measured on lower segment of Halo.
" outside of Red	23 - 17'	
" outside of Blue	24 - 43	

at 8<sup>hr</sup> a corona was also observed on cir.c.

Radius of inside of inner Red	2° - 50'
" " outside of inner Red and inside of Blue	} 3 - 46
" " Outside of Blue and inside of outer Red	
	} 5 - 52

Corona was faintly seen again at 13<sup>hr</sup>

No unusual colors round Sun when clear of clouds -

June 5

at 13<sup>hr</sup> the rain gauge which was buried out of sight on April 7. (see Vol I page 239) was found and taken in -

June 7

at 0<sup>hr</sup> - 10<sup>m</sup> thermometer box shifted one stage lower on ladder stand. Thermometers not shifted -

No glare round Sun all day, but thin cone at W<sup>r</sup> horizon at 16<sup>hr</sup> Halo at 18<sup>hr</sup>.



June 8

Fog on hills to SE in early morning which gradually spread over to Ben Nevis.

At 22<sup>h</sup> 5<sup>m</sup> Black Bull put one stage lower on Post A.

June 10

at 17<sup>h</sup> Raven heard croaking, but not seen.

Today Wm Stewart, Macdonald (hired man) and one horse came up. The horse got right up to the Observatory the snow being hard. This is the first horse up this year.

June 11

at Midnight the Dry and Wet read 36.1 and 35.2 though the Dry had a large drop of water hanging from it.

Today the top of the iron cage came in sight.

June 12

At 14<sup>h</sup> 10<sup>m</sup> Thermometer Box shifted one stage lower on ladder stand. Thermometers not shifted. Though not very high above the general surface of the snow, there is a deep hollow under it.

Today Mr W. Hay came up to the Observatory.

June 13<sup>th</sup>

At 8<sup>h</sup> 15<sup>m</sup> Black Bull was put out and shifted one stage lower on Post A. Mr. Oswald went down hill today on his way to Edinburgh, and left Mr. Rankin in charge at Observatory.



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June 17<sup>th</sup>

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At 22 hrs. a dark purple belt was observed to S<sup>ds</sup>, rising from Horizon to E<sup>ds</sup> to 15° above horizon to SSE<sup>d</sup>, and sinking again to horizon to SW<sup>a</sup>. At same time ordinary sun-set colours were observed at NW<sup>rs</sup> horizon. At 23<sup>h</sup> and at midnight the cirri clouds to N<sup>d</sup> shone with a bright silvery light (not auroral); the brightest parts were about 15° above the horizon.

June 18<sup>th</sup>

From 21 hours till Midnight the roof of Observ<sup>y</sup> was quite wet with water blown by wind from face of Precipice to N<sup>ds</sup>.

June 19<sup>th</sup>

Fog at horizon and over hills today till 22 hours, when it cleared away. After the Midnight Observation the Black Bull was shifted down one step on Post A, and the extra length on that post was taken off.

June 20<sup>th</sup>

At 20 hours fog, which was observed during the afternoon to W<sup>d</sup> and NW<sup>d</sup>, reached the Ben and began to drive over summit. At the same hour part of a Solar Halo, a fog bow, and 'Glories' were observed. Part of a Solar Halo was also observed at 15 hrs. No measurements were obtained.

June 23<sup>rd</sup>

At oh. 10 m. the thermometer box was lowered one step on ladder stand.



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June 25<sup>th</sup>

Today Mr. Ormond returned to the Observatory, and Mr. Hay departed.

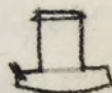
June 28

The 3<sup>rd</sup> observation was not taken till 3<sup>h</sup> 11<sup>m</sup>. No corrections applied to readings -

June 29

at 12<sup>h</sup> the greater part of the clouds was evidently below the level of the top of Ben Nevis. In the afternoon, though there was fog on, the air was distinctly dry -

Today three rain gauge, screw plug pattern but higher in the rim than the last set, arrived at the Observatory -



June 30 at 22<sup>h</sup> Black Bull shifted one stage down on post A -

at 23<sup>h</sup> 5<sup>m</sup> Dry and Wet shifted. 192671 (new ther.) put out as dry, and 192677 as Wet - Box 2 Min not altered -

In the month of June about 140 tourists climbed Ben Nevis -



July 1

at 10<sup>h</sup> the lower clouds were distinctly of cir-c type. They formed to WSW of Bea Vén's ~~at~~ and passed quickly overhead, at a height of about 200 feet. There seemed to be a strong down current to E<sup>o</sup> of the Ben which sucked them down & made them vanish.

Today the Sunshine-recorder stand was sent to Casella for repairs (see Vol I p. 227.) the glass globe & paper being mounted on a temporary stand -

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July 2

at 15<sup>h</sup> 8<sup>m</sup> Thermometer Box shifted one stage down on ladder stand. Thermometers not altered. at 22<sup>h</sup> Black Ball shifted on stage down on Post R. Both these are now in their lowest positions.

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July 3

at 15<sup>h</sup> 2 16<sup>h</sup> though the dry read higher than the wet there was a large drop of water hanging from it.

The depth of snow <sup>is</sup> difficult to estimate now as the ~~the~~ snow has thawed away around the foot of the post exposing the stones.

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July 4

Dense cum-fog over all the hills round at night. Rising to over 4000 ft.

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July 5

at 22<sup>h</sup>-20<sup>m</sup> Dry 192660 and Wet 192672

put out in old clock Box. This afternoon began to use the new rain gauges (see p. 22).

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July 6

Today's Dry and Wet are taken from the instruments in old clock Box. At 4<sup>h</sup>-5<sup>m</sup> Dry & Wet taken in from small Box on ladder stand. At 20<sup>h</sup> Max <sup>117293</sup>~~18687~~ and Min <sup>116918</sup>~~18697~~ put out in clock Box - Min 13852.5 and small Box taken in after 21 hr. At 22<sup>h</sup> Black Ball shifted to its own post & bracket taken in.

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July 12

at 22<sup>h</sup>-15<sup>m</sup> Dry 192671 and Wet 192677 put out in small box on ladder stand 112 inches above ground, to be read with the others in clock box.

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July 15

Mr Gray came up to the Observatory today as extra summer assistant.

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July 16

Began to charge extra scapence on  
public telegrams.

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July 17

Today the roof was taken off the  
Temporary coal cellar built in 1884 and some  
of the coke in it transferred to the large  
coal cellar.

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July 19

at 10<sup>h</sup> it was found that the sunshine  
recorder stand had been blown over. The  
glass ball rolled across the lead roof and  
fell to the ground on the west side of the  
new buildings, but was uninjured except  
for a few scratches. The record between  
9 and 10 hours may therefore be too short.  
The 20<sup>th</sup> observation was not taken till  
20<sup>h</sup>. 5<sup>m</sup> No correction applied to readings.

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July 23

Today the older side screw gauges  
that were in Edinburgh for repairs were  
returned to the observ. They were put out  
at 15<sup>h</sup> & all hours after that.

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1886

July 24 Today the brass work of the Sunshine recorded was returned to the Observatory.

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July 28 at 11 hrs the wet bulb readings may be too low, as it was frozen -

Today Mr H. N. Dickson came up to the Observatory - He brought with him his common thermometer Black Bull in vacuo which was put out at  $15^{\circ} - 50^{\circ}$ .

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July 29<sup>th</sup> Mr Omond went down the hill leaving Mr Dickson in charge.

During July about 500 tourists ascended Benckiss.

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August 3<sup>rd</sup>. Very thin fog hanging round hill top - covering at times - in early part of night after 23 hrs top was almost continuously enveloped but fog was so thin that sky could be quite well seen.

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August 14<sup>th</sup>. At 13 hrs solar halo observed - no corona visible. Measurement for Stephanos  $23^{\circ} - 30'$ ,  $23^{\circ} 3'$  and  $22^{\circ} 36'$  (Radii)



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At 15 his new cosmic dust-collector was put out with funnel of old one, the new funnel having been broken in transit.

Today Mr J. J. Morrison came up to the Observatory.

Overhauled Direction Anemometer, found that brass fitting on upper end of thin rod was simply pushed on to the rod without screw or pin. Drove it on as tight as possible and screwed the rod up so as to leave almost no play. Found that the vane had often been moving without the recording apparatus - the brass fitting simply turning on the rod. After careful adjustment vane was found to work easily. Re-set recording drum - error not over one point, probably east of north.

August 15. Mr Rankin went down.

August 16. On taking in rain gauge at 5 hrs it was found that hole in top of plug had been drilled through the plug and that the water leaked freely through the hole. All the rain-fall readings with this gauge, i.e. since July 23rd are therefore more or less trustworthy. The gauge had been marked for testing a few days previously - as some of the readings appeared unaccountably small. On the whole the errors are not likely to be large except in cases of heavy rain-fall. Another plug was substituted and both gauges carefully tested.



August-17<sup>th</sup>. Professor Crum Brown visited the Observatory.

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August 18<sup>th</sup>. In early morning sky almost completely covered with very high cumulus, which became slowly denser; a thin haze lying over the hills. At 3 hrs the eastern sky was of a deep orange colour, there being a clear band of about  $10^\circ$  between the horizon and the edge of the cloud. At 4 hrs conditions were much the same, except that the clouds were tinged here and there with red. About 4 hrs 15 min white fog began to form on the hills. Sometimes dark strata were formed in the valleys, which thickened and became fog, and in some place detached masses of mist rose up in cumulus form, and after reaching a certain height folded in and became umbrella-shaped with long filaments hanging down. Meanwhile the clouds above seemed to close in and descend and at 5 hrs they formed a thick pallium. The clear band to eastwards persisted after the sun had risen and gone along the edge of the pallium, after which it assumed a green colour.

---

August-19<sup>th</sup>. At 3 hrs faint fog now observed too large to measure.

At 5 hrs 50 min. two arcs of a bow were seen, centre apparently due west; on fog bank lying over west end of hill. The outer edges of these arcs were tinged with red.



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At 13 hrs solar halo observed, radius  $24^{\circ}14'$

Position of sunshine recorder shifted at 16 hrs as it was being shaded by kitchen chimney.

Ozone test read at 10 hrs instead of 9 hrs.

---

August 20<sup>th</sup>. At 2 hrs the surrounding hills were entirely covered with fog, which rose to a height of about  $15^{\circ}$  on all sides, leaving the top of the Ben in the bottom of a sort of cup. The upper edge of the fog was almost quite level all round, and sharply defined. A faint lunar corona was observed, and appearance of stars indicated presence of a good deal of vapour. No clouds were observed except small quantity of cirrus.

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August 24<sup>th</sup>. Mr Day visited the Observatory and inspected roof of kitchen, for repairs.

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August 27<sup>th</sup>. Barometer reading at 6 hrs was not noted till 10 hrs - and is therefore doubtful, but probably correct.

At 20<sup>hrs</sup> 50<sup>min</sup>. heavy hail shower commenced, changing to rain at 21 hrs. Rain continued but air being very dry almost no record was given by gauges - stones, thermometer boxes &c remained quite dry till after 22 hrs



August-29<sup>th</sup>. Today Mr Morrison left the Observatory - and the duties of First-Assistant were undertaken by Mr Gray - Telegraph Assistant.

August 30<sup>th</sup>.

Plumber began to repair roof round kitchen chimney.

Today Telegraph Lineman came to the Observatory and recharged batteries, inspected and readjusted instruments.

about 850 tourists ascended Ben Nevis in August.

1<sup>st</sup> September. At 1 hr readings of Dry and Wet No 192671 and 192677 in small box 112 inches above ground, were discontinued; also readings of Mr Dickson's Black Bull. The latter instrument was taken in.

Mr Omond returned to the Observatory. Mr Mitchell and Mr Fley visited the Observatory inspected the buildings, and made arrangements for necessary repairs.

September 2

Today Mr H. K. Dickson left the Observatory. Plumber finished repairing roof of kitchen, the lead having been made tight round the stonepipe, & all leaks stopped.

September 3<sup>rd</sup>

Some readings of high level box were taken at night. (see p. 24)



September 4

This afternoon the Cosmic Dust collector was brought in & put in middle room of tower to settle -

September 6

John Duncan left the observatory this evening -

September 7

The 14<sup>hr</sup> observation was not taken till 1 minute after 14<sup>hr</sup> owing to not knowing time correction of clock. James Miller returned to the observatory this afternoon -

September 9

The tarpaulin on kitchen roof was badly torn by the wind in the afternoon -

September 13

Dense soft looking fog in valleys to West and North in early morning -

September 14

at 22<sup>1</sup>/<sub>2</sub> Lunar fog low, white; and misty corona. Both formed on Scud. Today guide posts were erected down to Buchans Well for use in winter -



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September 15

Fog in patches on hills in morning -  
and before sunrise dense fog over Loch Arkaig.  
Level sheet of fog covering Eastern hills in the  
evening and haze in the valleys round Ben Nevis.  
Today an additional post was put up in the cairn  
immediately below Buchans Well, and the bearings  
of the other posts determined.

These bearings were as follows -

(Magnetic)

Buchans Well to post at corner of Road - - - - -	SSE $\frac{1}{4}$ S
Corner Post to lower small post - - - - -	SE
Lower to Higher small post - - - - -	SE $\frac{1}{4}$ E
Higher small to edge of Stewarts corrie - - - - -	SE $\frac{1}{4}$ S
Edge to Middle of Stewarts Corrie - - - - -	SE $\times$ E
Middle of Stewarts corrie to top of Macleams steep - - - - -	ESE
Above Macleams steep to 2 <sup>d</sup> post - - - - -	SE $\frac{1}{2}$ S
2 <sup>d</sup> post to First Gorge - - - - -	ESE $\frac{1}{4}$ S
First Gorge to B.N.O. - - - - -	E $\frac{3}{4}$ N.

September 16

Very thick haze in the valleys rising  
to rather above the level of Ben Nevis all day,  
and blowing across the hill top as thin fog at  
night -

September 17

Haze similar to yesterday, but with  
patches of cumulus fog in it.



Today the Sunshine recorder was set half an hour fast by mistake -

September 18

Dense haze and fog in valleys to about 4000 feet in early morning -

Today a new Crystal Hygrometer working with methylated spirit arrived at the observatory -

September 19

At 4 <sup>hr</sup> there was dense foggy looking haze all round & below the Ben, but no corona or unusual colours at Morn -

September 21<sup>st</sup>

Today the thermometer-box and the black-balls were encrusted with snow and ice, the latter so much so as to render it impossible to set it at night.

At 21 hours an Aurora was observed having two arcs from the lower of which short-streamers were seen ascending.

At 21 hrs. 5 mins a brilliant meteor was seen to SW<sup>th</sup> at 45 degs. altitude moving slowly towards SE. It was so bright as to light up the upper rooms of the tower, and lasted for about 6 secs. It made no audible noise. Its length was approximately from 12 to 15 yds. Before fading the head was yellow - the tail being of different colours having a great amount of blue.

Today Mr. Edmund left, and Mr. Rankin returned to the Observatory.



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September 22<sup>nd</sup>

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At 15 hrs. 20 mins. the thermometers (Dry and Wet) were taken in, being too much encrusted with snow and ice for readings to be satisfactory, and Dry-bulb 192671 and Wet-bulb 192677 were put out.

The reading of the Black bulb today is doubtful, not having been set till 14 hrs. owing to being tightly frozen to its support.

September 23<sup>rd</sup>

Black bulb reading again unsatisfactory owing to the above cause.

Today Water was carried on horseback from the Red-burns, wragge's Well having been quite dry since the morning of the 21<sup>st</sup> inst.

September 24

The Black Bulb could not be set at 20<sup>hr</sup> as usual as it was firmly frozen to its stand.

September 25

Today Mr Omond returned to the Observatory. Water was again carried up from the Red Burn -

September 27

At 5<sup>hr</sup> St Elmos Fire observed on lightning conductor -

Thunder heard at 15<sup>hr</sup> 33<sup>m</sup>

Thunder and lightning at 19<sup>hr</sup> 40<sup>m</sup>

Several flashes of lightning between 20 & 21 hrs.

Thunder, lightning and Earth currents about 23<sup>hr</sup>



September 28

Lightening seen (one flash) at 3<sup>h</sup>. 3<sup>m</sup>.

Thunder heard at 5<sup>h</sup>. 27<sup>m</sup>.

Mr Gray left the observatory today -

September 30

Today the hatches in the roof of the coal cellar were closed & tarpaulin nailed down over them -

October 1<sup>st</sup>

Today new steps were fitted in the upper part of the ladder in the tower.

Mr Whytes Hotel was closed today for the season -

October 3.

No report was sent today to the papers, as the observing telegraph wire had got foul of some others & signals could not be exchanged with Fort William -

October 4

At about 19<sup>h</sup>. 30<sup>m</sup> this evening communication was restored with Fort William, and the telegraph wire put in good order -

October 5.

Though no rain appeared to fall the mist contained large isolated drops of water both yesterday and today -



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October 6 at about 18<sup>h</sup> the hill top cleared leaving fog over the lower hills and rather high clouds of cumulus type above. Thunder was heard at 17<sup>h</sup> 45<sup>m</sup> and distant thunder & lightning at 18<sup>h</sup> 5<sup>m</sup> = 18<sup>h</sup> 16<sup>m</sup> and several times about 21<sup>h</sup>. at 19<sup>h</sup> lightning was seen in the distance to SSE low down just above the fog - at 21<sup>h</sup> 38<sup>m</sup> a flash was seen followed closely by thunder = at the time of the flash a sharp crack was heard in the tower stove pipe, as if a discharge had gone down the lightning rod, another flash with a similar crack, and followed closely by thunder, occurred at 21<sup>h</sup> 47<sup>m</sup>. From 21<sup>h</sup> 40<sup>m</sup> to 21<sup>h</sup> 47<sup>m</sup> rain fell heavily and the top was enveloped in thick mist. No thunder or lightning was observed between the flash at 21<sup>h</sup> 38<sup>m</sup> and that at 21<sup>h</sup> 47<sup>m</sup> and none after the latter = during that time the thunder-cloud seems to have been resting on, or crossing over, the hill top. No damage was done to the observatory or hotel.

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October 7 at 12<sup>h</sup> a Solar fog-bow was observed.  
 No colours, only a broad white band -  
 Radius to inside of bow  $36^{\circ} 20'$   
 " outside "  $43^{\circ} 36'$ .

This afternoon the Robinson Anemometer was taken down -

October 9 Between 12 and 13 hours the paper in the Sunshine Recorder was blown along its groove = the record for that hour is therefore doubtful -

October 10 At 15<sup>h</sup> the Black Bull was taken in as it was all encrusted with ice. The ground today got all covered with dry snow - about 2 inches deep -

October 14 at 23<sup>h</sup> misty lunar corona. Double ring, outer blue inside the red, 2 inner yellowish. Size varying rapidly, brightest when largest. Radius of inner red when of medium size  $2^{\circ} 26'$

October 17 The snow which fell early this morning was in large soft flakes and



was not hard and dry like the last -

October 18

Today and yesterday ~~the~~ evening the ground was all icy - Survives of thermometer box badly choked at night, especially to windward.

October 20

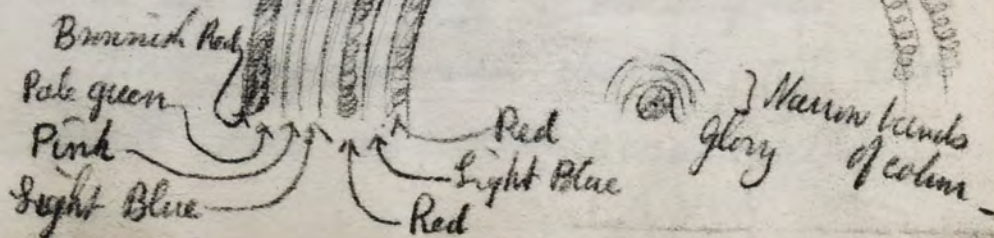
at 10<sup>h</sup> the time error of the standard clock was found to be 5<sup>m</sup> 5<sup>sec</sup>. It had been supposed to be only 1<sup>m</sup> 30<sup>sec</sup>. The times since the 16<sup>th</sup> have therefore probably a gradually increasing error, but no correction has been applied to any readings.

October 21

The fog or sand cleared overhead occasionally at 17 & 18 hrs showing blue sky with some cirrus.

October 22

Fog low & clear  
at 11<sup>h</sup> - 25<sup>m</sup>





Columns as in diagram on last page. The order of columns in the glory was not determined. No measurement was got as the bow had vanished before the stephane was got out. The pink was a badly defined space, not a true band.

Auroral streamers seen at 21<sup>h</sup>: the arch appeared to be just about the horizon. Thick haze in the valleys and over the other hills at night.

October 23

Low fog over lochs in Caledonian canal valleys at 8<sup>h</sup>

October 24

White icy fog crystals forming at night.

October 25

at 16<sup>h</sup> glory seen on fog to NE? Rather misty and badly defined. 4 rings: inner one a mere blotch; second, yellow & red - the brightest of the 4; third, green and red = fourth, only red seen clearly. The third and fourth were only seen occasionally.



Radius of First Red  $1^{\circ} 10'$  (bad observation)  
 " Second Red  $3^{\circ} 46'$   
 " Third Red  $6^{\circ} 18'$   
 " Fourth Red  $7^{\circ} 22'$   
 " Yellow in 2<sup>d</sup> Ring  $2^{\circ} 55'$   
 " Green in 3<sup>d</sup> Ring  $4^{\circ} 31'$

October 26 Meteorite seen at  $20^h 2^m$  Started at about  $60^{\circ}$  altitude to the E.S., and fell almost vertically only inclined at  $10^{\circ}$  to S.

October 27 This afternoon the tank at Wragges Well was emptied & put aside.

October 28 at  $15^h 7^m$  Dry and Wet Bulbs were shifted. Dry 192660 and Wet 192672 put int.

51 Tourists climbed Ben Nevis during October. at the end of the month the hill top was perfectly clear of snow.



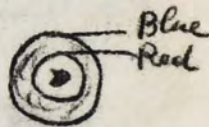
1886-

November 2

at 4<sup>h</sup> 5<sup>m</sup> St Elmo's fire seen on lightning conductor, anemometers and kitchen chimney - The bushes of light were broad looking and bright - Hard dry snow was falling at the time -

November 5

at 18<sup>h</sup> Lunar Corona seen colonies as in diagram (outer Blue probably a margin) Radius of Red 2° 17' and of Blue 4° 43'.



Well defined halo seen all evening - The two following measurements were taken -

at 19<sup>h</sup> Radius = 22° 36'

at 20<sup>h</sup> " = 22° 0'

Fleeting corona also seen = colonies as in diagram -



at 19<sup>h</sup> a light was seen to Northward possibly auroral -

at 22<sup>h</sup> 15<sup>m</sup> Small box put out on ladder stand with Dg 192671 and Wd 192677 but its readings were not used -

Heavy drift at night, gauges useless but apparently no snow fell -



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November 6

Very squally all morning with strong back swirls in the wind.

No gauge was out till 19<sup>h</sup> but probably no snow fell.

at 14<sup>h</sup> the thermometers in the old clock box were taken in, and at 21<sup>h</sup> Min 138533 was put out in the small box. The readings of the thermometers in the small box were used all today.

The following are the duplicate readings taken.

		Large Box		Small Box	
Hour		Dry	Wet	Dry	Wet.
Nov 5 -	23	24.1	24.1	24.3	24.3
"	Midnt	24.0	24.1	24.4	24.5
Nov 6.	1	24.3	24.4	24.5	24.5
"	2	25.4	25.3	25.3	25.3
"	3	25.1	25.1	25.0	25.0

November 7

at 11<sup>h</sup> though the temp. was 21° minute drops of rain were falling.

Thermometer Box shifted at 12<sup>h</sup> 25<sup>m</sup> Dry 192660 :  
Wet 192672 and Min 138575 put out.



November 8

Today one of the Observatory horses was up, probably for the last time this year.

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November 9

The fog crystals forming today were slightly brown in color.

Thermometer Box shifted at 15<sup>h</sup> 15<sup>m</sup> Day 192671 =  
Wet 192677 and Min 138533 put out.

Fleeting misty double lunar corona, yellow inside and blue outside seen at 21<sup>h</sup>

Great masses of cumulus - fog all round at night, and also over the Southern hills.

---

November 11

at 8<sup>h</sup> the shadow of Ben Nevis was seen on low clouds to NW. 2 with it a badly defined glory - a portion of a solar Halo was observed at 10<sup>h</sup> and also at 11<sup>h</sup> Red inside.

at 14<sup>h</sup> the Western hills were topped with a sheet of ~~3~~ fog reaching from about 2000 to 5000 feet height, & extending from Mull to the extreme north - This rolled on and reached Ben Nevis at about 15<sup>h</sup>.

Thermometer Box shifted at 8<sup>h</sup> 10<sup>m</sup>. Day 192660  
Wet 192672 put out - Min 138533 left out.

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November 12

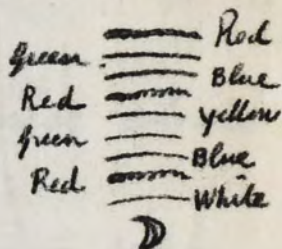
Box shifted at 11<sup>h</sup> 30<sup>m</sup> Dry 192671;  
Wet 192677 and Min 138545 put out.

Double fog bow seen at 13<sup>h</sup> outer bow white =  
inner bow Red and Blue, Red being inside.

Faint single fog bow (white) seen at 14<sup>h</sup>.

Solar fog bow and misty corona at 18<sup>h</sup>

Triple corona at 19<sup>h</sup> columns  
as in margin -



Radius of inside Red 1° 2½'

" middle Red 2° 29'

" middle Green 2° 3'

Size varying - Measurements were stopped by ice  
crystals from passing mist clogging Stephanome -  
White fog-bow seen at same time.

Portion of Halo seen at 21<sup>h</sup> Radius = 21° 13'.

Thin gauzy fog or mist filling valleys up to  
the level of top of Ben and hiding hills round  
all night.

November 13

Fog similar to last till 5<sup>h</sup> after which  
it rose and covered the hill tops - The drizzling  
rain covered all exposed surfaces with ice.

November 14

Thermometer Box shifted at 0<sup>h</sup> 15<sup>m</sup> Dry  
192660; Wet 192672 and Min 138533 put out.



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Meteor seen at 5<sup>h</sup> - 10<sup>m</sup>

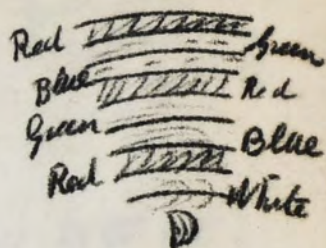
Purple lunar corona seen at  
5<sup>h</sup> columns as in diagram.

Radius of Inner Red 1<sup>o</sup>. 23<sup>1</sup>/<sub>2</sub>

" Middle Red 2<sup>o</sup>. 52

" Outer Red 3<sup>o</sup>. 36

" Inner Blue 1<sup>o</sup>. 34<sup>1</sup>/<sub>2</sub>.



at 7<sup>h</sup> Red, green and blue sunrise columns  
in Eastern sky -

at 10<sup>h</sup> Sky at North-eastern horizon sickly  
green in colour: gloomy to North-west.

November 16

Fog low seen at 11<sup>h</sup> Red outside and  
white inside - a fainter low was seen inside  
this one at times -

November 17

at 10 hours the snow that was falling  
consisted of very small needle shaped crystals -

November 18

Thermometer Box shifted at 4<sup>h</sup> - 20<sup>m</sup>  
Dry 192671 ; Wet 192677 and Min 188545  
put out -

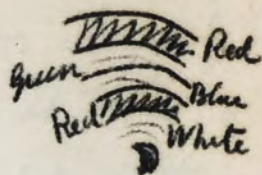
Meteor seen at 5<sup>h</sup> - 7<sup>m</sup> to WSW -



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Double corona (lunar) at 7<sup>h</sup>  
 colors as in margin - Too  
 variable to measure -



at 8<sup>h</sup> shadow of Ben Nevis

seen as a dark gap in rosey sky to NW.

at 16<sup>h</sup> distinct bank of stratus fog on hills  
 of Mull - Very clear to E<sup>2</sup> SE all afternoon.

November 21

Thermometer Box shifted at 3<sup>h</sup> 15<sup>m</sup>  
 Dry 192660 ; Wet 192672 and Min 138533 put out -

at 4<sup>h</sup> faint double corona and portion of lunar  
 fog-bow seen -

at 11<sup>h</sup> portion of halo (Red inside) seen -

Broken bits of fog-bow down on Lochs Eil and  
 Lochy in forenoon, but no continuous layers -

Hills round almost clear of snow -

November 23

At 5 and 6 hrs. the dark part of  
 the moon was clearly seen (new moon on 25<sup>th</sup>).

By the telescope the dark part looked light blue  
 in colour with large dark spots on the moons  
 surface -

Though the fog lay all round up to about



4000 feet no glories were formed on it; only patches of confused colour were seen at times -

This evening the mist covered the top of the Ben, but so thinly that the stars were clearly seen through it, yet distinct drizzling rain fell -

Faint aurora seen at night.

### November 24

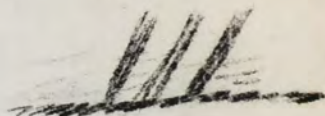
The dark part of the moon was seen again this morning similarly to yesterday -

at 7<sup>h</sup>-20<sup>m</sup> long dark gaps

like streamers in Eastern sky -

The Sun rose at about 8<sup>h</sup>-12<sup>m</sup>.

Brown colour under Sun at 9<sup>h</sup>



### November 25

Auroral arch (low down) seen at 23<sup>h</sup> with faint streamers -

### November 26

Meteorite (from Andromeda?) seen to W<sup>d</sup> at 0<sup>h</sup> 2<sup>m</sup>

### November 28

Bright display of St Elmo's Fire on lightning rod and anemometers at Midnight Heavy but dry & hard snow falling at the time -



1886.

November 29St Elmo's Fire on lightning rod  
at 5<sup>h</sup>. Snow falling at the time.Thermometer Box shifted at 9<sup>h</sup> 20<sup>m</sup> Dry 192671  
Wet 192677 and Min 138545 put out.November 30Thermometer Box shifted at 12<sup>h</sup> 15<sup>m</sup>  
Dry 192660 = Wet 192672 and Min 138533  
put out.December 4Faint misty lunar corona seen several  
times in evening. Too fleeting to measure.December 5Thermometer Box shifted at 8<sup>h</sup> 20<sup>m</sup>.  
Dry 192671 = Wet 192677 and Min 138545 put  
out. Put up one stage on stand. {First tier}  
Height above snow 53 inches. Depth at A. 9 inches.December 6Thunder heard at 5<sup>h</sup> 44<sup>m</sup>.  
Earth-current in telegraph cable about 10<sup>sec</sup> before  
the peal was heard.



December 7

Thermometer Box shifted at 4<sup>h</sup>-15<sup>m</sup>  
 Dry 192660 : Wet 192672 and Min 138533  
 put out. Height above snow not altered -  
 at 4<sup>h</sup> the Dry (No 192671) was below its scale  
 and the temp. of Wet was assumed to be also  
 that of the Dry -

December 8

At 4 hours the lower doorway was blocked by  
 drift and for the rest of the day the tower door  
 was used -

No rain gauge was out from 4 to 10 hours as  
 the drift made it useless, but apparently no  
 snow fell -

at 6 and 7 hours the wind was so strong  
 that it was impossible to go out to the  
 thermometer box - at 7 hours Mr Rankin went  
 out tied with a rope, but found himself unable  
 to stand -

The fog crystals formed this morning were very  
 slightly brown in colour -

at 20 and 21 hours fleeting double coronas  
 formed on snow.

at 8<sup>h</sup> the kitchen stove pipe took fire but no damage  
 [was done.]



December 9.

This evening the ventilator in passage at kitchen door was opened without its cover.

December 10

Thermometer Box shifted at 22<sup>h</sup> - 20<sup>m</sup>  
 Dry 50850 ; wet 50852 and Min 138545 put out -  
 Height above snow not altered -

at 23<sup>h</sup> the Dry read 21-6 and the Wet 28-8,  
 it had evidently not had time to cool down -

This morning the door at coal-cellar was  
 dug open again -

December 11

Dry and Wet bulbs shifted at 2<sup>h</sup> - 10<sup>m</sup>.  
 Dry 192660 and Wet 192672 put out - Thermometer  
 Box and Min not shifted -

The snow which fell at night was soft and  
 heavy and did not drift -

December 13

Faint after-glow observed at 16<sup>h</sup> -  
 Bright single-arch aurora at 18<sup>h</sup> - No streamers  
 and ~~the~~ arch hazy at its edges -

Goose cum-fog hanging about the hill all  
 day and occasionally brushing the top. Sky  
 very clear & deep blue in colour -



December 14

very thin cirro-stratus in sky most of the day: the sun shone through it though not strongly enough to record on the paper of the Sun-shine recorder.

Portions of lunar halo seen several times at night -

---

December 15

very squally with back-squalls at night - Had to use jacketted lantern -  
No gauge was out but probably no snow fell.

---

December 16

Fleeting misty lunar corona at times in early morning - No measurements got. Glories ~~and~~ and fog bows at 15<sup>h</sup> Too fleeting to measure - Glory double with Reds out - Fog bow as broad whitish band, with occasionally another bow inside it more sharply defined and colored -  
Cum-Fog hanging about the sides of the Ben all day -

---

December 17

at 10 hrs very small star shaped snow-flakes falling - At 14 hrs air full of very



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fine needle shaped crystals - The snow at night was ordinary snow - quite soft.

at 14<sup>h</sup> - 30<sup>m</sup> white vertical beam under Sun apparently stretching down into Glen Nevis. Faint ~~with~~ misty glories seen at times in afternoon - no measurements got.

Faint aurora seen at 21<sup>h</sup> no steamers only a low irregular looking arch.

---

### December 18

Misty faint glories seen in afternoon; too fleeting to measure -

No gauge was out at night but probably no snow fell, though there was considerable drift.

---

### December 19

Thermometer Box shifted at 10<sup>h</sup> - 30<sup>m</sup> Min 138533 put out. Dry 192660 and Wet 192672 were brought in, the bulbs washed & then the instruments put out again. Height of Box above snow not altered.

