

ARCTIC EXPEDITION.

RESULTS

DERIVED FROM THE

ARCTIC EXPEDITION,

1875-76.

I.—Physical Observations by Captain Sir George Nares, R.N., and Captain Feilden, &c.

II.—Medical Report on the Eskimo Dog Disease, by Fleet Surgeon B. Ninnis, M.D.

Presented to both Houses of Parliament by Command of Her Majesty.



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ARCTIC EXPEDITION.

I.

PHYSICAL OBSERVATIONS

AND

REPORTS.

**The Thickness of the Salt-water Ice frozen during one Season,
at Floeberg Beach, Discovery Bay, and other Positions in the
Arctic Regions.**

At Floeberg Beach, where the station was sheltered by heavy ice from tidal currents, the thickness of the newly frozen ice agrees well with the records of other observers, and especially with that of Koldewey.

At Discovery Bay and Robeson Channel, where the ice was subject to a strong tidal current, it attained a considerably less thickness.

THICKNESS OF SALT-WATER ICE, IN INCHES.

Date.	NARES.	STEPHENSON.	KOLDEWEY.	BELCHER.	KELLETT.	PARRY.	PARRY.	COLLINSON.	NARES.
	Floeberg Beach. 1875-76.	Discovery Bay. 1875-76.	Sabine Island, East Greenland. 1869-70.	Wellington Channel. 1853-54.	Dealy Island. 1852-53.	Winter Harbour, Melville Island. 1819-20.	Port Bowen. 1824-25.	Camden Bay. 1853-54.	Robeson Channel. 1875-76.
Sept. 25	—	—	—	—	—	—	—	—	—
„ 30	—	10·75	—	—	—	—	—	—	—
Oct. 1	8·0	—	—	—	—	—	—	—	—
„ 22	19·0	—	—	—	—	—	—	—	—
„ 31	—	16·5	—	—	—	—	—	—	—
Nov. 1	—	—	—	—	—	—	—	24·0	—
„ 5	—	—	—	18·0	—	—	—	—	—
„ 11	—	—	31·0	—	—	—	—	—	—
„ 15	—	—	—	—	26·0	—	—	—	—
„ 20	—	—	—	—	—	—	30·5	—	—
„ 24	—	—	36·5	—	—	—	—	—	—
„ 25	—	—	—	28·0	—	—	—	—	—
„ 30	—	20·6	—	—	—	—	—	—	—
Dec. 5	—	—	—	36·0	—	—	—	—	—
„ 11	40·5	—	—	—	—	—	—	—	—
„ 13	—	—	—	—	—	—	38·5	—	—
„ 15	—	—	—	39·5	—	—	—	—	—
„ 16	—	—	—	—	33·0	—	—	—	—
„ 25	—	—	—	44·0	—	—	—	—	—
„ 31	—	24·7	—	—	—	—	—	—	—
Jan. 1	—	—	—	—	—	—	45·3	—	—
„ 3	—	—	—	—	54·0	—	—	—	—
„ 4	—	—	—	54·0	—	—	—	—	—
„ 14	—	—	—	51·0	—	—	—	—	—
„ 20	—	—	53·0	—	—	—	—	—	—
„ 21	—	—	—	—	62·0	—	—	—	—
„ 24	—	—	—	54·0	—	—	—	—	—
„ 31	—	28·7	—	—	—	—	—	—	—
Feb. 1	50·75	—	—	—	—	—	—	—	—
„ 2	—	—	—	—	66·0	—	—	—	—
„ 3	—	—	—	59·0	—	—	—	—	—
„ 13	—	—	—	63·0	—	—	—	—	—
„ 15	55·5	—	—	—	74·0	—	—	—	—
„ 18	—	—	57·0	—	—	—	—	—	—
„ 23	—	—	—	67·0	—	—	—	—	—
„ 29	—	31·0	—	—	—	—	—	—	—

THICKNESS OF SALT-WATER ICE, IN INCHES—*continued.*

Date.	NARES.	STEPHENSON.	KOLDEWEY.	BELCHER.	KELLETT.	PARRY.	PARRY.	COLLINSON.	NARES.
	Floeberg Beach. 1875-76.	Discovery Bay. 1875-76.	Sabine Island, East Greenland. 1869-70.	Wellington Channel. 1853-54.	Dealy Island. 1852-53.	Winter Harbour, Melville Island. 1819-20.	Port Bowen. 1824-25.	Camden Bay. 1853-54.	Robeson Channel. 1875-76.
March 2	—	—	—	—	—	—	73·0	72·0	—
" 5	—	—	—	62·0	—	—	—	—	—
" 6	64·0	—	—	—	—	—	—	—	—
" 15	—	—	—	65·0	84·0	—	—	—	—
" 23	—	—	—	—	—	78·0	—	—	—
" 25	—	—	—	68·0	—	—	—	—	—
" 31	—	35·5	—	—	—	—	—	—	—
April 2	—	—	—	—	—	—	82·5	72·0	—
" 4	75·0	—	—	—	—	—	—	—	—
" 10	—	—	—	66·0	—	—	—	—	—
" 30	—	39·25	—	—	—	—	—	—	—
May 1	—	—	—	—	—	—	—	84·0	—
" 4	79·25	—	—	—	—	86·5	—	—	—
" 21	—	—	79·0	—	—	—	—	—	—
" 23	75·0	—	—	—	—	—	—	—	—
" 28	—	—	—	—	—	—	—	—	49·5
" 31	—	38·0	—	—	—	—	—	—	—
June 1	—	—	—	—	—	—	—	84·0	—
" 15	—	—	—	—	—	—	—	74·5	—
" 16	75·5	—	—	—	—	—	—	—	—
" 30	—	27·5	—	—	—	—	—	—	—
July 3	72·5	—	—	—	—	—	—	—	—

Solar Radiation, H.M.S. "Discovery," 1875-76.

THE thermometers were fixed on the floe, suspended 4 feet above the ice and 35 feet from the ship.

Wherever the observations are in consecutive hours, the first observation of the daily series is the reading of the thermometer at the time denoted, and not the maximum temperature registered since the previous observation, which the heading would denote.

JULY 1875.

Date and Place of Observation.		Maximum Temperature registered since previous observation.		(c.) Temperature in Shade.	Difference.		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.
		(a.) Black bulb in vacuo.	(b.) Bright bulb.		a. and b.	a. and c.	Nature of.	Amount.	
Ritenbenk:		No. 41.	No. 43.						
July 17	11 0 a.m.	101·0	69·0	52·0	32·0	49·0	st.	1	41° South. 0° 5' North.
	Noon	105·0	69·0	49·0	36·0	56·0	st.	1	
	1 0 p.m.	107·5	71·0	47·5	36·5	60·0	st.	1	
	2 0	117·0	74·0	48·0	43·0	69·0	st.	1	
	3 0	103·5	81·5	50·0	22·0	53·5	st.	1	
	4 0	103·0	76·5	48·5	26·5	54·5	st.	1	
	5 0	96·5	76·0	47·0	20·5	49·5	cir.	5	
Proven:									
July 21	1 30 p.m.	104·2	78·0	46·0	26·2	58·2	cir.-st.	2	38° South. 3° North. 32° South. 6° North.
At sea off Cape Parry:									
July 27	Noon	94·0	60·0	47·0	34·0	47·0	st.	2	
	1 0 p.m.	93·0	60·0	48·5	33·0	44·5	cir.-st.	6	
	2 0	94·0	60·0	50·0	34·0	44·0	cir.-st.	6	
	3 0	98·0	62·0	53·0	36·0	45·0	cir.-st.	6	
	4 0	94·0	57·8	51·0	36·2	43·0	cir.-st.	6	

AUGUST 1875.

Date and Place of Observation.	Maximum Temperature registered since previous observation.		(c.) Tempe- rature in Shade.	Difference.		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.
	(a.) Black bulb in vacuo.	(b.) Bright bulb.		a. and b.	a. and c.	Nature of.	Amount.	
In pack ice off Cape Victoria:	No. 41.	No. 43.	°	°	°			
Aug. 7 8 0 p.m.	72·2	51·9	34·1	20·3	38·1	st.	2	27° South.
9 0	71·1	50·9	32·1	20·2	39·0	st.	2	6° North.
Dobbin Bay:								
Aug. 14 5 0 p.m.	83·0	53·0	34·5	30·0	48·5	cir.	4	25° South.
6 0	86·2	33·5	35·5	52·7	50·7	cir.	6	4° North.
7 0	81·0	51·5	35·5	29·5	45·5	cir.	6	
8 0	82·0	51·2	34·8	30·8	47·2	cir.	6	
9 0	79·0	52·2	34·0	26·8	45·0	cir-st.	2	
Dobbin Bay:								
Aug. 15 7 0 p.m.	76·1	51·5	38·5	24·6	37·6	cir.	2	24° South.
8 0	77·1	50·0	37·1	27·1	40·0	cir.	2	4° North.
9 0	74·1	50·5	35·7	23·6	38·4	cir.	2	
Cape Fraser:								
Aug. 19 1 30 p.m.	83·0	54·5	35·4	28·5	47·6	nim.	6	23° South. 3° North.
Cape Lieber:								
Aug. 24 11 0 a.m.	79·3	47·0	31·1	32·3	48·2	cum.	2	20° South.
Noon	82·6	47·2	31·1	35·4	51·5	cum.	2	3° North.
1 0 p.m.	82·1	48·0	32·0	34·1	49·0	cum.	2	
2 0	84·3	48·8	35·1	35·5	49·2	str.	9	
3 0	87·1	50·2	37·0	36·9	50·1	str.	9	
Discovery Bay:								
Aug. 28 11 0 a.m.	74·5	42·0	28·6	32·5	45·9	str.	10	18° South. 1° North.
Discovery Bay:								
Aug. 29 4 0 p.m.	82·0	54·0	31·0	28·0	51·0	cir., st.	6	18° South.
5 0	80·8	49·2	32·0	31·6	48·8	cir., st.	6	1° North.
6 0	80·0	48·5	32·0	31·5	48·0	cir., st.	6	

SEPTEMBER 1875.

Date and Place of Observation.	Maximum Temperature registered since previous observation.		(c.) Tempe- rature in Shade.	Difference.		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.
	(a.) Black bulb in vacuo.	(b.) Bright bulb.		a. and b.	a. and c.	Nature of.	Amount.	
Discovery Bay:	No. 41.	No. 43.						
Sept. 4 1 0 p.m.	77·0	44·0	23·5	33·0	33·5	cir.	8	16° South.
2 0	77·2	45·0	24·1	32·2	53·1	cir.	8	
3 0	71·0	42·6	23·6	28·4	47·4	cir.	8	
4 0	68·0	41·6	—	26·4	—	cir.	8	
5 0	67·0	41·0	21·0	26·0	46·0	cir.	8	
6 0	63·0	39·0	22·0	24·0	41·0	cir.	8	
7 0	56·0	35·0	20·8	21·0	35·2	cir.	8	
„ 5 1 0 p.m.	74·5	39·5	23·2	35·0	51·3	Thick fog.		
2 0	74·0	39·6	21·0	34·4	53·0	Thick fog.		
„ 11 Noon	68·6	—	16·0	—	52·6	cir.	4	13° South.
1 0 p.m.	69·0	33·8	17·0	35·2	52·0	cir.	4	
2 30	65·8	33·2	17·2	32·6	48·6	cir.	2	
4 0	61·2	32·0	14·8	29·2	46·4	cir.	2	
5 0	58·2	28·0	14·5	30·2	43·7	cir.	2	
„ 14 - - -	74·0	33·5	29·0	40·5	45·0	st., cir-st.	3 to 9	12° South.
„ 15 - - -	53·0	39·0	34·0	14·0	19·0	st., cir-st.	5 to 10	
„ 22 - - -	54·0	23·0	19·0	31·0	35·0	nim., st.	4 to 10	9° South.
„ 23 - - -	55·0	30·0	22·0	25·0	33·0	st., nim.	4 to 7	
„ 24 - - -	49·0	25·5	17·5	23·5	31·5	st.	4 to 7	8° South.
„ 25 - - -	53·0	24·5	17·0	23·5	36·0	st., cir.	4 to 6	
„ 26 - - -	19·0	11·0	8·0	8·0	9·0	st., cir.	6 to 7	7° South.
„ 27 - - -	27·5	15·0	13·0	12·5	14·5	st.	6 to 7	
„ 28 - - -	37·5	17·0	13·0	20·5	24·5	st., nim.	6 to 7	
„ 29 - - -	25·0	16·0	13·0	9·0	12·0	st., nim.	7 to 10	6° South.
„ 30 - - -	22·0	14·0	13·0	8·0	9·0	st.	6 to 7	

OCTOBER 1875.

Date and Place of Observation.	Maximum Temperature registered since previous observation.		(c.) Temperature in shade.	Difference.		Clouds.		Altitude of the Sun above the South horizon to the nearest degree.
	(a.) Black bulb in vacuo.	(b.) Bright bulb.		a. and b.	a. and c.	Nature of.	Amount.	
Discovery Bay:	No. 41.	No. 43.						
Oct. 1	22·8	15·0	13·0	7·8	9·8	st. nim.	6 to 10	5°
" 2	21·0	17·0	15·0	4·0	6·0	st. nim.	7 to 10	
" 3	23·0	18·0	14·0	5·0	9·0	st. nim.	6 to 10	
" 4	28·0	17·5	17·0	10·5	11·0	st. nim.	6 to 8	4°
" 5	13·0	12·2	—	0·8	—	st. nim.	6 to 10	
" 6	21·0	12·3	—	8·7	—	nim.	10	
" 7	26·0	24·6	24·2	1·4	1·8	nim.	10	3°
" 8	19·0	18·2	17·8	0·8	1·2	nim.	7 to 10	
" 9	11·0	11·0	11·0	0·0	0·0	st. nim.	3 to 8	2°
" 10	—	—	—	—	—	—	—	
" 11	23·0	10·0	10·0	13·0	13·0	st. nim.	4 to 10	

After the 14th of October the sun did not rise above the southern horizon.

MARCH 1876.

Discovery Bay:		No. 41.	No. 43.	No. 237.					
March 23	11 0 a.m.	+26·5	-12·0	-25·0	38·5	51·5	—	—	
	Noon	+31·5	-7·5	-26·0	39·0	37·5	cir.	4	9°
	1 0 p.m.	+34·0	-6·5	-26·0	40·5	60·0	cir.	4	
	2 0	+30·0	-10·0	-26·0	40·0	56·0	cir.	4	
" 24	10 0 a.m.	+16·0	-18·0	-30·0	34·0	46·0	cir.-st.	0 to 4	
	11 0	+28·0	-12·0	-28·0	40·0	56·0	none	0	
	Noon	+31·0	-9·0	-25·5	40·0	56·5	none	0	10
	1 0 p.m.	+34·0	-9·8	-27·0	43·8	61·0	none	0	
	2 0	+33·0	-11·5	-27·0	44·5	60·0	none	0	
	2 30	+28·0	-11·5	-27·0	39·5	55·0	none	0	
	4 0	+25·2	-12·5	-26·0	37·7	51·2	none	0	
	5 0	+10·6	-18·0	-26·5	28·6	37·1	st.	4	
" 25	10 0 a.m.	-1·0	-25·0	-33·0	24·0	32·0	st., cir.	0 to 4	
	11 0	+24·0	-13·0	-30·5	37·0	54·5	st.	2	
	Noon	+28·8	-13·0	-31·0	41·8	59·8	st.	2	
	1 0 p.m.	+33·0	-9·0	-29·0	42·0	62·0	st.	4	
	2 0	+32·0	-5·0	-29·8	37·0	61·8	st.	4	
	2 30	+27·5	-12·0	-29·0	39·5	56·5	st.	4	
	4 0	+27·0	-11·5	-30·0	38·5	57·0	st.	4	
	5 0	+12·0	-17·5	-23·0	29·5	35·0	st.	3	
" 26	11 0 a.m.	+39·0	-4·0	-23·0	43·0	62·0	none	0	11°
		No. 41.	No. 43.	No. 237A.					
" 27	Noon	+31·5	-7·6	-25·0	39·1	56·5	st., cir.	2 to 4	11°
	1 0 p.m.	+38·3	-4·0	-25·0	42·3	63·3	st.	4	
	2 0	+39·0	-4·6	-24·5	43·6	63·5	st.	4	
	2 30	+35·5	-7·0	-24·5	42·5	60·0	st.	4	
	4 0	+34·0	-6·0	-23·0	40·0	57·0	st.	4	
" 28	10 0 a.m.	+35·0	-5·0	-22·0	40·0	57·0	nim., st.	4 to 10	
	11 0	+32·5	-5·0	-22·0	37·5	54·5	st.	4	
	Noon	+40·0	-4·0	-22·5	44·0	62·5	st.	4	
	1 0 p.m.	+39·5	-4·0	-24·0	43·5	63·5	cir.	3	
	2 0	+35·5	-7·5	-26·0	43·0	61·5	cir.	3	
	2 30	+32·5	-8·5	-24·6	41·0	57·1	cir.	3	
	4 0	+31·5	-9·0	-25·0	40·5	56·5	cir.	3	
	5 0	+22·6	-9·2	-24·6	31·8	47·2	st.	3	
	6 0	+12·5	-13·0	-25·5	25·5	38·0	st.	3	

MARCH 1876—continued.

Date and Place of Observation.		Maximum Temperature registered since previous observation.		(c.) Temperature in shade.	Difference.		Clouds.		Altitude of the Sun above the South horizon to the nearest degree.
		(a.) Black bulb in vacuo.	(b.) Bright bulb.		a. and b.	a. and c.	Nature of.	Amount.	
Discovery Bay:		No. 41.	No. 43.	No. 237A.					
March 29	10 0 a.m.	- 3·0	-16·5	-20·0	13·5	17·0	cir., nim.	3 to 10	12° Sun shining.
	11 0	- 1·5	-15·0	-18·5	13·5	17·0	nim.	10	
	Noon	+ 1·5	-13·5	-18·5	15·0	20·0	nim.	10	
	1 0 p.m.	+ 7·0	-12·0	-17·5	19·0	24·5	st.	4	
	2 0	+41·6	+ 0·5	-18·5	41·1	60·1	st.	4	
	2 30	+38·6	- 3·5	-20·0	42·1	58·6	st.	4	
	4 0	+37·0	- 2·5	-19·8	39·5	56·8	st.	4	
	5 0	+15·0	-11·0	-20·0	26·0	35·0	cir.	4	
" 30	10 0 a.m.	+20·5	-13·0	-35·0	33·5	55·5	nim., st.	3 to 10	12°
	11 0	+28·2	-15·0	-33·0	43·2	61·2	st.	3	
	Noon	+34·5	-13·0	-33·0	47·5	67·5	st.	3	
	1 0 p.m.	+42·0	-10·0	-33·0	52·0	75·0	cir.	3	
	2 0	+38·0	- 9·5	-30·5	47·5	68·5	cir.	3	
	2 30	+34·5	-11·0	-32·5	45·5	67·0	cir.	3	
	4 0	+30·6	-12·3	-30·0	42·9	60·6	cir.	3	
	5 0	+19·5	-18·5	-30·8	38·0	50·3	none	0	

APRIL 1876.

Date and Place of Observation.		Maximum of Radiation, Thermometer read off at midnight.		(c.) Maximum Temperature in shade, between midnight and midnight.	Difference between		Clouds.		Altitude of the Sun above North and South horizons to the nearest degree.
		(a.) Black bulb.	(b.) Bright bulb.		a. and b. Black and bright bulbs.	a. and c. Black bulb and Temperature in shade.	Nature of.	Amount.	
Discovery Bay:		No. 40.	No. 42.	No. 422.					
April	1 - - -	+41·0	- 2·0	-31·0	43·0	72·0	st.	0 to 3	13° South.
"	2 - - -	+40·0	- 4·0	-29·0	44·0	69·0	none	0	14° South.
"	3 - - -	+38·0	- 1·0	-30·0	39·0	68·0	st., cir.	3 to 5	
"	4 - - -	+34·0	- 7·0	-23·0	41·0	57·0	st., nim.	4 to 10	15° South.
"	5 - - -	+42·0	- 5·0	-30·0	47·0	72·0	st., cir., nim.	0 to 10	
"	6 - - -	+40·5	- 1·0	-28·0	41·5	68·5	st., cir.	2 to 4	16° South.
"	7 - - -	+32·0	- 1·0	-29·0	33·0	61·0	cir.-st., st.	3	
"	8 - - -	+59·5	+ 9·5	-19·0	50·0	78·5	st.	0 to 2	On North horizon.
"	9 - - -	+57·8	+ 8·0	-19·0	49·8	76·8	st., cir.	1 to 2	
"	10 - - -	+59·5	+13·0	- 2·0	46·5	61·5	st., nim.	6 to 10	17° South.
"	11 - - -	+40·0	+14·0	+ 6·0	26·0	34·0	st., nim.	4 to 8	
"	12 - - -	+70·0	+17·0	- 2·0	53·0	72·0	st., nim., cir.	2 to 8	1° North.
"	13 - - -	+48·5	+10·0	- 9·0	38·5	57·5	nim., cir.	2 to 9	
"	14 - - -	+52·5	+ 6·0	-10·0	46·5	62·5	st.	8 to 9	18° South.
"	15 - - -	+34·0	- 1·0	-18·5	33·0	52·5	st., nim.	5 to 10	
"	16 - - -	+62·0	+ 5·0	-22·0	57·0	84·0	st.	0 to 4	2° North.
"	17 - - -	+64·0	+ 6·5	-20·0	57·5	84·0	st.	0 to 2	
"	18 - - -	+66·0	+11·0	-15·0	55·0	81·0	st., cir.	0 to 6	19° South.
"	19 - - -	+68·0	+11·0	-13·0	57·0	81·0	st., cir.	0 to 6	
"	20 - - -	+68·5	+12·0	-14·5	56·5	83·0	cir.	0 to 2	3° North.
"	21 - - -	+73·0	+15·0	-12·0	58·0	85·0	cir.-st.	2 to 5	
"	22 - - -	+65·0	+14·0	-12·0	51·0	77·0	st., nim.	3 to 10	4° North.
"	23 - - -	+75·0	+19·0	- 6·0	56·0	81·0	st.	0 to 2	
"	24 - - -	+78·5	+20·0	- 5·5	58·5	84·0	cir.-st.	2 to 4	21° South.
"	25 - - -	+83·0	+21·0	- 1·5	62·0	84·5	cir.-st.	0 to 3	
"	26 - - -	+83·0	+29·0	+ 2·5	54·0	80·5	st., cir.	1 to 3	Sun above the hills at midnight.
"	27 - - -	+89·0	+31·0	+ 9·8	58·0	79·2	cir.	2 to 4	
"	28 - - -	+69·0	+29·0	+12·0	40·0	57·0	nim.	10	6° North.
"	29 - - -	+92·0	+37·0	+13·0	55·0	79·0	nim., st., cir.	4 to 9	
"	30 - - -	+56·0	+24·0	+11·0	32·0	45·0	nim.	10	23° South.

MAY 1876.

Date and Place of Observation.	Maximum of Radiation Thermometer between midnight and midnight.		(c.) Maximum Temperature in shade between midnight and midnight.	Difference between		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.	Reading of Radiation Thermometer at midnight.		(c.) Temperature in shade at midnight.	Difference between:	
	(a.) Black bulb.	(b.) Bright bulb.		α. and β.	α. and γ. Black bulb and Temperature in shade.	Nature of.	Amount.		(a.) Black bulb.	(b.) Bright bulb.		α. and β. Black and bright bulbs.	α. and γ. Black bulb and Temperature in shade.
Discovery Bay:	No. 40.	No. 42.	422 A.						No. 40.	No. 42.	422 A.		
May 1	95°0	31°0	9°5	64°0	85°5	st., nim.	1 to 10	7° North.	- 0°5	- 5°5	- 9°0	5°0	8°5
" 2	90°5	30°0	5°0	60°5	85°5	st.	2 to 5	24° South.	+ 9°0	- 2°0	-12°0	11°0	21°0
" 3	90°0	29°0	4°0	61°0	86°0	st.	0 to 1	—	+11°5	- 6°0	-14°0	17°5	25°5
" 4	87°0	26°5	0°5	60°5	86°5	st., cir.	0 to 1	8° North.	+12°5	- 2°0	-13°0	14°5	25°5
" 5	86°0	27°5	0°0	58°5	86°0	none.	0	25° South.	+ 6°5	- 8°5	-16°0	15°0	22°5
" 6	89°0	30°0	5°0	59°0	84°0	st.	0 to 3	—	+15°5	- 2°5	-11°0	18°0	26°5
" 7	86°5	31°0	6°0	55°5	80°5	st., cir.	1 to 2	—	+36°0	+ 9°0	- 2°3	27°0	33°3
" 8	93°5	34°0	10°5	50°5	83°0	st.	0 to 3	9° North.	+19°0	+ 2°5	- 4°0	16°5	23°0
" 9	98°5	38°0	13°0	60°5	85°5	none.	0	26° South.	+14°0	+ 3°5	- 1°0	10°5	15°0
" 10	100°0	42°0	16°5	58°0	83°5	st.	0 to 3	—	+38°5	+16°0	+ 6°5	22°5	32°0
" 11	105°5	47°8	19°0	57°7	86°5	st., nim.	3 to 10	—	25°0	16°0	11°5	9°0	13°5
" 12	106°0	45°2	18°0	60°8	88°0	nim., st.	3 to 10	10° North.	22°0	6°5	1°5	15°5	20°5
" 13	81°0	34°0	15°0	47°0	69°0	st., cir.	1 to 3	27° South.	56°5	28°6	4°6	32°9	51°0
" 14	105°5	47°0	14°0	58°5	91°5	none.	0	—	—	—	—	—	—
" 15	99°0	44°0	17°0	55°0	82°0	st.	0 to 2	—	61°5	24°0	0°0	37°5	61°5
" 16	100°0	44°0	13°0	56°0	87°0	none.	0	11° North.	57°5	23°5	7°0	34°0	50°5
" 17	101°5	47°0	20°0	54°5	81°5	cir.	0 to 1	28° South.	61°0	28°0	13°8	33°0	47°2
" 18	106°5	52°5	20°5	54°0	77°0	cir.	0 to 1	—	36°0	21°0	15°0	15°0	21°0
" 19	110°0	52°6	31°8	57°4	78°2	st., cir.	0 to 6	—	37°0	23°5	17°0	13°5	20°0
" 20	116°5	55°0	25°8	61°5	90°7	st., nim.	6 to 10	—	34°5	24°5	21°0	10°0	13°5
" 21	69°0	38°0	24°0	31°0	45°0	st.	6 to 8	12° North.	34°0	23°0	17°0	11°0	17°0
" 22	77°0	41°5	26°0	35°5	51°0	nim.	6 to 10	29° South.	43°0	27°0	19°0	16°0	24°0
" 23	119°0	59°0	25°8	60°0	93°7	none.	0	—	61°5	26°5	11°2	35°0	50°3
" 24	106°0	49°5	24°8	56°5	81°2	none.	0	—	60°5	28°5	11°0	32°0	49°5
" 25	107°0	52°8	28°5	51°2	78°5	st., cir.	2 to 7	—	31°5	21°5	16°0	10°0	15°5
" 26	93°5	43°5	30°0	50°0	63°5	cir., st.	7 to 10	13° North.	41°5	20°0	22°5	12°5	19°0
" 27	83°0	44°0	32°2	39°0	50°8	st.	10	30° South.	39°0	27°5	22°0	11°5	17°0
" 28	121°3	60°0	33°6	71°3	87°7	cir.	0 to 7	—	83°0	42°0	20°0	41°0	63°0
" 29	112°5	53°5	28°5	59°0	86°0	cir.-st.	1 to 7	—	63°0	23°5	9°5	39°5	53°5
" 30	108°0	51°0	30°7	57°0	77°3	st.	0 to 2	—	67°0	29°5	8°0	37°5	59°0
" 31	93°0	44°5	24°0	48°5	69°0	st., cir.	0 to 10	—	40°5	20°0	19°0	14°5	21°5

JUNE 1876.

Discovery Bay:	No. 40.	No. 42.	No. 422.						No. 40.	No. 42.	No. 422.		
June 1	81°5	48°0	30°5	33°5	51°0	nim., st.	1 to 10	—	46°0	32°5	27°0	13°5	19°0
" 2	91°5	54°0	38°0	37°5	53°5	nim., cir.	7 to 10	14° North.	54°0	45°0	33°6	9°0	20°4
" 3	116°5	59°0	34°0	57°5	82°5	nim., cir.	4 to 9	31° South.	42°0	31°5	28°0	10°5	16°0
" 4	122°5	62°5	30°0	60°0	92°5	nim., cir.	0 to 10	—	74°0	39°0	20°0	35°0	54°0
" 5	113°0	60°0	34°0	53°0	79°0	none.	0	—	70°5	35°0	19°0	35°5	51°5
" 6	128°0	68°0	34°0	60°0	94°0	st., cir.	3 to 7	—	82°5	45°5	26°5	37°0	56°0
" 7	112°5	62°5	36°0	50°0	76°5	st., cir.	0 to 7	—	77°0	43°0	27°0	34°0	50°0
" 8	114°0	62°5	37°0	51°5	77°0	none.	0	—	62°5	—	—	—	—
" 9	97°0	54°0	37°0	43°0	60°0	st., cir.	0 to 10	—	87°5	52°5	32°0	35°0	55°5
" 10	112°0	61°0	32°3	51°0	51°0	st., cir.	0 to 7	—	42°5	34°0	29°0	8°5	13°5
" 11	67°5	44°0	32°3	23°5	23°5	nim.	10	—	41°0	32°5	28°3	8°5	12°7
" 12	105°0	62°0	36°3	43°0	68°7	nim., cir.	7 to 10	15° North.	40°0	32°5	29°6	7°5	10°4
" 13	101°5	59°0	37°5	42°5	64°0	st., cir.	2 to 7	—	39°0	29°5	25°5	9°5	13°5
" 14	91°5	51°5	35°0	40°0	56°5	nim., cir.	2 to 10	—	35°0	26°8	24°0	8°5	11°0
" 15	105°0	60°0	35°6	45°0	69°4	nim., cir.	4 to 10	—	76°0	43°0	27°0	33°0	49°0
" 16	166°0	59°0	35°0	47°0	71°0	nim., st., cir.	0 to 10	—	41°0	34°0	30°5	7°0	10°5
" 17	91°5	51°5	38°0	40°0	53°5	nim., cir.	3 to 10	—	67°0	39°0	28°2	23°0	33°8
" 18	95°5	73°0	32°5	22°5	63°0	cir.	0 to 3	—	73°0	41°0	27°0	32°0	46°0
" 19	72°0	41°0	29°0	31°0	43°0	st.	10	—	39°0	31°5	25°0	7°5	11°0
" 20	93°5	50°0	32°0	43°5	61°5	st.	3 to 10	31° South.	48°0	31°0	25°5	12°0	17°5
" 21	60°5	48°0	34°5	23°5	32°0	nim., cir.	6 to 10	—	40°0	34°4	31°4	5°6	8°6
" 22	102°5	55°0	35°4	47°5	67°1	cir.	2 to 7	—	73°0	46°5	34°5	26°5	38°5
" 23	103°5	50°0	37°5	47°5	66°0	st.	2 to 5	—	67°0	44°0	32°0	23°0	35°0
" 24	106°4	68°5	39°4	47°0	67°0	st., cir.	4 to 7	—	71°0	46°0	36°2	25°0	34°8
" 25	103°0	68°0	41°0	45°0	62°0	st., cir.	4 to 7	—	50°0	41°0	36°5	9°0	13°5
" 26	106°5	60°5	40°2	45°0	65°3	st., cir.	4 to 10	—	41°5	36°0	34°5	5°5	7°0
" 27	83°5	63°5	39°5	30°0	44°0	nim., cir.-st.	5 to 10	—	44°5	37°5	35°2	7°0	9°3
" 28	98°0	65°5	40°0	41°5	58°0	cir.	6 to 7	—	91°0	50°5	34°5	40°5	56°5
" 29	100°0	55°0	35°5	45°0	64°5	st., cir.	6 to 10	16° North.	77°0	44°0	31°5	33°0	45°5
" 30	78°0	44°0	35°3	34°0	42°7	st., cir.	7 to 10	31° South.	38°0	34°0	33°2	4°0	4°8

JULY 1876.

Date and Place of Observation.		(a.) Maximum of Black bulb Radiation Thermometer read off at midnight.	(c.) Maximum Temperature in the shade, read off at midnight.	Difference between Black bulb and Temperature in shade. a. and c.	Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.
					Nature of.	Amount. 0 to 10.	
		No. 40.	°	°	°		
Discovery Bay:							
July	1 - - -	103·0	40·3	62·7	st., cir.	2 to 7	
"	2 - - -	100·0	41·0	59·0	st., cir.	0 to 7	
"	3 - - -	98·2	39·6	58·6	st.	0 to 6	
"	4 - - -	76·5	35·0	41·5	st., cir.	4 to 10	
"	5 - - -	105·5	37·0	68·5	nim., st.	7 to 10	31° South.
"	6 - - -	91·0	36·0	55·0	nim., st.	7 to 10	14° North.
"	7 - - -	70·0	37·5	32·5	nim.	10	
"	8 - - -	95·0	38·0	57·0	nim., st., cir.	7 to 10	
"	9 - - -	99·5	44·3	55·2	st., nim., cir.	4 to 10	
"	10 - - -	101·5	46·3	55·2	st., cir.	4 to 7	
"	11 - - -	78·0	44·0	34·0	nim., cir.	7 to 10	
"	12 - - -	97·5	40·0	57·5	st., cir.	0 to 7	
"	13 - - -	106·0	41·0	65·0	st., cir.	4 to 8	30° South.
"	14 - - -	78·0	38·0	40·0	nim., st., cir.	1 to 10	13° North.
"	15 - - -	87·0	36·0	51·0	nim., st., cir.	6 to 10	
"	16 - - -	95·0	37·0	58·0	st.	4 to 10	
"	17 - - -	84·0	39·2	44·8	st., nim., cir.	0 to 10	
"	18 - - -	98·0	36·5	61·5	st., nim., cir.	4 to 10	
"	19 - - -	54·5	36·0	18·5	nim.	10	29° South.
"	20 - - -	60·0	41·0	19·0	nim.	10	12° North.
"	21 - - -	93·0	45·0	48·0	nim., st., cir.	3 to 10	
"	22 - - -	63·0	43·0	20·0	nim.	10	
"	23 - - -	72·0	41·0	31·0	nim., cir.	7 to 10	
"	24 - - -	104·0	42·0	62·0	nim., st., cir.	4 to 10	28° South.
"	25 - - -	97·0	42·0	55·0	st., cir.	4 to 8	11° North.
"	26 - - -	97·5	41·5	56·0	nim., cir.	7 to 10	
"	27 - - -	94·0	42·0	52·0	cir.	7	
"	28 - - -	92·0	41·5	50·5	st., cir.	4 to 7	27° South.
"	29 - - -	92·0	43·5	48·5	st., cir.	4 to 7	10° North.
"	30 - - -	91·0	40·0	51·0	nim., cir.	7 to 10	
"	31 - - -	95·0	42·5	52·5	nim., st., cir.	4 to 9	26° South.

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Solar Radiation, H.M.S. "Alert," 1875-1876.

In the observations for Solar Radiation, the date of the observation is expressed in civil time, and in that manner differs from the other Meteorological observations.

SEPTEMBER 1875.

Date and Place of Observation.	Maximum Temperature between 9.30 a.m. and 3.30 p.m.			Difference.		Clouds.		Altitude of the Sun above the South horizon to the nearest degree.
	(a.) Black bulb.	(b.) Bright bulb.	(c.) Temperature in shade.	a. and b.	a. and c.	Name.	Amount.	
	No. 38.	No. 37.	No. 421A.					
Floeberg Beach :								
Sept. 26 - - -	+ 15·0	7·2	6·0	7·8	9·0	st.	2	6°
" 27 - - -	23·5	12·2	16·0	11·3	7·5	cir.-st.	1	6°
" 28 - - -	30·0	14·1	10·0	15·9	20·0	misty	10	Occasional sunshine.
" 29 - - -	12·0	12·2	12·0	—	—	st.	10	5°
" 30 - - -	21·5	15·1	13·5	6·4	8·0	nim.	10	Occasional sunshine.

OCTOBER 1875.

Oct. 1 - - -	20·0	10·2	10·0	9·8	10·0	cum.	10	Occasional sunshine.
" 2 - - -	17·5	13·2	12·3	4·3	5·2	misty	10	4°
" 3 - - -	23·0	20·1	19·0	2·9	4·0	nim.	10	
" 4 - - -	15·0	13·6	11·0	1·4	4·0	nim.	5 to 10	
" 5 - - -	15·3	13·6	12·6	1·7	2·7	nim.	10	3°
" 6 - - -	16·3	16·4	15·0	—	1·3	nim.	10	2°·5

The Sun did not rise above the Southern horizon after the 12th October.

MARCH 1876.

Date and Place of Observation.	Maximum Temperature between 9.0 a.m. and 9.0 a.m. of the previous day.			Difference.		Clouds.		Altitude of the Sun above the South horizon to the nearest degree.
	(a.) Black bulb.	(b.) Bright bulb.	(c.) Temperature in shade.	a. and b.	a. and c.	Name.	Amount.	
	No. 38.	No. 37.	No. 421A, 419A.					
Floeberg Beach :								
	The Sun appeared above the South horizon on the 1st March, but the mercury in the thermometers remained frozen until the 11th.							
March 11 - - -	- 9·8	Frozen	-55·5	—	45·7	cum.	0 to 2	4°
" 12 - - -	- 6·0	Frozen	—	—	—	cum.	0 to 5	
" 13 - - -	-19·5	-24·5	-25·0	5·0	6·0	nim.	4 to 10	
" 14 - - -	—	—	—	—	—	nim.	8 to 10	5°
" 15 - - -	—	—	—	—	—	st., nim.	6 to 10	
" 16 - - -	+30·0	- 1·7	- 9·5	31·7	39·5	cum., st., nim.	2 to 10	6°
" 17 - - -	+41·0	+ 5·3	- 8·0	34·7	49·0	cum.-st.	0 to 7	
" 18 - - -	—	—	-11·0	—	—	cir.-st., st.	0 to 6	
" 19 - - -	+11·0	—	-25·0	—	36·0	st.	0 to 3	7°
" 20 - - -	+12·4	—	-18·2	—	30·6	cum.-st., st.	1 to 7	
" 21 - - -	+31·8	+17·1	-30·8	14·7	62·6	cum.-st., st.	1 to 7	8°
" 22 - - -	+35·0	-19·6	-22·6	54·6	57·6	cum.-st., cir.-st., nim.	2 to 10	
" 23 - - -	+30·0	- 7·6	-19·8	37·6	49·8	cum., cir.-st.	2 to 10	
" 24 - - -	+38·0	- 6·7	-19·5	44·7	57·5	cum., cir.	3 to 8	9°
" 25 - - -	+32·5	-16·6	-28·0	49·1	60·5	cir.-st., st.	0 to 7	
" 26 - - -	+24·0	-17·6	-26·0	41·6	50·0	cir.-st., st.	0 to 9	10°
" 27 - - -	+42·0	- 9·6	—	51·6	—	cir.-st., cum-st.	2 to 8	
" 28 - - -	+37·0	- 7·6	-17·6	44·6	54·6	cir.-st., st., nim.	2 to 10	
" 29 - - -	—	—	—	—	—	cum.-st., nim.	4 to 10	11°
" 30 - - -	+29·0	-10·6	-22·2	39·6	51·2	cum., nim.	3 to 10	
" 31 - - -	+40·0	- 9·4	-17·0	49·4	57·0	cum., cir.-st.	0 to 4	12°

APRIL 1876.

Date, Place, and Hour of Observation.		Maximum Temperature registered since previous observations.			Difference.		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.
		(a.) Black bulb.	(b.) Bright bulb.	(c.) Tempe- rature in shade.	a. and b.	a. and c.	Name.	Amount.	
Floeberg Beach:		No. 38.	No. 37.	No. 421A, 419A.					
April	1 9 30 a.m.	+35.0	- 8.9	-22.0	43.9	57.0	cir.-st., cum.	3 to 9	
"	2 "	+37.0	-11.5	-22.0	48.5	59.0	cir.-st., st.	2 to 4	
"	3 "	+37.3	-11.0	-26.0	48.3	63.3	cir., cir.-st.	2 to 3	13° South.
"	4 "	+32.2	-10.5	-19.0	42.7	51.2	cir.-st., st.	1 to 2	
"	5 "	45.8	- 5.8	-22.0	51.6	67.8	st.	1	
"	6 "	40.0	- 9.5	-21.1	49.5	61.1	st.	1	14° South.
"	7 "	48.3	- 2.7	-20.0	51.0	68.3	cum.-st., st.	0 to 5	
"	8 "	52.0	- 2.7	-19.0	54.7	71.0	cum.-st., st.	0 to 5	
"	9 "	64.0	+ 5.3	- 2.0	58.7	66.0	cir.-st.	1	15° South. On North horizon.
"	10 "	50.0	+ 2.1	-14.0	47.9	64.0	cir.-st., nim.	0 to 6	
"	11 "	41.0	—	- 1.5	—	42.5	cum.-st., nim.	1 to 4	16° South. 1° North.
"	12 "	+60.0	+11.2	+ 2.0	48.8	58.0	cir.-st., st.	2 to 5	
"	13 "	+46.5	+ 2.8	- 5.1	43.7	51.6	—	—	
"	14 "	+55.5	+ 0.8	-17.5	54.7	73.0	cum.-st., cum.	2 to 6	17° South. 2° North.
	8 30 p.m.	+52.6	0.0	-17.5	52.6	70.1	cum.-st., cum.	4 to 6	
"	15 9 30 a.m.	26.0	-11.0	-16.5	37.0	42.5	cum.-st.	4	
	8 30 p.m.	42.6	- 6.8	-18.5	49.4	61.1	misty	10	
"	16 9 30 a.m.	23.0	-15.4	-24.9	38.4	47.9	misty	10	
	9 15 p.m.	44.5	-13.4	-26.4	57.9	70.9	misty	2 to 10	
"	17 9 30 a.m.	48.0	- 7.6	- 6.6	55.6	54.6	misty	0 to 10	3° North.
	8 30 p.m.	52.2	- 2.7	-12.5	54.9	64.7	misty	0 to 10	18° South.
"	18 9 30 p.m.	52.2	+ 0.3	- 4.9	51.9	57.1	misty	0 to 10	
	8 30 a.m.	64.5	+ 5.2	-11.5	59.3	76.0	misty	0 to 10	
"	19 9 30 a.m.	54.3	- 4.0	-16.1	58.3	70.4	cir.	2	
	8 30 p.m.	57.6	- 1.7	-23.7	59.3	81.3	misty	0 to 10	
"	20 10 0 a.m.	64.5	+ 1.8	-13.7	66.3	78.2	misty	0 to 10	4° North.
	8 30 p.m.	77.5	+10.2	- 8.2	67.3	85.7	misty	0 to 10	19° South.
"	21 9 30 a.m.	24.5	- 9.5	- 3.6	34.0	28.1	misty	0 to 10	
	8 30 p.m.	20.2	- 9.5	-10.5	29.7	30.7	misty	0 to 10	
"	22 9 30 a.m.	26.5	- 3.1	-11.8	29.6	38.3	misty	0 to 10	
	8 30 p.m.	36.0	- 1.7	- 9.8	37.7	45.8	misty	0 to 10	
"	23 9 30 a.m.	59.0	+ 5.5	-15.7	53.5	74.7	cir.-st.	1	5° North.
	8 30 p.m.	71.0	+10.7	- 6.1	60.3	77.1	cir.-st.	0 to 1	20° South.
"	24 9 30 a.m.	59.5	- 1.2	-18.4	60.7	77.9	cir.-st.	0 to 2	
	8 30 p.m.	67.0	—	-16.0	—	83.0	cir.-st.	2	
"	25 9 30 a.m.	61.0	+ 5.7	-11.5	55.3	72.5	cir.-st.	1	
	8 30 p.m.	69.0	- 9.2	- 7.6	51.8	71.1	cum.-st.	2	
"	26 9 30 a.m.	63.5	+11.7	- 7.6	51.8	71.1	cum.-st.	1	6° North.
	8 30 p.m.	—	—	- 1.8	—	—	cir.-st.	1 to 3	21° South.
"	27 9 30 a.m.	75.5	+24.5	+21.6	41.0	53.9	cir.-st., cum.	2	
	8 30 p.m.	79.5	19.1	+17.1	60.4	62.4	cir.-st., cum.	1	
"	28 9 30 a.m.	68.0	+18.6	+ 8.2	49.4	59.8	cum.	3	
	8 30 p.m.	59.0	17.6	+ 8.2	41.4	50.8	overcast.	10	
"	29 9 30 a.m.	82.0	+26.5	+ 8.2	55.5	73.8	overcast.	10	7° North.
	8 30 p.m.	94.0	32.0	+17.1	62.0	76.9	cum.-st., cum.	3 to 5	32° South.
"	30 9 30 a.m.	40.0	+13.2	+ 5.3	27.8	34.7	cir.-st.	2	
	8 45 p.m.	49.0	20.1	+10.2	28.9	38.8	overcast.	10	

MAY 1876.

Date, Place, and Hour of Observation.		Maximum Temperature registered since previous observations.			Difference.		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.
		(a.) Black bulb.	(b.) Bright bulb.	(c.) Tempe- rature in shade.	a. and b.	a. and c.	Name.	Amount.	
		No. 38.	No. 37.	No. 419A.	°	°			
Floeberg Beach: May 1	9 30 a.m.	—	+24.6	+ 3.9	—	—	overcast	10	8° North. 23° South. 9° North. 24° South. 10° North. 25° South. 11° North. 26° South. 12° North. 27° South. 14° North. 29° South.
	8 30 p.m.	+76.9	20.6	+ 5.9	56.3	71.0	cir.-st.	2	
" 2	9 30 a.m.	42.0	8.1	+ 0.5	33.9	41.5	overcast	10	
	8 30 p.m.	70.9	19.6	- 1.1	51.3	72.0	cir.-st.	5	
" 3	9 30 a.m.	46.4	9.6	+ 1.3	36.8	45.1	cir.-st.	4	
	8 30 p.m.	44.5	10.1	- 3.1	34.4	47.6	overcast	10	
" 4	9 30 a.m.	42.0	8.6	- 4.6	33.4	46.6	cir.-st.	3 to 10	
	8 30 p.m.	79.4	16.1	- 3.3	63.3	82.7	cir.-st.	2 to 3	
" 5	9 30 a.m.	78.9	15.9	+ 6.0	58.0	67.9	cir.-st.	2	
	8 30 p.m.	77.4	16.1	- 4.2	61.3	81.6	cir.-st.	3	
" 6	9 30 a.m.	80.4	23.9	+ 4.3	56.5	76.1	cir.-st.	2	
	8 30 p.m.	84.4	25.6	+ 4.3	58.8	80.1	st.	2	
" 7	9 30 a.m.	—	26.1	+ 9.7	—	—	cir.-st.	2	
	8 30 p.m.	81.9	27.1	+11.2	54.8	70.7	cir.-st., st.	2 to 6	
" 8	9 30 a.m.	79.9	22.1	+ 8.3	57.8	71.6	st.	1 to 6	
	8 30 p.m.	80.9	22.1	+11.0	58.8	69.9	st.	1	
" 9	9 30 a.m.	89.9	27.1	- 5.6	62.8	95.5	cir.-st.	3	
	8 30 p.m.	85.9	27.1	9.2	58.8	76.7	cir.-st.	1	
" 10	9 30 a.m.	—	—	—	—	—	—	—	
	8 30 p.m.	—	—	—	—	—	—	—	
" 11	9 30 a.m.	55.9	21.1	13.3	34.8	42.6	st., misty	1 to 10	
	8 30 p.m.	60.0	24.1	12.7	47.3	47.3	misty	10	
" 12	9 30 a.m.	73.9	26.6	13.2	47.3	60.7	misty	10	
	8 30 p.m.	90.4	31.1	13.2	77.2	77.2	overcast	10	
" 13	9 30 a.m.	91.9	32.1	3.8	59.8	88.1	cir., cum.-st.	2 to 5	
	8 30 p.m.	55.9	25.1	12.2	30.8	43.7	cum.-st.	5	
" 14	9 30 a.m.	—	—	—	—	—	—	—	
	8 30 p.m.	—	—	—	—	—	—	—	
" 15	9 30 a.m.	+54.4	+21.1	+12.2	33.3	42.2	overcast	10	
	8 30 p.m.	61.9	24.6	16.7	37.3	45.2	overcast	10	
" 16	9 30 a.m.	56.9	20.1	12.2	36.8	44.7	overcast	10	
	8 30 p.m.	75.4	21.3	11.7	54.1	63.7	overcast	10	
" 17	9 30 a.m.	89.9	35.6	14.0	54.3	75.9	cum.	3 to 5	
	8 30 p.m.	—	37.6	18.1	—	—	cum., cir.	1 to 5	
" 18	9 30 a.m.	89.4	38.1	19.1	51.3	70.3	cir.-st.	2	
	8 30 p.m.	96.4	40.2	23.1	56.2	73.3	cir.-st.	3	
" 19	9 30 a.m.	83.4	34.1	28.5	54.9	54.9	cir., cir.-st.	2 to 3	
	8 30 p.m.	85.9	37.6	22.9	48.3	63.0	cir.-st.	3	
" 20	9 30 a.m.	91.9	36.1	20.1	55.8	71.8	cir., cir.-st.	3 to 5	
	8 30 p.m.	60.4	50.1	19.1	30.3	41.3	overcast	10	
" 21	9 30 a.m.	64.4	32.6	20.1	31.8	44.3	overcast	10	
	8 30 p.m.	70.9	36.1	26.6	34.8	44.3	overcast	10	
" 22	9 30 a.m.	62.9	32.4	28.5	30.5	34.4	overcast,	10 to 6	
	8 30 p.m.	64.4	34.6	28.0	29.8	36.4	cir.-st. overcast	10	
" 23	9 30 a.m.	65.4	30.1	21.6	35.3	43.8	overcast,	6 to 10	
	8 30 p.m.	66.9	30.6	22.1	36.3	44.8	cir.-st.	1 to 6	
" 24	9 30 a.m.	69.4	29.4	16.6	40.0	52.8	cir.-st.	1 to 10	
	8 30 p.m.	91.9	35.9	19.1	56.0	72.8	cir.-st.	1 to 3	
" 25	9 30 a.m.	97.9	38.1	21.6	59.8	76.3	cir.-st.	1 to 3	
	8 30 p.m.	99.4	39.7	21.1	59.7	78.3	cir.-st.	1 to 4	
" 26	9 30 a.m.	68.4	34.1	24.1	34.3	44.3	cir.-st.,	0 to 4	
	8 30 p.m.	83.9	39.7	24.1	44.2	59.8	overcast. cir.-st.	0 to 7	
" 27	9 30 a.m.	69.4	35.4	24.6	34.0	44.8	misty	10	
	8 30 p.m.	83.9	40.2	26.6	43.7	57.3	Misty, st.	1 to 10	
" 28	9 30 a.m.	64.4	34.1	28.0	30.3	36.4	st., cir.-st.	1 to 3	
	8 30 p.m.	80.4	—	26.5	—	53.9	cir.-st.	1 to 3	
" 29	9 30 a.m.	114.9	45.2	24.6	69.7	90.3	cir.-st., st.	2 to 3	
	8 30 p.m.	122.9	47.7	22.1	75.2	100.8	cir.-st., st.	2 to 3	
" 30	9 30 a.m.	97.4	33.1	16.1	64.8	81.3	cir.-st., st.	2 to 3	
	8 30 p.m.	76.0	32.9	18.6	43.1	57.4	cir.-st., st.	1 to 2	
" 31	9 30 a.m.	69.1	33.1	18.9	36.0	50.2	overcast	1 to 10	
	8 30 p.m.	95.7	46.2	27.8	49.5	67.9	cir.-st.	2 to 7	

JUNE 1876.

Date, Place, and Hour of Observation.		Maximum Temperature registered since previous observation.			Difference.		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.	
		(a.) Black bulb.	(b.) Bright bulb.	(c.) Tempe- rature in shade.	a. and b.	a. to c.	Name.	Amount.		
		No. 38.	No. 37.	No. 419A.						
Floeberg Beach :										
June	1	9 30 a.m.	63·4	36·6	27·8	26·8	35·6	overcast	10	
		8 30 p.m.	—	—	—	—	—	—	—	
"	2	9 30 a.m.	—	—	35·5	—	—	—	—	
		8 30 p.m.	77·4	43·2	34·8	34·2	42·6	overcast	10	
"	3	9 30 a.m.	85·8	45·7	31·2	40·1	54·6	overcast	10	
		8 30 p.m.	92·0	48·0	34·8	44·0	57·2	st.	2 to 8	
"	4	9 30 a.m.	78·0	42·7	29·5	35·3	48·5	st.	8	
		8 30 p.m.	103·0	52·2	35·8	51·8	67·2	st.	6 to 8	
"	5	9 30 a.m.	97·8	49·2	28·5	48·6	69·3	cum.-st.cir.-st.	2 to 7	15° North.
		8 30 p.m.	105·0	47·7	23·6	57·3	81·4	cir.-st.	1 to 2	30° South.
"	6	9 30 a.m.	105·0	—	24·2	—	80·8	cir.-st.	2	
		8 30 p.m.	115·5	52·2	25·0	63·3	90·5	cir.-st.	1 to 3	
"	7	9 30 a.m.	102·8	46·7	28·0	56·1	74·8	cir.-st.	1	
		8 30 p.m.	107·0	48·2	26·0	58·8	81·0	cir.-st., st.	1 to 8	
"	8	9 30 a.m.	89·0	47·2	30·0	41·8	59·0	st.	8 to 9	
		8 30 p.m.	—	—	—	—	—	—	—	
"	9	9 30 a.m.	—	—	—	—	—	—	—	
		8 30 p.m.	82·5	47·2	35·0	35·3	47·5	overcast	10	
"	10	9 30 a.m.	92·0	47·2	35·0	44·8	57·0	st.	8 to 9	
		8 30 p.m.	95·5	47·7	27·5	47·8	68·0	st.	8 to 10	
"	11	9 30 a.m.	70·2	40·1	28·0	30·1	42·2	st.	8 to 10	
		8 30 p.m.	77·5	42·0	33·0	35·5	44·5	misty	10	
"	12	9 30 a.m.	97·5	51·2	36·0	46·3	61·5	overcast	10	16° North.
		8 30 p.m.	102·0	52·2	38·5	49·8	68·5	nim., st.	8 to 10	31° South.
"	13	9 30 a.m.	107·8	53·0	33·8	54·8	74·0	st.,cir.-cum.	7 to 10	
		8 30 p.m.	129·0	57·0	40·0	72·0	89·0	cir.-cum.	5 to 8	
"	14	9 30 a.m.	—	—	—	—	—	—	—	
		8 30 p.m.	—	—	—	—	—	—	—	
"	15	9 30 a.m.	—	—	—	—	—	—	—	
		8 30 p.m.	—	—	—	—	—	—	—	
"	16	9 30 a.m.	113·0	53·7	39·9	73·1	73·1	cir.-st.	1 to 2	
		8 30 p.m.	110·5	67·6	38·4	42·9	72·1	cir.-st.	0 to 6	
"	17	9 30 a.m.	83·0	45·2	32·0	37·8	51·0	cir.-st., st.	2 to 8	
		8 30 p.m.	—	—	—	—	—	cir.-st., st.	2 to 8	
"	18	9 30 a.m.	104·0	52·2	39·8	51·8	64·7	cir.-st.	0 to 2	
		8 30 p.m.	109·0	52·7	28·0	56·3	81·0	cir.-st.	2 to 3	
"	19	9 30 a.m.	79·0	38·6	26·5	40·4	52·5	st.	9	
		8 30 p.m.	77·5	41·2	29·5	36·3	48·0	st.	8 to 9	
"	20	9 30 a.m.	116·5	54·2	35·0	62·3	81·5	cum.	3 to 8	
		8 30 p.m.	114·5	53·7	31·0	60·8	83·5	cir.-st., st.	2 to 9	
"	21	9 30 a.m.	114·5	53·2	29·5	61·3	85·0	st., cir.-st.	4 to 9	16° North.
		8 30 p.m.	128·0	62·1	40·7	65·9	87·3	cir.-st., st.	6 to 7	31° South.
"	22	9 30 a.m.	88·0	50·2	39·3	37·8	48·7	st.	5 to 6	16° North.
		8 30 p.m.	102·0	69·1	39·3	32·9	62·7	st.,cir.-cum.	2 to 5	31° South.
"	23	9 30 a.m.	111·0	59·1	37·4	51·9	73·6	cir.-st.	2	
		8 30 p.m.	113·0	60·1	36·9	52·9	76·1	cir.-st.	2 to 4	
"	24	9 30 a.m.	109·0	58·1	39·7	50·9	69·3	cir.-st.	3 to 5	
		8 30 p.m.	—	—	39·7	—	—	—	—	
"	25	9 30 a.m.	—	—	39·7	—	—	—	—	
		8 30 p.m.	—	—	—	—	—	—	—	
"	26	9 30 a.m.	—	Gale	40·2	—	—	—	—	
		8 30 p.m.	—	Gale	39·3	—	—	—	—	
"	27	9 30 a.m.	—	—	43·2	—	—	—	—	
		8 30 p.m.	—	—	39·7	—	—	—	—	
"	28	9 30 a.m.	—	—	36·9	—	—	—	—	
		8 30 p.m.	98·5	52·2	34·0	46·3	64·5	st.	6 to 8	
"	29	9 30 a.m.	76·0	45·2	33·0	30·8	48·0	st., nim.	5 to 10	
		8 30 p.m.	104·0	53·7	35·0	50·8	69·0	st., cir.-st.	1 to 8	
"	30	9 30 a.m.	94·5	49·7	42·2	44·8	52·3	st.	3 to 8	16° North.
		8 30 p.m.	72·0	45·2	45·7	26·8	26·3	st.	8 to 9	31° South.

JULY 1876.