A faint auroral light seen to N<sup>W</sup> at night. Sky cloudless to horizon at night, but dark hazy look in the valleys below.

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December 20

at 7 hours Red, Green and Blue Aurine  
columns at Eastern horizon. Dark portion of  
Moon clearly seen.

at 9 hours two layers of cir-c the higher  
radiating from S.W. and the lower from SW.  
Shadow of Ben Nevis seen on brownish-red  
clouds above the NW horizon = No glories or  
fog-bows about it.

at 12 hrs upper half of halo seen, Red  
inside, white outside.

Radius of middle of Red	21° 56'
" junction of Red & White	22° 12'
" middle of White	23° 58'.

Distinct though small rain fell at 21°  
though the temp. was 18° 0.

The fog crystals at night were white.

December 23-

Snow at night large and soft.

December 24

at 22<sup>h</sup> Min 138533 Taken in as  
it had an air bubble in spirit, and Min  
138545 put out.

Measurements of amount of snow very doubtful



December 25 The snow which fell today was large and soft. Measurements at night rather doubtful owing to drift.

December 26.

Thermometer Box shifted at 0<sup>h</sup>. 20<sup>m</sup>.  
Dry 50850 : Wet 50852 and Wlin 138533

put out. Put one stage higher on stand.

Fog on all hills to SW, W and N during the day = a level layer but with roll-c tops, it rose to about 3000 ft. but looked thin.

At 10<sup>h</sup> a faint vertical halo stretching down from Sun.

at 12<sup>h</sup> a little drizzling rain and small dry snow were falling at the same time : temp. 19°4.

at 12<sup>h</sup> 30<sup>m</sup> misty glory and double fog bow seen : outside bow had Red outside and inside bow Red inside. No measurements got.

No unusual colours near Sun during the day ; sunset colours weak and apparently no afterglow.

Dark hazy look round horizon and under



Ben all night -

Aurora seen at night. Single low arch  
a few streamers (upward) observed at 22<sup>h</sup>

December 27

Black Bull (old) put out on  
bracket stand at post A. about 50 inches  
above snow at 4<sup>h</sup> Taken in at 14<sup>h</sup>  
at 9<sup>h</sup> shadow of Ben Nevis seen on  
clouds to NW. above the horizon -

Faint halo at 10<sup>h</sup>

In the evening the snow was large & soft  
but after Midnight small and hard -

December 28

Thermometer Box shifted at 17<sup>h</sup> - 15<sup>m</sup>

Dry 192660 : Wet 192672 and Min 138545

put out. Height above snow not altered -

December 30

at 10<sup>h</sup> small needle shaped crystals  
of snow falling - Drizzling rain fell at 21<sup>h</sup>  
and a very little small hardish snow at  
22<sup>h</sup> Fog crystals at night were white  
and icy -



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Double fog low seen at 11<sup>h</sup>

Red outside outer low and inside inner -

The following (rough) measurements were got -

Radius of outside of outer low	41° 22'
" middle " "	39 " 20
" inside " "	36 " 36
" outside of inner low	34 " 44
" inside " "	32 " 20

The first and last measurements give the radii of the two Reds.

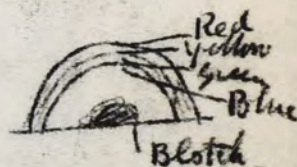
Misty Glory seen at 15<sup>h</sup>

Columns as in diagram = the central part a confused mass

of colors - Radius of Red 1° 53'.

Earth shadows seen to E<sup>o</sup> at 16<sup>h</sup> and a very faint afterglow at 16<sup>h</sup> 5<sup>m</sup>.

Fog on hills to about 4000 all day -



December 31

Distinct icy hail fell in forenoon. At 13<sup>h</sup> the rain gauge contained round icy particles like frozen rain drops.

The rain covered everything with a coating of ice, three or four inches thick in some places.



Barometer No 1385 was in use during the whole of 1888 ; No 1252 being occasionally read as a check.

For the Dry and Wet Bulbs thermometers No 192660 192672 ; 192677 and 192671 all by Adie and Wedderburn, and also No 50850 and 50852 by ~~Mc~~ Negretti and Zambra but fitted with glass scales by Adie & Wedderburn, were used.

The Black Bull in vacuo used was No 182 by Hicks called Old Black Bull usually.

Up to July 4 .5 inch rain gauges (see p 192 of Vol I.) were used, but after that date 5 inch gauges with higher rims were in use except when only rain was falling - all gauges made by Alex. Kemp from drawings supplied by Mr Omond.

The Crystal (Direction) anemometer worked fairly well, and the Robinson (Velocity) anemometer occasionally - On Oct 7. it was taken down for the winter.

From July 1 to July 24 the bar work of the Sunshine Recorder was under repair and the papers were mounted in a temporary



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pane, which however worked well.

On Sept 18 a New Crystal Hygrometer arrived at the observatory, but there have been as yet very few opportunities of testing its working -

From July 6 to Nov 5 inclusive the thermometers in use were placed in the old Clock Box: for the rest of the year in small Boxes on ladder stand. Max 117293 and Min 116918 were used in Clock Box; and Mins 138533 and 138545 in small Boxes.

The depth of snow was always measured at Post A.

The measurement of the Rainfall was interrupted several times by drifting, and the gauge papers were occasionally blown away.

Temperature readings were not got at 6 and 7 hours on Dec 8 owing to the high wind and dangerous drift - otherwise the Record is continuous, though once or twice the observation was a few minutes late -



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Prof. Ewing of Dundee sent during the summer a Seismometer which was mounted on the stone slab in office, but which is not yet in satisfactory working order; owing it is believed to want of steadiness in the slab. From Aug 14 to Sept 4 the Cosmic Dust collector was out.

The Barograph has worked most of the year, but its scale is seriously in error, a deflection of 2.25 inches on it corresponding to 1.00 inch on the mercurial barometer. It seems also to have been strained a little during the low pressure on Dec 8.

The Thermograph has not been used.

The Hair Hygrometer has not been used.

The permanent staff of the Observatory consists as before of R. T. Omond:

A. Rankin and J. Miller.

From July 15 to Sept 28 Mr Gray (telegraph clerk) was also at the Observatory.

Mrs H. N. Dickson, J. T. Morrison, A. Hay and J. Duncan ~~also~~ took the places of some of the staff at various times.



January 1

at 7<sup>h</sup> a very few large flakes of  
mm falling: each covering about one inch  
square -

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January 2

at 18<sup>h</sup> Triple corona seen. Red  
outside in all three rings. Outermost ring  
joint and evanescent. at <sup>times</sup> a fourth Red  
was seen inside these surrounding white  
space near Moon but it was too small to  
measure {less than 50'}. It was formed  
on Soud, diameters seemed to vary -

The following measurements were got,

Radius of innermost Red	—	1° 22'
" Middle "	—	2° 5'
" Outermost "	—	4° 23'

When no Soud was passing a Blue corona  
was seen. Radius = 3° 2'.

Sunat fog bow seen also at 18<sup>h</sup> Radius  
about 38° 40'.

---

January 3

at 1<sup>h</sup> Rain gauge was found  
undercut & leaning over = none was



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put out till 4 hrs - at 11 hrs it was again found undercut and none was out till 17 hrs -

Faint halo seen at 19 hrs = also triple corona. Red outside in all three rings - The following measurements were got -

Radius of First Red	$0^{\circ} 54' : 0^{\circ} 56' : 1^{\circ} 0'$
" Second Red	$1^{\circ} 48'$
" Third Red	$3^{\circ} 36' : 3^{\circ} 15'$

Thermometer Box shifted at 22 h. 20<sup>m</sup> -

Dry 50850 : Wet 50852 and Min 138533 put out. Height above snow not altered.

January 4

at 6 h narrow auroral arch seen, top about  $11^{\circ}$  above horizon - No streamers - at 9 hrs a bright golden coloured Corona round Sun - No fog or haze in valleys, but a pink colour, like very thin haze, under the Sun in the valleys -

No gauge was out at night, but apparently no snow fell. Though the wind was high (force 7-8) there was little drift -



January 5Solar corona seen at 13<sup>h</sup>

Columns as in diagram -

Radius of Red' 3". 7'

" " Red<sup>2</sup> 6". 12

" extreme

outer edge of Red' 4". 13.

Solar corona seen at 22<sup>h</sup>

Radius of inner Red 3". 20'

" outer Red 6". 29

" inner yellow 2". 36

" outer yellow 5". 22



yellow bands narrow  
but green broad &  
badly defined.

The Ogone test paper was put out at 22<sup>h</sup>  
instead of at 21<sup>h</sup>

January 6

Thermometer Box shifted at 9<sup>h</sup> 30<sup>m</sup>  
Dy 192660 ; Wd 192672 and Min 13845 put  
out. Height above snow not altered.

Solar halo at 11<sup>h</sup> & 13<sup>h</sup> - Red inside -

Radius = 22°. 24' and 22°. 6'.

Misty badly defined lunar corona at  
night -

Today the snow at the just gorge was  
measured and found to be overhanging  
the cliff about 63 inches.



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January 8Halo seen at 1<sup>h</sup> These measurements got.

Radius to inside of edge of halo	21° 36'
" " " "	22° 0
" " " "	20° 51.

Solar corona seen at 11 hrs. - (Double)

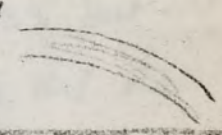

Radius of Inner Red -	3° 31'
" Outer Red -	6° 7'

at same hours glory seen with 4 rings -  
Larger than usual and the colors broad and  
soft looking - The innermost Red was only  
seen occasionally -

Radius of Second Red -	4° 46'
" Third Red -	8° 43
" Fourth Red -	12° 6

While measuring the glory a cloud passed to  
Southward of Ben and its shadow blotted  
out part of the three outer rings, but its  
shadow did not fall on the observer -

at 12<sup>h</sup> portion of  
glory seen on clouds to  
Northward; though at the  
time the shadow of observer  
fell inside the edge of diff.

Fragment  
of glory   
cliff.   
Shadow of observer.



at 14  $\frac{1}{2}$  faint horn column under Sun -  
 at about 18<sup>h</sup>. 3<sup>m</sup> Lunar corona seen while  
 sky appeared cloudless; at 18<sup>h</sup>. 6<sup>m</sup> stratus began  
 to form to ESE, and at 18<sup>h</sup>. 8<sup>m</sup> sky was overcast.

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January 10

Faint horn column under Sun in afternoon.  
 White dry fog crystals forming at night - No snow  
 fell apparently at night during the height of the  
 gale ~~fell~~ than as there was, comparatively, little  
 drift.

---

January 11

Rain gauge put out at 11 $\frac{1}{2}$  as  
 there was an icy crust on the snow due to  
 drizzling sleet and no drift going -  
 The snow falling in afternoon was large, white  
 and rather hard.

---

January 13

Thermometer Box shifted at 22<sup>h</sup>. 15<sup>m</sup>.  
 Dry 192671: Wet 192677 and Min 188533 put out.  
 Height above snow not altered. Before this the  
 lenses of Box were badly choked with crystals and  
 drift.

---



January 14

Solar corona at 7<sup>h</sup> colors as under —  
 D white, yellow, red, violet, blue, green, yellow, red —  
 Only seen occasionally; too fleeting to measure and  
 size apparently varying —

at 13<sup>h</sup> small needle shaped crystals of snow  
 falling —

at 17<sup>h</sup> (after sunset) faint upper glow with  
 long streamers = and purple glow to E<sup>h</sup> from 15°  
 to 70° above horizon —

Bright aurora at 19<sup>h</sup> : no streamers — On the  
 upper side of the arch a little on each side of  
 the highest part there was a dark patch partly  
 cutting the aurora through and marked on the  
 sky = stars seen through it —

at 23<sup>h</sup> the Moon was just rising = very yellow —

at Midnight the Dry Bull read 24.5 and the Wet  
 22.3 yet in less than one minute after reading  
 them very thin fog was blowing over the hill, giving  
 a damp feeling to the air, and a double corona  
 was formed on Moon = inner very yellow, outer  
 faint blue-green with Red ring outside —

Sever topped fog on hills to about 4000 feet  
 at night with haze above it.



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January 15

Level sheet of fog on all hills round at about 4000 ft all the early morning. Lunar corona at times formed by sand passing high up though the air was very dry -

Upper Glow above a light orange coloured streak at E<sup>n</sup> horizon at 8<sup>h</sup>

The fog on the hills broke up into detached bits of cumulus type in the forenoon - but haze formed round the horizon, and there was a brown colour under the Sun in afternoon -

at 16<sup>h</sup> 5<sup>m</sup> Dry and Wet shifted. Dy 192660 and Wet 192672 put out. Box 2 Min not shifted.

January 16

Thick dry fog crystals forming all day, slightly brown in colour -

January 17

No rain gauge was out till 16<sup>h</sup> but apparently no snow fell before 11<sup>h</sup>

January 18

at 20<sup>h</sup> the Rain gauge could not be found as it was buried in a drift. at 22<sup>h</sup> however the snow had been so much cut away that the gauge was visible -



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No gauge was out after 20<sup>h</sup> till Midnight.

January 20

Thermometer Box lenses choked with hard ice all afternoon -

January 21

Thermometer Box shifted at 18<sup>h</sup> 30<sup>m</sup>  
 Q<sub>g</sub> 192671 : W<sub>t</sub> 192677 and Min 138545 put  
 out. Height above snow not altered. Before  
 this the lenses were badly choked with ice.

January 22

Ice forming freely on all exposed  
 surfaces again this afternoon -

January 23

From 20<sup>h</sup> till Midnight an aurora  
 was observed : single arch, no streamers -  
 Lenses of thermometer box badly choked with ice  
 all day -

January 25

Thermometer Box shifted at 1<sup>h</sup> 30<sup>m</sup>  
 Q<sub>g</sub> 50850 : W<sub>t</sub> 50852 and Min 138533 put  
 out. Height above snow not altered.



January 26

Very heavy hail in early morning. The following measurements were got but not entered in daily sheet as the gauge evidently contained a large amount of drifted hail.

at 2<sup>h</sup> 1.460 : at 3<sup>h</sup> 1.733 and at 4<sup>h</sup> 2.233. No gauge was out after 4<sup>h</sup> till

7<sup>h</sup>. The squalls in early morning came in very sudden blasts.

During the late rains the roof of the kitchen had been leaking badly round the stove-pipe, and this afternoon Mr Rankin fixed a piece of tarpaulin round the chimney, under the ~~iron~~ boarding, which greatly lessened the leakage. - Owing to continual dripping inside the tower the papers of the Crystal (Direction) anemometer have got wet and turn almost every day -

January 28

a flash of lightning was observed at 6<sup>h</sup> 27<sup>m</sup>. Strong earth currents in telegraph wire at 6<sup>h</sup> 52<sup>m</sup>. 2 at 7<sup>h</sup> 10<sup>m</sup>.



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January 30

The snow which fell at 16 hr & subsequently today was very small but not hard. Thermometer Base shifted at 18<sup>h</sup>-12<sup>m</sup>. Dry 192660 : Wet 192672 and Min 138545 put out. Height above snow not altered.

January 31

Readings of Rain gauge very doubtful. at 11 hours the gauge was found buried up to the rim, and none was put out till 21 hr. The strong winds had blown so much of the late snow fall off that today the old surface hardened by the rains of last week was showing in several places.

The fog crystals forming today were white and rather hard.

During the month the low-level door at the coal-cellar has been several times blocked & dug open again - the continuous frost enabled a good arch to be kept over it; but the last thaw has left the entrance too open, and the next heavy snow storm will probably close it up entirely.



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February 2

at 7<sup>h</sup> the Raingauge was found full of drift none was put out after that till 17<sup>h</sup> L; but all the measurements got were unsatisfactory -

Thermometer box badly choked up with fine drift during most of the day -

February 3

Thermometer Box shifted at 9<sup>h</sup>-30<sup>m</sup>  
Dy 50850 : Wet 50852 and Min 138533 put out. Height above snow not altered.

February 4

at 5<sup>h</sup> St Elmo's Fire seen on lightning conductor & Crystal Vane = also faintly visible at 6<sup>h</sup>

at 7<sup>h</sup>-2<sup>m</sup> bright flash of lightning followed very closely by thunder: at 7<sup>h</sup> 7<sup>m</sup> earth-currents in telegraph cable, and 7<sup>h</sup> 25<sup>m</sup> another peal of thunder.

February 5

at 12<sup>h</sup> the snow that was falling consisted of partly flat soft flakes and partly of hard white (hail) snow -



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The snow this evening was lying in waves  
from 20 to 50 inches long & about 2 inches  
high from trough to crest.

### February 6.

Solar fog-bow and corona seen at 2<sup>h</sup>  
Inside Radius of Fog-bow 33° 56' } Measured from  
Outside " " " 40° 20' } shadow of  
head of observer.

at 3<sup>h</sup> faint brown colour under moon.

Thermometer Box shifted at 3<sup>h</sup> 20<sup>m</sup> Dry  
192660 ; Wet 192672 and Min 138545 put  
out. Height above snow not altered. The  
Globe paper was found blown off its hook,  
and lying in the snow near the Box.  
Earth-shadow seen to W<sup>2</sup> at 8<sup>h</sup> just before  
sunrise.

Dense haze & fog hiding Mull all day.  
Brown colour under Sun above this haze  
in afternoon = but no glare round Sun.  
Earth-shadow seen again just after sunset.

February 7 The drizzle from the mist this  
morning gave a brown colour to the snow, and  
the fog crystals were also brown.



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February 8

at 7<sup>h</sup> faint pink glow on thin cir-  
 clouds 15° to 20° above E<sup>r</sup> horizon - Sun rose  
 just at 8<sup>h</sup> Dark brown colour under Sun at 9<sup>h</sup>  
 No afterglow at 17<sup>h</sup> but sky "Smudged".

Double Lunar corona at 23<sup>h</sup> 2 Mdt - Rather  
 indistinct, apparently formed on cir- clouds.

Radius of Inner Red 2° 1'

" Outer Red 4° 40.

No trace of a halo was observed on the Cirrus.

This afternoon the snow at the ~~First~~ Gorge  
 was found to be overhanging the edge 172 inches.

February 9

At 6<sup>h</sup> double Lunar corona seen -  
 Colours in following order. D. White. Red. Violet. Blue. Green. Red.

Radius of Inner Red 1° 45'

" Violet 2° 19

" Blue 2° 50

" Green 3° 15

" Outer Red 4° 0.

Brown colour under Sun at 10<sup>h</sup> and again  
 in afternoon -

a set of Hygrometer readings were taken today -



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Haze, thickening into fog to W & S., in valleys and over all lower hills today -

February 10

at 4<sup>h</sup> Cum-fog was rising as high as the top of Ben out of Corries to NE<sup>s</sup> though Dry & Wet read 28.0 and 23.2 -  
at 7<sup>h</sup> the fog was rising higher than the Ben to SE & at 8<sup>h</sup> it covered the Ben -  
Ozone paper was not shifted till 9<sup>h</sup>-10<sup>m</sup> -

February 12

Double lunar corona at 7<sup>h</sup> Colours in following order -

D	White	Red	Purple	Green	yellow	Red -
Radii		1°.14'	1°.34'	1°.49'		2°.28'

at 17<sup>h</sup> Misty pinkish colour to W<sup>s</sup> below level of Ben - As the Sun set the shadow of Ben was distinctly seen above the horizon to ENE for a few minutes, until lost in the general earth-shadow - The Sun set into the sea, & as it disappeared a momentary bright green flash was observed -  
No afterglow was observed -



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at 22<sup>h</sup> the aurora consisting of a bright single arch without streamers was observed - Height of top of arch above horizon about  $12^{\circ}$ . Width of bright part of arch  $2^{\circ}.15'$ . At 22<sup>h</sup> the arch was more irregular, being apparently made up of several superimposed on each other, and a few long streamers reaching nearly to the zenith were seen -

The clouds which formed overhead in afternoon appeared to sink down as evening came on; though the sky was clear at 20<sup>h</sup> the air on the hill top was nearly saturated, and it did not dry again till midnight -

The Gane test paper was not shifted at 9<sup>h</sup>; the reading at 21<sup>h</sup> is therefore for 24 hours exposure -

Several sets of Hygrometer readings were taken today -

February 13

Double fog low seen at 12<sup>h</sup> Trace of Red outside outer, and inside inner low - Several sets of Hygrometer readings were taken early this morning -



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Edmary 15

Bright light seen to N<sup>W</sup> through breaks in fog at 1<sup>h</sup> — possibly auroral —

a few passing glories seen at 14<sup>h</sup> - 10<sup>m</sup>

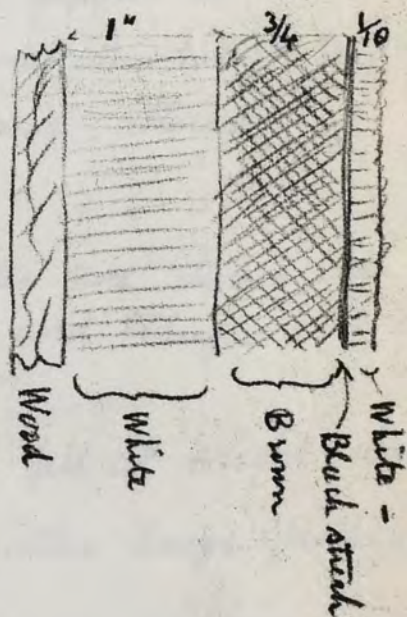
Solar Corona observed on passing Seud at 12<sup>h</sup> always double sometimes triple = best seen when Seud was uniform in thickness — not fibry — and thin enough to see the blue sky through.

Radius of Inner Red	3° 35'	3° 31'	{ 3° 52' }	3° 21'	4° 13'
" Outer Red	4° 28'	5° 43'	{ 6° 55' }		7° 38'

The bracketted values were taken at as nearly as possible the same time —

At 9<sup>h</sup> - 20<sup>m</sup> the fog-crystals on T stand for Hygrometer were measured. Next the wood was one inch deep of white badly defined and rather powdery crystals = then  $\frac{3}{4}$  inch of brown well defined feathery crystals = then  $\frac{1}{10}$  inch of pure white crystals, grown

in the last half hour. Between the  $\frac{3}{4}$  layer and the  $\frac{1}{10}$  inch layer was a belt of minute black specks which had apparently formed while





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the top was clear of fog - at 11<sup>h</sup> the outer white layer was 0.55 inches long showing a rate of growth of over  $\frac{1}{4}$  inch per hour -

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February 16

Brown fog crystals forming in early morning -

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February 17

Ice on all exposed surfaces in morning but no trace of dust in it -

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February 18

Thermometer Box shifted at 22<sup>h</sup> 15<sup>m</sup> -  
Dy 192671; Wet 192677 and Min 138533 put out. Height above snow not altered -

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February 21

Sides of Thermometer Box choked with fog-crystals & dust all yesterday and today -

---

February 24

The snow which fell at night was dry and hard and in rather large flakes -

---

February 25

Thermometer Box shifted at 19<sup>h</sup> 20<sup>m</sup> -  
Dy 192660 = Wet 192672 and Min 138545  
put out. Height above snow not altered -



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The measurements of amount of snow this afternoon are very doubtful owing to drift -

February 26

Very thin film of cirrus over sky in early morning; stars showing through it - at 7<sup>h</sup> the under surface of the clouds to E<sup>r</sup> was like sheets of flame and the sky behind of a sickly pale green colour - at 7<sup>h</sup> 15<sup>m</sup> the colours had faded -

Slight brown colour under Sun at 13<sup>h</sup>

Sunset colours weak; no afterglow observed -

The wind today cut away almost all the freshly fallen snow leaving the old hard surface.

February 27

Dark haze mixed with small patches of cum-pog round horizon & in valleys all day - Snow almost gone off other hills round -

Dull "Smoky" colours at sunset -

February 28

Haze similar to yesterday in the valleys all day - Faint brown colour under Sun at 16<sup>h</sup>



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March 1.

Solar Corona at  $13^h - 10^m$  on passing Sund.  
Three rings, Red outside in each. The following

	got I	II	III	IV	V
Radius of first Red	$1^{\circ} 46'$			$1^{\circ} 41'$	
" second Red	$2^{\circ} 26'$	$2^{\circ} 34'$	$2^{\circ} 39'$	$2^{\circ} 44'$	
" third Red	$4^{\circ} 8'$				$4^{\circ} 40'$

at the same time a faint red corona seen on  
cirrus clouds when the Sund cleared off. Radius  
about  $0^{\circ} 56'$ .

Thermometer Box shifted at  $15^h - 12^m$ . Dry  
192671; Wet 192677 and Min 138533 put out.  
Height above snow not altered.

at  $16^h$  faint brown colour under Sun.

at  $17^h$  misty red colour under Sun and Solar  
corona formed on Sund. Three rings red  
outside in all. The following measurements were  
got -

	I	II	III
Radius of first Red	$1^{\circ} 41'$	$1^{\circ} 25'$	$1^{\circ} 19'$
" second Red	$2^{\circ} 23'$	$2^{\circ} 26'$	$2^{\circ} 30'$
" third Red	$3^{\circ} 54'$		

at night Lunar Corona seen occasionally; too  
flecting to measure.

Fog crystals at night white and icy.



March 2

about half an inch of hard ice on all exposed surfaces this morning -

March 3

Ice forming fully on exposed surfaces all morning - No trace of dust in it -

at 12 and 13 hours fog-bow seen, Red outside no other colors -

Icy fog crystals forming in afternoon - after 18<sup>h</sup> the sky above was apparently clear, but banks of fog higher than Ben Nevis lay all round, and the hill top was often enveloped by this fog drifting over -

March 4

Glories seen on passing fog all day - at 11<sup>h</sup>. 15<sup>m</sup> one seen from Roof of Observatory the shadow of Observer falling on the snow about 10 yards away - Colors in following order centre, White, Red', Blue Green, Red<sup>2</sup>, Blue, Red<sup>3</sup>.

Radius of Red' (2 measurements) 2°. 15' and 3°. 12' \*.

Another seen from edge of cliff at 11<sup>h</sup>. 20<sup>m</sup>

No fog-bow with it -

Four rings of colors in order on ~~next page~~ <sup>next page</sup> -

\* Inside and outside of colors -



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{ Glory seen at 11-20<sup>h</sup> )RadiusColumns.

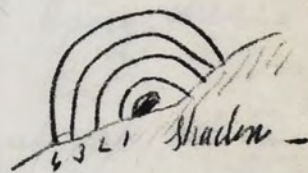
80

Measurements to  
outside edge of  
column in each  
case - The  
Radius appeared to  
vary slightly as  
the surface of the  
fog rose & fell.

	9° 28'	Faint Red <sup>4</sup>
		Faint Green
6° 12' 2	6° 18'	Red <sup>3</sup>
	5° 14'	yellow
	4° 40'	green
	4° 5½'	Dark Blue
3° 35' 2	3° 25'	Red <sup>2</sup>
		Yellow
		White
		Bad Blue
1° 4½' 2	1° 1½'	Yellowish Red <sup>1</sup>
		Centre of Shadow -

Another glory seen at 14<sup>h</sup> - 5<sup>m</sup> from edge of cliff.  
Four rings red outside in each.

Radius of Second Red	3° 46'
" Second yellow	2° 40'
" Second Blue	1° 43'
" Third Red	10° 37'
" Third yellow	6° 12'
" Third green	4° 25'



Bright glories too fleeting to measure, were  
seen ~~at~~ all afternoon on the loose fog  
drifting across the hill top.



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Solar corona seen at 11<sup>h</sup>. 10<sup>m</sup> columns as under.

☉	Radii	Outer edge	Inner edge
White			
Red <sup>1</sup> .....	2° 9'	2° 27' 2 2° 30'	1° 40'
Dark Blue .....	2° 30'		
Green			
Red <sup>2</sup> .....	3° 54'	4° 43' 2 4° 37'	3° 31'
Dark Blue			
Green			
Red <sup>3</sup> .....	6° 48'		
Dark Blue			
Green			
Red <sup>4</sup> .....	7° 59' ½		

Another Solar Corona seen at 12<sup>h</sup>. 10<sup>m</sup>  
 columns and Radii (outer edge of each column) as under.

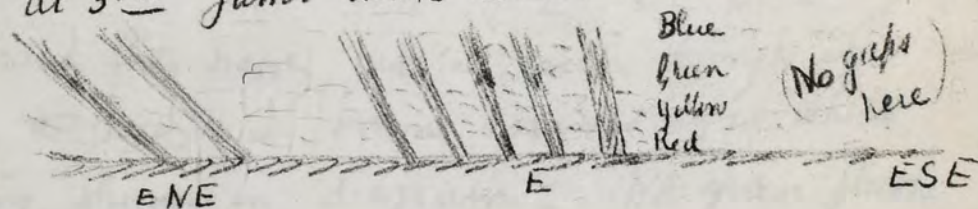
☉	
White	
Yellow	
Red <sup>1</sup> .....	2° 39' 2 2° 39'
Dark Blue	
Green	
Yellow	
Red <sup>2</sup> .....	4° 46'
Dark Blue	
Green	
Red <sup>3</sup> .....	7° 55'
Blue	
Red <sup>4</sup> .....	9° 41'



all the afternoon and evening very thick fog lay over the hills round, not a single <sup>hill</sup> top showing through till well on in the night, while the sky was cloudless, and with no trace of glare round the Sun or Moon and no brown colour under either - The Sun set into the level-topped fog at  $18^h - 2^m$ , no green flash was seen as it disappeared - The Sunset colours at  $18^h - 10^m$  were Red, pale yellow and pale Blue - No afterglow - Earth-shadow distinct to  $E^{\wedge}$  with a Red glow above it reaching to  $45^\circ$  altitude -

March 5

at  $3^h$  faint brown colour under Moon -



At  $6^h - 15^m$  appearance of Eastern horizon as in diag.

at  $6^h - 20^m$  Red and Orange colours rising higher, and gaps between the bright parts lengthening -

at  $6^h - 35^m$  Red almost gone, only faint traces of gaps left; and a faint pink glow about  $12^\circ$  above horizon -

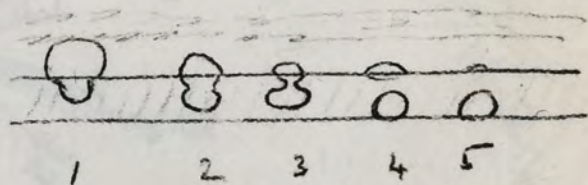
at  $6^h - 45^m$  only Orange & yellow colours, then colourless



a Blue strip of sky, then pink glow = no gaps -  
 Sun rose at 7<sup>h</sup> 2<sup>m</sup> - Before and as it  
 rose Earth-shadow 2° high to W<sup>5</sup> with shadow  
 of Ben Nevis about 2½ high distinctly marked in it.  
 Brown colour under Sun in morning and evening -  
 Haze and detached cum-fog in valleys all day,  
 but no continuous sheet of fog over hills as there  
 was yesterday -

Earth-shadow seen at Sunset, and shadow of  
 Ben Nevis still visible on cloud or haze to E<sup>5</sup>  
 after it had vanished -

Thin cloud  
 clear space  
 Haze  
 Horizon



Sun sank into haze, but was seen through it  
 down to horizon - Forms assumed by it while  
 sinking shown in diagram - No green flash  
 seen either when disappearing into haze or  
 below horizon - Colour of Sun above haze was  
 yellow and in haze Red -

Single arch aurora seen at night -

Highest point of arch 16° above horizon - Breadth  
 of arch about 4° - at 20 hours -

Streaks of cirrus and thick haze to SW. at night -

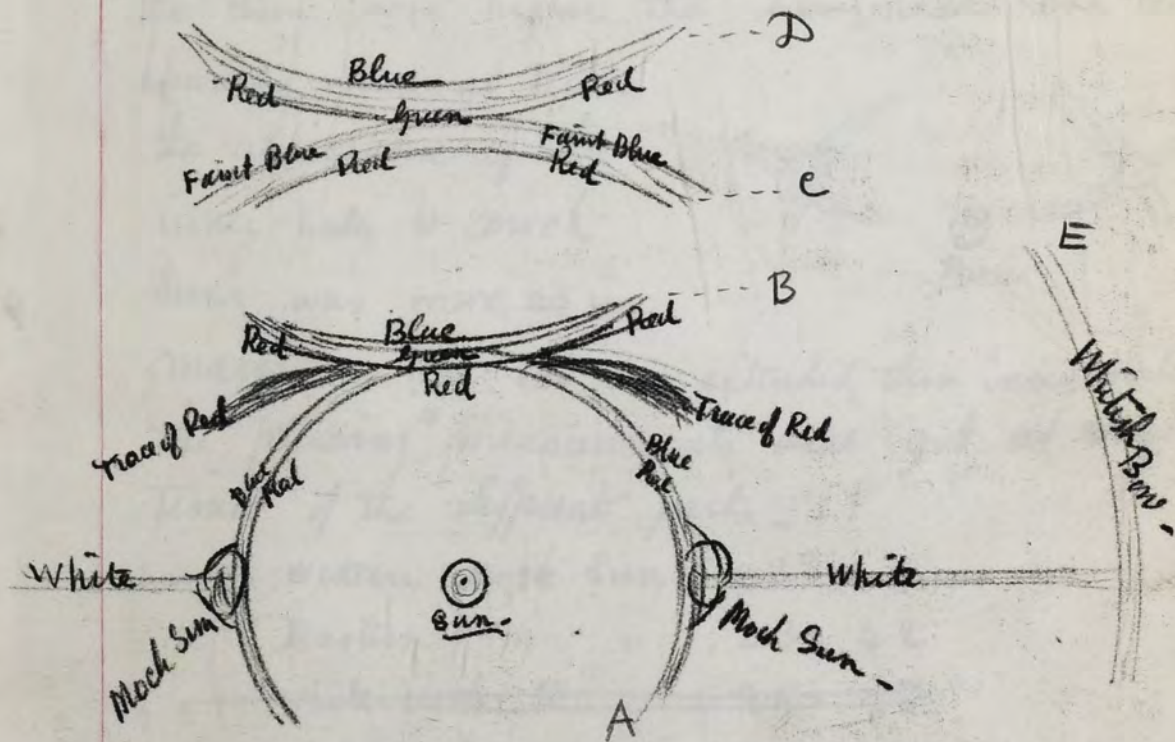
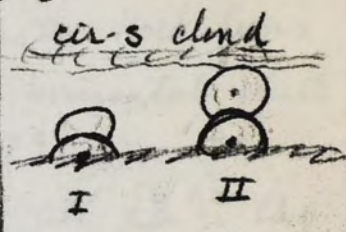


1887

March 6 at 6<sup>h</sup> Red and yellow Sunrise columns seen.