Date, Place, and Hour of Observation.		Maximum Temperature registered since previous observation.			Difference.		Clouds.		Altitude of the Sun above the North and South horizons to the nearest degree.	
		(a.) Black bulb.	(b.) Bright bulb.	(c.) Tempe- rature in shade.	a. and b.	a. and c.	Name.	Amount.		
Floeberg Beach:		Nos. 38, 39.	No. 37.	No. 419A.						
July	1	9 30 a.m. 8 30 p.m.	74.0 82.0	45.9 48.8	43.2 42.7	28.1 33.2	30.8 39.3	cir.-st. cir.-st.	4 to 6 4 to 6	16° North. 31° South.
"	2	9 30 a.m. 8 30 p.m.	— 96.0	52.8 87.2	50.7 42.7	— 8.8	— 53.3	cir.-st. cir.-st.	1 to 5 1 to 2	
"	3	9 30 a.m. 8 30 p.m.	93.0 77.0	50.8 —	45.7 41.2	42.2 —	47.3 35.8	cir.-st. cir., cir.-st.	1 2 to 3	
"	4	9 30 a.m. 8 30 p.m.	74.0 70.0	44.3 43.3	35.0 39.3	29.7 26.7	39.0 30.7	cir.-st. st.	3 to 5 6 to 7	
"	5	9 30 a.m. 8 30 p.m.	94.0 71.0	48.8 44.3	39.8 40.3	45.2 26.7	54.2 30.7	st. st.	6 to 9 8 to 9	
"	6	9 30 a.m. 8 30 p.m.	81.0 99.0	44.8 55.8	39.3 42.7	36.2 43.2	41.7 56.3	st., nim. nim., cir.-st.	8 to 10 4 to 10	15° North. 30° South.
"	7	9 30 a.m. 8 30 p.m.	66.0 79.0	44.8 47.8	40.3 41.3	21.2 31.2	25.7 37.7	st. st.	8 to 9 6 to 10	
"	8	9 30 a.m. 8 30 p.m.	85.5 78.0	48.8 49.8	40.8 42.2	36.7 28.2	44.7 35.8	st. st.	8 to 10 6 to 9	
"	9	9 30 a.m. 8 30 p.m.	94.0 100.0	56.8 59.3	46.7 45.2	37.2 40.7	47.3 54.8	nim., cir. cir.-st.	4 to 6 3 to 5	
"	10	9 30 a.m.	97.5	60.3	46.7	37.2	50.8	cir.-st., st., cum.-st.	2 to 5	
"	11	8 30 p.m.	—	—	47.2	—	—	—	—	
"	12	9 30 a.m. 8 30 p.m.	— 99.0	— 67.7	55.7 42.7	— 31.3	— 56.3	— cir.-st.	— 2 to 5	
"	13	9 30 a.m. 8 30 p.m.	65.5 109.0	49.8 67.7	44.7 49.2	15.7 41.3	20.8 59.8	cum.-st., st. cir.-st., st.	6 3 to 5	
"	14	9 30 a.m. 8 30 p.m.	98.0 101.5	59.8 64.7	57.7 48.7	38.2 36.8	40.3 52.8	cir.-st., cir.-st. cir.-st.	2 to 5 1 to 2	
"	15	9 30 a.m. 8 30 p.m.	64.0 59.0	43.8 39.9	37.8 39.8	26.2 19.1	26.2 19.2	nim. nim., st.	7 to 10 5 to 10	14° North. 29° South.
"	16	9 30 a.m. 8 30 p.m.	88.0 90.0	48.2 50.8	39.8 39.8	48.2 39.2	48.2 50.2	st., cir.-st. cir.-st., st.	5 to 10 4 to 7	
"	17	9 30 a.m. 8 30 p.m.	89.0 95.0	50.3 52.8	46.7 40.8	42.3 42.2	42.3 54.2	st. cir.-st., st.	3 2 to 4	
"	18	9 30 a.m. 8 30 p.m.	— 80.0	— 45.8	— 37.8	— 34.2	— 42.2	— cum., st.	— 7 to 9	
"	19	9 30 a.m. 8 30 p.m.	59.0 63.0	39.9 40.9	39.8 45.7	19.2 22.1	19.2 17.3	st. st.	4 to 6 6 to 8	
"	20	9 30 a.m. 8 30 p.m.	54.0 52.0	38.9 40.9	43.7 46.7	10.3 11.1	10.3 5.3	st., nim. st., nim.	7 to 10 7 to 10	
"	21	9 30 a.m. 8 30 p.m.	59.0 66.0	42.9 47.8	39.8 45.7	19.2 18.2	19.2 20.3	st., nim. st., cum.-st.	5 to 7 6 to 7	13° North. 28° South.
"	22	9 30 a.m. 8 30 p.m.	91.5 74.0	51.8 41.4	42.7 52.7	48.8 32.6	48.8 21.3	nim., cir.-st. cir.-st.	6 to 8 4 to 6	
"	23	9 30 a.m. 8 30 p.m.	— 54.5	— 41.9	51.7 43.7	— 10.8	— 10.8	— nim., st.	— 9 to 10	
"	24	9 30 a.m. 8 30 p.m.	57.0 —	44.9 —	43.7 —	13.3 —	14.3 —	st., cir.-st. —	4 to 9 —	
"	25	9 30 a.m. 8 30 p.m.	— —	— —	43.7 —	— —	— —	— —	— —	
"	26	9 30 a.m. 8 30 p.m.	88.0 72.0	47.8 43.9	40.8 40.8	40.2 31.2	47.2 31.2	st., nim. st., cum.-st.	4 to 9 8 to 9	12° North. 27° South.
"	27	9 30 a.m. 8 30 p.m.	51.0 94.5	39.9 57.8	38.8 48.2	11.1 36.7	12.2 46.3	cum.-st., nim. cum., nim.	8 to 9 6 to 9	
"	28	9 30 a.m. 8 30 p.m.	68.0 100.0	43.9 61.8	44.7 44.7	24.1 38.2	23.3 55.3	cum., nim., st. cum.-st., cir.-cum.	8 to 10 4 to 8	
"	29	9 30 a.m. 8 30 p.m.	94.0 95.0	56.8 56.8	43.7 43.7	37.2 38.2	50.3 51.8	st., nim., cir. cir.-cum., st.	2 to 7 0 to 2	11° North. 26° South.
"	30	Thermometers taken down.								
"	31									

Monthly Abstract of Meteorological Observations, H.M.S. "Discovery," at Discovery Bay and North of Lat. 80° N., 1875-1876.

AUGUST 1875.

Date.	Temperature of Air.			Barometer.			Clouds.		Ozone, 0 to 10.	Hours of Wind.							Max. and Min. Force.	Hours of Weather.						
	Max.	Min.	Mean.	Max.	Min.	Mean.	Name.	Amount. 0 to 10.		Calm.	N.E.	E.	S.E.	S.	S.W.	W.		N.W.	N.	Strong Wind.	b. c.	Over-cast.	Fog.	Snow.
Aug. 1	+38.0	+37.0	+37.78	29.561	29.403	29.470	nim, cir.	10 to 4	3	—	—	—	—	—	—	—	—	—	—	16	8	—	—	2
" 2	37.5	35.0	36.03	596	538	563	nim, cir-st.	1 to 10	2	16	—	—	6	2	—	—	—	—	—	12	12	14	—	2 R.
" 3	39.0	38.0	38.05	615	573	595	st, cir-st.	1 to 7	2	—	—	—	—	4	—	—	—	—	—	24	—	—	—	—
" 4	42.0	37.2	40.20	605	563	584	nim, st.	4 to 9	3	4	—	—	12	8	—	—	—	—	—	12	12	—	—	—
" 5	48.0	37.0	39.83	541	483	511	nim, st.	7 to 9	1	8	4	4	4	—	—	—	—	—	—	4	20	—	—	4
" 6	41.0	34.0	38.92	883	511	695	nim, st, cir-st.	0 to 9	1	—	—	—	—	8	12	—	—	—	—	20	4	—	—	—
" 7	39.0	32.5	33.83	30.085	943	30.028	nim, st.	0 to 9	1	8	—	—	—	—	16	—	—	—	—	16	8	12	—	—
" 8	39.0	33.0	35.62	29.935	877	29.902	nim, cum., cir.	4 to 10	2	24	—	—	—	—	—	—	—	—	—	12	12	—	—	—
" 9	39.0	31.5	35.02	30.121	945	30.028	cir-st.	2 to 9	3	12	—	—	—	—	—	—	—	—	—	16	8	8	—	—
" 10	35.5	28.0	31.82	065	750	29.938	nim, st, cir.	2 to 9	2	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—
" 11	37.0	32.0	34.25	29.919	750	812	nim, cum., cir.	1 to 10	2	20	—	—	—	—	4	—	—	—	—	8	16	4	—	4 R.
" 12	42.0	35.0	37.37	977	784	861	nim, cir.	1 to 10	4	8	4	—	—	—	—	—	—	—	—	20	4	—	—	—
" 13	37.0	32.0	34.80	965	863	919	nim, cir-st.	3 to 10	4	16	—	—	—	—	—	—	—	—	—	20	4	—	—	—
" 14	39.0	32.0	34.70	30.053	965	30.025	cir, cir-st.	2 to 8	2	24	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 15	38.0	34.0	35.83	122	981	051	cir, cir-st.	2 to 3	1	24	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 16	35.0	30.0	32.67	29.922	717	29.801	st, cir-st.	0 to 9	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 17	33.0	31.0	32.17	859	704	774	nim.	8 to 10	2	8	4	8	—	—	—	—	—	—	—	—	24	—	—	8
" 18	36.5	29.0	31.50	899	788	859	nim, cir-st.	1 to 8	3	20	4	—	—	—	—	—	—	—	—	20	4	—	—	—
" 19	35.0	29.0	31.83	765	403	619	nim, cir-st.	6 to 10	2	8	4	—	—	—	—	—	—	—	—	8	16	—	—	—
" 20	32.5	26.5	29.33	613	365	478	nim, cir-st.	5 to 9	2	12	8	—	—	—	—	—	—	—	—	8	16	8	—	—
" 21	29.5	26.5	27.88	795	620	726	nim, cir.	5 to 10	2	4	8	—	—	—	—	—	—	—	—	16	8	—	—	—
" 22	30.8	28.0	29.13	853	815	834	nim, cir-st.	6 to 9	2	6	—	—	12	—	—	—	—	—	—	12	12	—	—	—
" 23	30.8	27.0	28.90	822	595	686	nim, cum., cir-st.	2 to 9	1	—	—	—	—	—	—	—	—	—	—	4	20	—	—	—
" 24	33.0	30.0	31.28	690	453	575	nim, cir-st.	8 to 10	1	4	8	12	—	—	—	—	—	—	—	—	—	—	—	—
" 25	34.0	31.0	27.42	974	787	865	nim.	8 to 10	0	16	—	—	—	—	—	—	—	—	—	—	24	—	—	—
" 26	33.0	28.0	20.15	80.119	30.029	30.080	nim.	8 to 10	1	20	—	—	—	—	—	—	—	—	—	—	24	—	—	—
" 27	29.0	27.0	28.17	045	29.915	29.983	nim, st.	6 to 10	3	24	—	—	—	—	—	—	—	—	—	4	20	4	—	—
" 28	31.0	29.0	29.33	29.863	693	784	nim, cir.	4 to 10	3	24	—	—	—	—	—	—	—	—	—	8	16	4	—	—
" 29	31.0	27.0	29.13	738	668	700	st, cir-st, nim.	4 to 9	2	24	—	—	—	—	—	—	—	—	—	20	4	—	—	—
" 30	31.0	28.0	29.13	839	756	813	st, cir.	4 to 9	3	24	—	—	—	—	—	—	—	—	—	12	12	—	—	—
" 31	+31.0	+26.0	29.27	711	476	626	nim, cir-st.	6 to 10	3	16	—	—	—	—	—	—	—	—	—	16	8	—	—	—
744 hours	+43.0	+26.0	+32.44	80.123	29.365	29.777	—	—	—	422	44	40	32	62	36	40	12	56	—	400	344	74	—	50

SEPTEMBER 1875.

Date.	Temperature of Air.			Barometer.			Clouds.		Ozone, 0 to 10.	Hours of Wind.								Hours of Weather.						
	Max.	Min.	Mean.	Max.	Min.	Mean.	Name.	Amount, 0 to 10.		Calm.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	N.	Strong Wind.	b. c.	Over- cast.	Fog.	Snow.	
																								Inches.
Sept. 1	+33.5	+22.9	+31.50	29.589	29.409	29.504	nim.	7 to 10	4	8	—	4	12	—	—	—	—	—	4	8	16	—	—	
" 2	30.0	19.5	24.67	.451	.403	.431	nim.	7 to 10	4	—	—	4	—	—	20	—	—	—	—	—	8	16	8	12
" 3	27.6	15.4	20.22	.689	.353	.617	nim, cir.	6 to 7	3	12	—	—	—	4	—	—	—	—	—	—	12	12	—	—
" 4	25.2	12.0	19.86	.763	.669	.736	nim, cir, cir-st.	0 to 8	2	4	—	8	—	—	—	—	—	—	—	—	—	24	16	—
" 5	21.0	11.8	17.00	.759	.605	.678	nim, st.	5 to 9	3	4	—	—	—	4	—	—	—	—	—	—	8	16	16	—
" 6	21.5	15.6	18.60	.770	.601	.651	nim, st.	5 to 10	2	8	—	8	—	—	—	—	—	—	—	—	8	16	16	12
" 7	23.4	16.2	18.08	30.001	.903	.995	nim.	6 to 8	—	20	—	—	—	4	—	—	—	—	—	—	4	20	8	4
" 8	23.5	16.1	20.08	29.920	.682	.837	nim, st.	6 to 10	—	8	—	8	—	—	—	—	—	—	—	—	—	—	—	—
" 9	22.8	10.7	20.42	.756	.652	.712	st, nim, cir.	2 to 8	2	8	—	8	—	—	—	—	—	—	—	—	8	16	—	—
" 10	21.8	7.1	19.60	.792	.621	.738	cir, nim.	4 to 8	2	—	—	4	—	—	4	—	—	—	—	—	—	—	—	—
" 11	19.8	4.7	12.43	.469	.398	.412	st, nim, cir.	0 to 6	1	8	—	—	—	—	—	—	—	—	—	—	20	4	—	—
" 12	24.0	4.6	13.25	.523	.365	.455	st, cir.	1 to 6	1	8	—	4	—	—	—	—	—	—	—	—	16	8	—	—
" 13	27.2	20.0	22.42	.605	.475	.585	st, cir-st, cir.	3 to 6	1	—	—	4	—	—	—	—	—	—	—	—	20	4	—	—
" 14	34.0	23.5	26.63	.485	.359	.423	st, cir-st.	4 to 9	1	—	—	4	—	—	—	—	—	—	—	—	24	—	—	—
" 15	34.7	24.6	26.97	.538	.354	.481	nim, st, cir-st.	5 to 10	1	—	—	4	—	—	—	—	—	—	—	—	4	12	12	—
" 16	43.0?	29.0	31.78	.723	.485	.658	st, nim.	6 to 9	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 17	36.8	20.0	33.22	.784	.590	.691	nim, st.	4 to 7	1	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 18	26.0	15.0	24.47	30.352	.989	30.158	nim, st.	6 to 10	2	8	—	—	—	—	—	—	—	—	—	—	4	20	—	—
" 19	26.0	14.0	21.30	.119	30.019	.076	st, cir, nim.	4 to 10	3	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 20	25.2	8.2	22.42	.089	.085	.058	nim, st.	5 to 10	2	20	4	—	—	—	—	—	—	—	—	—	—	—	—	—
" 21	19.0	2.5	11.78	.085	29.861	29.955	nim, st.	4 to 10	1	12	12	—	—	—	—	—	—	—	—	—	4	20	—	—
" 22	22.0	9.5	14.43	29.731	.424	.520	nim, st.	4 to 8	2	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 23	18.0	8.0	11.75	.892	.510	.630	nim, st.	4 to 7	1	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 24	17.0	5.0	12.50	.594	.509	.539	cir-st.	4 to 6	—	16	4	—	—	—	—	—	—	—	—	—	—	—	—	—
" 25	15.0	2.4	8.60	.709	.499	.582	cir-st.	4 to 7	3	16	8	—	—	—	—	—	—	—	—	—	—	—	—	—
" 26	14.0	7.0	9.78	.989	.726	.871	st.	6 to 7	2	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 27	14.0	3.0	9.08	.959	.849	.905	st.	6 to 7	3	13	8	—	—	—	—	—	—	—	—	—	—	—	—	—
" 28	14.8	3.2	11.25	.853	.686	.758	nim, st.	7 to 10	3	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 29	13.4	4.5	8.58	.900	.810	.843	nim, st.	6 to 10	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 30	+13.6	+ 5.5	+10.00	.903	.676	.799	st.	6 to 7	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
720 hours.	+43.0	+ 2.4	+18.53	30.352	29.398	29.705	—	—	—	320	40	16	20	80	100	16	52	76	16	808	412	80	—	120

Date.	Temperature of Air.			Barometer.			Clouds.		Ozone, 0 to 10.	Hours of Wind.								Max. and Min. Force.	Hours of Weather.						
	Max.	Min.	Mean.	Inches.	Min.	Mean.	Name.	Amount, 0 to 10.		Calm.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.		N.	Strong Wind.	b. c.	Over- cast.	Fog.	Snow.	
																									°
Oct. 1	+16.4	+6.0	+11.27	29.846	29.777	29.809	st. nim.	7 to 10	1	8	4	4	—	—	—	—	—	—	—	—	4	20	—	—	16
" 2	19.0	11.0	13.17	.905	.805	.877	st. nim.	7 to 10	1	20	4	—	—	—	—	—	—	—	—	—	4	20	—	—	12
" 3	11.5	1.0	15.97	.915	.893	.891	nim., st.	6 to 9	2	24	—	—	—	—	—	—	—	—	—	—	4	20	—	—	8
" 4	12.5	0.0	6.97	.943	.896	.919	nim., st.	6 to 10	2	8	—	—	—	—	—	—	—	—	—	—	16	8	—	—	—
" 5	14.9	7.0	10.80	30.014	.936	.962	nim., st.	7 to 10	2	20	—	—	—	—	4	—	—	—	—	—	4	20	—	—	20
" 6	21.5	8.2	13.22	.035	.896	.963	nim.	10	2	24	—	—	—	—	—	—	—	—	—	—	—	24	—	—	24
" 7	19.0	+10.0	15.33	.010	.933	.960	nim.	8 to 10	2	16	8	—	—	—	—	—	—	—	—	—	—	24	—	—	24
" 8	13.0	-18.5	+11.92	29.943	.576	.806	nim.	7 to 8	2	20	—	—	—	—	—	—	—	—	—	—	—	24	—	—	12
" 9	1.5	20.0	-10.17	.558	.437	.501	nim., st.	3 to 8	2	4	12	—	—	—	—	—	—	—	—	—	20	4	—	—	4
" 10	10.0	8.2	0.17	.817	.591	.744	nim., st.	7 to 10	2	20	4	—	—	—	—	—	—	—	—	—	8	16	—	—	8
" 11	8.0	16.5	4.17	.926	.844	.894	st.	7 to 4	2	20	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 12	+4.0	20.0	14.83	30.079	.967	30.023	st.	4 to 7	2	4 to 2	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—
" 13	-3.0	23.0	18.58	.122	30.102	.115	st.	2 to 7	2	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 14	-10.0	24.5	17.92	.099	.024	.053	st.	2 to 3	2	16	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 15	+1.5	22.0	17.67	.097	29.837	29.994	st.	2 to 7	2	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 16	+2.0	15.0	7.83	29.756	.689	.702	st.	3 to 9	1	20	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 17	-1.0	20.2	7.50	.729	.642	.678	nim., st.	3 to 10	2	20	—	—	—	—	—	—	—	—	—	—	20	4	—	—	8
" 18	3.0	15.0	11.83	.665	.575	.640	nim., st.	6 to 10	3	20	4	—	—	—	—	—	—	—	—	—	12	12	—	—	—
" 19	3.0	24.0	8.50	.861	.689	.776	nim., st.	5 to 10	2	24	—	—	—	—	—	—	—	—	—	—	16	8	—	—	—
" 20	10.2	26.0	19.25	.850	.702	.819	st.	4 to 8	2	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 21	9.0	29.0	25.00	30.005	.847	.941	st.	4 to 7	2	20	—	—	—	—	4	—	—	—	—	—	20	4	—	—	—
" 22	6.0	20.0	15.33	.078	.866	30.017	nim., st.	6 to 10	2	24	—	—	—	—	—	—	—	—	—	—	8	16	—	—	12
" 23	12.0	38.2	21.17	.259	30.002	.185	st.	4 to 7	1	20	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 24	15.0	39.0	32.68	.368	.289	.333	st.	4 to 7	2	16	—	—	—	—	4	—	—	—	—	—	24	—	—	—	—
" 25	15.0	32.0	28.75	.356	.262	.313	nim., st.	4 to 10	1	20	—	—	—	—	—	—	—	—	—	—	20	4	—	—	—
" 26	12.0	30.0	26.33	.841	.245	.289	st.	3 to 9	3	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 27	15.0	30.0	23.83	.219	.152	.191	st.	2 to 5	2	20	4	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 28	12.0	28.0	19.50	.226	.179	.202	nim., st.	7 to 5	2	12	—	—	—	—	—	—	—	—	—	—	20	4	—	—	4
" 29	11.0	28.0	19.67	.228	.131	.180	nim., st.	4 to 10	1	24	—	—	—	—	—	—	—	—	—	—	16	8	—	—	—
" 30	19.0	31.0	24.50	.319	.125	.225	st.	3 to 8	2	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 31	-15.0	-28.0	-26.50	.545	.307	.450	st.	3 to 5	1	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
744 hours.	+21.5	-39.0	-9.79	30.545	29.437	29.981	—	—	—	604	40	8	4	20	4	44	20	—	—	—	504	240	—	—	144

Date.	Temperature of Air.			Barometer.			Clouds.		Ozone, 0 to 10.	Hours of Wind.								Hours of Weather.				Max. and Min. Force.	Strong Wind.	b. c.	Over- cast.	Fog.	Snow.	Mercury frozen.			
	Max.	Min.	Mean.	Inches.	Min.	Mean.	Name.	Amount, 0 to 10.		Calm.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	N.													
	°	°	°	Inches.	Inches.	Inches.																									
Dec. 1	+ 3.0	-17.0	- 9.00	30.124	30.038	30.076	nim., st.	0 to 4	2	20	—	—	—	—	—	—	4	3 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 2	+ 4.0	-14.0	-10.50	.053	29.731	29.831	st.	0 to 4	3	12	—	—	—	—	—	4	4	2 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 3	+ 26.0	+ 13.0	+ 5.92	29.953	.788	.875	nim., cir.-st.	1 to 10	3	12	4	—	—	—	—	—	—	8 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 4	+ 3.0	22.0	- 5.67	30.569	.813	30.228	st.	0 to 4	7	8	8	—	—	—	—	—	8	6 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 5	+ 7.0	21.0	15.52	.560	30.371	.472	cir.	0 to 2	6	20	—	—	—	—	—	—	4	1 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 6	+ 5.0	12.0	4.67	.502	.310	.396	nim., cir.-st.	2 to 10	6	20	—	—	—	—	—	—	—	4 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 7	+ 2.0	13.0	3.67	.479	.274	.369	nim., cir.-st.	1 to 10	5	20	—	—	—	—	—	—	—	2 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 8	+ 5.0	21.0	5.83	.377	.207	.297	nim., cir.	1 to 10	3	8	4	—	—	—	—	—	—	2 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 9	+ 10.0	24.0	18.08	.101	29.591	29.837	cir.-st.	1 to 10	6	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 10	+ 8.0	19.0	11.50	29.623	.252	.422	nim., st.	3 to 10	7	12	8	—	—	—	—	—	—	2 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 11	+ 5.0	16.0	11.83	.172	28.995	.067	nim., st., cir.	1 to 10	5	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 12	+ 7.0	34.0	8.00	.707	29.102	.497	nim., cir.	6 to 10	5	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 13	+ 24.0	35.0	29.00	.775	.705	.733	cir.-st.	0 to 4	5	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 14	+ 21.0	33.0	29.00	.715	.627	.676	st.	3 to 8	6	20	—	—	—	—	—	—	—	1 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 15	+ 18.0	27.0	20.07	.582	.211	.403	nim., st.	0 to 10	3	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 16	+ 24.0	37.0	26.17	.257	.157	.206	nim., st.	0 to 6	6	4	12	—	—	—	—	—	—	3 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 17	+ 20.0	37.0	30.50	.447	.296	.383	nim., cir.-st.	0 to 10	6	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 18	+ 38.0	52.0	34.58	.447	.382	.411	nim., cir.-st.	0 to 10	4	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 19	+ 45.0	53.5	47.08	.301	.207	.279	—	0	4	20	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 20	+ 44.0	52.0	46.83	.298	.164	.236	st.	0 to 2	1	24	—	—	—	—	—	—	—	2 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 21	+ 41.0	51.5	45.42	.249	.118	.195	—	0	4	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 22	+ 43.0	54.0	46.27	.452	.287	.367	—	0	3	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 23	+ 35.0	47.5	42.17	.532	.389	.454	—	0	3	20	—	—	—	—	—	—	—	1 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 24	+ 41.0	48.5	40.75	.916	.597	.782	cir.	0 to 2	6	16	4	—	—	—	—	—	—	2 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 25	+ 35.0	47.5	40.50	.961	.749	.852	cir.-st.	0 to 2	5	20	—	—	—	—	—	—	—	1 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 26	+ 41.0	48.5	43.17	.735	.598	.645	—	0	4	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 27	+ 10.0	46.5	40.67	.772	.432	.608	st., cir.	1 to 2	5	20	4	—	—	—	—	—	—	1 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 28	+ 7.0	31.0	21.25	.314	.057	.157	nim., st., cir.	2 to 10	4	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 29	+ 22.0	39.0	25.83	.391	.134	.245	st., cir.	0 to 4	3	24	—	—	—	—	—	—	—	0	—	—	—	—	—	—	—	—	—	—	—		
" 30	+ 20.5	40.5	32.33	.602	.471	.562	nim., cir.	0 to 10	3	16	—	—	—	—	—	—	—	2 to 0	—	—	—	—	—	—	—	—	—	—	—		
" 31	+ 15.0	36.0	19.67	.623	.518	.574	nim.	6 to 10	4	24	—	—	—	—	—	—	—	1 to 0	—	—	—	—	—	—	—	—	—	—	—		
744 hours	+ 26.0	- 54.0	- 24.54	30.569	28.995	29.647	—	—	—	504	44	32	4	0	8	12	32	3 to 0	—	—	—	—	—	—	—	—	—	—	—	—	

MARCH 1876.

Date.	Temperature of Air.			Barometer.			Clouds.		Ozone, 0 to 10	Hours of Wind.							Max. and Min. Force.	Hours of Weather.							
	Max.	Min.	Mean.	Max.	Min.	Mean.	Name.	Amount, 0 to 10		Calm.	N.E.	E.	S.E.	S.	S.W.	W.		N.W.	N.	Strong Wind.	b. c.	Over- cast.	Fog.	Snow.	Mercury frozen.
Mar. 1	-59.0	-67.0	-63.25	30.124	30.053	30.089	cir.-st.	0 to 4	3	24	—	—	—	—	—	—	—	—	—	24	—	—	—	—	24
"	62.5	70.8	64.38	.176	.084	.125	cir.-st.	0 to 2	3	24	—	—	—	—	—	—	—	—	—	24	—	—	—	—	24
"	56.0	68.0	64.00	.097	.018	.058	cir.-st.	0 to 4	3	20	—	—	—	—	—	—	—	—	—	24	—	—	—	—	24
"	51.0	62.0	58.13	29.964	29.789	29.876	cum., cir., cir.	0 to 7	2	12	—	—	—	—	—	—	—	—	—	24	—	—	—	—	24
"	46.5	54.5	51.00	.967	.784	.835	cir.-st.	0 to 4	4	12	8	—	—	—	—	—	—	—	—	24	—	—	—	—	24
"	47.0	54.5	48.63	.996	.924	.969	cir.	0 to 2	5	24	—	—	—	—	—	—	—	—	—	24	—	—	—	—	24
"	40.0	52.0	47.83	30.090	30.024	30.039	nim.	0 to 10	4	24	—	—	—	—	—	—	—	—	—	12	12	—	—	—	24
"	46.5	54.5	45.50	.838	.094	.281	nim., cir.-st.	0 to 10	3	20	—	—	—	—	4	—	—	—	—	20	4	—	—	—	24
"	45.0	53.5	49.83	.354	.211	.298	cir.-st.	2 to 6	3	20	—	—	—	—	—	—	—	—	24	—	—	—	—	—	24
"	47.0	55.2	50.67	.211	.114	.159	cir.	0 to 3	3	24	—	—	—	—	—	—	—	—	24	—	—	—	—	—	24
"	24.0	48.0	45.17	.134	29.611	29.938	nim., cir.	0 to 10	2	24	—	—	—	—	—	—	—	—	—	20	4	—	—	—	20
"	26.0	38.5	31.18	29.949	.561	.795	nim., cir.-st.	0 to 10	3	12	4	—	—	—	—	—	—	—	8	16	—	—	—	—	—
"	13.6	34.5	29.02	30.024	.930	.986	nim.	10	2	8	—	—	—	—	8	—	—	—	—	—	—	—	—	—	—
"	8.5	17.5	15.50	29.948	.838	.896	nim.	9 to 10	1	4	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	8.0	29.0	11.17	30.209	30.010	30.102	nim., st.	4 to 10	3	4	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	27.5	37.2	26.33	.474	.181	.300	cir.-st.	0 to 4	3	8	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	30.5	42.0	33.00	.488	.153	.345	st.	0 to 5	1	16	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	24.0	45.5	38.17	30.189	29.641	29.927	cir.-st.	0 to 4	3	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	28.5	42.0	28.42	.136	.657	.834	cir.-st.	0 to 6	2	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	26.5	42.3	35.75	.128	.829	.999	cir.	0 to 4	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	17.0	31.0	29.00	.183	.766	.895	nim., cir.	0 to 4	1	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	21.6	31.0	23.42	.536	30.358	30.434	nim., cir.	0 to 9	1	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	25.0	37.0	28.92	.512	.237	.398	cir.-st.	0 to 4	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	23.5	37.5	30.50	.396	.178	.300	cir.-st.	0 to 4	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	23.0	37.0	30.25	.580	.310	.406	st.	0 to 4	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	21.5	34.0	28.58	.313	.041	.122	cir.-st.	2 to 4	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	18.5	30.0	23.38	.181	29.943	.092	nim., st.	4 to 10	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	17.0	28.0	23.50	.841	30.149	.246	cir.-st.	3 to 10	1	8	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	29.0	46.0	27.08	.446	.147	.304	nim., cir.	3 to 10	1	4	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	31.0	46.0	36.42	.273	29.979	.132	nim., cir.-st.	0 to 3	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
"	-31.0	-41.0	-36.67	29.914	.829	29.859	cir.	0 to 3	1	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
744 hours.	-8.0	-70.8	-37.05	30.580	29.561	30.100	—	—	—	572	44	—	—	—	—	—	—	—	—	612	132	—	—	—	280

JUNE 1876.

Date.	Temperature of Air.			Barometer.			Clouds.		Ozone, 0 to 10	Hours of Wind.							Hours of Weather.								
	Max.	Min.	Mean.	Max.	Min.	Mean.	Name.	Amount, 0 to 10.		Calm.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	N.	Strong Wind.	b. c.	Over- cast.	Fog.	Snow, Rain.		
																								Max. and Min. Force.	
June 1	+88.0	+23.0	+29.25	29.490	29.395	29.437	nim, cir-st.	1 to 10	16	—	—	—	—	—	—	—	—	—	—	16	8	—	—	8	
" 2	84.0	23.5	29.08	.648	.580	.584	nim, cir.	4 to 10	—	8	—	—	—	—	—	—	—	—	—	—	8	16	—	—	4
" 3	30.0	20.0	27.70	.789	.682	.735	nim, cir.	4 to 10	—	8	—	—	—	—	—	—	—	—	—	—	16	8	—	—	8
" 4	84.0	17.5	25.58	.886	.796	.847	cir.	0 to 2	—	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 5	84.0	16.5	23.83	.872	.833	.856	st.	0 to 7	—	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 6	86.0	18.5	28.33	.842	.807	.880	cir-st.	0 to 4	3	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 7	37.0	18.5	31.50	.809	.747	.768	cir-st.	0 to 7	2	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 8	37.0	17.0	33.00	.859	.765	.814	cir.	9 to 7	6	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 9	32.3	16.5	32.33	.978	.846	.908	cir-st.	4 to 10	2	—	—	—	—	—	—	—	—	—	—	—	20	4	—	—	—
" 10	32.3	27.0	30.83	30.006	29.956	29.978	nim, cir.	0 to 10	4	12	—	—	—	—	—	—	—	—	—	—	12	12	—	—	8
" 11	36.3	27.0	30.83	30.051	30.007	30.019	nim, cir.	7 to 10	5	24	—	—	—	—	—	—	—	—	—	—	4	20	—	—	16
" 12	37.5	24.3	31.33	29.999	29.889	29.949	nim, cir.	4 to 10	3	24	—	—	—	—	—	—	—	—	—	—	16	8	—	—	—
" 13	35.0	23.5	30.25	.889	.774	.824	nim, st.	2 to 10	4	24	—	—	—	—	—	—	—	—	—	—	12	12	—	—	—
" 14	35.5	22.0	31.17	.748	.726	.740	nim, cir-st.	2 to 10	4	24	—	—	—	—	—	—	—	—	—	—	16	8	—	—	—
" 15	35.0	24.0	35.50	.829	.761	.794	cir-st.	4 to 7	5	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 16	38.0	28.0	33.67	.961	.823	.913	nim, cir.	6 to 10	4	24	—	—	—	—	—	—	—	—	—	—	4	20	—	—	—
" 17	32.5	26.0	34.67	.971	.948	.959	cir.	0 to 7	3	24	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 18	29.0	24.5	31.60	.966	.923	.947	cir-st.	0 to 10	2	8	—	—	—	—	—	—	—	—	—	—	12	12	—	—	—
" 19	32.0	24.0	31.60	.979	.677	.891	st.	3 to 10	2	4	—	—	—	—	—	—	—	—	—	—	12	12	—	—	—
" 20	34.5	24.0	31.17	.704	.624	.641	nim, cir-st.	4 to 10	3	20	—	—	—	—	—	—	—	—	—	—	12	13	—	—	—
" 21	35.4	24.0	33.33	29.898	.679	.788	cir.	4 to 7	5	—	—	—	—	—	—	—	—	—	—	—	8	24	—	—	—
" 22	37.5	31.0	36.75	30.015	.633	.867	cir-st.	2 to 4	6	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 23	39.4	27.4	34.92	30.015	.893	.984	cir-st.	2 to 7	4	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 24	41.0	34.0	37.42	29.958	.844	.916	cir.	5 to 7	1	12	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 25	40.2	33.5	38.50	.817	.790	.804	cir-st.	4 to 7	4	4	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 26	39.5	33.5	37.42	.795	.755	.779	nim, cir-st.	7 to 10	4	4	—	—	—	—	—	—	—	—	—	—	16	8	—	—	—
" 27	40.0	29.0	36.45	.761	.658	.728	cir-st.	5 to 7	4	12	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 28	35.5	30.5	36.27	.683	.659	.668	cir-st.	6 to 10	4	4	—	—	—	—	—	—	—	—	—	—	20	4	—	—	4
" 29	35.3	30.5	34.83	.661	.489	.591	cir-st.	6 to 7	6	8	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
" 30	+40.3	+32.0	+35.83	29.597	29.379	29.470	cir-st.	6 to 10	2	24	—	—	—	—	—	—	—	—	—	—	12	12	—	—	—
720 hours	+41.0	+16.5	+32.50	30.051	29.379	29.801	—	—	—	416	60	12	68	100	44	—	—	—	—	—	544	176	—	—	48

Abstract of Daily Mean Temperature of the Air, 1875-1876.

FLOEBERG BEACH.—H.M.S. "ALERT."

Date.	August 1875.	September.	October.	November.	December.	January 1876.	February.	March.	April.	May.	June.	July.	August.
1	+35.60	+29.56	+ 8.82	-18.07	- 7.29	-27.08	-17.04	-66.68	-30.18	+ 1.75	+30.03	+38.58	+37.91
2	34.15	11.36	11.55	- 5.33	+ 1.56	26.62	12.49	68.86	30.22	- 2.79	31.17	37.23	35.50
3	36.02	17.42	12.33	+ 8.85	+12.71	24.80	25.35	69.18	30.98	7.92	30.79	35.21	35.25
4	39.30	12.50	9.53	11.41	-15.05	18.42	19.71	62.71	30.91	4.38	27.22	36.71	34.83
5	38.73	12.19	12.98	2.75	15.55	24.32	18.31	59.34	29.68	- 2.01	22.63	35.21	32.00
6	38.43	13.37	12.47	6.92	3.75	31.45	24.58	55.62	32.01	+ 0.47	25.22	39.29	31.88
7	35.10	17.04	14.44	13.89	5.56	24.46	36.18	47.41	24.87	2.72	29.67	37.08	36.70
8	34.35	17.73	+ 9.91	+ 0.65	12.61	14.50	41.42	49.96	27.15	2.67	34.25	42.71	31.40
9	32.81	16.78	-12.40	-13.65	25.67	7.35	44.68	55.35	26.91	7.07	29.93	43.27	31.48
10	31.42	17.46	+ 6.87	27.97	14.11	13.15	47.68	56.47	12.08	10.55	28.83	42.00	35.70
11	34.73	9.32	13.90	22.83	10.24	16.70	46.69	50.03	7.15	9.27	31.79	43.83	35.18
12	36.32	12.38	+ 6.99	11.23	12.21	15.96	43.47	34.26	20.53	5.19	32.50	44.17	34.96
13	36.35	19.48	- 1.41	20.73	28.47	22.26	50.00	25.77	20.77	8.36	33.87	38.37	38.64
14	34.71	24.69	11.52	22.78	25.42	18.92	48.77	25.82	23.05	9.74	34.42	36.37	32.96
15	35.50	23.42	13.67	21.81	22.18	33.11	46.01	21.18	29.12	8.27	34.50	34.79	34.21
16	32.52	27.68	1.14	27.14	27.84	37.94	53.11	21.83	26.23	8.97	33.08	35.95	35.27
17	32.04	32.15	10.18	28.87	31.57	38.81	57.81	26.76	22.39	18.25	30.72	36.14	31.62
18	31.18	18.04	11.11	27.97	23.85	34.01	44.22	34.53	21.82	17.26	27.72	35.89	32.94
19	31.05	16.64	13.33	26.69	36.61	39.50	43.66	26.98	21.76	17.61	30.24	36.58	34.83
20	29.75	19.51	18.41	31.23	39.39	41.87	52.77	37.28	13.09	19.81	30.60	37.87	32.62
21	26.83	7.26	18.97	36.03	33.94	45.91	54.41	31.76	15.60	24.10	33.42	38.46	34.93
22	27.17	10.92	17.95	40.04	37.36	48.20	36.87	23.42	16.88	21.52	34.05	37.08	39.50
23	27.20	22.11	12.32	38.93	37.66	56.25	12.17	29.79	17.23	17.01	34.17	37.14	35.92
24	25.00	6.38	16.10	37.65	32.84	43.38	17.28	34.65	14.72	15.73	37.00	38.54	36.44
25	30.59	3.33	13.21	28.84	34.49	53.78	25.09	37.11	11.17	19.07	38.59	35.87	34.71
26	26.52	3.77	15.18	7.36	39.42	44.09	32.24	32.61	- 2.63	22.38	37.92	38.62	33.10
27	26.21	8.13	13.57	15.37	31.93	42.68	40.64	24.90	+ 3.20	21.43	37.36	40.33	33.17
28	27.98	6.52	19.62	12.62	25.02	46.79	54.75	18.48	3.58	18.60	34.75	41.61	32.32
29	27.94	10.42	20.17	12.87	28.05	43.97	-62.88	32.62	7.28	13.03	38.96	37.46	30.11
30	27.35	+11.47	12.59	-13.86	22.43	42.08	—	39.17	+ 5.66	17.62	+38.25	37.05	23.39
31	+27.59	—	-21.55	—	-19.32	-42.02	—	-32.79	—	+26.23	—	+39.64	+29.95
	+31.95	+15.301	-4.987	-16.847	-22.115	-32.916	-37.975	-39.768	-17.963	+11.212	+32.455	+38.355	+33.690

Mean for 366 days, from 22nd August 1875 to 21st August 1876, -3°.473.

Spring, -15°.506; Summer, +34°.241; Autumn, -2°.178; Winter, -31°.002.

DISCOVERY BAY.—H.M.S. "DISCOVERY."

Date.	August 1875.	September.	October.	November.	December.	January 1876.	February.	March.	April.	May.	June.	July.	August.
1	+37.78	+31.50	+11.27	-17.58	- 9.00	-29.00	-22.08	-60.25	-35.25	- 2.20	+29.25	+36.58	+38.42
2	36.03	24.67	13.17	-13.67	-10.50	38.80	16.83	64.38	35.83	3.00	29.08	37.33	38.33
3	36.05	23.22	15.97	+ 1.58	+ 5.92	32.67	12.20	64.00	31.83	6.80	27.70	36.50	36.75
4	40.20	19.86	6.97	+ 5.50	- 5.67	23.50	7.00	58.13	33.17	9.00	25.58	35.58	36.50
5	39.33	17.00	10.30	-10.17	15.52	32.58	16.70	51.00	35.92	8.50	23.83	34.83	36.17
6	36.92	18.60	13.22	12.50	4.67	43.05	22.33	48.68	33.42	0.70	28.33	35.33	34.63
7	33.83	18.08	15.33	- 1.17	3.67	42.42	28.42	47.83	22.00	- 1.00	31.50	35.92	37.33
8	35.62	20.08	+11.92	+ 3.00	5.83	44.78	40.67	45.50	24.75	+ 3.90	33.00	36.58	35.33
9	35.02	20.42	-10.17	-20.67	18.08	21.10	44.00	49.83	19.27	5.80	32.33	39.75	36.58
10	31.82	19.60	0.17	25.50	11.50	20.50	47.83	50.67	2.62	8.62	30.83	40.42	37.17
11	34.25	12.43	4.17	27.17	11.83	37.92	40.38	45.17	5.25	13.17	30.83	39.75	35.42
12	37.37	13.25	14.83	16.08	8.00	26.50	42.00	31.18	16.00	7.75	31.33	38.67	35.50
13	34.80	22.42	18.58	22.83	29.00	31.67	46.00	29.02	12.00	6.62	30.25	37.50	32.33
14	34.70	26.62	17.92	24.08	29.50	29.60	45.42	15.50	18.00	5.25	31.17	36.17	32.42
15	35.33	26.97	17.67	16.25	20.67	38.07	40.00	11.17	25.95	2.50	35.50	37.33	33.75
16	32.67	31.78	7.83	21.92	26.17	43.75	46.00	26.33	30.75	7.25	33.67	36.50	33.42
17	32.17	33.22	7.50	26.25	30.50	48.67	50.42	33.00	23.50	14.43	34.67	36.50	31.75
18	31.50	24.47	11.83	20.83	34.58	50.92	41.00	38.17	27.00	8.43	31.60	34.33	32.17
19	31.83	21.30	8.50	20.00	47.08	46.50	39.67	28.42	22.87	19.00	31.60	34.83	34.83
20	29.33	22.42	19.25	31.30	46.83	44.50	46.16	35.75	17.50	22.25	31.17	36.42	31.67
21	27.88	11.78	25.00	40.00	45.42	39.33	51.00	29.00	16.70	23.25	33.33	37.50	32.33
22	29.13	14.43	15.33	40.00	46.27	44.45	40.60	22.42	13.42	20.75	36.75	36.00	40.17
23	28.80	11.75	21.17	38.08	42.17	56.75	34.67	28.92	15.60	17.50	34.92	38.17	35.83
24	31.28	12.50	32.58	33.08	40.75	58.35	23.00	30.50	13.00	16.25	37.42	37.58	36.17
25	27.42	8.60	28.75	22.83	40.50	54.50	13.25	30.25	5.90	21.80	38.50	36.92	33.00
26	20.15	9.78	26.33	13.83	43.17	48.75	19.67	28.25	- 3.20	20.80	37.42	36.83	33.17
27	28.17	9.08	23.83	10.33	40.67	46.75	33.92	23.38	+ 3.00	25.60	36.45	38.42	32.83
28	29.33	11.25	19.50	11.83	21.25	50.17	49.67	23.50	6.20	22.60	36.27	37.83	31.67
29	29.13	8.56	19.67	14.83	25.83	50.50	-54.17	27.08	6.20	15.50	34.83	37.83	29.50
30	29.13	+10.00	24.50	- 9.67	32.33	41.67	—	36.42	+ 7.10	12.10	+35.83	38.83	23.33
31	+29.27	—	-26.50	—	-19.67	-42.25	—	-36.67	—	+19.80	—	+40.67	+29.75
	+32.44	+18.522	-9.788	-18.412	-24.539	-40.644	-35.00	-37.109	-17.270	+9.414	+32.498	+37.206	+34.180

Mean for 366 days, from 22nd August 1875 to 21st August 1876, -4°.288.

Spring, -14°.988; Summer, +34°.142; Autumn, -3°.226; Winter, -33°.394.

Mean Hourly Range of Temperature, 1875-1876.

FLOEBERG BEACH.—H.M.S. "ALERT."

Hour.	September 1875.	October.	November.	December.	January 1876.	February.	March.	April.	May.	June.	July.	Mean for 142 days, Sun below horizon.
Minimum hourly mean } 1 p.m.	—	0 -5.64	0 -17.84	0 -23.17	0 -34.25	0 -39.29	0 -42.06	0 -21.38	0 +8.57	0 +31.10	0 +37.32	0 26.06
2	—	—	0.08	0.61	-0.61	1.77	4.41	—	—	—	—	0.48
3	—	1.56	0.27	0.76	1.68	1.50	4.64	6.53	5.15	2.94	2.55	0.67
4	—	—	0.09	0.12	1.27	0.90	4.55	—	—	—	—	0.32
5	—	1.76	coldest	0.18	coldest	1.37	3.67	6.39	4.49	2.91	1.33	coldest
6	—	—	0.85	0.98	0.15	1.11	3.19	—	—	—	—	0.26
7	—	1.69	0.05	1.04	0.48	1.00	2.35	5.04	4.48	—	—	0.17
8	—	—	1.18	1.84	1.31	2.38	2.33	—	—	—	—	0.80
9	—	1.07	1.79	1.75	0.43	2.64	1.67	3.79	3.96	1.85	1.80	0.89
10	—	—	2.15	1.95	1.03	2.65	1.07	—	—	—	—	1.07
11	—	0.38	1.97	1.80	1.29	2.40	0.88	—	2.11	0.89	0.41	0.95
Midnight	—	—	1.56	1.60	1.32	2.15	1.65	—	—	—	—	0.88
1 a.m.	—	0.67	1.89	1.06	1.95	0.59	1.56	0.55	0.39	0.50	0.05	0.61
2	—	—	1.41	0.71	1.02	0.88	0.87	—	—	—	—	0.31
3	—	0.77	1.01	0.88	1.44	0.77	0.44	—	coldest	coldest	0.05	0.35
4	—	—	0.98	0.76	1.70	1.01	0.11	—	—	—	—	0.34
5	—	coldest	1.06	1.95	1.94	1.18	coldest	coldest	0.46	0.01	0.13	0.46
6	—	—	1.68	1.95	1.95	1.54	1.36	—	—	—	—	0.83
7	—	0.04	1.55	1.99	1.58	1.48	1.39	0.84	0.86	0.03	coldest	0.63
8	—	—	1.43	1.56	1.55	0.90	1.75	—	—	—	—	0.50
9	—	0.18	1.42	1.05	1.16	0.52	1.96	2.78	1.78	0.73	1.57	0.25
10	—	—	0.36	1.08	1.87	coldest	2.84	—	—	—	—	0.14
11	—	0.37	0.22	0.70	1.52	0.65	4.00	—	3.40	1.58	1.21	0.14
Noon	—	—	0.47	coldest	1.98	1.20	4.96	—	—	—	—	0.24
Maximum daily range } Noon	—	0.06	0.60	0.10	-1.79	0.93	5.24	6.70	4.62	2.54	2.02	0.28
Maximum daily range } Midnight	—	1.76	2.15	1.99	1.98	2.65	5.24	6.70	5.15	2.94	2.55	1.07

DISCOVERY BAY.—H.M.S. "DISCOVERY."

Hour.	September 1875.	October.	November.	December.	January 1876.	February.	March.	April.	May.	June.	July.	August.	Mean for 142 days, Sun below horizon.
Minimum hourly mean } 4 p.m.	0 +17.58	0 -9.84	0 -19.20	0 -25.32	0 -40.99	0 -35.81	0 -39.07	0 -21.09	0 —	0 +29.36	0 +35.42	0 +32.89	0 -28.82
1	2.06	0.11	coldest	1.08	0.47	0.11	3.04	—	—	4.21	3.14	2.64	0.16
2	1.38	coldest	0.52	0.64	coldest	0.20	2.26	3.29	—	2.96	1.84	1.84	0.11
Midnight	coldest	0.43	1.07	0.14	0.15	coldest	1.04	coldest	—	coldest	0.95	0.29	coldest
4 a.m.	0.25	0.36	1.47	coldest	0.41	1.40	coldest	—	—	3.15	coldest	coldest	0.63
8	0.71	0.02	1.13	1.28	0.26	1.14	1.23	4.63	—	4.24	1.35	0.92	0.56
Noon	2.02	0.10	0.60	2.51	0.74	0.74	4.18	7.43	—	4.32	3.43	1.42	0.50
Maximum daily range } 4 p.m.	2.06	0.43	1.47	2.51	0.74	1.40	4.18	7.43	—	4.32	3.43	2.64	0.63

Abstract of Daily Mean Atmospheric Pressure, 1875-1876.

FLOEBERG BEACH AND NORTH OF LATITUDE 80° N.

Day.	August 1875.	September	October	November	December	January 1876.	February	March.	April.	May	June.	July.	August.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
1	29.499	29.432	29.794	30.580	30.061	29.530	29.505	30.084	29.844	30.309	29.438	29.426	29.347
2	.562	.453	.871	30.348	29.770	.390	29.873	.132	30.004	.181	.601	.629	.436
3	.577	.499	.906	29.839	29.816	.332	30.146	30.080	.055	30.064	.714	.766	.262
4	.603	.736	.914	30.067	30.245	.230	29.406	29.902	.035	29.938	.829	.815	.389
5	.488	.712	.915	.146	.381	.420	.512	29.823	.348	.864	.847	.748	.655
6	29.633	29.663	.930	.088	.323	.581	.643	30.002	.371	.826	.870	.726	.960
7	30.016	30.005	.938	.090	.361	.785	.706	.079	.242	.825	.826	.755	.871
8	29.879	29.869	.823	.275	30.287	.912	29.844	.230	.403	29.941	.840	.758	.836
9	30.019	.703	.546	.481	29.935	.349	30.020	.296	.521	30.013	29.985	.768	.617
10	29.986	.635	.637	.545	.415	.733	.125	30.195	.353	.035	30.023	.767	.787
11	.763	.425	.824	.716	.079	.906	.089	29.920	.342	.065	30.062	.700	.927
12	.858	.373	29.927	.744	.364	.499	.112	.779	.280	.226	29.978	.565	.941
13	29.894	.384	30.013	.540	.729	.566	.436	.888	.137	.231	.843	.515	.774
14	30.013	.276	30.034	30.131	.640	29.618	.397	29.919	.278	.214	.798	.614	.744
15	30.035	.372	29.973	29.935	.367	30.016	.412	30.091	.452	30.171	.814	.686	.730
16	29.733	.567	.673	.835	.170	.138	.401	.262	.459	29.852	.905	.786	.615
17	.767	29.663	.692	.981	.340	30.040	30.046	.355	.400	.727	.922	.785	.616
18	.860	30.161	.648	.892	.301	29.951	29.714	30.003	.463	.815	.977	.723	.557
19	.650	.069	.730	.863	.275	.819	.913	29.900	.597	.793	.889	.711	.611
20	.468	30.085	.843	.913	.246	.637	.938	30.047	.613	.887	.647	.628	29.698
21	.714	29.832	.884	.933	.135	.629	29.807	29.869	.435	29.997	.692	.274	30.006
22	.820	.560	29.968	29.861	.323	.317	30.133	30.410	.193	30.153	.905	.146	29.961
23	.689	.600	30.048	30.040	.492	.051	30.191	.395	30.047	29.971	.836	.123	.847
24	.587	.542	.226	.221	.713	.139	29.927	.247	29.934	.738	.874	.265	.701
25	29.839	.578	.240	30.050	.890	.526	.672	.380	29.959	.692	.738	.279	.767
26	30.045	.876	.274	29.852	.622	.613	29.980	.155	30.083	.668	.664	.561	.906
27	29.989	.893	.205	30.106	.527	.465	30.215	.062	.408	.662	.753	.769	.760
28	.791	.737	.181	.382	.136	.803	.184	.212	.587	.592	.711	.800	29.835
29	.687	.820	.171	.013	.178	.783	30.092	.281	.550	.705	.613	.457	30.026
30	.811	29.846	.168	30.081	.467	.525	—	30.094	30.378	.716	29.402	.586	29.915
31	29.564	—	30.405	—	29.534	29.455	—	29.880	—	29.488	—	29.454	29.655
Mean -	29.771	29.679	29.948	30.153	29.615	29.606	29.981	30.096	30.299	29.915	29.802	29.599	29.734

Mean for one year of 366 days (from 22nd August 1875) — 29.866.

DISCOVERY BAY AND NORTH OF LATITUDE 80° N.

Day.	August 1875.	September	October.	November	December	January 1876.	February	March.	April.	May.	June.	July.	August.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
1	29.470	29.504	29.809	30.669	30.076	29.563	29.544	30.089	29.836	30.281	29.437	29.459	29.842
2	.563	.431	.877	30.423	29.831	.521	.971	.125	30.018	.169	.584	.632	.425
3	.595	.517	.891	29.916	29.875	.381	.992	30.058	.051	.000	.735	.746	.243
4	.594	.736	.919	30.214	30.228	.349	.269	29.876	.249	30.088	.847	.828	.385
5	.489	.678	.962	.216	.472	.513	.611	.825	.471	29.906	.856	.723	.659
6	29.695	.651	.963	.237	.386	.731	.596	29.969	.438	.861	.880	.738	.955
7	30.028	.995	.960	.204	.369	29.968	.726	30.059	.252	.862	.768	.804	.812
8	29.902	.837	.806	.303	30.297	30.134	29.892	.231	.623	29.955	.814	.762	.718
9	30.028	.712	.501	.484	29.837	29.632	30.014	.298	.581	30.076	.908	.794	.594
10	29.938	.738	.744	.559	.422	29.663	.128	30.159	.395	.109	29.978	.811	.785
11	.812	.412	29.894	.782	.067	30.039	.116	29.938	.325	.987	30.019	.701	.901
12	.861	.455	30.023	.717	.437	29.555	.124	.795	.320	.157	29.949	.572	.931
13	29.919	.535	.115	.500	.733	.660	.428	.986	.116	.256	.824	.481	.791
14	30.025	.423	30.053	30.150	.676	29.658	.428	29.896	.293	.275	.740	.571	.660
15	30.051	.481	29.994	29.915	.403	30.034	.410	30.102	.519	30.160	.794	.644	.714
16	29.801	.658	.702	29.838	.206	.162	.403	.330	.480	29.841	.913	.752	.629
17	.774	29.691	.678	30.012	.383	.110	30.059	30.345	.450	.847	.959	.742	.626
18	.859	30.158	.640	29.880	.411	30.044	29.743	29.927	.467	.898	.947	.692	.519
19	.619	.076	.776	.904	.279	29.828	.932	.934	.579	.825	.891	.716	.623
20	.478	30.058	.819	.957	.236	.597	.999	.999	.518	29.947	.641	.643	.727
21	.726	29.955	29.941	.934	.195	.591	29.861	29.895	.342	30.061	.788	.291	.997
22	.834	.520	30.017	29.923	.367	.304	30.255	30.434	.181	30.146	.867	.172	.988
23	.636	.630	.135	30.106	.454	.129	30.277	.398	30.040	29.898	.934	.153	.827
24	.575	.539	.333	.238	.782	.282	29.975	.300	29.950	.729	.916	.240	.699
25	29.865	.582	.313	30.065	.852	.601	29.662	.406	29.998	.673	.804	.266	.765
26	30.080	.871	.289	29.919	.645	.568	30.023	.122	30.131	.696	.779	.534	.847
27	29.983	.905	.191	30.243	.608	.535	.150	.092	.442	.674	.728	.769	.741
28	.784	.758	.202	.361	.157	.818	.157	.246	.690	.567	.668	.738	29.806
29	.700	.842	.180	.062	.245	.754	30.067	.304	.601	.706	.591	.436	30.026
30	.813	29.799	.225	30.101	.562	.532	—	30.132	30.454	.704	29.470	.615	29.913
31	29.626	—	30.450	—	29.574	29.463	—	29.859	—	29.518	—	29.454	29.657
Mean -	29.769	29.7049	29.9807	30.1944	29.6467	29.6751	29.9935	30.1000	30.3270	29.9313	29.8010	29.5961	29.7195

Mean for 366 days (from 22nd August 1875) — 29.865.

Mean Hourly Range of Atmospheric Pressure, 1875-1876.

FLOEBERG BEACH AND NORTH OF LATITUDE 80° N.

Hour.	Septem-ber.	Octo-ber.	Novem-ber.	Decem-ber.	Janu-ary.	Febru-ary.	March.	April.	May.	June.	July.	August.	Mean, Novem-ber to March.	Mean, Septem-ber to March.	Mean of 12 months.
Minimum hourly mean	Inches. 29·669	Inches. 29·935	Inches. 30·144	Inches. 29·6025	Inches. 29·5944	Inches. 29·962	Inches. 30·085	Inches. 30·289	Inches. 29·906	Inches. 29·796	Inches. 29·594	Inches. 29·709	Inches. 29·8825	Inches. 29·864	Inches. 29·866
1 p.m.	—	—	0·017	0·025	0·000	0·002	0·000	—	—	—	—	—	0·004	—	—
2	0·000	0·002	·016	·025	·004	·000	·006	—	—	—	—	—	·005	0·000	—
3	—	—	·018	·017	·010	·004	·007	—	—	—	—	—	·006	—	—
4	·014	·000	·010	·010	·015	·008	·004	0·006	0·032	0·007	0·004	0·003	·004	·001	0·001
5	—	—	·022	·016	·020	·018	·013	—	—	—	—	—	·013	—	—
6	·022	·010	·021	·014	·019	·025	·012	—	—	—	—	—	·013	·010	—
7	—	—	·014	·010	·028	·024	·010	—	—	—	—	—	·012	—	—
8	·013	·010	·010	·001	·024	·022	·008	·000	·017	·003	·004	·000	·008	·005	·001
9	—	—	·010	·006	·016	·024	·009	—	—	—	—	—	·008	—	—
10	·017	·018	·012	·011	·014	·024	·012	—	—	—	—	—	·009	·008	—
11	—	—	·011	·016	·010	·024	·014	—	—	—	—	—	·010	—	—
Midnight	·006	·017	·014	·016	·009	·024	·015	·009	·001	·000	·004	·003	·010	·007	·001
1 a.m.	—	—	·005	·012	·009	·025	·014	—	—	—	—	—	·008	—	—
2	·004	·018	·010	·003	·006	·022	·010	—	—	—	—	—	·005	·003	—
3	—	—	·015	·014	·008	·021	·013	—	—	—	—	—	·009	—	—
4	·006	·013	·018	·011	·009	·023	·013	—	—	—	·007	·007	·010	·006	—
5	—	—	·015	·016	·010	·024	·019	—	—	—	—	—	·012	—	—
6	·014	·021	·010	·017	·016	·020	·016	—	—	—	—	—	·011	·009	—
7	—	—	·008	·018	·017	·020	·015	—	—	—	—	—	·011	—	—
8	·013	·011	·008	·016	·014	·019	·015	·016	·000	·008	·011	·016	·009	·006	·003
9	—	—	·009	·014	·008	·017	·014	—	—	—	—	—	·007	—	—
10	·017	·017	·002	·012	·006	·020	·015	—	—	—	—	—	·006	·005	—
11	—	—	·004	·005	·001	·021	·007	—	—	—	—	—	·003	—	—
Noon	0·012	0·017	0·000	0·000	0·001	0·021	0·003	0·015	0·003	0·013	0·000	0·018	0·000	0·000	0·000
Maximum daily range	0·022	0·021	0·022	0·025	0·028	0·025	0·019	0·016	0·032	0·013	0·011	0·018	0·013	0·010	0·003

DISCOVERY BAY AND NORTH OF LATITUDE 80° N.

Hour.	Septem-ber.	Octo-ber.	Novem-ber.	Decem-ber.	Janu-ary.	Febru-ary.	March.	April.	May.	June.	July.	August 1875 and 1876.	Mean of 5 months Nov. to March.	Mean of 7 months Sept. to March.	Mean of 12 months.
Minimum hourly mean	Inches. 29·696	Inches. 29·957	Inches. 30·183	Inches. 29·633	Inches. 29·662	Inches. 29·987	Inches. 30·082	Inches. 30·324	Inches. 29·912	Inches. 29·788	Inches. 29·588	Inches. 29·773	Inches. 29·914	Inches. 29·8925	Inches. 29·890
4 p.m.	0·000	0·000	0·014	0·023	0·013	0·003	0·018	—	—	0·000	0·003	0·033	0·010	0·0034	—
8	·019	·020	·028	·023	·023	·015	·023	0·000	—	·004	·008	·014	·018	·0148	—
Midnight	·017	·005	·012	·014	·011	·020	·031	·007	0·025	·031	·016	·021	·013	·0087	0·610
4 a.m.	·023	·026	·011	·018	·000	·002	·028	—	—	·012	·009	·030	·0076	·0088	—
8	·002	·024	·000	·000	·016	·000	·005	·002	0·000	·014	·015	·013	·000	·0000	0·000
Noon	0·006	0·032	0·005	0·005	0·017	0·002	0·000	0·003	—	0·014	0·000	0·000	0·0014	0·0027	—
Maximum daily range	0·023	0·032	0·028	0·023	0·023	0·020	0·031	0·007	0·025	0·031	0·016	0·033	0·018	0·0148	0·010

Yearly Abstract, 1875-1876.

H.M.S. "ALERT."