At 6<sup>h</sup> 50<sup>m</sup> a vertical beam of light starting from 5° above the horizon to E<sup>r</sup> and about 5° long was seen. it lasted till the sunrise at 6<sup>h</sup> 56<sup>m</sup>.

One minute or so after the Sun rose it appeared double as in sketches on margin -



Solar halo seen between 9 and 10 hours as sketched above. Colors as marked: the Mock Suns were Red inside and Blue outside, they lay distinctly on the ~~the~~ outer edge of the halo.

The following measurements were got.



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	Left Mock Sun -		Right Mock Sun -
Radius of Red	22° 49'	23° 17'	23° 3'
" White	23° 44'	24° 13'	24° 13'
" Blue	24° 28'		24° 58'

Faint traces of green and yellow seen in the Mock Suns at 10<sup>h</sup> 10<sup>m</sup>. The Mock Suns and horizontal white bar about 24° above horizon at 9<sup>h</sup>. The halos etc continued to be visible till 13<sup>h</sup>. As the Sun rose higher the horizontal bar curved upwards and at Noon the appearance of the inner halo & mock Suns was more as in



margin - The bar also extended then inside halo A. The following measurements were got at various times of the different parts -

Sun to Western Mock Sun	23° 46'	
" Eastern " "	23° 42'	
" <del>White circle E</del>	<del>24° 38'</del>	
" White circle E	79° 56'	}
" " " 2 <sup>nd</sup> measuring	81° 23'	
" Green at junction of C & D	50° 26'	
Red of C to Red of A	25° 28'	and 24° 48'
Blue " " Blue "	25° 13'	" 24° 32'
Green " " Green "		" 24° 20'



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at 12<sup>h</sup>. 20<sup>m</sup> measurements  
were made of the Wings  
between A and B (page 84)  
at point A on one wing  
was taken and its distances  
from B, C & D (see margin)  
measured.

$$AB = 13^{\circ} 22'$$

$$BC = 24^{\circ} 8'$$

$$AC = 29^{\circ} 52'$$

$$BD = 28^{\circ} 56'$$

$$AD = 19^{\circ} 34'$$

The wings were not arcs of same circle: judging  
by the old ring of Stephanome their centres of  
curvature lay about midway between the Sun and  
the Mock Suns on either side.

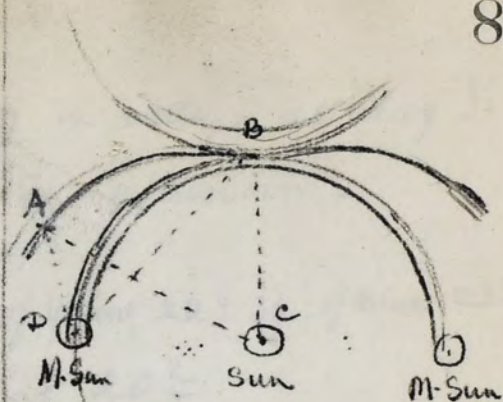


Diagram for measurements of  
"Wings" only.

Note. The point B is not  
in centre as shown above:  
it should lie more to the  
~~right~~ left, i.e. nearer A.



Haze with some patches of fog in valleys all day -

Brown column under Sun in afternoon -

Mock Sun seen again at  $17^h$

Radius of Red  $22^\circ 0'$ ; of Yellow  $22^\circ 36'$ ; of Blue  $23^\circ 17'$

Faint Lunar halo seen at  $20^h$

Single arch Aurora at  $22^h 30^m$  at  $22^h 40^m$

it broke up into a set of short vertical rays of rapidly varying place & brightness - at  $23^h$  it was gone. Its color was greenish-yellow

Readings of crystal Hygrometer were taken at night -

March 7

at  $6^h$  Sky green near horizon to E<sup>s</sup>  
at  $7^h$  faint double solar corona = fleeting coronae and glories were seen all day, but not measurements were got.

Dense fog over the lower hills during the day which occasionally blew across the top of Ben Nevis; but it cleared away at night, remaining longest on the hills to SE.

March 8

Fog gathered again on the hills round in morning and gradually rose till at about  $14^h 30^m$  it covered Ben Nevis.



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Readings of Crystal Hygrometer were made again today -

March 9.

White dry fog crystals forming in early morning - at 11<sup>h</sup> thick haze with detached cum-fog in it in valleys -

The snow that <sup>fell</sup> in the afternoon was hard and dry -

March 10

The snow which fell today was light and dry and drifted along the ground early - The gauges were useless after 15<sup>h</sup> as they were found always either nearly buried or else undercut and lying over -

March 11

a Rain gauge was put out at 8<sup>h</sup> and they continued to be shifted till 15<sup>h</sup> but the readings were obviously worthless - No gauge was out after 15<sup>h</sup>

Sky clear but banks of cum-fog all round higher than Ben Nevis at night -

Dry & Wet Bulbs shifted at 22<sup>h</sup> 10<sup>m</sup>. Dry 192660 and Wet 192672 put out : Box and Min - not shifted -



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March 12

Faint brown colour under Sun in afternoon -  
Cum at horizon all day especially to W<sup>2</sup>  
at 16 hours the Dry and Wet Bulbs read the  
same but the Wet looked rather dry = however  
at 17 hours the air was obviously saturated and  
fog was just beginning to form overhead -  
Readings of Cheyette Hygrometer were taken today -

March 13

At 4<sup>h</sup> faint brown colour under Moon.  
The recent fall of snow has been almost entirely  
swept off by the wind, leaving only patches or  
wreathes here and there. One patch is round  
post B at the first gorge & the total depth  
there is 64 inches.

March 14

Some passing showers were observed today  
near the horizon, and a little snow may have  
fallen on Ben Nevis, but the gauges were quite  
useless owing to the light whirling drift  
brought up by the Northerly wind from the cliff -

March 15

Masses of cum-fog round Ben Nevis most  
of the day - a light - probably auroral - seen above  
this to Northward at 21 & 23 hours -



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March 16

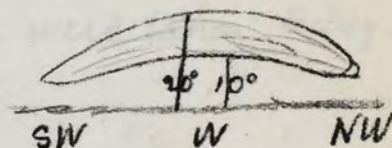
Aurora, single arch no streamers, seen at 2  
23 hrs -

at 5<sup>h</sup> Red, Green and Blue Sunrise colors seen.

at 6<sup>h</sup> faint pink upper glow above yellowish sunrise  
columns to E<sup>W</sup>

After 6<sup>h</sup> dark arch of shadow

seen to W<sup>W</sup> about 10° broad at



thickest part and about 20° above horizon - (see diagram)

The <sup>slightly</sup> above and below this was distinctly brighter  
than itself - By 6<sup>h</sup>. 32<sup>m</sup> this arch had sunk  
down towards the horizon and become the Earth-  
Shadow, the sky above it was bright red.

The Sun rose about 6<sup>h</sup>. 35<sup>m</sup> and at 6<sup>h</sup>. 37<sup>m</sup>  
the shadow was still seen to W<sup>W</sup> with the shadow  
of Ben Nevis showing still darker in it -

at 6<sup>h</sup>. 40<sup>m</sup> the Earth-shadow was gone, but  
the shadow of Ben Nevis was still visible above  
the horizon -

Views very clear in forenoon, Jura, Colonsay &  
Oronsay clearly visible - also horn colors under Sun.

At 11<sup>h</sup> two Mock Suns, with faint trace of  
white horizontal circle outside them, seen on  
apparently perfectly clear sky - No trace of 22° halo.

Radius of Eastern Mock Sun 25' 13'.



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at 11<sup>h</sup> 15<sup>m</sup> however a trace of cir-s was observed round & near the Sun.

After Noon Cum-fog began to form on S<sup>d</sup> and W<sup>d</sup> hills, and very loose fog to rise out of Glen Nuis. Readings of Crystal Hygrometer were taken today.

### March 18

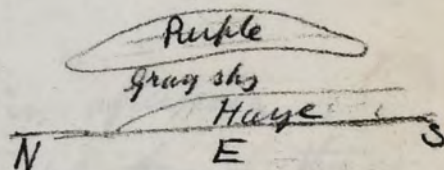
Low fog in valleys not rising above 1000 feet except in a few places in morning & till 10 hours, after which it broke up and rose as cum-fog - Thin uniform sheet of cloud over the Ben most of the day -

Thermometer Box shifted at 15<sup>h</sup> 10<sup>m</sup> Day 192671  
Wet 192677 and Min 138545 put out. Height above snow not altered -

### March 19

Air very clear at Sunset, Tura Mull & the Islands beyond being all visible.

at 19<sup>h</sup> ~~haze~~ dark purple belt to E<sup>s</sup> about 15° above horizon with streak of sky below it above the Haze near the horizon.



Dark haze all round horizon at night, with auroral light above it to NW & N.



March 20

Very dark haze at horizon in early morning - at 14<sup>h</sup> a few hard rounded flakes of snow were falling though the gauge recorded nothing - similarly at Mdt. but the flakes then were soft. White fog crystals forming in afternoon.

March 21

Very thick haze in valleys in early morning, Socheil & Soch Sinnke invisible at 6<sup>h</sup>.  
 at 6<sup>h</sup> faint pinkish upper glow above red streak at Eastern horizon - at 6<sup>h</sup> 7<sup>m</sup> Earth Shadow seen - at 6<sup>h</sup> 18<sup>m</sup> the top of it was about 15° above horizon to W<sup>l</sup> Sun appeared at 6<sup>h</sup> 22<sup>m</sup> and was all up at 6<sup>h</sup> 26<sup>m</sup>.  
 at 9<sup>h</sup> Solar corona seen: colours as on margin: no measurements got.  
 Haze and Cum-fog all round all morning -

Red
Blue
Red
White
①

a few soft snow-flakes fell in afternoon -  
 Probably no snow fell night though the gauge recorded a little; as there was a good deal of surface drift.



March 22

Fog crystals in morning loose & dry, and slightly blown in column.

March 23

Several showers of hardish solid snow fell in the forenoon. Fog crystals at night hard and icy.

March 24

Gourres of Thermometer Box considerably choked with drift & crystals both yesterday and today.

March 25

Thermometer Box shifted at 4<sup>h</sup> 15<sup>m</sup>.

Dry 192660 = Wet 192672 and Min 138533 put out. Height above snow not altered.

Solar halo of 22° seen at 8<sup>h</sup> Red inside & Bluish White outside = no measurements got.

The snow at the First Gorge was found this afternoon to be overhanging the edge by 217 inches.

Icy fog crystals forming in afternoon.

March 27

very variable winds most of the day & especially towards nightfall - at 20<sup>h</sup> the outside observations were delayed about 3 minutes owing to the lamp being blown out.



The Gyne paper at  $21^{\frac{1}{2}}$  was quite different shades of colour on the two sides = both values are entered on the daily sheet. The fresh test paper was put out at  $22^{\frac{1}{2}}$  instead of at  $21^{\frac{1}{2}}$

### March 29

Both at  $9^{\frac{1}{2}}$  and at  $21^{\frac{1}{2}}$  the Gyne paper was of distinctly different colours on ~~the~~ two sides. Thermometer Box shifted at  $22^{\frac{1}{2}}$  - 15<sup>m</sup> Dry 1926.71; Wet 1926.77 and Min 1385.45 put out. Height above mnn not altered. At about  $22^{\frac{1}{2}}$  40<sup>m</sup> the kitchen stove pipe took fire, but no damage was done.

### March 30

at  $6^{\frac{1}{2}}$  after the sun was up the shadow of Ben Nevis was visible above the horizon to W<sup>o</sup>.

at 7<sup>h</sup> the thin haze filled the lower parts of the valleys, but to SW there was above this another distinct streak of haze just touching the tops of the hills in Mull & Jura with quite clear air between. This streak was distinctly haze & not cloud. At  $8^{\frac{1}{2}}$  the clear space had vanished & stratus was beginning to form in the haze: at  $8^{\frac{1}{2}}$  7<sup>m</sup> the sky was overcast.



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at 9<sup>h</sup> the clond formed  
an arch over Ben Nevis  
as in sketch, moving with  
the N<sup>E</sup> wind -



March 31

Strong back-swirls of wind in early  
morning & very heavy & sharp squalls coming  
in hammer like blows -

April 1

Strong back-swirls again today -

Thermometer Box shifted at 11<sup>h</sup> 25<sup>m</sup> Dry  
192660 : Wet 192672 and Min 138533 put  
out. Height above mm not altered -

a single arch rather faint Rainbow seen  
at 15<sup>h</sup> [Temp- Dry 25.1 : Wet 23.9]

Icey fog crystals forming at night -

April 4

Thermometer Box shifted at 11<sup>h</sup> 30<sup>m</sup>  
Dry 192671 : Wet 192677 and Min 138545 put  
out. Height above mm not altered -  
at 12<sup>h</sup> and 13<sup>h</sup> hard mm falling in



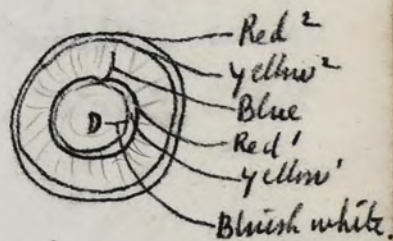
conical pieces having spherical bases; diameter of base from  $\frac{1}{20}$  to  $\frac{1}{4}$  inch = angle at vertex  $90^\circ$ . Two put with their conical surfaces touching show, in their outline, a semi-circle.

Fleeting double Lunar Corona formed on Sun at night = usual type, inner circle yellow & outer blue-green = no measurements got.

April 5 at  $0^h 10^m$  Thermometer Box put one stage higher on ladder stand. Same instruments left out.

at  $3^h$  double lunar corona seen = columns as in diagram.

Radius of Red' . . . . .  $2'' 10'$   
 " yellow' (aint)  $1'' 38$   
 " Red<sup>2</sup> . . . . .  $4'' 13$   
 " yellow<sup>2</sup> . . . . .  $3'' 58$



Fog low seen at same time, rather faint.

at  $4^h$  light seen to ENE possibly zodiacal.

at  $20^h$  wind very squally & variable. The lamp was blown out twice & the sling-notebook blown away. Lantern in jacket was used at 21 and 22 hours. At  $21^h$  the ozone test paper



was found to be blown away = none was put out till 23<sup>hr</sup>. At 22<sup>hr</sup> the door of the thermometer box was found torn off its hinges & lying on the snow = it had probably not been properly secured at 21<sup>hr</sup>. The Dry & Wet were therefore for that hour (22) exposed partly to radiation.

---

April 6

Thermometer Box shifted at 9<sup>h</sup>-30<sup>m</sup>

(Dry 192660 : Wet 192672 and Min 138533 put out. Height above snow not altered.

at 10<sup>hr</sup> Solar Corona seen occasionally.

at 19<sup>hr</sup> Stratus pallium overhead but rosy & hazy light to W & below its edge. This reddish column was also seen on the W side of the ~~snow~~ hills to S and SE.

---

April 7. Layer of thin Stratus overhead all day with its lower edges often brushing the hills round = sun shining through it in patches. at 17<sup>hr</sup> ~~just before sunset~~ the sun's rays shining down into the haze that filled the valleys to W<sup>h</sup> light it up = the rays below the Sun were ~~that~~ Brick-red, those to SW green



and those to NW bluish in colour -

at 19<sup>h</sup> the clouds were coming lower & disappearing

at 20<sup>h</sup> the sky was cloudless -

Faint brown colour under Moon at 22<sup>h</sup>

April 8

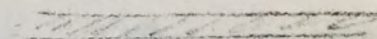
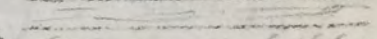
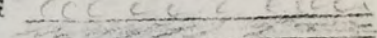
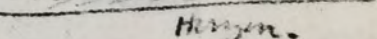
Faint sunrise colours visible at 4<sup>h</sup>  
Stratus fog in thin sheet on hills to N & E in  
early morning - Broken Cumulus on and over  
hills during the day -

Readings of the Crystal Hygrometer were taken today -

April 9 Thin Stratus fog on hills again this  
morning, and thick haze mixed with smoke  
from burning hearth in the valleys ~~to~~ during  
the day - The haze seemed to be higher than  
the level of Ben Nevis; it shrouded alone  
the horizon - broken Cum. over hills also today -

Faint upper glow at 5<sup>h</sup> -

at 8, 9 and 10 hours  
colours above haze to  
NW as noted in

Brown	
Blue	
creamy white	
Haze	

Horizon.

margin - The brown extended almost all round  
the horizon -

Readings of Crystal Hygrometer were taken  
again today -



1887

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April 10

Thick haze in valleys all day, but hill tops showing clear above it.

The snow at the first gorge was found to be overhanging the edge by 214 inches.

April 11

at 4<sup>h</sup> the Old Black Bull (No 186) put out on bracket stand on ~~west~~ south side of post A 54 inches above snow.

No fog in valleys but very thick haze: in the afternoon and at night the haze was higher, so that the hills round could scarcely be seen through it.

April 12

at 5<sup>h</sup> faint upper glow <sup>to E</sup> and Earth shadow to W<sup>s</sup> about 10° high, sky above it of a reddish color. Brown color under sun at 6<sup>h</sup> and 7<sup>h</sup>. Detached cumulus lay among and on the top of the haze all today. Cum-fog rising rapidly out of Glen Nevis and vanishing at 11<sup>h</sup>. at 18<sup>h</sup> bright spot on each side of Sun like Mock-suns, but no trace of halo: Radius = 21° 48'. Before 19<sup>h</sup> thin fog was brushing across the top. At Mdt. the upper half of the Peg Bull was covered with small crystals while the bottom was quite clear.



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April 13

at 5<sup>h</sup> Earth-shadow seen to W<sup>^</sup>  
topped by a brownish red glow. also faint pink  
upper glow to E<sup>^</sup>

at 19<sup>h</sup> bright red colour in valleys to W<sup>^</sup>  
with at times gaps in it due to clouds shadows.  
clouds forming above Glen Nevis at about 4600  
ft height indicating ascending currents.  
at 20<sup>h</sup> fog all round -

April 14

at 13<sup>h</sup> a Cum. clouds lying 35°  
SW of Sun was seen to be very green on  
side next sun, and slightly pink on the  
further side.

No brown colour under Sun today, but haze  
mixed with smoke from burning heather  
in the valleys all day -

April 15

Black Bull taken in at 3<sup>h</sup>.  
Very small fine snow falling most of the  
day, too little to affect gauge -

April 16

Aurora, single arch no streamers, seen  
at Midnight -



1887.

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April 18

Fog crystals forming all day, very hard and icy at night.

April 19

Thermometer Box shifted at 19<sup>h</sup> 15<sup>m</sup>  
 Dry 192671 : Wet 192672 and Min 138545 put out.  
 Height above snow not altered.

April 24

The snow that fell today was mostly large and rather hard; often conical in shape. The drift therefore did not rise high, though the top ~~of the~~ was thickly covered with soft fresh snow.

April 25

Heavy shower of hard conical snow at about 14<sup>h</sup> - 15<sup>m</sup>

April 28

Heavy masses of Cumulus round Ben Nevis and over the surrounding hills all day.

Thermometer Box shifted at 10<sup>h</sup> - 30<sup>m</sup> Dry 192660 : Wet 192672 and Min 138533 put out. Height above snow not altered.

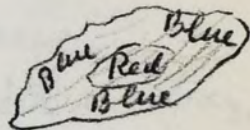
About a dozen peals of thunder heard between 17<sup>h</sup> - 25<sup>m</sup> and 18<sup>h</sup> - 20<sup>m</sup>. No lightning seen - but at from 35 to 40 seconds before most of them Earth currents moved the needle of telegraph instrument.



1887.

April 29

Sky well covered with loose detached cumulus and cirro-cumulus all day. At 9 hrs. these clouds were observed to be coloured Red green & Blue when passing near or over the Sun: one cir-c cloud lying a little below the Sun was Red in its centre and Blue all round towards its edges.



At 17 $\frac{1}{2}$  hrs there were two layers of Cir-c the upper moving from WNW & the lower apparently from SW. The cumulus or "Lower clouds" were at the same time moving from NE.

Sun set at about 20 $\frac{1}{2}$  5 $\frac{1}{2}$  behind the hills of Skey = horizon to NW rather hazy.

April 30

all boats almost perfectly calm all morning. Sky cloudy during the day, but air very clear underneath especially to W and SW, except when loose cumulus-fog rose from the glens near Ben Nevis.

Eighteen tourists climbed Ben Nevis during April.



1887.

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May 1

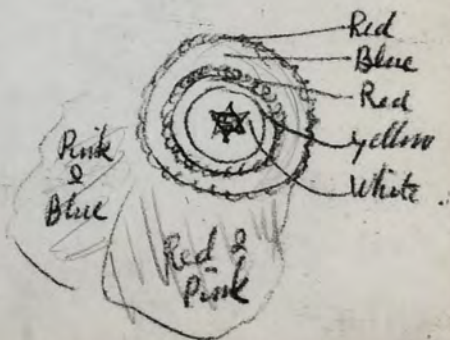
at 4<sup>h</sup> faint upper glow seen to NE-  
 at 11<sup>h</sup> there was both cirrus and cir-c in  
 the sky the former being much higher than the  
 latter = also a trace of a halo. At the same  
 hour fog lay over all the hills round and  
 occasionally passed across Ben Nevis.  
 Dark heavy bank of cumulus with a clear  
 streak below it to W-S all night.

May 2

at 10<sup>h</sup> the Dry Bull had fog crystals  
 on its windward (a South) side and a film  
 of ice on the North side; while the Wet Bull  
 had no crystals on South side, but on the North  
 side had long loose ones - (? Eddy of wind in box)  
 after 18<sup>h</sup> the upper joint was fixed on to ladder  
 stand for thermometer Box. The Box was replaced  
 in its old position at 18<sup>h</sup> 35<sup>m</sup> thermometers  
 not changed -

May 3

Solar Corona at 10<sup>h</sup>  
 columns as in diagram = no  
 measurements got -  
 so in valleys & cum over hills  
 all morning, but air clear -





May 4 The snow which fell this evening was soft and in large flakes.

---

May 5 This morning the fog crystals were slightly brown in color. Loose cumulus fog rising all round in the middle of the day and very dark haze in the valleys towards evening.

---

May 6 Fog crystals brown in morning. Very dark haze almost hiding the nearest hills in afternoon.

---

May 7 This afternoon the depth of snow at the First Gage (Post B) was found to be 76 inches. The snow in the gorges overhangs the edge by 243 inches.

---

May 11 Thermometer Box shifted at 9<sup>h</sup>. 25<sup>m</sup>.

Dry 192671 : Wet 192677 and Min 138545 put out. Height above snow not altered.

This afternoon the low level door was dug open again after being closed for several weeks.

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1887

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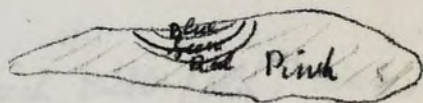
May 12

at 3<sup>h</sup> low strips of fog in valleys  
to N<sup>o</sup>

May 13

at 8<sup>h</sup> fog was rising from Glen Nevis  
& getting blown away by the N wind -  
★ sun.

at 11<sup>h</sup> pink coloured  
cloud with upper part under  
sun coloured as in diagram -

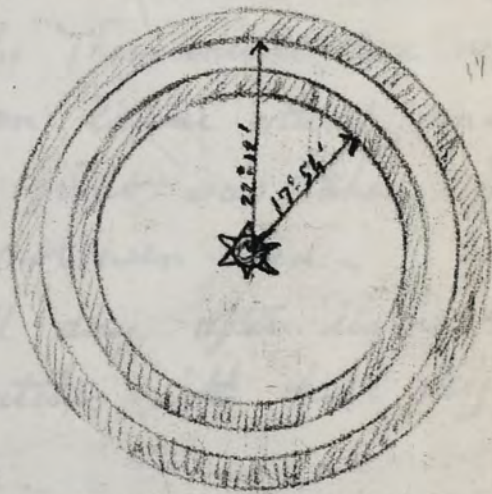


Length of cloud =  $103^{\circ}$  Breadth =  $6^{\circ} 30'$

Radius of green (only distinct line of colour) =  $12^{\circ} 36'$

Cloud vanished suddenly leaving a halo on cirrus  
much higher up -

Shortly afterwards the  
halo got more distinct;  
it had inside it  
another ring as in  
diagram - The outer  
ring was a distinct  
halo with Red inside &



Blue out, Radius of Red =  $22^{\circ} 12'$

The inner ring had a faint trace of red inside -

Radius of this red =  $17^{\circ} 54'$

By 11<sup>h</sup>. 15<sup>m</sup> all had disappeared -

coloured clouds were seen again several  
times during the day, and at 17<sup>h</sup> a



halo was again observed. The following measurements were got. —

Radius of Red	21° 54'	22° 12'
" yellowish green	23° 17'	23° 17'
" Blue	24° 28'	24° 13'

No trace of an inner ring was visible. p47

May 15

At 9<sup>h</sup> - 20<sup>m</sup> the Black Bull (Old) was put out on bracket stand on Post A -

Cum-fog round Ben Nevis in forenoon and cum. clouds overhead in afternoon -

May 16

at 0<sup>h</sup> - 7<sup>m</sup> the Thermometer Box was put one stage down on ladder stand, and at 17<sup>h</sup> - 10<sup>m</sup> the upper joint was taken off the stand — it had not been used -

Haze round horizon all day often rising so as to form cloudy patches with clear sky under them -

at 22<sup>h</sup> - 10<sup>m</sup> Black Bull was put one stage lower on post A -

May 18

at 8<sup>h</sup> hard conical shaped snow falling = at night the snow was soft and in large flakes.



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May 20

Due to the heavy drift the low level door had to be closed this morning -

May 22

Thermometer Box shifted at 15<sup>h</sup> 15<sup>m</sup> Dry 192660 ; Wet 192672 and Min 138533 put out. Height above snow not altered.

The Northern horizon was faintly red all night.

May 23

At 3<sup>h</sup> low fog was lying over Lock Fil.

At 4<sup>h</sup> the Black Bull (old) was put out on bracket stand on S<sup>d</sup> side of W<sup>d</sup> standard of ladder thermometer stand 40 inches above snow.

Readings of Crystal <sup>Hygrometer?</sup> anemometer were taken in early morning. In the afternoon the low level door way was dug out.

May 25

At 22<sup>h</sup> the Black Bull was shifted and mounted on bracket stand on south side of post A -

Wm Stewart came up to the observatory today and stayed overnight.

May 26

Faint Solar halo seen at 12 and 13 hours. Snow almost gone off hills round -



at 4<sup>h</sup> two tourists and a horse came up - This is the first horse up this year, and the first visitors at sunrise -

May 27 Solar halo seen at 11<sup>h</sup> colonies strong - red inside and blue outside - but ring very broad and edges badly defined - The view to S and E was very clear in afternoon but haze formed there at night. Dense cumulus fog hid all the hills to N<sup>o</sup> at night, it extended to at least 4000 ft. Today Wm Stewart and J. Rankin came up with two horses with stores for the first time this year - the horses came right up to the obexy. over the snow - Mr Mackenzie the lessee of the Hotel on the summit accompanied them -

May 28 The Wet Bulb readings at 4 and 5 am were obviously wrong as the bulb had been allowed to get dry - at 4<sup>h</sup> the entry on daily sheet is filled in by interpolation; at 5<sup>h</sup> a reading taken at 5<sup>h</sup> 5<sup>m</sup> after the wet bulb had been moistened is entered - The actual readings were - at 4<sup>h</sup> Dry 39.4, Wet 37.4; at 5<sup>h</sup> Dry 44.0, Wet 40.0 -



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The Wet Bulb had to be moistened a few minutes before every hour till 9<sup>h</sup>

Dense fog lay over the N<sup>o</sup> and E<sup>o</sup> hills till Noon when it broke up & disappeared: it gathered again in the same manner in the evening -

The Moon (6 days old) was visible all afternoon -

---

May 29

At 1<sup>h</sup> the Wet Bulb was found to be dry; a reading at 1<sup>h</sup> 8<sup>m</sup> gave Dry 39.2, Wet 31.1. The Wet Bulb at 1<sup>h</sup> was assumed to be 32.0, the Dry Bulb being 41.0.

At 3<sup>h</sup> a distinct upper glow was seen to NE<sup>o</sup>. No unusual colours were seen round the Sun during the day -

Fog on hills round all day except for a few hours in the afternoon -

---

May 30

At 0<sup>h</sup> 5<sup>m</sup> Thermometer Box was shifted one stage down on ladder stand: instruments not shifted -

At 22<sup>h</sup> Black Bulb was moved one stage down in ~~ladder~~ post A -



Continuous fog over all the lower hills till 10<sup>h</sup>, after which it began to break up and rise as Cumulus - Upper Glen seen at 3<sup>h</sup>.

The Ozone test paper was put out at 10<sup>h</sup> 10<sup>m</sup> instead of at 9<sup>h</sup>.

Horizon and valleys hazy all day -

May 31 Low fog lay in the valleys till 8<sup>h</sup>, after which it broke up and cumulus clouds formed -

Thick haze round the horizon all day, and at night heavy clouds above and mingling with it -

The measurements of depth of snow & estimates of the height of thermometers above it are difficult to get now, owing to there being a deep hollow round all the posts -

Thirty four tourists climbed Ben Nevis during May -



June 2

Some fog in valleys to N & NE in early morning especially over Loch Oich. At 6<sup>h</sup> and 7<sup>h</sup> the Wet Bulb readings were obviously wrong, the bulb having been allowed to get dry - The entries on daily sheet were therefore interpolated - The actual readings were at 6<sup>h</sup> Dry 34.0 Wet 32.4 - and at 7<sup>h</sup> Dry 34.9 Wet 32.7.

A faint Solar halo was seen at 17<sup>h</sup>

June 3

In early morning str-fog on Mon of Rannoch and in valleys ~~over~~ among the hills to NW. It cleared off about 9<sup>h</sup>

Solar halo seen at 11<sup>h</sup> and 12<sup>h</sup>

at 11 <sup>h</sup>	Radius of Red = 22°-12'	See page 113-
"	Blue = 22°-43'	

at 15<sup>h</sup> 10<sup>m</sup> Dry 192671 and Wet 192677 were put out in large box 35 inches above snow - Double readings were taken till Midnt. but the small box values were entered on the Daily Sheet - Max 117293 and Min 116918 were put out in ~~small~~ large box at 16<sup>h</sup> 5<sup>m</sup> They were set at 9<sup>h</sup> when the Gyne test paper was also put in large box -



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The following are the double readings.

Horn	Small Box		Large Box	
	Dry	Wet	Dry	Wet
16	44.9	41.1	44.8	40.1
17	44.2	39.4	44.0	39.4
18	43.3	39.3	43.3	39.4
19	42.2	39.0	42.0	39.1
20	41.3	37.2	41.2	37.1
21	41.2	34.4	41.2	34.2
22	41.2	36.0	41.0	36.3
23	40.2	36.0	40.0	36.0
Midnt	40.3	37.1	40.0	37.0

Today the Hotel was opened by Mr Machenye.

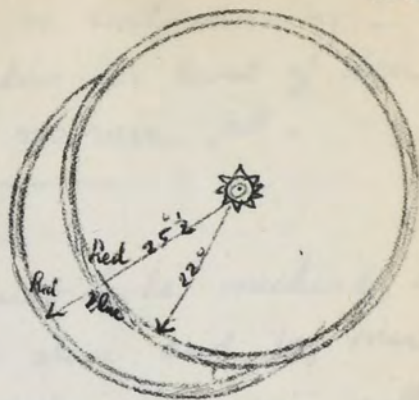
June 4 The Dry and Wet Bulb entries on daily sheet are now taken from the instrument in the large box (old clock box).  
 at 0<sup>h</sup> - 10<sup>m</sup> the small box with Ds 192660 and wet 192672 was put on highest joint of ladder stand to be used for occasional readings - Min 138533 was taken in -  
 at 21<sup>h</sup> the Cosmic Dust collector was put out

June 5 Loose Cum-fog hanging about all afternoon. Cosmic Dust collector taken in at 14<sup>h</sup> -



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Note (see page 111)On June 3 at 12<sup>h</sup>Solar halo was observed  
Red inside and Blue out,  
colours right.Outside ~~side~~ this halo  
on the SE side was  
a segment, coloured  
Red inside, that appeared  
to cut into the halo, but did not extend  
inside it (see diagram)

Radius of inner red - - - - -  $22^{\circ} 18'$  and  $22^{\circ} 0'$   
 " outer red at furthest  
 point from sun - - - - -  $25^{\circ} 28'$

June 6The measurement of depth of snow has  
had to be given up as the stones are  
showing up all round post A.at 22<sup>h</sup> 10<sup>m</sup> cosmic Dust collector put out.June 7at 4<sup>h</sup> 10<sup>m</sup> cosmic Dust collector  
taken in and emptied.June 10a faint Glory was seen on the  
fog to SW at 4<sup>h</sup>. No measurements got.



Fog on hills to 4000 feet in early morning -  
 About 6<sup>h</sup> this fog rose above the level of Ben  
 Nevis, but it was dry & no rain fell -

---

June 13

at 23<sup>h</sup> the mist broke overhead and  
 at midnight sky was clear and fog over  
 hills to S and E. Northern sky green with  
 filmy cirrus above -

Today Mr W. Hay arrived at the Observatory -

---

June 14<sup>th</sup>

Today Mr. Grouse went down the  
 hill, en route for Edinburgh, and left  
 Mr. Rankin in charge at Observatory.

---

June 16.

At 14<sup>h</sup> 40m dry bulb (50850) and Wet bulb (50852)  
 were put out in screen at top of ladder-stand;  
 and the first of a set of readings was taken at  
 15 hrs.

After sunset and during the night the northern  
 horizon, and the lower surface of the cir-c. clouds  
 on the sky, were both dark red in colour.

---

June 17

There was no fire in Observatory office  
 after Noon today - the inside temperature being  
 over 60°.

---



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June 18

At 6<sup>h</sup> and 7<sup>h</sup> the sky was overcast, with a heavy thunder-cloud. Thunder, and lightning (seen) were noted at 6<sup>h</sup> 27<sup>m</sup>, and thunder at 6<sup>h</sup> 31<sup>m</sup>. Heavy rain fell while thunder-storm lasted. Dew formed on thermometer-screens, black-balls, and Observatory roof at night.

---

June 20<sup>th</sup>

A segment of a Solar Halo was seen at 4<sup>h</sup>, and a full Halo at 6<sup>h</sup> - no measurements were obtained.

---

June 21<sup>st</sup>

A faint "Glow" was seen at 3<sup>h</sup>, and at same hour the Earth-shadow seen to ~~was~~ was topped by a belt of rosey colour, having streamer-like gaps therein. (After ~~June~~ 20<sup>th</sup> a number of people from Fort William arrived on the summit to celebrate the Jubilee of the Queen's reign. A huge bonfire was lit at 10<sup>h</sup> 40<sup>m</sup> on the point of the summit beyond the 'Second Gorge')

---

June 22

at 22<sup>h</sup> pink afterglow observed. At Midnight Northern horizon Red and Green.



Today Mayges Well was found to be 64 feet below the Ordnance mark on summit, ie it is 4342 feet above sea level.

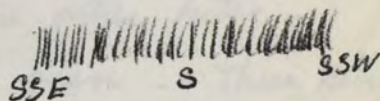
June 24 at 3<sup>h</sup> faint upper glow seen  $\pm$ NE<sup>o</sup> and earth shadow to SW<sup>o</sup> a faint after glow was also seen at 22<sup>h</sup>

At Midnight N horizon red & green with pearly white cirrus clouds above it.

Today Mr Omond returned to the Observatory and Mr Hay went down -

June 25

At 2 hrs. a cloud bank



was seen to S<sup>o</sup> not far

off about 6° above horizon of peculiar perpendicular columnar structure as sketched on margin -

Pink upper glow observed at 3<sup>h</sup> and a faint after glow at 22<sup>h</sup>

at 18 hrs a wasp was seen on roof - For the past few days large numbers of flies have been all about the hill top.

June 26 at 1<sup>h</sup> pearly-white cirrus to N<sup>o</sup>

In early morning str. fog gathered in the valleys;



it rose higher in the forenoon, and about Noon broke up into cumulus and disappeared.

June 27

in early morning str-fog again in valley, it gradually rose till it covered Ben Nevis as well as all the other hills. The stones of the hill top however were never wetted by this fog -

June 28

upper surface of fog layer was about the level of Ben Nevis all day, sometimes rising over it, but never sinking so low as to expose many of the other hills -

at 2 o'clk a glory was seen - Three rings badly defined and too fleeting to measure, but the middle ring was distinctly the brightest - Red outside in all rings -

Pearly white cirrus reaching to about  $30^{\circ}$  altitude at Midnight to N<sup>o</sup>

Today Mr Mathewie the post office lineman came up & overhauled battery & telegraph instrument

June 29

Pink upper glow observed at 3 hrs  
Fog-low, occasionally double, observed at 5 hrs.  
and at 6 hrs.



Thick continuous fog over all the hills round in early morning: at 9 hrs this had risen above level of Ben Nevis and continued so all day -

at night it cleared to N<sup>W</sup> and nearly cirrus at about 20° altitude was seen -

---

June 30 at 3<sup>h</sup> faint upper glow seen to NE<sup>W</sup>  
Pink after glow seen at 22<sup>h</sup> -

The fog cleared away gradually today leaving only a general hazeiness in the valleys -

Today tools from A. Fraser Edinburgh came up and the base plate of the Robinson Anemometer was unshipped - The gear of it was packed ready to send to Edinburgh for repairs -

---

192 Tourists climbed Ben Nevis in June -

---



July 1

at 3<sup>h</sup> faint upper glow seen.

Thick foggy looking haze in the valleys all morning, rising into cum-fog in the forenoon.

July 2

Halo seen at 7 hrs. Red inside; rather broad & faint. Seen again at 9 & at 13 hrs.

July 3

During the recent dry weather the signals of the telegraph instrument had got very weak, both in sending and in receiving, but after the rain fell today they have become as strong as usual.

July 6

at 1<sup>h</sup> bright pearly cirrus seen to Northward. Underneath it at the Northern horizon was dark roll-e.

This afternoon the office stove pipe was cleaned out.

July 8

Dark ugly looking haze all round in afternoon.

Today Wm Stewart came up to the Observatory and stayed overnight, being engaged in sorting the road near the top of the hill.



July 16

Heavy ugly looking cumulus all round at night though hill top and sky pretty clear. Clouds to N<sup>W</sup> quite dark though horizon faintly red at Mdt.

July 17

No after-glow was observed after sunset though the sky was quite clear.

at night bright pearly cirrus to N<sup>W</sup> height about  $12^{\circ}$ , highest to NNW all night, not following the sun round.

July 18

No upper glow before sunrise.

at 3<sup>h</sup> the Wet Bulb had got dry, it read  $31^{\circ}3$ .

but  $27^{\circ}6$  was taken as its true reading. The surface of the water in the W.B. reservoir was frozen though the air temp. was  $35^{\circ}2$ .

Today (July 18) the first batches of Hornby sheets were sent down to Fort William.

July 20

Thick fog over the lower hills in evening.

at 21<sup>h</sup> Earth shadow seen to SE<sup>W</sup>

Up to Midnight Pearly cirrus seen to N<sup>W</sup>

July 21

At 10<sup>h</sup> 50<sup>m</sup> a double glory was observed from edge of cliff. The following measurements were got —



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Radius of Inner Red  $1^{\circ} 57' 36'' : 2^{\circ} 1' 12'' : 1^{\circ} 59' 14''$   
 " Outer Red  $3'' 18'' 0 : 3'' 19'' 30$ .

a double fog-bow was also seen at times - Red inside inner bow and outside outer bow = the rest of the bows were white, no other colours.

a Solar halo was seen at 8<sup>h</sup> no measurements got.

The fog on the lower hills gradually rose & covered Ben Nevis; at 9 & 10 hrs it was about level with the top.

---

July 24 Heavy showers of hail fell between 11<sup>h</sup> 55<sup>m</sup> and 12<sup>h</sup> 10<sup>m</sup>. The hail shower at 13<sup>h</sup> came on from the SW. It was falling on the roof of the Visitor's Room about 4 seconds before any fell at the tower.

---

July 25 a distinct shower of snow fell between 10 & 11 hrs = a little was seen lying at 11 hrs.

---

July 31 Rainbow seen at 18<sup>h</sup> 45<sup>m</sup> Double, Primary bow the brightest.

Radius of Red of Primary =  $42^{\circ} 48'$  and  $44^{\circ} 17'$   
 " " Secondary =  $53'' 8$

Red outside primary and inside secondary.  
 Measurements made from centre of shadow of Observer's head.



659 Tourists climbed Ben Nevis during  
the month of July = the greatest number in one day 63.

---

August 1.

Today the Robinson Anemometer that had  
been in Edinburgh for repairs (see page 118) arrived  
at the Observatory.

---

August 2 Soft looking fog over all hills around  
at night. Northern horizon bright at Midnight.  
Today the last batch of Hourly sheets containing  
those of July 25<sup>th</sup> 1885 were sent down to the  
store in Fort William.

---

August 3.

Between 4<sup>h</sup> and sunrise (4<sup>h</sup> - 25<sup>m</sup>) the  
Earth shadow was visible. Thick fog over hills  
to 3000 or 4000 feet till about 10 hrs after  
which it broke up gradually, first clearing away  
to Northward. At 10 hrs a butterfly flew over the  
roof. At 21<sup>h</sup> a faint upper glow was seen =  
the North and North Western horizon remained red till  
after 23<sup>h</sup>.

Today the repaired Robinson anemometer was set  
up. Mr C. E. Gray ~~of~~ arrived at the  
Observatory to take charge of telegrams.

---



August 4 Haze and low fog in valleys in early morn-  
cum-fog all round during the day & in valleys again  
at night.

---

August 5 Trace of halo seen at 12 hrs.  
very thick haze all round most of the day & at night.

---

August 10 at 1<sup>h</sup> Robinson anemometer was hid up.  
but it was set going again at 7 hrs.

---

August 12 Mr Herbertson arrived at the Observatory  
today and Mr Rankin went down.

---

August 16 No fog in valleys all day, but cumulus  
and cum-f hanging about hill-tops, which at 19<sup>h</sup>  
surrounded Ben Nevis except to S<sup>o</sup> where there was  
haze - at 20<sup>h</sup>-45<sup>m</sup> afterglow seen to NW.

---

August 17 Low fog gathered in the valleys to N<sup>o</sup> between  
2<sup>h</sup> & sunrise: about 5<sup>h</sup> it had risen to the level  
of the hill top and the rest of the day was misty.  
Glory seen at 5<sup>h</sup>-7<sup>m</sup> Single ring badly defined  
with occasional traces of second outer ring.  
Radius of Red (two measurements) 3°.42' and 3°.52'.  
The 17<sup>h</sup> observation was not taken till 17<sup>h</sup>-5<sup>m</sup>

---



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August 19 glories seen about  $9^h 40^m$  Two circles distinct and two others outside these indistinct - Red outside in all - The color next the shadow was yellow: between its Red and Red<sup>2</sup> was violet, and between Red<sup>2</sup> and Red<sup>3</sup> Green - No measurements got - A Fog-bow was seen at  $9^h 45^m$  with glory inside it round shadow -

at  $10^h 22^m$  another glory seen at cliff -

Red outside, radius =  $2^\circ 36'$

The violet was a deep band reaching nearly if not quite to the shadow -

Two other measurements of different glories about the same time gave for Radius of Red  $3^\circ 4'$  and  $3^\circ 13'$ .

Misty glories were seen at various times during the day -

A Rainbow was seen at  $19^h$

Flashes of lightning were observed far to S<sup>W</sup> at  $22^h 4^m$  and at about  $22^h 30^m$

August 20

At  $3^h$  low lying fog over looks 2 miles to N<sup>E</sup> Fog gradually gathered on the hills round and at  $6^h$  covered Ben Nevis



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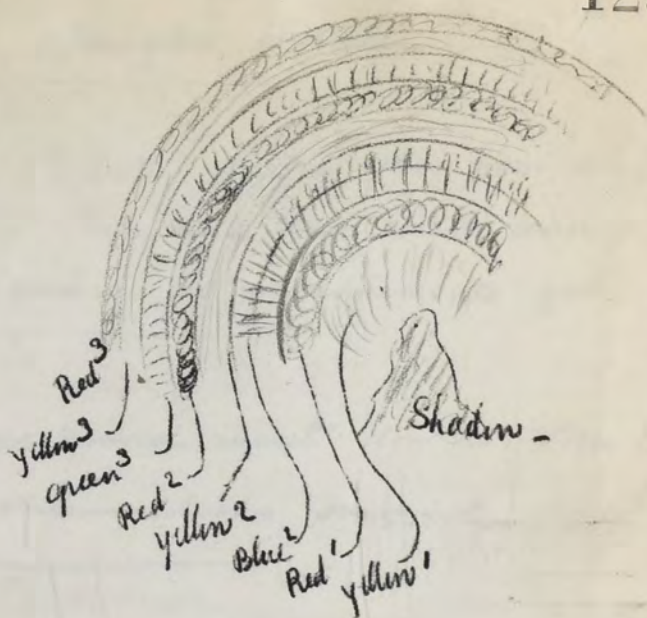
August 21<sup>st</sup>

Glory seen at  
about 9<sup>h</sup> - 30<sup>m</sup>

Colours as in  
diagram -

Yellow<sup>1</sup> and Red<sup>1</sup>  
faint -

Yellow<sup>2</sup> and Red<sup>2</sup>  
very distinct.



~~Diagram~~

In 2 no green

and in 3 no blue (or only faint traces in both cases)

In Ring 3. the Green and Red were the most  
distinct colours, yellow barely ~~was~~ visible.

When clouds or fog blew up the circle where the  
glory was seen the colours got blurred and  
indistinct.

The following measurements were taken by  
Mr Herbertson -

Radius of Yellow <sup>2</sup> (inside)	2" 36' 9	2" 32'
" junction of Yellow <sup>2</sup> & Red <sup>2</sup>	3" 15 2	3" 29,
" Red <sup>2</sup> (outside)	4" 25 2	4" 18
" Red <sup>3</sup> (outside)	7" 30	
" Green <sup>3</sup> (inside?)	6" 48	



At 20<sup>h</sup> faint after-glow observed -

August 23

At 5<sup>h</sup> 20<sup>m</sup> glory seen from window in tower door - Two and three circles seen, Red outside in each - No measurements got -

August 26

Today Mr. Brund went down. Mr. C. E. Gray took observations during night.

August 27

Today Mr. A. Rankin returned to Observatory as Interim Supt.

August 28

At 14 hrs a Rainbow was seen.

August 31<sup>st</sup>

A shower of hail fell between 14<sup>h</sup> and 15<sup>h</sup>. Thunder was noted at 16<sup>h</sup> 9<sup>m</sup> and again at 17<sup>h</sup> 0<sup>m</sup> - no lightning seen.

During August 1199 tourists ascended Ben-Nevis.



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September 1

At 22 hrs. an ill-defined white  
Lunar Halo was observed.

September 2<sup>nd</sup>

At 10<sup>h</sup>. 45<sup>m</sup> part of a rainbow  
was observed to ESE.

September 4<sup>th</sup>

At 4 hrs a Lunar Corona  
was observed - arrangement of  
colours as shown in diagram.  
It was too fleeting for measurement  
to be obtained.

September 6<sup>th</sup>

Snow and sleet fell between 18<sup>h</sup> and  
19<sup>h</sup>. At midnight the anemometer  
(Robinson's) was tied up.

Sep. 7<sup>th</sup>

At 5 hrs. a Lunar Corona was seen.  
At 10 hrs the mist cleared off summit - but -  
lay in valleys and on hills around till  
13 hrs. after which it rose and formed  
into Cumulus clouds overhead, leaving great  
"visibility" all round below.



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Sep. 8<sup>th</sup>

A Lunar Corona was seen at 5 hrs but no measurements were got. At 7 hrs the anemometer (Robinson's) was untied, and for the rest of the day it went all right. Lightning was seen at 21 hrs.

---

Sep. 9<sup>th</sup>

The Anemometer was tied up at 18<sup>h</sup> 25<sup>m</sup>. At 23 hrs. St. Elmo's fire was seen on the tips of the lightning rod and on the vane. Its appearance was accompanied by a very audible fizzing - not crackling - like the sound emitted by water on a hot stone-plate. A little snow was falling at the time, and the wind was rather gusty. It was observed that the light was brightest when the wind was strongest.

At midnight the Summit was white with snow.

---

Sep 10<sup>th</sup>

Robinson's Anemometer was untied at Noon.

---

Sep 11<sup>th</sup>

Anemometer was tied at 16 hrs. The Black bull was frozen to its support, as so could not be set.

---



Sep. 12<sup>th</sup>

Heavy showers of snow fell this morning. The maximum in Sun was lost today owing to the Black bulb remaining frozen to its support.

Sep 14<sup>th</sup>

Anemometer untied at 8 hrs..

Sep 15<sup>th</sup>

The Summit was clear till 16 hrs. but fog-enveloped for the rest of the day. During the morning hours the "lights" of the S.W. coast were easily seen.

Sep 16<sup>th</sup>

Between 3<sup>h</sup> and 4<sup>h</sup> this morning the Zodiacal light was seen as a steel-gray glimmering extending from Eastern horizon through the Constellations Leo and Cancer to the border of Gemini. At the same time a light supposed to have been the glare of the Carron ironworks was observed at the SSE<sup>n</sup> horizon.

Fog lay in valleys and on surrounding hills all day, rising in afternoon and occasionally passing the Summit. The anemometer was untied at 13 hrs - having been bound since 20<sup>h</sup> yesterday.



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September 14<sup>th</sup>

Summit was clear after 6 hrs. ~~for the night~~. The sky was cloudless after 19 hrs except for some thin Stratus at 22 hrs. Fine pink "afterglow" observed from 18<sup>h</sup> 45<sup>m</sup> till 19<sup>h</sup> 5<sup>m</sup>. Ice formed on top of thermometer screen at 21 hrs. and at midnight. A bright shooting star was seen at 20<sup>h</sup> 11<sup>m</sup> - path as in diagram *Corona Borealis*

September 18<sup>th</sup>

At 3<sup>h</sup> an aurora was seen low to N<sup>d</sup> with short and not very bright streamers. Summit

The Zodiacal light was seen at 3<sup>h</sup> 30<sup>m</sup> as figured in diagram.



The summit was clear till 15 hrs, but thick fog lay on lower hill all around, which gradually

rose and enveloped summit after that hour. At 12 hrs and at 14<sup>h</sup> 30<sup>m</sup> 'glories' were seen from edge of cliff to N<sup>d</sup>. At 13<sup>h</sup> 30<sup>m</sup> the following measurements were got:

and flora ↓ Shadows of Observer.	inside of	Red <sup>1</sup>	outside of	Red <sup>1</sup>	Blue	Green	Inside	Red <sup>2</sup>	outside
	Red <sup>1</sup>		Red <sup>1</sup>				Red <sup>1</sup>		Red <sup>2</sup>
	1° 12'	2° 56'	3° 44'	4° 54'	4° 23'	4° 43'	4° 56'	5° 34'	6° 24'
			3° 35'	3° 46'			5° 3'		6° 29'
									35° 16'

A fog low was observed at same time measuring



Sept 19<sup>th</sup>

The fog cleared off summit after 17 hrs, leaving thick fog in valleys all round, and a cloudy sky. From 21 hrs till midnight. the sky was cloudless. At 23<sup>h</sup> a glimmering light was seen at N<sup>m</sup> horizon - probably auroral. The noon observation was 6½ minutes late. The anemometrical values of wind mileage in daily sheet for the hours 14, 15 and 16 ~~were~~ are interpolations.

September 20

At 3<sup>h</sup> the Zodiacal light was seen looking as bright as the Milky Way -

Fog in valleys till 4 hrs after that cum-fog on hills till about Noon, and thick haze in valleys all afternoon & at night - at about 18<sup>h</sup> 45<sup>m</sup> the afterglow was seen faintly.

The following extra temp. readings were taken:

Hour	Dry	Wet.
7 <sup>h</sup> 30	47.8	34.4
8 <sup>h</sup> 30	50.2	35.9
10 <sup>h</sup> 30	54.1	38.2
11 <sup>h</sup> 30	56.1	40.1
12 <sup>h</sup> 30	55.4	40.8
13 <sup>h</sup> 30	56.9	42.9

Today Mr Omond returned to the observatory and Mr Rankin went down - Mr Miller also returned and Mr Duncan went down.



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September 21

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Fog lying over & hiding all the lower hills round most of the day - On this glories were seen frequently - The following measurements were got at 7<sup>h</sup> 10<sup>m</sup> Columns as in diag -



Radius of Red <sup>2</sup>	4° 18'	3° 15'	4° 18'	3° 54'
" Yellow <sup>2</sup>	2° 59'	3° 2'	3° 4'	2° 39'
" Blue <sup>2</sup>	2° 17'	2° 21'	2° 24'	2° 12'

after 8 hrs the following measurements were taken = some from top of tower and some from edge of cliff - The glory appeared to vary in size as different parts of the fog drifted past -

	Tower			cliff	
Radius of Red <sup>2</sup>	3° 15'	3° 44'	3° 50'	4° 6'	3° 54'
" Yellow <sup>2</sup>	2° 37'	2° 47'	2° 58'	3° 2'	2° 47'
" Blue <sup>2</sup>	2° 2'	2° 0'	2° 13'	2° 19'	1° 58'
" Red <sup>3</sup>				6° 55'	

The fog occasionally rose above the level of the hill top, causing in each case a rapid and considerable fall of temperature (see daily sheet).

September 22

The fog thinned away into haze in the forenoon and a few hill tops showed above it at times -

N.B. On the 21<sup>st</sup> Mr Gray left the obsrvg.



September 23

Thick haze in the valleys all day mixed with cum-fog in the afternoon -

Heavy dew on the top of thermometer box and on Black Bull at 20<sup>h</sup> but nowhere else.

Aurora seen at night, misty, confused looked arch, no streamers.

September 25

Though the wet bulb read a few tenths lower than dry for a few hours this morning the air was obviously saturated.

The Cosmic Dust collector was put out at 4 hrs and taken in again at Midnt.

September 28

at 3<sup>h</sup> aurora seen flashing in waves to N<sup>w</sup> no well defined arch and no streamers.

at 6<sup>h</sup> the "Snow line" appeared to be between 2000 and 3000 feet.

at 19<sup>h</sup> a lunar corona was observed occasionally, formed on Secd.

September 29

at 13<sup>h</sup> cumulus clouds all round at about level of top of Ben Nevis.

September 30

Dense masses of cumulus over all hills round and occasionally on Ben Nevis



also during the day but clearing at night.

The Earth shadow was seen after 18<sup>h</sup> as the Sun went down: it had been seen before sunrise on all clear days recently. A well marked after-glow was seen at about 18<sup>h</sup> 50<sup>m</sup>.

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405 Tourists climbed Ben Nevis in September.

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### October 1

Thick haze and str-f in valleys and over hills in early morning. Earth-shadow seen at 6<sup>h</sup>. Cum-f formed all round in forenoon and gradually rose till at about 14<sup>h</sup> it covered Ben Nevis.

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### October 3

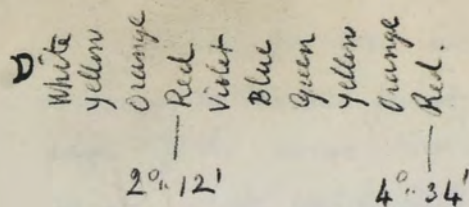
Mr James Maclean came up today to caulk seams in tower and spent the night at the Observatory.

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### October 4

The fog sank below the level of Ben Nevis in early morning but continued to cover all the other hills all day. When clearing a double lunar corona was observed. The following measurements were got at 5<sup>hrs</sup>.





glories were also seen during the day on the fog to N<sup>o</sup>.  
The following measurements were got between 11 212 hrs.  
Five rings -

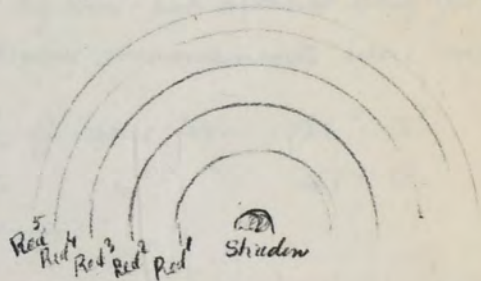
Radius of Red<sup>5</sup> too faint.

" Red<sup>4</sup> 6° 18'

" Red<sup>3</sup> 4° 37'

" Red<sup>2</sup> 2° 40'

" Red<sup>1</sup> 0° 52' (about).



The Earth Shadow was seen at 18<sup>h</sup> and the afterglow -

⊙ a Lunar Fog-bow was seen at 23<sup>h</sup>

Radius to inner edge (about) 38° 5'.

This afternoon the tower was tarred over.

October 5 at 1<sup>h</sup> a few hill tops were showing through the fog - a lunar fog-bow was seen -

At 2<sup>h</sup> the fog had risen higher and was beginning to blow across the hill tops - A distinct lunar fog bow was seen with traces of faint second bow outside it. The following measurements of the inner bow were got -

Radius inside of bow - 35° - 4'

" outside " 41° 0'.



a similar fog bow was seen at  $3\frac{1}{2}$  there appeared to be a faint trace of red about the outer edge of the inner bow. On both these occasions a faint white patch of light was seen round the shadow of the observers head ~~on~~ which was probably a lunar glory.

The fog bow was seen again but without any glory at  $4\frac{1}{2}$  and  $5\frac{1}{2}$ . The following measurements were made at  $4\frac{1}{2}$ .

Radius to inside of inner bow	$36^{\circ} 3'$
" outside "	$41^{\circ} 0'$

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October 7

Today Mr Drysdale arrived at the observatory and Mr Herbertson went down.

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October 11

at  $2\frac{1}{2}$  -  $10^m$  Dry 192660 and Wet 192672 were put out in small box on lowest stage of ladder-stand about 49 inches above ground, and the Gane paper shifted to this box. The Max 2 Min were left in the large box. At and after  $3\frac{1}{2}$  the temperatures on the days sheet are those of the small box. The following duplicate readings were taken.

	Large Box		Small Box	
	Dry	Wet	Dry	Wet.
$3\frac{1}{2}$	19.2	19.2	19.1	19.2
$4\frac{1}{2}$	19.3	19.3	19.1	19.1

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October 12

The measurements of the amount of Sun today are very doubtful owing to drift.

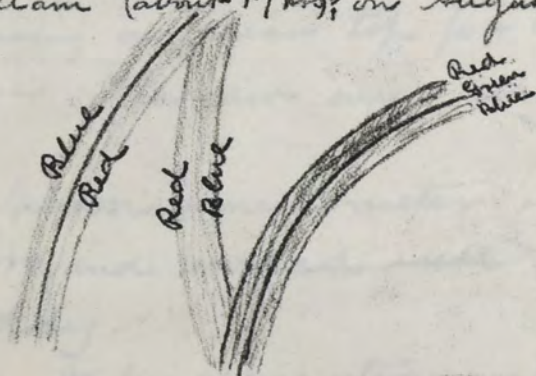
Today Mr Rankin returned to the Observatory.

October 13

The summit was ~~clear~~ enveloped in thin fog till 9 hrs., was clear from 10 till 13 hrs. after which the fog came on again.

Mr Omond went down the hill today.

Sketch of Extraordinary Rainbow seen at Fort William (about 17 hrs) on August-16<sup>th</sup> 1887.



Seen by.  
A. Rankin } B.N.O.  
J. Miller }  
W. Stewart } Officials  
D. McKenzie }

(Copied from rough sketch made at the time of observation by A.R.)

October 14

At 22<sup>h</sup> and 23<sup>h</sup> an aurora was observed.  
It had no streamers.



October 15

The fog cleared away at Noon, but lay on surrounding hills, its upper surface being about on a level with the Summit. On it, at 14 hrs were observed a double fog-bow and Glories, of which no measurements were obtained. A Solar Corona was seen at  $14^h 10^m$  and again at  $16^h 10^m$ , triple each time; the following measurements were recorded:—

$14^h 10^m$		$16^h 10^m$
⊙-Red <sub>1</sub> -Red <sub>2</sub> -Red <sub>3</sub>	:	⊙ Red <sub>1</sub> -Red <sub>2</sub> -Red <sub>3</sub> .
- 2°. 20 $\frac{1}{2}$ ' -		2°. 6' , 3°. 35' -

Oct. 16.

After 4 hrs the fog rose and enveloped summit but cleared down again after 16 hrs, leaving a clear top for the rest of the day— The air was very dry after 20 hrs.

Robinson's anemometer was set going at 14 hrs, and worked well for the rest of the day.

Chrystal's anemometer was recording all night after 9 hrs.

Oct. 17

The Cum-fog lay in valleys in early morning gradually rose and as mist began to pass the summit at 7 hrs completely enveloping it at 10 $\frac{1}{2}$ . At 19 hrs. Robinson had to be "tied up".



Oct. 18<sup>th</sup>

Robinson's was let loose at 9 hrs.

Oct. 19<sup>th</sup>

Robinson was tied up 20 hrs.

Oct. 21<sup>st</sup>

The fog cleared away at 10 h. and the summit remained clear till midnight.

Till 14 hrs the thermometer box (ladder stand) and the thermometers had a coating of hard snow on them. After that hour they were cleared. The following observation was made at 19<sup>h</sup> 31<sup>m</sup>, very dry bulb 25.2, Wet bulb 23.0, it being uncertain whether the wet bulb had been in good order or not at 19 hrs.

A feeble Aurora was seen at 22 hrs.

Oct. 23<sup>rd</sup>

Mist and fog covered the summit all day except at 20 h. and midnight. At the latter hour a faint glimmering light - probably auroral - was seen to Northwards.

At 9 hrs the anemometer (Robinson's) was tied up having been working since 13 h. yesterday.

October 26<sup>th</sup>

Glazed-frost - or a coating of ice, formed on all exposed surfaces all forenoon. At 22 hrs the anemometer (Robinson's) was let loose.

October 27

At 14 hrs the thermometers in the old Stevenson screen in Dry No 192671 and Wet No 192677 - were taken in.



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October 28<sup>th</sup>

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A flash of lightning was seen at 1<sup>h</sup> 45<sup>m</sup> as the anemometer was being tied up. A very heavy shower of snow and snow-hail fell during a squall that began at 3<sup>h</sup> 27<sup>m</sup> and ended at 3<sup>h</sup> 33<sup>m</sup>. At 4<sup>h</sup> the rain gauge recorded 0.335-inch.

October 29<sup>th</sup>

At 1<sup>h</sup> 5<sup>m</sup> St. Elmo's fire was seen, in jets 3 to 4 inches long on every point on the top of the tower, and on the top of the Kitchen Chimney. Owing to the number of jets on each cup of anemometer, this instrument was quite ablaze. On the Kitchen Chimney the jets on the top of the cone were vertical and those on the lower edge of same, horizontal.



The fizzing noise from the different places was very distinct. While standing on office roof watching the display the observer felt an 'electric' sensation at his temples, and the 2<sup>nd</sup> assistant observed that his (the observer's) hair was glowing. While standing erect the sensation and glow lasted but on bending down they <sup>always</sup> passed off. On raising the snow-axe a little above his head a jet 2 to 3 inches long shot out at the top. At 1<sup>h</sup> 15<sup>m</sup> the 'fire' ~~disappeared~~ vanished from every place at the same instant. A shower of snow and snow-hail (conical) was falling at the time, and the wind was a variable S. to S.W. breeze - very flaccid. (The measurements of length of jets were only roughly estimated - the jets on Kitchen Chimney varied from 3 to 6" approx.)



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October 29<sup>th</sup> (continued)

At 19<sup>h</sup> St Elmo's Fire was again seen.

At 21<sup>h</sup> 25<sup>m</sup> the thermometer (ladder stand) box was shifted, the hinge of the box door having fouled and the latches being choked with hard snow. The thermometers dry N<sup>o</sup> 192671, wet N<sup>o</sup> 192677 and minimum N<sup>o</sup> 138533 were put out. Height above snow not altered.

October 31<sup>st</sup>

From 16<sup>h</sup> till 20<sup>h</sup> the summit was clear. At 20<sup>h</sup> a lunar corona was seen. At 23<sup>h</sup> the rain gauge was covered with snow (drifted snow) and could not be found, consequently there are no measurements of amount of snow at 23<sup>h</sup> and midnight on daily sheets, but 0.020 in. has been ~~added~~ included <sup>for these hours</sup> in the amount for the day.

23 Tourists climbed Ben Nevis in October

November 1<sup>st</sup>

The rain gauge was found at 5<sup>h</sup> and brought in, and was not put out again till 19<sup>h</sup>.

November 2<sup>nd</sup>

In afternoon it was observed that the snow-crystals forming from the fog were slightly brown. Maximum 117293 and minimum 116918 were taken in from old thermometer box at 22<sup>h</sup>.

November 3<sup>rd</sup>

The following 1/4 hourly readings of barometer were taken viz. (Reduced to 32°) 3<sup>h</sup> 15<sup>m</sup> 24.002, 3<sup>h</sup> 30<sup>m</sup> 23.958, 3<sup>h</sup> 45<sup>m</sup> 23.937, 4<sup>h</sup> 15<sup>m</sup> 23.936, 4<sup>h</sup> 30<sup>m</sup> 23.924, 4<sup>h</sup> 45<sup>m</sup> 23.922, 5<sup>h</sup> 15<sup>m</sup> 23.923 and 5<sup>h</sup> 30<sup>m</sup> 23.948.



The rain gauge was not shifted at 4<sup>h</sup>, 5<sup>h</sup> and 6<sup>h</sup> owing to the heavy drifting at these hours.

November 4<sup>th</sup>

At 1<sup>h</sup> the summit cleared, leaving amount 5 of Strato Cirrus on sky which moved quickly from ENE and retreated slowly towards NW — its S<sup>m</sup> limit was sharply defined.

At 1<sup>h</sup> 20<sup>m</sup> the thermometer box was shifted, dry bulb N°192660 wet bulb N°192672 and minimum N°138545 were put out — height above snow not altered. At 9<sup>h</sup> there was no ozone test, as it had been taken in with the thermometer box.

The road is now quite impracticable for horses.

November 6<sup>th</sup>

At 1<sup>h</sup>, 3<sup>h</sup> and 4<sup>h</sup> a lunar halo was observed. At 4<sup>h</sup> there were apparently 4 distinct cloud-strata viz- beginning with the lowest —

- 1<sup>st</sup> Cumulus - fog on hills
- 2<sup>nd</sup> Cumulo-stratus and bend moving quickly from E<sup>st</sup>
- 3<sup>rd</sup> Cirro-cumulus moving from (SE?) slowly.
- 4<sup>th</sup> Cirro-stratus pallidum with halo moving from (SSE?)

November 7<sup>th</sup>

The barometer was pumping wildly, almost all day. The measurements of amount of snow today are very doubtful owing to drift.



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November 9<sup>th</sup>

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A lunar corona was seen at 4 hrs. The thermometer box was shifted after the 4<sup>th</sup> observation: its height above the snow was not altered. Dry bulb 192671 Wet-bulb 192677 and Minimum 138533 were put out. Thin fog was passing the summit occasionally in the forenoon, but during the afternoon the summit was clear and the sky cloudless. An Aurora was seen at night - faintly at 8<sup>th</sup> and 9<sup>th</sup> but with well defined streamers at midnight. Chrystal's Hygrometer was patched up, and put out after 23<sup>rs</sup>.