Date.	Thermometer.			Barometer.			Hours of Wind.										Hours of Weather.					
	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Calm.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	N.	Average hourly Force.	Strong Wind.	b. c.	Over-cast.	Fog.	Snow or Rain.	Mercury frozen.
August 1875-76	+44.0	+24.5	+31.913	30.062	29.190	29.716	266	94	60	42	104	104	37	17	20	1.4	23	476	268	49	74	—
September 1875	+36.5	+0.2	+15.603	30.219	29.211	29.679	168	8	6	30	21	192	39	227	29	2.2	111	218	502	36	173	—
October	21.2	-32.2	-4.987	.533	.490	29.948	334	8	10	36	16	46	84	144	46	0.8	—	346	398	136	178	—
November	23.0	45.7	16.847	.824	29.691	30.153	301	1	1	36	27	66	61	183	44	1.0	10	566	154	25	29	35
December	35.0	46.5	22.115	.522	28.979	29.616	300	—	—	24	34	65	35	211	75	0.9	2	386	138	54	140	46
January 1876	8.5	59.2	32.916	.205	29.015	.606	323	11	3	12	75	63	28	175	54	1.3	45	697	47	7	58	286
February	+2.0	66.5	37.975	.478	29.981	29.981	328	6	10	6	24	51	17	198	56	1.25	13	453	153	14	67	398
March	+8.0	73.75	39.768	.527	30.096	30.096	263	17	22	50	26	59	22	237	48	1.1	20	644	100	37	46	285
April	+15.0	46.5	-17.963	.649	30.299	29.7	27	3	40	13	10	11	191	128	0.8	—	—	450	270	—	61	10
May	32.5	-14.9	+11.212	.370	29.915	30.0	8	12	—	28	22	108	172	94	1.0	13	304	440	—	—	180	—
June	44.0	+18.2	33.455	30.104	.379	.802	208	12	14	22	2	140	38	204	80	1.7	122	410	310	22	168	—
July	+50.0	+29.0	+33.336	29.890	29.004	29.599	206	10	34	54	74	28	128	136	1.2	17	424	320	34	—	118	—
366 days	+50.0	-73.75	-3.473	30.824	29.979	29.866	3314	202	175	352	444	892	508	2087	810	1.2	616	5664	3120	414	1292	1060
Proportion	—	—	—	—	—	—	0.38	0.02	0.02	0.04	0.05	0.10	0.06	0.24	0.09	—	0.07	0.65	0.35	0.05	0.16	0.12

H.M.S. "DISCOVERY."

Date.	Thermometer.			Barometer.			Hours of Wind.										Hours of Weather.					
	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Calm.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	N.	Maximum Force.	Strong Wind.	b. c.	Over-cast.	Fog.	Snow or Rain.	Mercury frozen.
August 1875-76	+41.0	+26.0	+32.72	30.352	29.485	29.709	406	17	24	53	117	77	10	8	32	8	34	521	223	29	28	—
September 1875	43.0	+2.4	+18.32	.332	.338	.705	320	40	16	20	80	100	16	52	76	7	16	308	412	80	120	—
October	21.5	-39.0	-9.79	.545	.437	29.981	604	40	8	—	4	20	4	44	20	4	—	504	240	—	144	—
November	19.0	46.0	18.41	.877	29.741	30.194	464	16	20	29	1	13	64	112	3	—	—	624	96	4	68	32
December	+26.0	54.0	24.54	.569	28.995	29.647	604	44	32	4	—	8	8	12	32	8	12	596	136	16	92	194
January 1876	-13.0	63.0	40.64	.238	29.101	.675	584	28	—	20	9	21	14	56	34	10	23	608	187	—	66	852
February	+2.0	62.0	35.00	.506	29.994	29.994	451	86	13	12	9	—	8	24	72	2	—	509	136	—	92	472
March	+8.0	70.8	37.05	.580	30.100	30.100	572	44	—	28	20	16	4	20	40	8	4	612	132	—	72	280
April	+13.0	42.5	-17.27	.729	.759	30.327	620	20	16	8	8	16	8	8	16	3	—	600	120	—	90	—
May	33.6	-20.5	+10.04	.350	.411	29.931	552	24	16	20	44	8	4	—	76	8	12	628	116	—	74	—
June	41.0	+16.5	32.50	30.051	.379	.801	416	60	12	68	100	44	—	4	16	8	56	544	176	—	48	—
July	+46.3	+29.6	+37.21	29.887	29.043	29.596	520	4	12	40	100	40	12	12	4	6	10	476	268	16	80	—
366 days	+46.0	-70.8	-4.232	30.877	28.995	29.866	6113	423	169	302	491	351	101	304	530	—	167	6530	2254	145	974	1334
Proportion	—	—	—	—	—	—	0.69	0.05	0.02	0.03	0.06	0.04	0.01	0.04	0.06	—	0.02	0.74	0.26	0.01	0.11	0.15

Date.	Thermometer.			Temperature of land, 18 inches deep.	Barometer.		Ozone, 0 to 10.	Clouds.		Hours of Wind.						Max. and Min. Force.	Hours of Weather.			Mercury Frozen.			
	431 A. 228 A.	Max.	Min.		Mean.	Inches.		Inches.	Name.	Amount, 0 to 10.	Calm.	N.E.	E.	S.E.	S.		S.W.	W.	N.W.		N.	Strong Wind.	b. c.
Mar. 1	-64.3	-69.4	71.6	68.86	30.115	30.065	cum., cir.-st.	0 to 7	16	—	—	—	—	—	1	7	—	—	24	—	—	—	24
" 2	65.9	71.6	73.75	69.18	.145	.110	cir.-st.	4 to 5	24	—	—	—	—	—	—	—	—	—	24	—	—	—	24
" 3	66.4	68.3	62.71	66.3	.120	30.080	cum.-st.	0 to 3	18	1	—	—	—	—	—	3	2	—	24	—	—	—	24
" 4	58.7	63.3	59.34	62.71	30.000	29.797	cum.-st.	1 to 4	9	—	—	—	—	—	—	8	7	—	24	—	—	—	24
" 5	57.6	57.7	55.62	57.7	29.940	.785	cum.-st., cir.	0 to 4	4	—	—	—	—	—	—	18	2	—	24	—	—	—	24
" 6	54.6	57.3	47.41	55.62	30.028	29.950	cum., cir.-st.	0 to 7	—	—	—	—	—	—	8	16	—	—	24	—	—	—	24
" 7	41.0	57.3	49.96	47.41	.110	30.028	cum.-st., nim.	4 to 10	—	—	—	—	—	—	—	24	—	—	18	6	8	2	24
" 8	44.2	57.4	55.35	49.96	.330	.105	cir.-st.	2 to 7	13	1	—	—	—	—	—	10	—	—	24	—	—	—	24
" 9	50.8	59.0	55.47	55.35	.355	.222	cum., cir.-st.	2 to 5	19	—	—	—	—	3	2	—	—	—	24	—	—	—	24
" 10	59.0	60.7	50.03	56.47	.237	30.160	cum., cir.-st.	0	21	—	—	—	—	—	2	1	—	—	22	2	4	—	24
" 11	25.0	38.0	34.26	38.0	30.160	29.569	cum.-st., nim.	0 to 10	18	—	—	—	—	—	—	4	—	—	22	2	—	—	21
" 12	27.4	39.1	25.77	34.26	29.925	.569	cum., nim.	4 to 10	2	1	4	—	—	—	—	10	7	—	—	22	5	11	—
" 13	16.5	33.6	25.82	33.6	30.992	.795	nim.	10	4	—	—	—	—	—	—	—	—	—	5	—	—	—	—
" 14	16.0	37.1	21.18	33.6	.092	.762	nim., st.	6 to 10	4	3	—	—	—	—	—	12	3	—	—	24	—	—	—
" 15	9.5	39.1	21.33	33.6	.165	29.994	nim., cum.-st.	7 to 0	4	5	1	—	—	—	—	4	—	—	6	3	21	3	8
" 16	8.0	36.6	26.76	33.6	.394	30.160	cum.-st., cir.	0 to 10	7	—	—	—	—	—	—	—	—	—	2	—	—	—	—
" 17	11.0	42.1	34.53	36.6	.427	30.212	cum.-st.	0 to 6	7	1	—	—	—	—	—	—	—	—	—	—	—	—	—
" 18	26.0	34.6	26.98	36.6	.172	29.725	cum.-st.	0 to 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 19	18.0	44.1	37.28	34.6	.143	.654	cum.-st., cir.	1 to 7	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 20	30.3	37.0	31.76	37.0	.148	.875	cum., cir.-st.	0 to 7	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 21	23.3	29.2	23.42	29.2	.164	29.719	cum.-st., nim.	1 to 10	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 22	19.8	39.1	29.79	29.79	.524	30.194	cum.-st.	1 to 9	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 23	19.5	41.1	34.65	34.65	.527	.242	cum.-st., cir.	2 to 8	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 24	26.0	45.1	37.11	37.11	.305	.187	cir.-st.	0 to 7	3	1	2	4	—	—	—	—	—	—	—	—	—	—	—
" 25	28.0	41.1	32.61	32.61	.424	.318	cir.-st.	0 to 9	18	1	2	—	—	—	—	—	—	—	—	—	—	—	—
" 26	23.3	31.5	24.90	31.5	.305	30.030	cir.-st., cum.	0 to 6	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 27	18.0	28.5	18.48	28.5	.194	29.979	cir., cum., nim.	3 to 10	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 28	14.1	40.1	32.62	32.62	.300	30.104	cum., nim.	4 to 7	—	1	1	4	3	1	—	—	—	—	—	—	—	—	—
" 29	27.4	51.1	39.17	39.17	.435	30.097	cum., nim.	2 to 10	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 30	27.4	43.1	32.79	32.79	30.305	29.915	cum., cir.-st.	0 to 4	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
" 31	28.0	43.1	32.79	32.79	29.945	30.844	cum., cir.-st.	2 to 9	12	4	—	—	—	—	—	—	—	—	—	—	—	—	—
744 hours.	8.0	78.75	39.768	78.75	30.527	29.569	—	—	263	17	22	50	26	59	22	237	48	20	644	100	87	46	285

* Mercury frozen in upper part of tube.

Date.	Thermometer.			Temperature of Land, 18 inches deep.	Barometer.			Ozone, 0 to 10.	Clouds.		Hours of Wind.								Max. and Min. Force.	Hours of Weather.			
	Max.	Min.	Mean.		Max.	Min.	Mean.		Name.	Amount, 0 to 10.	E.	S.E.	S.	S.W.	W.	N.W.	N.	Strong Wind.		b. c.	Over-cast.	Fog.	Snow or Rain.
July 1	49.1 A. 44.0 A.	41.8 A. 41.9 A.	44.9 A. +38.56	29.469	29.386	29.426	—	1 to 6	4	—	—	6	6	6	2	0 to 3	—	—	—	—			
" 2	39.5	32.5	37.23	.751	.497	.629	3 to 5	1 to 2	2	—	—	—	—	—	2	0 to 1	—	—	—	24			
" 3	38.0	31.0	35.21	.780	.750	.766	—	2 to 10	—	—	—	—	—	24	1	—	4	—	—	20			
" 4	39.0	32.0	36.71	.890	.778	.815	—	0 to 10	12	—	—	—	—	12	0 to 1	—	—	—	—	24			
" 5	39.0	31.0	35.21	.770	.724	.748	3 to 5	4 to 10	8	—	—	—	—	6	0 to 1	—	—	—	—	4			
" 6	44.0	32.0	39.29	.768	.685	.726	2 to 5	4 to 10	12	2	4	—	2	—	2	0 to 2	—	—	—	8			
" 7	41.0	32.5	37.08	.794	.725	.755	0 to 5	6 to 10	8	4	6	—	2	—	4	0 to 1	—	—	—	16			
" 8	46.0	35.0	42.71	.784	.742	.758	4 to 5	4 to 10	14	4	—	—	2	—	—	0 to 2	—	—	—	18			
" 9	46.0	34.0	43.27	.798	.750	.768	3 to 0	2 to 5	12	2	2	4	—	—	2	0 to 4	—	—	—	24			
" 10	48.0	38.0	42.00	.779	.748	.768	3 to 0	1 to 4	6	—	—	16	—	—	4	0 to 4	—	—	—	24			
" 11	48.0	35.0	43.88	.745	.648	.700	3 to 5	2 to 10	6	2	10	—	—	—	4	0 to 1	—	—	—	10			
" 12	50.0	34.0	44.17	.619	.509	.565	0 to 5	1 to 5	10	4	4	—	—	—	—	0 to 2	—	—	—	24			
" 13	47.5	31.0	38.37	.567	.472	.515	0 to 5	2 to 10	2	4	—	4	—	—	2	0 to 2	—	—	—	6			
" 14	41.0	32.0	36.37	.637	.580	.614	3 to 5	5 to 10	10	—	—	—	—	—	4	0 to 1	—	—	—	2			
" 15	39.0	30.5	34.79	.720	.653	.686	3 to 0	2 to 10	—	—	—	—	—	—	10	1	—	—	—	22			
" 16	38.0	30.5	35.95	.810	.740	.786	3 to 5	2 to 10	6	—	—	—	—	—	16	2	—	—	—	20			
" 17	38.0	29.0	36.14	.788	.782	.785	2 to 5	4 to 10	6	6	—	—	—	—	4	0 to 2	—	—	—	16			
" 18	37.0	31.0	35.89	.765	.685	.723	—	0 to 10	—	—	—	—	—	—	2	0 to 1	—	—	—	—			
" 19	39.0	31.0	36.56	.738	.665	.711	0 to 5	0 to 10	2	—	—	—	—	—	10	0 to 1	—	—	—	24			
" 20	39.5	32.0	37.37	.688	.548	.628	1 to 5	5 to 10	4	2	6	—	—	—	4	0 to 2	—	—	—	12			
" 21	42.5	38.0	38.46	.489	.137	.274	2 to 0	4 to 10	10	—	—	—	—	—	8	0 to 6	—	—	—	4			
" 22	44.0	34.0	37.08	.215	.004	.146	2 to 0	4 to 10	8	—	—	—	—	—	—	0 to 6	—	—	—	8			
" 23	44.0	38.0	37.14	.265	.017	.123	4 to 5	3 to 10	8	—	—	—	—	—	—	0 to 7	—	—	—	14			
" 24	42.0	30.5	38.54	.820	.171	.265	3 to 0	3 to 10	16	2	4	—	—	—	2	0 to 1	—	—	—	16			
" 25	43.5	32.0	35.87	.416	.165	.279	—	7 to 10	4	2	2	—	—	—	4	0 to 2	—	—	—	8			
" 26	45.0	33.0	38.62	.620	.472	.561	—	5 to 10	12	2	—	—	—	—	4	0 to 2	—	—	—	18			
" 27	44.0	36.5	40.33	.854	.639	.769	—	2 to 7	2	—	—	—	—	—	2	0 to 2	—	—	—	6			
" 28	43.0	40.0	41.61	.869	.583	.800	—	0 to 2	6	6	—	—	—	—	—	0 to 4	—	—	—	24			
" 29	43.0	35.0	37.46	.543	.417	.457	—	2 to 10	6	—	—	—	—	—	2	0 to 2	—	—	—	10			
" 30	42.0	35.0	37.05	.649	.469	.586	—	5 to 10	10	—	—	—	—	—	4	0 to 6	—	—	—	12			
" 31	42.0	+37.0	+39.64	29.582	29.365	29.454	—	2 to 8	—	—	—	—	—	—	—	3 to 6	—	—	—	24			
744 hours.	+50.0	+29.0	+38.856	29.890	29.004	29.599	—	—	206	10	34	74	74	28	128	2 to 7	17	424	320	84	118		

Daily Observations on the Atmospheric Pressure,
H.M.S. "Discovery," 1875-1876.
(Barometer corrected.)

AUGUST 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	29.561	29.523	29.448	29.435	29.403	29.453
2	.538	—	—	.596	—	.555
3	.593	.593	.599	.615	.599	.573
4	.605	.603	.598	.563	.595	.601
5	.541	.531	.491	.433	.448	.491
6	.511	29.609	29.663	29.709	29.798	29.883
7	.943	30.055	30.083	30.043	30.011	30.033
8	.902	29.887	29.885	29.877	29.925	29.935
9	.945	29.959	30.017	30.055	30.073	30.121
10	—	30.065	30.021	29.973	29.880	29.750
11	.750	29.825	29.767	.919	.812	.800
12	.787	.787	.784	.879	.955	.977
13	.965	29.953	29.903	29.863	29.895	.935
14	29.965	30.025	30.032	30.053	30.049	—
15	30.099	30.122	30.045	30.059	30.035	.981
16	29.922	29.865	29.803	29.781	29.717	.717
17	.707	.704	.747	.773	.853	.859
18	.869	.899	.895	.845	.861	.788
19	.765	.711	.703	.609	.528	.403
20	.888	.365	.390	.505	.611	.613
21	.620	.695	.728	.743	.778	.795
22	.829	.815	.835	.843	.853	.832
23	.822	.757	.719	.681	.595	.603
24	.547	.547	.453	.570	.643	.690
25	29.737	29.787	.854	.899	29.939	29.974
26	30.029	30.119	—	—	30.076	30.098
27	30.045	30.025	.993	.971	29.953	29.915
28	29.863	29.825	.821	.761	.743	.693
29	.738	.668	.671	.703	.711	.713
30	.756	.813	.836	.839	.801	.835
31	29.694	29.711	29.649	29.675	29.552	29.476

OCTOBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	29.797	29.846	29.823	29.813	29.777	29.803
2	.805	.882	.895	.885	.905	.890
3	.901	.903	.915	.870	.863	.893
4	.903	29.920	.943	.913	.896	.939
5	.964	30.014	29.939	.957	.954	29.936
6	.896	29.975	30.022	.944	.908	30.035
7	.995	.948	30.010	.933	.940	29.935
8	.943	.923	29.907	.813	.673	.576
9	.543	.468	.476	.437	.525	.558
10	.591	.699	.748	.799	.809	.817
11	29.844	29.851	.917	29.926	29.909	29.921
12	30.009	30.004	29.967	30.039	30.042	30.079
13	.121	.114	30.117	.117	.122	.102
14	.041	.024	.044	30.042	30.072	30.099
15	30.097	30.059	30.094	29.959	29.922	29.837
16	29.694	29.749	29.756	.711	.665	.639
17	.672	.647	.642	.729	.724	.654
18	.650	.655	.657	.665	.642	.575
19	.689	.762	.739	.784	.824	.861
20	.849	.702	.832	.837	29.850	.848
21	.847	29.912	29.918	29.972	30.005	29.991
22	29.866	30.046	30.028	30.009	.078	30.076
23	30.002	.066	.181	.168	—	.259
24	.289	.297	.359	.358	.336	.368
25	.287	.303	.336	.262	.356	.334
26	.341	.314	.289	.291	.246	.254
27	.209	.219	.196	.152	.186	.183
28	.179	.159	.226	.202	.208	.208
29	.209	.228	.213	.167	.137	.131
30	.125	.177	.197	.219	.319	.313
31	30.307	30.400	30.433	30.489	30.529	30.545

SEPTEMBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	29.589	29.588	29.576	29.449	29.409	29.418
2	.439	.449	.413	—	.451	.403
3	.353	.498	.533	.476	.639	.606
4	.669	.738	.748	.748	.763	.758
5	.739	29.759	.665	.662	.641	.605
6	.611	—	29.601	.659	29.617	29.770
7	.903	30.005	30.011	.996	30.059	30.001
8	.920	29.902	29.899	.813	29.805	29.682
9	.652	.723	.756	.748	.723	.674
10	.792	.778	.735	.765	.621	—
11	.513	.460	.469	.449	.343	.338
12	.365	.420	.450	.523	.473	.503
13	.475	.503	.555	.605	.571	.503
14	.463	.483	.485	.385	.359	.364
15	.354	.455	.503	.501	.536	.538
16	.485	.678	.696	.723	.703	.665
17	.735	29.784	29.691	29.590	29.611	29.739
18	29.989	30.034	30.181	30.174	30.222	30.352
19	30.102	.119	.079	.092	.045	.019
20	.082	.042	.037	30.064	30.089	30.035
21	30.035	30.002	30.025	29.861	29.879	29.931
22	29.731	29.519	29.424	.433	.463	.550
23	.510	.663	.658	.882	.662	.658
24	.594	.568	.528	.518	.517	.509
25	.499	.511	.541	.579	.657	.709
26	.728	.773	.903	.915	.989	.918
27	.959	.919	.873	.935	.894	.849
28	.852	.801	.731	.686	.709	.769
29	.839	.810	.822	.870	.810	.900
30	29.903	29.862	29.817	29.800	29.678	29.733

NOVEMBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	30.627	30.615	30.615	30.752	30.701	30.705
2	.605	30.607	30.506	30.409	30.244	.167
3	.012	29.912	29.807	29.841	29.913	.015
4	.118	30.205	30.205	30.246	30.311	.203
5	.160	.170	.198	.221	.274	.274
6	.313	.293	.311	.197	.123	.186
7	.171	.193	.193	.183	.246	.241
8	.225	.245	.263	.295	.351	.443
9	.475	.475	.500	.476	.479	.500
10	.538	.568	.501	.559	.574	.613
11	.646	.790	.755	.781	.846	.877
12	.746	.788	.763	.755	.636	.613
13	.626	.475	.511	.520	.464	30.407
14	30.347	30.221	30.211	30.109	30.039	29.973
15	29.948	29.968	29.898	29.901	29.894	.881
16	.860	.838	29.785	29.789	29.861	29.898
17	.935	.975	30.013	30.049	30.059	30.043
18	.918	.973	29.931	29.839	29.879	29.741
19	.803	29.892	.922	.913	.947	29.948
20	29.953	30.005	.919	.929	.924	30.011
21	30.031	30.006	.948	.939	29.858	29.823
22	29.805	29.868	29.871	29.932	30.012	30.049
23	30.059	30.109	30.127	30.100	.016	.229
24	.229	.309	.301	.245	.178	30.169
25	30.104	30.091	30.111	30.129	30.028	29.931
26	29.948	29.919	29.903	29.921	29.874	29.954
27	30.025	30.200	30.216	30.291	30.346	30.379
28	.386	.402	.405	30.400	30.323	.253
29	.233	.161	.021	29.954	29.994	.013
30	30.056	30.051	30.148	30.156	30.151	30.099

DECEMBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	30·058	30·053	30·038	30·091	30·124	30·091
2	30·053	29·886	29·841	29·731	29·737	29·738
3	29·788	29·788	29·825	29·951	29·953	29·946
4	29·813	30·015	30·242	30·415	30·513	30·569
5	30·550	·560	·550	·453	·401	·371
6	·310	·327	·349	·399	·432	·502
7	·479	·462	·379	·340	·274	·285
8	·276	·312	30·319	30·377	30·290	30·207
9	30·101	30·016	29·873	29·796	29·649	29·591
10	29·623	29·573	·476	·352	·257	·252
11	·172	·102	·039	·052	29·995	·042
12	·102	·287	·411	·499	29·617	·707
13	·775	·751	·715	·717	·737	·705
14	·715	·707	·687	·675	·627	·645
15	·582	·487	·386	·517	·237	·211
16	·211	·227	·187	·157	·197	·257
17	·296	·336	·381	·410	·432	·447
18	·419	·416	·447	·405	·382	·399
19	·361	·294	·207	·262	·253	·302
20	·222	·164	·298	·262	·225	·249
21	·223	·214	·175	·195	·118	·249
22	·287	·314	·367	·380	·403	·452
23	·452	·389	·439	·462	·450	·532
24	·597	·712	·732	·823	·910	·916
25	·961	·938	·899	·749	·790	·777
26	·735	·672	·650	·616	·598	·602
27	·652	·772	·650	·603	·538	·432
28	·314	·262	·154	·057	·058	·098
29	·134	·132	·202	·245	·318	·391
30	·471	·526	·584	·600	·602	·591
31	29·623	29·596	29·576	29·599	29·518	29·534

FEBRUARY 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	29·529	29·555	29·484	29·532	29·588	29·579
2	29·634	29·783	29·928	30·016	30·184	30·283
3	30·314	30·279	30·178	29·979	29·695	29·517
4	29·470	29·333	29·237	·163	·156	·258
5	·378	·659	·589	·632	·719	·687
6	·651	·634	·628	·557	·569	·537
7	·587	·644	·728	·789	·801	·810
8	·948	·863	29·841	29·891	29·908	29·901
9	29·921	29·998	30·019	30·035	30·005	30·109
10	30·106	30·096	·128	·131	·155	·151
11	30·164	·131	·144	·189	·043	·024
12	29·961	·038	·067	·195	·194	·288
13	30·358	·311	·469	·436	·506	·490
14	·472	·462	·467	·388	·395	·337
15	·380	·362	·422	·466	·422	·409
16	·476	·467	·415	30·404	30·359	30·299
17	30·224	·191	30·120	29·994	29·929	29·901
18	29·921	—	29·744	·658	·673	29·719
19	29·786	·836	29·949	·981	·999	30·042
20	30·089	30·089	30·012	·984	·941	29·879
21	29·803	29·831	29·849	29·818	29·959	29·906
22	30·026	30·141	30·224	30·345	30·266	30·431
23	·429	·346	30·298	30·236	30·218	30·141
24	30·129	30·041	29·959	29·959	29·964	29·801
25	29·721	29·736	29·698	29·552	·568	29·704
26	29·853	30·057	30·109	30·023	29·994	30·101
27	30·151	·123	·201	·184	30·115	·129
28	·158	·183	·131	30·159	·174	·141
29	30·079	30·083	30·161	29·995	30·036	30·049

JANUARY 1876.

1	29·529	29·656	29·553	29·525	29·574	29·544
2	·514	·485	·529	·436	·548	·612
3	·537	·449	·447	·449	·163	·244
4	·309	·311	·347	·335	·372	·424
5	·471	·529	·497	·500	·572	·539
6	·557	·639	·709	29·757	·843	29·880
7	29·859	29·881	29·959	30·002	29·998	30·109
8	30·137	30·209	30·161	30·168	30·113	30·017
9	29·919	29·762	29·605	29·468	29·579	29·462
10	29·490	29·662	29·801	29·944	30·070	30·214
11	30·216	30·246	30·151	30·002	29·905	29·718
12	29·703	29·629	29·554	29·528	·495	·511
13	·544	·643	·659	·670	·759	·689
14	·661	·634	29·607	29·614	29·709	29·723
15	29·835	29·926	30·026	30·037	30·146	30·233
16	30·225	30·253	·207	·145	·081	·064
17	·034	·054	·107	30·120	30·159	30·189
18	30·179	30·145	30·049	29·962	29·984	29·949
19	29·859	29·862	29·844	·833	·849	·722
20	·725	·618	·568	·565	·497	·610
21	·620	·602	·620	·583	·583	·537
22	·475	·465	·322	·253	·142	·167
23	·132	·110	·130	·101	·161	·143
24	·262	·242	·270	·286	·296	·340
25	·387	·463	·561	·640	·754	·801
26	·580	·751	·602	·500	·463	·514
27	·471	·449	·476	·457	·620	·741
28	·805	—	·738	·854	·859	·835
29	·843	·833	·807	·728	·682	·633
30	·634	·611	·509	·617	·440	·384
31	29·416	29·411	29·426	29·432	29·600	29·496

MARCH 1876.

1	30·053	30·094	30·119	30·088	30·061	30·124
2	·144	·103	·176	·149	·094	·084
3	30·083	30·097	30·044	30·061	30·046	30·118
4	29·929	29·964	29·921	29·845	29·811	29·789
5	·784	·784	·799	·824	·796	·967
6	29·939	29·994	29·984	29·966	29·924	29·929
7	30·024	30·041	30·039	30·081	30·090	30·082
8	·094	·184	·256	·242	·338	·276
9	·351	·854	·333	·296	·211	·244
10	·149	·211	30·124	30·200	30·156	30·114
11	30·134	30·099	29·991	29·953	29·843	29·611
12	29·561	29·711	29·809	29·828	·913	·949
13	·999	30·024	30·023	30·009	·930	·931
14	29·893	29·838	29·883	29·909	29·905	29·948
15	30·010	30·055	30·053	30·127	30·159	30·209
16	·191	·274	·286	·309	·277	·474
17	·488	·463	·398	30·339	30·230	30·153
18	30·189	30·051	30·016	29·919	29·749	29·641
19	29·657	29·789	29·898	30·019	30·109	30·136
20	30·128	30·077	30·015	29·967	29·982	29·829
21	29·776	29·766	29·833	29·849	29·962	30·183
22	30·390	30·358	30·416	30·536	30·448	·456
23	·506	·512	·423	·399	·315	·237
24	·178	·286	·296	·264	·396	·380
25	·380	·410	·580	·386	·374	·310
26	·313	·129	30·066	·139	·045	·041
27	·119	·016	29·943	·131	·161	·181
28	·276	·841	30·321	·204	·187	·149
29	·151	·147	·446	·428	·346	30·306
30	30·273	30·221	30·175	30·095	30·050	29·979
31	29·914	29·894	29·841	29·843	29·833	29·829

APRIL 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	29·769	29·759	29·801	29·832	29·898	29·950
2	29·971	29·997	30·044	30·012	30·032	30·054
3	30·024	30·041	·071	·038	·042	·091
4	·139	·144	·261	·300	·283	·365
5	·422	·415	·519	·450	·500	·515
6	·507	·488	·500	30·441	·354	·338
7	—	·251	·241	—	·264	—
8	—	·659	·632	—	·610	·590
9	—	·603	·608	—	·562	·553
10	—	·493	·459	—	·311	·318
11	—	·299	·314	—	·350	·337
12	—	·373	·364	—	·312	·233
13	—	·137	·127	—	·106	·095
14	—	·157	·227	—	·368	·421
15	—	·497	·512	—	·514	·555
16	—	·515	·497	—	·454	·454
17	—	·444	·501	—	·426	·429
18	—	·406	·334	—	·554	·573
19	—	·520	·570	—	·596	·631
20	30·579	·628	·598	—	·606	·279
21	·447	·407	·376	—	·268	·213
22	·215	·225	·192	—	·124	·148
23	30·078	30·068	30·012	—	30·018	30·026
24	29·995	29·978	29·949	—	29·943	29·888
25	29·968	29·958	30·002	—	30·013	30·048
26	30·075	30·099	·129	—	·124	·231
27	·289	·332	·396	—	·595	·602
28	·666	·691	·651	—	·729	·715
29	·690	·686	·626	—	·544	·461
30	30·646	30·446	30·425	—	30·387	30·365

JUNE 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	29·395	29·425	29·411	—	29·463	29·490
2	·530	·560	·583	—	·603	·643
3	·682	·717	·714	—	·772	·789
4	·796	·879	·886	29·855	·866	·799
5	·857	·858	·863	·833	·851	·872
6	·823	·807	·942	·931	·931	·846
7	·809	·766	·757	·747	·753	·778
8	·765	·783	·788	·829	·859	·859
9	·846	·871	·903	·891	·962	29·978
10	29·975	29·956	29·973	29·971	29·991	30·006
11	30·019	30·009	30·051	30·007	30·019	30·011
12	29·999	29·989	29·971	29·932	29·914	29·889
13	·886	·889	·809	·774	·784	·804
14	·746	·744	·748	·738	·739	·726
15	·761	·781	·789	·808	·799	·829
16	·823	·879	·919	·946	·951	·961
17	·948	·953	·969	·971	·961	·951
18	·923	—	·966	·944	·957	·947
19	·967	·979	·969	·907	·851	·677
20	·704	·627	·631	·624	·624	·639
21	·679	·725	29·745	·821	·861	·898
22	·633	·773	30·015	·946	·941	·893
23	·893	·903	30·015	·935	·925	·935
24	·944	·950	29·958	·911	·891	·844
25	·796	·810	·807	·790	·803	·817
26	·792	·795	·787	·775	·771	·755
27	·755	·745	·761	·738	·658	·711
28	·659	·661	·683	·669	·659	·677
29	·661	·621	·612	·539	·489	·627
30	29·587	29·379	29·597	29·410	29·419	29·431

MAY 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	30·350	30·337	30·277	—	30·226	30·217
2	·186	·178	·189	—	30·159	30·136
3	·116	·081	·041	—	29·844	29·921
4	30·111?	30·253?	30·255?	—	·921	·901
5	29·888	29·862	29·859	—	·970	·954
6	·939	·894	·855	—	·818	·802
7	·829	·842	·857	—	29·888	29·897
8	29·919	29·919	29·907	—	30·003	30·027
9	30·061	30·066	30·089	—	·082	·086
10	·109	·111	·134	—	30·082	—
11	—	—	·001	—	29·920	·041
12	·093	·133	·171	—	30·232	—
13	—	·268	·281	—	·238	30·239
14	30·246	·256	·265	—	·332	—
15	—	30·234	30·184	—	30·062	—
16	—	29·876	29·769	—	29·878	—
17	—	·868	·848	—	·827	—
18	—	—	·906	—	·879	29·911
19	29·823	·818	·806	—	29·769	29·910
20	29·860	—	29·898	—	30·031	30·000
21	30·018	—	30·035	—	·031	·163
22	·128	—	30·201	—	30·156	30·101
23	30·128	—	29·950	—	29·761	29·753
24	29·757	—	·772	—	·679	·707
25	·653	·681	·704	—	·677	·651
26	·617	·719	·669	—	·717	·759
27	·745	·733	·645	—	·614	·635
28	·516	·535	·563	—	·597	·626
29	·669	·679	·707	—	·729	·749
30	·777	·679	·707	—	·679	·679
31	29·611	29·586	29·516	—	29·467	29·411

JULY 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	29·449	29·448	29·449	29·449	29·467	29·494
2	·509	·546	·611	·727	·697	·701
3	·716	·736	·741	·746	·766	·771
4	·887	·823	·827	·821	·819	·795
5	·751	·707	·697	·703	·735	·748
6	·768	·768	·761	·719	·719	·713
7	·718	·761	·805	·833	·868	·839
8	·811	·791	·751	·711	·763	·745
9	·755	·795	·808	·805	·825	·780
10	·817	·827	·853	·808	·788	·775
11	·725	·725	·718	·693	·683	·663
12	·623	·616	·589	·554	·542	·509
13	·473	·456	·479	·484	·501	·491
14	·504	·564	·587	·567	·599	·604
15	·614	·617	·652	·577	·699	·704
16	·717	·747	·747	·767	·768	·769
17	·757	·757	·764	·744	·726	·707
18	·717	·729	·717	·672	·669	·649
19	·672	·690	·740	·697	·759	·739
20	·689	—	·669	·657	·657	·547
21	·494	·384	·281	·204	·197	·189
22	·189	·219	·212	·200	·118	·094
23	·043	·093	·114	·237	·217	·217
24	·287	·297	·277	·279	·190	·110
25	·074	·147	·267	·297	·377	·434
26	·454	·474	·514	·541	·591	·631
27	·662	·711	·773	·816	·836	·816
28	·853	·837	·789	·719	·657	·577
29	·472	·444	·437	·419	·429	·419
30	·507	·554	·622	·681	·674	·651
31	29·619	29·541	29·481	29·379	29·359	29·349

AUGUST 1876.

Date.	4 P.M.	8 P.M.	Midnight.	4 A.M.	8 A.M.	Noon.
1	29·316	29·325	29·332	29·327	29·384	29·361
2	·401	·421	·447	·537	·401	·347
3	·331	·261	·244	·214	·194	·214
4	·264	·303	·365	·389	·467	·521
5	·522	·601	·615	29·597	29·814	·806
6	·896	·901	·896	30·023	30·016	·996
7	·901	·881	·851	29·751	29·731	·756
8	·756	·786	·729	·739	·673	·627
9	·577	·519	·585	·610	·627	·649
10	·726	·707	·781	·788	·834	·873
11	·886	·911	·921	·907	·954	·831
12	·936	·951	·951	·954	·911	·881
13	·836	·809	·800	·800	·754	·751
14	·744	·575	·480	·720	·734	·707
15	·699	·705	·712	·739	·729	·704
16	·667	·652	·612	·595	·607	·645
17	·563	·595	·602	·668	·682	·647
18	·624	·504	·477	·497	·502	·512
19	·509	·589	·584	·632	·684	·739
20	·697	·712	·627	·699	29·808	29·818
21	·903	·958	29·993	30·049	30·056	30·023
22	·996	·981	30·009	29·997	30·006	29·941
23	·961	·895	29·853	·786	29·766	·703
24	·676	·674	·697	·725	·733	·693
25	·691	·671	·777	·803	·817	·832
26	·878	·816	·881	·819	·796	·891
27	·841	·786	·776	·708	·671	·668
28	·685	29·703	29·806	29·829	29·876	29·936
29	·999	30·041	30·059	30·001	30·048	30·007
30	·929	29·928	29·920	29·897	29·914	29·889
31	29·776	29·711	29·579	29·579	29·621	29·679

Daily Observations on the Atmospheric Pressure, 1875-1876.

H.M.S. "ALERT."—AUGUST 1875.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	29·589	29·584	29·524	29·536	29·516	29·476	29·469	—	29·427	29·425	—	29·448
2	—	·531	·541	·552	·564	·551	·561	29·588	·586	·581	—	—
3	·557	·562	·585	·584	·574	·585	·583	·593	—	·597	29·570	·559
4	—	·589	·584	·589	·589	·594	·605	·625	·627	·621	·612	·594
5	—	·555	·535	·528	·525	29·497	29·457	·455	·435	·453	·458	·472
6	·466	·510	29·552	29·549	—	—	—	·712	—	29·782	—	·870
7	·930	·970	30·010	30·030	—	30·080	30·101	—	—	30·067	·981	·971
8	—	·907	29·890	29·886	·855	29·863	29·857	29·856	29·874	—	—	29·921
9	29·907	29·907	29·944	29·980	29·999	30·018	30·035	30·055	30·088	30·133	—	30·143
10	30·132	30·122	30·105	30·068	30·052	30·004	29·992	29·970	29·926	29·888	·818	29·758
11	29·752	29·727	29·718	29·722	29·752	29·755	·777	·796	·798	·791	·798	·788
12	—	·775	·782	29·770	·788	·797	—	·885	·925	·930	·960	·965
13	·960	·957	—	—	29·908	29·880	29·875	29·878	29·872	29·876	29·905	29·933
14	29·944	29·960	29·963	30·001	30·003	30·005	30·028	30·044	30·060	30·057	30·038	30·049
15	30·050	30·076	30·076	30·060	—	30·082	30·055	30·049	—	29·995	29·971	29·943
16	—	—	—	29·860	29·815	29·795	29·785	29·771	29·772	·745	—	·721
17	29·700	29·703	29·706	·717	—	·734	·758	·787	—	·848	·859	·854
18	·884	·886	·883	·889	·877	·863	·856	·856	·852	·849	·816	·806
19	·788	·771	·763	·665	—	·629	·613	·686	—	·508	—	·423
20	·371	—	·367	·375	·413	·417	·455	·477	—	·591	·604	·610
21	·607	·630	·657	·705	—	·722	·722	·742	·768	—	·786	·805
22	·804	·805	·809	—	·842	·786	·850	·832	·818	—	—	·824
23	—	·789	·789	·754	·744	·706	·674	·649	·613	29·599	·570	—
24	—	·544	—	·544	—	·549	·534	·580	—	—	·658	·703
2	29·715	29·743	29·782	29·808	29·796	29·835	29·857	29·860	29·882	—	29·973	29·982
26	30·000	30·013	30·033	—	30·042	30·037	30·045	30·063	30·065	30·055	30·070	30·074
27	30·062	30·051	30·035	30·002	30·020	30·007	29·992	29·980	29·971	29·946	29·915	29·890
28	—	29·868	29·917	29·835	—	—	—	·762	·771	·746	·727	·706
29	—	·660	·656	·656	—	29·672	·685	·695	·692	·713	29·716	·726
30	—	·829	·793	·794	29·853	·838	—	·826	·802	·773	—	·791
31	29·688	29·673	29·637	29·598	29·558	29·558	29·588	29·495	29·476	29·481	—	29·502

FLOEBERG BEACH.—SEPTEMBER 1875.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	—	29·571	29·557	29·520	—	29·444	29·349	29·349	29·327	29·338	—	29·431
2	29·436	·457	·565	·474	29·467	·453	·457	·457	·432	·431	29·425	·405
3	·415	·425	·450	—	·511	·498	·524	·528	·555	·590	—	—
4	—	·661	·677	·707	·741	·735	·756	·763	·765	·771	·765	·758
5	—	·729	·729	·730	·710	·708	·758	·723	·701	·699	·670	·669
6	·654	·640	·698	·652	29·650	29·630	29·613	29·627	29·675	29·664	29·755	29·800
7	29·835	29·903	·981	·960	30·023	30·029	30·062	30·074	30·071	—	30·062	30·050
8	30·031	30·024	·971	·954	—	29·856	29·851	29·818	29·793	·774	29·755	29·735
9	29·707	29·708	·696	·707	29·707	—	—	—	—	—	·715	·682
10	·683	·696	·707	·697	·688	·670	·698	·626	·560	·596	·490	·503
11	·511	·494	·595	·506	·429	·394	·398	·309	·373	·373	·362	·360
12	·842	·309	·313	·335	·423	·403	·402	·422	·405	·396	·373	·356
13	·360	·344	·379	·406	·380	·405	·408	·449	·456	·404	·331	·284
14	·261	·250	·211	·211	—	—	·267	·312	·308	—	·311	·357
15	·377	·410	·415	·365	·336	·297	·321	·323	·376	—	·439	·436
16	29·470	·530	·553	·541	·615	·595	·580	·565	·578	·578	·597	·597
17	—	30·644	29·697	29·639	29·618	29·612	29·585	29·615	29·649	29·697	29·747	29·802
18	—	30·007	30·089	30·122	30·142	30·213	30·195	30·210	30·219	30·208	30·192	30·179
19	30·142	·138	·138	·138	·139	30·050	·015	29·992	29·995	·011	30·032	30·039
20	30·052	30·084	30·052	30·094	30·102	—	30·117	—	—	30·097	—	—
21	—	—	—	—	—	—	—	—	—	29·848	29·857	29·790
22	29·730	29·685	29·640	29·572	29·572	29·502	29·514	·518	·529	·421	·515	·515
23	·511	·521	—	·582	·605	·631	·615	·636	·618	·621	·632	·626
24	·598	·597	·594	·571	—	—	·464	·506	·551	·511	·511	·519
25	·497	·502	·536	·528	—	·510	·569	·594	·635	·657	·635	·691
26	·738	·751	—	·738	·856	·860	·937	·939	·926	·985	·973	·981
27	·930	·945	·875	·915	·910	·910	·786	·869	·904	·897	·926	·854
28	·811	·861	·752	—	·698	·710	·734	·729	·694	·737	·681	·701
29	·711	·748	·755	·815	·804	·838	·830	·830	·842	·864	·954	·858
30	29·928	29·848	29·831	29·835	29·831	29·823	29·787	29·784	29·864	29·854	29·915	29·845

FLOEBERG BEACH.—OCTOBER 1875.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	29·729	29·805	29·843	29·778	29·808	29·730	29·825	29·827	29·837	29·826	29·755	29·768
2	·825	·848	·789	·835	·878	·875	·915	·921	·926	·836	·911	·888
3	·888	·901	·894	·891	·916	·945	·875	·905	·919	·924	·891	·918
4	·905	·880	·934	·911	·938	·900	·925	·916	·915	·915	·915	·915
5	·919	·938	·945	·945	29·912	29·913	·891	·908	·892	·886	·910	·922
6	·921	·943	·810	·937	30·000	30·005	·918	·925	·934	·939	·903	·920
7	·922	·925	29·957	·990	29·988	29·923	·943	·936	·916	·915	·920	·924
8	·994	·939	30·019	·909	·902	·848	·785	·743	·761	·721	·648	·613
9	·594	·595	29·596	·518	·490	·518	·554	·526	·604	·516	·520	·513
10	·505	·525	·585	·588	·618	·638	·623	·694	·716	·710	·712	·735
11	·794	·772	·780	·845	·818	·818	·798	·830	·861	·855	·862	·859
12	·864	29·864	29·899	29·902	29·883	29·891	29·953	29·961	29·963	29·970	·986	29·994
13	29·977	30·001	30·029	30·001	30·012	30·034	30·033	30·039	30·008	30·025	29·986	30·005
14	30·043	·039	·004	·004	·007	29·984	·037	30·034	30·052	30·043	30·067	30·089
15	30·084	30·106	30·146	30·079	30·014	30·037	30·003	29·948	29·880	29·840	29·826	29·714
16	29·702	29·651	29·724	29·691	29·691	29·691	29·599	·631	·631	·656	·696	·712
17	·656	·619	·703	·685	·684	·721	·789	·664	·724	·704	·701	·656
18	·694	·574	·535	·651	·638	·643	·615	·681	·689	·689	·703	·663
19	·663	·616	·694	·698	·699	·722	·711	·844	·791	·805	·803	·909
20	·829	·826	·851	·838	·914	·928	·814	·817	·810	·824	·829	·833
21	·934	·932	·806	·725	·831	·856	29·929	29·932	·904	·912	29·934	29·912
22	29·945	29·993	29·902	29·977	29·970	29·936	30·006	30·015	29·937	29·892	30·027	30·015
23	30·035	30·025	30·036	30·062	30·067	30·060	·086	29·986	30·027	30·019	·084	·084
24	·181	·201	·224	·264	·302	·290	·237	30·222	·207	·219	·179	·181
25	·241	·215	·232	·204	·220	·223	·225	·228	·270	·290	·292	·242
26	·285	·285	·283	·299	·292	·282	·275	·281	·281	·237	·247	·247
27	·214	·220	·225	·217	·214	·212	·213	·181	·199	·199	·177	·187
28	·152	·152	·153	·216	·167	·168	·216	·219	·208	·136	·159	·222
29	·194	·224	·192	·179	·199	·199	·192	·184	·128	·127	·126	·113
30	·131	·127	·174	·152	·112	·114	·165	·178	·193	·212	·238	·248
31	30·251	30·253	30·348	30·351	30·376	30·422	30·407	30·435	30·475	30·497	30·513	30·533

FLOEBERG BEACH.—NOVEMBER 1875.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid-night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.	
1	30.536	20.516	30.518	30.516	30.516	30.514	30.495	30.562	30.512	30.605	30.576	30.586	30.619	30.602	30.584	30.584	30.589	30.584	30.659	30.662	30.627	30.627	30.627	30.628	30.625
2	30.627	30.636	30.616	30.607	30.592	30.546	30.496	30.514	30.493	30.433	30.391	—	30.430	30.330	30.232	30.261	30.215	30.192	30.192	30.152	30.092	30.046	30.039	30.011	29.979
3	29.956	29.956	29.993	29.912	29.903	29.877	29.835	29.855	29.775	29.762	29.802	—	29.797	29.735	29.758	29.758	29.738	29.823	29.806	29.846	29.900	29.873	29.887	29.905	29.905
4	29.875	29.757	30.027	30.024	30.046	30.098	30.088	30.086	30.092	30.092	30.122	0.099	30.077	30.077	30.067	30.059	30.058	30.055	30.116	30.110	30.142	30.143	30.153	30.164	30.164
5	30.121	30.181	30.145	30.115	30.161	30.161	30.121	30.140	30.115	30.115	30.134	1.140	0.030	0.124	0.137	0.199	0.204	0.207	0.135	0.145	0.155	0.205	0.160	0.195	0.195
6	2.10	2.08	2.25	1.40	1.68	1.65	1.60	1.29	—	30.024	29.967	30.087	30.096	0.096	0.138	0.128	0.029	0.112	0.005	0.005	0.999	0.020	0.037	29.994	29.994
7	1.147	0.47	0.47	0.47	0.92	0.52	0.12	0.16	29.979	29.949	29.952	29.982	29.952	0.045	0.098	0.144	0.193	0.198	0.207	0.226	0.197	0.181	0.210	30.184	30.184
8	1.164	1.62	1.32	1.26	1.39	1.81	2.18	2.13	30.248	30.278	30.261	30.281	30.251	0.251	0.304	0.326	0.371	0.358	0.362	0.380	0.397	0.388	0.417	4.05	4.05
9	4.10	3.98	4.08	4.27	4.74	4.84	4.94	4.97	4.84	4.61	4.66	4.86	4.83	4.92	4.74	4.97	4.97	5.00	5.08	4.87	5.27	5.42	5.47	5.08	5.08
10	5.15	5.25	5.22	4.91	5.11	5.21	5.30	5.30	5.40	5.56	5.51	5.50	5.08	5.50	5.52	5.56	5.46	5.49	5.52	5.54	5.67	5.67	5.67	6.35	6.35
11	6.35	6.30	6.60	6.85	7.31	6.75	7.29	6.60	—	—	7.28	6.98	7.49	7.46	7.59	7.66	8.19	8.24	7.60	7.70	7.07	6.87	6.87	6.84	6.84
12	6.70	6.97	7.22	7.22	7.29	7.22	7.34	7.27	7.22	7.22	7.27	6.67	6.95	7.02	7.10	6.95	7.10	6.84	6.85	6.81	7.35	7.27	6.84	6.54	6.54
13	6.18	6.02	6.00	5.94	5.92	5.97	5.68	5.63	5.78	6.03	6.31	5.91	5.17	5.46	5.49	5.29	4.60	4.90	4.90	4.60	3.513	4.72	4.24	30.379	30.379
14	4.04	30.454	30.336	30.302	2.62	30.264	1.82	30.142	30.080	30.071	30.071	30.080	30.121	30.114	30.086	30.084	30.029	30.039	30.032	30.009	29.996	30.004	30.024	29.981	29.981
15	30.001	29.975	29.956	29.956	30.003	29.968	30.008	29.908	29.910	29.910	29.888	29.900	29.913	29.915	29.921	29.921	29.934	29.956	29.946	29.934	916	29.901	29.998	901	901
16	29.897	30.034	29.997	908	29.909	909	29.948	948	921	29.918	29.918	29.888	29.891	29.801	29.808	896	29.864	854	29.824	29.824	29.859	29.862	29.820	29.798	29.798
17	29.844	29.832	29.826	821	926	29.891	944	29.948	948	30.008	30.022	30.025	30.004	30.006	30.029	—	30.059	—	30.054	30.052	30.050	30.049	30.047	30.061	30.061
18	30.054	30.035	30.035	986	986	30.018	955	30.008	963	29.983	29.985	29.921	29.868	29.926	29.926	844	29.799	762	29.742	29.730	29.702	29.702	29.784	29.691	29.691
19	29.718	29.715	29.724	779	782	29.782	794	29.801	844	915	875	883	921	956	926	957	954	926	926	940	939	894	890	29.905	29.905
20	9.18	—	908	29.898	944	933	931	949	908	905	905	932	910	868	878	878	860	856	860	913	943	931	940	30.010	30.010
21	9.48	9.48	29.948	30.008	930	940	980	965	968	968	970	969	948	933	938	938	921	904	916	924	871	860	850	29.860	29.860
22	29.860	29.844	—	—	29.804	29.801	795	790	29.825	843	832	862	29.882	29.882	29.888	29.893	29.875	29.866	29.885	29.883	29.870	29.870	29.968	30.008	30.008
23	30.020	30.038	30.038	30.036	30.048	30.028	29.905	29.902	30.010	29.984	29.985	29.985	30.003	30.018	30.010	30.058	30.118	30.073	30.068	30.080	30.126	30.144	30.131	30.155	30.155
24	1.55	2.26	2.21	2.21	2.13	1.60	30.170	30.169	278	30.278	30.278	30.283	3.25	273	230	30.275	1.81	1.81	224	30.221	1.65	30.171	30.211	30.211	30.211
25	30.125	30.118	30.116	30.097	30.108	30.082	30.060	30.136	30.136	30.050	30.044	30.065	30.082	30.070	30.100	30.030	30.040	30.040	30.008	29.992	30.002	29.883	29.913	29.905	29.905
26	29.920	29.625	29.649	29.639	29.753	29.798	29.754	29.752	29.791	29.794	29.794	29.803	29.823	29.868	29.908	29.908	29.905	29.905	29.905	29.902	29.920	29.910	29.910	29.910	29.910
27	29.935	30.008	29.980	29.996	30.018	30.086	30.113	30.125	30.162	30.162	30.202	30.200	30.250	30.250	30.302	30.252	30.352	30.352	30.352	30.352	30.382	30.370	30.370	30.379	30.379
28	30.378	30.378	30.378	30.383	418	424	393	393	405	402	405	30.405	3.58	3.55	30.358	30.360	30.359	30.359	30.375	30.391	30.408	30.405	30.388	30.288	30.288
29	30.278	30.310	30.253	30.218	30.225	2.52	1.55	1.52	0.61	0.50	0.12	29.974	874	29.888	29.908	29.850	29.823	29.824	29.810	29.873	29.873	29.878	29.880	29.900	29.900
30	29.898	29.878	29.908	29.920	29.985	30.002	30.035	30.054	30.101	30.141	30.171	30.201	30.192	30.192	30.190	30.200	30.190	30.205	30.145	30.115	30.102	30.042	30.082	30.085	30.085

FLOEBERG BEACH.—DECEMBER 1875.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid-night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	29-994	30-021	30-012	29-981	29-946	29-908	29-888	29-872	29-910	29-968	30-000	30-100	30-072	30-115	30-128	80-158	30-188	30-190	30-210	30-154	30-154	30-158	30-155	30-152
2	30-130	30-120	30-050	30-030	29-995	29-998	29-940	29-932	29-899	29-787	29-767	29-715	29-677	29-637	29-647	29-567	29-583	29-552	29-572	29-552	29-567	29-637	29-559	29-550
3	29-610	29-623	29-629	29-629	29-631	29-645	29-673	29-640	29-670	29-763	29-771	29-811	29-865	29-915	29-914	29-913	29-940	29-927	29-937	29-999	30-055	30-005	30-005	30-006
4	30-005	30-005	30-002	30-012	30-015	30-005	29-982	30-020	30-102	30-150	30-160	30-248	30-252	30-355	30-370	30-358	30-458	30-455	30-432	30-490	30-490	30-517	30-514	30-484
5	29-517	29-503	29-464	29-480	29-460	29-444	29-444	29-414	29-417	29-417	29-420	29-410	29-402	29-402	29-405	29-355	29-358	29-328	29-328	29-267	29-267	29-267	29-267	29-267
6	29-208	29-230	29-197	29-127	29-150	29-150	29-147	29-152	29-192	29-239	29-300	29-303	29-362	29-375	29-391	29-408	29-445	29-465	29-465	29-450	29-450	29-450	29-450	29-450
7	29-482	29-465	29-465	29-465	29-460	29-455	29-405	29-402	29-404	29-404	29-397	29-357	29-330	29-330	29-318	29-318	29-303	29-312	29-282	29-280	29-280	29-255	29-255	29-252
8	29-252	29-255	29-263	29-315	29-315	29-310	29-310	29-302	29-312	29-307	29-317	29-347	29-327	29-327	29-345	29-332	29-268	29-268	29-262	29-244	29-244	29-242	29-244	29-165
9	30-205	30-205	30-205	30-137	30-124	30-122	30-102	30-089	30-069	29-997	29-987	29-867	29-807	29-857	29-867	29-802	29-835	29-802	29-832	29-705	29-705	29-657	29-610	29-618
10	29-627	29-625	29-575	29-595	29-553	29-552	29-582	29-557	29-467	29-507	29-452	29-382	29-422	29-422	29-352	29-332	29-305	29-255	29-260	29-257	29-247	29-247	29-233	29-245
11	30-233	29-217	29-157	29-155	29-175	29-192	29-155	29-149	29-144	29-192	29-114	29-047	29-997	29-997	29-999	29-999	29-902	29-992	29-922	29-989	29-994	29-999	29-999	29-999
12	29-034	29-014	29-064	29-072	29-142	29-139	29-189	29-242	29-244	29-294	29-297	29-347	29-394	29-394	29-424	29-497	29-547	29-579	29-592	29-629	29-659	29-667	29-669	29-719
13	29-757	29-757	29-760	29-760	29-765	29-765	29-757	29-752	29-737	29-732	29-727	29-727	29-749	29-749	29-745	29-737	29-737	29-705	29-705	29-689	29-697	29-697	29-647	29-647
14	29-660	29-660	29-673	29-607	29-644	29-649	29-614	29-684	29-644	29-639	29-644	29-649	29-689	29-689	29-675	29-667	29-657	29-660	29-660	29-667	29-667	29-667	29-589	29-589
15	29-605	29-602	29-552	29-552	29-519	29-509	29-509	29-492	29-487	29-407	29-379	29-379	29-339	29-339	29-297	29-257	29-257	29-257	29-257	29-257	29-257	29-257	29-257	29-257
16	29-169	29-154	29-157	29-157	29-184	29-184	29-179	29-169	29-189	29-189	29-194	29-197	29-199	29-202	29-157	29-160	29-180	29-120	29-160	29-160	29-167	29-167	29-167	29-177
17	29-213	29-225	29-228	29-263	29-258	29-251	29-265	29-265	29-257	29-255	29-244	29-244	29-240	29-240	29-260	29-260	29-260	29-260	29-260	29-260	29-260	29-260	29-260	29-260
18	29-367	29-367	29-367	29-392	29-352	29-347	29-349	29-355	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344	29-344
19	29-387	29-347	29-347	29-342	29-335	29-302	29-297	29-297	29-297	29-277	29-277	29-277	29-267	29-267	29-250	29-247	29-207	29-210	29-230	29-237	29-237	29-253	29-253	29-253
20	29-223	29-217	29-227	29-227	29-207	29-202	29-205	29-245	29-262	29-262	29-319	29-272	29-232	29-232	29-205	29-277	29-247	29-247	29-257	29-265	29-243	29-217	29-213	29-213
21	29-210	29-160	29-155	29-152	29-162	29-157	29-159	29-137	29-104	29-104	29-077	29-094	29-044	29-052	29-052	29-052	29-052	29-052	29-052	29-052	29-052	29-052	29-052	29-052
22	29-205	29-235	29-215	29-232	29-262	29-259	29-297	29-257	29-299	29-318	29-324	29-317	29-329	29-332	29-335	29-335	29-335	29-335	29-335	29-335	29-335	29-335	29-335	29-335
23	29-483	29-473	29-473	29-475	29-485	29-507	29-455	29-444	29-442	29-439	29-442	29-449	29-502	29-502	29-502	29-502	29-502	29-502	29-502	29-502	29-502	29-502	29-502	29-502
24	29-448	29-445	29-448	29-448	29-545	29-557	29-560	29-560	29-560	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562	29-562
25	29-978	29-988	29-978	29-975	29-975	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978	29-978
26	29-668	29-668	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665	29-665
27	29-573	29-571	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568	29-568
28	29-351	29-321	29-298	29-288	29-275	29-243	29-203	29-180	29-160	29-195	29-197	29-120	29-110	29-113	29-063	29-063	29-018	29-018	29-018	29-018	29-018	29-018	29-018	29-018
29	29-085	29-085	29-085	29-128	29-107	29-130	29-140	29-137	29-145	29-205	29-155	29-152	29-152	29-152	29-152	29-152	29-152	29-152	29-152	29-152	29-152	29-152	29-152	29-152
30	29-315	29-355	29-353	29-349	29-349	29-349	29-399	29-394	29-484	29-457	29-492	29-505	29-515	29-527	29-537	29-550	29-500	29-510	29-530	29-520	29-520	29-520	29-520	29-520
31	29-557	29-555	29-553	29-555	29-549	29-544	29-572	29-567	29-569	29-567	29-574	29-567	29-527	29-519	29-529	29-532	29-530	29-527	29-530	29-520	29-455	29-465	29-465	29-467

FLOEBERG BEACH.—JANUARY 1876.