A rat was trapped in storeroom this evening. Its body was 9 inches long, its tail 6 $\frac{1}{2}$  inches - i.e. 15 $\frac{1}{2}$  inches from snout to point of tail - its girth was 7 $\frac{1}{2}$  inches.

November 10<sup>th</sup>

Fog was observed on E<sup>st</sup> hills at 1<sup>h</sup> which gradually crept westwards till by 7<sup>h</sup> all the surrounding hills were covered. From 7<sup>h</sup> till 10<sup>h</sup> it brushed past the summit at times, but after 10<sup>h</sup> and for the rest of the day it enveloped the Ben, breaking however at times overhead showing a clear blue sky above. As this fog came up to the Ben the air temperature became very unsteady, and a few extra readings of the Dry and Wet-bulbs were taken (These readings are entered on an extra daily-sheet)



November 11<sup>th</sup>

Fog on summit till 13<sup>h</sup>, sinking thereafter to about 4000ft leaving Ben clear for the rest of the day. At 14<sup>h</sup> a 'glory' was seen on fog in the Corrie to N<sup>W</sup>. A pink afterglow was observed from 16<sup>h</sup>-45<sup>m</sup> till 17<sup>h</sup>.

November 12<sup>th</sup>

Extra readings of dry and wet-bulbs were taken from 5<sup>h</sup> till 12<sup>h</sup>. (They are entered with the extras of 10<sup>th</sup>). Fog began to blow over summit at 9<sup>h</sup>, and settled thereon after 12<sup>h</sup>. At 9<sup>h</sup> a glory was observed and measurements of its red rings were obtained:

Viz -		
	(1)	(2)
Red <sup>1</sup>	2°.46'	2°.53'
Red <sup>2</sup>	4°.41½'	4°.31'
Red <sup>3</sup>	—	—

From 20<sup>h</sup> till 23<sup>h</sup> the summit was clear, but the sky was overcast with thin stratus.

November 13<sup>th</sup>

Today began with a clear top, but an overcast sky of thin stratus. Fog came on at 4<sup>h</sup> and lasted till 8<sup>h</sup> ~~and~~ and was passing summit at times till 14<sup>h</sup>. A fogbow was seen at 11<sup>h</sup> 20<sup>m</sup> and a glory at 15<sup>h</sup>. The following measurements of red rings of glory were obtained viz - Red<sup>1</sup> 0°.53', Red<sup>2</sup> 1°.50' and Red<sup>3</sup> 3°.46'. An aurora was seen at 20<sup>h</sup> 22<sup>h</sup>, and 23<sup>h</sup>. At 23<sup>h</sup> 20<sup>m</sup> it broke up into streamers. The Black bulb was out till 16<sup>h</sup> - maximum registered 99.0. The thermometer-box was shifted at 10<sup>h</sup> 30<sup>m</sup> - Dry 192660, and Wet-192672 were put out - minimum was not changed.



1887 November 14<sup>th</sup>

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At 2<sup>h</sup> and 3<sup>h</sup> three of the West coast lights could be seen.

The sky, cloudless at 1<sup>h</sup> became overcast with stratus<sup>at 2<sup>h</sup></sup> (through which ~~at~~ the stars were dimly visible till 6<sup>h</sup>) and remained so till 15<sup>h</sup>, after which it rapidly cleared and was cloudless at 19<sup>h</sup>. Fog came on at 20<sup>h</sup> and enveloped summit till 23<sup>h</sup>. but at midnight the summit was again clear and the sky cloudless, but fog covered the surrounding hills

November 15<sup>th</sup>

By 1<sup>h</sup> the fog that lay on the surrounding hills had disappeared. At 1<sup>h</sup> and 2<sup>h</sup> the West coast lights were visible. The sky was cloudless or almost so till noon, after which it became overcast and remained so till 17<sup>h</sup>. At 18<sup>h</sup> it was again cloudless, but at 19<sup>h</sup> fog came on and enveloped the summit for the rest of the day. Bright meteors with long trains were seen at the following times: -

1 <sup>h</sup> 8 <sup>m</sup> 30 <sup>s</sup>	Path from SSW 30° altitude to SW 15° altitude.	(approximately)
1 <sup>h</sup> 15 <sup>m</sup> 15 <sup>s</sup>	" " 40° almost parallel with above	"
1 <sup>h</sup> 17 <sup>m</sup> 45 <sup>s</sup>	" " 20° " " "	"
1 <sup>h</sup> 19 <sup>m</sup> 0 <sup>s</sup>	" " Mirach (Anarumda) to $\alpha$ Arietes	"
1 <sup>h</sup> 22 <sup>m</sup> 0 <sup>s</sup>	" " Rigel towards SSW. almost parallel to horizon	"
1 <sup>h</sup> 24 <sup>m</sup> 0 <sup>s</sup>	" " Sirius " "	"
1 <sup>h</sup> 32 <sup>m</sup> 30 <sup>s</sup>	" " $\alpha$ Arietes to W horizon	"
1 <sup>h</sup> 33 <sup>m</sup> 30 <sup>s</sup>	" " ( ? ) towards W horizon	"
2 <sup>h</sup> 5 <sup>m</sup> 10 <sup>s</sup>	" " S 15° altitude to SSW 5° altitude	"
2 <sup>h</sup> 11 <sup>m</sup> 30 <sup>s</sup>	" " SE-E 12° " " SSE 5° "	"
2 <sup>h</sup> 12 <sup>m</sup> 0 <sup>s</sup>	" " " " " "	"
2 <sup>h</sup> 17 <sup>m</sup> 45 <sup>s</sup>	" " Low to S. inclining to horizon to SSW	"



1887 November 19<sup>th</sup>

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The record of the direction anemometer today is very doubtful till 15<sup>h</sup>, as the vane had been sheltered by the chimney and other instruments on the tower which were all covered heavily with snow and ice. At 15<sup>h</sup> the vane was broadside to the wind. After that hour the snow was cleared away and the vane worked all right for the rest of the day.

November 20<sup>th</sup>

At 3<sup>h</sup> and 4<sup>h</sup> a pale light (probably auroral) was seen behind the clouds to N<sup>W</sup>. At 4<sup>h</sup> 20<sup>m</sup> the thermometer box was shifted - dry bulb 192671, wet-bulb 192677 and min. 138545 were put out - height above the snow about 35 inches. It had been forgotten to transfer the ozone test to the box put out - consequently there is no ozone entry at 9<sup>h</sup> on today's sheet. At 8 hrs. a Sola Corona was seen - Radius of red' =  $4^{\circ}.10\frac{1}{2}'$  and of red<sup>2</sup>  $6^{\circ}.48'$ . At the same hour a few hexagonal starry snow crystals were fallen. A Glory was seen at 10<sup>h</sup> having three well defined colour-rings - red, green and yellow. At 22<sup>h</sup> and 23<sup>h</sup> an aurora was seen. ~~It had~~ no streamers, ~~had~~ ill-defined boundaries, and <sup>was</sup> of uniform brightness.

November 21<sup>st</sup>

At 18<sup>h</sup> and 19<sup>h</sup> an aurora was seen - no streamers were observed. At midnight - Dry and wet-bulbs were 34 inches above snow



November 22<sup>nd</sup>

Fog covered the hill-top till 3 hrs, and passed occasionally till 15<sup>h</sup>, but during the rest of the day the top was clear and the sky cloudless. At 21<sup>h</sup> and 23<sup>h</sup> an aurora was seen at the former hour with streamers. The air was very dry at midnight - the humidity then being 19.

At 22<sup>h</sup> - 15<sup>m</sup> the thermometer box was shifted one step up on ladder stand, and a fresh set of thermometers put out, viz - dry bulb 192660 and wet bulb 192672. At midnight the height of the bulbs above the snow was 52 inches.

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November 23<sup>rd</sup>

The sky was cloudless till 8 am after which it became overcast or nearly so, and at 19<sup>h</sup> fog came on and enveloped hill-top for the rest of the day. All morning and



1887 till 17<sup>hrs</sup> the air was very dry, and a 148  
few extra readings of dry and wet bulbs  
were taken. viz: -

Hour	Dry	Wet-	Hour	Dry	Wet-
0 <sup>h</sup> -43 <sup>m</sup>	22.1	18.0	9 <sup>h</sup> -30 <sup>m</sup>	23.4	17.9.
1-42.	23.9	18.6	10-30	24.3	18.2
2-43.	23.4	18.0.	10-45	25.1	19.0
3-42	19.6	17.8.	15-40	22.5	16.3.
4-42	17.5	16.8.	16-42	23.1	17.9.
6-40	21.1	16.7.	17-43	22.8	20.0.
8-30	21.4	16.7.			

At midnight the "fog"-crystals deposited seemed to  
be a mixture of icy crystals and snow (white)  
crystals.

At 4<sup>h</sup> there was a trace of an aurora in  
N<sup>W</sup> sky.

November 24

From 7<sup>h</sup> till 13<sup>hrs</sup> "glazed frost" was forming on  
all exposed surfaces. Hard dry conical snow was  
falling at night. At 22 hrs. it was observed that the  
fog at times had a misty feel.

November 25<sup>th</sup>

St. Elmo's fire was seen faintly at 4<sup>h</sup> for only about  
half a minute, and again at 4<sup>h</sup> 35<sup>m</sup> brightly and for  
some minutes. At 1<sup>h</sup> 59<sup>m</sup> there was a "dot" signal in  
telegraph instrument (current down the line), and at 4<sup>h</sup> 9<sup>m</sup>  
a "dash" signal (current up the line). The wind was very  
variable today. Heavy rain began to fall after 23 hrs.

November 27<sup>th</sup>

Sky was clear at 16<sup>h</sup> and 17<sup>h</sup>, and again after 22<sup>h</sup>. At  
midnight a lunar Halo was seen having a trace of red inside  
at part nearest Zenith only - Radius of inner edge for strophomena



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was  $21^{\circ} 2'$ , and of the middle or brightest part  $149^{\circ} 22' 36'$ ,  $22^{\circ} 24'$ ,  $21^{\circ} 48'$ . At 20 hours a hare's tracks were seen on the snow at the thermometer box.

November 28<sup>th</sup>

The thermometer box was shifted at  $0^h 30^m$ . The dry and wet bulbs (192660, 192672) were bathed and put out again at  $0^h 45^m$ . Minimum 138533 was put out. Fog came on at  $4^h$  and fine snow began to fall in needle shaped crystals. At 22 hrs it was clear at times and a corona was observed, and a halo was seen faintly through the fog. The following measurements of radii of colours in Corona were obtained by stephanome - viz -

Order of Colours	Rad. of Inside	Rad. of Outside	Rad. of middle
Moon			
White	---	---	---
Yellow	$0^{\circ} 56'$	$1^{\circ} 36'$	---
Violet	---	---	$2^{\circ} 5'$
Blue	---	---	---
Red	$2^{\circ} 42'$	$3^{\circ} 35'$	---

A hare's tracks were again seen today at  $4^h$ . On snow at -rainingange.

November 29<sup>th</sup>

The fog cleared off hill top at 8 hrs but lay in detached masses on lower hills and in valleys more or less all day. From  $15^h 10^m$  to  $15^h 20^m$  a Solar corona was observed, and the following stephanomic measurements were obtained - viz -

White	Yellowish Red	Blue Green Red	Blue Green Red	Blue Green Red	Blue Red
↓	↓	↓	↓	↓	↓
$2^{\circ} 3'$	$3^{\circ} 26'$	$3^{\circ} 44'$	$4^{\circ} 2'$	$6^{\circ} 12'$	$9^{\circ} 41'$

Triple Lunar coronae were seen at  $18^h 10^m$  and again at  $23^h 15^m$ . The following.



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measurements were obtained at  $22^{\circ} 15'$  per stephane

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ring -

D. white) yellowish red) violet-blue Red) violet-blue Red)  
 $\downarrow$   $\downarrow$   $\downarrow$   
 $1^{\circ} 50'$   $2^{\circ} 42'$   $5^{\circ} 0'$

At times the white space about D widened making the Corona a double one only, Red ( $2^{\circ} 42'$ ) being then the first coloured ring from the moon.

November 30<sup>th</sup>

At  $0^h 5^m$  a Strato-cirrus cloud layer was seen to NW. lying NE and SW. and advancing from NW. its advancing edge was there rather less than  $20^{\circ}$  above horizon. A few straggling pieces of Cir-e were here and there on sky also moving from NW. At  $0^h 10^m$  and while the advancing edge of cloud stratum was still  $41^{\circ} 39'$  per steph. from W or NW. of Moon, a halo began to form about half way between Moon and cloud. A spot in the halo brighter than the rest of it - was apparently a faint - mock Moon. To this spot the Radius was  $23^{\circ} 58'$  per steph. The following notes were taken of progress of cloud etc.

$0^h 15^m$  - Halo complete - Cloud just-entering W side of Halo - Radius per steph.  $23^{\circ} 3'$

$0^h 19^m$  Edge of cloud at Zenith and at Moon. Halo gone. No trace of Corona on cloud. Moon shining pretty strongly through.

$0^h 35^m$  Halo faintly visible - White beams radiating from Moon, some of them reaching Halo. Cloud of uniform thickness - no appearance of anything to Cause beams, or breaks in Moonlight.



0<sup>h</sup> 46<sup>m</sup>. A uniform pallium of stratus-like  
 Cloud much lower than before 0<sup>h</sup> 35<sup>m</sup> with  
 Corona which has white core, and yellowish red  
 border - extreme outside measuring from Moon  
 2°-13'. - All appearances of halo gone.

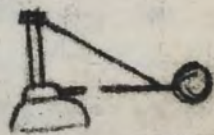
0<sup>h</sup> 50<sup>m</sup> Shadow of eastern edge of cloud now at  
 West end of L. Laggan (unbroken moonlight to  
 E<sup>d</sup> of that), and cloud touching (apparently) the  
 hills at Corran and Glen col

0<sup>h</sup> 55<sup>m</sup> Lower surface of cloud just at Ben (No  
 view to W<sup>a</sup> now) and beginning to brush top.  
 Moon still visible with corona as observed  
 already - Cloud still of uniform texture.

Fog on at 1 hr. Temperature rising rapidly all forenoon  
 and at 10<sup>h</sup> the fog changed to mist - and glazed  
 frost - was forming till, at 21<sup>h</sup>, the temperature had  
 risen above 32°0. Heavy rain falling at night.

December 3<sup>rd</sup> 2 Tourists - Climbed Ben Nevis in Nov<sup>r</sup>

Robinson was let loose at  
 22 hrs last night, but was tied up at  
 4 h. today, as it was observed that - one  
 Cup-arm was broken at shoulder, and was  
 only held on by the metal stay from  
 top of instrument; Cause of  
 breakage unknown. The velocities  
 on daily sheet are of course untrustworthy.





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December 5<sup>th</sup>

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At 3<sup>h</sup> it was difficult to tell whether the cloud enveloping summit was mist or fog, so "mist-or-fog" has been entered at that hour on daily sheet. The Vane was frozen inside its supporting pillar all day.

Today the rubbish buckets were taken out by tower for first time this winter.

December 6<sup>th</sup>

The outside part of the 3<sup>h</sup> observation was 3 minutes late owing to lamps having been blown out. The measurements of snow today are very doubtful owing to drift. The amount at 5<sup>h</sup> is an interpolation - a junk of snow having got into gauge when on way in.

December 7<sup>th</sup>

St Elmo's fire was seen at 1<sup>h</sup> on all points on tower <sup>and</sup> on observer's hat and pencil, but not on Kitchen Chimney. Snow and snow-hail (conical) were falling heavily at the time.

December 8<sup>th</sup>

Sun and sky cleared a little in forenoon. At 7<sup>h</sup> a corona was seen on passing fog. At 16<sup>h</sup> the rain gauge was buried in a snow wreath: it was taken in and was not put out again till 20<sup>h</sup> owing to the heavy drift. At 22<sup>h</sup> 30<sup>m</sup> the thermometer box was shifted and the fresh one was put one step higher on the



1887 ladder stand than the other had been. 153  
Thermometers 192671 (dry bulb), 192677 (wet bulb), and  
138545 (min) were put out - at 47 inches above  
snow. Stewart came up today and had  
to spend the night at Observatory as it was  
~~too~~ stormy for him to get down.

December 9<sup>th</sup>

Top was clear at 4<sup>h</sup> and 5<sup>h</sup> and again  
mostly all afternoon. At 15<sup>h</sup> 16<sup>h</sup> and 17<sup>h</sup> when the  
observed wind direction was NNE, the Stratus or  
Cumulus clouds immediately overhead were moving  
from NNW. At 13<sup>h</sup> Dry 192660 and Wet-192672  
were put out and the other set taken in.

December 10<sup>th</sup>

At 22<sup>h</sup> 5<sup>m</sup> a large red pear shaped meteor was  
seen <sup>to NE</sup> about 5<sup>o</sup> above level of Ben top moving  
was slowly. It was seen through thin fog.

December 11<sup>th</sup>

At about 3<sup>h</sup> 5<sup>m</sup> a very bright meteor was seen  
It started from about Zenith and vanished at W. end of  
Orion's belt. It increased rapidly and just before  
bursting or vanishing was at its best, showing blue  
and green colour circles. It was seen for about  
1<sup>1</sup>/<sub>2</sub> secs. It lighted up the Ben-top and hills to  
SW<sup>d</sup>. No noise heard. After 10<sup>h</sup> the thermometer  
box was shifted, dry bulb 192660, and wet-bulb 192672  
being left out, and min. 138533 put out.



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December 12

Storm all afternoon. After 20<sup>h</sup> there was no gauge out - but apparently ~~no~~ no snow fell.

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December 13.

Storm continued all morning. At 9<sup>h</sup> it was found that ozone test had been blown away. At 2<sup>h</sup> 50<sup>m</sup> Vane began to spin round at a great rate, owing to having been partially sheltered by the snow on Chimney and the other instruments on tower. As the drum of was being un-gear'd it got shifted round (veered) 5-points, so that now the marked line corresponds to SSE. The rain gauge was not put out till 7 hrs. but apparently no snow fell till then.

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December 14.

The snow was drifting very much in early morning consequently the amounts on daily sheet are rather doubtful. Somewhat stormy in afternoon.

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December 15<sup>th</sup>

Shifted Thermometer box at 1<sup>h</sup> 30<sup>m</sup> dry bulb 192671 wet bulb 192677 and minimum 138545 were put out. The sky was cloudless till 6h. fog after that till 11h. cloudy sky till 14<sup>h</sup> and fog for the rest of the day. At 14<sup>h</sup> low stratus-fog on SW<sup>m</sup> and W<sup>m</sup> hills - clinging to hills - Shortly after 14<sup>h</sup> this fog developed into Cum-fog and came rapidly eastward enveloping Ben at 14<sup>h</sup> 35<sup>m</sup>. The upper sky was overcast with cir-c, and midway between upper and lower



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strata a few dark long detached cum-str. clouds were observed. The air temperature as the fog began to pass Ben was 23.0.

December 16<sup>th</sup>

At Elmo was seen at 20<sup>h</sup> and 22<sup>h</sup> at the latter hour on observer only. At 22<sup>h</sup> and 23<sup>h</sup> there was a misty feel in the air at times, and an icy cake was observed on rain gauge, thermometer box, and other exposed surfaces.

December 17

Wind very variable and squally all forenoon. and snow drifting a good deal rendering the measurement of amount obtained rather doubtful. The top was clear for about an hour at midday, but sky was cloudy with Str. and Cum-s.

The old thermometer box and the iron cage are completely covered with snow now.

December 18

The fog cleared away after 11<sup>h</sup> and summit was clear till 19<sup>h</sup>, after which fog came on again. In afternoon the <sup>W<sup>SW</sup></sup> horizon ~~was~~ rather wild looking with Cir. and cum-str. clouds, and there was low str. fog clinging to hills. After the 12<sup>h</sup> observation the thermometer box was shifted. the fresh one was put one step higher (the last step) on ladder stand than the other had been. Dry bulb 192660, wet bulb 192672 and minimum 138533 were put out at 48 inches above the snow.

A pink afterglow and the earth shadows were seen at 16<sup>h</sup> - both well defined -



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December 20<sup>th</sup>

The wind was very squally and variable today & the barometer was pumping heavily mostly all day. Hard icy drift-blown from the cliff, and falling in gully made the measurements of snow amount worthless, but as it was believed that snow was falling in early morning .060 inch has been allowed in total fall for day.

December 21<sup>st</sup>

Top was clear after 11 hrs, but fog was hanging around Ben and thin stratus covered sky. In afternoon it was observed that the country was snow-clad to sea level. At each observation after 20<sup>th</sup> an aurora was seen to N<sup>th</sup> - at 22<sup>hrs</sup> only a small part of it could be seen between clouds and horizon but this part-

was very bright, flashing with red yellow and blue colours - the flashes moving from E to W. After 20<sup>th</sup> the thermometer box was shifted and Dry 192660 and Wet-192672 after being thawed and dried were again put out-



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as was also minimum 138545 at - 54 inches above snow. A Lunar Corona was seen at - 21<sup>h</sup> and 22<sup>h</sup>, but no measurements were obtained - at 22<sup>h</sup> the order of colors were D green yellow Red. Sky was cloudless at - Midnight.

December 22<sup>nd</sup>

Aurora seen at 1<sup>h</sup> with bright horizontal streaks. Top of aurora was about 10° altitude and was not well defined but - thinned off into the general tint of the sky; at the same time the horizon to N<sup>d</sup> and NW<sup>d</sup>s was very dark. The top continued clear and the sky cloudless till 3<sup>h</sup>. At 2<sup>h</sup> the SW<sup>rn</sup> lights were visible and at same hour stratus streaks were seen low to NN lying NE and SW. Fog came on at 4<sup>h</sup>, changed to mist at 15<sup>h</sup> and cleared away at 22<sup>h</sup>. Glazed frost was forming @ in afternoon. A lunar corona was seen at - 23 hrs. At Midnight fog covered the hills around to 4000 ft. leaving Ben alone clear; at same hour sky was cloudless. All afternoon the thermometer box was rather badly choked with ice.

December 23<sup>rd</sup>

The thermometer box was shifted at 0<sup>h</sup> 25<sup>m</sup> dry bulb 192671, wet bulb 192677 and minimum 138533 were put out at - 54 inches above snow. The summit was



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clear till 11<sup>hrs</sup>. The air was very dry in 158  
 early morning, the humidity at 4<sup>hrs</sup> being only  
 10 per cent. A number of extra readings of the  
 dry and wet bulbs were taken while the  
 air remained dry, and they along with notes  
 of the appearance, duration, and passing  
 away of some cir-s clouds, and of other  
 items, are entered on an extra daily sheet.  
 Blazed frost formed heavily and rapidly  
 from a very wet mist which prevailed  
 all afternoon. The thermometer box got so  
 heavily encrusted that at 17<sup>h</sup> there was difficulty  
 in opening it, and the readings of the dry  
 and wet were 7<sup>m</sup> late in consequence.

December 24<sup>th</sup>

The top cleared at 15<sup>hrs</sup> and from then till 23<sup>h</sup>  
 the sky (except for a little cir at 22<sup>hrs</sup>) was cloudless.  
 At 19<sup>h</sup>, 20<sup>h</sup>, and 21<sup>h</sup> there was neither fog below nor  
 cloud above, but at 22<sup>h</sup> there was fog all round,  
 except to S<sup>2</sup>, on hills to about the level of summit,  
 occasionally passing summit, and causing coronae  
 of which the following measurements per stephanon  
 were obtained:

	Red <sup>1</sup>	Red <sup>2</sup>	Red <sup>3</sup>
1 <sup>st</sup> set	1° 20' 30"	2° 47' 0"	4° 25' 0"
2 <sup>nd</sup> set	1° 27' 0"	2° 37' 0"	4° 0' 30"

Triple coronae were also seen at 23<sup>hrs</sup> but were  
 too fading to measure. At 16<sup>hrs</sup> the Earth shadow



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was seen - sharply defined, topped by a belt of rosey colour rising to  $E^{\circ}$  to about  $20^{\circ}$  alt. At same hour the sunset-colours to  $W^{\circ}$  were - red at horizon, sickly green to about  $20^{\circ}$  alt. and pink afterglow above that to  $45^{\circ}$  alt.

The thermometer box was shifted at  $15^h$   $20^m$  and dry bulb 192660 wet bulb 192672 and minimum 1385-45 were put out. Fog horns were seen at  $22^h$  and midnight-

December 25<sup>th</sup>

The top was clear from  $18^h$  to  $21^h$  but fog lay in detached masses on hills around. The sky was cloudless at  $18^h$  and  $19^h$  but cloudy afterwards and coronae were seen at  $20^h$  and  $21^h$ . Needle shaped snow-crystals were falling at  $22^h$  and  $23^h$ .

December 26<sup>th</sup>

The fog cleared away after  $6^h$  and till  $15^h$  the sky was quite cloudless, but there was a good deal of stratus-fog on the other hills all round. The top was covered in fog again from  $16^h$  till  $22^h$  and at  $23^h$  and midnight fog was passing at times.

After  $11^h$  the thermometer box was shifted, dry bulb 192671, wet bulb 192677 and minimum 1385-33. being put out - height above snow not altered. At  $23^h$  and midnight coronae were observed (double); at former hour following measurements were obtained: - inner red  $5^{\circ} 3'$  and outer red  $9^{\circ} 28'$ .



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December 27<sup>th</sup>

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A Double corona was seen at 1<sup>hr</sup> and the following measurements for stephanome were obtained - viz -

	Inner red	Outer red
1 <sup>st</sup> set -	4° - 34'	8° 4'
2 <sup>nd</sup> set -	4° - 46'	8° 22'

The summit was clear till 19<sup>h</sup> but fog on after that.

The thermometer box was shifted after 10<sup>h</sup> dry bulb 192660, wet bulb 192672 and minimum 138545 were put out - height above snow not altered.

At 22<sup>hrs</sup> a corona was observed with white and red as only colours - measurement of outside of red gave 2° 6' as radius.

December 28

Double and triple coronae were seen at 3<sup>h</sup>, 4<sup>h</sup> and 5<sup>h</sup>, and foghorns at 4<sup>h</sup> and 5<sup>h</sup>. At 3<sup>h</sup> the extreme outer edge of the first red (i.e. red nearest moon) was measured with following result -

Radius of 1 <sup>st</sup> red	At times the 2° 6' red was the
3° 31'	inner of a double corona in which
2° 6'	the 3° 42' was the outer.
2° 6'	
3° 42'	Fog was on summit, or passing,

till 18<sup>h</sup> after which it sank and gradually diminished in quantity till at 23<sup>h</sup> and midnight there were only detached str-f pieces low to N and NE.



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December 29<sup>th</sup>

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At 1<sup>h</sup> there was a little Str-f to N<sup>a</sup> and E<sup>2</sup>, but by 5<sup>h</sup> there was fog all round, with very few breaks. After 7<sup>h</sup> it began to rise as a whole, ~~and~~ at 8<sup>h</sup> it was passing E<sup>2</sup>-end of summit<sup>1</sup> and at 9<sup>h</sup> it was passing generally and the air (till then dry) was saturated. At 10<sup>h</sup> the fog began to break up - the SW<sup>2</sup> hills clearing first - but after 14 hrs it began to close all round again, and from 18<sup>h</sup> till midnight it was either on, or passing, the summit. At 7 and 8<sup>h</sup> cir. and cir-s clouds ~~were~~ seen at NE<sup>a</sup> horizon; from 13<sup>h</sup> to 16<sup>h</sup> the sky was almost covered with cirrus; but at 18<sup>h</sup> and till midnight the upper sky was cloudless.

The following measurements of the radii of red rings in Lunar coronae were obtained at night:-

	1 <sup>st</sup> red	2 <sup>nd</sup> red	3 <sup>rd</sup> red	No of readings	
20 <sup>h</sup> ..	1° 42'	3° 28'	5° 52'	3	1 <sup>st</sup> set
21 <sup>h</sup> ..	1° 55'	4° 20'	-	2	2 <sup>nd</sup> "
22 <sup>h</sup> ..	1° 54'	3° 25'	-	3	3 <sup>rd</sup> "
23 <sup>h</sup> ..	1° 44'	3° 15'	5° 0'	3	1 <sup>st</sup> set
midnt	2° 24'	4° 13'	-	2	2 <sup>nd</sup> "
	2° 24'	3° 46'	-	2	3 <sup>rd</sup> "
	1° 54'	2° 59'	5° 0'	3	

(measurements made in each case to extreme outside of red)  
When the corona was triple all the colours of spectrum were seen between red<sup>1</sup> and red<sup>2</sup> - the blue usually brightest.

The broken cup-arm of the Robinson Anemometer was spliced after 14<sup>h</sup> today. (See page 157).

December 30<sup>th</sup>

Thin fog on summit till 4 hrs, after which it sank and ~~the~~ remaining on hills for the rest of the day with its upper surface from 3000 to 4000 ft. above sea-level. In the early morning the



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The following measurements of radii of red rings in lunar coronae were obtained per Stephanome - the measurements were made to outside of red in each case - viz: -

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	1 <sup>st</sup> red	2 <sup>nd</sup> red	3 <sup>rd</sup> red	4 <sup>th</sup> red	N <sup>o</sup> of readings
1 <sup>h</sup> - { 1 <sup>st</sup> set -	1° 43'	3° 13½'	4° 43'	6° 48'	4
2 <sup>nd</sup> "	1° 41'	3° 9'	-	-	3.
3 <sup>rd</sup> "	1° 43'	2° 56'	5° 0'	-	3.
4 <sup>th</sup> "	1° 44'	2° 52'	-	-	3.
5 <sup>th</sup> "	1° 43'	3° 10½'	4° 56'	-	3.
6 <sup>th</sup> "	1° 43'	3° 4'	4° 43'	-	3.
2 <sup>h</sup> - { 1 <sup>st</sup> set -	1° 33'	2° 47'	-	-	3.
2 <sup>nd</sup> "	1° 22'	2° 30'	-	-	3
3 <sup>rd</sup> "	1° 49½'	2° 33'	3° 56'	-	4
4 <sup>th</sup> "	1° 21'	2° 33'	3° 46'	-	3.
5 <sup>th</sup> "	1° 27½'	2° 39'	3° 58'	-	3.
6 <sup>th</sup> "	1° 21½'	2° 27'	3° 38'	-	3.
3 <sup>h</sup> - { 1 <sup>st</sup> set -	1° 5'	2° 6'	-	-	3.
2 <sup>nd</sup> "	1° 4'	2° 4'	-	-	3.
3 <sup>rd</sup> "	1° 10'	2° 5'	3° 13½'	-	4
4 <sup>th</sup> "	1° 14'	2° 17½'	3° 12'	4° 37'	4
5 <sup>th</sup> "	1° 6'	2° 11'	3° 4'	-	3.
4 <sup>h</sup> - { 1 <sup>st</sup> set	1° 36'	2° 43'	4° 5½'	-	4
2 <sup>nd</sup> "	0° 55½'	1° 51'	-	-	2.
3 <sup>rd</sup> "	0° 56½'	1° 35'	2° 41'	-	4
4 <sup>th</sup> "	0° 56'	1° 42'	2° 51'	-	3.

At 4<sup>h</sup> fog low rad. inside 37° 10', outside 40° 20'.  
 The upper joint was put on ladder stand at 15.15<sup>m</sup>.  
 The Earth-shadow was seen at 8<sup>h</sup> 36<sup>m</sup> and again



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at 16<sup>h</sup><sub>30</sub>. A Glory was seen at 10<sup>h</sup> 163  
 At 16<sup>h</sup> 30<sup>m</sup> gaps (streamer-like) were observed in  
 the pink afterglow that filled the W<sup>m</sup> sky, Small  
 bits of cir-s were seen very near the W<sup>m</sup> horizon at  
 same time.

December 31<sup>st</sup>

The Summit was clear and sky clear  
 till 2<sup>h</sup>. At 3<sup>h</sup> thin fog was passing, and  
 at 4<sup>h</sup> and for the rest of the day the summit  
 was enveloped. During the forenoon there was  
 a 'misty feel' in the fog, and at 15<sup>h</sup>, 16<sup>h</sup> and 17<sup>h</sup>  
 it was distinctly mist that enveloped the top -  
 yet the temperature of the air was about 22°.

At 3<sup>h</sup>, 4<sup>h</sup> and 5<sup>h</sup> coronae were seen, and a  
 frequency was noted at 7<sup>h</sup>.

At 3<sup>h</sup> the following measurements of Corona  
 were obtained: -

	1 <sup>st</sup> set	2 <sup>nd</sup> set	3 <sup>rd</sup> set
Radius of First red	1° 44'	1° 22'	0° 59'
" " Greenish "	2° 2'	-	-
" " Thinner "	2° 50'	-	-
(Measured to outside of red in each case)			

There were no visitors during the month



Barometers:— No 1385 was in use during the whole of 1887. No 1252 though not in use was hanging in position ready for use at any time. The Barograph worked most of the year — the note about its scale error on page 59 of this vol. is still applicable.

Thermometers:— As Dry and wet, Nos 192660, 192672, 192671, 192677, 50852 and 50852 were used (For makers see p. 210 Vol I, and p. 57 Vol II).

As self-registering; Max No 117293, and mins. 116918, 138545, 138533. were in use — the max. and first min. in "old clock box", and the other two in ladder-stand-boxes.

Rain-gauges:— Mr. Ormond's patterns of 5 in. gauges were used, — the deep rimmed, or the shallow rimmed as the season and kind of precipitation required.

Anemometers:— For direction, Chrystall's anemometer continued in use, and worked fairly well.

For Velocity — After August 3<sup>rd</sup> Robinson's cup Anemometer was used when the weather



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permitted - i.e. when it was not  
freezing - Till August 3<sup>rd</sup> it was out of  
gear (see pp 57, 118, 121 above). When repaired (Aug 3<sup>rd</sup>)  
an arrangement of bevil-pinions was put  
instead of upper flexible part of shaft that communi-  
cates revolutions to counter. About the beginning  
of December one of its arms ~~got~~ was broken  
(see p 151) but it was put in working order  
again before the end of ~~that month~~.

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Sunshine Recorder: - The repaired sunshine  
recorder <sup>(see p 57)</sup> was used, and worked well.

Mr. Omund's pattern of Crystal's Hygrometer  
was used several times during the  
year, and worked satisfactorily; but  
it was broken in September and since  
then it has been out of repair.

From June 4<sup>th</sup> till Oct: 11 the thermometers  
in use were placed in the Old Clock  
Box; for the rest of the year in  
small boxes on ladder-stand.

The depth of snow was always measured  
at post A.

The measurements of Rainfall were several  
times interrupted, and often rendered unsatis-  
factory, by drifting; and the Ozone tests  
were occasionally blown away, and



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occasionally bleached.

<sup>with the alpine exceptions,</sup>  
The Record for the year is continuous, though once or twice the observation, or part of it was a few minutes late.

The seismometer is still unsatisfactorily mounted (see p. 59). No results have been obtained from it during the year.

The Thermograph and Hair Hygrometer were not in use.

The Black Bulb in vacuo used was N<sup>o</sup> 186.

The Cosmic Dust collector was out several times during the year.

For observing the Rainband Hilgers Pocket Spectroscope was used.

The permanent staff of the Observatory consists ~~of~~ of R. T. Omond, A. Rankin and J. Miller, and since Oct. 7, A. Drysdale. From Aug. 3<sup>rd</sup> till Sep. 21 M<sup>r</sup> C. E. Gray acted as telegraph clerk at the Observatory.

Messrs Wm Hay, A. J. Herbertson and J. Duncan took the places of some of the staff at various times

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January 2<sup>nd</sup>

The tracks of a hare were seen at-  
thermometer-box at 8<sup>hrs</sup> today.

January 3<sup>rd</sup>

The lamp was blown out at 18<sup>hrs</sup>, causing the outside readings at that hour to be from 2 to 3 minutes late.

There was a fall of .122 in. in barometer from 23<sup>h</sup> to midnight.

January 4<sup>th</sup>

The ~~the~~ temperature readings at 1<sup>h</sup>, 2<sup>h</sup> and 3<sup>h</sup> were taken from 2 to 3 mins. late - owing to the lamp being blown out - the wind being so strong at 1<sup>h</sup> that the observer could not stand and had to crawl to thermometer box. At 2<sup>h</sup> there was no drift but junks of ice and hard snow were flying about - at same hour the observing-book and form were blown away.

It was found impossible to carry rain-gauge and manage lamp in early morning - hence no rainfall measurements were obtained; and in afternoon the gauge was each hour filled or almost so ~~is~~ surface-drift which made the readings worthless.

The Robinson anemometer was set going at 9<sup>h</sup> 50<sup>m</sup>, but was tied up again at 19<sup>h</sup>. After 18<sup>hrs</sup> in an average squall the velocity ~~was~~ indicated by anemometer was  $93\frac{3}{4}$  miles per hour. The squall



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which was measured had an estimated force = 10.

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At 21 hrs the ozone test was bleached.

January 5<sup>th</sup>

The rainfall measurements at 5<sup>h</sup> and 6<sup>h</sup> were vitiated by surface drift

January 6<sup>th</sup>

Top clearing at times in forenoon showing wild sky above, with bands of cloud lying E and W, and heavy Cum-str. all round on other hills.

January 7<sup>th</sup>

The Thermometer box was shifted after the 15<sup>h</sup> observation - height on ladder not changed. Dry bulb 192671, wet 192677 and mm 138533 were put out. The box taken in had its hinges fouled.

Robinson was set going at midnight

January 8<sup>th</sup>

Yesterdays rainfall amounts are somewhat doubtful owing to leaks being discovered in raingauges today. The leak in the gauge taken in at the odd hours (1, 3, 5, etc) today would hardly, if at all, affect the results, but that in the even-hour gauge rendered the results quite untrustworthy. (The gauges had been overhauled and examined on morning



1888

of 5<sup>th</sup> and found quite sound). 169

The top cleared at 22<sup>h</sup> and till midnight. The sky overhead was cloudless, but dark clouds were observed low to SE<sup>d</sup> and fog or mist covered the hills all round,

January 9<sup>th</sup>

Rain gauges were sorted in early morning. The top cleared after 7<sup>h</sup> and remained clear except for occasional whiffs of passing mist for the rest of the day. At 10<sup>h</sup> it was noted that the upper clouds were lying E. and W. and in places where the structure was ribbed the ribs were lying N. and S. At 16<sup>h</sup> the shadow of Ben was observed above horizon to NE<sup>d</sup> - the Sun did not set till 16<sup>h</sup> - 15<sup>m</sup>. After the Sun had set the Earth shadow was seen rising to E<sup>d</sup> topped by red clouds. About sunset the sky was hazy.

Dryhulls 192660 & wet hulls 192672 were put out after 22 hrs and the other set taken in.

January 10<sup>th</sup>

Mist on top till 6<sup>h</sup> and passing at times till 13<sup>h</sup> but top quite clear and sky cloudless for rest of day. but fog hills to about 4000 ft. At 16<sup>hrs</sup> the



1888

fog to  $W^a$  was much higher than Ben 170 but sloped down as it came up to Ben, but was very low over the Loch basin and was breaking up to  $E^a$ . At same hour Earth shadow was seen topped by rosey clouds.

At 18<sup>hrs</sup> bright meteor seen - It fell from a little to  $W^a$  of Capella to forehead of Great Bear, its path being at an angle of  $45^\circ$  to horizon.

At 21<sup>h</sup> and 22<sup>hrs</sup> an aurora was seen. At the former hour it was pretty bright and there was a dark cloud below it but at latter it was faint and only seen between a dark cloud and horizon.

January 11<sup>th</sup>

Except from 8<sup>h</sup> till 12<sup>h</sup> the sky overhead was cloudless all day, but till 17<sup>hrs</sup> patches and bands of Str-cir were observed all round below  $30^\circ$  - at 10<sup>h</sup> the bands thus observed were lying E and W.

At 8<sup>h</sup> 50<sup>m</sup> shadow of Ben seen.

Fog in valleys to about 3000ft till 11 hrs. and below 2000ft till 17<sup>h</sup> after which it vanished.

At 16<sup>h</sup> Shadow of Ben was seen above horizon to ENE when the Earth shadow was on a level with its apex it was  $1^\circ 32'$  above horizon. Just before vanishing and when the disc of the sun had half set its height was  $1^\circ 45'$  (measured by steph.)

At 20 hrs. the Zodiacal light was seen as a grey ~~glowing~~ light sloping from  $W^a$  horizon



1889

to about  $30^\circ$  above SSW horizon. It was  
variable at  $21^h$  and faintly at  $22^h$ .

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From  $20^h$  till midnight an aurora was observed,  
streamerless except at  $22^h$  and more or less  
ill defined and faint.

January 12<sup>th</sup>

The above aurora continued till after  
 $1^h$  today but at  $2^h$  and following hours there  
was none.

The hills and valleys around were clear till  $7^h$ . At  
 $8^h$  fog was observed over L. Dunbar and in valleys  
to N<sup>W</sup>, which kept spreading and increasing  
till at  $13^h$  and for the rest of the day there was  
fog all round. From  $18^h$  to  $20^h$  a dark  
cloud bank was seen to W<sup>W</sup> increasing and  
approaching. At  $21^h$  there was thin mist passing.  
(It could not be determined whether this mist  
was due to the above 'cloud bank' or to the fog  
in valleys) The sky was overcast with a  
thin pall. at  $22^h$  and  $23^h$  through which the  
stars could be seen. Thin mist enveloped  
summit at midnight.

The Ben shadow and Earth shadow were  
seen after 16 hrs, and the Zodiacal light  
at  $20^h$ .

January 13<sup>th</sup>

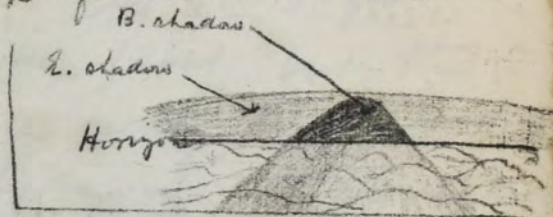
Very wet mist on summit till  $5^h$  but so thin  
that the brighter stars were seen all the time.  
During the rest of the day the top was clear  
and the sky overhead almost cloudless, but  
fog on hills around to about 3000ft.



1888

At 16<sup>h</sup> - the Ben shadow was seen to NE. 172  
 When the Sun's disc was half down the apex of  
 Ben shadow and top of Earth shadow were  $1^{\circ} 22'$   
 above horizon. The Ben shadow was much darker  
 than Earth-shadow. At 16<sup>h</sup> 16<sup>m</sup> the former was seen  
 as a black speck in the latter. The Sun set  
 at 16<sup>h</sup> 18<sup>m</sup> and then the top of Earth shadow was  
 $2^{\circ} 29'$  above horizon.

From 18<sup>h</sup> to midnight an  
 aurora was observed.



At 19<sup>h</sup> - it was double arched. At 19<sup>h</sup> 15<sup>m</sup>  
 the top of upper arch was at Polaris. At  
 19<sup>h</sup> 20<sup>m</sup> the upper this arch was at Zenith  
 and its ends were at WSW<sup>m</sup> and NE<sup>m</sup>  
 horizons. At same time the second arch  
 was double throughout its whole length  
 and triple in eastern half, and <sup>all</sup> ~~at~~ these  
~~these~~ sections <sup>were</sup> giving out short streamers  
 Between this second arch or series of arches  
 and horizon another thin arch and sometimes two  
 were seen and also a number of  
 short jets or streamers having no connection  
 with any arch. From 19<sup>h</sup> 20<sup>m</sup> to 19<sup>h</sup> 25<sup>m</sup>  
 the display was at its best - after this  
 the upper arch began slowly to retreat  
 towards N<sup>m</sup> horizon. At 20<sup>h</sup> the aurora  
 was very bright, and double - and sometimes  
 triple-arched, but its upper limit did not



1888

extend higher than Vega and Benetnasel - Mr. Maj 173  
 Each arch had streamers. At 19<sup>h</sup> and 20<sup>h</sup>  
 there was no 'dark segment', but at 21<sup>h</sup>  
 there was, and from the ragged appearance  
 of its upper edge it seemed to be due  
 to a bank of cloud. At 21<sup>h</sup> some red  
 was seen in aurora. At 22<sup>h</sup> the  
 body of auroral light was faint but the  
 streamers then seen were very long, reaching  
 in some cases from horizon to 25° altitude.  
 At this cloud dark broken clouds were  
 seen to N<sup>o</sup>. At 23<sup>h</sup> it had neither streamers  
 nor arch and was greatly obscured by  
 dark clouds. At midnight it was very  
 faint and low, and had neither streamers  
 nor arch.

At 19<sup>h</sup> 30<sup>m</sup> there was a steady current in  
 telegraph cable keeping needle almost hard  
 over to dash side (current up the wire), and  
 at 21<sup>h</sup> 15<sup>m</sup> when sending report there was  
 a steady current keeping needle over to  
dot side (current down wire) - At 20<sup>h</sup> dew  
 was observed on thermometer box and boat  
 frost on snow and roof. A like observation  
 was made at 22 hrs.

At 18<sup>h</sup>, 19<sup>h</sup> and 20<sup>h</sup> the Zodiacal light was  
 observed

January 14

The aurora continued faintly visible till  
 5<sup>h</sup> today. At 2<sup>h</sup> mist was passing summit -



1888

but during the rest of the day the summit <sup>174</sup>  
 was clear, but fog covered the lower hills.  
 At 15<sup>hrs</sup> the shadow <sup>on hills</sup> of the Cir. clouds  
 and sky was seen in the air as  
 dark streaks. At 16<sup>hrs</sup> Shadow of Of. Ben  
 was observed with its apex at about  
 horizon. From 18<sup>hrs</sup> till midnight  
 an arc was observed, at 18<sup>hrs</sup>  
 it had 2 arcs - the lower just visible  
 above horizon. At 19<sup>hrs</sup> and 20<sup>hrs</sup> it was  
 faint and streamerless. At 21<sup>hrs</sup> it consisted  
 of a single arch low to N<sup>2</sup> with streamers  
 occasionally. At 21-30 it was double -  
 the lower arch shooting streamers - at same  
 time the "Dark Segment" was sharply defined.  
 At 22<sup>hrs</sup> there were two well defined arches the  
 lower one being sharply defined beneath. At  
 22<sup>hrs</sup> 10<sup>min</sup> it suddenly brightened up - lighting the  
 hill top - and broke up into many streamers  
 which moved quickly horizontally: its lowest-  
 limits and the base of each streamer were  
 red. At 23<sup>hrs</sup> there was no definite arch, only  
 patches, but <sup>there were</sup> numerous streamers. Its altitude  
 was not above 12°. At midnight it was but  
 faintly seen. After 10<sup>hrs</sup> the Zodiacal light  
 was visible in W. sky; at 20<sup>hrs</sup> and 21<sup>hrs</sup> it  
 was very distinct - stretching up through Pisces  
 to near Aries. It continued visible till after  
 22 hrs.



1888

January 15<sup>th</sup>

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Summit clear all day. From 1<sup>h</sup> till 6<sup>h</sup> the Aurora was faintly visible. Fog in valleys all day to the height of about 2500 ft. In afternoon glimpses of the lower hills and moors were got through breaks in the fog, and it was observed that the Moor of Rannoch was white with hoar frost, as were also the hills to S<sup>d</sup> and NE<sup>d</sup> of Ben but these only to a height of about 2500 ft. all above this having no hoar-frost. From 13<sup>h</sup> to 16<sup>hrs</sup> a small arc of Solar halo was seen coloured Red yellow and blue, and at times Red yellow and green. At 15<sup>hrs</sup> two small arcs were seen at opposite ends of almost horizontal diameter. The colours were very bright. The following measurements were got for Stephanome.

13 <sup>hrs</sup>	Radius to Red	$22^{\circ} 57'$
14 <sup>hrs</sup>	Radius to Red	$22^{\circ} 24'$
"	" Yellow	$23^{\circ} 3'$
15 <sup>hrs</sup>	" inside of Red	$= 22^{\circ} 12'$
"	" outside "	$= 22^{\circ} 49'$
"	" middle " yellow	$= 23^{\circ} 17'$
"	" Outside " Blue	$= 23^{\circ} 44'$

At 16<sup>h</sup> Shadow of Ben was seen above horizon to NE<sup>d</sup>. At 23<sup>hrs</sup> there was a pale grey light in northern sky. At midnight the S<sup>m</sup> N<sup>m</sup> and E<sup>m</sup> skies <sup>(to 20° altitude)</sup> were much brighter than Zenith — as bright as Milky Way. At 7<sup>pm</sup> past midnight an Aurora burst into view low to N<sup>d</sup>.



1888

January 16<sup>th</sup>

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The 4<sup>hrs</sup> the sky to E<sup>c</sup> N<sup>a</sup> and S<sup>d</sup> to 15° alt.  
 was much brighter than the part of above this.  
 There was fog in the valleys all round till  
 6<sup>h</sup>; mist passing at 7<sup>h</sup>; but at 8 hrs the  
 N<sup>w</sup> hills and valleys were clear of fog. The  
 top was enveloped in fog at 16<sup>hrs</sup> and again from  
 18<sup>h</sup> till midnight. At 14<sup>h</sup> and 15<sup>h</sup> Glories with three  
 and fourings were seen from roof on passing  
 fog. After 15<sup>hrs</sup> an attempt was made to get  
 an artificial Corona, by means of a mirror  
 reflecting the Sun's rays, side by side with  
 a true Glory for comparison. From  
 the emalness and unsteadiness of mirror  
 a comparison could not be made. However,  
 when the reflected beam was thrown on  
 observer's face - a corona was seen, but  
 when the beam was thrown a little to  
 one side of observer's head a section of  
 a corona was observed, that is the  
 beam consisted of a series of spectra  
 (The angle through which the mirror was  
 turned was not determined.)

Snow crystals were forming from fog at  
 night. The Robinson anemometer was tied at 4<sup>h</sup>  
 A weasel was seen at 11<sup>hrs</sup> running from SE  
 side of summit to Hotel

January 17<sup>th</sup>

The fog cleared away after 4 hrs. and



1888

for the rest of the day the sky 177  
was absolutely cloudless—from zenith to  
horizon all round, but fog lay on E<sup>m</sup>  
and S<sup>m</sup> hills, and in afternoon haze was  
observed in valleys to N<sup>o</sup> and W<sup>a</sup>.  
Fog crystals forming in early morning.

The wet bulb reading at 11 hrs. (that on daily  
sheet-) being somewhat doubtful owing to the  
bulb having been partly dry, the following  
observation was made at 11<sup>h</sup> 15<sup>m</sup> viz—  
Dry bulb 25.8 and wet bulb 21.1.

January 18<sup>th</sup>

Faint aurora seen at 4<sup>h</sup> 50<sup>m</sup>

Fog passing at 12 hrs. and fog crystals forming  
then. Fog on Eastern and Southern  
hills till about 16 hrs after which it  
vanished, but dark haze filled valleys  
all round. A little cir-s was seen  
at 1<sup>h</sup> low to NE<sup>a</sup>—this was the only cloud  
above horizon all day

January 19<sup>th</sup>

Fog on C. Canal and Lock Hill all morning  
Hoar frost was seen on low grounds about  
midday. Thick haze filled valleys today to  
about 3000 ft—the tops of the higher hills  
showing clear above it. Fog was seen to  
SW<sup>a</sup> at 11 hrs. It steadily increased E<sup>a</sup> and N<sup>a</sup>  
till at midnight it was all round and



1888 Rising to  $3^{rd}$  higher than Prev.

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At 2<sup>2</sup> hrs faint aurora was seen, and also a broad white ill-defined lunar halo. In afternoon the cir. clouds were lying SW-NE and moving from NW.

January 20<sup>th</sup>

Fog passing at 1<sup>h</sup>: but sky above cloudless till 4<sup>h</sup> after which however and till 14<sup>h</sup> it was overcast or nearly so with cirri types which at 11<sup>h</sup> were observed to be lying WSW and ENE. Mist-on at 15<sup>h</sup> and for rest of day. Robinson was let loose at 11<sup>h</sup> 15<sup>min</sup>

January 21<sup>st</sup>

Continuous mist till 18<sup>h</sup> - clearing at times after that - showing fog or mist all round but cloudless sky overhead.

Double and triple Coronae were observed at 19<sup>and</sup> 20 hrs, and an aurora suspected at 21 hrs.

The g<sup>l</sup> ozone test - was blown away. A fog horn was seen at Midnight.

January 22<sup>nd</sup>

At 2<sup>h</sup> & 3<sup>h</sup> aurora was seen - single arch, bright but no streamers. The thermometer box was shifted one



1888

step down on ladder stand after 179  
 4<sup>h</sup> - box or thermometer not changed.  
 Robinson was tied after 20<sup>h</sup>. a corona  
 was seen at 19<sup>h</sup>

January 24<sup>th</sup>

At 8<sup>h</sup> and 17<sup>h</sup> the readings of thermometer  
 were taken from 1 to 3 minutes late, owing to  
 the door of box being tightly frozen.  
 Robinson was let off at midnight.

January 25<sup>th</sup>

Robinson's anemometer was  
 working till 7<sup>h</sup> and again from  
 13<sup>h</sup> till 15<sup>h</sup>. A Lunar corona  
 was seen at midnight -  
 Very large white snow hail fell  
 between 21<sup>h</sup> and 22<sup>h</sup>.

January 26<sup>th</sup>

Lunar Coronae were observed  
 at 1<sup>h</sup> and 3<sup>h</sup>, and at the latter hour  
~~was~~ a fog hour was seen.

January 28<sup>th</sup>

Thermometer Box was shifted at 0<sup>h</sup> 35<sup>m</sup>  
 and the dry and wet that had been out-  
 were after being heated and freed of ice  
 and snow put out again, with min 1385  
 From 4<sup>h</sup> till 22<sup>h</sup> the sky was cloudless



1888

except for occasional whiffs of fog 180  
 passing summit. Fog covered Northern and  
 Eastern hills mostly all day, and haze was  
 observed to westward and Southwestward.  
 At 6<sup>h</sup> ~~passed~~ and from 19<sup>h</sup> to 21<sup>h</sup>, lunar coronae  
 were seen in passing fog - double and  
 triple at times, and with very bright colours.  
 The eclipse of the Moon was observed after  
 21<sup>h</sup>

At 10<sup>h</sup> a vessel was seen about the Hotel.

Today Mr. Ormond returned to  
 the Observatory.

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January 29

This afternoon Mr Rankin went  
 down the hill.

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January 31

At 6<sup>h</sup> the temperature (Dry and Wet)  
 was not noted on Hourly Sheet at the time of  
 reading: Mr. Dunsdale believes it to have been  
 about 20°0.

at 11<sup>h</sup> the rain gauge was found undercut  
 and lying over = none put out after this.

Large "chunks" of hardish snow were flying  
 about in the forenoon, and almost all  
 the loose fresh snow on the hill top was  
 cleared off, leaving the icy surface ~~left~~  
 formed by the last thaw exposed.



at 12<sup>h</sup> the note book was blown away -  
 at 18<sup>h</sup> and 19<sup>h</sup> jacketed lantern was used -  
 The ome paper put out at 9<sup>h</sup> was blown away  
 none was put out at 21<sup>h</sup>  
 at 18<sup>h</sup> and 19<sup>h</sup> the Wet Bulb could not be  
 read satisfactorily owing to its being coated with  
 ice: it has been assumed to be the same as  
 the Dry Bulb -

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### February 1

Thermometer Box shifted at 4<sup>h</sup>. 10<sup>m</sup>  
 Dry 192671 : Wet 192677 and Min 138533 put  
 out : height above snow not altered -  
 at 8<sup>h</sup>. 30<sup>m</sup> Dry 192660 and Wet 192672  
 put out : Box and Min not shifted -

The cir. clouds noted today were mostly  
 in rather large pieces - No fog in valleys,  
 but horizon rather hazy in afternoon -  
 The depth of snow at post B. (First gorge)  
 was 81 inches this afternoon -

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### February 3

Thermometer Box shifted at 10<sup>h</sup>. 40<sup>m</sup>  
 Dry 192671 : Wet 192677 and Min 138545 put  
 out. Height above snow not altered -  
 Squares of Box a good deal choked with ice  
 in afternoon; cleared at 20<sup>h</sup>

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Feb 5

at 14<sup>h</sup> - 20<sup>m</sup> Robinson set going -

Feb 6

Robinson tied up after 3<sup>h</sup>

Sources of thermometer box badly choked with hard ice all evening -

February 7

Thermometer Box shifted at 2<sup>h</sup>..30<sup>m</sup> -  
 Dry 192660 = Wet 192672 and Min 138533 put out.  
 Height alone now not altered -

February 8

Thermometer Box shifted at 10<sup>h</sup>..20<sup>m</sup>  
 Dry 192671 = Wet 192677 and Min 138545 put out.  
 Height alone now not altered -

February 10

Top covered with soft snow which drifted a little at night.  
 at Midnight Aurora seen faintly -

February 11

Aurora seen again at 1<sup>h</sup> 4<sup>h</sup> and 5<sup>h</sup> -  
 Thermometer Box shifted at 4<sup>h</sup>..35<sup>m</sup> Dry 192660 =  
 Wet 192672 and Min 138533 put out - Box put  
 one stage higher on ladder stand -  
 at 7<sup>h</sup> Detached fog among hills to E<sup>W</sup>  
 and in the valleys to N<sup>W</sup>



Sunrise at about 7<sup>h</sup>-55<sup>m</sup>. The Earth-shadow and shadow of Ben Nevis seen before sunrise. Detached fog among the hills all forenoon & part of afternoon; at times ~~a~~ streaks lying at about 1000 feet height with ragged cum. top. At 13<sup>h</sup> it was found that the Sunshine Recorder had slipped on the snow, consequently the record for that hour is blurred but is evidently continuous (60 minutes)

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### February 12

Aurora, single arch no streamers, seen at 3<sup>h</sup>, 4<sup>h</sup> and 5<sup>h</sup>.

Fog all round to about 4000 ft. from 7<sup>h</sup> to 10<sup>h</sup> after which it broke up into detached parts, which in the afternoon lay in streaks of cum.-structure along the sides of the hills.

No unusual colours were observed in the sky on either the 11<sup>th</sup> or 12<sup>th</sup>

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### February 14

at 8<sup>h</sup> a glory was seen: no measurements got.

No rain-gauge was out today as the drift would have made it useless, but apparently no snow fell.

### February 15

Thermometer Box shifted at 9<sup>h</sup>.30<sup>m</sup> same thermometers left out: height above snow not altered. Preliminary measurements for getting the depth of



Sum near the first gorge were made this afternoon -

No fog in valleys or on hills all day: no unusual clouds in sky. The Earth-shadow was seen at sunset.

February 16

At 8<sup>h</sup>, 9<sup>h</sup> and 10<sup>h</sup> low fog over Lochail & Loch Linneha and haze to S<sup>W</sup>

At 7<sup>h</sup>-50<sup>m</sup> the Earth-shadow & Shadow of Ben Nevis were seen -

at 10<sup>h</sup> fog was blowing over the Cairn Dearg and and 11<sup>h</sup> across the hill top -

At 14<sup>h</sup>-20<sup>m</sup> Solar halo seen Red inside and Blue Outside = no measurements got -

In afternoon level topped haze all round with cum. above and in it. At 14<sup>h</sup> brown column under Sun above this haze -

February 18

At 14<sup>h</sup> - Sunshining in patches on the hills all round = no fog in valleys, but heavy Cumulus and Cumulo-stratus everywhere -

Very heavy squalls began suddenly at 21<sup>h</sup>-45<sup>m</sup> ice-crystal blown away off tower etc. - Barometer pumping heavily = a reading at about 22<sup>h</sup>-12<sup>m</sup> during a lull gave 25.117.

At 23<sup>h</sup> the outside observations (temp etc) were about 4 minutes late owing to lantern being



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blown out while going to box - after this the jacketted lantern was used.

No rain gauge was out in early morning nor at night as the drift made it useless.

February 19<sup>th</sup>

after 11<sup>h</sup> Thermometer Box shifted the hinges being damaged. Same instruments left out and height above snow not altered.

The strong wind of last night and this morning have swept the fresh snow off, leaving the icy surface formed by the thaws of last month exposed over a large part of the hill top.

February 20<sup>th</sup>

Very squally in early morning with strong back-squalls. Ugly looking clouds all round in afternoon and patches of cum-fog on hills.

At 23<sup>h</sup> Lunar Halo and Corona seen.

Radius to inside of Halo — 21° 24'

" to Red of Corona — 2° 53'.

Corona very misty and badly defined.

February 21<sup>st</sup>

William Stewart came up to the observatory today and stayed over night.

February 22<sup>nd</sup>

Thermometer Box shifted at 18<sup>h</sup>. 15<sup>m</sup>



Dry 192671 : Wet 192677 and Min 1385-45 put out - Height above snow not altered -

White dry loose fog crystals forming at night -

February 23

after sunset at 17<sup>h</sup>. 45<sup>m</sup> the Earth-shadow was seen - Double Sinai crown at night :

inner set yellowish, outer blue-green inside reds -

February 24

In the evening the fog lifted forming a layer of cloud not far above the hill top and extending over the whole sky, but not touching any of the hill tops -

February 25

Detached fog hanging about the hills to S and E all afternoon - No unusual columns round Ben, but faint afterglow at 19<sup>h</sup> -

February 27

White dry fog crystals forming freely all yesterday and this morning - At 9<sup>h</sup> the fog was beginning to sink, and by 11<sup>h</sup> the sky was seen to be quite clear, though fog was still blowing over the hill top - All afternoon thick, rather cumulus looking, fog hid the hills round and extended to the horizon - the Aonach Mòr and Aonach Bèg (4000 ft height) were seen



above it occasionally, but no other hills except Ben Nevis and its adjacent ridges. No columns in sky round sun in afternoon, and only a very ~~the~~ brown column under it above the fog. The after-glow and Earth shadow were seen after sunset. Very bright Moonlight at night. At 14<sup>h</sup> - 30<sup>m</sup> glory was seen from the cliff edge. Three rings, Red inside in each. Middle ring the best defined, but all rather misty looking.



Radius of Red<sup>2</sup> — 4° 13'  
 — yellow<sup>2</sup> — 3° 36'.

Streaks of cirrus cloud came on from the NW at night (21<sup>h</sup> and 22<sup>h</sup>).

At 22<sup>h</sup> faint lunar fog low seen = single no column

Radius to inside of low 34° 0'  
 — outside — 48° 26'.

February 28-

At 2<sup>h</sup> a portion of a Lunar Halo was seen - at 4<sup>h</sup> it was again seen faintly tinged with Red inside. Radius of Red 22° 0'.

At 4<sup>h</sup> a Lunar Glory was also seen from edge of cliff. It had a sharp well defined outer edge but no columns - It disappeared before a





measurement could be made: the Radius was, roughly, about  $1^{\circ}$ .

A lunar corona was also seen at  $4^h$ .

At  $4^h$  the fog which had hid the lower hills had begun to break up to  $5^h$  and after this it gradually cleared off leaving the horizon however somewhat hazy -

A faint halo was seen at  $5^h$ ,  $6^h$  and  $8^h$  the last being Solar.

The Earth-shadow and shadow of Ben Nevis were seen at  $17^h$ . The after-glow and Earth shadow were also seen at  $18^h$  but no unusual colours were seen in the sky during the day.

Up to  $21^h$  the sky had been clear except for detached cirro-cumulus, but at  $22^h$  a heavy pallium, quite low down, covered it.

The Black Bull No 186 was put out at  $4^h$  on hacket stand on Port A & taken in at  $20^h$ .

### February 29.

The low pallium of cloud sank down and covered the hill top before  $2^h$  and continued on the top till  $21^h$  shortly after which it cleared off leaving a cloudless sky - This fog lingered longest on the hills to E and SE.

Thermometer Box shifted at  $23^h-15^m$  Dry 192660 : Wet 192672 : Min 138533 and Max BM (for trial) put out. Height above snow not altered.



March 1<sup>st</sup>

The fog that began to blow across the hill top at 4<sup>h</sup> seemed to be local, as none had been observed before - after the top cleared at 8<sup>h</sup> however fog still lay to about 4000 ft all around: it broke up into detached portions after Noon -

A glory was seen at 8<sup>h</sup>

No unusual columns near Sun during the day: the Earth-shadow & shadow of Ben Nevis seen after Sunset.

This afternoon the snow at the First Gorge was found to be overhanging the edge for 140 inches -

at 10<sup>h</sup> the tracks of a hare were seen near the thermometer box -

March 2<sup>nd</sup>

The Wet Bulb reading at 2<sup>h</sup> is rather doubtful as the bulb had got somewhat dry: after this time the bulb was wet at the half hour as long as the air continued dry -

A faint Lunar halo was seen at 3<sup>h</sup> and a corona at 4<sup>h</sup>

at 4<sup>h</sup> detached fog was lying among the hills to S<sup>W</sup>: at 5<sup>h</sup> it was over all the hills to 4000 ft. except those to SE<sup>W</sup>, and at 6<sup>h</sup> on the top -

March 4<sup>th</sup>

Between 15<sup>h</sup> and 16<sup>h</sup> brown crystals with six of blunt pointed rays, each ray feathered with smaller crystals, observed to be falling,



March 5<sup>th</sup>

Thermometer Box shifted at 2<sup>h</sup> 15<sup>m</sup>  
 Dry 192671 = Wet 192677 and Min 138545 put out.  
 Height above snow out altered.

at 7<sup>h</sup> the shadow of Ben Nevis was seen to W<sup>h</sup>  
 Stratus fog lay at about 2000 ft. or less among the  
 hills to South and West. at 8<sup>h</sup> this fog was in  
 detached portions but was blowing over the Cairn Dearg.

March 6<sup>th</sup>

The snow which fell this afternoon was  
 heavy granulated stuff which hardly drifted at all.  
 Between 13<sup>h</sup> and 14<sup>h</sup> the wind on Maclean's Steep  
 and the Plateau was WNW though on the top it  
 was between North and North East.

This morning one of the rope stays of the kitchen  
 chimney broke = it was repaired after 15<sup>h</sup>

March 12

Star shaped flakes of snow falling in  
 afternoon = too little to show in gauge.

March 13

Wm Stewart came up to the Observatory  
 and stayed over night.

March 14

at 4<sup>h</sup> the lamp was blown out just  
 after reading Dry Bull = the Wet Bull was  
 assumed to be the same - at 23<sup>h</sup> all the outside  
 observations were 4 minutes late owing to



lantern ~~then~~ being blown out. The jacketed lantern was used all night. It was impossible to stand on the roof during the strongest wind at night. At 15<sup>h</sup> the pressure of the wind was tested by holding the blade of a shovel measuring 16 inches by 12 vertically and measuring the pressure by a spring balance. The Max. observed was 26 ~~lb~~ on the square foot { 35 ~~lb~~ on shovel } the estimated force at the time being 10 - { 21.2 ~~lb~~. Instructions Scott }

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### March 15

The vane of Direction Anemometer was heavily coated with fog crystals till after 15<sup>h</sup> and did not point truly to windward. At Midnight the Dry Bulb was below its scale & its temp. was assumed to be the same as the Wet Bulb. Today Wm Stewart went down having been detained since the 13<sup>th</sup> by the stormy weather.

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### March 16

At 1<sup>h</sup> the Dry Bulb was below its scale and its temp. was assumed to be the same as the Wet Bulb. At 1<sup>h</sup> - 10<sup>m</sup> Dry and Wet shifted, Dry 192660 and Wet 192672 put out. Box and Min not shifted. At 2<sup>h</sup> the fog broke to N<sup>W</sup> and an aurora was seen.



At 10<sup>h</sup>. 10<sup>m</sup> Thermometer Bore shifted. Same Dry & Wet left out, and Min 138533 and Max B-M. (for trial) put out.

No fog in valleys all afternoon, but horizon very ~~hazy~~ hazy = this was partly due to the heater burning that was going on all round.

At 16<sup>h</sup> some cum. clouds under sun with very ragged edges were colored red and green on their upper edges, the Red being next sun. Distance of Red from sun about 7°.

Aurora was seen at night. At 20<sup>h</sup> and 21<sup>h</sup> it consisted of a single arch without streamers; but at 22<sup>h</sup> the arch was broken up and there were long narrow streamers rising from all parts of it and reaching to about 45° altitude. At 23<sup>h</sup> and Midnight it was again a single arch without streamers. All evening an earth current in telegraph cable kept the needle over to Dash side.