Date,	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid-night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	29.507	29.505	29.505	29.505	29.502	29.502	29.502	29.502	29.537	29.522	29.519	29.519	29.552	29.552	29.552	29.547	29.552	29.605	29.605	29.605	29.605	29.502	29.449	29.452
2	4.75	4.75	4.49	4.37	4.39	4.29	4.19	4.19	4.19	3.52	3.47	3.49	3.52	3.55	3.55	3.55	3.55	3.60	3.60	3.63	3.60	3.77	3.87	3.87
3	3.80	3.85	4.07	4.32	4.39	4.27	4.47	4.47	4.49	4.49	4.47	4.95	3.47	3.47	2.97	2.99	2.65	2.45	2.27	2.27	1.65	1.37	1.39	1.45
4	1.47	1.27	2.05	1.89	2.34	2.30	2.42	2.49	2.47	2.07	2.49	2.49	3.02	3.05	3.05	2.37	2.47	2.37	2.47	2.47	1.95	1.85	2.17	2.19
5	2.49	2.47	2.97	3.74	3.94	3.47	3.94	3.84	4.07	4.17	4.27	4.29	4.30	4.65	4.65	4.70	4.30	4.70	4.67	4.67	5.10	5.05	4.99	5.02
6	4.65	4.62	4.47	4.62	5.02	4.99	5.07	5.04	5.62	5.77	5.79	5.62	5.32	5.87	5.87	6.10	6.60	6.63	6.60	6.55	6.52	6.69	6.97	6.97
7	7.02	7.02	7.05	7.05	7.18	6.68	7.65	7.62	7.32	7.32	7.02	7.12	7.52	8.02	8.22	8.42	8.42	8.45	8.55	9.02	8.52	9.02	9.32	9.02
8	9.62	9.62	9.78	9.75	9.92	9.88	9.50	9.92	9.60	9.94	9.97	9.97	9.87	9.42	9.42	9.42	9.02	9.25	8.75	8.05	7.42	7.32	7.02	7.12
9	6.72	5.52	5.55	5.55	4.95	4.95	4.49	4.49	4.00	3.37	2.94	2.47	1.97	1.97	1.99	2.02	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
10	29.307	29.327	29.407	29.405	29.529	29.529	29.527	29.544	29.594	29.614	29.633	7.44	7.99	8.39	8.82	9.22	9.72	9.702	9.705	9.637	9.592	30.062	29.547	30.070
11	30.145	30.145	30.153	30.148	30.140	30.140	30.110	30.055	30.077	30.054	30.012	9.74	9.37	9.09	8.72	8.25	7.25	29.702	29.705	29.637	29.594	30.062	29.547	30.070
12	29.549	29.559	29.555	29.562	29.572	29.567	29.567	29.557	29.527	29.512	29.502	4.84	4.97	4.32	4.22	4.32	4.69	4.67	4.77	4.77	4.55	4.49	4.47	4.47
13	5.09	5.09	5.22	5.22	5.89	5.54	5.74	5.79	5.84	5.94	5.64	5.64	5.97	5.99	5.99	5.99	6.02	6.02	6.02	6.02	6.05	5.99	5.92	5.99
14	5.80	5.30	5.40	5.90	5.83	5.97	6.07	5.85	5.62	5.57	5.69	29.569	29.572	29.602	29.605	29.605	29.635	29.687	29.687	29.687	29.722	29.719	29.742	29.762
15	29.772	29.802	29.802	29.847	29.842	29.857	29.832	29.932	29.932	29.932	29.932	30.002	30.092	30.097	30.100	30.102	30.105	30.118	30.138	30.165	30.157	30.184	30.184	30.187
16	30.182	30.202	30.192	30.205	30.205	30.202	30.152	30.152	30.152	30.150	30.150	1.50	1.60	1.42	1.42	1.35	1.28	1.12	1.12	1.05	1.08	0.88	0.28	0.15
17	0.12	0.22	0.27	0.80	0.22	30.025	30.032	30.030	30.030	30.045	30.045	30.045	30.048	30.050	30.053	30.055	30.043	30.053	30.053	30.050	30.053	30.048	30.045	30.050
18	30.050	30.048	30.028	30.015	30.025	29.995	29.995	29.982	29.972	29.957	29.937	29.937	29.887	29.862	29.875	29.927	29.927	29.930	29.920	29.925	29.923	29.920	29.920	29.920
19	29.907	29.910	29.907	29.907	29.857	29.849	8.42	8.55	7.97	7.79	7.89	7.89	7.99	8.05	8.07	8.07	8.07	7.97	7.90	7.85	8.15	7.43	7.45	7.45
20	7.20	7.17	7.07	6.97	6.90	6.87	6.89	6.87	6.87	6.42	6.35	6.09	6.02	5.95	5.77	5.77	5.85	5.85	6.11	6.13	6.25	6.33	6.33	6.33
21	6.48	6.40	6.48	6.43	6.03	6.18	6.47	6.45	6.37	6.27	6.27	6.17	6.37	6.40	6.45	6.45	6.51	6.51	6.38	6.21	6.15	6.03	5.95	5.85
22	5.38	4.98	4.88	5.18	4.90	4.80	4.46	4.12	4.05	3.55	3.60	3.37	3.03	2.75	2.45	2.20	2.20	2.03	1.88	1.65	1.15	0.90	0.90	0.90
23	0.93	0.90	0.83	0.83	0.73	0.72	0.92	1.10	0.70	0.43	0.33	0.35	0.28	0.28	0.31	0.21	0.21	0.26	0.36	0.23	0.18	0.08	0.08	0.08
24	0.61	0.57	0.55	0.53	1.25	1.27	1.38	1.35	1.23	1.40	1.45	1.58	1.51	1.41	1.51	1.51	1.51	1.51	1.58	1.88	1.91	1.21	1.21	1.21
25	0.76	2.84	3.66	3.63	3.81	3.98	4.56	4.63	4.81	4.91	5.01	5.28	5.48	5.58	6.05	6.18	6.18	6.43	6.66	7.21	7.05	7.25	7.25	7.25
26	7.33	7.28	7.18	7.05	7.21	7.08	7.05	7.03	6.69	6.73	6.83	6.18	6.21	6.05	5.72	5.51	5.33	5.33	5.16	5.21	4.88	5.29	4.64	4.41
27	4.26	4.29	4.21	4.15	3.98	4.08	4.15	4.15	4.35	3.92	3.89	3.82	3.85	3.65	4.35	5.05	5.10	5.20	5.23	5.45	5.75	6.05	6.17	6.37
28	6.98	7.15	6.85	7.20	7.47	7.47	7.40	7.40	7.17	7.97	7.97	8.27	8.33	8.33	8.33	8.45	8.45	8.55	8.53	8.53	8.87	8.90	8.61	8.61
29	6.51	6.48	6.43	6.40	6.37	6.40	6.42	6.42	6.42	6.42	6.42	6.27	6.07	5.87	7.90	7.63	7.63	7.58	7.98	6.95	6.70	6.62	6.57	6.32
30	6.25	6.12	5.57	5.59	5.67	5.64	5.72	5.74	5.44	5.34	5.17	5.17	4.97	4.97	4.97	4.97	4.07	4.97	4.90	4.83	4.80	4.67	4.67	4.67
31	29.462	29.462	29.465	29.445	29.452	29.449	29.439	29.439	29.429	29.429	29.432	29.435	29.435	29.425	29.422	29.425	29.437	29.447	29.507	29.510	29.497	29.495	29.497	29.495

FLOEBERG BEACH.—FEBRUARY 1876.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid-night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	29-487	29-515	29-515	29-505	29-512	29-502	29-492	29-482	29-472	29-467	29-467	29-469	29-469	29-467	29-472	29-485	29-515	29-515	29-535	29-535	29-545	29-557	29-564	29-574
2	29-604	29-582	29-612	29-629	29-666	29-689	29-726	29-726	29-746	29-786	29-786	29-819	29-882	29-914	29-964	29-977	30-022	30-042	30-062	30-092	30-110	30-140	30-172	30-187
3	30-182	30-209	30-229	30-229	30-289	30-286	30-266	30-258	30-298	30-301	30-286	30-276	30-249	30-222	30-202	30-162	30-122	30-054	30-027	29-987	29-924	29-872	29-824	29-764
4	29-737	29-667	29-624	29-594	29-564	29-522	29-499	29-469	29-466	29-464	29-406	29-389	29-369	29-349	29-319	29-299	29-272	29-263	29-252	29-227	224	224	224	224
5	29-267	29-297	29-327	29-364	29-402	29-444	29-472	29-489	29-509	29-526	29-529	29-549	29-562	29-564	29-584	29-584	29-587	29-587	29-587	29-597	29-592	29-592	29-592	29-592
6	29-614	29-612	29-622	29-629	29-669	29-672	29-697	29-664	29-662	29-666	29-664	29-677	29-677	29-689	29-692	29-692	29-692	29-692	29-692	29-692	29-692	29-692	29-692	29-692
7	29-624	29-622	29-622	29-624	29-647	29-660	29-660	29-660	29-694	29-707	29-707	29-709	29-702	29-722	29-725	29-737	29-767	29-767	29-767	29-767	29-767	29-769	29-769	29-769
8	29-759	29-777	29-767	29-782	29-785	29-789	29-817	29-817	29-814	29-814	29-817	29-819	29-872	29-872	29-872	29-872	29-872	29-872	29-872	29-872	29-872	29-872	29-872	29-872
9	29-917	29-917	29-929	29-997	29-970	29-977	29-977	29-980	29-997	30-000	30-002	30-005	30-015	30-038	30-048	30-045	30-078	30-075	30-085	30-095	30-095	30-082	30-085	30-085
10	30-095	30-095	30-087	30-090	30-090	30-090	30-127	30-124	30-122	30-122	30-124	30-135	30-135	30-135	30-148	30-148	30-160	30-140	30-140	30-140	30-148	30-145	30-145	30-145
11	30-142	30-135	30-102	30-122	30-170	30-200	30-162	30-160	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157	30-157
12	29-980	29-980	29-970	29-964	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984	29-984
13	30-340	30-342	30-362	30-382	30-415	30-425	30-412	30-412	30-430	30-437	30-437	30-457	30-460	30-457	30-462	30-462	30-462	30-462	30-462	30-462	30-462	30-462	30-462	30-462
14	29-468	29-461	29-453	29-458	29-450	29-445	29-445	29-405	29-382	29-375	29-398	29-388	29-388	29-388	29-388	29-388	29-388	29-388	29-388	29-388	29-388	29-388	29-388	29-388
15	29-375	29-375	29-375	29-375	29-373	29-380	29-370	29-360	29-450	29-408	29-408	29-418	29-428	29-428	29-428	29-428	29-428	29-428	29-428	29-428	29-428	29-428	29-428	29-428
16	29-453	29-453	29-453	29-453	29-450	29-450	29-450	29-448	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455	29-455
17	30-815	30-853	30-280	30-218	30-218	30-195	30-185	30-160	30-137	30-112	30-100	30-070	30-028	29-985	29-975	29-943	29-933	29-915	29-905	29-883	29-869	29-842	29-832	29-812
18	29-805	29-805	29-795	29-785	29-788	29-775	29-763	29-740	29-707	29-687	29-670	29-658	29-658	29-658	29-655	29-655	29-658	29-675	29-655	29-655	29-655	29-655	29-655	29-655
19	29-751	29-755	29-778	29-793	29-813	29-835	29-823	29-847	29-877	29-895	29-907	29-925	29-927	29-940	29-953	29-965	29-965	29-965	29-965	29-965	29-965	29-965	29-965	29-965
20	30-020	30-018	30-028	30-038	30-015	30-015	30-030	30-022	30-002	29-995	29-985	29-985	29-968	29-937	29-907	29-907	29-900	29-880	29-830	29-837	29-827	29-813	29-803	29-793
21	29-810	29-807	29-810	29-807	29-770	29-765	29-765	29-775	29-805	29-805	29-807	29-807	29-807	29-807	29-807	29-807	29-817	29-817	29-823	29-837	29-823	29-823	29-823	29-823
22	29-858	29-878	29-890	29-915	29-927	29-932	30-002	30-002	30-000	30-020	30-062	30-155	30-205	30-248	30-278	30-308	30-278	30-298	30-308	30-318	30-318	30-345	30-325	30-325
23	30-800	30-862	30-262	30-282	30-270	30-267	30-264	30-264	30-254	30-234	30-237	30-217	30-167	30-157	30-140	30-130	30-142	30-132	30-132	30-122	30-097	30-102	30-105	30-102
24	30-102	30-100	30-087	30-054	30-034	30-022	29-989	29-956	29-874	29-916	29-896	29-886	29-902	29-902	29-904	29-897	29-897	29-880	29-872	29-865	29-800	29-800	29-810	29-815
25	29-795	29-785	29-779	29-767	29-754	29-744	704	734	29-669	29-649	29-644	29-634	29-622	29-614	29-597	29-599	29-599	29-599	29-592	29-589	29-604	29-644	29-667	29-724
26	29-774	29-772	29-864	29-892	29-912	29-922	29-979	29-996	30-016	30-046	30-049	30-032	30-022	29-982	29-962	29-954	29-934	29-934	29-934	30-034	30-069	30-082	30-102	30-112
27	30-080	30-099	30-129	30-149	30-169	30-199	30-209	30-212	29-252	29-252	29-254	29-254	29-257	30-257	30-260	30-260	30-250	30-240	30-237	29-227	29-207	29-240	29-240	29-240
28	30-182	30-195	30-205	30-172	30-180	30-175	30-207	30-207	30-204	30-204	30-207	30-210	30-200	30-192	30-165	30-188	30-208	30-213	30-165	30-162	30-147	30-152	30-138	30-126
29	30-185	30-182	30-112	30-105	30-120	30-120	30-112	30-110	30-104	30-104	30-100	30-077	30-037	30-032	30-082	30-102	30-105	30-095	30-078	30-058	30-068	30-065	30-078	30-070

FLOEBERG BEACH.—MARCH 1876.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid-night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	30.078	30.078	30.072	30.070	30.092	30.092	30.115	30.094	30.074	30.075	30.070	30.070	30.070	30.075	30.075	30.065	30.080	30.078	30.088	30.090	30.100	30.097	30.110	30.105
2	.115	.112	.110	.132	.135	.150	.134	.129	.126	.119	.134	.134	.127	.130	.132	.132	.145	.142	.142	.140	.140	.145	.125	.133
3	.120	30.118	30.110	30.108	30.072	30.062	30.065	30.080	30.067	30.067	30.072	30.068	.070	30.088	30.080	30.078	30.088	30.090	30.080	30.078	30.078	30.078	30.063	30.050
4	30.000	29.998	29.975	29.968	29.965	29.965	29.945	29.932	29.929	29.932	29.917	29.907	.887	29.877	29.870	29.850	29.850	29.850	29.848	29.847	29.845	29.847	29.845	29.797
5	29.800	.797	.790	.787	29.797	29.790	29.785	29.785	29.792	29.802	29.802	29.795	.815	.827	.837	29.837	29.835	29.827	29.827	29.847	29.847	29.847	29.913	29.940
6	29.953	29.950	29.970	29.970	30.010	30.008	30.005	30.005	30.012	30.025	30.028	30.028	.988	29.998	.998	30.000	30.010	30.010	30.010	30.023	30.010	30.010	30.015	30.013
7	30.040	30.033	30.030	30.028	.058	.055	.075	.072	.072	.095	.108	.105	.105	30.085	.098	.098	.088	.073	.073	.083	.108	.110	.100	.110
8	.105	.115	.135	.130	.138	.175	.202	.202	.190	.200	.210	.232	.235	.235	.235	.268	.298	.308	.308	.308	.308	.323	.325	.330
9	.380	.328	.333	.343	.355	.355	.312	.315	.302	.302	.305	.275	.300	.298	.298	.280	.283	.283	.280	.268	.268	.242	.235	.222
10	.215	.200	.190	.187	.237	.217	.177	.177	.197	.200	.200	.200	.208	30.208	.208	30.198	30.198	30.195	30.195	30.182	30.168	30.160	30.160	30.160
11	30.160	30.150	30.128	30.118	30.105	30.092	30.090	30.087	30.087	30.080	30.082	29.995	.968	29.937	.907	29.870	29.797	29.760	29.717	29.677	29.632	29.592	29.569	29.572
12	29.569	29.589	29.607	29.619	29.677	29.694	29.692	29.722	29.764	29.787	29.789	.789	.792	.792	.802	.845	.862	.862	.882	.892	.902	.915	.925	.922
13	.982	.954	.937	.964	.974	.984	.974	.954	.992	.914	.907	.879	.862	.842	.837	.833	.815	.805	.795	.820	.840	.825	.815	29.787
14	29.765	29.762	29.809	29.814	29.834	29.854	29.854	29.864	.884	29.904	29.934	29.937	.960	29.960	29.962	29.968	29.988	29.980	29.977	29.980	29.992	30.002	30.032	30.030
15	30.040	30.054	30.054	30.064	30.054	30.049	31.052	30.052	29.994	30.017	30.080	30.032	.082	30.105	30.138	30.138	30.148	30.145	30.145	30.142	30.142	.162	.165	.162
16	.200	.172	.175	.172	.172	.170	.160	.160	30.220	.220	.220	.222	.242	.265	.292	.302	.335	.352	.372	.370	.354	.372	.384	.394
17	.424	.427	.414	.412	.409	.409	.425	.436	.419	.412	.412	.380	.374	30.357	30.337	30.347	30.320	30.310	30.287	30.257	30.257	30.250	30.230	30.212
18	30.172	30.162	30.162	30.143	30.150	30.140	31.142	30.180	30.100	30.075	30.068	30.048	30.008	29.988	29.970	29.940	29.920	29.895	29.868	29.855	29.835	29.840	29.745	29.725
19	29.700	29.664	29.654	29.659	29.669	29.674	29.724	29.742	29.732	29.742	29.754	29.864	29.997	29.997	30.034	30.044	30.100	30.087	30.107	30.107	30.137	30.138	30.143	30.140
20	30.148	30.145	30.145	30.148	30.138	30.135	30.102	30.100	30.100	30.077	30.077	30.077	30.042	30.012	30.025	30.018	30.028	30.015	29.995	29.975	29.935	29.918	29.888	29.875
21	29.832	29.772	29.812	29.802	29.770	29.748	29.761	29.753	29.719	29.719	29.719	29.719	.782	29.827	29.875	29.905	29.947	29.908	29.992	30.042	30.060	30.081	30.082	30.164
22	30.194	30.214	30.222	30.222	30.332	30.332	30.332	30.319	30.389	30.412	30.424	30.434	.457	30.467	30.478	30.477	30.507	30.518	30.517	30.524	.502	.494	.494	.504
23	.494	.527	.447	.447	.447	.474	.472	.479	.479	.474	.467	.457	.447	.421	.400	.400	.370	.332	.325	.302	.290	.292	.292	.242
24	.225	.222	.205	.190	.187	.227	.237	.247	.257	.268	.270	.250	.240	.242	.245	.245	.248	.248	.258	.268	.275	.285	.285	.305
25	.350	.350	.372	.372	.407	.412	.414	.424	.404	.407	.407	.407	.412	.392	.395	.396	.368	.370	.345	.348	.355	.355	.332	.318
26	.305	.290	.277	.255	.240	.227	.174	.197	.137	.120	.101	.181	.042	.030	.045	.050	.100	.110	.130	.128	.145	.145	.141	.141
27	.131	.117	.087	.074	.097	.029	.029	.009	.979	.979	.982	.982	.994	.997	.027	.027	.040	.078	.087	.105	.134	.154	.164	.194
28	.197	.240	.300	.270	.274	.275	.252	.234	.267	.260	.252	.232	.232	.225	.175	.172	.180	.180	.170	.158	.147	.147	.137	.104
29	.097	.100	.100	.110	.110	.110	.150	.150	.210	.290	.320	.340	.863	.413	30.425	30.435	30.405	30.405	30.402	.392	.392	.400	30.322	30.312
30	30.305	30.282	30.262	30.242	30.230	30.207	30.204	30.197	30.177	30.130	30.111	30.085	30.095	30.005	29.995	29.965	29.965	29.985	29.980	29.967	30.005	30.002	29.995	29.915
31	29.885	29.882	29.882	29.882	29.895	29.889	29.881	29.859	29.844	29.939	29.937	29.939	29.945	29.855	29.845	29.846	29.867	29.867	29.867	29.907	29.855	29.852	29.849	29.849

FLOEBERG BEACH.—APRIL 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1.	29·828	29·808	29·818	29·802	29·810	29·825	29·840	29·843	29·858	29·855	29·915	29·930
2.	30·005	29·987	29·954	29·984	30·012	30·035	30·027	30·030	30·010	30·002	30·002	30·005
3.	30·015	30·028	30·035	30·035	30·042	·032	—	—	—	·028	·135	·145
4.	—	·188	—	·200	—	·228	—	—	—	·275	—	·285
5.	—	·305	—	·331	—	·341	—	30·355	—	·362	—	·392
6.	—	·408	—	·422	—	·440	—	—	—	·305	—	·278
7.	—	·180	—	·192	—	·205	—	—	—	·308	—	·325
8.	—	·355	—	·352	—	·382	—	—	—	·422	—	·502
9.	—	·552	—	·592	—	·592	—	—	—	·458	—	·411
10.	—	·875	—	·350	—	·382	—	—	—	·320	—	·340
11.	—	·417	—	·320	—	·320	—	—	—	·322	—	·332
12.	—	·350	—	·330	—	·320	—	—	—	·250	—	·150
13.	—	·159	—	·150	—	·122	—	—	—	·122	—	·132
14.	—	·152	—	·200	—	·190	—	—	—	·421	—	·425
15.	—	·407	—	·430	—	·442	—	—	—	·482	—	·500
16.	—	·494	—	·459	—	·484	—	—	—	·440	—	·417
17.	—	·897	—	·894	—	·412	—	—	—	·399	—	·399
18.	—	·409	—	·422	—	·442	—	—	—	·517	—	·527
19.	—	·552	—	·597	—	·602	—	—	—	·612	—	·624
20.	—	·642	—	·624	—	·609	—	—	—	·604	—	·584
21.	—	·547	—	·517	—	·464	—	—	—	·344	—	·304
22.	—	·264	—	·242	—	·194	—	—	—	30·144	—	30·122
23.	—	30·099	—	30·084	—	30·062	—	—	—	29·994	—	29·994
24.	—	29·959	—	29·989	—	29·919	—	—	—	·930	—	·924
25.	—	29·977	—	29·922	—	29·930	—	—	—	29·974	—	29·990
26.	—	30·024	—	30·047	—	30·107	—	—	—	—	—	30·155
27.	—	·209	—	·249	—	·369	—	—	—	30·639	—	·572
28.	—	·587	—	·563	—	·582	—	—	—	·649	—	·556
29.	—	·639	—	·563	—	·555	—	—	—	—	—	·444
30.	—	30·392	—	30·372	—	30·370	—	—	—	30·377	—	30·380

FLOEBERG BEACH.—MAY 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1.	—	30·870	—	30·367	—	30·320	—	—	—	30·250	—	30·237
2.	—	·224	—	·194	—	·164	—	—	—	30·162	—	30·159
3.	—	30·144	—	30·114	—	30·097	—	—	—	29·974	—	29·992
4.	—	29·974	—	29·969	—	29·944	—	—	—	·914	—	·887
5.	—	·867	—	·867	—	·855	—	—	—	·867	—	·864
6.	—	·887	—	·850	—	·840	—	—	—	·784	—	·767
7.	—	·824	—	·767	—	·734	—	—	—	·897	—	29·902
8.	—	29·892	—	29·880	—	·942	—	—	—	29·980	—	30·010
9.	—	30·027	—	30·020	—	29·978	—	—	—	30·015	—	·025
10.	—	·062	—	30·072	—	30·038	—	—	—	·002	—	·002
11.	—	·015	—	29·958	—	29·878	—	—	—	·235	—	·238
12.	—	·227	—	30·252	—	30·224	—	30·227	—	·222	—	·205
13.	—	·238	—	·238	—	·230	—	—	—	·227	—	·222
14.	—	·247	—	·144	—	·220	—	—	—	·230	—	·227
15.	—	30·230	—	30·217	—	30·197	—	—	—	30·152	—	30·058
16.	—	29·938	—	29·867	—	29·820	—	—	—	29·862	—	29·775
17.	—	·765	—	·728	—	·717	—	—	—	·608	—	—
18.	—	·858	—	·878	—	·908	—	—	—	·655	—	·778
19.	—	·837	—	·810	—	·789	—	29·804	—	·755	—	·777
20.	—	29·802	—	·850	—	·884	—	—	—	29·944	—	29·954
21.	—	30·004	—	29·964	—	29·976	—	29·954	—	30·022	—	30·060
22.	—	·089	—	30·122	—	30·134	—	30·128	—	30·234	—	30·214
23.	—	30·192	—	30·094	—	29·967	—	—	—	29·807	—	29·794
24.	—	29·777	—	29·770	—	·742	—	—	—	·698	—	·705
25.	—	·715	—	·725	—	·718	—	—	—	·678	—	·625
26.	—	·602	—	·615	—	·627	—	—	—	·745	—	·752
27.	—	·747	—	·734	—	·669	—	—	—	·592	—	·567
28.	—	·549	—	·559	—	·552	—	—	—	·645	—	·655
29.	—	·677	—	·695	—	·717	—	—	—	·719	—	·717
30.	—	·714	—	·729	—	·712	—	—	—	·715	—	·712
31.	—	29·589	—	29·564	—	29·515	—	—	—	29·402	—	29·372

FLOEBERG BEACH.—JUNE 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	—	29·397	—	29·394	—	29·409	—	—	—	29·492	—	29·499
2	—	·527	—	·554	—	·577	—	—	—	·657	—	·691
3	—	·693	—	·687	—	·689	—	—	—	·747	—	·754
4	—	·807	—	·814	—	·820	—	—	—	·848	—	·855
5	—	·850	—	·847	—	·840	—	—	—	·842	—	·858
6	—	·868	—	·875	—	·862	—	—	—	·875	—	·870
7	—	·852	—	·848	—	·828	—	—	—	·805	—	·798
8	—	·798	—	·788	—	·873	—	—	—	29·862	—	29·881
9	—	29·921	—	29·975	—	29·992	—	—	—	30·020	—	30·015
10	—	30·022	—	30·015	—	30·008	—	30·023	—	·028	—	·040
11	—	·044	—	·104	—	30·060	—	30·077	—	30·054	—	30·035
12	—	30·030	—	30·007	—	29·987	—	29·970	—	29·932	—	29·940
13	—	29·930	—	29·857	—	·835	—	·821	—	·810	—	·808
14	—	·798	—	·798	—	·802	—	·780	—	—	—	·812
15	—	·789	—	·799	—	·799	—	·789	—	·844	—	·864
16	—	·858	—	·875	—	29·882	—	29·900	—	·932	—	·985
17	—	·990	—	·990	—	30·000	—	30·002	—	·987	—	·984
18	—	·979	—	·972	—	29·974	—	29·974	—	·984	—	·980
19	—	·960	—	·950	—	·927	—	·894	—	·820	—	·785
20	—	·717	—	·669	—	·637	—	·629	—	·615	—	·615
21	—	·604	—	·614	—	·647	—	·697	—	·784	—	·805
22	—	—	—	·892	—	·914	—	·917	—	·909	—	·894
23	—	·848	—	·851	—	·824	29·789	·792	—	·831	29·861	·891
24	—	·881	—	·889	—	·879	·879	·869	29·854	·849	—	·889
25	—	·882	—	·848	—	·718	29·721	·721	29·676	·666	—	·674
26	—	·684	—	·679	—	·664	—	·644	—	·638	—	·675
27	—	·720	—	·735	—	·747	—	·767	—	·780	—	·767
28	—	·732	—	·717	—	·692	—	·714	—	·718	—	·694
29	—	·692	—	·669	—	·619	—	·589	—	·589	—	·522
30	—	29·417	—	29·417	—	29·379	—	29·385	—	29·407	—	29·405

FLOEBERG BEACH.—JULY 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	—	29·407	—	29·386	—	29·404	—	29·434	—	29·459	—	29·469
2	—	·497	—	·540	—	·599	—	·667	—	·723	—	·751
3	—	·750	—	·757	—	·767	—	·760	—	·780	—	·780
4	—	·778	—	·792	—	·800	—	·832	—	·890	—	·800
5	—	·770	—	·728	—	·727	—	·724	—	·768	—	·768
6	—	·768	—	·758	—	·737	—	·700	—	·685	—	·708
7	—	·725	—	·737	—	·739	—	·746	—	·787	—	·794
8	—	·784	—	·782	—	·754	—	·742	—	·742	—	·743
9	—	·750	—	·755	—	·755	—	·777	—	·798	—	·774
10	—	·768	—	·779	—	·761	—	·774	—	·769	—	·748
11	—	·745	—	·725	—	·694	—	·700	—	·690	—	·648
12	—	·619	—	·597	—	·574	—	·567	—	·524	—	·509
13	—	·480	—	·472	—	·507	—	·515	—	·547	—	·567
14	—	·580	—	·597	—	·610	—	·680	—	·637	—	·633
15	—	·653	—	·665	—	·682	—	·697	—	·699	—	·720
16	—	·740	—	·760	—	·798	—	·810	—	·810	—	·798
17	—	·788	—	·785	—	·782	—	·785	—	·785	—	—
18	—	—	—	·765	—	·738	—	·730	—	·695	—	·685
19	—	·665	—	·710	—	·720	—	·738	—	·720	—	·712
20	—	·688	—	·673	—	·638	—	·605	—	·618	—	·548
21	—	·483	—	·360	—	·215	—	·237	—	·137	—	·210
22	—	·213	—	·215	—	·199	—	·139	—	·109	—	·004
23	—	·019	—	·017	—	·084	—	·124	—	·227	—	·265
24	—	·305	—	·320	—	·815	—	·317	—	·247	29·178	·171
25	29·167	·165	29·173	·203	29·227	·245	29·299	·327	29·357	·381	·416	·389
26	—	·472	·516	·525	·561	·573	·560	·561	·579	·593	·611	·620
27	·639	·664	·687	·748	·752	·772	·800	·806	·813	·846	·854	·843
28	·844	·869	·828	·802	—	·821	·764	·742	·730	—	—	—
29	·534	·543	·500	·469	·446	·429	·439	·439	·419	·417	29·427	·419
30	29·469	·499	29·560	·588	·618	·632	·642	·649	—	—	—	·624
31	—	29·582	—	29·557	29·541	29·472	29·435	29·379	29·377	29·377	—	29·365

H.M.S. "ALERT."—AUGUST 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	29·352	29·339	29·322	29·325	29·322	29·322	29·335	29·345	29·377	29·377	29·397	—
2	·440	·470	·480	·468	·463	·433	·440	·443	·415	·418	·395	29·377
3	·365	·313	·310	·303	·263	·263	·223	·225	·203	·190	·237	·249
4	·259	·252	·312	·355	·352	·373	·395	·407	·457	·482	·515	·515
5	·540	·550	·570	·608	·628	·661	—	29·713	29·741	29·740	—	·804
6	·865	·903	·899	·938	·962	·968	·990	30·006	30·012	30·029	·986	·954
7	—	·918	·924	·919	—	·889	·891	29·816	29·860	—	·860	·830
8	·833	·816	·831	·848	·844	·851	·836	·826	·826	29·822	·842	·852
9	—	—	·582	·572	·580	—	·617	·617	·634	·631	·656	·666
10	·687	·721	·728	·739	·747	·773	—	·848	—	·875	·883	·875
11	·887	—	·897	·904	·882	·920	·930	·945	·946	·961	·966	·964
12	·961	·961	·961	·961	·991	·991	·944	—	·924	·916	·894	·845
13	·847	·847	·785	—	·755	·755	·757	·763	·750	·748	·753	·758
14	·731	·759	·759	·750	·750	·755	·755	·741	·741	·741	·723	·723
15	·715	·705	—	·739	·738	·741	·743	·733	·731	·731	·732	·728
16	·685	·665	—	—	·621	·601	·593	·606	·606	·606	·590	·580
17	·588	·581	·603	·584	·600	·602	·620	·656	·629	·649	·643	·636
18	·642	·636	·603	·576	·553	·526	·506	·506	—	·511	—	·513
19	·533	·533	·546	·581	·581	·621	·617	·617	·673	·680	·675	·675
20	29·687	·685	29·667	·667	·657	·623	·617	29·657	29·687	29·792	29·797	·839
21	—	·892	—	—	—	—	—	30·056	30·037	30·032	30·028	·990
22	30·018	—	30·043	·937	·937	·937	·930	29·892	29·962	29·970	29·972	·973
23	29·928	·948	29·938	·905	·895	·847	·800	·802	·895	·749	·744	·714
24	—	·724	·694	·686	·687	·680	·719	·724	—	·690	·702	·708
25	29·685	·694	·717	·737	·738	·751	·765	·789	·818	·820	·838	·848
26	·888	—	·903	·902	·897	—	·927	·924	·930	·907	·900	·879
27	·884	·875	·825	29·795	·777	·744	·730	·710	·692	·696	·690	·697
28	·694	—	·752	—	29·784	29·803	29·851	29·842	29·887	·890	·912	·935
29	29·945	·978	·998	30·015	30·102	30·062	30·056	30·060	30·052	—	—	·997
30	—	·975	·935	29·925	29·920	29·894	29·948	29·915	29·929	·913	29·878	·838
31	29·778	29·772	29·744	29·678	29·598	29·575	29·570	29·567	29·600	29·626	—	·695

Observations on the Temperature of the Earth.

FLOEBERG BEACH.

On the 26th September 1875, a thermometer five feet and a half in length, which had been specially prepared for such observations, was sunk into the ground with its bulb at a depth of 18 inches below the surface. On the 3rd January 1876, finding that a snow bank had collected near the thermometer, it was moved. The second position was on the brow of a hill, about 50 feet above the sea level, where the snow did not collect to any appreciable extent during the winter. When filling in the hole the earth was broken up and water poured over it to render it as nearly as possible the same as the natural ground.

On the 1st October the mean temperature of the earth at the depth stated was $+12^{\circ}5$, the same as the mean temperature of the air at the time.

From that date it gradually fell throughout the autumn and winter until it registered a mean temperature of $-12^{\circ}0$ during the whole of the month of March 1876, 28 degrees above the mean temperature of the air. On the 11th, when the mean temperature of the air for the previous 53 days was -44° , the difference between the temperature of the earth and that mean was 32 degrees.

Whenever the temperature of the air was below the freezing point of mercury, the mercury in the upper part of the tube was naturally affected; it must thus have been frozen on several occasions when that at the lower part remained liquid. Under these circumstances the register was evidently incorrect.

On the 10th April 1876, when the first decided rise in the temperature of the air occurred above -12° , the temperature of the earth commenced to rise, and continued to do so gradually during the spring. By the 3rd May it had risen to $+4^{\circ}$. After that date the temperature of the air was always higher than that of the earth.

In the month of June, when the earth was about $+6^{\circ}$, the mean temperature of the air was $+32^{\circ}$, a difference of 26 degrees, which agrees fairly with the mean difference during the winter.

On the 27th June, after the temperature of the air had been for 48 days above $+8^{\circ}$, that of the earth at the time, the warmth had evidently penetrated through the 18 inches of earth, for the thermometer suddenly registered a temperature of $+27^{\circ}$.

In July the temperature of the earth was $+30^{\circ}$, the highest degree recorded. When removing the thermometer on the 27th the ground was found to be frozen at a depth of 12 inches.

DISCOVERY BAY.

At Discovery Bay a thermometer five and a half feet in length was buried with its bulb at a depth of five feet on the 24th June 1876. The position was 20 feet above the sea level and about 50 yards from the beach. The ground was a mixture of ice and gravel.

On the 1st July it registered a mean temperature of $+24^{\circ}$, rising gradually to $+27^{\circ}$ by the end of the month. It remained steady at this temperature until the 16th August, when the "Discovery" left the neighbourhood. The thermometer was then so hardly frozen into the ground that it could not be removed without endangering its being broken; it was accordingly left in position.

Taking the mean temperature of the atmosphere during July as $+26^{\circ}$, there was a difference of 11 degrees between the mean temperature of the earth at a depth of five feet and the air.

Corrections for Meteorological Instruments, Remarks, and Meteorological Observations.

CORRECTIONS FOR THERMOMETERS.

H.M.S. "Alert."

Table I. represents the corrections of each thermometer as determined at Kew. At lower temperatures than -38° and at intermediate degrees between $+32^{\circ}$ and -38° the error was found by proportion.

Table II. Nine opportunities were taken to compare several spirit thermometers together at low temperatures. Their individual readings were then corrected by Table I., and the mean of the temperatures thus corrected was found. The difference between the reading of each instrument corrected for Kew and the mean thus obtained was then taken. These difference form Table II.

Table III. was then compiled, and represents the total difference between the temperature registered by each instrument and that of the mean of a number of thermometers corrected by Table I.

H.M.S. "Discovery."

The observations taken on board the "Discovery" have been corrected with the Kew correction only. The error of the standard thermometer No. 415 was practically nil at -40° .

CORRECTIONS FOR BAROMETER READINGS.

Each reading of the barometer has been corrected for temperature and error of instrument as determined at Kew.

TABLE I.

CORRECTIONS FOR THERMOMETERS CALCULATED BY THE ERRORS DETERMINED AT KEW.

Temperature.	No. 416.	No. 417.	No. 418.	No. 225.	No. 226.	No. 227.	No. 228.	No. 229.	No. 421.	No. 449. Mercury.
+ 32	0.0	0.0	0.0	0	- 0.1	+ 0.2	0.0	0.0	0.0	0.0
20	—	+ 0.4	- 0.2	+ 0.5	0.8	1.2	- 0.3	+ 0.8	—	- 0.3
+ 10	—	0.7	0.4	0.8	1.4	2.1	0.6	1.5	—	0.5
Zero	—	1.1	0.6	1.1	1.9	3.0	0.9	2.2	—	0.8
- 10	—	1.4	0.8	1.5	2.5	3.9	1.2	2.9	—	1.0
20	—	1.7	1.0	1.8	3.1	4.8	1.4	3.6	—	1.3
30	—	2.0	1.2	2.1	3.7	5.7	1.7	4.3	—	1.5
36	—	—	—	—	3.9	—	1.8	—	—	—
36.7	—	—	—	—	—	—	—	—	—	—
38	- 0.1	2.4	1.3	—	—	—	1.9	—	- 0.1	1.8
39.7	—	—	—	—	—	—	—	—	—	—
40	—	—	1.4	2.5	4.2	6.6	2.0	5.0	—	1.8
40.4	—	2.4	—	—	—	—	—	—	—	—
43.2	—	—	—	—	—	—	—	5.3	—	—
44.9	—	—	—	—	—	7.0	—	—	—	—
50	—	2.7	1.6	2.8	4.8	7.4	2.3	5.7	—	2.0
60	- 0.2	3.0	1.8	3.1	5.4	8.3	2.6	6.4	—	2.3
70	—	3.3	2.0	3.5	5.9	9.2	2.8	7.1	—	2.5
- 80	—	+ 3.6	- 2.2	+ 3.8	- 6.5	+ 10.1	- 3.1	+ 7.8	—	- 2.7

Temperature.	No. 37.	No. 38.	No. 39.	No. 41.	No. 43.	No. 237 A.	No. 40.	No. 42.	No. 423.
+ 110	+ 0.2	- 0.1	+ 0.1	0.0	- 0.2	0	+ 0.1	0.0	0
92	0.1	0.0	- 0.3	0.0	—	—	—	—	—
82	0.1	0.1	0.2	+ 0.1	0.2	—	- 0.1	0.0	- 0.2
72	0.0	0.1	- 0.1	0.1	0.2	—	+ 0.1	+ 0.1	0.3
62	0.1	0.0	0.0	0.0	0.2	—	0.0	0.0	0.3
52	0.2	- 0.1	0.0	0.0	0.1	+ 0.1	0.0	0.0	- 0.3
42	0.2	0.0	+ 0.1	0.0	- 0.1	+ 0.3	0.1	0.0	0.0
+ 32	0.1	0.0	0.3	0.1	0.0	+ 0.1	0.3	0.0	0.0
- 38	+ 0.6	+ 0.1	+ 3.1	+ 0.2	+ 0.7	- 1.7	+ 0.9	+ 0.3	+ 1.8

TABLE II.

DIFFERENCE between the TEMPERATURE REGISTERED by each THERMOMETER CORRECTED for KEW and the MEAN of a number of THERMOMETERS.

Mean Temperature.	No. 416.	No. 417.	No. 418.	No. 225.	No. 226.	No. 227.	No. 228.	No. 229.	No. 230.	No. 231.
°	°	°	°	°	°	°	°	°	°	°
-30.2	—	—	0.0	+ 0.7	- 0.6	- 0.4	+ 0.4	+ 0.1	- 0.1	+ 0.9
40.6	—	—	- 0.4	0.8	+ 0.1	0.6	0.8	0.1	1.9	1.1
42.6	—	—	+ 1.2	0.7	- 0.6	- 0.5	0.4	- 0.2	2.0	1.3
53.3	—	—	- 0.7	1.5	0.5	+ 0.2	0.5	+ 0.5	2.8	2.6
55.0	—	—	0.3	1.4	0.4	+ 0.1	+ 0.4	0.4	2.9	2.3
56.8	+ 1.3	+ 0.2	0.1	0.6	1.2	- 0.4	- 0.2	0.5	3.1	2.4
64.4	0.4	+ 0.6	0.8	1.6	1.1	+ 0.1	0.8	0.9	3.9	3.3
66.2	1.0	- 0.5	1.4	1.3	1.0	0.8	0.5	1.1	3.6	3.1
-68.8	+ 1.4	- 0.7	- 0.2	+ 1.6	- 1.5	+ 0.3	- 1.1	+ 0.6	- 4.1	+ 3.5

TABLE III.

CORRECTION actually applied to the TEMPERATURE REGISTERED.

Temperature.	No. 416.	No. 417.	No. 418.	No. 228.	No. 421. Mercury.	No. 449. Mercury.	No. 38. Black bulb.	No. 37. Bright bulb.	No. 419.	No. 415. Discovery.
°	°	°	°	°	°	°	°	°	°	°
+ 32	0.0	0.0	0.0	0.0	0	0.0	0	+ 0.1	0.0	0
30	0.0	0.0	0.0	0.0		0.0		0.1	—	
20	+ 0.1	+ 0.4	- 0.2	- 0.3		- 0.3		0.1	+ 0.1	
+ 10	0.2	0.7	0.4	0.5		0.5		0.2	0.2	
Zero	—	1.1	0.6	0.8	No correction.	0.8	No correction.	0.3	0.3	
- 10	0.3	1.4	0.8	1.0		1.0		0.4	0.4	
20	—	1.7	1.0	1.3		1.3		0.4	0.5	
30	0.4	2.0	1.3	1.2		1.5		0.5	0.6	
40	0.5	2.4	1.8	1.0		- 1.8		+ 0.6	+ 0.8	
50	0.6	2.7	2.0	1.9		—		—	—	
60	0.7	2.8	2.2	2.7		—		—	—	
- 70	+ 0.8	+ 2.8	- 2.3	- 3.6		—		—	—	

No correction used. Kew correction at -38° being only +0.1.

CORRECTIONS for BAROMETERS by comparison with STANDARD at KEW.

H.M.S. "Alert."

Instrument.	At 28.0.	At 28.5.	At 29.0.	At 29.5.	At 30.0.	At 30.5.	At 31.0.
Adie, A. 390	—	—	+ .001	+ .002	+ .003	—	—

H.M.S. "Discovery."

Adie, A. 417	- .002	- .002	- .003	- .003	- .003	- .003	- .003
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COMPARISON OF SPIRIT THERMOMETERS AT LOW TEMPERATURES.

23RD NOVEMBER 1875.

Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
A. 225	-46.0	+2.7	-43.3	+0.66
226	38.0	-4.0	42.0	-0.64
227	49.5	+7.4	42.1	-0.54
228	41.0	-2.0	43.0	+0.36*
229	48.0	+5.6	42.4	-0.24
230	37.0	-3.6	40.6	-2.04
231	49.5	+5.6	43.9	+1.26
A. 418	-42.5	-1.3	-43.8	+1.16
			-341.1	
		Mean -	-42.64	

* Adopted standard.

24TH NOVEMBER 1875.

A.	Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
225	225	-44.0	+2.6	-41.4	+0.88
226	226	36.8	-3.9	40.7	+0.13
227	227	47.1	+7.1	40.0	-0.57
228	228	39.4	-2.0	41.4	+0.83*
229	229	46.0	+5.5	40.5	-0.07
230	230	35.2	-3.5	38.7	-1.87
231	231	47.2	+5.5	41.7	+1.13
A. 418	A. 418	-39.0	-1.2	-40.2	-0.37
				-324.6	
		Mean -	-40.57		

* Adopted standard.

23RD JANUARY 1876.

A.	Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
225	225	-59.5	+3.1	-56.4	+1.42
226	226	49.8	-4.8	54.6	-0.38
227	227	63.8	+8.7	55.1	+0.12
228	228	52.0	-2.3	54.3	-0.68
229	229	62.0	+6.6	55.4	+0.42
230	230	48.0	-4.1	52.1	-2.88
231	231	64.0	+6.7	57.3	+2.32
A. 418	A. 418	-53.2	-1.5	-54.7	-0.28
				-439.9	
		Mean -	-54.98		

26TH JANUARY 1876.

A.	Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
225	225	-57.8	+3.0	-54.8	+1.48
226	226	48.0	-4.7	52.7	-0.62
227	227	62.0	+8.5	53.5	+0.18
228	228	50.5	-2.3	52.8	-0.52
229	229	60.2	+6.4	53.8	+0.48
230	230	46.5	-4.0	50.5	-2.82
231	231	62.5	+6.6	55.9	+2.58
A. 418	A. 418	-51.0	-1.6	-52.6	-0.72
				-426.6	
		Mean -	-53.32		

6TH FEBRUARY 1876.

Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
A. 225	-33.1	+2.2	-30.9	+0.7
226	26.2	-3.4	29.6	-0.6
227	36.1	+6.3	29.8	-0.4
228	28.9	-1.7	30.6	+0.4
229	35.0	+4.7	30.3	+0.1
230	26.2	-3.0	29.2	-1.0
231	35.8	+4.7	31.1	+0.9
A. 418	-29.0	-1.2	-30.2	-0.01
			-241.7	
		Mean -	-30.21	

18TH FEBRUARY 1876.

A.	Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
225	225	-60.5	+3.1	-57.4	+0.6
226	226	50.8	-4.8	55.6	-1.2
227	227	65.2	+8.8	56.4	0.4
228	228	54.2	-2.4	56.6	-0.2
229	229	64.0	+6.7	57.3	+0.5
230	230	49.5	-4.2	53.7	-3.1
231	231	66.0	+6.8	59.2	+2.4
416	416	58.0	-0.1	58.1	1.3
417	417	60.0	+8.0	57.0	+0.2
A. 418	A. 418	-35.0	-1.7	-36.7	-0.1
				-568.0	
		Mean -	-56.8		

29TH FEBRUARY 1876.

A.	Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
225	225	-69.5	+3.5	-66.0	+1.6
226	226	58.0	-5.3	63.3	-1.1
227	227	75.0	+9.6	65.4	+1.0
228	228	61.0	-2.6	63.6	-0.8
229	229	72.5	+7.2	65.3	+0.9
230	230	56.0	-4.5	60.5	-3.9
231	231	75.0	+7.3	67.7	+3.3
416	416	64.6	-0.2	64.8	+0.4
417	417	67.0	+3.2	63.8	-0.6
A. 418	A. 418	-61.8	-1.8	-63.6	-0.8
				-644.0	
		Mean -	-64.4		

2ND MARCH 1876.

A.	Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
225	225	-71.0	+3.5	-67.5	+1.27
226	226	59.8	-5.4	65.2	-1.03
227	227	76.8	+9.8	67.0	+0.77
228	228	63.0	-2.7	65.7	-0.53
229	229	74.8	+7.5	67.3	+1.07
230	230	58.0	-4.6	62.6	-3.63
231	231	76.8	+7.5	69.3	+3.07
416	416	67.0	-0.2	67.2	+0.97
417	417	69.0	+3.3	65.7	-0.53
A. 418	A. 418	-63.0	-1.8	-64.8	-1.43
				-662.3	
		Mean -	-66.28		

2ND MARCH 1876.

Thermo- meter.	Reading.	Kew Error.	Corrected Reading.	Difference from Mean.
A. 225	-74.0	+ 3.6	-70.4	+1.63
226	61.8	- 5.5	67.3	-1.47
227	79.2	+10.1	69.1	+0.33
228	65.0	- 2.7	67.7	-1.07
229	77.0	+ 7.6	69.4	+0.63
230	60.0	- 4.7	64.7	-4.07
231	80.0	+ 7.7	72.3	+3.53
416	70.0	- 0.2	70.2	+1.43
417	71.4	+ 3.3	68.1	-0.67
A. 418	-66.6	- 1.9	-68.5	-0.27
			-687.7	
		Mean -	-68.77	

POSITION OF THERMOMETERS.

On board the "Alert" the thermometers used for the hourly register were fixed in a thermometer screen secured to the ship's side under the conning bridge, where it was sheltered from the sun's rays.

The upper deck having been completely housed over, on the 29th October 1875, the screen and the instruments were removed to the ice, and fixed on a cask which formed a pedestal, raised $4\frac{1}{2}$ feet above the ice, and at a distance of 23 feet from the ship.

Owing to the gradual accumulation of snow about the pedestal it was raised from time to time, but may be considered to have been always between three and four feet above the snow-floor.

On the 20th April 1876 the screen and the instruments were removed to their former position on board the ship.

MAXIMUM AND MINIMUM TEMPERATURE OF THE AIR.

On the 14th October 1875, the maximum and minimum thermometers were fixed in a large thermometer screen on the top of a floeberg, 22 feet above the ice level, and about 100 feet from the ship.

As the darkness by midday increased, this position was found inconvenient, and on the 3rd November the screen and the instruments were placed on the floe 6 feet above the mean level of the ice, and 77 yards from the ship.

On the returning of midday light, on the 23rd January 1876, they were removed to the shore, and fixed about 30 feet above the sea level, and 400 yards from the ship, $4\frac{1}{2}$ feet above the ground.

On the 11th April their position was again changed, the instruments being fixed on a tripod 12 feet above the floe, and 40 feet distant from the ship.

Prior to the 14th October 1875, and after the 22nd July 1876, the temperatures recorded are the maximum and minimum registered by an ordinary thermometer during the day denoted.

On board the "Discovery," in September 1875, when the ship was frozen in, a thermometer screen, supplied for the purpose, was fixed on a boarding outside of the ship about four feet from the ship's side, and about 10 feet above the level of the ice. In this screen the thermometer used for registering the four-hourly observations was fixed.

A large thermometer screen was erected on shore, about 200 yards from the ship, in which the maximum and minimum thermometers were fixed.

The solar radiation thermometers were suspended four feet above the floe, and 35 yards from the ship.

In compiling the daily mean Temperature and Pressure of the atmosphere, astronomical time has been used; the mean of each observation, hourly or four-hourly, taken between noon of the day previous to that mentioned in column 1. and noon of that day.

On board the "Alert" the maximum and minimum temperature observations were registered at noon of the day mentioned.

On board the "Discovery" the maximum and minimum temperatures were registered at midnight, therefore the temperature recorded may on a few occasions have occurred on the following day.

The "Hours of wind" and "Hours of weather" are the relative number of hours for which the wind and weather lasted.

When four-hourly observations were registered, each observation has been considered as extending over that time, thus these observations can only be considered as proportional to each other.

In the column headed "strong winds" is recorded the number of hours the force of the wind reached to or exceeded force 6.

In the ozone observations, Negretti and Zambra's test paper was used, the shade ranging from 1 to 10, the latter figure being the highest amount. On board the "Alert," an observation was taken once a day, the paper having been exposed to the outer air in a wire gauze (Davy) lamp for the previous 24 hours.

In compiling the mean yearly Temperature and Pressure of the Atmosphere, the totals of the daily means between 22nd August 1875 and the 21st August 1876 have been added together, and the sum divided by 366, the number of intermediate days.

In obtaining the mean hourly range of Temperature and Pressure of the Atmosphere, where a few observations were not taken they have been interpolated, introducing exact means between the previous and succeeding observation. Where more than two or three blanks have occurred in one month under any particular hour, the observations for that hour have been discarded.

Daily Temperature Observations, H.M.S. "Alert," Floeberg Beach, 1875-1876.

H.M.S. "ALERT."—AUGUST 1875.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	°	°	°	°	°	°	°	°	°	°	°	°
1	+36.0	+36.0	+36.0	+35.5	+35.0	+35.0	+35.0	—	+35.0	+37.0	—	+35.5
2	—	35.0	35.0	34.0	34.5	33.0	33.5	+33.0	34.5	35.0	—	—
3	36.2	37.5	36.0	35.0	33.0	33.0	33.0	33.5	—	39.0	+40.0	40.0
4	—	—	—	40.0	39.0	39.0	40.0	39.5	39.2	40.0	39.0	38.0
5	—	39.0	40.0	36.5	38.0	36.0	36.0	39.0	40.0	41.0	40.0	40.5
6	48.0	40.0	34.0	—	—	—	—	36.0	—	36.0	37.0	38.0
7	39.2	39.2	39.0	34.0	—	34.0	30.5	—	—	34.0	33.0	33.0
8	34.0	34.0	34.0	34.0	34.0	34.0	34.0	32.5	34.0	—	—	39.0
9	—	—	35.0	35.0	—	32.0	32.0	31.0	33.0	30.0	—	34.5
10	35.0	34.0	32.0	32.0	32.0	29.5	28.0	29.0	30.0	31.5	32.0	32.0
11	33.5	34.0	37.0	35.0	33.0	32.2	34.0	34.0	36.0	36.0	36.0	36.0
12	36.0	35.5	36.0	39.0	37.5	35.0	—	35.0	37.0	36.5	35.0	37.0
13	40.0	38.5	—	—	34.0	34.0	33.0	33.0	32.0	39.0	42.0	38.0
14	37.0	36.0	36.0	35.5	33.0	33.0	32.0	31.5	32.0	34.5	38.0	38.0
15	39.0	36.0	36.0	36.5	36.0	33.0	32.5	31.5	—	35.0	36.0	39.0
16	—	—	—	35.0	32.0	30.2	32.0	33.0	—	32.0	32.0	34.0
17	32.0	34.0	33.0	31.0	30.5	29.0	32.0	33.0	—	32.0	32.0	34.0
18	32.0	34.0	33.0	31.0	30.5	29.0	—	28.0	29.5	29.5	32.5	34.0
19	34.0	32.0	30.5	30.0	—	30.0	31.5	29.5	30.0	31.0	31.0	32.0
20	33.0	—	31.0	32.0	31.0	29.0	29.0	31.0	28.0	26.5	—	27.0
21	—	27.0	26.5	26.5	—	27.0	27.0	27.0	27.0	—	27.0	26.5
22	26.5	27.0	28.0	—	26.0	26.0	27.5	28.5	28.0	—	—	27.0
23	—	27.0	28.5	28.5	27.0	26.5	26.0	25.5	26.5	26.5	30.0	—
24	—	—	—	30.0	—	30.0	28.5	—	—	—	31.0	30.5
25	30.5	31.0	31.0	31.0	31.0	31.0	29.5	30.0	29.5	—	31.0	31.0
26	31.0	30.0	29.0	—	29.0	29.0	28.5	29.5	28.0	28.2	25.0	24.5
27	24.5	25.5	26.0	26.0	27.0	26.0	25.5	26.0	26.0	27.0	28.0	27.0
28	—	29.0	28.5	—	27.5	—	26.8	26.5	26.0	30.0	29.5	—
29	—	29.5	—	28.5	—	26.0	26.0	27.0	28.0	28.0	28.5	30.0
30	29.0	29.0	27.5	26.0	27.0	26.0	—	27.0	27.0	26.5	—	28.5
31	+27.0	+27.0	+27.5	+28.0	+27.0	+27.0	+27.0	+27.0	+28.0	+28.0	—	+30.0

FLOEBERG BEACH.—SEPTEMBER 1875.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	0	+29.2	+30.5	+31.0	0	+30.0	0	+30.0	+31.5	+31.5	0	+22.8
2	+22.8	22.8	21.8	21.3	+19.7	18.7	+18.7	18.7	17.7	17.7	+18.2	18.2
3	18.7	19.2	19.7	—	17.7	18.2	17.7	15.1	14.6	14.6	—	18.7
4	—	18.7	16.7	14.6	11.6	9.3	8.7	8.0	10.6	12.1	13.6	13.6
5	—	—	18.7	13.6	13.6	12.6	10.6	10.6	8.5	9.5	11.6	12.6
6	13.1	13.1	13.6	12.6	12.1	12.1	12.6	12.6	12.6	14.6	15.7	15.7
7	15.7	16.2	16.7	18.2	16.7	15.2	15.2	15.7	16.2	—	20.8	20.8
8	20.8	21.8	20.8	17.2	—	16.7	16.7	16.7	16.7	16.7	15.7	15.2
9	15.2	15.2	16.7	16.7	16.7	—	17.7	19.7	17.7	17.7	14.6	16.7
10	18.7	18.7	20.8	17.7	17.7	17.7	15.7	16.7	15.7	15.7	16.2	18.2
11	15.6	15.6	12.6	14.1	10.0	9.5	6.4	5.4	5.4	3.3	5.9	8.0
12	10.6	12.6	13.6	13.6	12.6	9.5	7.5	10.6	13.6	15.2	14.6	14.6
13	14.6	15.7	16.7	19.7	20.8	20.8	20.8	20.8	—	20.8	21.8	21.8
14	22.3	22.8	22.8	—	—	—	24.9	25.4	24.4	—	30.0	24.9
15	23.8	21.8	20.8	20.8	22.8	23.8	23.8	23.8	—	—	25.4	27.4
16	26.9	27.9	29.0	29.5	26.9	30.0	30.0	29.0	29.0	31.0	31.0	32.0
17	33.0	33.5	33.5	35.0	36.5	35.5	36.0	32.0	30.0	29.0	27.4	24.4
18	—	18.7	18.7	16.2	16.7	15.7	16.7	16.7	14.1	14.6	14.6	15.7
19	16.7	16.7	14.6	12.1	11.6	17.7	14.6	15.7	19.2	19.7	20.8	20.3
20	20.6	19.7	19.7	19.7	19.7	—	20.8	18.7	—	17.2	—	—
21	—	—	8.5	8.5	—	4.4	—	—	—	—	6.4	8.5
22	9.5	9.5	9.5	9.5	9.5	9.5	10.6	12.1	12.6	11.6	13.6	13.6
23	19.2	19.2	—	21.8	21.8	23.8	23.8	24.9	21.8	22.8	22.8	21.3
24	17.7	12.6	11.6	11.6	—	—	2.3	2.3	0.2	1.2	2.2	8.5
25	5.4	2.3	0.2	5.4	2.3	2.3	—	—	3.3	3.3	4.4	4.4
26	3.3	3.3	2.3	1.3	2.3	1.3	4.4	4.4	4.4	1.3	7.5	9.5
27	10.6	10.6	10.6	9.5	8.5	7.5	5.4	5.4	3.3	—	9.5	8.5
28	6.4	4.4	5.9	—	5.4	6.4	5.9	5.9	5.9	6.4	8.5	10.6
29	10.6	10.1	10.1	9.6	8.5	9.6	9.6	11.1	11.6	9.5	12.1	12.6
30	+12.6	+12.1	+11.6	+11.6	+11.6	+11.6	+12.6	+12.1	+11.6	+11.1	+10.6	+8.5

FLOEBERG BEACH.—OCTOBER 1875.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	+3.9	+6.4	+9.0	+10.6	+9.5	+6.4	+7.5	+10.5	+11.4	+9.8	+10.2	+10.6
2	13.6	12.1	10.6	10.6	10.0	10.6	10.6	10.6	11.6	11.6	12.1	14.6
3	15.7	16.7	13.6	14.6	13.6	13.1	9.5	10.0	10.6	10.6	10.0	10.0
4	8.5	7.5	6.4	10.6	7.5	7.5	8.5	8.5	11.6	12.6	12.6	12.6
5	11.6	12.6	13.1	12.6	16.7	12.1	14.6	13.1	11.6	11.6	11.6	14.6
6	14.1	14.1	13.6	13.6	13.6	13.1	11.6	12.1	11.6	10.6	12.1	9.5
7	14.6	16.7	16.7	15.7	16.7	15.7	16.7	12.6	12.1	12.1	12.1	+11.6
8	+10.6	+11.6	+12.6	+12.6	+13.1	+12.6	+12.6	+13.6	+11.6	+10.6	+1.2	-3.8
9	-8.9	-8.9	-10.0	-12.0	-13.1	-11.0	-14.1	-11.0	-12.0	-16.1	-16.1	-15.6
10	-1.8	+2.3	+5.4	+4.4	+3.3	+9.5	+9.5	+9.0	+8.5	+10.6	+11.1	+10.6
11	+13.6	14.6	12.1	15.7	14.6	14.6	13.6	14.1	13.6	12.6	12.6	15.1
12	14.6	11.1	10.6	11.6	+11.6	+4.4	+2.3	+1.3	+1.3	+2.3	+6.4	+6.4
13	+2.3	+3.3	+2.3	+1.3	-1.3	-2.8	-2.8	-3.8	-0.8	-2.8	-5.4	-6.4
14	-6.4	-6.4	-5.4	-11.0	10.5	12.0	15.1	15.1	17.2	17.2	11.0	11.0
15	-15.6	-12.6	12.6	13.1	16.1	16.6	-12.0	12.0	14.1	13.1	13.1	13.1
16	+9.5	+16.7	6.4	10.0	8.9	6.9	+12.6	1.8	4.9	4.9	3.8	4.9
17	-7.9	-10.0	8.9	7.9	11.0	12.0	-13.1	10.0	10.0	9.4	10.0	12.0
18	12.0	12.0	15.1	13.1	14.1	14.1	8.9	9.4	9.4	8.4	8.9	7.9
19	7.9	12.0	16.1	15.6	14.1	15.1	15.1	15.6	12.0	12.0	12.0	12.5
20	15.1	16.1	14.6	16.6	18.7	19.2	19.2	20.3	20.8	20.3	19.2	20.8
21	19.7	20.8	17.2	18.2	20.3	6.9	17.7	19.2	21.3	20.8	22.3	23.8
22	22.3	23.3	22.3	25.4	26.5	17.2	16.1	14.1	13.1	11.0	11.0	13.1
23	12.5	13.1	14.6	12.0	12.0	11.0	12.5	13.1	11.0	14.1	10.0	12.0
24	15.1	15.1	16.1	16.1	17.2	17.2	16.3	15.6	17.2	17.7	16.5	13.1
25	14.6	17.2	9.4	8.9	8.9	12.0	14.6	14.6	16.1	16.1	12.0	14.1
26	15.1	16.1	16.6	15.1	14.1	12.0	13.1	18.2	15.1	12.5	17.2	17.2
27	19.2	16.6	14.1	13.1	10.0	11.0	11.0	12.0	14.1	13.1	13.6	15.1
28	17.2	16.6	18.2	18.7	20.3	20.3	22.3	22.3	21.3	20.3	18.7	19.2
29	18.7	19.2	20.3	21.3	24.4	24.4	24.4	22.8	18.2	16.1	16.1	16.1
30	14.1	14.1	13.1	11.0	8.9	10.0	11.0	13.1	13.1	13.1	15.1	14.1
31	-15.1	-16.1	-16.1	-16.6	-22.8	-22.8	-21.3	-26.4	-27.4	-27.4	-23.3	-23.8

FLOEBERG BEACH.—NOVEMBER 1875.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid-night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	-23.3	-23.8	-24.4	-23.3	-21.3	-21.3	-20.8	-17.2	-14.1	-13.6	-13.6	-15.6	-16.1	-12.0	-15.1	-13.6	-13.6	-14.1	-11.5	-19.7	-22.3	-21.3	-22.3	-20.3
2	-12.0	-15.6	-18.7	-18.7	-19.2	-21.3	-19.7	-16.1	-13.1	-3.9	-4.9	-	+ 2.3	+ 1.3	+ 1.3	+ 1.3	+ 1.3	+ 2.3	+ 2.8	+ 4.4	+ 3.8	+ 4.4	+ 6.4	+ 9.0
3	+ 8.4	+ 8.4	+ 7.4	+ 6.4	+ 9.5	+ 10.5	+ 12.6	+ 14.6	+ 14.6	+ 13.1	+ 11.5	+ 10.0	+ 10.0	+ 6.4	+ 6.4	+ 7.4	+ 5.9	+ 6.4	+ 7.4	+ 7.4	+ 5.4	+ 5.4	+ 9.5	+ 7.9
4	+ 7.4	+ 12.6	+ 18.6	+ 18.1	+ 15.1	+ 12.6	+ 11.5	+ 11.5	+ 11.5	+ 13.6	+ 15.6	+ 15.6	+ 15.1	+ 15.1	+ 14.1	+ 13.6	+ 15.6	+ 15.6	+ 12.6	+ 9.0	+ 1.8	+ 1.8	+ 1.8	+ 4.9
5	+ 4.4	+ 4.4	+ 3.8	+ 1.3	+ 2.8	+ 2.8	+ 3.8	+ 1.8	+ 4.4	+ 6.9	+ 3.8	+ 2.8	+ 3.3	+ 3.3	+ 4.4	+ 4.4	+ 4.4	+ 4.4	+ 0.8	+ 2.8	+ 2.3	+ 0.2	+ 0.2	+ 6.9
6	- 6.9	- 5.9	- 6.9	- 5.4	- 3.8	- 5.9	- 3.8	+ 1.8	+ 8.5	-	+ 9.5	+ 13.6	+ 14.1	+ 12.0	+ 11.5	+ 12.0	+ 14.6	+ 15.1	+ 17.1	+ 16.1	+ 12.6	+ 13.6	+ 11.5	+ 14.6
7	+ 10.5	+ 13.6	+ 11.5	+ 11.5	+ 11.5	+ 12.6	+ 14.1	+ 16.1	+ 11.5	+ 11.5	+ 10.5	+ 10.5	+ 15.6	+ 19.7	+ 17.7	+ 15.6	+ 15.6	+ 14.6	+ 14.6	+ 15.6	+ 15.6	+ 14.6	+ 14.6	+ 14.1
8	+ 18.6	+ 9.5	+ 9.5	+ 11.5	+ 15.6	+ 12.6	+ 8.5	+ 5.4	+ 5.4	+ 1.8	+ 0.8	+ 1.8	+ 2.3	+ 3.3	+ 3.3	+ 5.9	+ 8.9	+ 6.4	+ 6.9	+ 5.9	+ 6.9	+ 10.5	+ 10.5	+ 10.0
9	- 10.5	- 7.9	- 8.4	- 9.0	- 9.0	- 10.0	- 7.4	- 7.9	- 9.5	- 10.0	- 10.5	- 10.0	+ 17.2	+ 20.8	+ 16.6	+ 14.6	+ 18.1	+ 15.6	+ 17.2	+ 20.3	+ 20.8	+ 18.2	+ 22.3	+ 20.8
10	+ 24.9	+ 24.9	+ 22.8	+ 21.8	+ 22.3	+ 24.4	+ 28.3	+ 23.8	+ 25.4	+ 27.4	+ 28.4	+ 28.4	+ 30.5	+ 30.5	+ 30.5	+ 30.0	+ 29.5	+ 31.0	+ 31.5	+ 32.1	+ 32.1	+ 33.1	+ 30.5	+ 32.1
11	+ 32.1	+ 29.5	+ 31.5	+ 31.5	+ 30.5	+ 30.0	+ 26.4	+ 24.4	+ 23.8	+ 23.3	+ 23.3	+ 23.3	+ 23.3	+ 23.3	+ 23.3	+ 20.3	+ 20.3	+ 18.7	+ 19.2	+ 13.1	+ 16.1	+ 15.1	+ 13.1	+ 14.1
12	+ 11.0	+ 12.0	-	+ 10.0	+ 13.1	+ 13.0	+ 13.1	+ 13.1	+ 13.1	+ 13.1	+ 12.0	+ 11.0	+ 12.0	+ 10.0	+ 10.0	+ 9.5	+ 10.0	+ 10.0	+ 10.0	+ 10.0	+ 10.0	+ 11.0	+ 11.0	+ 12.5
13	+ 13.1	+ 14.1	+ 15.1	+ 19.2	+ 19.2	+ 21.3	+ 20.3	+ 21.3	+ 21.3	+ 21.3	+ 21.3	+ 21.3	+ 21.3	+ 21.3	+ 21.3	+ 23.8	+ 21.3	+ 21.3	+ 23.8	+ 23.3	+ 22.3	+ 21.3	+ 23.3	+ 26.4
14	+ 26.4	+ 24.9	+ 25.4	+ 25.9	+ 24.4	+ 23.8	+ 21.3	+ 21.3	+ 23.3	+ 22.3	+ 22.3	+ 21.3	+ 21.3	+ 24.4	+ 23.3	+ 21.3	+ 21.3	+ 21.3	+ 23.8	+ 23.8	+ 23.3	+ 22.3	+ 23.3	+ 18.2
15	+ 16.1	+ 15.1	+ 16.1	+ 16.1	+ 16.1	+ 17.2	+ 17.7	+ 18.2	+ 18.2	+ 18.2	+ 18.2	+ 20.3	+ 20.3	+ 21.3	+ 24.4	+ 24.4	+ 24.4	+ 26.9	+ 26.9	+ 26.9	+ 28.9	+ 28.9	+ 31.1	+ 30.0
16	+ 28.9	+ 28.9	+ 29.5	+ 31.0	+ 30.5	+ 30.5	+ 27.9	+ 27.4	+ 27.4	+ 28.4	+ 28.4	+ 26.9	+ 26.9	+ 26.4	+ 26.4	+ 26.9	+ 25.4	+ 23.3	+ 25.4	+ 25.4	+ 25.4	+ 25.4	+ 24.4	+ 24.4
17	+ 26.4	+ 26.4	+ 26.4	+ 26.4	+ 26.4	+ 28.9	+ 28.4	+ 28.9	+ 24.4	+ 29.5	+ 30.5	+ 30.5	+ 30.5	+ 30.5	+ 28.4	+ 28.4	+ 27.4	+ 31.5	+ 30.5	+ 29.5	+ 29.5	+ 30.5	+ 31.5	+ 30.5
18	+ 30.5	+ 31.5	+ 31.5	+ 30.0	+ 28.4	+ 29.5	+ 29.5	+ 28.4	+ 28.4	+ 28.4	+ 28.4	+ 26.4	+ 25.4	+ 26.9	+ 27.4	+ 28.4	+ 28.4	+ 26.4	+ 26.4	+ 26.4	+ 25.9	+ 26.4	+ 26.4	+ 25.9
19	+ 25.4	+ 25.4	+ 26.4	+ 26.4	+ 26.4	+ 26.4	+ 26.4	+ 25.4	+ 25.9	+ 27.4	+ 27.4	+ 28.9	+ 26.9	+ 25.9	+ 26.4	+ 26.4	+ 26.4	+ 26.4	+ 27.9	+ 27.4	+ 27.4	+ 27.4	+ 26.9	+ 27.4
20	+ 28.9	+ 28.4	+ 31.0	+ 31.0	+ 30.5	+ 30.5	+ 30.5	+ 32.6	+ 27.9	+ 31.0	+ 33.6	+ 32.0	+ 31.5	+ 31.0	+ 31.5	+ 31.5	+ 32.0	+ 31.5	+ 32.6	+ 32.1	+ 32.1	+ 32.0	+ 31.2	+ 32.6
21	+ 32.1	+ 32.1	+ 32.1	+ 31.7	+ 30.3	+ 31.2	+ 32.1	+ 35.1	+ 38.0	+ 37.0	+ 36.1	+ 36.1	+ 36.1	+ 38.0	+ 40.0	+ 41.0	+ 41.0	+ 40.0	+ 39.5	+ 38.5	+ 37.0	+ 39.0	+ 34.1	+ 36.6
22	+ 39.0	+ 39.0	+ 38.0	+ 37.0	+ 36.1	+ 36.1	+ 38.5	+ 38.5	+ 37.5	+ 40.0	+ 41.0	+ 41.5	+ 41.0	+ 42.5	+ 43.1	+ 42.0	+ 42.0	+ 43.1	+ 43.1	+ 41.0	+ 40.5	+ 40.5	+ 40.0	+ 40.0
23	+ 41.0	+ 41.0	+ 42.0	+ 42.0	+ 42.0	+ 42.0	+ 40.0	+ 38.0	+ 37.0	+ 37.0	+ 38.0	+ 37.0	+ 36.1	+ 35.1	+ 35.1	+ 38.0	+ 38.0	+ 38.0	+ 38.0	+ 38.0	+ 39.0	+ 41.0	+ 41.0	+ 40.0
24	+ 41.0	+ 39.5	+ 40.0	+ 40.0	+ 40.0	+ 39.0	+ 39.0	+ 38.0	+ 38.0	+ 37.0	+ 37.0	+ 38.0	+ 39.0	+ 39.5	+ 40.0	+ 40.5	+ 36.1	+ 36.1	+ 33.1	+ 36.1	+ 36.1	+ 36.1	+ 35.0	+ 29.5
25	+ 31.2	+ 31.2	+ 30.8	+ 31.2	+ 31.2	+ 30.3	+ 29.5	+ 30.3	+ 33.1	+ 32.1	+ 32.1	+ 32.1	+ 29.5	+ 30.3	+ 29.5	+ 28.4	+ 27.9	+ 27.4	+ 27.9	+ 27.4	+ 25.4	+ 23.3	+ 21.3	+ 19.2
26	+ 19.2	+ 16.1	+ 15.1	+ 13.1	+ 9.0	+ 10.0	+ 1.3	+ 9.5	+ 13.6	+ 11.5	+ 11.5	+ 10.5	+ 11.0	+ 13.1	+ 12.0	+ 13.1	+ 12.0	+ 10.5	+ 12.0	+ 9.0	+ 13.1	+ 14.1	+ 16.1	+ 16.1
27	+ 16.1	+ 19.2	+ 14.1	+ 16.1	+ 13.1	+ 20.3	+ 18.1	+ 16.1	+ 18.2	+ 18.2	+ 18.2	+ 16.6	+ 16.1	+ 16.6	+ 15.1	+ 14.1	+ 14.1	+ 13.1	+ 13.1	+ 10.0	+ 10.0	+ 14.1	+ 14.1	+ 15.1
28	+ 14.1	+ 14.1	+ 18.1	+ 18.1	+ 13.1	+ 13.1	+ 18.1	+ 13.1	+ 13.1	+ 13.1	+ 13.1	+ 13.1	+ 12.0	+ 12.0	+ 11.5	+ 11.0	+ 11.0	+ 11.0	+ 12.0	+ 12.0	+ 13.1	+ 12.0	+ 12.0	+ 14.1
29	+ 12.0	+ 13.1	+ 13.1	+ 13.1	+ 13.1	+ 13.1	+ 13.1	+ 14.1	+ 15.1	+ 15.1	+ 13.1	+ 12.0	+ 12.0	+ 12.0	+ 12.0	+ 12.0	+ 12.0	+ 12.0	+ 12.0	+ 11.5	+ 11.5	+ 13.1	+ 13.6	+ 13.1
30	- 15.1	- 15.1	- 15.1	- 16.1	- 15.1	- 17.2	- 17.2	- 13.1	- 16.1	- 16.1	- 16.1	- 16.1	- 15.1	- 16.1	- 16.1	- 12.0	- 10.0	- 9.0	- 10.0	- 10.0	- 10.0	- 12.0	- 12.0	- 12.0

FLOEBERG BEACH.—DECEMBER 1875.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid- night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	-11.0	-9.0	-7.9	-5.9	-3.9	-3.9	-5.9	-6.9	-4.9	-3.9	-4.9	-6.9	-9.0	-10.0	-11.0	-9.0	-9.0	-9.0	-10.0	-7.4	-5.9	-5.9	-6.9	-5.9
2	-6.9	-7.4	-7.4	-7.4	-7.4	-7.4	-6.9	-5.9	-8.4	-8.4	-8.4	-9.0	-9.0	-9.0	-3.3	+1.8	+6.4	+5.4	+11.5	+24.8	+24.8	+23.8	+24.8	+24.8
3	+23.8	+30.0	+27.9	+18.7	+28.9	+27.1	+26.4	+30.0	+11.5	+11.5	+5.9	+3.3	+2.3	+1.3	+1.3	+1.3	+22.8	+22.8	+21.8	-1.8	-4.9	-6.4	-7.9	-10.0
4	-10.0	-10.5	-11.0	-12.0	-12.0	-13.1	-13.6	-13.1	-12.0	-13.1	-12.0	-12.5	-13.1	-15.5	-15.0	-16.1	-18.2	-18.2	-19.2	-21.3	22.3	22.3	21.3	21.3
5	22.3	22.3	22.3	15.1	17.7	20.3	21.3	20.3	10.0	14.1	10.0	12.0	15.1	14.6	-15.1	-16.1	-16.1	-15.1	-16.1	-16.1	-3.9	-3.9	-12.1	13.1
6	-13.1	-9.0	-	10.0	12.0	11.0	9.0	9.0	6.9	8.4	6.9	2.8	2.8	0.8	+0.2	+0.2	+3.3	+2.3	+2.3	+1.3	+2.3	+1.3	+1.3	0.8
7	+0.2	+0.2	10.8	0.8	1.8	1.8	1.8	1.8	0.8	0.8	1.8	9.0	12.0	13.1	-9.0	-2.8	-2.8	-10.0	-10.0	-10.0	-11.0	-10.0	-10.0	11.0
8	-10.0	-10.0	10.0	10.0	10.0	11.0	11.0	11.0	10.5	10.5	10.5	11.0	11.0	10.0	11.0	12.0	12.0	12.0	13.1	14.1	15.1	18.2	19.2	23.3
9	22.3	23.3	23.3	24.4	24.4	24.4	25.4	27.4	28.4	29.5	29.5	28.4	28.4	27.4	27.4	27.4	27.4	26.4	26.4	26.4	23.3	22.3	19.2	-
10	19.2	19.2	18.7	16.1	14.1	15.1	16.1	15.1	14.1	14.1	13.1	11.0	10.0	7.9	-	10.0	11.0	14.1	15.1	16.1	15.1	14.1	13.6	13.6
11	10.0	10.0	15.1	16.1	16.6	15.6	11.5	12.0	11.0	11.0	10.0	10.0	9.5	9.0	8.4	7.4	7.9	7.4	7.9	7.9	7.9	7.9	7.9	7.9
12	8.4	7.9	7.9	10.0	9.0	7.9	9.0	9.0	10.0	10.0	10.0	11.0	9.0	8.4	12.0	12.0	12.0	14.1	15.1	17.2	19.2	21.3	22.3	22.3
13	24.4	23.3	25.9	25.9	25.9	25.9	26.4	27.4	27.4	28.4	29.5	31.2	31.2	31.2	32.1	31.2	31.2	27.4	28.4	29.5	29.5	30.3	20.3	29.5
14	27.4	24.9	24.4	22.8	22.8	22.3	23.3	24.4	24.4	23.3	24.4	24.4	26.9	24.4	26.4	26.4	27.4	28.4	26.4	25.4	25.4	27.4	28.4	28.4
15	25.4	24.4	26.4	25.9	22.8	21.3	21.3	21.3	21.3	21.3	21.3	22.3	24.4	21.3	20.3	19.2	19.2	21.3	21.3	22.8	23.3	21.8	21.8	19.7
16	20.3	22.8	25.9	24.9	21.3	21.3	22.3	21.3	24.4	27.4	24.4	23.3	25.4	30.3	31.2	32.1	32.1	32.1	32.1	32.1	33.1	34.1	37.5	36.1
17	36.1	36.1	35.1	33.1	33.1	32.1	36.1	34.1	32.6	35.1	36.1	36.1	35.6	32.1	34.1	34.1	29.5	27.4	25.4	25.4	24.4	25.4	28.3	25.4
18	26.4	27.4	27.4	28.4	29.5	25.4	21.3	18.7	18.2	14.1	17.2	19.2	16.1	17.2	18.2	18.2	19.2	21.3	23.4	31.2	31.2	32.1	33.1	33.1
19	34.1	35.1	35.1	35.1	33.1	34.1	35.1	35.1	35.1	35.1	36.1	36.1	35.1	36.1	39.0	38.5	38.5	38.0	38.0	38.0	40.0	39.0	39.5	38.0
20	39.0	41.0	40.0	40.5	40.0	38.0	38.0	37.0	37.0	37.0	37.0	36.1	36.1	37.0	38.0	38.0	37.0	40.0	43.1	43.1	43.1	43.1	41.0	41.0
21	41.0	41.0	42.0	38.0	35.1	35.1	38.0	34.1	35.1	30.8	30.3	36.1	35.1	28.4	26.4	26.4	27.4	29.5	29.5	29.5	34.6	37.5	38.5	40.0
22	41.0	41.0	42.0	42.0	37.0	36.1	31.2	34.1	33.1	34.1	33.1	32.1	34.1	38.0	39.0	41.0	41.0	40.0	39.0	38.0	35.1	36.6	38.0	40.0
23	40.0	40.0	40.0	41.0	42.0	41.0	43.0	40.0	36.1	35.1	37.0	38.0	37.0	38.0	38.0	38.0	39.0	39.0	36.1	34.1	34.1	33.1	33.1	31.2
24	30.0	30.0	30.0	30.0	28.4	27.4	29.5	29.5	29.5	29.5	29.5	28.4	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
25	34.1	37.0	35.1	37.0	35.1	35.1	31.2	34.1	34.1	40.0	39.0	42.0	38.0	32.1	33.1	34.1	34.1	34.1	35.1	34.1	34.1	35.1	35.1	35.1
26	37.0	36.1	39.0	40.0	40.0	42.0	42.0	42.0	41.0	40.0	39.0	42.0	38.0	38.0	38.0	38.0	42.0	42.0	40.0	41.0	38.0	37.0	36.1	36.1
27	36.6	39.0	40.0	40.0	39.0	38.0	35.1	32.1	30.3	28.4	28.4	28.4	31.2	31.2	29.5	31.2	31.7	30.3	28.4	26.9	27.0	28.4	27.4	26.9
28	26.4	25.4	25.4	24.4	24.4	24.4	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	24.4	24.4	24.4	24.4	26.4	28.4	28.4	29.5	29.5
29	28.4	30.3	30.3	28.9	29.5	31.2	31.2	31.2	31.2	31.2	31.2	28.4	26.4	26.4	26.4	26.4	27.4	27.4	25.4	24.4	24.4	24.4	26.4	26.4
30	24.4	23.3	26.4	26.4	28.4	28.3	24.4	23.3	26.4	25.4	25.4	27.4	25.4	26.4	26.4	20.3	17.2	18.1	16.1	18.2	18.2	18.2	17.2	17.2
31	-18.2	-18.2	-18.2	-21.3	-19.2	-17.7	-20.3	-19.2	-18.2	-18.7	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	-17.2	-22.3	-21.3	-24.4	-24.4

FLOEBERG BEACH.—JANUARY 1876.

Days.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid- night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	-24.4	-24.4	-22.8	-27.9	-27.9	-25.4	-26.4	-28.4	-26.4	-29.5	-27.4	-27.4	-29.5	-29.5	-27.4	-26.4	-26.4	-29.5	-29.5	-28.4	-25.4	-24.9	-27.4	-27.4
2	23.4	26.4	25.4	26.4	22.3	22.3	28.4	27.4	28.4	28.4	26.4	25.4	25.9	25.9	20.9	28.4	27.9	28.4	33.1	33.1	24.4	24.4	24.4	23.4
3	22.3	21.3	26.4	29.5	29.5	27.4	24.4	25.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	23.3	23.3	22.8	22.3	22.3	23.3	22.3	22.3	21.3
4	21.8	19.2	19.2	21.8	24.4	22.3	19.7	20.8	22.3	22.3	22.3	21.3	20.3	20.3	19.2	16.6	14.1	13.1	13.1	14.1	14.1	14.6	14.1	12.0
5	12.0	12.0	13.1	14.1	21.3	21.3	20.8	21.3	21.8	22.3	24.3	25.4	27.4	28.4	28.4	29.5	30.0	30.0	30.5	31.0	31.5	28.4	30.5	28.4
6	31.0	31.5	32.1	33.1	33.6	33.6	36.1	37.0	37.0	39.0	37.0	35.1	28.9	28.9	36.6	36.6	34.1	35.1	21.3	17.2	14.1	30.9	23.3	33.6
7	15.1	15.1	14.1	15.6	16.1	16.1	14.6	15.1	15.1	15.1	13.1	14.1	14.1	13.1	14.1	14.1	11.5	14.1	15.6	15.1	14.1	16.1	17.2	14.1
8	36.1	35.1	34.6	38.5	39.0	38.0	28.4	37.0	35.1	27.4	23.3	18.7	22.3	20.3	18.2	17.2	11.5	14.1	15.6	15.1	14.1	10.1	17.2	14.1
9				10.0				10.0	6.9	5.9	3.9	4.9	4.9	5.9	4.9	4.9	5.9	5.9	5.9	6.9	11.0	7.9	5.9	4.9
10	4.4	6.9	6.9	6.9	6.9	9.0	9.0	9.0	7.9	9.0	9.0	11.0	12.0	12.5	14.1	14.6	16.1	17.2	20.3	21.3		21.8	23.8	24.4
11	23.3	23.3	21.3	24.4	21.8	21.3	21.3	29.7	29.7	22.3	17.7	15.1	16.1	15.1	14.1	7.9	10.5	11.0	6.4	9.5	3.9	7.9	13.1	14.1
12	16.1	14.1	18.2	17.2	18.1	16.1	14.1	19.0	12.5	16.1	17.2	16.1	16.1	17.2	16.1	16.1	16.1	16.1	16.1	16.1	17.2	17.2	17.7	18.2
13	19.2	19.2	19.2	19.2	20.3	21.3	23.3	23.3	22.3	23.8	24.4	24.4	23.3	23.3	17.2	22.3	22.3	32.1	27.4	28.4	20.3	26.4	20.3	13.1
14	13.1	21.3	28.3	28.4	20.3	18.2	17.7	19.7	18.2	17.2	18.2	16.1	16.1	16.1	17.2	17.2	16.1	17.2	18.2	19.2	20.3	21.3	21.8	23.8
15	25.4	26.4	27.9	31.5	32.5	31.5	31.1	32.5	34.1	35.1	34.1	33.1	35.1	34.1	33.1	33.1	33.1	31.6	36.1	37.0	37.0	35.1	36.1	38.0
16	38.0	38.0	38.5	38.5	37.0	38.0	38.0	38.0	38.0	37.0	37.0	36.5	36.5	38.0	38.0	38.0	39.0	39.0	38.0	38.0	39.0	38.0	37.5	39.5
17	42.5	42.0	43.1	43.1	39.0	32.1	32.1	37.5	40.0	38.0	39.0	40.0	38.0	39.5	41.0	41.0	42.5	41.0	38.5	41.0	41.0	31.5	31.0	37.0
18	38.1	39.5	40.0	42.5	41.0	35.1	24.4	25.4	17.7	21.3	28.4	23.1	33.1	34.6	35.1	35.1	38.0	38.0	34.1	40.0	43.1	43.1	34.1	31.5
19	32.1	31.5	33.1	37.0	34.1	35.1	35.1	34.6	42.5	42.5	43.1	43.1	43.1	41.0	38.0	39.0	42.5	44.2	41.0	43.1	42.0	42.0	43.1	45.3
20	48.1	41.0	42.0	40.0	40.0	40.0	40.0	40.0	41.0	41.0	41.0	40.0	38.0	42.0	43.1	43.1	43.1	43.1	43.1	43.1	43.1	44.2	44.7	45.3
21	44.2	45.3	45.3	44.2	45.3	44.2	44.2	44.2	44.2	44.2	44.2	45.3	45.3	45.8	46.4	47.5	46.4	47.5	48.0	47.5	48.0	48.6	47.5	47.5
22	43.6	47.5	47.5	47.5	48.0	48.0	48.6	48.6	48.6	50.2	49.7	49.7	48.6	48.6	48.0	47.5	46.4	41.7	46.4	47.5	49.7	48.6	48.6	49.7
23	51.9	51.9	51.9	55.3	56.4	55.8	54.6	55.8	56.4	57.6	58.7	55.8	57.6	58.1	58.7	57.6	58.1	56.4	57.6	59.2	55.3	57.6	55.3	56.4
24	55.3	56.4	54.6	54.1	56.9	54.1	53.0	54.1	35.1	29.5	26.4	28.4	48.6	26.4	26.4	27.9	30.5	27.4	46.4	49.7	47.5	49.7	51.9	50.8
25	51.3	51.9	51.9	54.1	58.0	53.0	53.0	53.0	54.1	54.1	55.3	55.3	53.0	54.1	55.3	56.4	55.3	54.1	54.1	55.3	54.1	53.0	53.0	58.0
26	52.4	50.8	50.2	48.6	48.6	48.6	48.6	48.6	47.5	47.5	46.4	44.2	45.3	44.2	41.0	39.0	37.0	37.0	38.0	39.0	39.0	39.0	38.0	38.0
27	39.0	38.5	40.0	42.0	43.1	44.2	45.8	44.7	48.0	48.0	48.6	47.5	47.5	46.4	46.4	43.6	37.0	42.0	40.0	37.0	38.0	37.5	37.0	38.0
28	39.0	41.0	43.1	43.0	43.1	44.2	45.8	44.7	48.0	43.1	48.6	48.6	48.6	47.5	47.5	46.4	50.8	50.2	50.8	47.5	53.0	49.7	48.6	50.1
29	46.4	44.2	43.1	46.4	46.4	47.5	46.9	46.9	45.8	44.2	43.1	43.1	42.5	45.3	42.0	44.2	45.3	44.2	44.2	41.0	41.0	42.0	40.0	40.0
30	42.0	42.0	41.0	42.0	43.1	42.6	41.0	40.0	39.0	39.0	41.5	42.0	44.2	43.1	44.2	44.2	43.1	44.2	44.2	44.2	39.0	41.0	43.1	41.5
31	48.0	42.0	42.5	42.5	43.0	43.6	44.2	44.2	44.2	45.3	45.8	44.2	44.2	44.2	44.2	43.1	42.6	41.0	41.0	39.0	37.0	37.0	34.1	32.1

FLOEBERG BEACH.--FEBRUARY 1876.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid- night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.
1	-33.1	-33.1	-32.1	-31.5	-30.5	-29.5	-31.3	-19.2	-11.0	-11.0	-11.0	-12.0	-12.0	-11.5	-13.1	-14.1	-13.6	-11.0	-9.0	-9.0	-9.0	-6.9	-6.9	-7.9
2	11.0	11.0	11.0	10.0	12.0	12.0	12.0	12.5	12.0	12.0	12.0	12.0	12.0	14.1	12.0	11.0	14.1	18.2	16.1	14.1	12.5	12.0	11.0	13.1
3	12.0	17.2	21.3	19.7	23.4	28.4	30.5	29.5	28.4	27.4	27.4	30.0	23.8	23.8	23.8	25.9	25.4	25.4	26.4	25.9	27.4	28.4	28.4	26.4
4	24.4	23.3	19.2	18.2	20.3	20.3	19.2	18.7	17.2	17.2	18.2	18.2	18.2	19.2	17.7	17.7	20.3	20.3	20.3	20.8	20.3	21.3	19.2	18.2
5	19.2	19.2	18.7	18.2	18.2	19.2	18.2	18.2	13.1	13.1	13.1	17.2	17.2	17.2	17.2	17.7	18.2	18.2	20.3	21.3	21.3	21.3	21.3	19.2
6	17.7	17.2	17.7	21.3	23.3	23.3	20.3	22.3	26.4	28.9	29.5	29.5	29.5	28.4	28.4	26.4	22.3	22.3	22.3	22.3	26.4	27.4	27.4	29.5
7	30.5	30.0	29.5	30.5	31.0	31.5	32.1	32.1	33.1	33.1	34.1	35.1	36.1	37.0	38.0	41.0	39.0	41.0	41.0	42.0	43.1	43.6	42.0	42.0
8	40.5	42.0	43.1	42.0	42.0	42.0	37.0	38.0	40.5	43.1	40.0	40.0	41.0	39.0	38.0	37.5	39.0	41.0	43.1	44.2	45.3	45.3	45.3	45.3
9	45.3	47.5	47.5	46.4	43.1	45.3	40.0	43.1	46.4	44.2	45.3	41.0	43.1	43.1	43.1	43.1	45.3	44.2	45.3	47.7	48.6	44.2	45.3	44.2
10	47.5	48.6	47.5	48.6	48.6	46.4	46.4	46.4	45.3	45.3	48.6	47.5	47.5	47.5	49.7	48.0	46.4	44.2	47.5	47.5	49.7	53.0	46.4	49.7
11	51.8	51.3	51.9	51.9	49.7	50.2	50.8	49.7	49.7	51.9	47.5	46.5	44.2	44.2	44.2	44.2	44.2	43.1	42.0	42.0	49.7	42.0	43.1	48.1
12	44.2	44.2	43.6	43.1	42.0	43.1	43.1	40.0	40.0	39.0	39.0	40.0	42.0	43.1	43.1	43.1	43.1	42.0	45.3	45.3	49.7	49.1	48.6	49.7
13	48.6	47.5	50.8	48.6	49.7	50.8	48.6	48.6	48.6	50.8	49.7	51.9	47.5	48.6	50.8	50.8	50.8	52.5	58.0	51.9	49.7	49.7	50.8	49.7
14	49.7	49.7	50.8	50.8	51.9	50.8	51.9	51.9	51.9	53.0	53.0	53.0	51.9	46.4	46.9	47.5	46.4	43.1	42.0	41.0	48.6	46.4	45.3	45.3
15	47.5	47.5	47.5	47.5	45.3	45.3	45.3	44.2	43.1	43.1	43.1	43.1	51.9	51.9	50.8	50.8	55.3	55.3	55.3	55.3	56.4	57.6	57.6	57.6
16	48.6	48.6	50.8	51.3	51.9	51.9	53.0	53.0	57.6	58.7	59.7	57.6	58.6	59.7	59.7	59.7	54.1	57.6	57.6	57.6	57.6	56.4	57.6	57.6
17	57.6	57.6	56.9	56.5	56.5	57.6	59.7	57.6	49.1	48.6	46.4	45.3	45.3	41.0	40.5	38.1	35.1	36.1	38.6	34.1	34.1	35.1	36.1	37.1
18	57.6	57.6	55.3	55.3	53.0	49.7	49.7	49.7	49.1	48.6	46.4	45.3	45.3	41.0	40.5	38.1	35.1	36.1	38.6	34.1	34.1	35.1	36.1	37.1
19	33.1	33.1	34.1	34.1	37.0	39.0	42.0	41.0	45.3	46.4	47.5	47.5	45.3	51.9	54.1	54.1	51.9	50.8	50.8	50.8	49.7	51.9	54.1	54.1
20	54.1	51.9	51.9	49.7	54.1	55.3	53.0	54.1	57.6	56.4	55.3	53.0	51.9	54.1	54.1	54.1	51.9	50.8	50.8	50.8	49.7	51.9	54.1	54.1
21	51.9	51.9	54.1	54.1	51.9	54.1	53.0	55.3	53.0	57.6	56.4	56.4	57.6	55.3	55.3	58.0	51.9	53.0	53.5	55.3	55.3	55.3	55.3	55.9
22	55.3	55.3	55.3	54.1	51.9	46.4	15.0	15.0	17.0	17.0	17.0	38.0	42.0	41.0	44.3	44.3	42.5	48.1	45.3	46.9	47.5	20.3	16.1	15.6
23	15.1	16.1	16.1	16.1	15.1	14.1	13.1	14.1	19.2	12.0	20.8	21.3	16.1	11.0	10.0	9.5	9.0	5.9	5.4	5.4	7.9	7.9	5.9	4.9
24	5.9	4.9	9.0	6.9	6.9	6.9	10.0	11.5	5.9	3.9	0.8	21.3	26.4	27.4	25.9	26.4	27.4	25.9	27.4	27.4	26.4	26.4	27.4	27.4
25	27.4	26.9	26.9	25.4	24.4	23.3	22.3	22.3	23.3	22.3	24.4	25.4	27.4	27.4	28.4	27.4	27.4	27.4	26.4	26.4	27.4	22.3	21.3	21.3
26	21.3	20.3	20.3	19.2	20.3	20.3	21.3	21.3	22.3	23.3	23.3	26.4	28.3	28.3	16.1	19.2	16.1	16.1	28.4	31.5	30.5	22.3	21.3	21.3
27	30.5	31.1	37.0	35.1	37.0	38.0	38.0	38.0	38.0	38.0	40.0	48.1	44.2	42.0	42.0	43.1	44.2	44.2	42.0	42.0	42.0	45.3	46.4	47.5
28	47.5	50.8	50.8	51.9	51.9	53.0	53.0	55.3	51.9	53.5	54.1	55.3	54.1	55.3	55.8	54.6	54.6	57.6	57.6	58.7	57.6	59.7	59.7	59.7
29	-59.7	-60.7	-61.7	-60.7	-62.2	-63.7	-60.7	-60.7	-61.7	-63.8	-62.7	-62.7	-59.7	-65.9	-63.8	-63.8	-64.3	-63.8	-64.8	-65.3	-65.9	-64.8	-62.7	-64.3

FLOEBERG BEACH.—MARCH 1876.

Date.	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	9 P.M.	10 P.M.	11 P.M.	Mid- night.	1 A.M.	2 A.M.	3 A.M.	4 A.M.	5 A.M.	6 A.M.	7 A.M.	8 A.M.	9 A.M.	10 A.M.	11 A.M.	Noon.		
1	-64.3	-64.8	-64.8	-65.3	-66.9	-65.9	-65.9	-66.9	-68.0	-66.9	-65.9	-68.0	-68.0	-68.0	-66.9	-67.5	-66.9	-66.9	-68.0	-68.0	-68.0	-68.0	-68.0	-65.3	-65.3	
2	65.9	66.9	66.9	67.4	66.9	68.5	68.0	68.0	69.1	69.1	69.1	69.1	69.6	70.2	69.1	68.0	70.2	70.2	70.2	70.2	70.2	70.2	70.2	70.2	69.6	69.6
3	70.7	69.6	71.3	71.8	72.4	72.4	68.0	68.0	69.6	69.6	68.0	69.1	68.0	69.1	69.1	69.1	69.1	69.1	68.0	68.0	69.1	66.4	66.9	68.0	68.0	
4	66.9	65.9	68.0	65.9	64.8	63.8	63.8	61.7	62.7	62.7	58.7	59.7	61.7	62.2	62.7	62.7	60.2	60.2	61.7	62.2	59.2	62.7	62.7	61.7	61.7	
5	61.7	61.7	61.7	61.7	61.7	61.2	58.7	60.2	58.7	58.7	58.7	59.2	57.6	58.1	58.7	58.7	59.7	59.7	59.7	57.6	57.6	57.6	57.6	57.6	57.6	
6	56.4	56.4	55.8	55.8	55.3	54.1	55.3	55.3	55.3	55.8	54.6	55.3	55.3	55.3	55.3	55.8	55.3	55.3	55.3	56.4	56.4	56.4	56.4	56.4	56.4	
7	55.8	55.3	54.1	53.5	51.9	51.9	50.8	49.1	48.6	48.6	47.5	48.0	45.8	44.2	44.2	41.0	49.1	49.1	43.1	43.1	43.6	43.1	43.1	43.1	43.1	
8	45.3	46.4	45.3	44.7	44.2	44.2	46.4	45.3	45.3	47.5	48.0	48.0	49.7	50.8	54.1	54.1	55.8	55.8	56.4	56.4	55.8	54.1	53.0	52.4	52.4	
9	50.8	51.9	53.5	55.3	55.3	55.8	55.3	54.1	55.3	56.4	56.4	55.3	55.3	56.4	56.4	56.9	57.6	57.6	56.4	56.4	57.6	55.3	54.1	54.1	54.1	
10	53.0	55.3	55.3	56.4	57.6	57.6	56.4	56.4	58.1	56.4	56.4	56.4	56.9	57.6	58.7	55.3	56.9	58.1	58.7	59.2	57.6	53.5	54.1	53.0	53.0	
11	51.9	51.9	54.1	54.1	56.4	56.4	56.4	57.6	56.4	56.4	55.3	53.0	53.0	45.8	51.9	53.5	54.1	50.8	48.6	43.6	41.0	36.1	34.1	28.4	28.4	
12	28.4	27.4	28.4	28.9	30.3	30.8	31.2	32.6	37.0	37.0	37.0	36.1	36.1	36.1	36.1	36.1	36.1	37.0	37.0	38.0	37.5	37.5	34.6	35.1	35.1	
13	36.1	36.6	37.0	34.1	33.1	34.1	35.1	36.1	28.9	26.4	24.4	22.8	21.3	21.3	21.3	19.2	20.3	19.2	18.7	19.2	19.2	18.2	17.7	18.2	18.2	
14	16.1	17.2	18.2	17.2	19.7	20.3	22.3	24.4	28.4	28.4	28.4	29.5	30.0	30.0	29.5	29.5	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	
15	28.9	29.5	29.5	30.5	31.5	31.5	19.2	14.1	13.1	14.1	14.1	14.1	14.1	14.1	14.1	16.1	16.1	13.1	12.0	12.0	11.0	11.0	12.0	12.0	12.0	
16	15.6	20.3	13.1	14.6	15.6	16.1	18.2	23.3	26.4	27.4	15.1	15.1	18.2	23.4	30.3	38.1	23.8	27.4	24.4	25.9	28.4	28.4	32.1	31.5	31.5	
17	13.1	12.0	14.1	16.1	16.1	19.2	21.3	26.4	30.5	31.5	32.1	32.1	30.0	34.1	33.1	36.1	27.4	27.4	34.1	35.1	34.1	31.2	28.4	27.4	27.4	
18	31.5	32.1	32.6	33.4	33.4	34.1	36.1	37.0	38.0	37.0	37.0	37.0	38.0	38.0	38.0	37.0	33.6	33.1	33.1	32.1	35.1	37.0	34.6	32.1	32.1	
19	27.4	25.4	25.4	28.3	21.3	21.3	22.3	22.3	25.4	26.4	25.4	22.3	24.4	26.4	26.4	29.5	31.5	33.1	40.0	37.0	35.1	37.0	34.6	32.1	32.1	
20	30.3	30.3	31.2	35.1	34.6	37.0	38.5	39.0	39.0	37.0	37.0	39.5	38.0	38.0	38.0	37.0	33.6	33.6	33.1	32.1	35.1	28.4	27.4	27.4	27.4	
21	30.3	32.1	33.6	34.1	33.1	34.1	35.1	35.1	35.1	36.1	36.1	37.0	37.0	38.0	38.0	38.0	39.0	39.0	38.0	38.0	37.0	36.1	35.1	35.1	35.1	
22	24.4	21.3	20.3	21.3	20.3	20.3	21.3	21.3	21.8	21.8	21.8	21.3	21.3	23.8	23.8	25.4	26.4	26.4	27.4	24.4	23.3	23.3	23.3	24.4	24.4	
23	21.3	26.4	27.4	24.4	25.4	28.4	27.4	26.4	27.4	29.5	29.5	29.5	31.5	32.1	32.1	34.1	36.1	35.1	34.6	35.1	29.5	25.4	24.4	28.3	28.3	
24	29.5	26.4	27.4	27.4	30.3	26.9	32.1	36.1	36.1	35.1	37.0	37.0	38.0	38.0	38.0	38.0	39.0	39.0	38.0	38.0	37.0	36.1	35.1	36.1	36.1	
25	34.1	34.1	32.1	33.1	36.1	37.0	38.0	38.0	37.0	38.0	39.0	39.0	41.0	41.0	41.0	41.0	38.0	39.0	37.0	37.0	37.0	36.0	36.0	32.1	32.1	
26	31.2	32.1	32.1	30.3	31.2	36.1	35.6	37.0	37.0	37.5	37.0	37.0	36.5	36.1	35.1	32.1	32.1	31.7	30.3	38.0	29.5	26.4	28.3	28.3	28.3	
27	23.3	23.3	21.3	23.3	23.3	26.4	27.4	29.5	29.5	27.4	26.4	27.4	26.4	26.4	25.4	25.4	24.9	24.9	23.8	23.8	29.5	21.8	20.3	28.3	28.3	
28	26.4	26.4	26.4	24.4	21.3	23.3	19.2	19.2	18.2	19.2	18.2	18.2	16.1	16.1	16.1	15.6	15.6	15.1	14.6	16.1	18.2	16.1	12.0	12.0	12.0	
29	14.1	28.4	28.4	26.4	28.4	33.1	34.6	36.1	34.1	32.1	31.2	31.2	33.1	34.1	36.1	38.0	38.0	37.0	35.1	34.1	34.1	36.1	35.1	34.1	34.1	
30	33.1	33.1	33.1	36.1	36.1	39.0	38.0	43.1	45.3	47.5	46.4	46.4	46.4	46.4	42.0	41.0	41.0	41.0	40.0	40.0	35.1	33.1	27.4	29.5	29.5	
31	-29.5	-30.5	-30.5	-24.1	-30.5	-28.4	-30.8	-32.6	-36.1	-37.0	-37.0	-38.0	-39.0	-39.0	-39.0	-39.0	-31.5	-34.1	-34.1	-35.1	-35.1	-25.4	-25.4	-25.4	-25.4	

FLOEBERG BEACH.—APRIL 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	-26.4	-22.3	-28.4	-30.3	-29.5	-28.4	-34.1	-31.1	-34.1	-33.1	-31.2	-30.3
2	26.4	31.5	31.5	31.5	30.5	31.5	30.5	31.5	31.5	30.5	27.4	28.4
3	26.4	28.4	31.5	32.5	37.7	41.0	—	31.5	30.5	30.5	27.9	22.8
4	22.3	22.8	23.3	33.6	35.6	39.7	—	35.6	33.6	31.5	32.5	29.5
5	24.4	28.4	28.4	29.5	29.5	30.5	33.6	36.6	35.6	29.5	26.4	23.8
6	31.5	30.5	26.4	31.5	37.7	42.0	—	43.1	41.0	28.4	20.3	19.7
7	17.2	20.3	21.3	22.3	27.4	25.4	26.4	29.5	29.5	27.4	27.4	24.4
8	23.8	22.8	24.4	26.4	30.5	30.5	30.5	31.5	30.5	28.4	25.4	21.3
9	20.3	19.2	28.4	29.5	26.4	30.5	31.5	32.5	30.5	27.4	25.4	21.3
10	-10.0	-12.0	16.1	21.3	—	20.8	13.1	16.1	7.9	10.0	8.8	1.8
11	+ 0.2	+ 0.2	3.8	8.9	11.0	10.0	6.9	7.9	7.9	12.0	8.9	8.9
12	-10.0	-10.0	11.0	18.2	20.3	23.3	28.4	29.5	27.4	26.4	—	21.3
13	20.3	19.2	22.3	21.3	22.3	22.3	22.3	21.3	21.3	21.3	18.2	17.2
14	18.2	19.2	21.3	21.3	22.3	23.3	26.4	26.4	26.4	25.4	23.3	23.3
15	22.8	24.9	28.1	30.5	30.5	30.5	31.5	30.5	29.5	31.5	30.5	28.4
16	26.4	25.4	23.3	24.4	25.9	29.5	30.5	30.0	28.4	25.4	23.3	22.3
17	22.3	21.8	22.3	22.3	23.3	24.4	25.4	24.4	22.8	22.3	19.2	18.2
18	17.2	12.5	19.2	21.3	22.3	23.8	23.3	25.4	26.4	23.3	23.3	23.8
19	24.4	23.8	21.3	20.3	23.3	25.4	24.4	23.3	25.4	20.3	16.1	13.1
20	12.0	11.0	16.1	11.0	12.0	13.6	13.6	15.6	12.0	11.0	16.1	13.1
21	13.1	13.1	13.1	15.1	19.2	20.3	15.1	20.3	17.7	12.0	13.1	15.1
22	16.1	17.7	18.2	18.7	18.2	17.2	16.6	16.1	16.6	16.1	13.1	12.0
23	12.0	12.0	11.0	10.0	16.1	20.8	23.8	23.8	23.8	19.2	18.2	16.1
24	15.1	14.1	13.6	14.1	14.6	15.1	15.6	15.1	14.1	15.1	15.1	15.1
25	12.0	8.9	6.9	5.9	12.0	14.1	15.1	14.1	14.1	-13.1	-12.0	- 5.9
26	- 4.9	- 4.9	- 4.3	- 4.3	- 5.9	- 7.9	- 7.4	- 6.9	- 5.9	+ 1.8	+ 3.4	+13.6
27	+ 9.5	+ 7.5	+ 5.4	+ 4.4	+ 3.3	+ 0.2	+ 0.2	+ 1.3	+ 0.2	1.8	1.3	3.3
28	4.4	3.3	3.3	5.9	6.9	2.3	2.8	2.8	- 0.8	1.3	4.4	6.4
29	6.9	7.5	9.5	11.1	9.5	9.5	6.4	2.8	+ 4.4	4.4	6.4	9.0
30	+ 9.0	+ 8.5	+ 7.5	+ 6.9	+ 5.4	+ 4.9	+ 4.9	+ 4.4	+ 4.4	+ 3.8	+ 3.8	+ 4.4

FLOEBERG BEACH.—MAY 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	+ 3.8	+ 3.3	- 0.8	- 0.8	+ 0.2	+ 5.4	+ 3.8	+ 3.3	+ 2.3	+ 1.3	+ 0.2	- 0.8
2	- 1.8	- 1.8	1.8	1.8	- 2.3	- 2.8	- 2.8	- 2.3	- 3.3	- 5.2	- 3.8	3.8
3	4.9	6.4	6.9	8.9	-11.0	11.5	11.5	10.5	8.4	4.9	5.9	4.3
4	3.3	4.3	- 0.8	+ 5.4	+ 1.3	8.9	11.0	10.5	10.0	4.9	- 3.8	- 1.8
5	- 1.8	- 0.8	+ 4.4	6.4	- 2.8	10.0	7.9	6.9	4.9	4.9	+ 1.3	+ 3.8
6	+ 5.4	+ 4.9	3.3	1.3	+ 0.8	4.9	5.4	5.4	- 5.4	2.8	+ 4.4	9.5
7	10.6	6.4	8.5	9.5	4.4	2.8	2.8	0.8	+ 0.2	- 0.8	- 1.8	2.3
8	4.4	5.4	8.5	7.5	2.3	- 1.8	- 3.8	- 3.8	- 0.8	+ 1.3	+ 5.4	7.5
9	9.5	6.4	6.4	6.4	5.4	+ 4.4	+ 1.3	+ 6.4	+ 6.9	9.5	10.6	11.6
10	14.6	16.7	13.1	8.5	8.0	7.5	8.5	9.5	9.5	11.6	11.6	7.5
11	7.5	11.6	13.6	11.6	8.5	9.0	7.5	8.5	9.0	7.5	8.5	8.5
12	9.5	11.6	8.5	4.4	2.3	0.8	0.8	1.8	3.3	4.4	6.4	8.5
13	9.5	6.4	10.6	10.6	9.5	9.0	7.5	6.9	6.4	6.9	8.5	8.5
14	9.0	9.5	8.5	8.0	7.5	8.0	8.5	9.5	10.6	11.6	13.6	12.6
15	14.6	13.6	13.1	9.5	9.0	7.5	6.4	5.4	5.4	4.9	4.9	4.9
16	5.4	6.4	7.5	7.5	7.5	7.5	6.9	8.0	8.0	11.1	13.6	18.2
17	25.9	19.7	21.8	28.5	16.7	12.6	13.6	14.6	14.6	14.1	16.7	20.2
18	20.2	19.8	18.7	17.7	19.7	14.6	15.1	14.6	14.6	16.7	17.7	17.7
19	19.7	19.7	19.2	18.7	18.7	15.7	14.6	15.7	16.7	15.7	17.7	19.2
20	19.7	19.7	19.7	19.7	18.7	17.7	18.7	18.2	18.7	20.8	22.8	23.8
21	25.9	25.9	24.9	24.9	24.9	24.9	23.8	21.8	22.8	21.8	23.8	23.8
22	23.8	23.8	23.8	23.3	22.8	20.8	19.7	19.2	20.8	18.7	19.7	21.8
23	18.7	18.2	18.7	19.2	17.7	16.7	18.7	14.6	14.6	14.6	15.7	16.7
24	19.7	18.7	18.7	18.7	18.2	14.6	12.6	11.6	12.6	11.6	13.6	18.2
25	21.8	18.7	17.7	15.7	15.7	17.7	16.7	17.7	17.7	19.7	23.8	25.9
26	26.4	25.4	23.8	20.8	18.7	18.7	19.7	22.8	20.8	21.8	23.8	25.9
27	26.4	24.3	20.8	19.7	18.2	19.7	20.2	21.2	21.3	21.8	21.3	21.8
28	21.3	21.8	20.8	19.7	18.2	18.7	18.7	18.7	15.7	15.7	16.7	17.2
29	18.7	16.2	16.7	16.7	11.6	8.5	6.4	7.5	8.5	13.6	16.3	15.7
30	16.7	17.7	15.7	13.6	13.6	16.2	16.2	17.7	17.7	20.8	21.8	23.8
31	+28.4	+26.4	+27.9	+26.4	+26.9	+24.4	+24.9	+24.9	+25.9	+26.9	+25.9	+25.9

FLOEBERG BEACH.—JUNE 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	+27.9	+29.0	+29.0	+29.0	+30.0	+30.0	+31.0	+31.0	+31.0	+32.0	+31.0	+29.5
2	31.0	31.0	32.0	32.0	32.0	32.0	32.0	31.0	30.0	30.0	30.0	31.0
3	32.0	31.0	31.0	30.0	29.5	30.0	30.0	31.0	29.0	31.0	31.0	34.0
4	31.0	34.5	35.0	34.0	27.9	25.9	24.9	21.8	22.3	22.8	22.8	23.8
5	27.9	25.9	24.9	24.3	21.8	20.2	20.8	20.2	20.2	20.8	21.8	22.8
6	25.9	24.9	24.9	25.4	25.4	24.9	24.4	23.8	23.8	24.4	26.9	27.9
7	31.0	29.0	29.0	27.9	27.9	26.9	26.9	29.0	29.5	31.0	34.0	34.0
8	34.0	34.0	34.0	34.0	34.0	34.0	33.0	34.0	34.0	36.0	35.0	35.0
9	35.0	34.5	31.5	31.0	29.5	27.9	26.9	25.9	29.0	29.0	29.0	30.0
10	30.0	29.5	29.5	28.5	27.9	27.9	26.9	27.9	27.9	29.0	30.0	31.0
11	31.5	32.0	32.0	32.0	30.5	31.0	31.5	31.5	32.0	32.0	32.5	33.0
12	37.0	33.0	33.0	32.0	31.0	31.0	31.0	30.0	31.0	32.0	34.0	35.0
13	40.0	37.0	35.0	34.5	33.0	32.0	32.0	32.0	31.0	31.0	33.0	36.0
14	37.0	42.0	36.0	34.0	34.0	33.0	32.0	32.0	32.0	33.0	34.0	34.0
15	35.0	37.0	38.0	39.5	36.0	34.0	32.0	32.0	31.5	30.0	33.0	36.0
16	39.0	36.0	34.0	32.0	31.0	31.0	31.0	31.0	31.0	33.0	34.0	34.0
17	35.0	35.0	33.0	32.0	30.0	32.0	29.0	29.5	27.9	26.9	27.9	30.5
18	31.0	31.0	30.0	27.9	26.9	24.9	25.9	25.9	26.4	26.9	27.9	27.9
19	27.9	29.0	29.0	29.0	30.0	30.0	30.0	32.0	30.0	31.0	32.0	33.0
20	32.0	32.0	32.0	31.5	32.0	32.5	27.9	26.9	27.9	30.0	31.0	31.5
21	33.0	33.0	34.0	35.0	33.0	34.0	34.0	35.0	32.0	32.0	31.0	35.0
22	—	—	34.0	34.5	34.0	34.0	33.0	32.0	33.0	33.0	36.0	37.0
23	36.5	36.0	36.0	36.0	35.0	33.5	32.0	31.0	30.0	34.0	34.0	36.0
24	36.0	37.0	—	37.0	36.5	36.0	36.0	35.0	39.0	33.0	38.0	38.5
25	39.0	38.5	—	37.5	38.0	38.0	38.0	38.0	38.5	39.0	40.0	40.0
26	39.0	38.5	38.5	36.5	35.5	37.0	37.0	38.0	39.0	39.0	38.5	38.5
27	41.0	42.0	—	37.0	37.0	36.5	37.0	37.0	35.0	36.0	36.0	36.5
28	36.5	36.0	36.0	36.0	34.0	33.5	33.0	33.0	34.0	34.0	35.0	36.0
29	36.0	37.0	+38.0	41.0	40.0	38.5	—	39.0	39.0	40.0	41.0	40.0
30	+39.0	+41.0	—	+37.5	+36.5	+36.0	+36.0	+37.0	+38.0	+38.0	+40.0	+42.0

FLOEBERG BEACH.—JULY 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	+42.0	+40.0	+39.0	+38.0	+38.0	+38.0	+38.0	+38.0	+39.0	+37.0	+38.0	+38.0
2	37.0	37.5	—	38.5	37.0	36.0	36.0	38.0	38.0	37.0	37.5	37.0
3	38.0	37.5	37.0	37.0	35.0	35.0	34.0	32.0	32.0	34.0	36.0	35.0
4	36.0	37.0	36.5	36.0	35.0	34.0	37.0	37.0	37.0	37.5	38.0	39.0
5	38.0	39.0	38.0	36.0	34.0	33.0	33.0	32.0	33.0	33.0	35.5	38.0
6	40.0	42.0	44.0	42.0	39.0	36.0	35.0	37.0	38.0	40.0	39.5	39.0
7	37.0	34.5	35.0	35.0	35.5	36.5	37.0	38.0	39.0	39.0	39.0	39.5
8	40.0	43.0	42.0	41.5	43.0	45.0	45.0	45.0	41.0	42.0	42.0	43.0
9	44.0	46.0	—	46.0	42.0	40.5	41.0	42.0	42.0	45.0	43.0	44.5
10	43.0	43.0	43.0	43.0	42.5	43.0	43.0	43.0	38.0	38.0	42.0	42.5
11	47.5	43.0	46.0	43.0	43.0	41.0	40.0	41.0	42.0	42.0	45.0	47.5
12	48.0	50.0	47.0	44.5	42.0	41.0	41.0	41.0	41.0	46.0	42.0	46.5
13	47.5	46.0	46.0	44.0	36.0	34.0	34.0	34.0	34.0	34.0	35.0	36.0
14	37.0	37.0	37.0	37.0	36.0	37.0	35.0	36.0	35.0	36.0	36.5	37.0
15	39.0	38.0	37.0	36.5	35.0	31.0	34.0	34.0	31.0	33.0	34.0	35.0
16	35.0	35.5	—	36.0	36.0	34.0	34.0	36.0	36.0	37.0	38.0	38.0
17	37.0	37.5	38.0	37.0	38.0	36.5	36.0	36.0	36.0	33.0	32.5	—
18	—	—	—	37.0	35.0	35.0	35.0	36.0	36.0	36.0	36.0	37.0
19	37.0	38.0	37.0	37.0	36.0	36.0	36.0	35.0	35.0	35.0	38.0	39.0
20	39.5	39.0	38.0	38.0	38.0	38.0	38.0	38.0	36.0	37.0	38.0	37.0
21	37.5	38.5	40.0	42.5	39.0	41.0	41.0	36.0	36.0	36.0	37.0	37.0
22	38.0	37.0	37.0	36.0	34.0	35.0	35.0	36.0	38.0	39.0	40.0	40.0
23	41.0	39.5	—	37.0	37.5	37.0	37.0	34.0	35.0	37.0	37.0	36.5
24	39.0	38.0	40.0	42.0	39.5	38.0	36.0	38.0	37.0	38.0	38.0	39.0
25	35.5	36.5	36.0	35.0	33.5	34.0	35.0	35.5	36.0	37.0	36.5	40.0
26	40.0	38.0	36.0	39.0	40.0	39.0	37.0	37.0	37.0	38.5	40.0	42.0
27	42.0	41.0	40.0	42.5	39.0	37.0	40.0	39.0	39.5	41.0	42.0	41.0
28	44.0	42.0	41.5	40.0	—	40.0	41.0	42.0	41.0	43.0	—	—
29	43.0	38.5	37.0	38.0	36.5	37.0	36.0	35.9	37.0	37.5	37.0	37.0
30	+37.0	37.0	36.5	38.0	36.0	36.0	35.0	36.0	—	—	—	42.0
31	—	+42.0	+38.0	+38.0	+37.0	+42.0	+42.0	+42.0	+42.0	+37.0	+37.0	+39.0

H.M.S. "ALERT."—AUGUST 1876.

Date.	2 P.M.	4 P.M.	6 P.M.	8 P.M.	10 P.M.	Midnight.	2 A.M.	4 A.M.	6 A.M.	8 A.M.	10 A.M.	Noon.
1	+42.0	+38.0	+36.0	+36.0	+36.0	+36.0	+38.0	+37.0	+39.0	+40.0	+39.0	—
2	38.0	37.0	37.0	36.0	34.0	36.0	34.0	33.0	34.0	35.0	36.0	+36.0
3	35.0	36.0	36.0	36.0	36.0	35.0	35.0	35.0	34.0	37.0	34.0	34.0
4	35.0	35.0	35.0	34.0	34.0	34.0	33.0	33.0	34.0	36.0	37.0	38.0
5	36.0	36.0	35.0	31.0	31.0	31.0	—	30.0	30.0	32.0	30.0	30.0
6	30.0	31.0	30.0	30.0	30.0	30.0	31.0	32.0	33.0	34.0	34.0	37.0
7	—	41.0	44.0	39.0	—	37.0	34.0	36.0	33.0	33.0	34.0	36.0
8	35.0	35.0	33.0	32.0	30.0	28.0	26.9	26.9	30.0	33.0	34.0	33.0
9	—	32.0	31.0	32.0	27.9	—	27.9	30.0	32.0	32.0	34.0	36.0
10	35.0	37.0	36.0	37.0	35.0	37.0	34.0	—	—	34.0	35.0	37.0
11	35.0	—	35.0	35.0	36.0	35.0	34.0	34.0	34.0	35.0	37.0	37.0
12	38.0	36.0	37.0	35.0	34.0	33.5	34.0	33.0	32.5	35.0	36.0	35.5
13	35.5	35.0	34.5	34.0	33.0	34.0	33.0	32.5	32.0	32.2	34.0	34.0
14	36.0	32.0	32.5	33.0	32.0	33.0	30.0	31.0	32.0	33.0	35.0	36.0
15	35.0	37.0	36.0	34.5	33.0	33.0	32.0	31.0	33.0	36.0	36.0	34.0
16	37.0	38.0	39.0	—	36.0	35.0	36.0	33.0	34.0	32.0	33.0	35.0
17	35.0	34.0	33.0	33.0	29.5	28.5	28.0	28.5	30.0	31.0	35.0	34.0
18	36.5	38.0	35.0	33.5	32.0	31.5	31.0	30.0	—	29.0	—	—
19	32.0	33.0	33.0	33.0	33.0	35.0	36.0	35.0	34.0	36.0	39.0	39.0
20	34.0	36.0	35.0	32.0	32.0	30.0	31.0	30.0	30.0	31.0	37.0	33.5
21	—	39.0	35.0	36.0	—	—	—	35.0	33.0	33.0	34.0	34.5
22	35.0	40.0	42.0	42.0	42.0	39.0	41.0	41.0	41.0	40.0	36.0	35.0
23	34.0	35.5	34.5	35.0	34.0	34.0	37.0	36.0	35.0	38.0	39.0	39.0
24	—	36.0	36.0	36.0	36.0	38.0	—	36.0	—	36.0	37.0	37.0
25	38.0	38.0	39.5	35.0	33.0	32.0	32.0	33.0	33.0	33.0	35.0	35.0
26	36.0	—	35.0	34.0	33.0	—	32.0	31.5	32.0	33.0	32.5	32.0
27	34.0	34.0	33.0	33.0	32.5	32.5	33.0	33.0	32.5	32.5	34.0	34.0
28	34.5	35.0	32.0	—	31.5	31.0	31.0	32.0	31.0	31.5	32.0	34.0
29	36.0	34.0	32.0	32.0	30.0	27.4	—	27.9	25.9	26.9	—	29.0
30	—	30.0	25.9	20.8	20.8	19.2	20.8	19.8	22.8	24.9	+25.4	26.9
31	+29.5	+29.0	+29.0	+27.9	+29.5	+30.0	+30.0	+31.0	+30.5	+31.0	—	+32.0

Daily Temperature Observations, H.M.S. "Discovery," 1875-1876.