During this afternoon and evening the Dry read frequently below the Wet Bullb: it was observed to be covered with fine spicules of ice, which although wiped off continually gathered on it again.



March 17

at 1<sup>h</sup> double arch Aurora seen, and at 2<sup>h</sup> faint aurora still visible -

Loose dry white fog-crystals forming in afternoon. At 7<sup>h</sup> star shaped crystals falling, and ~~at~~ in the afternoon needle like crystals -



The above are some of the forms seen at 7<sup>h</sup>. They were roughly about 10 inch diameter -

March 18

Aurora seen faintly at 1<sup>h</sup> and 2<sup>h</sup>. At 6<sup>h</sup> the upper-glow was seen -

Detached Cumulus over hills in forenoon, but no fog in valleys all day - Horizon rather hazy, due partly to heather burning -

The Sun set at 18<sup>h</sup>. 40<sup>m</sup>. After glow and earth-shadow seen -

At 23<sup>h</sup> faint ~~aurora~~ auroral light seen to N<sup>o</sup>.

Today the Black Bull No 126 was put out on bracket stand on post A. 48 inches above ground -

March 19<sup>th</sup>

The Earth-shadow and shadow of Ben Nevis were seen before sunrise at 6<sup>h</sup>. 30<sup>m</sup>.



Some detached Cumulus over hills again today, but no fog in valleys - Horizon again hazy; large tracts of heather burning.

No unusual colours were observed in the sky either yesterday or today - At Sunset the afterglow and Earth-shadow were seen -

### March 20<sup>th</sup>

a faint aurora consisting of a single arch low down & without streamers was seen at 2<sup>h</sup> and 3<sup>h</sup> and 4<sup>h</sup> -

The Earth-shadow was seen before sunrise - a brown hunting was seen flying about on the hill top at 11<sup>h</sup> -

The Earth-shadow and the afterglow were seen after sunset at 19<sup>h</sup> at 20<sup>h</sup> the W<sup>h</sup> horizon still showed faint sunset colours -

There was no fog in the valleys or on the hills today, but thick haze mixed with smoke from burning heather covered everything to about 4000 feet - above this were a few patches of Cumulus - Air intensely dry all night -

### March 21<sup>st</sup>

at 6<sup>h</sup> roll cum. was seen low down to W and NW, at 7<sup>h</sup> it had come nearer, and at 8<sup>h</sup> had covered the sky overhead -

The upper glow and Earth shadow were seen before sunrise -



March 22<sup>nd</sup>

at 9<sup>h</sup> the mist that had covered the top all morning sank down to about 4000 ft but the sky overhead was covered with stratus which seemed to join the mist all round -

at 11<sup>h</sup> Fog - low seen, white with faint red outside. also at 11<sup>h</sup> - 10<sup>m</sup> glory with one band of colour - too faint to measure -

March 23<sup>rd</sup>

At 14<sup>h</sup> - the top was clear though sky overcast with low stratus = No fog in valleys -

At 15<sup>h</sup> crystals of snow as sketched on margin falling mixed with small hard shapeless snow -



March 24<sup>th</sup>

No rain gauge was out from 6<sup>h</sup> to 9<sup>h</sup> but apparently no snow fell - all measurements of amount of snow doubtful owing to drift -

Sources of thermometer box badly choked with pine drift and fog crystals most of the day -

March 25<sup>th</sup>

at 8<sup>h</sup> a layer of cloud of fog about the level of the hill top extended in all directions -

Thermometer Box shifted at 11<sup>h</sup> - 30<sup>m</sup> - Dry 192671 : Wet 192677 and Min 138545 put out - Height above snow not altered - Before this the box was had been much choked with snow - For



several hours after this the readings of the Dry and Wet were very wild, but the air was apparently saturated. Black Bulb (186) put out at 12<sup>h</sup> on bracket stand on S side of post A. 47 inches above snow.

At 14<sup>h</sup> snow crystals falling shaped as on margin varying from  $\frac{1}{10}$  to  $\frac{2}{10}$  inch diameter - a few of them had points projecting in different planes in addition to these six -



Similar crystals falling at 15<sup>h</sup> but on the whole smaller in size, none exceeding  $\frac{1}{10}$  inch diameter.

Faint lunar halo seen at 20<sup>h</sup>, 21<sup>h</sup> and 22<sup>h</sup>. It was difficult to distinguish between upper and lower clouds at night, they seemed to pass into each other without any marked plane of separation.

### March 26<sup>th</sup>

A slight shower of snow consisting of small rough pellets of hardish texture fell at 15<sup>h</sup>; diameter about  $\frac{1}{20}$  inch. Stars and small pellets mixed about  $\frac{1}{10}$  inch diameter fell at 19<sup>h</sup>. Neither of these showers were sufficient to affect the gauge.

### March 27<sup>th</sup>

Thermometer Box shifted at 9<sup>h</sup>. 40<sup>m</sup> Dry 192660; Wet 192672; Min 138533 and Max BM (for trial) put out. Height above snow not altered. At 9<sup>h</sup> cum. fog on hills to about 4000 feet.



at 10<sup>h</sup> Black Bull (186) put out on halibut stand on south side of post A 47 inches above snow.

The cum-fog continued to hang about the hills around most of the day, but at 18<sup>h</sup> had risen and joined cum. clouds above the hills, which gradually disappeared later in the evening.

At 23<sup>h</sup> and Midnight lunar halo seen, faintly tinged with red inside - at 23<sup>h</sup> it was measured.

Radius to inside of halo	23° 58'
" outside "	29° 4'

No low fog in valleys all day -

### March 28<sup>th</sup>

The lunar halo was still visible at 1<sup>h</sup> and 2<sup>h</sup>. At 4<sup>h</sup> a lunar corona was seen occasionally.

Before sunrise at 6<sup>h</sup> the Earth shadow and shadow of Ben Nevis were seen -

When clear today there was no fog in valleys but cumf on and over hills.

The great amount of fine drift going made the rain gauges useless: most of the snow that fell a few days ago was swept off the hill top and the old icy surface exposed.

### March 29<sup>th</sup>

Rain gauges useless in early morning owing to drift and measurements by them in forenoon doubtful from same cause -



March 30<sup>d</sup>

at 10<sup>h</sup> a few star shaped crystals ~~of~~ were falling mixed with the snow flakes - At 19<sup>h</sup> the ~~the~~ snow consisted of small pellets, not flakes -

No Tourists climbed Ben Nevis in March -

April 1<sup>st</sup>

Thermometer Box shifted at 2<sup>h</sup>. 20<sup>m</sup> -  
Dry 192671 = Wet 192677 and Min 138545 put out. Height above snow not altered -

No fog in valleys in morning, except a little patch of stratus-fog over Fort William at 6<sup>h</sup> 27<sup>h</sup> -  
at 7<sup>h</sup> fog on hills to W<sup>nd</sup> at 8<sup>h</sup> fog blowing across Ben Nevis and on hills round -

The snow that fell this afternoon was icy, in small pellets rather than flakes - Measurements of amount of snow at night rather doubtful owing to drift -

April 2<sup>nd</sup>

Aurora, single arch without streamers, seen at 22<sup>h</sup> and Midnight -

April 3<sup>rd</sup>

aurora still visible at 1<sup>h</sup> and 2<sup>h</sup> -  
at 8<sup>h</sup> cumulus was seen to N<sup>nd</sup> and at 9<sup>h</sup> it was over Ben Nevis and fog brushing the hill top -



April 4 At 17<sup>h</sup> fog on hill top but sky seen above covered with cum-s: the fog on the hill seemed local and distinctly below the level of the cum-s clouds.

April 5-

Thermometer Bore shifted. at 0<sup>h</sup> 15<sup>m</sup> Dry 1992660 : Wet 19262 : Max BM (for trial) and Min 138533 put out. Height above snow not altered. at 2<sup>h</sup> very faint aurora seen low down to NNW. at 4<sup>h</sup> faint sunrise columns were observed. at 5<sup>h</sup> the upper glow and Earth-Shadow were seen; fog over hills to E<sup>r</sup> to 4000 feet. This fog gradually broke up into cumulus ~~as~~ in the forenoon. at 10<sup>h</sup> 30<sup>m</sup> the Black Bulb (186) was put out on bracket stand on south side of post A 46 inches above snow. At 11<sup>h</sup> the sky was clear but cum-f rising out of Glen Mons, before 12<sup>h</sup> the sky was overcast with cumulus but the air under remained very clear till ~~the~~ the clouds sank & formed fog on the hill top at 15<sup>h</sup>. The beginning of the fog was not accompanied by any change of temp.

April 6.

Faint aurora, single arch no streamers, seen at 1<sup>h</sup>.

at 7<sup>h</sup> a little fog lay over both Lochy and cum-f



hung about the hills all forenoon - In the afternoon this fog rose and formed detached cumulus clouds above the hills = no fog in valleys all day - At 18<sup>h</sup> the cloud that had formed above Ben Nevis sank down & became fog -

April 8<sup>th</sup>

At 5<sup>h</sup> the day was covered with cumulus and fog lay over the hills round to 4000 ft. - In the forenoon the fog broke up and formed cumulus clouds: these in the afternoon were specially heavy to W<sup>d</sup> but there was no fog in valleys -

No unusual colors in sky all day.

a few faint and evanescent glories seen between 18<sup>h</sup> and 19<sup>h</sup> on fog blowing across the hill top -

April 9<sup>th</sup>

Till 4<sup>h</sup> though the sky was cloudless there was str. fog on hills to N<sup>o</sup> & E<sup>o</sup> to about 3500 ft. - After this the fog broke up into detached portions - The Earth-shadow was seen at 5<sup>h</sup> -

At 15<sup>h</sup> small needle shaped crystals of snow were falling, and at 16<sup>h</sup> besides these there were flakes composed of agglomerations of these crystals without any order or arrangement. The needles were about  $\frac{1}{10}$  inch long & the flakes up to  $\frac{2}{10}$  diameter. Small icy particles fell mixed with the snow in the ~~after~~ evening -



April 10<sup>th</sup>

The snow that fell this afternoon was small hard & rather icy. Sources of thermometer box choked with ice all evening.

April 12<sup>th</sup>

At 1<sup>h</sup> a light was seen to N<sup>w</sup> through breaks in the fog, — probably auroral.

At 6<sup>h</sup> 10<sup>m</sup> Thermometer Box shifted. Dry 192671 : Wet 192677 and Min 138545 put out. Height above snow not altered.

Portions of Solar halo were seen at 7<sup>h</sup> and 9<sup>h</sup>. At 9<sup>h</sup> there were two small arcs one on each side of the sun colored Red yellow Green Blue: the red being inside.

No fog in valleys in forenoon but detached fog on the hill tops all round.

Today Mr Balfour and Mr Cameron of the National Bank Ft. Wm. visited the observatory being the first strangers up this year.

April 13<sup>th</sup>

Today Mr Herberston arrived at the Observatory. He was accompanied by Wm Stewart and two men who carried up a camera and accessories.

April 14<sup>th</sup> A Solar halo, red inside, blue outside, was seen today between 17<sup>h</sup> and 18<sup>h</sup>.



April 16<sup>th</sup>

Thermometer Box shifted at 5<sup>h</sup> 15<sup>m</sup> Dry 192660 : Wet 192672 and Min 138533 put out -  
Height above snow not altered -

Today Wm Stewart and another man brought up the rest of the apparatus for the camera : Mr Drysdale went down to Fort William -

April 18<sup>th</sup>

No fog in valleys all day but cum-f hanging about the hills in heavy masses, and haze below it. Thermometer Box shifted at 15<sup>h</sup> 10<sup>m</sup> Dry 192671 ; Wet 192677 and Min 138545 put out - Height above snow not altered -

April 19<sup>th</sup>

Dense masses of cumulus all round during the day with dark haze below in valleys -

April 20<sup>th</sup>

Very squally and heavy drift in forenoon. at 11<sup>h</sup> the rain-gauge was found blown over & lying about 10 yards to leeward of its proper place = the door of the thermometer box was also torn from its hinges while reading the thermometers at the same hour - No gauge was <sup>used</sup> ~~not~~ all forenoon, but apparently no snow fell except a few crystals - at night though the top was sometimes clear of fog the air was evidently saturated, so the Box was not shifted though slightly coated with drift -



April 21<sup>st</sup>

Thermometer Base shifted at 19<sup>h</sup> 10<sup>m</sup> Dry  
192660 = Wet 192672 and Min 138533 put out.

Height above snow not altered.

No fog in the valleys but Cum-fog hanging about the hill tops round all day - Though fog was mostly brushing the top of Ben Nevis the sky above seemed pretty clear. - Some star-shaped snow crystals fell several times during the day - Flaring lunar Coronae were observed at night -

April 24<sup>th</sup>

No fog in valleys today but considerable haze. No unusual columns in sky during the day, but usual sunset columns and afterglow at 20<sup>h</sup>. Solar halo seen at 19<sup>h</sup> red inside. Radius of Red = 21°. 36' (rough measurement.) A lunar halo also seen at 21<sup>h</sup> and midnight -

April 25<sup>th</sup>

Solar halo still visible at 1<sup>h</sup> and 2<sup>h</sup> - at 1<sup>h</sup>, 2<sup>h</sup> and 3<sup>h</sup> Cum-fog to E<sup>W</sup> on hills - At 4<sup>h</sup> Black Bull 186 was put out on bracket stand on south side of post A 39 inches above snow - at 5<sup>h</sup> Cum-fog had formed on the hills to W<sup>E</sup> but no fog in valleys all day though haze at night - A solar halo was seen at 16<sup>h</sup>.

No unusual columns in sky during the day, but the Earth shadow was seen at 20<sup>h</sup> 5<sup>m</sup> and the afterglow at 20<sup>h</sup> 15<sup>m</sup>



April 26<sup>th</sup>

Thick haze in valleys below all morning. At 4<sup>h</sup> there were streaks of fog among the hills to N<sup>W</sup> and patches of cum-fog among those to S<sup>E</sup>. At 8<sup>h</sup> fog had begun to pass over Ben Nevis also.

The Black Bull was put out today in the same manner as on 25<sup>th</sup>.

Today Mr Rankin returned to the Observatory and Mr A. Herbertson went down to Fort William.

April 27<sup>th</sup>

The snow which fell last night and today was dense and heavy and scarcely drifted at all. Ice formed on all exposed surfaces out of the mist in early morning: the lenses of the thermometer box were badly choked till after 6<sup>h</sup> when they were cleared.

April 28<sup>th</sup>

Icy hail mixed with sleet fell several times in forenoon. All exposed surfaces heavily coated with hard ice including the thermometer box.

April 29<sup>th</sup>

Conical snow flakes a rather soft hail falling at 10<sup>h</sup>.

Thermometer box shifted at 12<sup>h</sup>. 30<sup>m</sup>. Dg 192671: Wt 192677 and Min 138545 put out. Height above snow not altered.

Fog-crystals at night hard and rather icy.



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April 30<sup>th</sup>

At 8<sup>h</sup> a glory was seen from cliff edge:  
too fleeting to measure -

Fog-crystals at night were dry and brown in colour.

During April 5 tourists visited the Observatory -

May 1<sup>st</sup>

The fog-crystals forming this morning were again  
brown in colour - The snow which fell at night was  
small and hard -

Due to the growth of fog crystals on the tower chimney,  
Anemometers etc the indications of the Crystal direction  
Anemometer were very unsatisfactory -

May 2<sup>nd</sup>

At 14<sup>h</sup> - 30<sup>m</sup> an earth current up the telegraph  
cable moved the indicator of the telegraph instrument  
and immediately afterwards a flash of lightning was  
seen - a heavy shower of hard hail had come on  
a few minutes before I was then falling -

The lenses of the thermometer box were badly  
choked with fog-crystals and drift all afternoon and  
night -

May 3<sup>rd</sup>

The lenses of the Thermometer Box were  
badly choked till 17<sup>h</sup>

At 17<sup>h</sup> - 35<sup>m</sup> Thermometer Box shifted - Dry 192660



Wet 192672 and Min 138533 put out. Put one stage higher on ladder stand: it is now in the first stage of the upper part of the stand.

May 4<sup>th</sup>

Fog very white and daygling in afternoon. The snow which fell today was large and coarse-grained & did not drift much. A little hail fell about Noon.

May 5<sup>th</sup>

The snow falling at 2<sup>h</sup> and thereafter ~~was~~ consisted of flakes & was not the coarsely granular form of last night.

The Gyne test paper was taken in as usual at 21<sup>h</sup> but a fresh one was not put out till 22<sup>h</sup>.

May 6<sup>th</sup>

Robinson Anemometer started at 14<sup>h</sup> 30<sup>m</sup>.

May 8<sup>th</sup>

Robinson anemometer tied up after 4<sup>h</sup>.

May 9<sup>th</sup>

Thermometer Base shifted at 2<sup>h</sup> 15<sup>m</sup>.

Dry 192671 = Wet 192677 and Min 138545 put out.

Put one stage lower on ladder stand.

A good deal of haze in the valleys today but no fog. Hills round almost clear of snow.

May 10<sup>th</sup> at 4<sup>h</sup> Black Bull (186) put out on leacher stand on south side of post A. 38 inches above snow.



at 4<sup>h</sup> faint upper glow seen = Sun rose at 4<sup>h</sup> 9<sup>m</sup>  
above fog lying on the hill tops to N and E. The Earth-  
shadow was also seen at 4<sup>h</sup>

at 6<sup>h</sup> faint Mock Suns seen with trace of halo on  
each side of Sun. Radius of Red of Mock Sun =  $21^{\circ}48'$ .

The halo was still visible though very faint at 7<sup>h</sup>

No fog in valleys all day but considerable haze  
with cumulus rising from it. At 21<sup>h</sup> there was

Cum-fog to NE<sup>o</sup> quite close to Ben Nevis.

The Sky was covered with cum. or cum s. all  
afternoon over the mainland, but the Sun was  
shining on the Atlantic.

at 23<sup>h</sup> pearly cirrus clouds to N<sup>o</sup> very low down.

May 11<sup>th</sup>

The Earth shadow was seen at 4<sup>h</sup>, the Sun  
rising about 4<sup>h</sup> 3<sup>m</sup>

at 6<sup>h</sup> a very faint halo was seen.

Slight haze and a little detached cumulus at  
horizon all day. No unusual colours in sky  
all day. Horizon bright but not coloured to N<sup>o</sup>  
at Midnight.

at 11<sup>h</sup> a Butterfly flew across the hill tops from  
S to N.

This afternoon the Robinson Anemom-  
eter was started again.

May 12<sup>th</sup> At 1<sup>h</sup> the Wet Bulb was found to be dry  
and its value for that hour was interpolated.



(No 50953)

A thermometer<sup>^</sup> was put out at 2<sup>h</sup> lying freely exposed on the snow: at 3<sup>h</sup> it read 25.6 the shade temp. being 37.8.

At 4<sup>h</sup> the Earth-shadow was seen - at same time Str-fog was lying on the hill tops to N and W. This fog gradually gathered on all the hills round and by 13<sup>h</sup> had risen high enough to cover Ben Nevis also - Glories, accompanied at times by fog lanes, were seen at 9<sup>h</sup> 12<sup>h</sup> 17<sup>h</sup> and 18<sup>h</sup> several photographs were taken of them - ~~Solar~~ Solar halo seen at 10<sup>h</sup>

Red inside, Blue outside; it was also seen at 11<sup>h</sup>  
At 17<sup>h</sup>-20<sup>m</sup> a measurement of a glory with two sets of  
colours gave Radius of inner Red (outside edge) 1° 3'  
" outer Red " 3" 8

Third and fourth sets of colours were seen occasionally -

at 19<sup>h</sup> the Robinson Anemometer was tied up -

at 20<sup>h</sup> the Black Bull was taken in -

Hard icy fog-crystals formed on all exposed surfaces at night -

May 13<sup>th</sup>

Thermometer Box shifted at 15<sup>h</sup>. 15<sup>m</sup>

Dry 192660 : Wet 192672 and Min 138533 put out - Height above snow not altered -

May 14<sup>th</sup>

at 11<sup>h</sup> the fog was breaking at times overhead  
showing Cum. and cir's above - a Halo was



seen on this eve at 11<sup>h</sup>. 8<sup>m</sup>. At about 11<sup>h</sup>. 13<sup>m</sup> the Halo was again seen and a arc cloud filled the space between the Sun and the Halo on the west side: this cloud was coloured in the following order -

⊙ White yellow Red<sup>1</sup>) Blue green Red<sup>2</sup>) Blue green Red<sup>3</sup>) Blue Red<sup>4</sup>) | Halo<sup>5</sup>  
Red Blue

These were portions of circles, but there were also Red and Blue spots on the cloud not coinciding with any ring.

The successive rings of colours filled almost the whole space inside the halo on the west side = if there had been a 5<sup>th</sup> Red ring it would have about coincided with the Red of the Halo.

At 14<sup>h</sup> hours the top was clear and there was no fog in valleys -

The snow falling at 18<sup>h</sup> consisted of small round soft pellets = later in the evening it became more flakey but was still soft & did not drift.

May 15<sup>th</sup> The fog-crystals forming today were white and dry - Considerable surface drift all day.

May 16<sup>th</sup> In early morning the fog-crystals were long and white, but ~~but~~ towards the middle of the day became slightly brown in colour.

Very faint Solar halo seen at 10<sup>h</sup>.

Thick haze all round when hill top was clear in morning.



May 18<sup>th</sup>

Robinson Anemometer set going after 13<sup>h</sup> all afternoon the Raingauges were useless as the strong wind blew up icy drift off the surface loosened by the thaw -

At 19<sup>h</sup> the Sunshine-recorder, which was standing on a box on Office Roof, was blown over but not damaged -

Today the Black Bull was put out on bracket stand on South side of post A -

Snow thawed away rapidly in afternoon and at night, the roof of Kitchen & Visitors room coming in sight

May 19<sup>th</sup>

A flash of lightning was seen at 1<sup>h</sup> 8<sup>m</sup> - Sky ugly when seen all morning, with cum-s and cir-s also cum-f on hills - Thunder and lightning began at about 14<sup>h</sup> - 35<sup>m</sup> and ~~lasted~~ went on at intervals till about 18<sup>h</sup> - 40<sup>m</sup> - The thunder <sup>clouds</sup> came rapidly ~~to~~ from the ~~the~~ SE at about the level of the hill top = it was found as each one came that there was a current for a short time down the telegraph wire and as they cleared off a similar current up the wire, but the latter was more distinctly marked than the former - At about 16<sup>h</sup> - 30<sup>m</sup> as



one of the clouds was moving off the hill top a sharp crack was heard in the office stove<sup>and</sup> a bright flash appeared to spring about a yard out from it & then vanish in the air; a similar crack was heard at the same instant in the kitchen stove and a flash from it struck the left leg of James Miller ~~who~~ at about a foot distance from the stove. It felt like a strong shock from a Seyden Jar but except for the pain at the moment did not injure him.

Another crack and flash was observed at the office stove at 18<sup>h</sup>-20<sup>m</sup> when another cloud was leaving the hill top.

During the whole time of the thunderstorms the wind blew from the SE<sup>o</sup> at about 60 miles an hour, and the temperature was between 43° and 46°. The hill top was some times covered with very thick mist and sometimes quite clear, though the sky was cloudy. Heavy showers of rain fell.

The Telegraph wire was rendered useless for a few hours by the lightning Protector being ~~so~~ scorched: the two surfaces of the Protector were slightly fused at one place. The surfaces were cleaned and a ~~the~~ fresh paper put in at 19<sup>h</sup>-30<sup>m</sup> after which the instrument worked well.

The general surface of the snow was lowered about a foot today by the strong wind & high temp.



May 20<sup>th</sup>

at 10<sup>h</sup> some glories were seen from the cliff edge and photographs were taken of them.

At 12<sup>h</sup> there were heavy masses of cum just above the hills all round, but the valleys underneath were very clear — no haze or fog —

At 18<sup>h</sup> - 10<sup>m</sup> the upper joint was taken off the ladder stand and the thermometer box put one stage down = same instruments left out.

At 21<sup>h</sup> the sky was cloudless but fog on the hills to S<sup>W</sup> the northern horizon was red all night with sunset colors —

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May 21<sup>st</sup>

at 2<sup>h</sup> very thin cloud overhead and patch of thin fog rising to W<sup>W</sup> at 3<sup>h</sup> - 25<sup>m</sup> a faint upper glow was seen. Haze in the valleys most of the

day: at 4<sup>h</sup> (after sunrise) the shadow of Ben Nevis was seen very distinctly on this haze. No fog in the valleys. At 21<sup>h</sup> a faint upper glow was seen.

Today the low-level door was long open —

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May 22<sup>nd</sup>

Heavy dew on everything till 5<sup>h</sup>

Thick haze in valleys all day = shadow of Ben Nevis seen on it at 4<sup>h</sup> over Loch Linnhe. Cumulus gathered all over the sky in afternoon with cir-c <sup>higher</sup> above it occasionally and still <sup>higher</sup> cumulus morning rather



quickly from the North -

It was noticed today that  $20^{\circ}$  is the first hour at this season in which the thermometer box is shaded from the direct rays of the Sun -

Today two visitors with a horse climbed the hill - This is the first horse that has been up this year; it was able to walk over the snow right up to the Obrenaty -

May 23<sup>rd</sup>

At  $3^{\text{h}}$  and  $4^{\text{h}}$  fog lay low down over Loch Oich - it had entirely cleared off by  $7^{\text{h}}$

Portions of Solar halos were seen at  $10^{\text{h}}$  and  $12^{\text{h}}$  Horizon hazy today but not so densely so as yesterday. At  $23^{\text{h}}$  a heavy fall of snow was heard on the cliff to N somewhere between the Obreny and the Cairn Dearg (BN) -

Northern horizon Red with sunset colours all night -

May 24<sup>th</sup>

Just after sunrise the shadow of Ben Nevis was seen above the Mull hills, it gradually sank and continued visible on Loch Linnhe till after  $4^{\text{h}}$

Fog on Loch Oich in early morning - at  $4^{\text{h}}$  it reached to about 1000 ft height and extended as far as could be seen to NE and down



to the head of Loch Lochy. Fog also lay in the Laggan valley - ~~That in~~ No fog in valleys during the day and less haze than yesterday. The Earth-shadow and a faint afterglow was seen at 21<sup>h</sup>. N<sup>h</sup> horizon red with sunset colors all night.

Today Wm. Stewart came up with one of the Oban horses for the first time this year.

May 25<sup>th</sup> Thick fog lay in the Caledonian Canal valley as far South as Banavie at 5<sup>h</sup> and also in the valley to NE<sup>h</sup> and on the Moor of Rannoch. Horizon rather hazy elsewhere in early morning. The Sun rose at 3<sup>h</sup>. 36<sup>m</sup>. The Earth-shadow was seen above Mull after sunrise; also the shadow of Ben Nevis. Great visibility to N<sup>h</sup> in forenoon. A Solar halo was seen at 11<sup>h</sup> and 12<sup>h</sup>. At 11<sup>h</sup> it was formed on streaks of cumuli  $\frac{1}{2}$  NE-SW and moving from the NW. At 14<sup>h</sup> two Eagles were seen flying up from the East end of Ben Nevis.

The Earthshadow was seen again clearly at Sunset. at 22<sup>h</sup> Black Bull moved one stage down on Port A.



May 26<sup>e</sup>

Fog gathered on the hills to NE<sup>W</sup> in early morning and after sunrise spread over all the hills round except to SW<sup>W</sup> at about 4000 ft. height. Shortly after Noon it rose clear off the hills forming cum. clouds. The Shadow of Ben Nevis was seen after sunrise in the same manner as yesterday.

Glinies were seen from the cliff edge in morning - some photographs were taken. After the cum. clouds formed there was no fog in the valleys nor on hills. At 6<sup>h</sup> the Wet Bulb had got too dry and its reading on the Daily sheet is interpolated -

May 27<sup>e</sup>

Though the hill top was clear for a few hours in morning there was heavy cum-fog all around. After 20<sup>h</sup> the Robinson Anemometer was tied up and the Black Bulb taken in.

Slight surface drift on the snow at night -

At 0<sup>h</sup>. 10<sup>m</sup> the Thermometer Box was shifted one stage down on ladder stand - Same Box and instruments left out.

May 28<sup>e</sup>

No fog in valleys all day - air very clear especially to S & W. during the middle of the day and in the afternoon = Islay, Colonsay and Barra seen distinctly. The Black Bulb was put out at 10<sup>h</sup> on post A as before but was taken in after 20<sup>h</sup>.



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May 29<sup>th</sup>

At 2<sup>h</sup> only very thin fog was blowing across the hill top, but there was detached patches of fog on the hills to E<sup>W</sup> and a very heavy and sharply defined cloud bank to SW. White loose dry fog-crystals forming all afternoon -

May 31<sup>st</sup>

At 12<sup>h</sup>. 15<sup>m</sup> James Miller thought he saw St. Elmo's Fire on the kitchen chimney for a moment -

Though the snow which fell today was granular and dense it drifted a little and the low hall door got blocked in the afternoon: the Turner door was used all evening -

63 Tourists climbed Ben Nevis in May -

June 1<sup>st</sup>

Thermometer Box shifted at 9<sup>h</sup>. 10<sup>m</sup> D<sub>g</sub> 192671: Wet 192677 and Min 138545 put out -

Put one step higher on ladder stand -

After the fog cleared off in the afternoon the air was very clear all round, and no fog in the valleys -

At about 20<sup>h</sup>. 45<sup>m</sup> a Solar halo was seen: only a small portion of the circle - Red inside, Blue outside.

Radius to middle of Red 22<sup>o</sup>. 42'

" " " Blue 23 " 30.

The cum. clouds seen in the evening were small and high up, almost like cir. c.



June 2<sup>d</sup>

At Sunrise the air was very <sup>clear</sup> to W<sup>d</sup>. the Outer Hebrides were seen. also the shadow of Ben Nevis above Mull very sharp and distinct, after the Sun was up. Fog lay on the hills to SE<sup>d</sup> at 4<sup>h</sup>. At 5<sup>h</sup> upper part of Halo seen, very bright. The Black Bull was put out at 4<sup>h</sup> but had to be taken in again at Noon being covered with fog-crystals. Considerable drift all evening making the Rain gauge measurements very doubtful. The low level door was dug out this morning but got blocked up again in the afternoon. The kitchen windows ~~to~~ were also blocked with drift at night.

June 3<sup>d</sup>

Up to 4<sup>h</sup> the fog crystals were long, white, and rather hard but easily knocked off from their hold, but at 5<sup>h</sup> rain began and, the temp. being 27° everything was covered with hard ice. The fog crystals grew to a great length: those on the hand-rail of the Tower steps were 22 inches long at 20<sup>h</sup>. The rain formed a hard icy crust on the surface of the fresh snow, which at night was again covered with fresh snow.

June 4<sup>th</sup>

At 5<sup>h</sup> it was seen that the snow lay



on all the hills round down to about 1000 feet -  
 No fog in the valleys, but at night fog on the hills to  
 NE<sup>o</sup> At Midnight. N<sup>o</sup> horizon red and pearly cirrus  
 to NE<sup>o</sup>

Today the door of the Visitors Room was dug open again

June 5<sup>th</sup>

At 3<sup>h</sup> the Upper glow & Earth shadow were  
 seen - Fog on hills to NE<sup>o</sup> till 6<sup>h</sup> - air very clear  
 especially to SW<sup>o</sup> after sunrise - A faint solar halo  
 was seen at 8<sup>h</sup> and again at 17<sup>h</sup> - The cir-s  
 which covered the sky in the afternoon came up  
 gradually from the SW and had a moderately  
 rapid motion from the W a WSW when overhead -  
 No fog in valleys all day - Air very clear again  
 in the evening - S. Vist and today seen -

June 6<sup>th</sup>

At 1<sup>h</sup> pearly cirrus clouds to N<sup>o</sup>  
 at 3<sup>h</sup> bright sunrise columns and faint upper-glow  
 seen; the shadow of Ben Nevis very clear at 3<sup>h</sup> 35<sup>m</sup> -  
 At 3<sup>h</sup> and on till 8<sup>h</sup> detached fog on hills to SE<sup>o</sup>  
 but no fog in valleys - All morning the air was very  
 clear especially to N<sup>o</sup> - At 8<sup>h</sup> it was noted that  
 Ben Wyvis, The Black Isle, Beaulieu Firth and North  
 Western coasts were seen - Haze gathered to  
 S<sup>o</sup> and W<sup>o</sup> in the middle of the day - Owing to  
 the drift in afternoon the door of the Visitors Room,  
 the only low level door open, had to be closed -



June 7<sup>th</sup> The fog crystals forming this morning were white and rather hard. At 9<sup>h</sup> a glory and fog<sup>low</sup> were seen - loose cum-fog on hills round and blowing across Ben Nevis all afternoon - This afternoon the door of Visitors Room and the low level door beside coal-cellar were dug open again. Robinson Anemometer started after 12<sup>h</sup>

June 9<sup>th</sup> At 4<sup>h</sup> the Black Bulb was put out on bracket stand on South side of post A, but it was taken in again at 22<sup>h</sup> At 22<sup>h</sup> the Robinson Anemometer was clogged with ice & was tied up - Ice formed on all exposed surfaces at night -

June 11<sup>th</sup> Thermometer Box shifted at 1<sup>h</sup> 15<sup>m</sup> Dry 192671 : Wet 192677 and Min 138545 put out - Height above snow not altered -

At 2<sup>h</sup> the Wet Bulb had obviously not cooled down to its true temperature, it read 32°-1 but as fog was blowing over the hill top at the time it was assumed to be the same as the Dry Bulb, viz 29°-0. The Shadow of Ben Nevis was well seen before 4<sup>h</sup> after the Sun was up - Fog in streaks among the hills round at 3<sup>h</sup> and 4<sup>h</sup> A Solar Halo was seen at 9<sup>h</sup> Haze but no fog in the valleys in forenoon -

Robinson Anemometer was set going after 11<sup>h</sup> after the Midnight observation the Thermometer Box was put one stage lower on ladder stand -



On June 11<sup>th</sup> Mr Mackenzie of the Imperial Hotel  
 Fort William came up and opened the hotel on summit.