AUGUST 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	+38.1	+38.0	+37.6	+38.0	+38.0	+37.0
2	35.6	—	—	37.5	—	35.0
3	36.0	35.0	34.5	33.0	38.8	39.0
4	42.0	41.0	40.0	41.0	40.0	37.2
5	39.0	38.0	37.0	38.0	41.0	48.0
6	39.0	34.0	35.5	35.0	37.0	41.0
7	39.0	38.0	33.0	33.0	32.5	32.5
8	34.0	36.2	33.0	33.5	39.0	38.0
9	37.0	39.0	35.6	32.0	31.5	—
10	35.5	32.0	30.4	28.0	32.0	33.0
11	34.0	34.5	32.0	34.0	37.0	34.0
12	36.2	42.0	36.0	36.0	39.0	35.0
13	37.0	36.5	35.8	34.5	33.0	32.0
14	34.5	35.0	33.0	—	32.0	39.0
15	38.0	36.5	35.0	34.0	34.5	34.0
16	35.0	34.8	30.2	30.0	33.0	33.0
17	31.0	33.0	32.0	32.0	32.0	33.0
18	33.0	31.0	29.5	29.0	30.0	36.5
19	32.0	29.0	31.0	31.0	38.0	35.0
20	32.5	31.0	30.0	27.5	28.5	26.5
21	27.8	28.5	26.5	28.0	27.0	29.5
22	30.8	30.0	29.5	28.5	28.0	28.0
23	29.8	29.0	27.0	28.2	28.0	30.8
24	30.5	31.2	31.0	30.0	32.0	33.0
25	31.0	34.0	32.0	34.0	—	33.5
26	30.0	32.0	—	—	30.9	28.0
27	29.0	28.5	28.0	28.0	27.0	28.5
28	29.2	29.0	29.0	28.8	29.0	31.0
29	31.0	28.0	28.0	27.0	29.8	31.0
30	31.0	28.8	28.0	29.0	28.0	30.0
31	+30.0	+28.0	+26.0	+29.6	+31.0	+31.0

OCTOBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	+ 8.5	+10.5	+10.0	+11.0	+13.0	+14.6
2	9.0	13.0	14.0	13.0	13.5	16.5
3	16.8	16.0	14.0	15.5	16.0	17.5
4	9.0	5.0	1.8	6.5	8.5	11.0
5	9.5	10.5	10.0	10.0	9.8	12.0
6	11.0	12.0	13.0	8.5	14.8	20.0
7	15.5	13.0	14.0	16.0	17.0	16.5
8	14.0	+13.0	+12.0	+10.5	+11.0	+11.0
9	+ 5.0	- 9.0	-16.0	-10.0	-15.0	-16.0
10	- 5.0	2.0	- 1.0	+ 1.0	+ 3.0	+ 3.0
11	+ 4.0	5.0	+ 6.0	- 8.0	-11.0	-11.0
12	-12.0	16.0	-12.0	16.0	17.0	16.0
13	18.5	18.0	18.0	18.0	20.0	19.0
14	19.0	17.0	17.5	16.0	16.0	22.0
15	21.0	22.0	21.0	15.0	16.0	11.0
16	6.0	4.0	5.0	12.0	12.0	8.0
17	10.0	8.0	8.0	3.0	5.0	11.0
18	16.0	9.0	7.0	15.0	13.0	9.0
19	6.0	6.0	6.0	5.0	10.0	18.0
20	18.0	19.0	19.0	20.0	19.5	20.0
21	23.0	23.0	30.0	23.0	28.0	28.0
22	23.0	19.0	11.0	11.0	12.0	16.0
23	19.0	19.0	16.0	22.0	21.0	30.0
24	31.0	32.0	31.0	32.0	35.5	34.0
25	26.5	22.0	20.0	25.0	29.0	30.0
26	28.0	29.0	29.0	28.0	22.0	22.0
27	21.0	23.0	22.0	25.0	25.0	27.0
28	27.0	24.0	21.0	18.0	14.0	13.0
29	28.0	24.0	23.0	11.0	16.0	16.0
30	19.0	21.0	26.0	27.0	27.0	27.0
31	-27.0	-27.0	-27.0	-26.0	-27.0	-25.0

SEPTEMBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	+33.0	+31.0	+29.0	+31.0	+32.0	+33.0
2	27.0	28.0	23.0	23.0	23.0	24.0
3	23.0	25.5	21.0	22.0	24.0	23.8
4	24.0	19.0	16.0	18.0	19.0	23.2
5	20.0	17.5	16.5	13.5	14.0	20.5
6	20.0	19.0	17.5	17.5	18.8	20.0
7	19.0	18.0	15.0	16.0	18.5	22.0
8	19.0	21.0	20.5	20.0	20.0	20.0
9	21.5	22.0	19.0	21.5	18.0	20.5
10	17.0	19.0	20.0	20.0	21.0	21.0
11	18.5	12.5	11.0	11.5	10.0	10.5
12	17.0	9.5	8.5	12.0	15.0	17.5
13	20.0	21.5	21.0	23.2	23.3	25.5
14	24.5	25.0	28.0	27.0	30.2	30.0
15	31.5	27.5	27.0	27.5	29.8	30.5
16	32.0	31.0	31.8	31.2	33.5	31.2
17	32.8	35.5	38.5	34.5	34.0	29.0
18	25.0	25.0	25.0	24.5	22.5	24.8
19	24.0	24.0	17.0	20.5	21.5	20.8
20	26.0	24.0	21.5	21.0	22.0	20.0
21	12.0	16.0	13.2	10.5	9.0	10.0
22	10.5	9.0	17.5	16.5	15.0	18.0
23	13.0	11.0	9.0	9.0	11.0	12.5
24	16.0	17.0	11.0	9.0	9.0	13.0
25	9.8	10.8	10.5	7.0	4.0	9.5
26	7.0	7.0	10.5	10.0	12.0	13.2
27	13.5	12.5	10.0	7.0	5.0	6.5
28	11.0	11.0	11.5	11.0	11.0	12.0
29	5.0	8.5	6.5	9.0	10.0	12.5
30	+10.0	+ 9.0	+ 9.5	+ 9.0	+11.0	+11.5

NOVEMBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	-23.0	-20.0	-23.0	-14.0	- 8.5	-16.0
2	-21.0	-20.0	-20.0	- 6.0	- 8.0	- 7.0
3	- 5.0	- 2.0	—	+ 5.0	+ 5.0	+ 5.0
4	+14.0	+13.0	+ 8.0	+ 7.0	- 3.0	- 6.0
5	-11.0	-10.0	-10.0	- 8.0	-10.0	-12.0
6	-17.0	-17.0	-12.0	-10.0	- 9.0	-10.0
7	-12.0	- 6.0	- 3.0	—	+ 5.0	+ 8.0
8	+11.0	+ 5.0	+10.0	+ 4.0	- 3.0	- 9.0
9	-16.0	-20.0	-23.0	-22.0	24.0	19.0
10	17.0	24.0	27.0	29.0	29.0	27.0
11	30.0	28.0	30.5	26.5	27.0	21.0
12	19.5	20.0	15.0	13.0	14.0	15.0
13	16.0	19.5	22.0	26.0	25.0	28.5
14	25.0	25.0	26.0	26.0	21.5	21.0
15	22.0	16.0	11.5	12.0	14.5	21.5
16	24.5	23.0	22.0	20.0	22.0	20.0
17	23.0	23.5	27.0	28.0	29.0	27.0
18	23.0	22.0	19.0	24.0	18.0	19.0
19	14.0	13.0	19.0	20.5	25.0	28.5
20	33.0	30.0	27.0	28.0	31.0	39.0
21	39.0	41.5	36.0	40.0	39.5	44.0
22	41.0	37.5	38.0	41.0	41.5	41.0
23	40.0	38.0	38.0	38.5	38.0	36.5
24	34.0	35.5	34.0	32.0	32.0	31.0
25	28.0	25.0	21.0	23.0	21.0	19.0
26	19.0	14.0	14.5	14.0	11.0	10.5
27	8.5	13.0	10.0	13.0	9.5	8.0
28	7.0	7.5	9.0	13.5	16.0	18.0
29	20.5	17.0	20.0	12.0	11.5	8.0
30	-12.0	-10.5	- 7.0	- 9.0	-10.5	- 9.0

DECEMBER 1875.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	-9.0	-7.0	-12.0	-9.0	-11.0	-6.0
2	10.0	14.0	14.0	11.0	-7.0	-7.0
3	-5.0	-1.0	1.0	2.0	+21.0	+23.5
4	+11.0	+5.0	5.0	12.0	-13.0	-20.0
5	-18.0	-18.5	16.0	17.0	-11.6	-13.0
6	-12.0	-10.0	6.0	5.0	+1.0	+4.0
7	+4.0	+2.0	3.0	7.0	-10.0	-8.0
8	-5.0	-4.0	3.0	9.0	5.0	9.0
9	13.0	16.0	20.0	20.0	20.0	19.5
10	15.0	11.0	8.0	10.0	12.0	13.0
11	15.0	15.0	15.0	11.0	9.0	6.0
12	5.0	5.0	6.0	7.0	10.0	15.0
13	20.0	28.0	31.0	34.0	29.0	32.0
14	30.0	30.0	29.0	30.0	29.0	29.0
15	26.0	26.0	21.0	21.0	18.0	12.0
16	18.0	20.0	24.0	28.0	32.0	35.0
17	32.0	35.0	30.0	34.0	27.0	25.0
18	25.0	22.0	34.0	40.0	43.5	43.0
19	45.5	45.0	47.0	49.0	48.0	48.0
20	51.0	48.0	45.0	47.0	45.0	45.0
21	47.0	47.0	47.5	42.0	44.0	45.0
22	46.0	48.0	47.6	45.0	46.0	45.0
23	46.0	47.0	47.0	40.0	36.0	37.0
24	36.0	41.0	37.5	43.0	45.0	42.0
25	42.0	43.0	47.0	36.0	36.0	39.0
26	43.0	45.0	43.0	42.0	43.0	43.0
27	44.0	45.0	46.0	38.0	35.0	36.0
28	31.0	22.5	11.0	16.0	22.0	25.0
29	25.0	26.0	26.0	26.0	26.0	26.0
30	30.0	33.0	35.0	35.0	36.0	25.0
31	-22.0	-19.0	-23.0	-19.0	-18.0	-17.0

FEBRUARY 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	-34.0	-27.0	-23.0	-19.0	-15.5	-14.0
2	12.0	15.0	14.5	15.0	21.0	23.5
3	27.0	-26.0	36.0	6.0	1.0	2.0
4	11.0	+2.0	9.5	3.0	6.0	11.5
5	14.0	-18.0	18.0	18.0	21.0	26.0
6	27.0	21.0	20.0	22.0	22.0	22.0
7	22.0	23.0	26.0	29.0	34.5	36.0
8	40.0	40.0	43.0	41.0	39.0	41.0
9	44.0	45.0	43.0	44.0	44.0	44.0
10	44.0	48.0	47.0	48.0	49.0	51.0
11	49.8	48.5	41.0	31.0	36.0	36.0
12	41.0	40.5	42.0	44.0	42.0	42.5
13	43.0	43.0	46.0	49.0	47.0	48.0
14	48.5	47.5	45.5	39.0	47.0	45.0
15	45.0	39.0	38.5	39.0	39.5	39.0
16	38.0	41.5	48.0	51.0	49.5	48.0
17	51.5	51.0	48.0	48.0	51.0	58.0
18	49.0	48.0	44.0	49.0	34.0	32.0
19	33.0	34.0	36.0	45.0	45.0	45.0
20	46.0	47.0	46.0	45.0	47.0	46.0
21	49.0	50.0	51.5	51.0	52.0	52.5
22	51.0	54.6	44.0	43.0	25.0	26.0
23	41.0	38.5	33.0	29.0	32.5	34.0
24	27.0	24.0	22.0	24.0	23.0	18.0
25	12.5	13.0	13.0	12.0	14.0	15.0
26	16.0	19.0	22.0	18.0	21.0	22.0
27	24.0	30.5	35.0	38.0	38.0	38.0
28	42.0	48.0	50.0	53.0	54.0	51.0
29	-53.0	-54.0	-53.0	-55.0	-55.0	-55.0

JANUARY 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	-25.0	-33.0	-30.0	-23.0	-28.0	-30.0
2	31.8	33.0	39.0	41.0	44.0	44.0
3	46.0	42.0	36.0	30.0	23.0	20.0
4	21.0	24.5	23.0	22.0	25.0	25.5
5	23.5	26.0	32.0	36.0	38.0	40.0
6	40.8	42.0	45.0	43.5	44.0	43.0
7	41.0	42.0	42.5	43.0	45.0	41.0
8	44.0	44.0	45.0	47.5	45.0	43.2
9	36.0	24.0	14.6	14.0	19.0	17.0
10	14.0	21.0	16.0	19.0	21.0	32.0
11	36.0	38.0	39.5	41.0	38.0	35.0
12	29.0	27.5	31.0	26.5	22.5	22.5
13	23.0	25.0	27.0	34.0	40.0	41.0
14	41.0	33.0	27.0	25.0	23.0	29.0
15	31.0	38.0	37.0	38.4	43.0	41.0
16	39.0	44.0	41.0	45.0	46.0	47.5
17	47.5	47.5	50.0	49.0	48.0	50.0
18	52.0	51.0	50.0	51.0	51.0	50.5
19	49.0	48.0	46.5	46.0	45.0	44.5
20	45.0	49.0	48.0	41.0	47.0	37.0
21	38.0	38.0	38.0	40.0	40.0	42.0
22	43.0	43.2	42.0	45.0	46.0	47.5
23	53.0	56.0	59.0	57.0	58.0	57.5
24	59.0	57.6	57.0	59.5	60.0	57.0
25	56.0	56.0	59.0	54.0	52.0	50.0
26	54.0	49.0	49.0	47.0	47.0	46.5
27	47.5	49.0	49.0	48.0	42.0	45.0
28	52.0	50.0	54.5	47.5	49.0	48.0
29	53.0	52.0	51.5	49.0	50.0	47.5
30	37.0	44.5	44.5	44.0	41.0	39.0
31	-46.0	-43.0	-42.5	-46.0	-42.0	-34.0

MARCH 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	-57.0	-56.0	-60.0	-62.0	-62.0	-64.5
2	63.5	64.0	62.0	65.8	66.0	65.0
3	66.0	65.5	64.5	65.0	62.0	61.0
4	61.0	58.0	61.0	59.8	54.0	55.0
5	54.5	51.5	51.0	51.0	50.0	48.0
6	48.0	48.6	48.5	49.0	48.5	49.5
7	50.0	52.0	51.0	46.0	46.0	42.0
8	42.0	42.0	46.0	48.0	48.0	47.0
9	50.0	50.0	52.0	51.0	48.0	48.0
10	50.0	51.0	51.0	53.0	50.0	49.0
11	51.0	51.0	50.0	45.0	47.0	27.0
12	27.8	28.0	35.8	34.5	31.0	30.0
13	33.0	28.0	31.0	31.0	28.6	23.5
14	20.0	17.5	15.0	12.0	15.0	18.5
15	14.0	12.0	11.0	21.0	9.0	10.0
16	16.0	19.0	25.0	29.0	35.0	34.0
17	34.0	31.0	30.0	36.0	35.0	32.0
18	32.0	39.0	40.0	40.0	43.0	35.0
19	27.0	25.5	26.0	30.0	32.0	30.0
20	37.0	37.0	37.5	39.0	34.5	29.5
21	28.0	30.0	34.0	34.5	25.5	22.0
22	19.0	18.5	20.0	23.0	29.0	25.0
23	24.0	25.0	29.0	33.0	34.0	28.5
24	26.5	32.0	33.5	35.0	31.0	25.0
25	27.5	32.0	34.0	34.0	29.0	25.0
26	27.0	29.5	30.0	30.0	29.0	24.0
27	23.0	27.0	23.5	23.0	22.0	22.0
28	25.0	28.5	20.0	28.5	20.5	18.5
29	19.0	20.0	25.5	33.0	33.0	32.0
30	30.0	35.0	43.0	40.0	38.5	32.0
31	-34.0	-37.0	-38.0	-39.0	-37.0	-35.0

APRIL 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	-32.0	-35.5	-37.5	-38.0	-37.5	-31.0
2	30.0	36.0	38.0	40.0	39.0	32.9
3	31.0	35.0	38.0	34.0	29.0	24.0
4	26.0	34.0	35.0	36.0	36.0	32.0
5	32.0	38.0	38.5	39.0	38.0	30.0
6	29.0	37.0	38.0	-39.0	35.5	22.0
7	21.0	23.0	22.0	—	22.0	—
8	—	27.5	30.0	—	21.0	20.5
9	—	24.5	25.6	—	-16.0	-11.0
10	—	10.0	5.0	—	+ 0.5	+ 4.0
11	—	2.0	9.0	—	- 6.0	- 4.0
12	—	16.0	21.0	—	16.5	10.5
13	—	11.0	12.0	—	14.0	11.0
14	—	14.0	22.0	—	19.0	17.0
15	—	21.0	30.0	—	22.8	30.0
16	—	32.0	38.0	—	27.0	26.0
17	—	27.0	30.0	—	20.0	17.0
18	—	21.0	27.0	—	26.0	34.0
19	—	23.5	29.0	—	22.0	17.0
20	16.0	16.5	19.0	—	19.0	17.0
21	14.0	20.5	24.0	—	14.0	11.0
22	11.5	15.0	13.0	—	11.5	16.1
23	16.0	17.0	17.0	—	17.0	11.0
24	12.0	16.0	19.0	—	-10.0	- 8.0
25	11.0	-12.0	12.0	—	+ 0.5	+ 5.0
26	- 4.0	+ 3.0	9.0	—	- 0.0	- 6.0
27	+ 3.0	4.0	- 2.0	—	+ 2.0	+ 8.0
28	9.0	6.0	+ 3.0	—	4.0	9.0
29	5.0	9.0	1.5	—	9.0	7.0
30	+ 5.0	+ 9.0	+ 3.5	—	+ 9.0	+ 9.0

JUNE 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	+29.0	+25.0	+26.0	+29.5	+33.0	+33.0
2	34.0	31.5	25.0	29.0	33.0	22.0
3	30.5	28.0	26.0	27.2	28.5	26.0
4	26.5	23.0	27.0	27.0	25.0	25.0
5	26.5	24.5	19.0	20.0	26.0	27.0
6	27.0	26.0	26.0	30.0	31.0	30.0
7	31.0	30.0	27.0	32.0	36.0	33.0
8	36.0	33.0	29.0	33.0	34.0	33.0
9	36.0	35.0	32.0	30.0	30.0	31.0
10	31.0	30.0	29.0	31.0	32.0	32.0
11	31.0	31.0	28.0	31.0	32.0	32.0
12	32.0	32.0	28.0	31.0	33.0	32.0
13	30.0	29.0	25.5	30.0	32.0	35.0
14	35.0	34.0	24.0	30.0	30.0	34.0
15	38.0	34.0	27.0	40.0	37.0	37.0
16	34.0	34.0	30.5	32.0	35.0	36.5
17	36.0	36.0	28.0	35.0	36.0	37.0
18	34.0	31.0	27.0	37.0	30.0	31.0
19	31.0	29.0	28.0	31.0	35.0	36.0
20	32.0	33.0	25.0	29.0	33.0	35.0
21	35.0	33.0	31.0	33.0	33.0	35.0
22	35.5	35.0	34.5	38.0	39.0	37.5
23	36.0	34.5	32.0	36.0	36.0	35.0
24	36.0	38.0	36.5	37.0	38.0	39.0
25	37.0	37.0	36.5	39.0	41.0	41.0
26	38.0	37.0	35.0	38.0	38.0	38.5
27	37.0	38.0	35.2	35.5	36.0	37.0
28	39.0	36.0	35.6	36.0	35.0	36.0
29	36.0	35.0	33.5	34.0	34.5	36.0
30	+37.0	+36.0	+34.0	+34.0	+36.0	+38.0

MAY 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	+ 0.0	+ 0.0	- 9.0	—	- 2.0	- 0.0
2	- 0.0	- 3.0	13.0	—	0.0	0.0
3	4.0	8.0	12.0	—	3.0	7.0
4	8.0	9.0	12.0	—	8.0	6.0
5	8.0	10.0	13.5	—	5.0	- 0.0
6	1.0	- 2.0	2.5	—	2.0	+ 4.0
7	- 1.0	+ 2.0	- 2.0	—	- 4.0	- 0.0
8	+ 1.0	2.0	+10.5	—	+ 2.0	+ 4.0
9	5.0	2.0	2.0	—	10.0	10.0
10	12.0	6.0	6.5	—	10.0	—
11	—	—	11.5	—	15.0	13.0
12	12.0	10.5	1.5	—	7.0	—
13	—	5.0	4.5	—	7.0	10.0
14	9.0	7.0	+ 0.0	—	5.0	—
15	—	5.0	- 2.0	—	7.0	—
16	—	9.0	- 1.3	—	—	14.0
17	—	13.0	+12.8	—	17.5	—
18	—	—	15.0	—	20.0	20.0
19	21.0	17.0	17.0	—	20.0	20.0
20	21.0	—	21.0	—	23.0	24.0
21	24.0	—	17.0	—	24.0	28.0
22	24.0	—	19.0	—	18.0	22.0
23	23.0	—	13.0	—	17.0	18.0
24	20.0	—	10.0	—	16.0	19.0
25	23.0	22.0	16.0	—	22.0	26.0
26	24.0	22.0	15.0	—	21.0	23.0
27	23.0	23.0	22.0	—	21.0	29.0
28	24.5	41.0	20.0	—	19.5	28.0
29	20.0	17.0	9.5	—	15.0	16.0
30	12.0	10.0	8.0	—	15.5	15.0
31	+19.0	+19.0	+ 9.0	—	+25.0	+27.0

JULY 1876.

Date	4 P.M.	8 P.M.	Midnight	4 A.M.	8 A.M.	Noon.
1	+38.0	+36.5	+35.0	+36.0	+37.0	+37.0
2	38.0	39.0	36.0	34.0	36.0	41.0
3	37.0	37.0	36.0	35.0	37.0	37.0
4	38.0	36.0	34.0	33.0	33.0	39.5
5	38.0	36.0	38.0	32.0	34.0	36.0
6	38.0	36.0	33.0	33.0	35.0	37.0
7	36.0	35.5	36.0	35.0	36.0	37.0
8	39.0	36.5	35.0	33.0	36.0	40.0
9	37.5	40.0	40.0	40.0	40.0	41.0
10	41.0	39.0	39.0	39.0	40.0	44.5
11	41.0	40.0	39.5	37.0	40.0	41.0
12	42.0	39.0	39.0	37.0	37.0	38.0
13	39.0	38.0	38.0	34.0	36.0	40.0
14	38.0	35.0	35.0	34.0	36.0	39.0
15	39.0	36.0	35.0	34.0	39.0	41.0
16	39.0	38.0	36.0	34.0	35.0	37.0
17	37.0	37.0	36.0	34.0	36.0	39.0
18	37.0	34.0	34.0	32.0	33.0	36.0
19	36.0	35.0	34.0	33.0	34.0	37.0
20	38.0	36.5	35.0	35.0	37.0	37.0
21	38.0	39.0	40.0	36.0	36.0	36.0
22	35.0	35.0	34.0	34.0	39.0	39.0
23	40.0	39.0	37.0	36.0	37.0	40.0
24	38.5	35.0	35.0	33.0	40.0	39.0
25	40.0	37.0	35.0	35.5	36.0	38.0
26	37.5	37.0	37.0	35.5	36.0	38.0
27	38.0	39.5	39.0	37.0	37.0	40.0
28	40.0	36.0	36.0	39.0	36.0	40.0
29	42.0	39.5	37.0	36.0	35.5	37.0
30	39.0	38.0	39.0	37.0	39.0	41.0
31	+41.0	+40.0	+40.0	+40.0	+41.5	+41.5

AUGUST 1876.

Date.	4 P.M.	8 P.M.	Midnight.	4 A.M.	8 A.M.	Noon.
1	+39·0	+40·5	+38·0	+36·0	+38·0	+39·0
2	40·0	39·0	38·0	38·0	38·0	37·0
3	37·0	37·0	37·0	36·0	37·0	36·5
4	37·0	36·0	36·0	36·0	36·0	38·0
5	38·0	38·0	37·0	36·0	35·0	33·0
6	35·0	34·0	33·5	36·0	34·0	34·0
7	37·0	36·0	36·0	39·0	39·0	37·0
8	37·0	37·0	36·0	32·0	34·0	36·0
9	39·5	40·0	38·0	31·0	35·0	36·0
10	41·0	40·0	36·0	35·0	36·0	35·0
11	36·0	36·0	35·0	34·0	35·5	36·0
12	38·0	35·0	34·0	32·0	32·0	32·0
13	32·0	32·0	32·0	32·0	32·0	34·0
14	32·0	32·0	31·0	30·0	32·5	37·0
15	36·0	34·0	31·5	30·0	34·0	37·0
16	37·0	35·0	32·0	30·0	32·5	34·0
17	36·0	30·0	29·5	29·0	32·0	34·0
18	36·0	34·0	33·0	30·0	28·0	32·0
19	31·0	37·0	33·0	35·0	36·0	37·0
20	35·0	31·0	30·0	30·0	32·0	32·0
21	33·0	34·0	30·0	31·0	33·0	33·0
22	41·0	43·0	39·0	41·0	41·0	36·0
23	35·0	34·0	35·0	35·0	38·0	38·0
24	35·0	35·0	35·0	39·0	36·0	37·0
25	37·0	34·0	31·0	32·0	32·0	32·0
26	35·0	37·0	31·0	31·0	32·0	33·0
27	34·0	33·0	32·0	33·0	33·0	32·0
28	34·0	32·0	31·0	31·0	31·0	31·0
29	32·0	31·0	27·0	29·0	31·0	27·0
30	28·0	22·0	21·0	20·0	23·0	26·0
31	+28·0	+28·0	+30·0	+30·5	+30·0	+32·0

Temperature and Specific Gravity of the Sea Surface in Baffin Bay and North of Smith Sound.—H.M.S. "Alert" and "Discovery," 1875-76.

TEMPERATURE AND SPECIFIC GRAVITY OF SEA.

On the 26th June 1875, the "Alert" and "Discovery" were in lat. $58^{\circ} 39' N.$, long. $46^{\circ} 4' W.$, 90 miles S.W. of Cape Farewell, without having met with any ice; the temperature of the water being 41° , and the sp. gr. 1·02545.

On the 27th the ice bordering the south-west coast of Greenland was met in lat. $59^{\circ} 46' N.$, long. $48^{\circ} 40' W.$; the sea temperature falling from $40^{\circ} 5'$ to 39° , and near the edge of the ice to $36^{\circ} 5'$. Ten miles outside of the ice stream the minimum temperature of the water between the surface and a depth of 22 fathoms was 38° .

Proceeding to the northward the edge of the pack was followed, at a distance of about 50 miles from the land, until midnight of the 30th, when we had apparently cleared its northern edge in lat. $62^{\circ} 40' N.$; while following its edge we occasionally passed through streams of open pack, the temperature of the surface water falling to 32° , but except when amongst ice it was between 35° and 38° .

On July 1st, near the most southward of the Torske banks, although ice was not met with, we passed through water at a temperature of 33° and 34° , evidently the continuation of the cold current running to the north-west past Cape Farewell and Cape Desolation. This was the most northern indication of its presence. In obtaining a serial temperature sounding (No. 2.) the minimum temperature of the water between the surface and a depth of 130 fathoms was $33^{\circ} 5'$. The specific gravity of the surface water was 1·0246.

During the rest of the passage to Disko the land was kept in sight at a distance of 15 or 20 miles, the temperature of the water ranging between 36° and 40° , one observation recording a temperature of 34° in the neighbourhood of a piece of ice. Very few icebergs or pieces of ice were met with.

At Godthavn, Disko, the temperature of the sea was 40° .

On the 15th July, when in Disko Bay, on our passage to Ritenbenk, the sea temperature ranged between 49° and 42° .

On the 17th we left Ritenbenk, passing through the Waigat strait. But notwithstanding that the southern end of the channel was much encumbered by icebergs, the water remained at a steady temperature ranging between 39° and 41° .

Between Hare Island, on the eastern side of which we passed on the 18th, and the harbour of Proven, where we anchored on the evening of the 19th, icebergs were passed only occasionally; the sea temperature ranged between $41^{\circ}5$ and 37° .

Between Proven and Upernivik, passing through the channel inside the outer islands, and close to Sanderson's Hope, the temperature of the sea ranged between 37° and 39° .

Upernivik was left on the 22nd July, the ships taking an inshore passage to Kangatok. The channel was much encumbered by icebergs and berg pieces; the temperature of the water, however, never falling below 34° .

Passing out from the land to the northward of Brown Island, the temperature of the water was 37° , the specific gravity 1.02361, with a few icebergs in sight.

At 0.45 A.M. of the 24th we sighted the pack ice, the temperature of the water falling to 33° . The middle ice was entered in lat. $73^{\circ} 17' N.$ 60 miles west of the Berry Islands. By noon of the 25th when we were in lat. $75^{\circ} 20' N.$, long. $66^{\circ} 19' W.$, we had gained the North-water off Cape York.

While in the pack the temperature of the water ranged between 29° and 35° , the specific gravity being 1.02037. Only two or three icebergs were met with before we approached Cape York, but there vast numbers were collected together.

On entering the North-water the surface temperature rose to $36^{\circ}5$, but near the land it again fell to 33° , and remained at 35° until Cape Atholl was passed.

While near a land floe in a bay to the eastward of Cape York, and surrounded by icebergs, the "Discovery" found the specific gravity of the surface water to be 1.005. In the North-water it was 1.02274.

On the 26th, after passing Cape Atholl, and when about eight miles south-west of Wolstenholme Island, the temperature of the sea rose to 40° , at about which temperature it remained until the Cary Islands were approached. A serial set of temperatures (No. 5.) indicated that a warm stratum of water, above $35^{\circ}8$, extended to a depth of 10 fathoms, and that below 20 fathoms the minimum temperature of the water down to a depth of 275 fathoms was about $29^{\circ}0$, and that was the actual temperature at a depth of 100 fathoms. The specific gravity of the surface was 1.0241.

Between the Cary Islands and Northumberland Island, the surface temperature ranged from 36° to 44° , the specific gravity was 1.0241. Many icebergs were in the neighbourhood, the largest clusters being inshore and probably aground; the majority of them were table-topped.

Crossing the entrance to Murchison Sound the temperature of the sea was between 34° and 36° . Inglefield Gulf was full of ice, apparently fast to the shore, otherwise no floe-ice was met with.

We arrived at Jensen Point on the morning of the 28th July, the surface temperature being $34^{\circ}5$, the specific gravity 1.0236.

Thus except when we were near ice the temperature of the sea between Conical Rock and Port Foulke was always above 34° .

A southerly running current was experienced while near the Cary Islands.

On the 29th July we crossed the entrance of Smith Sound, the temperature of the sea falling to 32° immediately we left the east shore; near Cape Isabella it was 31° . While crossing we experienced a southerly current independent of the tidal currents.

NORTHWARD OF SMITH SOUND.

Arriving off Cape Sabine on the 30th July the main pack was fallen in with, a spur six miles broad separating the "Alert" from the shore of Ellesmere Land. The temperature of the sea was $32^{\circ}5$, in the pack it fell to 31° and $30^{\circ}5$.

In Payer Harbour, while completely surrounded by pack ice the surface temperature ranged between 29° and 31° , the specific gravity was 1.02420 and 1.02445.

On August the 4th the ships ran along shore through Buchanan Strait, the temperature of the sea rising to 34° at Alexandra Haven, but falling again to 31° whenever the close vicinity of the land was left.

In Hayes Sound the minimum temperature of the water between the surface and 20 fathoms was $30^{\circ}5$, and between the surface and a depth of 57 fathoms $29^{\circ}0$.

While in Hayes Sound, between the 3rd and 6th of August, the specific gravity of the surface water fell to 1.02301 and 1.02239; on our leaving the sound on the afternoon of the latter date, it again increased to its ordinary standard,

On arriving at the entrance of Princess Marie Bay on the 8th, the sea water was again found to be fresher than ordinary sea-water, the specific gravity by the uncorrected Casella Hydrometer being 1.019. On entering Franklin Pierce Bay, and securing the ships alongside a fixed ice floe, the surface water was found to be nearly fresh, the uncorrected Hydrometer registering 1.003.

While navigating along the Grinnell land shore between Walrus shoal and Dobbin Bay, always close to ice, the water remained at about the same degree of freshness, but on our rounding Cape Louis Napoleon on the 15th, and entering a water channel about a mile in breadth, the specific gravity increased to 1.0235; on the following day it was 1.02375.

Between Hayes Sound and Cape Louis Napoleon the temperature of the water ranged from 29°·5 to 31°. On the 18th, off the latter position, it fell to 29°·0.

After the 22nd August, when the ships were in Kennedy Channel, it was difficult to obtain the true temperature of the sea, owing to that of the air being always below the freezing point of water. A coating of ice collected on the instrument, which, if not completely removed, caused a lower temperature to be registered than what actually existed.

Dr. Moss' report and the Tables will give the temperature and specific gravity observations at Discovery Bay and Floeberg Beach.

On the return voyage in 1876, the "Alert" left Floeberg Beach on the 29th July, the temperature of the surface water ranging between 29° and 30°.

On the 1st August, when the ship was secured off the mouth of a small watercourse, the surface temperature rose to 33°; on leaving the vicinity it again fell to 29°·0, at which temperature it remained until we arrived at Discovery Harbour on the 12th.

Off Cape Union on the 2nd the specific gravity was 1.02443, and on the 7th off Cape Beechey it was 1.02383.

The pack ice prevented the two ships leaving Discovery Bay before the 20th August, the temperature of the water in the bay was 30°.

Passing to the southward along the east coast of Grinnell Land the sea temperature ranged between 29° and 30°·5; the specific gravity ranging between 1.02430 and 1.02178, always being fresher than ordinary Atlantic sea water.

On the 23rd the serial temperature observation (No. 19) indicated that below a depth of 30 fathoms the bottom water gradually increased in temperature from 29°·0 to 30°·0.

The specific gravity of the surface water was 1.02430, and that at a depth of 70 fathoms 1.02547, a decided indication of Atlantic water.

This last observation was confirmed on several occasions, notably so on the 1st September (No. 15) when at a depth of 115 fathoms water, a temperature of 30°·8, and a specific gravity of 1.02567 was found.

On the 4th September on entering Allman Bay the temperature of the water suddenly rose from its usual temperature between 29° and 30° to 32°. A sample of it was tested, and the specific gravity found to be 1.00217. The freshness of the sea water was probably caused by the large discharge of water from the John Evans Glacier at the head of the bay.

Owing to the lateness of the season the temperature of the sea during the early part of September, when the ships were navigating along the south-east coast of Grinnell Land, was 29°·0, and young ice was constantly forming on all the water pools opened by the drifting of the pack.

On the 9th September the two ships escaped from the pack, about one mile north of Victoria Head, between which position and 10 miles north of Cape Sabine the young ice was from one to three inches thick, covering water at a temperature of 29°.

To the southward of Cape Sabine the temperature of the water was 29°·5, and no young ice had formed.

BÄFFIN BAY.

Between Cape Isabella and Bardin Bay, where we arrived on the 12th September, the sea temperature ranged between 30° and 31°. In Bardin Bay, where the ships anchored on the 13th, the temperature of the water near the end of a discharging glacier was 33°.

When passing near Hakluyt Island, and when crossing our outward track near Wolstenholme Island, we failed to meet with the warm stream of water, at a temperature of about 40°, which we passed through in July the previous year, the temperature on the homeward voyage remaining at between 30° and 33°.

On crossing Baffin Bay towards Lancaster Sound, a stream of water at a temperature of 34°, about 50 miles in breadth, was passed through off the entrance of Lady Ann strait. Within a distance of 50 miles from Possession Bay at the south side of the entrance to Lancaster Sound the water fell to 32° and 30°.

When crossing Baffin Bay from Possession Bay towards Wilcox Head, the warm stream was again met with about 70 miles distant from the West coast, the temperature rising to 34°·5 and 35°, this extended to within 70 miles of the Greenland coast where the temperature was between 33° and 32°. Two narrow streams of water at a temperature of 32° were met with within the warm area. This was the coldest water passed through in the position occupied by the middle ice the previous season. Off Cape Shackleton from 20 to 40 miles from the coast the temperature of the water was 34°.

On the 22nd September we met with colder water, the temperature falling to 30°·5, and indicating the near neighbourhood of ice. At noon when in lat. 71° 58' N., and long. 60° 19' W., 85 miles from the Greenland coast, the edge of the western pack was sighted.

On the following day when 50 miles off Svarten Huk Peninsula we entered the warm current hugging the Greenland coast, the temperature rising to 36°. From that position to Godthavn Disko the temperature ranged between 36° and 38°·5.

A serial temperature observation obtained on the 22nd (No. 4.) indicated a warm stratum of water, at a temperature of 30° at a depth of 100 fathoms, underlying a colder stratum at 29° at a depth of 20 fathoms.

On the 3rd October on the Torske Bank North of the Knight Islands in Davis Strait the temperature rose to 39°.

On the 6th when in lat. 64° 46' N. long. 56° 29' W. the temperature of the sea fell to 33°·5, denoting the nearness of the western pack. Several icebergs and berg pieces were in sight.

On our nearing the Greenland shore the temperature again rose to 38°, and on reaching lat. 63° 20' N. long. 54° 30' W. on the 7th, the temperature was 40° and 42° above which temperature the water remained as we proceeded to the southward and eastward.

Date.	Latitude. N.	Longitude. W.	Temperature of Sea Surface.	Specific Gravity.			
				Hydrometer.	Corrected for 60°, Standard at 60°.	Corrected for 60°, Standard at 39°·2.	
1875.							
June 21 - -	58 3	33 45	44	1·0275	1·0270	1·0261	
" 22 - -	59 23	35 46	44	1·0270	1·0265	1·0256	
" 23 - -	59 36	39 5	43	1·0265	1·0260	1·0251	
" 24 - -	58 0	40 22	43	1·0270	1·0265	1·0256	
" 25 - -	58 5	41 0	42	1·0265	1·0265	1·0256	
" 26 - -	58 39	46 4	41	1·0270	1·0265	1·0256	
" 27, noon	59 36	48 46	40	1·0265	1·0250	1·0241	
" " 4 p.m.	—	—	39·5	—	—	—	
" " 6 "	—	—	37·0	—	—	—	
" " 8 "	—	—	39·0	—	—	—	
" " 12 "	—	—	36·5	—	—	—	
" 28, 2 a.m.	—	—	39·0	—	—	—	
" " 4 "	—	—	37·5	—	—	—	
" " 8 "	—	—	39·0	—	—	—	
" " 10 "	—	—	36·5	—	—	—	
" " noon	60 20	49 31	37·0	1·0260	1·0255	1·0246	
" " 8 p.m.	—	—	35·5	—	—	—	
" " 10 "	—	—	37·0	—	—	—	
" 29, 4 a.m.	—	—	35·0	—	—	—	
" " 6 "	—	—	33·0	—	—	—	
" " 8 "	—	—	32·0	1·0255	1·0240	1·0231	
" " 10 "	—	—	36·0	—	—	—	
" " noon	61 52	51 38	38·0	—	—	—	
" 30 noon	61 48	52 4	37·0	—	—	—	
" " 10 p.m.	—	—	34·0	—	—	—	
" " 12 "	—	—	35·0	—	—	—	
July 1, 6 a.m.	—	—	33·5	—	—	—	
" " noon	63 16	52 39	34·5	—	—	—	
" " 2 p.m.	—	—	38·0	—	1·0255	1·0246	
" " 12 "	—	—	37·0	—	—	—	
" 2, 8 a.m.	—	—	38·0	—	—	—	
" " noon	64 44	52 53	39·0	—	—	—	
" " 2 p.m.	—	—	40·75	—	—	—	
" " 4 "	—	—	39·5	—	—	—	
" " 8 "	—	—	38·0	1·0245	1·0255	1·0246	
" " 10 "	—	—	39·0	—	—	—	

See Dr. Moss' report on Specific Gravity.

Date.	Latitude. N.	Longitude. W.	Temperature of Sea Surface.	Specific Gravity.			—
				Hydrometer.	Corrected for 60°, Standard at 39°·2.	Corrected for 60°, Standard at 60°.	
1875.							
July 3, 4 a.m.	—	—	37·5	—	—	—	
" " noon	65 26	54 12	38·0	—	—	—	
" " 2 p.m.	—	—	36·0	1·0265	1·0255	1·0246	
" " 8 "	—	—	38·0	1·026 D	—	—	
" " 10 "	—	—	39·0	—	—	—	
" " 4, 8 a.m.	—	—	37·0	1·027 D	—	—	
" " 10 "	—	—	39·0	—	—	—	
" " noon	—	—	40·0	—	—	—	
" " 4 p.m.	66 0	53 59	40·0	1·027 D	—	—	
" " 12 "	—	—	37·5	1·027 D	—	—	
" " 5, 2 a.m.	—	—	35·5	—	—	—	
" " noon	—	—	36·5	1·026 D	—	—	
" " 4 p.m.	67 43	54 37	37·0	1·025 D	—	—	
" " 6 "	—	—	34·0	—	1·0240	1·0231	
" " 10 "	—	—	36·0	—	—	—	
" " 2 a.m.	—	—	38·0	—	—	—	
" " noon	Godthavn, Disko		40·0	1·026 D	—	—	
" " 7 - -	Ditto		40	—	—	—	
" " 16, 2 a.m.	—	—	47	—	—	—	
" " 4 "	—	—	44	1·025 D	—	—	
" " 8 "	—	—	42	1·025 D	—	—	
" " 10 "	Ritenbenk, Waigat Straits		45	—	—	—	
" " 17, 4 a.m.	—	—	44	—	—	—	
" " 8 "	—	—	42	1·026 D	—	—	
" " noon	69 51	51 57	42	—	—	—	
" " 4 p.m.	—	—	40	—	—	—	
" " 18, 2 a.m.	—	—	39·5	—	—	—	
" " 4 "	—	—	41·0	1·025 D	—	—	
" " 10 "	—	—	40·0	—	—	—	
" " noon	70 42	55 7	39·0	1·0237	1·0230	1·0221	
" " 2 p.m.	—	—	42·0	—	—	—	
" " 8 "	—	—	40·5	—	—	—	
" " 10 "	—	—	39·0	—	—	—	
" " 19, 4 a.m.	—	—	38·0	—	—	—	
" " 6 "	—	—	40·0	—	—	—	
" " 10 "	—	—	39·0	1·024 D	—	—	
" " noon	72 1	56 29	41·0	1·026 D	—	—	
" " 2 p.m.	—	—	40·0	—	1·0260	1·0251	
" " 8 "	—	—	37·0	—	—	—	
" " 12 "	—	—	38·0	—	—	—	
" " 20, 2 a.m.	—	—	41·0	—	—	—	
" " noon	Proven, Greenland		40·0	1·0265	1·0255	1·0246	
" " 22, 2 a.m.	—	—	37·0	1·025 D	—	—	
" " noon	Upernivik, Greenland		35·0	1·024 D	—	—	
" " 2 p.m.	—	—	36·0	1·0260	1·0255	1·0246	
" " 23, 2 a.m.	—	—	35·0	—	—	—	
" " 6 "	—	—	34·0	—	—	—	
" " 8 "	—	—	35·0	1·0260	1·0245	1·0236	See Dr. Moss' report on Specific Gravity.
" " noon	73 3	56 56	36·0	—	—	—	
" " 6 p.m.	—	—	38·0	—	—	—	
" " 8 "	—	—	36·0	1·025 D	—	—	
" " 12 "	—	—	35·0	—	—	—	
" " 24, 2 a.m.	—	—	33·0	—	—	—	
" " 4 "	—	—	32·0	—	—	—	
" " noon	73 33	63 19	29·5	1·024 D	—	—	
" " 6 p.m.	—	—	30·0	—	1·0220	1·0211	See Dr. Moss' report on Specific Gravity.
" " 8 "	—	—	35·5	—	—	—	
" " 12 "	—	—	32·5	1·025 D	—	—	
" " 25, 2 a.m.	—	—	31·0	—	—	—	
" " noon	—	—	32·0	—	—	—	
" " 4 p.m.	75 20	66 19	35·0	—	1·0240	1·0231	
" " 8 "	—	—	36·5	—	—	—	
" " 12 "	—	—	37·0	1·005 D	—	—	
" " 26, 4 a.m.	—	—	33·5	1·005 D	—	—	"Discovery" surrounded by icebergs and pack ice off Cape York.
" " 8 "	—	—	34·0	—	—	—	
" " noon	76 19	70 16	35·0	1·026 D	—	—	
" " 2 p.m.	—	—	35·0	—	—	—	
" " 4 "	—	—	39·0	—	—	—	
" " 27, 2 a.m.	—	—	40·0	—	—	—	
" " 6 "	—	—	32·5	—	—	—	
" " noon	77 8	72 41	36·0	1·026 D	—	—	
" " 4 p.m.	—	—	41·0	—	1·0250	1·0241	
" " 6 "	—	—	39·0	—	—	—	
" " 8 "	—	—	35·0	—	—	—	
" " 10 "	—	—	38·0	1·027 D	—	—	
" " 12 "	—	—	36·0	—	—	—	

Date.	Latitude. N.	Longitude. W.	Temperature of Sea Surface.	Specific Gravity.		
				Hydrometer.	Corrected for 60°, Standard at 39°·2.	Corrected for 60°, Standard at 60°.
1875.						
July 28, 2 a.m.	—	—	35·0	1·026 D	—	—
" " noon	Port Foulke		35·0	—	1·0245	1·0236
" 29, 10 a.m.	—	—	32·0	—	—	—
" " noon	78 29	74 45	33·5	—	—	—
" " 2 p.m.	—	—	32·0	—	—	—
" " 8 "	—	—	31·0	1·026 D	—	—
" " 12 "	—	—	32·0	—	—	—
" 30, 8 a.m.	—	—	33·0	1·023 D	—	—
" " noon	78 48	73 25	30·0	1·025 D	—	—
" " 4 p.m.	—	—	31·0	—	—	—
" 31, 2 a.m.	—	—	33·0	—	—	—
" " 4 "	Payer Harbour		31·0	1·026 D	—	—
" " noon	Ditto		31·0	1·025 D	—	—
August 1 - -	Ditto		30·0	1·02555	1·02590	1·02445

Date.	Latitude. N.	Longitude. W.	Temperature of Sea Surface.	Specific Gravity by Hydrometer.	
Aug. 3 - -	Payer Harbour		30	1·025 D	
" 4, 8 a.m. -	—	—	31	1·024 D	
" " noon -	Hayes Sound		30	1·021 D	
" " 4 p.m. -	—	—	30	1·0195 D	
" " 6 " -	—	—	32	1·020 D	
" " 10 " -	—	—	34	1·021 D	
" 5, 2 a.m. -	—	—	31·0	1·023 D	
" " 8 " -	—	—	33·0	1·020 D	
" " noon -	78 52	75 50	30·5	1·021 D	In pack ice, Hayes Sound.
" " 4 p.m. -	—	—	31·0	1·010 D	
" " 8 " -	—	—	30·5	1·016 D	
" 6, 8 a.m. -	—	—	29·0	1·015 D	
" " noon -	79 0	76 0	30·0	1·014 D	Amongst pack ice in Hayes Sound.
" " 4 p.m. -	—	—	32·0	1·024 D	
" " 6 " -	—	—	30·0	—	
" 7, noon -	79 18	74 22	30·5	1·0245 D	Beset in the Pack, Kanes Sea.
" 8, noon -	79 20	74 30	32·0	1·019 D	Near Cape Victoria, Princess Marie Bay.
" " midnight -	Franklin Pierce B.		32·0	1·003 D	
" 9, noon -	79 25	75 3	32·0	1·002 D	Alongside floe ice, near Walrus Shoal.
" 13, noon -	79 34	72 20	31·5	1·007 D	
" 14 - -	79 40	73 6	32·0	1·004 D	
" 15, midnight -	—	—	30·0	1·0235 D	One mile off shore, S.E. of Cape Louis Napoleon.
" 16, 4 a.m. -	—	—	29·5	1·0245 D	Surrounded by pack ice.
" " noon -	79 37	72 25	30·0	1·025 D	
" 17 - -	—	—	30·0	1·025 D	
" 18 - -	—	—	29·5	1·025 D	
" 19 - -	—	—	31·0	1·022 D	Surrounded by open pack.
" 20 - -	80 2	70 40	29·5	1·025 D	Attached to a floe off Cape Collinson.
" 21 - -	—	—	29·0	1·025 D	Ditto ditto.

Date.	Latitude. N.	Longitude. W.	Temperature of the Sea Surface.	Specific Gravity at 60°. Water at 39°·2 = Unity.	
1876.					
Aug. 1 - -	Off Cape Union		30·0	—	
" " 12 p.m. -	—	—	32·0	—	
" 2, noon -	Off Cape Union		31·0	1·02443	
" " 12 p.m. -	—	—	29·0	—	
" 3, noon -	Off Cape Beechey		29·0	—	
" 4 - -	Ditto		29·5	—	
" 5 - -	Ditto		29·0	—	
" 6 - -	Ditto		29·0	—	
" 7 - -	Ditto		29·0	1·02383	
" 8 - -	Ditto		29·0	—	

Date.	Latitude. N.	Longitude. W.	Temperature of the Sea Surface.	Specific Gravity at 60°. Water at 39°·2 = Unity.	
1876.					
Aug. 9 - -			29·0	—	
" 10 - -			29·0	—	
" 11 - -			29·0	—	
" 12 - -			30·0	—	
" 19 - -			30·0	—	
" 20 - -	80 30	—	30·0	1·02380	
" 21 - -	80 20	70 20	30·5	—	
" 22 - -	80 4	—	30·0	1·02326	
" 23 - -	79 46	Cape Fraser	29·0	1·02430	
" 24 - -	79 48	71 32	30·0	—	
" 25 - -	79 40	72 5	30·0	1·02397	
" 26 - -	79 40	72 5	29·0	—	
" 27 - -		Cape Louis Napoleon	29·5	—	
" 28 - -		Dobbin Bay	29·5	1·02178	
Sept. 2 - -		Ditto	29·0	—	
" 3, noon - -		Off Cape Hawkes	29·0	—	
" 4 - -		Allman Bay	32·0	1·00217	
" 6 - -		Ditto	31·0	—	
" 7, noon - -		Walrus Shoal	29·0	—	
" 8 - -		Off Victoria Head	29·5	1·02506	
" 9 - -		Off Buchanan Strait	29·0	1·02347	
" 10, noon - -	77 30	74 30	31·0	1·02416	
" 11 - -	77 16	71 5	31·5	1·02410	
" " midnight - -	—	—	30·0	—	
" 12, noon - -		In Whale Sound	30·0	—	
" " 4 p.m. - -		In Bardin Bay	33·0	—	
" 13, noon - -	76 33	70 37	32	1·02405	
" " midnight - -	—	—	80	—	
" 14, 2 a.m. - -	—	—	29·5	—	
" " noon - -	76 9	73 16	30·5	1·02385	
" " 4 p.m. - -	—	—	32·0	—	
" " 12 " - -	—	—	31·5	—	
" 15, 4 a.m. - -	—	—	30·5	—	
" " 8 " - -	—	—	31·0	—	
" " 10 " - -	—	—	34·5	—	
" " noon - -	74 56	75 14	34·0	1·02447	
" " 6 p.m. - -	—	—	34·0	—	
" " 8 " - -	—	—	32·0	—	
" 16, noon - -	—	—	30·5	—	
" 17, 10 a.m. - -	—	—	30·5	—	
" " noon - -	73 40	73 8	34·5	1·02304	
" " 2 p.m. - -	—	—	33·5	—	
" " 6 " - -	—	—	32·0	—	
" " 12 " - -	—	—	34·0	—	Water phosphorescent.
" 18, 2 a.m. - -	—	—	34·5	—	
" " 6 " - -	—	—	32·5	—	
" " 9 " - -	—	—	35·5	—	
" " noon - -	73 50	67 44	35·0	1·02440	
" " 5 p.m. - -	—	—	32·5	—	
" " 7 " - -	—	—	35·0	—	
" 19, 1 a.m. - -	—	—	33·5	—	
" " noon - -	74 17	61 22	33·0	1·02382	
" " midnight - -	—	—	32·0	—	
" 20, noon - -	73 33	58 48	33·5	1·02416	
" " 6 p.m. - -	—	—	34·0	—	
" " 8 " - -	—	—	32·5	—	
" " 10 " - -	—	—	34·0	—	
" 21, noon - -	73 7	58 26	33·5	1·02401	
" " 8 p.m. - -	—	—	31·5	—	
" " 10 " - -	—	—	32·0	—	
" 22, 4 a.m. - -	—	—	30·5	—	
" " noon - -	71 58	60 19	31·0	1·02325	
" " 8 p.m. - -	—	—	33·0	—	
" " midnight - -	—	—	32·0	—	
" 23, 5 a.m. - -	—	—	34·0	—	
" " 6 " - -	—	—	36·0	—	
" " noon - -	71 12	57 37	36·5	1·02439	
" 24, noon - -	70 23	55 53	35·5	1·02372	
" 25, noon - -	69 20	54 26	38·0	1·02436	
" 26, noon - -		Godthavn, Disko	38·5	—	

**Observations on the Specific Gravity of the Sea Water, by
Buchanan's (Challenger) Method and Chlorine Estimations.
By Staff Surgeon Edward Lawton Moss, M.D., R.N.**

Standard of unity water at 39°·2 Fahrenheit (4° centigrade).

The observations are arranged with regard to the latitude of the stations.

The thermometer used was, except when others are specified, a centigrade instrument supplied with the apparatus for carbonic acid estimations, verified in melting snow.

The colour scale refers to an arbitrary scale of 18 tints; passing from pure blue at 1 to decided green at 18.

The screw-well answered the purpose of a water glass. There was little difficulty in deciding on the tint. On the day the scale was completed, 13 individuals made independent estimations and all settled on two tints next each other on the scale.

The first four observations connect with and check those made with Casella hydrometers. These observations are repeated in their order with regard to latitude. The cylinder to float Buchanan's hydrometer was too short for certain specific gravities, and a suitable substitute could not at once be extemporised.

Reference to Notes.	Date.	Latitude N.	Longitude W.	(d.) Depth at which Water was taken.	Temperature at d. (t.)	Temperature during Observation. (t., c.)	Specific Gravity at t.	Specific Gravity at t, o.	Specific Gravity at 60°.	Per-centage of Chlorine.	Colour Scale.
							Water at 39°·2 = Unity.	Water at 39°·2 = Unity.	Water at 39°·2 = Unity.		
	26 June 1875	58 39	46 4	Surface	41	48·2	1·02719	1·02670	1·02545	—	—
	23 July 1875	73 3	56 56	"	35	50	1·02559	1·02470	1·02361	—	—
	24 "	73 33	63 19	"	30	48·2	1·02249	1·02162	1·02037	—	—
	25 "	75 20	66 19	"	38	38	1·02467	1·02467	1·02274	—	—
	19 Oct. 1876	55 44	35 38	Surface	46	59	1·02744	1·02620	1·02607	1·985	—
Note 1.	10 "	58 13	54 7	"	44	50·4	1·02722	1·02676	1·02572	—	9
	26 June 1875	58 39	46 4	"	41	48·2	1·02719	1·02670	1·02545	—	—
Note 2.	8 Oct. 1876	61 56	54 41	"	42	57·6	1·02642	1·02499	1·02473	—	11
	7 "	63 42	54 32	"	38	53·6	1·02577	1·02457	1·02386	—	11
	6 "	64 46	56 29	"	38	41·0	1·02543	1·02531	1·02352	—	—
	4 "	66 40	54 30	"	38·7	50·0	1·02632	1·02553	1·02445	—	11
	3 "	67 59	55 37	"	38·7	46·4	1·02691	1·02639	1·02500	—	13
Note 3.	30 Sept. 1876	68 38	Egedesminde Harbour.	"	38	50	1·02710	1·02624	1·02520	1·986	16
	25 "	69 20	54 26	"	37	51·8	1·02629	1·02527	1·02436	—	15
Note 4.	24 "	69 45	—	"	37	50·9	1·02651	1·02560	1·02458	1·929	—
Note 5.	24 "	70 23	55 53	"	36	46	1·02572	1·02513	1·02372	—	—
Note 6.	23 "	71 12	57 37	"	36·5	46·8	1·02636	1·02574	1·02439	—	6
	22 "	71 58	60 19	"	32·0	52·2	1·02535	1·02414	1·02325	—	—
	23 July 1875	73 3	56 56	"	35	50	1·02559	1·02470	1·02361	—	—
	21 Sept. 1876	73 7	58 26	"	33·8	49·6	1·02613	1·02512	1·02401	—	—
Note 7.	20 "	73 33	58 43	"	34	52·2	1·02628	1·02503	1·02416	—	6
	16 "	73 33	76 59	"	31·5	56·8	1·02516	1·02338	1·02300	—	15
	24 July 1875	73 33	63 19	"	30·0	48·2	1·02249	1·02162	1·02037	—	—
	17 Sept. 1876	73 40	73 7	"	30·7	44·6	1·02520	1·02460	1·02304	—	—
	18 "	73 50	67 44	"	35·6	48·2	1·02648	1·02564	1·02440	—	11
Note 8.	19 "	74 19	61 22	"	32·9	52·7	1·02591	1·02460	1·02382	—	11

Note 1.—*Nostoc* spheres common.

Note 2.—After 8th October 1876, in lat. 61° 56' N., long. 54° 41' W. on the homeward voyage no *Ceratium* was found.

Note 3.—Full of *Cydippe*.

Note 4.—This was the nearest station to the site of Rink's sample of July 1849, examined by Forchhammer.

Note 5.—The towing net yielded *Limacina*, *Oikopleura*, and *Sagitta*.

Note 6.—Filter choked with *Ceratium tripos*.

Note 7.—*Limacina* and *Sagitta* common.

Note 8.—Cotton filter choked with *Ceratium tripos*. This Peridinaean is extremely plentiful in these seas.

Reference to Notes.	Date.	Latitude N.	Longitude W.	(d.) Depth at which Water was taken.	Temperature at d. (°)	Temperature during Observation. (°)	Specific Gravity at t. Water at 39°·2 = Unity.	Specific Gravity at t, o. Water at 39°·2 = Unity.	Specific Gravity at 60°. Water at 39°·2 = Unity.	Percentage of Chlorine.	Colour Scale.
	15 Sept. 1876	75 10	75 5	Surface	34·4	50·4	1·02650	1·02553	1·02447	—	—
	25 July 1875	75 20	66 19	"	38	38	1·02467	1·02467	1·02274	—	—
Note 9.	14 Sept. 1876	76 9	78 16	"	30	56·8	1·02602	1·02422	1·02385	—	11
	18 "	76 33	70 37	"	32	48·2	1·02620	1·02503	1·02405	—	15
Note 10.	11 "	76 16	71 5	"	30·0	57·2	1·02626	1·02444	1·02410	—	—
	10 "	77 30	74 30	"	30·0	52·2	1·02628	1·02503	1·02416	—	—
Note 11.	9 "	78 32	Off Leconte Island.	"	29·8	64·9	1·02668	1·02539	1·02450	—	16
	1 Aug. 1875	78 42	Payer Harbour	"	32	45·5	1·02655	1·02590	1·02445	—	15
	2 "	"	"	"	32	42·8	1·02630	1·02580	1·02420	—	15
	5 " (10 O.A.M.)	78 52	75 46	"	33·8	37·9	1·02507	1·02492	1·02301	—	17
	6 "	79 0	76 0	"	31·6	36·0	1·02450	1·02439	1·02339	—	—
Note 12.	9 Sept. 1876	79 6	Off Albert Head	"	28·9	46·4	1·02558	1·02486	1·02347	—	11
Note 13.	8 "	79 15	Off Victoria Head.	56 fathoms	30	46·8	1·02719	1·02641	1·02506	1·97	—
	10 Aug. 1875	79 25	75 3	Surface	31·6	33·8	1·00784	1·00600	1·00578	—	13
Note 14.	10 "	"	"	15 fathoms	29·5	50·0	1·02629	1·02523	1·02413	1·89	—
	4 Sept. 1876	79 29	Allman Bay -	Surface	31·8	46·0	1·00423	1·00358	1·00217	—	—
Note 15.	"	"	"	2 fathoms	30	51·8	1·01955	1·01835	1·01743	—	—
Do.	"	"	"	3 fathoms	29·7	57·2	1·02600	1·02422	1·02388	—	—
Note 16.	31 Aug. 1876	79 34	73 15	115 fathoms	30·9	54·3	1·02779	1·02634	1·02567	2·019	—
	28 "	79 38	Dobbin Bay - (ebb tide.)	9 feet	30·2	56·1	1·02389	1·02224	1·02178	—	15
Note 17.	"	"	"	20 fathoms	29·3	56·3	1·02677	1·02506	1·02462	—	—
	"	"	"	40 fathoms	29·8	56·1	1·02720	1·02553	1·02507	—	—
	16 Aug. 1875 (9 p.m.)	79 37	72 25	Surface	30·2	30·2	1·02588	1·02588	1·02375	—	16
	17 " (11 a.m.)	"	"	"	30·9	30·9	1·02500	1·02500	1·02288	—	16
	25 Aug. 1876	79 40	72 5	"	29·5	56·8	1·02612	1·02443	1·02397	—	—
Note 18.	23 "	79 45	Off Cape Fraser	"	30·0	58·5	1·02643	1·02446	1·02430	1·88	9
Note 19.	"	"	"	70 fathoms	30·0	55·0	1·02761	1·02606	1·02547	1·99	—
	19 Aug. 1876 (10 p.m.)	79 50	Maury Bay -	"	29·8	29·8	1·02558	1·02558	1·02345	—	15
	21 " (12 p.m.)	80 4	70 40	"	29·5	29·5	1·02541	1·02541	1·02326	—	16
	20 "	80 30	Near Crozier Island.	"	30·0	43·7	1·02543	1·02538	1·02380	—	17
	22 Aug. 1875 (11 p.m.)	80 38	Off Franklin Island.	Surface	29·1	29·1	1·02606	1·02606	1·02392	—	17

Note 9.—Water phosphorescent contains numerous *Ceratius tripos* and *Chatocera*. Many icebergs near.

Note 10.—Contains *Oikopleura*, *Fritillaria*, *Ceratium*, and *Achnan* *Diatomacea*.

Note 11.—Full of *Diatomaceous* needles and *Ceratius tripos*.

Note 12.—A few *Diatomaceous* needles.

Note 13.—A bottled sample of this water examined in Laboratory of Royal Dublin Society contained—
1·97 per cent. of chlorine. Co-efficient 1·94.
0·219 " sulphuric acid.
3·732 " solids.

Specific gravity by bottle 1·02621 at 59° 9', unity 59° 9'.

" " 1·025316 at 59° 9', unity 39° 2'.

Note 14.—This sample was retained and examined on 7th October, when the apparatus for chlorine estimations was first available.

Notes 15.—No results in cotton filter after 1·5 litre of each had passed through.

Note 16.—Water has an actinic cloudiness from extremely minute mud which could not be filtered out through cotton filter; 1·5 litre filtered through microscope field of cotton yielded only one organism; the minute cup-shaped end of a *Chatoceros*.

Note 17.—Full of *Diatomaceous* needles, thus differing from layers above and below.

Note 18.—150cc of muddy water came up in the collapsed tube of Buchanan's bottle lowered to 112 fathoms; this water gave 1·92 per cent. of chlorine, but was too small a quantity to estimate specific gravity.

Note 19.—A quantity of water too small to estimate specific gravity came up in a magnetic current indicator from 70 fathoms, an additional quantity was obtained from 80 fathoms in a common bottle whose cork had resisted the pressure at 50 fathoms, and both quantities united gave results noted on 24th August; each sample having been found to give the same results by Casella hydrometer, No. 742, i.e., 1·027 at 60°.

Reference to Notes.	Date.	Latitude N.	Longitude W.	(d.) Depth at which Water was taken.	Temperature at <i>t.</i> (°)	Temperature during Observation. (°)	Specific Gravity at <i>t.</i> Water at 39°·2 = Unity.	Specific Gravity at <i>t.</i> , <i>o.</i> Water at 39°·2 = Unity.	Specific Gravity at 60°. Water at 39°·2 = Unity.	Percentage of Chlorine.	Colour Scale.
	20 Aug. 1876	81 40	Off Bellot Island (high tide.)	5 fathoms	228·4	53·6	1·02619	1·02480	1·02405	—	15
	28 Aug. 1875	81 42	Discovery Bay	Surface	29·5	29·5	1·02606	1·02606	1·02392	—	16
	18 Aug. 1876	"	"	7 fathoms	228·4	53·6	1·02613	1·02473	1·02398	—	15
	7 "	81 53	Cape Beechey	Surface between floes.	30	53·6	1·02596	1·02460	1·02388	—	—
	30 Aug. 1875	82 9	62 45	Surface	29·7	29·7	1·02615	1·02615	1·02400	—	9
	2 Aug. 1876	82 14	Cape Union	Surface between floes.	30	42·8	1·02656	1·02607	1·02448	—	—
	1 Sept. 1875	82 20	63 27	Surface	29·7	29·8	1·02610	1·02610	1·02396	—	9
Note 20.	29 May 1876	82 23	Off Black Cape	"	28·9	47·3	1·02686	1·02603	1·02472	1·93	—
	1 Sept. 1875	82 27	61 22	"	29·5	29·5	1·02615	1·02615	1·02400	—	9
	12 Oct. 1875	"	"	Surface under floe.	28·9	30·0	1·02662	1·02662	1·02447	1·97	—
Note 21.	1 Nov. 1875	"	"	4 feet below surface.	28·6	46·6	1·02615	1·02576	1·02440	1·97	—
Note 22.	29 "	"	"	4 feet deep	28·2	43·9	1·02664	1·02506	1·02449	1·95	—
Note 23.	24 Dec. 1875	"	"	Surface under floe.	28·2	47·3	1·02660	1·02516	1·02384	1·92	—
Note 24.	30 "	"	"	Bottom, 27 feet.	28·3	48·9	1·02667	1·02573	1·02452	1·95	—
	27 Jan. 1876	"	"	Surface under floe.	28·3	46·9	1·02667	1·02587	1·02452	1·96	—
	6 Mar. 1876	"	"	"	28·3	54·5	1·02660	1·02510	1·02442	1·97	—
Note 25.	5 May 1876	"	"	Surface	28·3	59·9	1·02769	1·02554	1·02554	2·01	—
Note 26.	21 June 1876	"	"	Bottom, 27 feet.	29·2	50·5	1·02626	1·02517	1·02412	1·85	—
Note 27.	15 July 1876	"	300 yards from shore.	11 fathoms	28·8	60·8	1·02589	1·02384	1·02374	1·80	—
	"	"	"	Surface	32·2	60·8	1·00241	1·00027	1·00037	·04	—
Note 28.	21 "	"	500 yards from shore.	47½ fathoms	29	50·9	1·02628	1·02505	1·02413	—	—
Do.	"	"	"	Surface	32	68·9	1·00296	·999762	1·00092	—	—
	"	"	"	47½ fathoms	29	51·8	1·02672	1·02551	1·02458	1·89	—
Note 29.	"	"	"	"	29	49·6	1·02682	1·02580	1·02467	1·897	—

Note 20.—Tide ebbing north under floe 4 feet 2 inches thick; several *Cydippes* seen.

Note 21.—Four *Copepoda* captured with towing net hauled up and down.

Note 22.—A very small phosphorescent *Pleurobranchia* caught in the tow net.

The temperature 28° 2' was obtained by No. 9 registering Casella (R.C.) thermometer lowered to depth of 4 feet for 25 minutes.

Note 23.—The temperature of the snow-hut over the "fire hole" where this sample was obtained was 13°. So that minute plates of ice at once formed on the sides of the beaker and floated to the top. When they melted (at 28° 9') the resulting water floated on top like spirit, and had to be shaken up before observations for specific gravity estimations could be made.

Note 24.—The thermometer used was a Negretti and Zambra reversible, and it registered 28° 3'.

Note 25.—The fire-hole had been closed since early March and this sample was therefore obtained from the narrow hole dug to find thickness of floe; the sea water rose so slowly that it had time to part with some of its water to the sides of the hole.

Note 26.—Casella hydrometers, Nos. 811 and 740, give at 60° with this water 1·0256 and 1·0255 respectively. Standard being water at 60°. At standard 39° these specific gravities would be 1·0247 and 1·0246.

Commander Markham used these two hydrometers in obtaining 1·0268 *t.* 28° 8' and 1·0262 *t.* 39°, at lat. 83° 19' N. on the 11th May 1876. The latter specific gravities corrected for *t.* of observation, and referred to standard at 39° give 1·0246 and 1·0241.

Note 27.—The two first attempts to raise water from this depth failed, owing to the light surface water freezing in the neck and funnel of Buchanan's bottle cooled by the temperature of deeper water. I attribute the lighter specific gravity of this sample to the intrusion of a little ice.

Note 28.—Water at 29° extends to within 9 feet of the surface and is covered by that depth of water at 32°.

Note 29.—Re-examined in the Laboratory of the Royal Dublin Society, a sample of this water sealed with Canada balsam in a marked stoppered bottle possessed a specific gravity of 1·025567, by specific gravity bottle *t.* 60°. Standard *t.* 60°, this referred to standard at 39° 2' = 1·02467. Its chlorine was 1·9 per cent. co-efficient 1·98.

Total solids 3·761.

Sulphuric acid ·2146.

Surface and Deep Sea Temperatures.—H.M.S. "Alert" and "Discovery."

Making due allowance for instrumental errors, and for the inexperience of some of the Observers, these independent Sea Temperature observations, taken on the west shores of Smith Sound, demonstrate the existence there of a stratum of cold Arctic water. At a temperature of about $29^{\circ}\cdot 0$ lying between the locally heated surface water and a depth of from 20 to 30 fathoms, flowing to the southward during the summer months.

They also denote a warm underlying stratum at a temperature of about $30^{\circ}\cdot 0$.

The latter water was not found near Floeberg Beach, but coupled with the observations made in 1872 by the members of the Polaris Expedition, when a temperature of $32^{\circ}\cdot 8$ is reported to have been found at a depth of 203 fathoms in Lat. $80^{\circ} 44'$ N., midway between Franklin and Hans Islands and a temperature of $32^{\circ}\cdot 1$ at a depth of 17 fathoms in Polaris Bay, it would appear that the warm underlying water forces itself to the northward on the east side of Robeson Channel. Whether it enters the Polar Sea or no will depend on the depth of water at the north end of that channel.

The observations also denote that water at a lower temperature than $28^{\circ}\cdot 8$ does not exist in Smith Sound or Baffin Bay above a depth of 275 fathoms.

The coldest portion of the Arctic water appears not to affect that near Hayes Sound to so great an extent as that in the direct channel.

The specific gravity estimations are reduced to a temperature of 60° ; water at $39^{\circ}\cdot 2 =$ unity.

1. 27th June 1875. "Alert." Lat. $59^{\circ} 36'$ N. Long. $48^{\circ} 46'$ W. Millar Casella Thermometer.—Off Cape Desolation.

Reading before Immersion.		Depth.	Temperature of Air $41^{\circ}\cdot 0$.		
			Reading on Recovery.		Minimum Temperature of Water between the Surface and Depth denoted.
Maximum.	Minimum.		Maximum.	Minimum.	
—	} Not recorded.	Sea surface - -	—	—	$40\cdot 5$
$52\cdot 0$		5 fathoms - -	$52\cdot 0$	$40\cdot 0$	$40\cdot 0$
$52\cdot 0$		15 " - -	$52\cdot 0$	$38\cdot 5$	$38\cdot 5$
$52\cdot 0$		22 " - -	$52\cdot 0$	$38\cdot 0$	$38\cdot 0$

2. 1st July 1875. "Alert." Lat. $63^{\circ} 16'$ N. Long. $52^{\circ} 39'$ W. Millar Casella Thermometer.—Off Fiskernæs.

Reading before Immersion.		Depth.	Temperature of Air $39^{\circ}\cdot 0$.		
			Reading on Recovery.		Minimum Temperature of Water between the Surface and Depth denoted.
Maximum.	Minimum.		Maximum.	Minimum.	
—	} Not recorded.	Sea surface - -	—	—	$34\cdot 5$
$48\cdot 0$		130 fathoms - -	$48\cdot 0$	$33\cdot 5$	$33\cdot 5$

At a position seven miles farther North the sea surface was $38^{\circ}\cdot 0$.

3. 24th September 1876. "Alert." Lat. $70^{\circ} 25'$ N. Long. $56^{\circ} 0'$ W. Negretti and Zambra Thermometer.—Off the N.W. point of Disko Island.

Temperature of the air	-	-	-	$37^{\circ}\cdot 5$
" of sea surface	-	-	-	$35^{\circ}\cdot 5$. Sp. gr. 102372
" at 45 fathoms	-	-	-	$32^{\circ}\cdot 5$

4. 22nd September 1876. "Alert." Lat. $71^{\circ} 54'$ N. Long. $60^{\circ} 18'$ W. Negretti-Zambra Thermometer.—On the eastern edge of the Baffin Bay west pack.

Temperature of the air	-	-	-	$36^{\circ} 0$
" of sea surface	-	-	-	$31^{\circ} 0$ Sp. gr. 1.02325
" at 10 fathoms	-	-	-	$31^{\circ} 2$ (?)
" at 10 "	-	-	-	$30^{\circ} 5$
" at 20 "	-	-	-	$29^{\circ} 0$
" at 30 "	-	-	-	$29^{\circ} 3$
" at 50 "	-	-	-	$29^{\circ} 8$
" at 100 "	-	-	-	$30^{\circ} 0$

The observation denoting a temperature of $31^{\circ} 2$ at 10 fathoms is questionable; a second observation gave a temperature of $30^{\circ} 5$.

5. 26th July 1875. "Alert." Lat. $76^{\circ} 35'$ N. Long. $71^{\circ} 40'$ W. Millar-Casella Thermometer.—20 miles S.E. of the Cary Islands.

Reading before Immersion.		Depth.	Temperature of the Air $40^{\circ} 0$.		
Maximum.	Minimum.		Reading on Recovery.		Minimum Temperature of Water between the Surface and Depth denoted.
			Maximum.	Minimum.	
°	°	Sea surface - -	°	°	°
—	—	2 fathoms - -	—	—	$40 \cdot 0$
$40 \cdot 5$	$40 \cdot 0$	4 " - -	$40 \cdot 8$	$39 \cdot 8$	$39 \cdot 8$
$40 \cdot 2$	$40 \cdot 2$	10 " - -	$40 \cdot 6$	$39 \cdot 0$	$39 \cdot 0$
$40 \cdot 0$	$40 \cdot 0$	20 " - -	$40 \cdot 2$	$35 \cdot 8$	$35 \cdot 8$
$38 \cdot 5$	$38 \cdot 2$	30 " - -	$38 \cdot 5$	$29 \cdot 0$	$29 \cdot 0$
$40 \cdot 8$	$40 \cdot 5$	40 " - -	$40 \cdot 8$	$29 \cdot 8$	$29 \cdot 8$ (?)
$40 \cdot 0$	$40 \cdot 0$	50 " - -	$40 \cdot 0$	$29 \cdot 2$	$29 \cdot 2$
$40 \cdot 0$	$40 \cdot 0$	275 " - -	$40 \cdot 0$	$29 \cdot 1$	$29 \cdot 1$
$34 \cdot 0$	$33 \cdot 6$		Not recorded.	$28 \cdot 8$	$28 \cdot 8$ No bottom.

The reading $29^{\circ} 8$ at 30 fathoms appears to be in error.

The thermometer lowered to 20 fathoms must have passed through the upper stratum of water warmer than $38^{\circ} 5$, too quickly to record it.

6. At the same time and position. Negretti-Zambra Thermometer.

Temperature at 100 fathoms - - - $29^{\circ} 0$

Compared with the temperatures obtained elsewhere this appears to be in error.

7. 26th July 1875. "Discovery." Lat. $76^{\circ} 40'$ N. Long. $72^{\circ} 15'$ W. Nature of thermometer not recorded.—A short distance from the shore at Cary Islands.

Minimum temperature registered by a thermometer lowered
32 fathoms $32^{\circ} 0$ (?) Bottom.

This observation differs considerably from the other recorded observations.

8. 6th August 1875. "Alert." Lat. 79° 0' N. Long. 76° 0' W. Millar-Casella Thermometer.—In Hayes Sound.

Reading before Immersion.		Depth.	Temperature of the Air 40°·5.		
			Reading on Recovery.		Minimum Temperature of Water between the Surface and Depth denoted.
Maximum.	Minimum.		Maximum.	Minimum.	
°	°	Sea surface - -	°	°	°
—	—	20 fathoms - -	—	—	31·0 Sp. gr. 1·02239
54·0	54·5	40 " - -	54·5	30·5	30·5
59·5	59·5	57 " - -	59·5	28·8	28·8
58·0	58·0	Ditto - -	58·0	29·0	29·0 Bottom.
33·5	33·5		33·8	29·5	29·5

"Discovery" near the same position. Nature of thermometers not recorded.

Minimum temperature registered by thermometer lowered 12 fathoms 30°·5 Bottom.
Ditto ditto ditto 42 " 29°·5 Bottom.

The reading at 40, 42, and 57 fathoms is probably the temperature of an upper stratum which the instruments had passed through.

The difference in half a degree in the two thermometers is probably due to the instruments not remaining in the cold stratum an equal time.

9. "Discovery." 8th August 1875. Lat. 79° 15' N. Long. 74° 30' W. Nature of Thermometer not recorded.—Near Cape Victoria.

Temperature of air - - - 32°·5
" of sea surface - - - 32°·0

Minimum temperature registered by a thermometer lowered 29 fathoms 29°·75 Bottom.

10. "Discovery." 8th September 1876. Lat. 79° 16'. Long. 74° 30' W. Negretti-Zambra Thermometer.—North of Cape Victoria.

Temperature of the air - - - 20°·0
" of sea surface - - - 29°·5
" of 60 fathoms - - - 30°·0 Bottom.
Per-centage of chlorine 1·97. Sp. gr. 1·02506.

11. 7th August 1875. "Discovery." Lat. 79° 17' N. Long. 74° 15' W. Nature of thermometer not recorded.—In pack 6 miles East of Cape Victoria.

Temperature of air - - - 41°·0
" of sea surface - - - 32°·5

Minimum temperature recorded by a thermometer lowered 48 fathoms 31°·5 Bottom.

This observation appears doubtful.

12. 9th August. "Alert." Lat. 79° 24' W. Long. 74° 30' W. Millar-Casella Thermometer.—Walrus Shoal.

Reading before Immersion.		Depth.	Temperature of the Air 39°·0.		
			Reading on Recovery.		Minimum Temperature of Water between the Surface and Depth denoted.
Maximum.	Minimum.		Maximum.	Minimum.	
°	°	Sea surface - -	°	°	°
—	—	46 fathoms - -	—	—	32·0 Sp. gr. 1·00578
32·8	32·8		32·2	29·5	29·5 Bottom.

10th August. "Alert." Same position. Nature of thermometer not recorded.

Temperature at 15 fathoms - - - 29°·5. Bottom. Sp. gr. 1·02413
Per-centage of chlorine - - - 1·89

13. 7th September 1876. "Discovery." Lat. 79° 24' N. Long. 74° 30' W. Negretti-Zambra Thermometer.—Near Walrus Shoal.

Temperature of air	-	-	-	30°·0
" of sea surface	-	-	-	29°·5
" at 15 fathoms	-	-	-	29°·5

14. 4th September 1876. "Alert." Lat. 79° 29' N. Long. 74° 10' W. Millar-Casella Thermometer.—Mouth of Allman Bay.

Reading before Immersion.		Depth.	Temperature of the Air 34°·0.		
Maximum.	Minimum.		Reading on Recovery.		Minimum Temperature of Water between the Surface and Depth denoted.
			Maximum.	Minimum.	
°	°	Sea surface	°	°	°
—	—	1 fathom	—	—	32°·0 Sp. gr. 1·00217
29·5	30·0	2 "	30·0	30·0	30·0
29·0	29·2	3 "	30·0	29·2	30·0 " 1·01743
38·8	39·0		38·8	29·5	29·5 " 1·02388

At the same time and position.

Temperature by Negretti-Zambra Thermometer at 10 fathoms 29°·2
Ditto ditto at 26 " 29°·2

15. "Alert" and "Discovery." 31st August and 1st September 1876. Lat. 79° 34' N. Long. 73° 15' W. Negretti-Zambra Thermometer.—West of Washington Irving Island, Dobbin Bay.

	"ALERT."	"DISCOVERY."	
Temperature of sea surface	30°·0	29°·8	
" at 10 fathoms	29°·2	—	
" at 20 "	29°·2	—	
" at 30 "	29°·5	29°·7	
" at 40 "	29°·5	—	
" at 60 "	30°·0	—	
" at 80 "	30°·5	—	
" at 100 "	30°·2	31°·0	Bottom.
" at 115 "	30°·8	—	{ Sp. gr. - 1·02567 Per-centage of chlorine } 2·019
" Ditto "	30°·9	—	
" at 125 "	30°·8	Bottom, 2nd position.	

16. "Alert." 28th August 1876. Lat. 79° 38' N. Long. 72° 57' W. Negretti-Zambra Thermometer.—Cape Hilgard, Dobbin Bay.

	Temperature of sea surface	30°·0	
Sp. gr. 1·02178	at 9 feet		
" 1·02462	" 20 fathoms.	" at 30 fathoms	29°·0
" 1·02507	" 40 fathoms.	" at 42 "	29°·8
		" at 47 "	29°·8
			Bottom. 1st position.
			Ditto, 2nd ditto.

17. "Alert." 29th August 1876. Same position. Moored to a grounded iceberg.

Temperature of air	-	-	-	34°·0	N. Z. thermometer.
" of sea surface	-	-	-	30°·0	
" at 10 fathoms	-	-	-	29°·5	
" at 20 "	-	-	-	29°·2	
" at 30 "	-	-	-	29°·2	
" at 39 "	-	-	-	29°·5	Bottom.

18. "Alert." 25th August 1876. Lat. 79° 40' N. Long. 72° 0' W. Negretti-Zambra Thermometer.—2 miles East of Cape Louis Napoleon.

Sp. gr. 1·02397.	Temperature of air	-	-	-	38°·0
	" of sea surface	-	-	-	29°·5
	" at 15 fathoms	-	-	-	29°·0
	" at 25 "	-	-	-	29°·2 Bottom.
	" at 21½ "	-	-	-	29°·7 Bottom.

"Discovery" at the same position.

19. "Alert." 23rd August 1876. Lat. 79° 45' N. Long. 71° 20' W. Negretti-Zambra Thermometer.—Off Cape Fraser, 2 miles from shore.

Temperature of air	-	-	-	34°·0
" of sea surface	-	-	-	29°·0
" at 10 fathoms	-	-	-	29°·0
" at 30 "	-	-	-	29°·2
" at 35 "	-	-	-	29°·8
" at 40 "	-	-	-	30°·0
" at 45 "	-	-	-	30°·0

At the same time and position a Millar-Casella Thermometer was used.

Reading before Immersion.		Depth.	Reading on Recovery.	
Maximum.	Minimum.		Maximum.	Minimum.
38°·8	38°·8	47 fathoms - -	38°·8	29°·2

This thermometer could not indicate the warm stratum of water at the lowest depth; but the observation agrees precisely with the record above that no colder water exists.

At the same time and position with a Negretti-Zambra Thermometer.

Per-centage of Chlorine.	Specific gravity.	Depth.	Temperature.
1·88	1·02430	Surface - -	30°·0
1·99	1·02547	70 fathoms - -	30°·0

20. "Alert." 19th August 1875. Lat. 79° 50' N. Long. 71° 20' W. Nature of Thermometer not recorded.—Near Cape John Barrow.

Temperature of air	-	-	-	42°·0
" at sea surface	-	-	-	29°·0 Sp. gr. 1·02345
" at 22 fathoms	-	-	-	29°·5 Bottom.

21. "Discovery." 27th March and 10th August 1876. Lat. $81^{\circ} 44' N$. Long. $65^{\circ} 3'$.
Negretti-Zambra Thermometer.—Discovery Bay.

	Specific gravity.		Depth.		Temperature.					
	1·02392	1·02398	Surface - - -	7 fathoms - -	29°·5	28°·4 ?				
Date.	27th Mar.	28th Mar.	28th Mar.	29th Apr.	1st June.	1st July.	2nd Aug.	10th Aug.	Winter. Nature of Thermometer not recorded.	
									1st Jan.	1st Feb.
Surface -	29·0	28·8	28·5	30·0	29·0	30·5	34·5	30·8	—	27·5
3 fathoms -	—	—	—	—	—	—	—	29·2	—	—
15 " -	—	29·5	29·5	—	—	—	29·8 Bottom.	—	—	—
21 " -	—	—	—	30·0 Bottom.	29·8 Bottom.	—	—	29·1 20 fathoms.	—	28·5
24 " -	—	—	—	—	—	—	—	—	29·0	—
25 " -	—	29·8 Bottom.	—	—	—	29·5 Bottom.	—	—	—	—
35 " -	—	—	29·8	—	—	—	—	—	—	—
45 " -	—	—	—	—	—	—	—	29·8 Bottom.	—	—
50 " -	30·0	—	30·0	—	—	—	—	29·8 Another position.	—	—
65 " -	—	—	30·2 Bottom.	—	—	—	—	—	—	—

The observations made between the 28th March and 2nd August at depths between 15 and 30 fathoms are remarkable as denoting the existence of water about half a degree warmer than that found in the same neighbourhood during the winter and on the 10th August; and also to that found in Robeson and Kennedy Channel to the northward and southward.

If no instrumental error has to be applied it would appear that the north running warm bottom current enters Discovery Bay during the spring; and that the cold arctic surface current only enters the Bay occasionally.

22. "Alert." 3rd August 1876. Lat. $81^{\circ} 53' N$. Long. $62^{\circ} 50' W$. Negretti-Zambra Thermometer.—Close to the shore ice near Cape Beechey.

	Temperature of the air	-	-	-	35°·0
Sp. gr. 1·02383.	" of sea surface	-	-	-	29°·0
	" at 5 fathoms	-	-	-	29°·0 Bottom.

23. "Alert." 2nd August 1876. Lat. $82^{\circ} 14' N$. Long. $61^{\circ} 0' W$. Negretti-Zambra Thermometer.—One mile from the shore off Cape Union.

	Temperature of the air	-	-	-	35°·0
Sp. gr. 1·02443.	" of sea surface	-	-	-	30°·0
	" at 5 fathoms	-	-	-	29°·5
	" at 40 "	-	-	-	29°·0 Bottom.

At this time a strong under current was setting to the southward while the water at a depth of 5 fathoms was stationary.

24. Lieut. Egerton. 28th May. Lat. $82^{\circ} 23' N$. Long. $61^{\circ} 5' W$. Millar-Casella Thermometer.—Half a mile from the land near Black Cape.

Reading before Immersion.		Depth.	Temperature of the Air $22^{\circ} 0$.		
Maximum.	Minimum.		Reading on Recovery.		Minimum Temperature of Water between Surface and Depth denoted.
			Maximum.	Minimum.	
24.0	25.0	2 fathoms	28.5	29.1	28.5* Sp. gr. 1.02472
29.5	29.2	5 "	29.0	29.2	29.2
22.8	23.8	10 "	28.3	23.8	28.3†
22.2	21.2	20 "	29.0	21.2	29.0

* Per-centage of chlorine - 1.93.

† This observation is evidently untrustworthy except as indicating that water colder than $28^{\circ} 3$ does not exist.

At the same time and position a Negretti-Zambra Thermometer at 30 fathoms recorded a temperature of $29^{\circ} 4$ near the bottom.

The current was setting to the southward during the observations.

25. 19th July 1876. "Alert." Lat. $82^{\circ} 27' N$. Long. $61^{\circ} 20' W$. Negretti-Zambra Thermometer.—Half a mile from the shore near Floeberg Beach through a crack in the ice.

Per-centage of Chlorine.	Specific Gravity.	Temperature of air	
0.04	1.00092	of air	$36^{\circ} 0$
		" of sea surface	$32^{\circ} 5$
		" at $1\frac{1}{2}$ fathoms	$29^{\circ} 0$
		" at $2\frac{1}{2}$ "	$29^{\circ} 0$
		" at 10 "	$29^{\circ} 0$
		" at 20 "	$29^{\circ} 0$
		" at 30 "	$29^{\circ} 0$
1.89 } 1.897 }	1.02413 1.02458-1.02467	" at 46 "	$29^{\circ} 0$ Bottom.

These observations were made by experienced observers.

26. 9th July 1876. "Alert." Lat. $82^{\circ} 27' N$. Long. $61^{\circ} 24' W$. Negretti-Zambra Thermometer.—Near the grounded ice at Floeberg Beach through a crack in the ice.

Per-centage of Chlorine.	Specific Gravity.	Temperature of the air	
0.04	1.00037	of the air	$37^{\circ} 2$
		" of sea surface	$32^{\circ} 4$
		" at 1 fathom	$31^{\circ} 8$
		" at $1\frac{1}{2}$ "	$31^{\circ} 8$
		" at 2 "	$28^{\circ} 9$
		" " "	$29^{\circ} 0$
1.80	1.02374	" at 12 "	$29^{\circ} 0$ Bottom.
		" " "	$29^{\circ} 0$

The great difference in temperature at 9 and 12 feet below the surface is due to the former being nearly fresh water from the melting of the ice and snow, and the latter being salt water. The difference in specific gravity also denotes the freshness of the surface water.

27. Temperatures of sea water obtained at Floeberg Beach between 19th December 1875 and 21st June 1876. Negretti-Zambra Thermometer.

DR. MOSS, Observer.

—	12th Oct.	1st Nov.	29th Nov.	3rd Dec.	24th Dec.	30th Dec.	27th Jan.	6th Mar.
Surface -	—	—	—	—	—	—	28·3	28·3
6 to 8 feet -	29·1	28·5	28·3 28·2	28·2	28·3	—	—	—
27 feet -	—	—	—	—	—	28·3 28·4	—	—

G. S. NARES, Observer.

Date.	19th December.	17th February.	23rd May.*	22nd June.
Sea surface - -	— 28·2	— 28·2	— 29·0	— —
1 fathom - -	28·5	28·5	—	—
4 „ - -	28·5	—	—	29·2
5 „ - -	—	—	29·0	—
6 „ - -	28·5	28·5	—	—

* Previous to the 23rd May the highest daily mean temperature of the air in the shade was 24°·0. On only four days had the temperature risen above 28°·5; but the temperature in the sun had been above 28° on nine previous days.

28. Captain Markham. 11th May 1876. Lat. 83° 20' 26" N. Long. 63°·5' W.
Millar-Casella Thermometer.

Temperature at surface	-	-	-	-	-	28°·5
Reading of thermometer after recovery from 10 fathoms	-	-	-	-	-	28°·5
„	„	„	20	„	-	28°·5
„	„	„	30	„	-	28°·8
„	„	„	40	„	-	28°·8
„	„	„	50	„	-	28°·8
„	„	„	60	„	-	28°·8
„	„	„	72	„	-	28°·8 Bottom.

The specific gravity of two samples of surface water, corrected for a temperature of 60°, water at 39°·2 = unity - - 1·0246, 1·0241

Remarks on the Weather experienced by H.M.S. "Alert" and
"Discovery" while North of Smith Sound, 1875-1876.

AUGUST 1875.

July 28th.—On the 28th July 1875, H.M.S. "Alert" and "Discovery," on an exploring voyage towards the North Pole, arrived at the entrance to Smith Sound, and anchored in a small bay on the south side of Sunrise Point, Hartstene Bay.

The barometer had been falling steadily from 30·20 inches on the 26th, and was then 29·90 inches with a northerly wind; temperature of the air ranging between 42° and 46°.

July 29th.—On the 29th Smith Sound was crossed. On approaching Cape Isabella, the barometer having fallen to 29·75 inches, a squall from the S.W. set in, accompanied with snow; the barometer rising slightly, and then remaining steady. By the morning of the 30th the weather was calm, but misty overhead. In the afternoon the two ships anchored at Port Payer, the temperature of the air ranging between 32° and 36°.

August 2nd.—During the night the barometer again fell slightly with northerly winds, accompanied with cloudy weather and snow. This lasted until the morning of the 2nd August, when the barometer was 29·47 inches. A light air from the southward, lasting eight hours, with fog, then preceded calm weather, and a rising barometer.

August 3rd.—On the 3rd, 4th, and 5th, winds from the S.W. were experienced, with a stationary barometer at 29·6 inches, the weather misty, temperature between 34° and 41°. On the evening of the latter day the wind shifted to the N.E., and died off into a calm. The barometer still going down slowly; the S.W. wind returned on the afternoon of the 6th. With a rapidly rising barometer it gradually blew itself out; the weather being calm on the night of the 10th, with the mercury standing at 30·10 inches; a few cirrus clouds in the sky.

For the 12 following days light airs and calms, with clear weather, were experienced, the barometer remaining fairly stationary, and the temperature ranging between 29°·5 and 39°.

August 19th.—On the afternoon of the 19th the barometer commenced falling from 29·78 inches, and on the following day, when it was 29·36 inches, a northerly wind, accompanied with snow and fog, set in, blowing down Kennedy Channel. With the continuation of the northerly wind the barometer rose; after a short calm on the 22nd, when it had reached 29·85 inches, a southerly wind checked it until the 24th, when northerly winds obtained the mastery, and the glass rose steadily. The weather was cloudy and misty.

August 25th.—On the 25th the two ships entered Discovery Bay, experiencing calms and northerly airs, which lasted until the 28th, when the "Alert" parted company, and continued on her voyage towards the north.

August 27th.—On the evening of the 27th the barometer at 30·05 inches commenced to fall, and on the 28th south-westerly airs and calms set in with cloudy weather, which lasted until noon of the 31st, when the glass commenced falling rapidly at both stations. At Discovery Bay no wind was felt, but at the "Alert's" position at Lincoln Bay the southerly wind foretold by the falling barometer set in at 8 p.m. of the 31st.

WINTER QUARTERS, 1875-76.

The station at Discovery Bay was protected from the E.S.E., through N.E., to West, by nearly precipitous hills attaining an altitude of upwards of 2,000 feet. Two miles towards the S.W., an island 2,050 feet high, protected the position from that direction; only S.E. or west winds could reach the station direct. Consequently the records of the winds are merely of those in the locality, and do not denote the winds prevailing in the neighbourhood.

The station at Floeberg Beach was protected from S.S.E., through S.W., to N.N.W., by hills 500 feet high, sloping gradually up to an altitude of about 1,000 feet, at 10 miles towards the southward and westward.

SEPTEMBER 1875.

September 1st.—On the morning of the 1st, while at Discovery Bay, a wind, force 4, from the S.W. was experienced; a gale set in at Lincoln Bay, which enabled the "Alert" to advance up Robeson Channel. During the afternoon the barometer rose slightly, and the wind died away at both stations. During the night the former again fell. At the same time a S.W. gale sprang up, reaching at Floeberg Beach to force 9, but at Discovery Bay force 6 was the highest registered.

September 2nd.—At 10 a.m. of the 2nd the barometer at each station commenced to rise, the wind shifting suddenly to the N.W., and then becoming gradually lighter until it died away calm on the 3rd. During the gale the temperature ranged between 27° and 31°; on the change of wind it fell to 18°. The sky was overcast and misty, masses of rolled cumulus and stratus clouds, with very hard edges, moving slowly from the S.W. Sleet and thick mist accompanied the change.

September 8th.—Calms and moderate breezes, generally from the N.W. quarter, with a rising barometer and low temperature, followed until the 8th, when after rising very rapidly the preceding day, the glass began to fall, the wind inclining to haul more to the south-westward, the temperature rising a few degrees, but varying as the winds blew from the northward or southward of west. During the prevalence of the fine weather the height of the barometer at the two stations agreed very closely together, but although the variations in the temperature of the air occurred simultaneously, it was always from four to six degrees colder at Floeberg Beach than at the more southern station.

September 9th.—On the 9th a N.W. wind at Floeberg Beach, when at its greatest force, was felt as a southerly wind at Discovery Bay.

September 12th.—After falling steadily for four days the barometer reached 29.30 inches on the morning of the 12th, when it commenced to rise slightly; shortly afterwards, while light variable winds were experienced at Discovery Bay, at the northern station a breeze set in from the S.W. Weather fine at both places. The barometer now began oscillating slightly, the sky clouded over at Floeberg Beach, and the temperature, which had fallen to +3° on board the "Alert," and +8°.5 at the "Discovery's" position, rose quickly to above +20°; and the wind freshened to a strong gale, blowing uninterruptedly until 10 a.m. of the 15th, having culminated in strength (force 10) at the north, and force 7 at the south station on the afternoon of the 14th, when the barometer at Floeberg Beach registered the minimum of the month, 29.21 inches. During the disturbance the barometer was slightly higher at Discovery Bay, and continued to fall until 4 p.m. of the 15th, when it registered 29.38 inches. From this time the barometer rose slowly at both stations, and as in the previous gale, the wind at Floeberg Beach shifted suddenly to the N.W., but in a few hours, during which it shifted right round the compass, through east and south, returned to its old quarter in the S.W., and blew furiously for several hours of the night of the 15th and forenoon of the 16th; but although its strength reached to force 10 at Floeberg Beach, it was only force 5 at the southern station. The weather was overcast at both places, snow falling occasionally.

September 17th.—Since the setting in of the disturbance on the 12th, the temperature rose at both stations, and with a temporary fall during the change of weather on the 15th, rose to 35°.5 and 36°.5 at midnight of the 17th.

September 18th.—At noon of the 18th a very rapid rise of the barometer took place simultaneously at both stations with a northerly wind and cloudy weather, the temperature falling fast.

For the five following days the weather was calm with light variable airs, the weather cloudy with occasional snow, the temperature falling, but always remaining coldest at the northern station.

September 21st.—On the 21st the temperature was +2°.5 and +4°.4. The barometers then fell rapidly, and the temperature rose. On the 22nd a N.W. wind was experienced, reaching in strength to force 7 at Discovery Bay, but only lasting eight hours, after which the weather was calm.

September 23rd.—On the afternoon of the 23rd a S.W. wind was experienced at Floeberg Beach, the temperature rising to 24°.9, while the weather was calm, and the temperature fell to +9° at the southern station.

During the remainder of the month the winds were light and variable, the barometer having a small range, and those at the two stations agreeing closely together. The

temperature of the air also varied very little, remaining at about $+10^{\circ}$. On the night of the 28th snow commenced falling, and continued throughout the following days.

OCTOBER 1875.

October was a quiet month; the prevailing winds were light, and from the north or south of west, the strongest was force 5 at Floeberg Beach on 6th, 7th, and 11th. At Discovery Bay on only three days was the strength of the wind greater than force 1; force 4 being logged on the 2nd.

During the first 10 days snow fell nearly continuously.

The variations of the barometer were remarkably similar at the two stations. The greatest disturbances were on the 9th and 16th. During the former, northerly winds were experienced, with a fall of the barometer and a very remarkable fall of temperature of upwards of 25° . With the latter, while it was calm at Discovery Bay, a squall from the S.W. was felt at Floeberg Beach, lasting, however, only an hour, after which the winds were from the N.W.

Between the 10th and 16th there was a remarkable difference in temperature at the two stations, that at Discovery Bay remaining 10° to 20° colder than that at the north station. During this period light S.W. winds were experienced at the latter station, which were not felt at the former. Again, between the 23rd and 28th there was a difference in temperature of about 10° in favour of the northern station. In consequence the mean temperature of the month was nearly 5° colder at Discovery Bay than at the north station.

A decided change to cold weather took place on the 13th, after which date the thermometer rose above zero only on two days, when light puffs from the S.W. were felt.

Our winter may be said to have set in on the 14th, the mean temperature of the first 13 days being $+8^{\circ}$, and of the latter part of the month -14° .

NOVEMBER 1875.

November 2nd.—On the night of the 2nd, after a long period of settled weather, the temperature rose very quickly at each station, but the weather remained calm and the barometers steady. On the morning of the 3rd a southerly wind was experienced at Floeberg Beach, which was not felt at Discovery Bay, consequently the temperature was 15° warmer at the former than at the latter-named station. After midnight the barometers commenced rising from 29.80 and 29.74 inches respectively, and continued to do so with a few slight fluctuations until the 12th, when they reached 30.82 and 30.87 inches; the extreme height registered during the year.

November 8th.—Up to the 8th southerly winds and light airs prevailed, which kept the temperature above the mean, that at Floeberg Beach being always higher than that at the protected station at Discovery Bay, where the southerly and westerly winds had a difficulty of entering in consequence of the high land in the immediate neighbourhood. This was noticeably the case on the 7th and 8th, when the temperature was 20° warmer at the northern than at the southern station. The sky was overcast occasionally, much more so at Floeberg Beach than near the "Discovery." Very little snow fell, and the weather was usually fine.

The temperature remained high ($+14^{\circ}$) until after noon on the 8th, when a fresh breeze of short duration was experienced from the northward, which caused it to fall gradually, the barometer continuing to rise steadily.

On the 12th, 15th, and 19th there were sudden rises in temperature without any apparent cause. On the two latter days the fluctuations were greatest at Discovery Bay.

By the 15th the barometer had fallen to an average height. On the 21st, with light northerly winds, the temperature at each station fell considerably, the mean on the 22nd being -40° . On the two following days light northerly winds kept the temperature low, with a slightly rising barometer. During all this time the weather was exceedingly clear and fine.

On the 26th at Floeberg Beach, a light air from the west, backed round to S.S.W., and afterwards to S.S.E., with a quickly rising temperature and slowly falling barometer. At 9 p.m. the temperature had risen to $+19^{\circ}$.

During this period the "Discovery," in her protected position, experienced calm and cold weather; only one light puff from the S.E. reaching her, and the highest temperature recorded being -10° . We must therefore conclude that the warm blast which reached the Polar Sea passed clear of Discovery Bay in its passage north.

At Floeberg Beach the disturbance lasted until 1 a.m. of the 27th, when it was checked by a squall from the west, which instantly lowered the temperature to -10° , about the same temperature as the "Discovery" experienced at the same time.

During the four following days the "Alert" experienced light airs from the N.W., with fine weather and a high temperature from -13° to -7° , a most unusual occurrence. At Discovery Bay the maximum thermometer recorded $+1^{\circ}6$, at midnight of the 28th, and $+5^{\circ}$ on the 30th. These blasts of warm air did not reach the northern station. The barometer rose steadily from midnight of the 26th until midnight of the 28th; on the two following days it was unsteady.

DECEMBER 1875.

December 1st.—On the 1st, calm weather with a light clear sky, and occasional light variable squalls, was experienced at both stations, the temperature ranging between -5° and -10° , but the maximum thermometers indicated that the temperature had actually risen above zero.

December 2nd.—At 8 p.m. of the 2nd a south-easterly wind, accompanied with a falling barometer, reached Floeberg Beach. During the following night the temperature rose above zero, and at 7.30 a.m. a squall from the southward raised it to $+25^{\circ}$. At noon the maximum thermometer registered $+34^{\circ}$ and at 8 p.m. $+35^{\circ}$. At 10 p.m., the wind changing to the northward, lowered the temperature immediately; by midnight it had fallen to $+4^{\circ}$. This very warm blast of air from the southward passed the station at Discovery Bay without affecting the temperature there, the maximum temperature registered being only $+4^{\circ}$. Light north-westerly winds and calm were experienced at the time.

December 4th.—On the morning of the 4th another southerly squall, lasting two hours, reached Floeberg Beach, raising the temperature from $+2^{\circ}$ to $+23^{\circ}$; at 8 a.m. a breeze from the N.N.W. caused it to fall below zero again.

This last wind forced its way into Discovery Bay, and affected the temperature there to an equal degree, but not at quite so early a period of the day. At 1 a.m. gale set in from the S.W. with the temperature at -2° , and a fairly clear sky; at 11 a.m. the temperature was $+21^{\circ}$; and about noon, when at Floeberg Beach the cold air current had replaced the warm blast, the temperature at Discovery Bay was $+26^{\circ}$. It then gradually fell with a N.E. wind; at 8 p.m. it was below zero, and by noon of the 5th, with calm weather and a perfectly clear sky, it was -20° .

At both stations the barometer rose slightly from 29.70 inches during the 3rd and 4th, to about 30.00 inches. At 8 p.m. on the latter day it commenced to rise rapidly, with a falling thermometer.

December 6th.—At 8 a.m. of the 6th, when it was calm at Discovery Bay, with a temperature at -11° , the "Alert" experienced a S.S.E. wind, which raised the temperature at that station to -2° without affecting the southern position.

December 7th.—At 3 a.m. of the 7th, during calm weather, the temperature at Floeberg Beach again rose above zero. A similar rise occurred at Discovery Bay a few hours later, accompanying a squall from the S.E., which, however, did not reach Floeberg Beach. The temperature remained high until the afternoon of the 9th, when it fell below -20° , the fall occurring earliest at the most northern position, accompanied by a northerly wind.

December 13th.—Between the 10th and 13th, each station experienced variable light airs and calm, with a very low barometer, reaching 28.98 inches at the northern, and 28.99 inches at the southern station, the lowest registered during the year, the temperature rising to -7° and -5° .

December 14th.—By midnight of the 14th, although the barometer remained low, the disturbance had passed away, the weather remaining calm, and the temperature ranging generally between -20° and -40° during the following fortnight.

It, however, fluctuated considerably, the weather at the northern station being invariably much warmer and more affected by southerly winds, which did not enter Discovery Bay. On the night of the 28th, however, when the barometers at each station fell rapidly, the temperature at the southern position, during a calm, rose to -7° , a light northerly air keeping the temperature at Floeberg Beach 12° colder.

An unusual quantity of snow fell on the 6th, 7th, and 8th, and the four last days of the month.

After the return of the expedition to England, we learnt that a remarkable rise in temperature, accompanied by south-easterly winds, was experienced on the west coast of

Greenland, between the 23rd November and the 11th December 1875, agreeing precisely with the disturbance at the same period at our more northern stations.

At Upernivik on the 25th November the temperature was 46° above the mean. This disturbance arrived at the northern stations about 24 hours afterwards, producing a heat excess of about 40° . On the 3rd December there was a heat excess of about 58° at Floeberg Beach, and on the following day, at both stations, of 46° or 48° .

JANUARY 1876.

January is remarkable for the very calm weather at Discovery Bay, where the wind was never greater in strength than force 2, while at Floeberg Beach several strong winds and one gale, force 10, for two days were experienced.

January 3rd.—The month commenced with fine weather and a slightly varying barometer below the mean height. On the morning of the 3rd we experienced light squalls from the S.S.W. with fine weather, followed during the next 24 hours by a slightly fluctuating barometer with light and variable winds, which settled steadily down from the W.N.W. just before midnight of the 3rd, blowing for 12 hours, force 4-5, when the wind shifted to the S.W. for a couple of hours, accompanied by a little snow, and then died away calm as the barometer rose. This wind not being felt at Discovery Bay the temperature there was considerably the coldest.

January 5th.—At 8 a.m. of the 5th a heavy squall came from the S.W., lapsing into a breeze from that quarter with a rise in temperature.

From noon of the 5th the barometer rose steadily until the night of the 8th, when it stood at 29.99 and 30.20 inches, the latter being the register at Discovery Bay.

January 7th.—Up to midnight of the 7th the weather remained fine, but occasional puffs of wind were experienced from the north and south of west; light as they were, as a rule, the variations in temperature were sudden and extensive, ranging between -13° and -39° ; while at Discovery Bay it remained fairly steady at about -43° .

The clouds consisted of very hard edged smoky looking stratus with a little cirrus, the moon and stars being particularly bright, and the sky a very unusual black blue. The hard detached patches of stratus did not appear to move in any direction; they formed chiefly above the hills near the entrance to Robeson Channel, and were at a moderate height. Similar clouds were observed twice before; first off Cape Sabine, and in September before the gale of the 14th.

After midnight of the 7th the temperature rose considerably, but only at Floeberg Beach, and a few hours afterwards there were some exceedingly heavy squalls from the southward, which continued more or less frequently until midnight of the 8th, when the barometer commenced to fall, and a most furious gale set in from the southward. Its force was such that it became impossible to register the temperature outside the ship, but that under the housing of the ship rose nearly to zero during the main strength of the gale. At Discovery Bay, although the force of the wind was only -1° , the temperature rose considerably, but not quite so high as at Floeberg Beach.

Throughout the gale the barometer at the southern station, where it was nearly calm, was more than a quarter of an inch higher than that at Floeberg Beach.

January 10th.—On the 10th the barometers began to rise, the wind died away, and snow fell in moderate quantities.

At noon of the 11th the barometers were again at about the same height, and agreed fairly together for the rest of the month. By the 15th the weather was completely settled, and remained calm and fine, with a few short breezes from the S.W., which invariably caused fluctuations in the temperature, until the end of the month. It is remarkable that on the 18th, and the morning of the 25th, when the temperature rose 25° at Floeberg Beach, it remained steady below -50° at the sheltered position at Discovery Bay. On the latter day the range at the northern position was between -23° and $-56^{\circ}.5$.

The first half of the month, being subjected to southerly winds, was warm; while the last half consisted in northerly winds, calms, and extreme cold. Thus the mean for the first 15 days was -22° , and that of the last 16 -44° . The great differences of $7^{\circ}.3$ in the mean temperature of the month at the two stations is evidently due to the exposed position of the "Alert," and the shelter afforded by the high land near the "Discovery."

FEBRUARY 1876.

The two first days of February were remarkable for a breeze from the N.N.W., fresh at Floeberg Beach, but only a light air at Discovery Bay, which continued for 24 hours,

accompanied by heavier snow than had fallen for several weeks, with a rising barometer and warm temperature.

February 3rd.—At 5 a.m. of the 3rd, it fell calm for a short time, followed by a strong breeze from the S.S.W., which, however, did not enter Discovery Bay. This again was followed by light airs and calms, with a clear sky, till midnight, during which the temperature fell at both stations. At 4 p.m. the barometer at Discovery Bay commenced to fall from 30.31 inches. At Floeberg Beach the corresponding fall did not take place until six hours afterwards. Between 4 a.m. of the 4th and noon it fell 0.46 inches at the south, and 0.40 inches at the northern station, accompanied with a strong gale from the northward, and a rapid rise in temperature at the northern station, the register there reaching 20° higher than at the southern position. During the gale heavy dark coloured stratus clouds collected over Robeson Channel.

February 5th.—The gale lasted until 8 a.m. of the 5th, when the barometers at the two stations commenced to rise simultaneously, the temperature falling, and the wind dying out at the same time.

Although this warm gale was felt as a N.N.W. wind, a most unusual occurrence, several squalls from the southward and westward were experienced at Discovery Bay. Also the maximum temperature there was +2°, while it was only -10° at the northern station; it is therefore probable that the wind was affected locally, and that the gale was in reality a southerly one. After the extreme force of the gale was over snow fell for several hours.

February 6th.—During calm weather on the 6th, while the lower clouds were moving from the N.N.W., the upper clouds, consisting of small cirro cumulus, were moving slowly from the southward.

In the afternoon the weather again became misty, snow falling occasionally, with a breeze, force 5, from the N.N.W., with a slowly rising barometer and decreasing temperature.

February 7th.—On the 7th light northerly winds and calm, with a very clear atmosphere, set in, lasting until the 19th, accompanied with cold weather, the mercury being almost continually frozen. During this time the barometers remained high and fairly steady, attaining a maximum of 30.48 inches, and 30.50 inches at 8 a.m. of the 14th. After the 16th they fell steadily until the 19th, on which day a rise in temperature was experienced without any corresponding wind at either station.

February 20th.—On the 20th a few patches of black smoky-looking stratus clouds appeared over Robeson Channel. The upper part of these clouds was rounded with clearly defined but soft edges. About noon it was very clear to the northward, but from the summit of a hill 480 feet high, a mist was observed extending about 60 feet above the floe, and for a short distance to iceward. The Greenland coast was enveloped in fog, with the tops of the hills visible above it.

February 22nd.—Similar smoky clouds to those mentioned above appeared on the two following days, Greenland being hidden to the same extent. During the afternoon the cold weather broke up with squalls from the S.S.W., lasting six hours; the temperature rising suddenly from -50° to within a few degrees of zero. Neither this wind nor the rise in temperature was experienced at Discovery Bay.

From noon of the 23rd the barometers went down steadily; the weather was very unsettled with strong breezes, amounting in the squalls to a gale, from the southward, and the temperature fluctuating considerably and once rising above zero. At Discovery Bay, although the snow was observed to be drifting off the high land, the wind did not reach the ship.

On the 25th the weather had settled again, with rising barometers and a falling temperature, the atmosphere being very clear. With the exception of a short squall on the 26th, accompanied with misty weather, fine weather was experienced during the remainder of the month, the barometers being high and steady, and the temperature at the two stations agreeing well together, the northern position, however, being 3° or 4° the coldest.

MARCH 1876.

The first eleven days of March were intensely cold, both the barometers were very steady and agreed remarkably closely together, ranging slightly on either side of 30.00 inches. The winds were very light, and usually from the N.W. and N.N.W.

March 8th.—On the morning of the 8th, with a rising barometer and a temperature of about -44°, light snow fell for two or three hours, the weather been foggy and overcast.

March 12th.—On the forenoon of the 12th a breeze from the N.N.W. set in at Floeberg Beach, and from the N.N.E. at Discovery Bay, accompanied by snow and a considerable rise in temperature. Immediately the breeze set in the barometers which had fallen previously began to rise.

March 13th.—At midnight of the 13th a breeze from the S.W. set in at both stations, and rapidly freshened to a gale, which lasted until the afternoon of the 14th, when the barometers began to rise, and the wind shifted to the N.W. at the northern station, but remained in the eastern quarter at the southern position. As the wind shifted and became light the temperature fell about 10 degrees.

March 15th.—Throughout the 15th a great many shifts of wind were experienced at Floeberg Beach from the N.W. and S.W., with a rising barometer and a varying temperature between -9° and -37° , the cold weather accompanying the northerly winds. The "Discovery" also experienced variable winds, but the temperature remained high and steady.

March 16th.—On the 16th the temperature fell quickly at Discovery Bay and remained low with calm weather. At the northern station light southerly winds kept the temperature fluctuating considerably.

March 22nd.—On the 22nd light snow fell for some hours with a rising barometer; wind light from the S.S.E. and warmer weather.

March 28th.—Nothing particular happened until the morning of the 28th, when with falling barometer a S.W. gale set in at Floeberg Beach, with furious squalls, force 8, which on the morning of the 29th, was followed by light airs. The "Discovery" at this time experienced light variable winds, but on the night of the 29th, when the wind was only force 3 at the northern station, she experienced a squall from the northward, reaching to force 8.

The cold weather during the last two days of February and the first eleven days of March was the most intense during the winter, the mean for 13 days being $-58^{\circ}4$ at Floeberg Beach and -53° at Discovery Bay. During the first six days of March the mean temperatures were $-63^{\circ}5$ and $-57^{\circ}7$. The minimum temperature registered was $-73^{\circ}75$ and $-70^{\circ}8$ respectively.

The difference in temperature between night and day became perceptible from about March 19th. The fluctuations in temperature during the previous week prevented its being noticed.

APRIL 1876.

April 3rd.—The first three days of April, light N.W. winds were experienced with a mean temperature of about -30° , a slowly rising barometer, and, with the exception of a low mist occasionally, very clear weather at each station. On the 1st, when the "Alert" experienced a northerly breeze, force 4, and the "Discovery" a calm, at Cape Beechey, a travelling party was confined to the tent by the wind blowing, force 9, from the northward.

April 6th.—The barometers continued rising steadily until midnight of the 6th, when they began to fall, followed by a light breeze from the southward, force 3, at the northern station and a rise in temperature at both positions. The wind lasted only a few hours, and from midnight of the 7th the barometers rose, and calm fine weather with a mean temperature of about -25° set in.

April 10th.—On the morning of the 10th it was foggy in Robeson Channel with threatening cirro-stratus clouds. The barometers fell, and a decided rise in the temperature took place, reaching to just above zero on the 11th, accompanied by misty and gloomy weather with a little snow. A S.W. squall, force 3, was felt at Discovery Bay, but little or no wind at Floeberg Beach.

April 13th.—On the two following days the barometers fell a little, with calms and light variable winds, and, except a thick low mist, very fine weather. On the 14th and 15th the barometers rose with clearer weather. A falling temperature and light northerly and westerly winds at Floeberg Beach, and south-westerly ones at Discovery Bay.

April 20th.—From noon of the 20th the barometers fell slowly and steadily with N.W. breezes (variable airs at Discovery Bay), which lasted till midnight of the 22nd, with occasional light snow falling and a comparatively warm temperature. Light airs from the southward and calms followed, with fine clear weather, the barometers falling below 30.00 inches for the first time during the month.

April 25th.—On the 25th they began to rise again rather rapidly until the 28th, light snow falling at both stations on the latter day, and more or less frequently until the end of the month, with a falling barometer and light northerly airs and calms.

The barometers only fell below 30·00 inches on five days during the month, and the mean for the month was the highest of the year, and was 0·43 and 0·44 of an inch above the mean height for the year. In this respect the observations agree with those of the other expeditions which have wintered north of Smith Sound.

The winds during the month were very light, force 4 being the strongest registered at the northern, and force 3 at the southern station. At the latter position the relative amount of calms 0·86 is remarkable.

The mean temperature for the month $-17^{\circ}96$ and $-17^{\circ}27$ appears to be the lowest yet recorded.

MAY 1876.

During the first week the barometers fell steadily from $30^{\circ}37$ to $29^{\circ}73$. A N.W. wind, sometimes quite fresh, blew for the first three days, bringing with it a low temperature. On the 6th and 7th, before the barometers began to rise, several puffs of wind from the S.W. were experienced at Floeberg Beach, but they were not lasting; at Discovery Bay it was calm.

May 9th.—On the 9th a southerly wind set in at the northern station, which affected the temperature very little; the barometers fell as the wind got stronger, and rose again towards noon of the 10th, by which time it was nearly calm.

May 13th.—On the night of the 13th a moderate gale from the northward was experienced at Discovery Bay and Polaris Bay, while merely a light air from the N.W. was felt at the northern station.

At the latter position, snow fell on the 15th without any movement in the barometer, but the following morning the glass fell quickly, accompanied by a strong breeze from the westward, which lasted until midnight, and was succeeded with light N.W. winds, calms, and occasional falls of snow. At Discovery Bay this wind was from the N.E., light and without snow. At Polaris Bay it was felt as a strong northerly gale.

With the exception of the 24th, which was a fine day, snow fell more or less on each of the last 14 days of the month, with a low barometer and light N.W. winds, accompanied with thick misty weather.

May 21st.—On the 21st and 22nd the "Discovery" experienced northerly winds. On the former day its force reach to 8; with these exceptions the weather at that station was calm and much finer, with considerably less snow than fell at Floeberg Beach. On the 31st there was a very heavy fall of light snow at each position, with a strong breeze from the N.W. at the northern and a calm at the southern one.

The winds during the month were almost entirely from the N.W. and W. at Floeberg Beach.

The temperature rose rapidly after the first week.

JUNE 1876.

The barometers rose slowly and steadily for the first four days of the month. On the night of the 2nd, when only light N.W. winds prevailed at Floeberg Beach, a strong northerly gale was experienced at Discovery Bay. Snow fell at both stations.

June 8th.—After midnight of the 8th the barometer rose a little, with northerly winds increasing to force 7 at Discovery Bay, but only to force 4 at the northern station. The weather was misty with snow falling until noon of the 12th, when the barometer began to fall and the weather cleared for a short time.

On the 8th of June a stream of water nine feet broad was observed running in a ravine at Discovery Bay for the first time.

Light winds, with a slowly rising barometer, were experienced until the afternoon of the 19th, when the glass began to fall pretty rapidly. No wind was felt until the afternoon of the 21st, when a strong gale set in, backing round from N.W. to S.W., the barometer commencing to rise at the same time and continuing to do so for the next 48 hours. At midnight of the 21st the wind was from the southward, force 8, at each station.

June 21st.—On the 21st a pool of water was observed on the land at Floeberg Beach.

June 23rd.—On the 23rd the barometer fluctuated considerably and the wind freshened to a strong gale from the southward at both positions. Squally weather continued until the 26th, when the wind died away gradually and shifted to the N.W., the barometer rising slightly throughout the 27th.

During this disturbance the weather was generally fine, but a slight shower of rain fell on the 26th, at Floeberg Beach, the first which was experienced during the season.

June 28th.—On the 28th, while only light airs from the N.W. were experienced at the northern station, a strong breeze from the north-eastward was felt at Discovery Bay. After this wind the barometer went steadily down during the remainder of the month, with fine weather and light winds.

After the 20th the temperature remained steadily above freezing point of fresh water.

Generally speaking S.W. winds brought fine weather, the N.W. winds being accompanied with clouds and snow.

On the 29th the streams in the ravines commenced running; this was three weeks after the same thing occurred at Discovery Bay with a sheltered southern aspect.

JULY 1876.