June 12<sup>th</sup>

after 21<sup>h</sup> the Robinson anemometer was  
 tied up -

June 13<sup>th</sup>

Robinson Anemometer set going after 12<sup>h</sup>  
 At 17<sup>h</sup>, 18<sup>h</sup> and 19<sup>h</sup> passing showers with portions of  
 Rainbows seen to E<sup>W</sup>  
 No fog in valleys all day -  
 Sky faintly red with Sunset colors at Midnight.

June 14<sup>th</sup> The upper glow was seen faintly at 3<sup>h</sup> 10<sup>m</sup>  
 also the Earth-shadow - The Sun was seen at 3<sup>h</sup> 16<sup>m</sup>  
 At 3<sup>h</sup> and 4<sup>h</sup> detached cum-fog among hills to S and W.  
 At 4<sup>h</sup> low str-fog on Moor of Rannoch and on both Aich.  
 Air very clear during the day especially to S<sup>W</sup> and  
 massive cumulus clouds in the middle of the day  
 all over sky - Haze and Stratus gathered round  
 the horizon at night - N<sup>W</sup> Horizon red at Midnight -

June 15<sup>th</sup>

The haze gradually thickened and at 3<sup>h</sup>  
 mist had come on from the SW. After the mist cleared  
 off there was no fog in valleys, but slight haze at the  
 horizon - Pearly cirrus seen to N<sup>W</sup> at night - at  
 23<sup>h</sup> it ~~was~~ reached to almost overhead, not more  
 than 10° from zenith, and even at Midnight was  
 about 45° above horizon -



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June 16<sup>th</sup>

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Dense masses of fog gathered on the hills to N<sup>W</sup> in early morning and by sunrise ~~for~~ covered all the hills to N and E. The sun was not seen till 3<sup>h</sup>. 32<sup>m</sup>. The Earth shadow was seen before sunrise and the Ben Nevis shadow ~~for~~ shortly after sunrise as usual. The fog on the hills gradually rose and formed cumulus clouds in the forenoon, these continued overhead till 22<sup>h</sup> and the almost entirely disappeared. The shadow of Ben Nevis was seen at 9<sup>h</sup> shortly before sunrise sunset. N. horizon dusky red at midnight but no pearly cirrus all night.

June 17<sup>th</sup>

The Sun was first seen at 3<sup>h</sup>. 14<sup>m</sup>. Earth shadow seen before sunrise and Ben Nevis shadow at and after sunrise as usual. No fog in valleys all day except 2<sup>h</sup> to 6<sup>h</sup> when it lay in Caledonian Canal Valley as far south as Loch Oich. Horizon rather hazy most of the day. A little cirrus formed in afternoon, and some Pearly cirrus was seen at night: at 23<sup>h</sup> some if it was not more than 5° from zenith. After 22<sup>h</sup> the Black Bull was put one stage down on Port A. Pearly cirrus seen ~~again~~ at midnight to about 30° altitude with dark stratus nearer horizon. Horizon faintly red.



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June 18<sup>th</sup>

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at 3<sup>h</sup> Earth shadow and after sunrise shadow of Ben Nevis seen as usual. Streaks of str-fog at about 3000 feet on hills to N<sup>o</sup> in early morning - by 6<sup>h</sup> it had spread over almost all the hills, but after Noon broke up & formed cumulus clouds leaving very clear views all round under them. It got rather hazy again in the evening after the cumulus had vanished & cirrus clouds coming from the N<sup>o</sup> appeared -

Shadow of Ben Nevis seen at 21<sup>h</sup> just before sunrise. - Today the stones began to show under the thermometer box on ladder stand -

June 19<sup>th</sup> Thermometer Box shifted at 0<sup>h</sup>. 15<sup>m</sup> Dry 192660 = Wet 192672 and Min 138533 put out. Put one stage down on ladder stand. Thin layer of fog at about 3000 feet among hills to N and NE all morning -

At 3<sup>h</sup> faint upper glow seen, and after sunrise shadow of Ben Nevis very distinctly = seen first at about 3 times the height of Mull above horizon -

Thin cirrus in sky all afternoon coming from the E<sup>o</sup>. Solar halo seen at 15<sup>h</sup> and again at 19<sup>h</sup>

Shadow of Ben Nevis seen again ~~after~~ at 21<sup>h</sup> before sunset -

No fog in valleys all day, but fog as in morning among the hills to N<sup>o</sup> at night.



Today the large Thermometer Box (old clock box) had broken lenses replaced & was painted -

June 20<sup>th</sup>

Fog on hills to N<sup>d</sup> at 3000 to 4000 feet till about 6<sup>h</sup>. Faint pearly cirrus seen at 1<sup>h</sup>. The upper glw was seen at 2<sup>h</sup> 50<sup>m</sup> and mine faintly at 3<sup>h</sup>. The Earth shadow was seen before and the Ben Nevis shadow after sunrise as usual - the latter seen first at about 3 times the height of the Mull hills - Slight haze at the horizon but no fog in valleys during the day - Fog gathered on the N<sup>d</sup> hills again at night - The upper glw was seen at 22<sup>h</sup>.

June 21<sup>st</sup>

Fog on hills to N<sup>d</sup> at about 3000 feet till 11<sup>h</sup> after which it cleared off but formed again about 21<sup>h</sup>. No other fog in valleys during the day - At 2<sup>h</sup> there were passing showers seen to E<sup>d</sup> and at 3<sup>h</sup> and 4<sup>h</sup> cum-f coming up from the E and almost covering Ben Nevis, at same times heavy cumulus clouds passing close overhead - Sun was first seen at 3<sup>h</sup> 17<sup>m</sup> - Horizon rather hazy all day - N<sup>d</sup> horizon red and yellow all night - At 22<sup>h</sup> the upper glw was seen - After 22<sup>h</sup> the Black Bull (186) was shifted from the bracket stand on post A. to its own post - Dy 192671, Nit 192677, Max 117293 and Min 116918 were put out in large box at 18<sup>h</sup> 30<sup>m</sup>.



The following duplicate readings were taken -

(21 <sup>st</sup> )		Small Box		Large Box		(22 <sup>nd</sup> )		Small Box		Large Box	
Hour		Dry	Wet	Dry	Wet	Hour		Dry	Wet	Dry	Wet
19		50.9	44.2	50.0	44.1	1		49.1	40.0	49.5	40.2
20		49.0	41.8	49.1	48.0 <sup>x</sup>	2		49.9	39.8	49.4	40.0
21		47.8	39.8	48.0	40.0	3		47.6	41.8	47.7	42.0
22		48.8	39.9	48.3	40.0	4		48.3	40.9	48.4	41.1
23		47.9	39.6	48.0	39.9	5		48.0	41.2	48.3	41.8
Mdt.		49.0	39.1	49.0	39.2						

x Wet Bulb day -

Up to Midnight (June 21<sup>st</sup>) the Small Box readings were entered on Daily Sheet: at and after 1<sup>h</sup> (June 22<sup>nd</sup>) the Large Box readings -

June 22<sup>nd</sup>

Faint pearl cirrus seen to N and NE at 1<sup>h</sup>. Fog on hills to N<sup>o</sup> at about 3000 feet till Noon = none seen during the day but gathering again in the Caledon Canal valley beyond Loch Lochy after 22<sup>h</sup>. Horizon hazy all day -

at about 2<sup>h</sup> - 50<sup>m</sup> the upper glim was seen - It was seen again very brightly at 22<sup>h</sup>. The sun was last seen at 21<sup>h</sup> - 27<sup>m</sup>. Faint pearl cirrus at Midnight. It was observed that the large thermometer bore, which is now in use, was in shade for the first time at 20<sup>h</sup>, but that it got sunshine again at, and for a few minutes before 21<sup>h</sup>.



June 23<sup>d</sup>

Fog gathered among the Northern hills in early morning at 2000 or 3000 feet. It also lay on the Moor of Rannoch about sunrise. The Upper glow and Earth shadow were seen at 3<sup>h</sup> and the shadow of Ben Nevis after sunrise; this last was first seen at about 3 times the height of Mull hills. The sun was first seen at 3<sup>h</sup>. 11<sup>m</sup>, having been thus just 5<sup>h</sup>. 44<sup>m</sup> out of sight. Horizon hazy all day, but the fog was all gone by 8<sup>h</sup>. Cirrus clouds about the N<sup>o</sup> horizon all day forming at midnight both Pearly and dark cirrus. At 22<sup>h</sup> the afterglow was seen. N<sup>o</sup> horizon red all night.

June 24<sup>th</sup>

At 2<sup>h</sup> fog gathered in Caledonian canal valley North of Loch Oich and on Moor of Rannoch: the latter vanished shortly after sunrise but the former did not disappear altogether till about 9<sup>h</sup>. At 2<sup>h</sup>. 45<sup>m</sup> the Upper glow seen. Sun was first seen at 3<sup>h</sup>. 15<sup>m</sup>. The Earth-shadow was seen before, ~~sunrise~~ and the shadow of Ben Nevis after sunrise as usual. Horizon hazy all day except to N<sup>o</sup> where it was very clear in the forenoon; Ben Nevis seen at 10<sup>h</sup>. The Sun was last seen at 21<sup>h</sup>. 26<sup>m</sup> after glow observed at 22<sup>h</sup>. N. horizon red all night, and a little Pearly cirrus. At 13<sup>h</sup> it was found that the Robinson Anemometer was not running freely owing to the counter



being clogged. It was taken down and one of the axles of the counting wheels that was rubbing on the back part of the box holding the counter set clear of the back; it was then found to be all right and readings were resumed at 15<sup>h</sup>

June 25<sup>th</sup>

Fog formed in the Caledonian canal valley as far south as Loch Oich in early morning, but it cleared off about 8<sup>h</sup>. Bright upper glow at 3<sup>h</sup>. Sunrise at 3<sup>h</sup> 16<sup>m</sup>. Shadow of Ben Nevis after sunrise rather faint. The Sun was last seen at 21<sup>h</sup> 26<sup>m</sup>. At 21<sup>h</sup> the shadow of Ben Nevis was observed to SE<sup>o</sup> and at 22<sup>h</sup> the after glow. Northern horizon red all night with a little pearly cirrus above it.

June 26<sup>th</sup>

Some fog, not over 1000 ft. height, in Caledonian canal valley as far south as Loch Oich in early morning, it cleared off about 7<sup>h</sup>. The Sun was first seen at 3<sup>h</sup> 18<sup>m</sup>. Faint solar halo seen at 11<sup>h</sup>. Northern horizon red at night, with pearly cirrus above it. Both yesterday and today it has been very hazy all round.

This morning Mr Mackenzie the F.E.Wm. telegraph lineman came up and renewed battery and cleaned telegraph instrument.

June 27<sup>th</sup>

Very bright Pearly cirrus to N<sup>o</sup> at 1<sup>h</sup>. Upper glow seen at 2<sup>h</sup> 50<sup>m</sup>. Earth Shadow at 3<sup>h</sup>. Sun first seen at 3<sup>h</sup> 18<sup>m</sup>. Shadow of Ben



Nebis seen very distinctly after sunrise -  
 At 3<sup>h</sup> there was low lying fog on Loch Ness but it cleared  
 off before 5<sup>h</sup>. Cumulus clouds gradually formed in  
 forenoon & for most of the day after 7<sup>h</sup> fog was  
 on or near the hill top = but the fog was almost quite  
 dry. At 20<sup>h</sup> a few misty, badly defined glories  
 were seen on large masses of cum-fog to E<sup>h</sup>.  
 The Sun sank into a cloud bank to NW a few  
 minutes after ~~21~~ 21<sup>h</sup>.

June 30<sup>h</sup>

Fog on or passing over hill top till 6<sup>h</sup> - at  
 7<sup>h</sup> fog on hills ~~at~~ everywhere except to S<sup>h</sup> at about  
 4000 feet. This fog continued to hang about the hills  
 to NE<sup>h</sup> all day & forming at night a thick bank  
 of cum-fog just beyond the Cronach More & Beg -  
 After glow observed at 21<sup>h</sup> 35<sup>m</sup>. Northern horizon  
 red all night, and pearly cirrus very bright to N  
 and NE. Hazy to SW and W all day -  
 After 21<sup>h</sup> the Robinson Anemometer was taken down  
 and cleaned, it was set going again before 23<sup>h</sup>.

During June about 213 tourists climbed  
 Ben Nevis, the largest number in one day  
 being 27 on the 30<sup>th</sup>



July 1<sup>st</sup>

Upper glow seen before sunrise, brightest at about 3<sup>h</sup> 5<sup>m</sup> Sun just seen at 3<sup>h</sup> 27<sup>m</sup> Nearly cirrus at 2<sup>h</sup> Thin layer of fog capping the hill tops to N and E till about 8<sup>h</sup> and haze at horizon all day -

The cirrus clouds seen in the afternoon came on from the W<sup>st</sup> but their own motion was from NW or N.

The Cumulus which covered the sky at 22<sup>h</sup> had come up rapidly from the S<sup>st</sup> since 21<sup>h</sup>.

During all the late fine weather the Thermometer Box in use was in shade at 20<sup>h</sup> and in sun again at 21<sup>h</sup> as noted on page 224 (June 22<sup>nd</sup>).

July 2<sup>nd</sup>

Sun just seen at 3<sup>h</sup> 22<sup>m</sup> Dark crimson sunrise columns - sky too cloudy to see Upper glow, - Earth shadow or Ben Nevis shadow - Horizon hazy all morning - Cum-fog among hills to E and SE from after sunrise till Noon when it covered Ben Nevis also - in the course of the afternoon the fog turned to mist and rain came on -

July 6<sup>th</sup>

Top cleared at 1<sup>h</sup> but fog lay over the hills around especially to N<sup>st</sup> till about Noon - The Sun was just seen rising above this fog at 3<sup>h</sup> 40<sup>m</sup> The Upper glow was seen at 3<sup>h</sup> 5<sup>m</sup> - and the Earth-shadow before and the Ben Nevis-shadow after sunrise as usual - All very clear especially to the



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South and West in afternoon: South Dist and Islay seen. Passing showers to E<sup>s</sup> at 17<sup>h</sup>. In the evening showers of snow fell and before midnight the roof was quite white.

July 7<sup>th</sup>

Robinson Anemometer tied up at 3<sup>h</sup> and started again at 7<sup>h</sup>. Mist cleared off a little before 3<sup>h</sup> = detached fog on hills or rising out of valleys all round till 10<sup>h</sup>. The Sun was just seen at 3<sup>h</sup>. 31<sup>m</sup>. No Upper Glow or shadows seen as the sky was overcast. Passing showers to E<sup>s</sup> a great part of the day; a portion of a Rainbow was seen on one at 19<sup>h</sup>. Rolling cum-fog in N<sup>s</sup> valley at night and fog among hills to N and NW. N horizon red all night. Pearly cirrus seen to N and NE at midnight; that to N silvery white and to NE slightly yellow.

July 9<sup>th</sup>

Robinson Anemometer tied up after 21<sup>h</sup>.

July 10<sup>th</sup>

From 10<sup>h</sup> onwards the hill top was quite white with fresh fallen snow. When clear of fog in afternoon visibility to W and S and no fog in valleys. Today Mr Beaton plumber arrived at the Obseing to carry out repairs on roof etc.

July 11<sup>th</sup>

Top cleared at night but fog continued



to drift across the hill top till almost Midnight.  
At Midnight A horizon was faintly red but no  
heavily cirrus was seen.

Today Mr Ch. Gray arrived at the Observatory to  
take charge of the public telegrams.

Mr Fraser - grimer, and a mason also came up  
today to carry out repairs.

July 12<sup>th</sup> Am. fog on hills to N and W in early morning -  
Sun first seen at 3<sup>h</sup>.45<sup>m</sup> Earth shadow seen  
before and Ben shadow after sunrise as usual -  
No low fog in valleys during the day but considerable  
haze and fog in valleys. Between 19<sup>h</sup> and 20<sup>h</sup>  
glories with three sets of coronas were seen on  
fog passing the East end of the hill. At midnight  
the clouds sank low down, fog surrounded the  
hill and drizzling rain came on.

Robinson anemometer started after 14<sup>h</sup>.

Today Mr Sydney Mitchell visited the Observatory.

This afternoon additional barrels were set up at  
Wragges Well to store more water.

July 13<sup>th</sup> At about 17<sup>h</sup>.30<sup>m</sup> the Black Bull was shifted  
from the post near ladder stand and placed on  
a new post to the South East of the large  
thermometer box.

Today Mr Stewart, Painter, and a second  
mason arrived at the Observatory to carry out repairs.



July 14<sup>th</sup> At 2<sup>h</sup> fog lying in N<sup>o</sup> valley to about 4000 feet and detached fog among hills. Misty Solar Corona seen at 4<sup>h</sup>. Fog low down in valleys, not reaching 500 feet, at 6<sup>h</sup> and 7<sup>h</sup>. Fog hanging about the hills round all day except for a few hours in afternoon when it was very clear to N<sup>o</sup>. No fog in valleys at night.

July 18<sup>th</sup> Detached fog in valleys and among hills in early morning. This fog hung about the hills to N<sup>o</sup> E<sup>o</sup> till 11<sup>h</sup> but in the afternoon there was ~~no~~ fog in the valleys and the air was very clear, though with occasional showers passing to S<sup>o</sup>. The rain that fell on Ben Wino consisted of short heavy showers, like thunder showers, but no thunder was heard nor lightning seen. A portion of a Solar halo was seen at 17<sup>h</sup>. Today the office fire was let out as the room was being painted, but the temp. of barometer remained pretty steady though a few degrees lower than usual.

July 19<sup>th</sup> Sun fog clinging to the watercourses in Caledonian Canal valley & its tributaries in early morning. This cleared off about 8<sup>h</sup> and after that hour there was no fog in valleys but thick haze gathered all round in the afternoon. The sun was first seen at 3<sup>h</sup> 46<sup>m</sup> rising from



behind the hills to NE<sup>W</sup> without cloud or fog -  
 No Upper Glow the sky being cloudy, but Earth shadow before  
 and Ober Venus shadow after sunrise as usual -

July 20<sup>th</sup> Very thick haze all round all day until  
 fog came on at night - Faint Upper Glow seen at  
 3<sup>h</sup>.25<sup>m</sup> - Sun first seen at 3<sup>h</sup>.49<sup>m</sup> rising above hills  
 and shining through dark haze -

July 21<sup>st</sup> Thunder was heard at 8<sup>h</sup>.45<sup>m</sup> and at  
 9<sup>h</sup>.15<sup>m</sup> but no lightning was seen - When clear of  
 mist in the afternoon the other hills round were  
 mostly covered with cum-fog rising up to and  
 meeting the cumulus clouds above -

Today the Sunshine recorder was put for the first  
 time on new stone pillar at South side of kitchen  
 roof - The office fire was lit again at 18<sup>h</sup>  
 The two masons that were up doing repairs left  
 the Obsevy today, their work being completed -

July 24<sup>th</sup> Top clear for a few mins in forenoon but  
 fog all round - At 10<sup>h</sup> a Solar halo was seen -  
 At 9<sup>h</sup> the Gyne test paper was shifted as usual  
 but its value was not entered on the hourly  
 sheet & the record therefore was lost -



July 25<sup>a</sup>

Top clear in afternoon and at night but cum fog on hills round till about 20<sup>h</sup> after which it cleared to W<sup>h</sup>. Fog began to form in the valleys to N<sup>h</sup> after sunset - N<sup>h</sup> horizon furnished at Mdt.

Today the new kitchen stove pipe came up and was partly erected -

July 26<sup>c</sup>

Fog lay all round ~~to about~~ except to S<sup>h</sup> to about 3000 feet in early morning - Sun was first seen over this at 4<sup>h</sup> - 5<sup>m</sup>. No Upper glow, Earth shadow or Ben Nevis shadow owing to the sky being covered with cumulus - About 9<sup>h</sup> the fog rose higher covering Ben Nevis and continued to hang about the hill top all day -

A heavy shower of rain and hail came on at 17<sup>h</sup> 45<sup>m</sup> evidently thunder rain; showers and drizzle fell from then on to Midnight -

July 27<sup>b</sup>

Thin fog with the Moon occasionally seen through it till 4<sup>h</sup> after which it sunk and lay covering almost all the hills round to about 3000 feet till 8<sup>h</sup>, after which it rose again and covered Ben Nevis also - The sky from 5<sup>h</sup> to 8<sup>h</sup> was cloudless overhead; though the fog lifted sometimes again the sky was always cloudy -



Today the plumber left the Observatory his work being finished - The part of new stone pipe that stands inside kitchen was found not to fit & was sent back for alterations.

July 29<sup>th</sup>

In the early morning the ground was all white with freshly fallen snow -

Robinson Anemometer tied up after 5<sup>h</sup> and started again after 23<sup>h</sup>

In early morning hard, icy, white fog crystals formed on all exposed surfaces.

July 30<sup>th</sup>

Top clear in early morning but detached masses of fog on all the hills round - In afternoon view clearer but passing plumes seen - about 18<sup>h</sup> one passed over ~~the~~ Ben Nevis where it fell as snow (Temp. 33.9) but immediately afterwards a Rainbow was seen on it with all the usual colors quite bright - The Robinson Anemometer was not working for some time in forenoon owing to getting clogged with crystals, and it was tied up after midnight -

July 31<sup>st</sup>

Robinson Anemometer started after 11<sup>h</sup> Thin fog in early morning with Moon



shining through it. The top cleared about 10<sup>h</sup> and remained so though with a cloudy sky above till about 18<sup>h</sup> after which thin fog came on. Great visibility all afternoon = the Beauty Firth with the Black Isle beyond, South Uist, Barra, and the North East coast of Ireland were all visible at the same time. The Irish coast showed as a faint line of land between Islay and Cantire.

Today a new ladder thermometer stand for use in winter was set up on the SE side of the old one. It will be known as ladder stand No. 2 - the old one being termed No 1.

694~~4~~ Tourists climbed Ben Nevis during July -

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August 1<sup>st</sup> Thin fog in early morning but clear or nearly so from 10<sup>h</sup> onwards. Heavy masses of cum-fog hung about the hills round during the day and many passing showers were observed; two of these fell on Ben Nevis as slight snow showers.

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August 2<sup>nd</sup>

Sun first seen at 4<sup>h</sup> - 15<sup>m</sup> Earth shadow seen before and Ben Nevis shadow after sunrise as usual - At 4<sup>h</sup> fog on hills to E<sup>d</sup> and low down on Moor of Runnoch -

A broad and ill defined Solar halo was seen at 8<sup>h</sup> - formed on cirrus clouds -

August 3<sup>rd</sup>

~~Today~~ Today Mr Fraser Joiner left the Observatory his work being finished - Mr Stewart painter is now the only workman left.

August 4<sup>th</sup>

Top cleared about Noon - No fog in valleys & air clear all round but sky overcast - At 19<sup>h</sup> the ground was sprinkled with snow -

August 5<sup>th</sup>

Top cleared about 10<sup>h</sup> - No fog in valleys but air not so clear as yesterday there being a little haze especially to S<sup>d</sup> - The sky remained covered with cumulus which about 19<sup>h</sup> sank down and enveloped the hill top -

August 6<sup>th</sup>

Top clear from 8<sup>h</sup> to 14<sup>h</sup> but sky overcast with cir-s. and fog on all hills round. Today Mr J. Miller left the Observatory.



August 7.

John Duncan arrived at the observatory today to take James Miller's place while away.

August 10<sup>2</sup>

Top cleared in early morning but detached masses of fog lay over most of the hills round. A solar halo was seen at 8<sup>h</sup> and 9<sup>h</sup>. Horizon hazy all day and fog again at night.

August 11<sup>2</sup>

Today Mr Stewart painter (the last workman) left the observatory his work being finished.

August 13<sup>2</sup>

Robinson Anemometer tied up after 19<sup>h</sup>. Ground sprinkled with freshly fallen snow at and after 20<sup>h</sup>.

August 14<sup>2</sup>

Robinson Anemometer started after 14<sup>h</sup>. Top clear and sky overhead cloudless at 23<sup>h</sup> and midnight, but fog on all the hills round and clouds, mostly roll in at horizon.

August 15<sup>2</sup>

Fog on the hills round and blowing across Ben Nevis also till about 10<sup>h</sup>. Air very clear in afternoon especially to N<sup>d</sup> and W<sup>d</sup>. The Outer Hebrides seen. Sky cloudless at night and no fog in valleys.



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August 16<sup>th</sup>

Aurora, single arch no streamers seen at 1<sup>h</sup> 2<sup>h</sup> and 3<sup>h</sup>

From 3<sup>h</sup> to 7<sup>h</sup> level topped fog on hills to N<sup>o</sup> and E<sup>o</sup> at about 3500 feet. The sun was first seen rising above this fog at 4<sup>h</sup> 46<sup>m</sup>

The upper glow was seen about half an hour before sunrise and the earth shadow before and Ben Ken's shadow shadow after sunrise as usual. Hoar frost on roof all morning till 6<sup>h</sup>

Air not so clear as yesterday - Cumulus fog rising above hills & forming Cumulus clouds in afternoon, but sky quite cloudless at night.

The sun was last seen at 20<sup>h</sup> 6<sup>m</sup>. The Earth shadow and upper glow were seen after sunset. Aurora, similar to that seen in morning but slightly higher above the horizon seen at Midnight.

Today the remaining part of Kitchen stone pipe arrived (see p 234) and was set up.

August 17<sup>th</sup>

Aurora, single arch no streamers, seen at 1<sup>h</sup> and 2<sup>h</sup>. At 3<sup>h</sup> fog beginning to form on hills to N<sup>o</sup>. Continuous str. fog on hill tops all round from 4<sup>h</sup> to 7<sup>h</sup> and detached fog till 10<sup>h</sup>. Sun first seen at 4<sup>h</sup> 49<sup>m</sup>. Upper glow and Earth shadow before sunrise as usual.



Shadow of Ben Nevis seen on the fog to SW<sup>r</sup> at 5<sup>h</sup> no trace of glory around it.

Loose cum fog floating about in afternoon. Slight haze at horizon most of the day, but occasionally quite clear to W<sup>r</sup> & vice seen faintly. No fog in valleys at night.

August 18<sup>th</sup>

From 4<sup>h</sup> to 8<sup>h</sup> thick looking fog lay over ~~all the~~ almost all the hills round at about 4000 ft, at 6<sup>h</sup> & 5<sup>h</sup> not a single peak was visible above this fog to S<sup>r</sup>. Heavy Dew on everything in early morning. The Upper Glow & Earth shadows were seen before sunrise and after sunset.

After 8<sup>h</sup> the fog on the hills got broken up into detached portions & formed towards the middle of the day cumulus clouds = but thick haze hid everything except the nearest hills ~~most~~ all day & turned into thin fog at night. Dew was again observed on the Thermometer bore at 22<sup>h</sup>.

August 19<sup>th</sup>

Faint halo seen at 7<sup>h</sup> the part to N<sup>r</sup> of Sun most distinct. Mock Sun seen also to N<sup>r</sup> of Sun at some height above horizon. Distance from Sun (rough measure)

119°. 8' { Evidently the 120° Mock Sun on horizontal circle }

Thick haze all day passing into fog and mist at night.



August 23<sup>rd</sup> - From 16<sup>h</sup> till midnight a strong gale from SSE and SE blew, the anemometer recording velocities of 70 miles between 18<sup>h</sup> and 19<sup>h</sup>, 73 m. between 19<sup>h</sup> and 20<sup>h</sup> and 74 m. between 20<sup>h</sup> and 21<sup>h</sup>. During the storm the wind was very squally.

August 25<sup>th</sup> - A Lunar Corona was observed at 2 h. Except for some thin mist or fog passing occasionally the summit was clear of cloud from 7<sup>h</sup> till after 18<sup>h</sup>. A Rainbow was seen at 18<sup>h</sup>.

August 29<sup>th</sup> - Mr. R. Turnbull arrived at Observatory today.

August 30<sup>th</sup> - Owing to the low temperature Robinson's anemometer stopped recording after 22 h. and was tied up. An aurora was seen at 23 h.

August 31<sup>st</sup> - A Lunar Corona was seen at 2 hrs. Robinson's anemometer was set free after 10 h.

Today Mr. Emmond left the Observatory

No. of Visitors in August 911



## Anemometer.

5-10-27-37-68-118-122-146-  
151-161-167-205-225-227-240-

## Aurora

1-2-7-8-33-39-41-47-50-  
-52-55-61-65-67-74-75-83-  
-87-89-90-100-130-131-133-  
-137-139-143-144-146-147-  
-148-156-157-170-171-172-  
-173-174-175-177-178-182-185-  
-191-192-193-194-198-199-201-  
-238-240-

## Barograph

4-12-16-17-

## Birds

10-20-194-

## Butterfly

122-207-

## Camera 201-

## Chimney

49-94-190-233-238-

clouds light by Sun at Midnight

18-21-116-117-118-119-120-207

218-220-221-224-226-228

229-

## Comets in Sky-

2-3-4-5-7-8-13-15-17-19-  
21-28-33-45-47-50-53-54-64  
66-71-72-77-78-82-83-84-87-  
89-90-91-97-98-99-100-105-107-  
109-114-115-122-175-183-184-  
186-187-188-189-194-199-200-  
203-207-212-220-221-225-226-  
229-

## Conical Snow-

96-101-106-179-204-

## Coronae-

2-3-5-8-11-13-14-19-29-37  
41-43-44-45-46-48-49-51-60  
61-62-63-64-65-66-71-72-73  
75-78-81-87-92-96-97-103-127  
128-133-134-138-141-143-146-149-  
157-158-159-160-161-162-163-  
178-179-180-185-186-188-203-  
231-240-

## Cosmic Dust.

27-31-112-113-133-

Cum Brown - Prof. 28-

Eagles - 214-



## Earth currents in Wire -

34-48-68-70-101-148  
173-192-205-210-

## Earth. Shadms.

2-56-71-72-73-82-83  
90-92-100-115-116-120-  
122-134-135-155-158-162-  
169-170-171-172-183-184  
186-187-188-189-193-194  
197-199-200-203-207-208-  
212-213-214-217-218-219-  
220-221-222-223-225-226-  
228-230-232-236-238-239-

## Elms Fire - St.

34-41-47-48-70-128  
140-141-148-152-155-  
216-

## Fog. bow

14-21-28-31-37-38-  
44-45-46-51-54-56-60-  
71-74-79-96-117-121-124  
130-135-136-138-144-159  
162-163-179-187-195-219-

Fog crystal, measured - 75-

## glory.

21-39-43-52-54-56-  
63-79-80-113-117-120-123-  
124-125-126-130-132-135-  
136-138-144-146-163-176  
183-187-189-195-200-205  
208-212-215-219-227-230-

## Guide-ports.

31-32-51

## Halo

3-4-6-8-9-11-12-13-16-  
17-18-19-21-26-29-41-43-  
44-46-51-52-53-54-55-61-  
62-63-84-87-93-103-105-  
107-108-111-113-115-119-  
121-123-127-142-148-149-  
150-175-178-184-185-187-  
188-189-197-201-203-207-  
208-209-213-214-216-217-  
218-219-222-226-231-232-  
236-237-239-

## Hare

149-167-189-



## Horses -

20-43-108-142-213-

## Hygrometer.

33-72-74-87-88-89

91-98-107-143-

## Instruments - lists of.

57-164-

## Ladder - Stand, for Thers.

235.

## Ladder - Stand - Trip joint

1-103-106-162-212-

## Lightening -

34-35-36-68-70-115-

124-128-140-205-210-

## Meteor -

5-33-40-45-47-130-

145-153-170 -

## Mock Moon - 150-

## Mock Sun

84-87-90-99-207-

239-

## Observations - Notes on -

22-25-29-31-38-49-

93-96-123-131-152-158-

167-179-180-181-184-190-

191-

## Pressure of Wind - 191-

## Rainbow -

95-121-124-126-127-137-

220-229-234-238-240-

## Rainfall (or gauge -)

15-19-22-24-25-27-29-42

49-51-52-53-60-61-64-66-

68-69-70-88-89-92-140-141-

142-152-154-156-167-168-

169-180-183-185-195-197-

202-210-

## Rat - 143-

## Repairs -

30-35-68-134-135-229

230-232-234-236-237-

## Snow Crystals -

193-195-196-198-200-203-



Stewart, Wm.

107-119-153-185-190  
191-

Sunset - Green column -  
73-

Sun - Shape of Rising &  
Setting -  
83-84-

Sunshine Recorder -  
23-25-26-29-33-  
37-183-210-232-

Telegraph wire & insulator  
30-35-117-119-

Thermometer Box -  
24-42-48-97-103-  
111-112-126-136-202-  
223-

Thermometer Box, Shaded -  
213-224-228-

Thermometer Readings -  
4-12-18-20-23-42-  
49-50-89-108-109-111  
120-131-133-139-143-  
144-148-158-181-190  
191-192-196-215-219-224-

Thunder -

34-35-36-70-101-115-210  
232-

Upper glow.

14-50-56-65-66-73-90-98-  
99-100-103-109-110-115-116-118  
119-122-123-126-130-131-134-135  
144-155-163-186-187-188-189-193-  
194-199-203-207-212-214-218-220-  
222-223-224-225-226-227-228  
232-238-239-

Velocity of Wind  
167-240-

Water Supply -  
34-40-230-

Weasel -  
176-180-

Wragges Well, height of -  
116-

Zodiacal Light -  
96-129-130-131-170-  
171-173-174-



Values of Wind Scale deduced from readings  
of geared Robinson Anemometer - 4 August  
1887 to 30 September 1888.

Scale -	Means -	Smoothed Means -
0	2	2
I	7	7
II	14	13
III	21	21
IV	29	29
V	38	38
VI	47	47
VII	61	57
VIII	66	67
IX	78	77
X		88
XI		99
XII		110

The Smoothed Means are deduced from a curve drawn through the points given by plotting the observed means -



Pages 246-253 blank



























A  
B  
C  
D



E  
F  
G  
H



J  
K  
L  
M



M  
N  
O  
P



Q.  
R.  
S.  
T.



U  
V  
W  
Y