July is marked as not only showing the lowest mean monthly height of the barometer during the year, but also the lowest maximum height in any one month, the instruments in the two ships never rising above 29.88 and 29.89 inches respectively.

July 5th.—Fine weather with light variable airs and a rising barometer were experienced until noon of the 4th, when a fall of snow occurred; between the 5th and the 11th the barometers were fairly steady. On the night of the former day the "Discovery" experienced a heavy squall from the eastward shifting round to the S.W. with rain, while only light airs were felt at the northern station.

July 7th.—On the 7th rain fell at Discovery Bay during a calm, and on the 8th, after a light breeze from the S.E. and W.S.W., rain fell at Floeberg Beach for two hours, also during a calm.

July 9th.—On the morning of the 9th, with a slightly rising barometer, while it was calm at Discovery Bay a breeze set in at Floeberg Beach from the S.W., with fine weather, lasting 24 hours.

July 14th.—From noon of the 11th until the morning of the 14th the barometer went slowly down, with little or no wind and fine weather, a little fine snow or rain falling occasionally. The barometer then rose slowly until the 18th, light winds from the N.W. prevailing at the northern and southerly airs, and calm at the southern station with fine weather.

July 18th.—Between the 18th and 23rd the barometer, with a temporary rise on the 19th, fell considerably with occasional rain or snow and overcast weather. On the 21st the fall in the mercury was greatest and a good breeze set in from the southward, at each station with rain or snow, lasting intermittently for three days.

July 23rd.—On the 23rd the barometer began to rise, the wind gradually fell, and was succeeded by calm and snow, on the 24th, which again gave place, on the following day, to a light breeze, force 2 from the N.W., at Floeberg Beach, and a moderate wind, force 6 from the N.E., at the southern station.

July 27th.—Throughout the afternoon of the 25th and 26th the mercury rose quickly, and at noon of the 27th, with fine weather, a breeze set in from the S.W., as usual blowing strongest at the northern station; it continued 36 hours and gave place to overcast misty weather, with occasional snow or rain.

As the wind died away, the barometer went down, and on rising again about noon of the 30th a light air from the southward commenced, with snow or rain.

During the night it again commenced to fall, with an overcast sky and heavy cumulus clouds collecting over Robeson Channel, foretelling a stronger breeze, which set in at Floeberg Beach on the morning of the 31st; although at Discovery Bay the strongest force of the wind was 2, the squalls at Floeberg Beach reached to force 6. During the wind the weather was fine and the Greenland coast very clear.

The "Alert" left Floeberg Beach on the last day of the month.

AUGUST 1876.

August 1st.—On the 1st the barometer continued falling as long as the southerly wind lasted. In Robeson Channel force 6 was logged while only light airs were felt at Discovery Bay. The weather remained fine.

August 4th.—On the three following days the barometer fluctuated considerably, rising with light airs and calm, and falling as the southerly wind increased. While the wind was strongest a considerable quantity of snow fell.

August 5th.—On the 5th and 6th the glass rose rapidly, a light north-easterly wind setting in with fog and misty weather in Robeson Channel. At Discovery Bay the weather was finer, with variable winds.

August 8th.—On the 7th and 8th similar kind of weather occurred with a falling barometer, the wind freshening to a gale as the glass fell. At Discovery Bay force 9 was logged at midnight of the 7th, and at Cape Beechey force 8 on the following morning. By the evening of the 8th the gale had blown itself out, a low fog forming over the Greenland coasts.

This gale was felt by the "Pandora" at Cape Isabella.

The "Alert" reached Discovery Bay on the 12th. On the 20th the two ships crossed Lady Franklin Straits.

August 9th.—Between the 9th and the 21st the weather remained remarkably fine, with a fluctuating barometer, and light winds from the southward.

August 18th.—On the 18th a southerly wind was seen to be blowing on the southern shore of Lady Franklin Sound, which, however, did not extend across the pack collected there or that in Hall's Basin. On the 20th as the ships crossed the Sound they steamed out of a calm, which prevailed in the neighbourhood of Discovery Bay, and met a strong south-westerly wind near Cape Lieber.

On the 22nd and 23rd a strong gale from the S.W. was experienced, preceded by an overcast sky and snow with a rising barometer, which remained high and fairly steady while the storm lasted. In this it was totally different to our previous experience, when each southerly disturbance was preceded or accompanied by a fall in atmospheric pressure.

On the 24th the weather was fine but foggy, and the wind freshened slightly from the S.W. This continued on the 25th with a rising barometer.

During the remainder of the month the weather was foggy with an occasional fall of snow or rain. A fluctuating barometer and high variable winds or calms.

SEPTEMBER 1876.

September 1st.—On the 1st the temperature, which had been below freezing point for the three previous days, rose to 35°. The barometer, which had been falling during the same period, ceased doing so, and rose slightly; it then remained fairly stationary. The weather was very misty with frequent falls of rain or snow; the upper clouds, when seen through the mist, were moving from the southward or westward, but only light variable airs were experienced. Except on the night of the 3rd, when a northerly wind set in backing round to the W. and S.W. on the morning of the 4th, this kind of weather continued until the 6th, when the mist and fog cleared off with a rising barometer and light variable airs, the temperature again falling below freezing point.

Owing to the warm temperature the ravines, which had previously stopped running, burst forth again.

The fine weather continued until the morning of the 9th, when a S.W. wind sprang up with a falling barometer and misty weather.

On the evening of the 9th the Expedition quitted Smith Sound on its return voyage to England.

Remarks on the Freezing and Thawing of Mercury in Thermometers.

The spirit and mercury thermometers were fixed alongside one another in the same screen, and, being read off every hour during the winter, were found to agree very well together until the temperature fell to about -44° , when on the temperature reaching a certain point between $-45^{\circ}\cdot 0$ and $-46^{\circ}\cdot 5$ the mercury fell suddenly to a point in the tube, which would be about equal to -60° had the tube been graduated.

While in this state the mercury could be easily tapped down to a lower point in the scale; it appeared to be very brittle, that is, as the end of it reached the narrow passage leading to the bulb, small particles broke off and found their way through; the stream was not continuous.

When the thermometer was left quite still, no matter how cold the atmosphere was, the mercury never sank lower in the tube than about -60° .

When a thaw set in the first effect was to melt the mercury remaining in the tube, which fell into the bulb out of sight, the mercury in the bulb always taking a longer time and a higher temperature before it became fluid. By the observations made, this temperature is about $-35^{\circ}\cdot 0$, but length of time may affect the actual degree at which the mercury would become fluid.

Occasionally when the mercury assumed the fluid state, the expansion was apparently a sudden action, as the mercury in the tube of the maximum thermometer, lying in nearly an horizontal position, was projected along the tube and registered a much higher temperature than that of the atmosphere; thus, on February 22nd the maximum thermometer registered a temperature of $+51^{\circ}\cdot 5$, and on March 30th $+3^{\circ}\cdot 0$, both readings being higher than the actual temperature experienced. During the 24 hours preceding the first of these observations the weather was stormy, and the thermometer may have been shaken. When the latter observation was made the weather was calm.

—	No. 449. Mercury.	No. 228. Spirit.	Reference to Notes.	—
1876.	o	o		
January 19	-34·1	-34·6		
	41·8	42·5		
	42·8	42·5		
	42·8	43·1		
	42·8	43·1		
	42·8	43·1		
	40·8	41·0		
	41·8	42·5		
	42·8	44·2		
	40·8	41·0		
	42·8	43·1		
	43·8	45·8	Note (1.)	
	-60·	43·1	Note (2.)	
	—	—	Note (3.)	
" 21	-43·8	-45·3		
	43·8	44·2		
	43·8	45·8		
	43·8	44·2		
	43·8	44·2		
	43·8	44·2		
	43·8	44·2		
	43·8	44·2		
	43·8	45·3		
	43·8	45·3		
	43·8	45·8		
	-60·	46·4	Note (4.)	
" 24	-26·4	-27·4		
	-60·	-46·4	Note (5.)	
" 28	-43·8	-44·2		
	43·8	45·8		
	43·8	44·7		
	-60·	-48·0	Note (6.)	
February 15	-42·3	-43·1		
	42·3	43·1		
	42·3	43·1		
	44·8	46·4		
	-60·	-46·9	Note (7.)	

[The observations were registered hourly, except when stated otherwise.]

(1.) Although No. 228 thermometer only registered as low as $-45^{\circ}\cdot 3$ when observed hourly, the minimum thermometer showed that the temperature had really fallen to $-46^{\circ}\cdot 5$ within half an hour of the time. This accounts for the mercury sinking suddenly to -60° at a warmer temperature than usual.

(2.) Mercury sank suddenly to about -60° .

(3.) On the 20th January the temperature ranged between -38° and $-45^{\circ}\cdot 3$, but the mercury remained unthawed and contracted the whole day. No. 449 was then taken down to register the temperature in a crack in the floe, which proved to be -2° . The mercury was consequently thawed; on being replaced in the thermometer screen, the mercury continued to register the temperature fairly correctly until—

(4.) The temperature was between $-45^{\circ}\cdot 8$ and $-46^{\circ}\cdot 4$, when it contracted suddenly to about -60° .

(5.) Mercury found to have contracted suddenly to about -60° , when the spirit thermometer had fallen to $-46^{\circ}\cdot 4$.

(6.) Mercury continued to work fairly until the temperature fell below the critical point at about $-46^{\circ}\cdot 4$.

(7.) The mercury thermometer had been thawed on board the ship. On being replaced it continued to work fairly until the temperature fell below $-46^{\circ}\cdot 4$, when it contracted suddenly as usual.

	No. 449. Mercury.	No. 228. Spirit.	Reference to Notes.	
1876.	o	o		
February 27	-41·8 41·8 43·8 44·8 -60·	-42·0 42·0 45·3 46·4 -46·4	Note (8.)	(8.) The mercury thermometer continued to work fairly until the temperature fell below -46°·4. Although the hourly reading does not record a lower temperature, the minimum thermometer recorded a fall to -48°·9.
" 19	-40·8 40·8 44·8 -60·	-42·0 41·0 45·3 -46·4	Note (9.)	(9.) The mercury thermometer, as usual, worked fairly until the temperature fell to -46°·4, when the mercury suddenly contracted to about -60°.
March 30	-42·8 44·8 -60·	-43·1 45·3 -47·5		(10.) After the mercury had remained frozen for three days during which time the temperature fell to -59°·2. On the setting in of the thaw the frozen mercury left in the tube suddenly sank into the bulb out of sight, as soon as the temperature rose to -35°·1.
January 24	-60· All in bulb. -28·4	-54·1 35·1 29·5	Note (10.)	(11.) For 11 hours the temperature ranged between -39° and -37°, but the mercury remained unmelted.
" 26	-60· -60· -60·	-39·0 -37·0 -37·0	Note (11.)	(12.) The mercury was found to be working within an hour of the change of temperature, but the maximum thermometer showed that for a short time the temperature had risen to -28°·8.
" 27	-60· -36·6	-43·6 -37·0	Note (12.)	(13.) With the rise in temperature the mercury in the tube melted at -39°·0, but fell into the bulb and remained there, probably frozen with the rest, until the temperature rose above -37°·0.
" 31	-60 In bulb In bulb In bulb -34·6	-41·0 39·0 37·0 37·0 -34·1	Note (13.)	(14.) During three hours, while the temperature rose to -35°·1, the mercury remained frozen, but thawed at about that temperature.
February 18	Frozen Frozen -36·6	-38·0 35·1 -36·1	Note (14.)	(15.) Mercury remained frozen until the temperature rose to about -35°.
March 11	Frozen Frozen -33·1	-41·0 36·6 -34·1	Note (15.)	

**Astronomical and Atmospheric Phenomena Observations,
H.M.S. "Alert" and "Discovery," 1875-1876.**

ASTRONOMICAL PHENOMENA.

SEPTEMBER 1875.

September 24th. Report. *Discovery Bay*.—At 10.30 a.m., the sun having an altitude of about 12° and bearing S.E. (true) the following phenomenon was observed: Two mock suns, one to the left, the other above the sun; these were included in a prismatic arc about 10° distant from the sun, with the sun for its centre; another arc over this one at about 12° distant from it. Temperature at the time +11°·8. Barometer 29·68 inches falling steadily. No wind. Clouds cr.-st. 6. It was visible for 25 minutes. *Vide* diagram.

OCTOBER 1875.

After the 12th the sun did not rise above the southern horizon at Floeberg Beach.

After the 14th it was not seen at Discovery Bay.

The moon remained above both horizons between the 14th and 24th. Full moon occurred on the 14th.

Although the weather was calm and often apparently favourable for the occurrence of atmospheric phenomena, none were observed at either station during the month.

October 27th. *Discovery Bay*.—At 11.30 p.m. two meteors were observed in the S.E. (true) about the second magnitude; they were both faint and moved slowly.

NOVEMBER 1875.

The moon remained above both horizons between the 11th and 21st; full moon occurring on the 13th.

November 11th and 12th. *Discovery Bay*.—Faint halos of about 40° diameter were observed round the moon during the first and middle watches.

November 13th. *Discovery Bay*.—At 4 p.m. a lunar phenomenon consisting of a luminous arc on each side of the moon, crescent in form and a tangent above. From the middle of each side arc appeared a broad horizontal ray tapering to a point; while from the moon itself radiated four shorter pointed rays resembling the cardinal points of the compass. *Vide* diagram. The temperature was 14° . Barometer 30.65 inches. No wind. Clouds st. 5.

November 19th. Lieut. Aldrich. *Floeberg Beach*.—6.30 p.m. A moderately brilliant paraselena was observed: three bright patches were visible displaying prismatic colours. These were joined by a luminous arc, and were situated at an angle of $22^{\circ} 15'$ on either side of the moon and above it. Crucial rays from the moon were distinct, the vertical rays being the brightest, and all growing fainter as they became more distant from the moon. Of the luminous patches or mock moons the two horizontal ones were much brighter than that above the moon. The phenomenon lasted more or less brightly for nearly two hours.

November 19th. Captain's journal. *Floeberg Beach*.—A fine clear paraselena in the evening. The prismatic colours being clearly visible in the halo passing through the horizontal mock moons. The red tint was nearest to the true moon. The vertical reflection was merely a bright blurr. Temperature, -25° . Calm weather. Barometer 29.80 inches, steady. Clouds cum. 1. Atmosphere a little misty.

November 20th. Report. *Discovery Bay*.—A lunar phenomenon was observed precisely the same as the one described on the 13th. It was first observed at 8 a.m., most vivid at 8.35, after which it gradually faded away. Temperature -25° . Barometer 29.97 inches. No wind. Clouds cr. 1.

November 20th. Dr. Ninnis. *Discovery Bay*.—8 p.m. observed a lunar corona with radiating and convergent rays from either side, slightly prismatic. Also four convergent rays from the moon itself, and an arc tangent to the upper part of the corona.

Meteors.

November 2nd. Report. *Discovery Bay*.—9.30 a.m. One moving from N.E. to S.W.

November 7th. Report. *Discovery Bay*.—2 p.m. One moving from the Zenith to N.W.

November 10th. Report. *Discovery Bay*.—9.30 p.m. One moving from East to West.

November 14th. Report. *Discovery Bay*.—10.0 a.m. One moving from N.E. to S.W.

November 16th. Report. *Discovery Bay*.—2 p.m. A meteor of a very brilliant green colour was observed in the East, emitting light as it passed on its way to the westward; it finally broke up, the particles emitting a violet light.

November 18th. Report. *Discovery Bay*.—4 a.m. One moving from the Zenith to West.

November 20th. Report. *Discovery Bay*.—6 a.m. One moving from South to North.

November 29th. Report. *Discovery Bay*.—9.30 a.m. One moving from East to West.

DECEMBER 1875.

The moon remained above both horizons from the 8th to the 18th. Full moon occurred on the 12th.

December 9th. Report. *Discovery Bay*.—1 p.m., a lunar phenomenon was observed similar to the one on the 13th November, with an additional arc above the tangent, 55° from the moon. Diameter of circle $44^{\circ} 48'$. Altitude of moon $21^{\circ} 50'$. Temperature of the air -9° . Barometer 30.25 inches. Wind, N.E. force 2. Clouds, cr. 1. *Vide* diagram.

December 11th, Lieut. Aldrich. *Floeberg Beach*.—4 a.m. A very clear paraselena was observed, the atmosphere was rather hazy. Moon, bearing about West, and at an altitude of 23° , very bright. The phenomenon consisted of two concentric halos, with the moon as a centre, and at angular distances of $23^{\circ} 25'$ and $47^{\circ} 30'$ respectively. The inner circle was quite complete and visible between the observer and the hills. The brilliancy of the crucial rays varied much in intensity, the horizontal rays being always the brightest, and extending between 90 and 100 degrees on either side of the moon. The sky was quite clear of clouds, but there were two masses of luminous haze, which appeared to rise from the horizon to about 15° of altitude as tangents to the lower part

of the outer circle. There were three mock moons, tolerably distinct, situated in the inner circle, and very faint representations of two others where the horizontal crucial rays intersected the outer circle. The phenomenon lasted for $2\frac{1}{2}$ hours.

December 14th. Report. *Discovery Bay*.—At 10.30 p.m. observed a halo round the moon, diameter 45° , the weather being misty.

December 15th. Report. *Discovery Bay*.—1 p.m. A faint halo round the moon, the weather very thick and misty. Temperature, -26° . Clouds, stratus, 6.

December 15th. Report. *Floeberg Beach*.—The moon has been surrounded by a halo for the best part of the last two days; between 11 and 1 to-day the clouds consisted of stratus radiating from two points situated in the horizon N.N.W. and S.S.E.

December 16th. Report. *Discovery Bay*.—Between 3 a.m. and 4 p.m. Faint halos round the moon were observed, light snow was falling at the time.

December 16th. Report. *Floeberg Beach*.—Between 1 a.m. and 5 a.m. A faint halo round the moon, the atmosphere hazy with light snow falling. Temperature, -26° . Light air from the N.W.

December 17th. Report. *Floeberg Beach*.—1 a.m. A faint circle round the moon. The atmosphere very misty.

December 17th. Captain's journal. *Floeberg Beach*.—About noon. As the moon sank towards the northern horizon a misty paraselena formed of the usual diameter. Observing that the reflection was between us and the land I walked until it fell directly on the ship, my position being 250 yards from the reflection. Objects at a greater distance were mistily hidden from view by the lighted part of the atmosphere, while other objects at the same distance, which were seen through the same hazy but unlighted atmosphere, were quite distinct and presented sharp outlines.

December 18th. Report. *Discovery Bay*.—At 2 a.m. A faint halo round the moon.

December 2nd. Report. *Discovery Bay*.—Two meteors of the second magnitude were observed passing from East to West.

December 17th. Report. *Discovery Bay*.—11.45 p.m. A meteor of the first magnitude was seen bearing S.E.

December 21st. Report. *Discovery Bay*.—10 a.m. Three were seen, one bearing S.S.W., one bearing East, and one bearing North.

December 24th. Report. *Discovery Bay*.—4 p.m. A very brilliant meteor from the Zenith to W.S.W.

December 26th. Report. *Discovery Bay*.—11.40 a.m. A meteor of the first magnitude moving from North to South.

December 29th. Report. *Floeberg Beach*.—A most brilliant meteor was observed to the southward; so intense was its brilliancy that it lit up the whole floe, and was mistaken for a flash of lightning by those who happened to be facing towards the North. A similar occurrence was noticed the previous day, but no meteor was actually seen.

JANUARY 1876.

The moon remained above both horizons from the 4th to the 14th. Full moon occurred on the 11th.

January 4th. Report. *Floeberg Beach*.—3 p.m. Very faint paraselena.

January 5th. Report. *Discovery Bay*.—At 8 p.m. Observed a halo round the moon; diameter about 40° .

December 6th. Report. *Floeberg Beach*.—7 a.m. Faint paraselena lasting for an hour, succeeded shortly afterwards by another. Two concentric circles partially visible, horizontal crucial rays much extended and appeared curved upwards away from the horizon.

January 9th. Report. *Floeberg Beach*.—3 a.m. A faint halo round the moon. A strong gale from the southward with a heavy snow drift.

January 11th. Report. *Floeberg Beach*.—7 a.m. A very faint halo round the moon.

January 12th. Report. *Discovery Bay*.—4.50 a.m. A halo round the moon, diameter 43° .

January 13th. Report. *Floeberg Beach*.—1 a.m. Fair paraselena with a misty atmosphere.

" " " 6 to 12 a.m. Ditto.

January 13th. Report. *Discovery Bay*.—6 a.m. A halo round the moon; diameter 50° . 5 p.m., observed several distinct rays of light radiating from a halo round the moon (which at the time was hidden by the hills, leaving only a segment of the halo visible). These rays after arching across the heavens met again at the opposite point of the horizon. Besides these, a pointed ray was visible within the halo evidently coming from the moon. *Vide* diagram. Radius of the halo about 23° . Altitude of the moon about $17\frac{1}{2}^{\circ}$. A very fine snow dust was falling during the time that the phenomenon was observed. Temperature -23° . Barometer 29.58 inches. No wind. b. c. Clouds, stratus 4. Shortly afterwards the halo broke up, the rays seeming to come from the moon. At 6 p.m. the moon was clear of the hills, and the rays of light crossing the heavens were in the same position, but very faint. At 8 p.m. there was a magnetic disturbance. The needle was deflected to the eastward 2° beyond the normal. No appearance of any aurora was visible.

January 14th. Report. *Discovery Bay*.—9 a.m. Observed faint and imperfect side arcs on either side of the moon, slightly prismatic. A horizontal ray proceeded from each of them (diverging); also four divergent rays from the moon. The right-hand arc passed between the observer and the land, distant three miles. There was also a faint circle above the moon as in former cases. *Vide* diagram. The sky was clear overhead, with a very fine and impalpable snow dust falling. Distance of side arcs from the moon's centre $21^{\circ}5'$. Altitude of the moon 17° . Temperature, -40° . Barometer 29.75 inches. No wind. No clouds.

January 16th. Report. *Discovery Bay*.—On the 16th there was a very bright dawn in the southern horizon at noon having an altitude of about 8° . β Aquilæ (fourth magnitude) was nearly obscured; the light was sufficient to throw a slight shadow.

On the 24th very bright dawn. β Aquilæ was on the meridian at noon with an altitude of 14° , and could not be seen. Ordinary newspaper type could be read at noon on the 28th.

January 2nd. Log. *Discovery Bay*.—Between 9.30 p.m. and 10 p.m. eight meteors were observed.

January 5th. Report. *Discovery Bay*.—At noon, a *bright* meteor was observed passing from East to West.

FEBRUARY 1876.

The moon remained above both horizons from the 1st to the 11th, and from the 28th to the 9th March.

Full moon occurred on the 9th.

On the 29th the upper limb of the sun was seen above the southern horizon at *Discovery Bay*.

February 3rd. Report. *Discovery Bay*.—8 a.m. A faint halo round the moon. Diameter about 45° .

February 5th. Report. *Discovery Bay*.—4 a.m. A very faint halo round the moon. Diameter about 40° .

February 6th. Report. *Discovery Bay*.—8.15 p.m. Observed a faint and imperfect halo. A nucleus of light was situated on either side of the moon, distant about 23° . The weather was very thick and hazy at the time.

February 7th. Report. *Floeberg Beach*.—11 p.m. A faint halo round the moon lasted till 7 a.m. of the 8th.

February 8th. Report. *Discovery Bay*.—1 a.m. A faint halo round the moon. Diameter about 48° .

February 10th. Report. *Floeberg Beach*.—6 p.m. Very faint paraselena observed.

February 6th. Report. *Discovery Bay*.—At 1.45 p.m. Venus appeared to be very much refracted; on looking through the astronomical telescope the disc appeared blurred and prismatic, violet at the top and the remainder of the prismatic colours in succession, with red at the bottom. On looking through the telescope green appeared to be the upper colour, but on careful observation the blue and violet could be seen flashing out occasionally. On being observed through the spectroscope a faint spectrum was obtained from the reflected light, in which the red predominated. The day was bright and clear. Temperature -26° . Barometer 29.72 inches. Wind N.E. 2. b. c. Clouds, cirrus 4.

February 9th. Report. *Discovery Bay*.—At 10.30 a.m. a very brilliant meteor of a green colour was observed moving very slowly from the Zenith to the westward leaving a luminous track behind it. The dawn at the time was considerable, sufficient to read ordinary type.

MARCH 1876.

At *Floeberg Beach* the sun appeared above the horizon at noon of the first. The moon remained above both horizons from the 28th February to the 9th March. Full moon occurred on the 10th.

After the 26th stars were not visible at midnight.

March 2nd. Report. *Discovery Bay*.—At 11 a.m., a faint nucleus of light appeared to the right of the sun, slightly prismatic.

March 7th. Report. *Discovery Bay*.—At 0.30 p.m. from the high land over "Distant Cape," about five miles from the ship, the following phenomenon was observed: A luminous patch appeared about 23° to the left of the sun, slightly prismatic, with a horizontal ray tapering to a point proceeding from it; shortly afterwards a similar one appeared to the right. About thirty minutes afterwards the side patches became more developed and strongly prismatic, appearing like mock suns. At the same time a mock sun appeared directly over the sun, and the same distance from it as those at the sides. A vertical ray tapering to a point proceeded from the sun. Thermometer $-49^\circ.5$. Barometer 29.96 inches. No wind or clouds. This phenomenon was not observed from the ship, the sky being clear at the time.

On the same day at 11 p.m. a faint halo was observed round the moon; diameter about 45° .

March 9th. Report. *Discovery Bay*.—At 11 p.m. a faint halo was observed, with side arcs on either side of the moon, with a broad horizontal ray tapering to a point proceeding from each. Thermometer -52° . Barometer 30.37 inches. Wind N.W., force 1, b.c.m.; clouds, cirrus 6. Diameter of the halo $48^\circ.5$.

March 11th. Report. *Floeberg Beach*.—At noon a faint parhelion was observed.

March 16th. Report. *Discovery Bay*.—At noon a mock sun was observed to the right and a luminous patch of prismatic colours to the left of the sun, both distant $23^\circ.5$ from the sun. Thermometer -10° . Barometer 29.94 inches. Wind, North-easterly, force 2 to 3. Weather, b. c. Clouds, stratus 4.

March 25th. Report. *Floeberg Beach*.—Between 11.30 a.m. and 1 p.m. a parhelion was observed on either side of the sun, with a third much fainter and only occasionally visible above the true sun.

March 26th. Report. *Floeberg Beach*.—A slight parhelion was visible for an hour.

APRIL 1876.

The sun remained above both horizons after the 8th.

April 14th. Report. *Floeberg Beach*.—At 2 a.m. a very faint parhelion was observed.

MAY 1876.

May 1st. Lieutenant Aldrich, on the north coast of Grinnell Land, reports: There was a very brilliant parhelion, lasting for about an hour, during the afternoon. It consisted of a horizontal white, but hazy looking belt, which reached nearly three quarters of the way round the heavens; in it were situated four luminous patches of prismatic colours or mock suns. The angles, measured by sextant, between those nearest on either side of the true sun and the true sun itself, was 23° . The more distant ones, very much fainter, were at an angle of 105° on either side of the true sun.

Right above, and curved upwards or away from the true sun, was a most brilliant arc of prismatic colours, about 80 or 90 degrees of it only visible. The colours were most vivid, the red being nearest the sun, on the outer edge of the arc; the angle between the most adjacent portion of which and the true sun was 46° . In the luminous patches the red colour was invariably nearest the sun.

Auroras observed, 1875-1876, at Floeberg Beach and Discovery Bay. By Lieutenant A. C. Parr, R.N.

Though the auroral glow was often present and served in some degree to lighten the darkness of the sky during the long winter, when the moon was absent, the actual appearances of the aurora itself were few, and the nimbus worthy of any particular remark extremely small. Those which were stationary assumed the form of low arches with streamers flashing up to them from the horizon and usually to the eastward. But the more common form was for an arch to appear low down in some part of the sky where the glow was brightest; at first it was very faint and narrow, but as it rose gradually in the heavens it would increase both in size and intensity, till on arriving near the zenith with its ends extending nearly to the horizon, it would be about the breadth of three or four rainbows, and its colour that of white fleecy clouds lit up by the rays of the full moon. On reaching this point, however, its course was nearly run; for after appearing to remain stationary, as little white gaps would suddenly rend the arch asunder, the portions thus detached seemed to roll together and concentrate all their brightness in the smaller space, and then gradually fade away and become extinct. Sometimes a very pale green would show itself in the more luminous patches, and once or twice there was a slight suspicion of red; but never was the whole sky illuminated by streams running in all directions, and forming coronæ, while these colours varied every moment.

When instead of the arch rising up from the horizon a streamer appeared, its origin was in the north. From the northern horizon it would stretch out towards the zenith, passing nearly overhead, and reaching to within a few degrees of the land to the south. In appearance they would be the same as the arches, but sometimes a second would grow out of the first, and on one occasion three were visible at the same time. They had lateral motion either from east to west, or west to east, but there was no flashing to brighten them, and they gradually faded away.

The time at which auroras usually occurred was between 9.0 p.m. and midnight, the last display being on February 19th, commencing at 11.0 p.m. It was a beautifully clear night without mist or haze of any description, and small stars visible close down to the horizon. At the above-named hour two arches made their appearance and remained stationary; the lower one was the brighter, being of a pale green colour, its centre bearing E.S.E. (true), and having an altitude of about 5° , with a breadth of about twice that of a rainbow. The second arch was concentric with the first, and about 7° above it, but rather broader and fainter. These arches maintained their altitude, the upper one at about the same intensity, but that of the lower one varied considerably. It would gradually lighten up, then send flashes to the upper one, then break up and fade away; before, however, it had quite disappeared, flashes would come up to it from the horizon which seemed to endue it with new life, for the arch would be reformed, brighten up, and the same performance would be again repeated. This occurred three or four times in the course of three quarters of an hour, but the flashes from the horizon never extended beyond the lower arch, and those from the lower never went beyond the upper. During this display the citron line was obtained very clearly with the spectroscope, but no other lines were visible.

On six or seven occasions auroras were visible at the same time on board both the "Alert" and "Discovery," but the absence of characteristic features makes it impossible to determine whether they were the same display, or merely two distinct ones which happened to occur at the same time. But as by far the larger number of those recorded in the one ship were not visible at the other, it was certainly only under exceptional conditions that they could be simultaneously observed at both stations, if indeed they ever were. Auroras seemed to appear indifferently both when there was wind and when it was calm, with either a high or low barometer, and seemed quite unconnected with the temperature, although on an occasion the thermometer was observed to fall 3° during the display, and to rise 2° almost immediately afterwards. But it was never seen illuminating the edges of clouds as we saw it on the passage home, nor playing about the outline of the land, and never was there the slightest suspicion of sound being produced by it.

The opportunities for observing the spectrum of the aurora in this position have been most unsatisfactory, as the displays were small in number and deficient in brilliancy.

The form they generally assumed was to rise like an arch from a portion of the horizon where there was a luminous glow, at first very faint, but gradually increasing in

brilliancy till near the zenith, where it would remain stationary for a short time and then break up and disappear. Sometimes they would rise up as streamers, but {only occasionally was more than one visible at a time, and they lasted for such a short time, that even if they had been bright it would have been very difficult to make satisfactory observations.

Very few showed any signs of colour, and those only the slightest tinge. Nearly all that were observed gave the citron line with the small pocket spectroscope with more or less distinctness, though no signs of any other lines were ever seen; but on only two occasions was it bright enough to get the line with Nury's spectroscope, and then only for such a short time that a satisfactory measure could not be obtained.

Solar spectrum.--No observations of the solar spectrum were obtained, as in the autumn the sun was obscured by cloud or fog nearly the whole time, so that the only opportunities which my other duties allowed me to avail myself of were occupied in trying to adjust the large spectroscope which was out of order, and in which I was not successful before the sun disappeared altogether before the horizon. During the winter I got it nearly into working order, but since the sun has returned this spring the temperature has been so low as to prevent any observations being made, and the start of the sledges as soon as there is a rise precludes any chance this season.

OCTOBER 1875.

On the 25th, except between the hours of 9 a.m. and 3 p.m., it was sufficiently dark for the whole 24 hours for aurora display to have been distinguished.

After the 27th, the moon remained below both horizons. New moon occurred on the 29th.

October 25th. Lieut. Parr. *Floeberg Beach.*—At a quarter to 12 p.m. a faint display of aurora extending from about S.E. through North to West; brightest E. by S. Streams running up towards the zenith.

Captain's journal. Light flashes of colourless aurora in the East.

October 26th. Lieut. Aldrich. *Floeberg Beach.*—At 1 a.m. observed an aurora S.E. to East for about an hour.

Meteorological Register. Sub.-Lieut. Conybeare. *Discovery Bay.*—At 10 p.m. there was a very faint display of aurora in the S.E., lasting for 15 minutes. Temperature -25° . Barometer 30.33 inches, steady. No wind. Clouds st. 5.

Lieut. Parr. *Floeberg Beach.*—Observed an aurora at 11 p.m. It assumed the form of two low arches stretching from about S.E. to N.E., the first about 15° and the second 10° in altitude. The rest of the sky seemed slightly illuminated except to the southward and S.W.

October 30th. Dr. Ninnis. *Discovery Bay.*—10 p.m. Faint aurora E.S.E. Temperature -21° . Barometer 30.33 inches, steady. Clouds st. 5.

NOVEMBER 1875.

Between the 10th and the 21st the moon was above both horizons, and prevented any aurora display being distinguished. Between the latter date and the 5th December it was sufficiently dark throughout the whole 24 hours for it to have been seen.

November 1st. Dr. Ninnis. *Discovery Bay.*—10 p.m. Faint but well-marked aurora E.S.E. Temperature -20° . Barometer 30.66 inches, steady. Clouds st. 4.

November 2nd. Lieut. Parr. *Floeberg Beach.*—9.0 p.m. An aurora commenced and lasted about an hour. Mostly in the form of arches with very few and short streamers. The principal arch had an altitude of about 10° , and in the end seemed to roll together, the ends being brightest, and then disappeared.

Capt. Nares. A few flashes of aurora N.E.; stars very bright and distinct, particularly at low altitudes. Temperature -39° . Barometer 30.45 inches, steady. Clouds cum. st. 4.

November 21st. Lieut. Parr. *Floeberg Beach.*—Between 9 and 10 p.m. slight flashes of aurora. At about 10 p.m. appeared a bright broad streamer which passed from due North about 15° above the horizon, through the zenith, and then terminated in an irregular curve 25° above the horizon, bearing S.S.E. The whole belt appeared to have

a lateral motion from West to East, but it gradually disappeared as it drew clear of the zenith, and was succeeded a short time afterwards by various luminous patches, those most brilliant being to the S.E. The temperature, -45° , fell 3° during the display, and rose 2° shortly afterwards.

Lieut. Aldrich. The stars in the zenith were visible through the aurora.

Capt. Nares. A faint streak of aurora through the zenith in a line parallel with the coast line; we could not determine whether it shot up from the northward or southward. At first it appeared to rise from the northward.

Register. *Discovery Bay*.—During the first watch a slight aurora was visible, lasting about 30 minutes without any defined lines or brilliancy.

November 22nd. Lieut. Parr. *Floeberg Beach*.—2 p.m. Slight red aurora occasionally. 8 p.m. Aurora lighter, but not so red.

November 26th. Lieut. Parr. *Floeberg Beach*.—About 9.30 a.m. a stream of light, about $1\frac{1}{2}^{\circ}$ in breadth, was observed; it extended as nearly as possible North and South, beginning and ending some 8° or 9° above the respective horizons. It passed through the zenith and was of very moderate, but about equal, brilliancy throughout.

Capt. Nares. A streak of aurora passing in a North and South direction through the zenith. It consisted of a continuous straight thin ribbon of fairly bright light, distinctly marked at the edges. The sides were parallel, and the stars were visible through it. The sky near the border was not darkened. Sky was perfectly clear of clouds.

Report. *Discovery Bay*.—During the first watch a slight aurora was visible, lasting about 30 minutes without any defined lines or brilliancy.

November 27th. Register. *Discovery Bay*.—11.40 p.m. A slight aurora was visible, lasting about 30 minutes, without any defined lines or brilliancy.

November 27th and 28th. Lieut. Parr. *Floeberg Beach*.—Flashes of aurora between midnight and 1.0 a.m., principally overhead, and to the S.E. The streamer which passed nearly through the zenith was much more broken, and appeared closer than former ones.

Capt. Nares. At 1 a.m. a bright streak of aurora made up of detached feather-shaped streams stretched across the zenith from north to south, from and to about 20° of either horizon. At the same time there were several bright flashes forming an arch in the S.E., having a darkened sky below them. The streams in the zenith were apparently close to the earth, moving past the stars like a thin cloud, and having the same effect in hiding them.

November 29th. Register. *Discovery Bay*.—A faint reddish glow was observed in the southern horizon at 9.30 a.m., and shortly afterwards a few streamers were observed reaching to the zenith; they worked, closing and opening, for a space of 10 minutes, and then disappeared leaving a glow in the horizon. The streamers were too faint to make any spectroscopic observations. The glow and streamers appeared as if they were the reflection of an aurora farther to the southward.

November 30th. Register. *Discovery Bay*.—A very faint aurora was observed at 4.30 a.m., lasting 20 minutes.

Dr. Ninnis. *Discovery Bay*.—5 p.m. Faint Northern lights.

Lieut. Aldrich. *Floeberg Beach*.—5 p.m. Aurora flashes. 8 p.m. Aurora flashes occasionally. 10 p.m. Flashes of aurora.

DECEMBER 1875.

Between the 8th and the 18th the moon remained above both horizons.

The aurora display on the 16th was one of the few seen when the moon was present. The moon was hid by clouds at the time.

December 2nd. Lieut. Parr. *Floeberg Beach*.—Streams of aurora in the evening. Temperature -7° . Barometer 29.83 inches, falling rapidly. Clouds nim. 4. Wind S.E. 1.

December 3rd. Lieut. Aldrich. *Floeberg Beach*.—1 a.m. Flashes of aurora not very distinct. Temperature -8° . Barometer 29.72 inches, falling rapidly. Wind S.W. 1. Clouds nimbus 2. At 8 a.m. a strong breeze from the southward set in with a very extraordinary rise in temperature to $+25^{\circ}$.

Register. *Discovery Bay*.—2.30 p.m. A faint aurora was observed in the East, lasting 1 h. 30 m. Temperature -5° . Barometer 29.83 inches. Calm. Clouds st. 2.

December 16th. Lieut. Parr. *Floeberg Beach*.—A slight aurora at 10 p.m., which gave the citron line very clearly in the small spectroscope, but the bright flashes did not last long enough to observe it well with the larger one.

Register. *Discovery Bay*.—11 p.m. Faint Northern lights from South to West, without colour or defined dimensions. Temperature -24° . Barometer 29.22 inches. Wind N.E. by N. 3. b. c. Clouds st. 2.

December 19th. Lieut. Aldrich. *Floeberg Beach*.—3 p.m. and 6 p.m. Faint aurora. Temperature -32° . Barometer 29.40 inches, falling slightly. Clouds cum. 4.

Lieut. Parr. *Floeberg Beach*.—Between 9 and 10 p.m. Faint indications of an aurora. At the latter hour there was a moderately bright arc, extending from the horizon, about N.N.W. and E.S.E. and attaining an altitude of 15° . This was replaced shortly afterwards by a series of flashes and luminous masses chiefly in the North, apparent motion of the flashes to the westward. Temperature -33° . Barometer 29.35 inches, stationary. Wind S.S.W. 1. Clouds cum. 4.

December 22nd. Lieut. Parr. *Floeberg Beach*.—10 p.m. A slight aurora.

December 23rd. Lieut. Parr. *Floeberg Beach*.—6 p.m. A slight aurora.

December 24th. Register. *Discovery Bay*.—At 9 a.m., an aurora in the form of an arch passing through the zenith from S.S.E. to N.N.W. of a pale white colour. It lasted ten minutes and then gradually disappeared. The weather was rather thick at the time. Temperature -37° . Barometer 29.55 inches. Calm. b. c. m. Clouds cr. 2.

December 26th. Register. *Discovery Bay*.—6 p.m. A faint aurora was observed from N.E. to West. Temperature -45° . Barometer 29.69 inches. Weather calm. b. No clouds.

December 29th. Register. *Discovery Bay*.—6.15 p.m. A very faint aurora was observed from E.S.E. to W.N.W. Temperature -26° . Barometer 29.21 inches. Calm. No clouds.

December 31st. Lieut. Aldrich. *Floeberg Beach*.—4 p.m. A very faint aurora visible from N.E. to West.

JANUARY 1876.

Between the 4th and the 14th the moon remained above both horizons and prevented any aurora display being distinguished.

January 1st. Lieut. Aldrich. *Floeberg Beach*.—5 p.m. A slight aurora towards the S.W. 11 p.m. A slight aurora.

January 2nd. Lieut. Parr. *Floeberg Beach*.—9 p.m. Streams of aurora. Stars shining brightly.

Register. *Discovery Bay*.—9 p.m. Observed an aurora like a pale band of light in the form of an arch whose centre was on the true meridian and 15° from the zenith. It shortly afterwards broke up into feathered edges, their direction being a little to the eastward of the zenith. The arch grew fainter and shifted to the eastward of the meridian four points; the left extremity of the arch faded away, and the right assumed the shape of the folds of a curtain doubled over. *Vide diagram*. The weather was clear and calm. The display lasted upwards of 30 minutes.

A spectroscope, one of Browning's 8-in. direct vision, was directed towards the aurora, but the light was not sufficient to give any spectrum.

The temperature was -39° . Barometer 29.56 inches. No wind. Clouds stratus 2. Eight meteors were observed during the time the aurora was visible.

January 17th. Register. *Discovery Bay*.—9.25 a.m. A few streams were observed above the hills to N.N.E.; they were very faint. Temperature -46° . Barometer 30.11 inches. Wind S.E. by E. 2. b. c. Clouds cr. 3.

January 18th. Lieut. Aldrich. *Floeberg Beach*.—8.40 p.m. Aurora visible from E.S.E. to N.N.W. Stars very bright. Temperature -24° . 10.5 p.m. Aurora visible from S.S.E. to N.N.W.

Register. *Discovery Bay*.—10.15 p.m. Observed a faint aurora in the form of an arch of a very pale colour, passing through the zenith from S.S.E. to N.N.W. There was also a faint glow over Bellot Island to the S.E. by South having an altitude of about 15° . Temperature -50° . Barometer 30.08 inches. No wind or clouds.

January 20th. Lieut. Aldrich. *Floeberg Beach*.—2 a.m. A slight aurora to the S.S.E.

January 23rd. Meteorological Register. *Floeberg Beach*.—7.55 a.m. A slight appearance of aurora N.N.W. 2 p.m. A faint streak of aurora. A few stars visible. Temperature -50° . Barometer 29.13 inches, steady. Calm weather. Clouds str. 7.

Register. *Discovery Bay*.—8.45 p.m. Observed a faint aurora from N.W. to S.E. across the sky in detached masses, soon passing away. Temperature -56° . Barometer 29.13 inches. Calm weather, 6. No clouds.

January 24th. Lieut. Parr. *Floeberg Beach*.—5 p.m. Slight flash of aurora N.N.W.

Meteorological Register. *Floeberg Beach*.—11.15 p.m. Faint aurora North to South. Temperature -42° . Wind squally from S.W. 2 to 4. No clouds. Barometer 29.18 inches, steady.

January 27th. Meteorological Register. *Floeberg Beach*.—2 a.m. Aurora faintly visible to the S.W. Stars bright. 3 a.m. Aurora disappeared. 3.45. Aurora visible, faint, to the westward. Temperature -40° . Barometer 29.64 inches, falling slightly. Wind N.W. 4. Clear sky.

Register. *Discovery Bay*.—At 1 a.m. observed a faint aurora in the form of a double arch, running N.N.E. and S.S.W. They were very faint and indistinct, and lasted for three hours. Temperature -48° . Barometer 29.52 inches. No wind. b.c. Clouds stratus 4. 8.30 p.m. Observed a very faint aurora from the zenith to N.W. The temperature was -49° . Barometer 29.49 inches. No wind. b. No clouds.

January 28th. Meteorological Register. *Floeberg Beach*.—7.30 p.m. Faint flashes of aurora visible, to the E. and N.E. 9 p.m. Faint ray of aurora, S.S.W. Calm weather. Stars very bright. No clouds. Temperature -42° . Barometer 29.82 inches, rising slightly.

Register. *Discovery Bay*.—7.20 p.m. Observed a faint aurora in N.E., streamers reaching to the zenith. Temperature -56° . Barometer 29.80 inches. No wind. b.c. Clouds stratus 2. From 8.30 to 10.30 p.m. Very faint aurora in detached masses in all parts of the heavens.

January 30th. Lieut. Aldrich. *Floeberg Beach*.—8 p.m. A streak of aurora from N.W. to about N.E., passing through the zenith. No colours visible. Temperature -39° . Barometer 29.63 inches, falling slowly. Calm weather. No clouds.

Register. *Discovery Bay*.—7.50 p.m. Observed a very faint aurora in the form of an arch, similar to the one observed on the 2nd instant at 9.30 p.m., but not so brilliant. It lasted till 9 p.m., varying slightly in form, and increasing and decreasing in brilliancy. Temperature -44° . Barometer 29.65 inches, falling. Weather calm, with no clouds. Stars shining brightly.

January 31. Register. *Discovery Bay*.—8.25 a.m. and 5.30 p.m. Very faint aurora to the N.E. and W. by N. Very faint streams. Temperature -39° . Barometer 29.42 inches. No wind. b. m. No clouds.

Meteorological Register. *Floeberg Beach*.—8 to 8.30 a.m. A flash of aurora rising in the W.N.W., and passing towards the N.E. No colours visible. Temperature -40° . Barometer 29.52 inches, steady. Light north-westerly air. Clouds stratus 3. 7.30 p.m. A streak of aurora W.N.W. to E.S.E. Temperature -43° . Barometer 29.49 inches, steady. Calm weather: Clouds cumulus 1. Stars shining brightly.

FEBRUARY 1876.

After the 5th the returning twilight was too powerful at noon to allow aurora display to be distinguished. On the 18th bright twilight lasted from 9 a.m. to 3 p.m. After the 27th the moon remained above both horizons.

February 3rd. Lieut. Aldrich. *Floeberg Beach*.—10 p.m. Slight flash of aurora. Stars shining brightly. Light air from S.S.W. No clouds. Temperature -26° . Barometer 30.30 inches, steady. At 3 a.m., with a falling barometer, a strong gale set in from the N.W.

February 11th. Register. *Discovery Bay*.—11 p.m. A very faint aurora from South to North was observed. Temperature -41° . Barometer 30.11 inches, rising rapidly. Wind South 1. Weather b. c. Clouds stratus 6.

February 13th. Lieut. Aldrich. *Floeberg Beach*.—11 p.m. Flashes of aurora S.E. Weather foggy towards the North. No wind. Clouds cumulus stratus 3. Temperature -48° . Barometer 30.49 inches, stationary.

February 14. Register. *Discovery Bay*.—At 2 a.m. a faint aurora passing across the heavens from S.E. to S.W. was observed, like an arch of a pale colour. It lasted only a short time, and was very indistinct. Temperature -47° . Barometer 30.44 inches. No wind or clouds.

Lieut. Aldrich. *Floeberg Beach*.—2 a.m. A faint aurora towards the S.W. Weather calm. Cumulus stratus clouds 3. Temperature -46° . 8 p.m. Faint flashes of aurora in the East and S.W.

Lieut. Aldrich and Lieut. Parr. *Floeberg Beach*.—11.50 p.m. A moderately bright arch of aurora extended from due North to about S.S.W., where it terminated close down to the horizon in a crook turned to the eastward (Fig. 1). In a few moments a streamer flashed from the end of the crook parallel to the first and right across the heavens, its edges being quite sharp and parallel to each other (Fig. 2). A third streamer shot up a minute afterwards, but did not extend more than 80° upwards (Fig. 3). The streamers were visible for a very short time, the first remaining longest. The second named arch gradually faded away till within a few degrees of the S.S.W. horizon, and (still being a continuation of the crook) bent round to the eastward, and towards the horizon, going on to what was left of the stump of the third arc (Fig. 4). A lateral motion to the eastward now began, the whole body gradually turning round until it disappeared about due South, its last appearance being as (Fig. 5). Stars were visible through it at its brightest, but not very distinctly. This is the most intense and variegated aurora we have experienced, but scarcely any colours were to be seen. Temperature -51° . Barometer 30.43 inches, stationary. Calm weather. Clouds cumulus 1. Preceded and followed by calm weather.

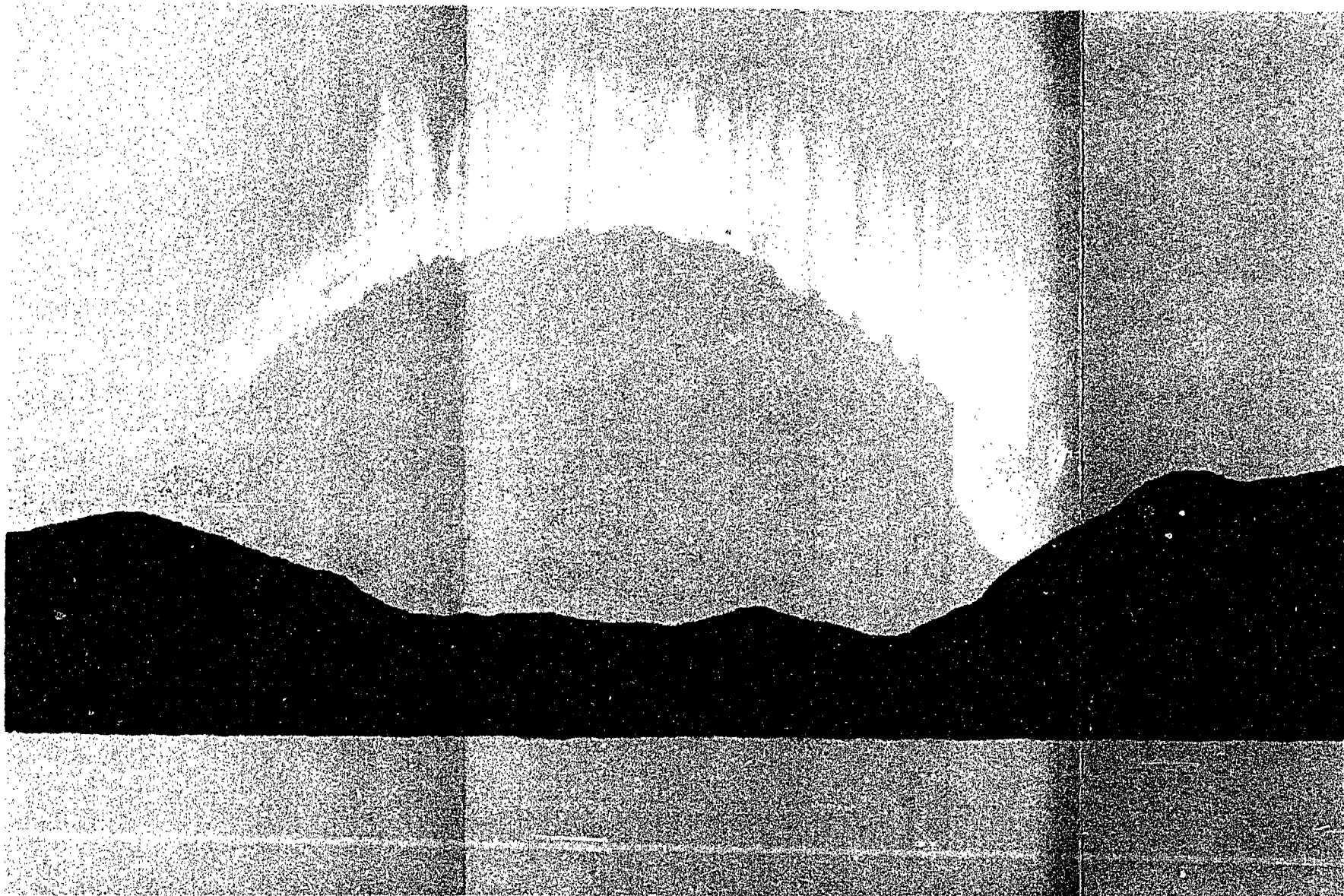
Meteorological Register. *Discovery Bay*.—9.15 p.m. An aurora was observed to the southward, spreading out like a fan in separate ways. It was faint. A few cirro-stratus clouds were visible, apparently between the observer and the aurora. It lasted about 40 minutes, and then gradually faded away. Temperature -47° . Barometer 30.51 inches, stationary. No wind. Clouds cirro-stratus 4.

February 19th. Meteorological Report. *Discovery Bay*.—9.45 p.m. An aurora like a fluted arch with rays flashing towards the Pole was observed spanning the hills from the South to the East. The direction of the lines of light from all parts of the arch was towards the zenith. Above the arch a pale band of colour appeared, like a secondary arch above the other. It appeared very much as if it was caused by the reflected light of the aurora. The aurora was bright for a few seconds, and then gradually died away. It lasted altogether about 30 minutes. See diagram. The centre of the arch bore S.E., having an altitude of about 30° . The secondary arch was about 15° above the former. Both arches were of a pale light colour, the upper one very faint. Temperature -34° . Barometer 29.87 inches, rising rapidly. Weather calm. Misty. No clouds.

Lieut. Parr. *Floeberg Beach*.—An aurora appeared shortly after 11.0 p.m., consisting of bright arch, whose centre bore about E.S.E., and had an altitude of about 5° , with a second broader and fainter arch about 7° above the first. These arches maintained their altitudes, the upper one at about the same intensity, but that of the lower one varied considerably. It would gradually brighten up, then send streamers up to the second, then break up into light patches, and gradually fade away. This happened three or four times during the 40 minutes that the display lasted. At times streamers would come up from the horizon to the lower arch, for it was a splendidly clear night, and seemed to brighten it up, but none of them extended beyond it. Neither did the streamers from the lower arch extend beyond the upper one. It was slightly green in colour when brightest, and the citron line was well defined, but no others were visible. Temperature -46° . Barometer 29.95 inches, steady. Weather calm. Cumulus clouds 4. Misty.

February 20th. Meteorological Register. *Floeberg Beach*.—2 a.m. A faint aurora, forming an arch along the eastern horizon. 2.30 a.m. Aurora visible to the S.W. Stars shining brightly. Light S.W. wind. No clouds. Temperature -44° . Barometer 29.99 inches, rising slowly.

Meteorological Report. *Discovery Bay*.—2.30 a.m. A very faint aurora was observed from North to South, very indistinct. Temperature -45° . Barometer 30.01 inches, rising slowly. Wind N.Ely. 2: b. c. Clouds cirrus 2.

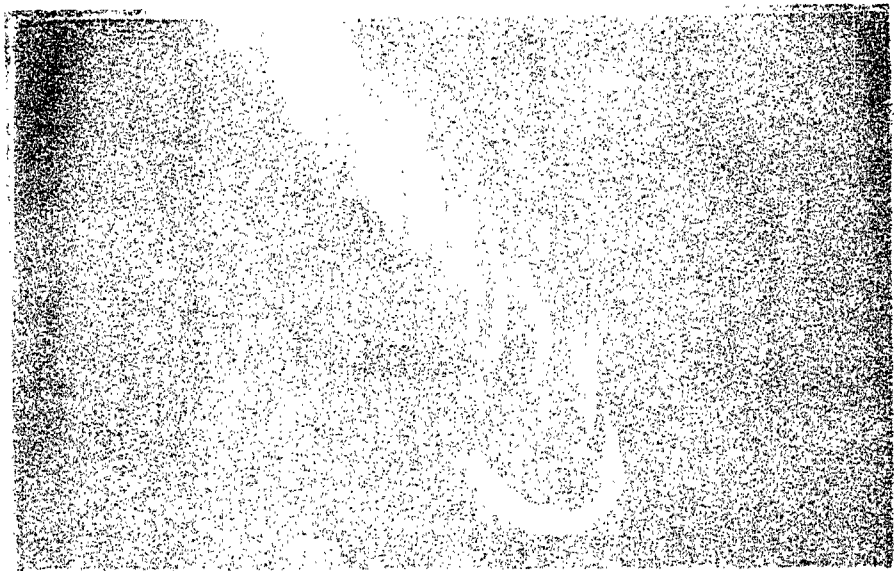


F. Dunsterfield del. London

AURORA.

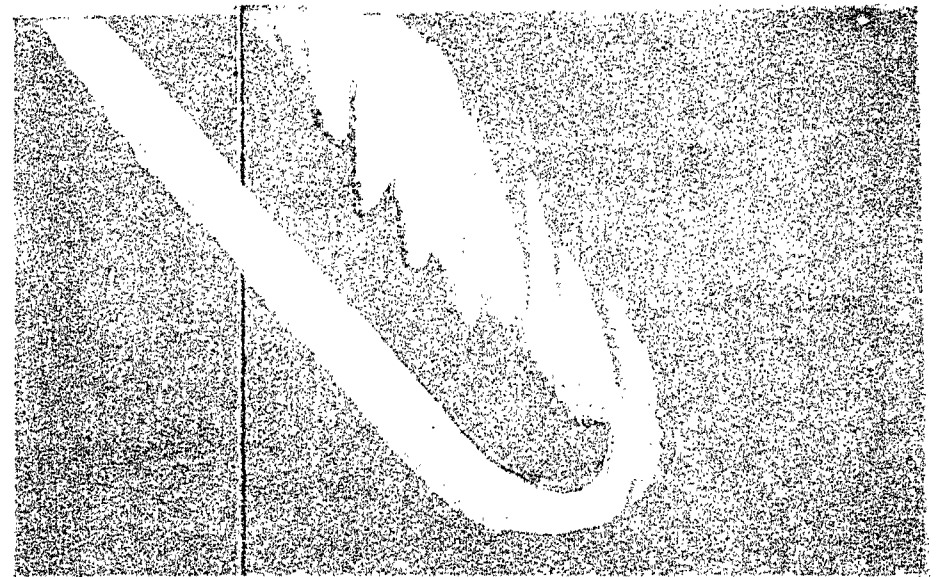
OBSERVED 9.30 P.M. JANUARY 2ND 1876.

C. Combeate.



N^o 1. IN THE S. S. W.

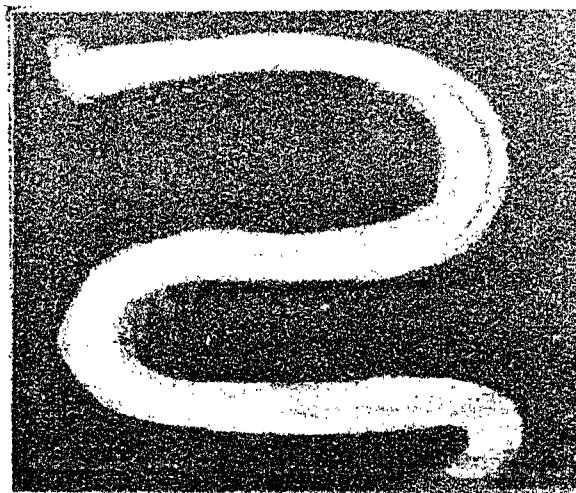
DIFFERENT APPEARANCES
OF THE AURORA ON
FEBRUARY 14TH 1876.
ABOUT MIDNIGHT.
P. Aldrich.



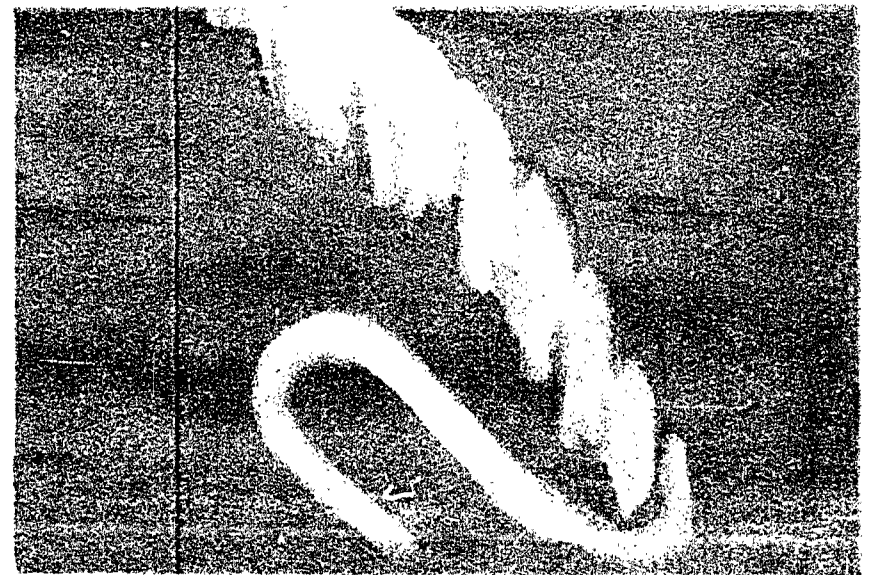
N^o 2. IN THE S. S. W.



N^o 3. IN THE S. S. W.

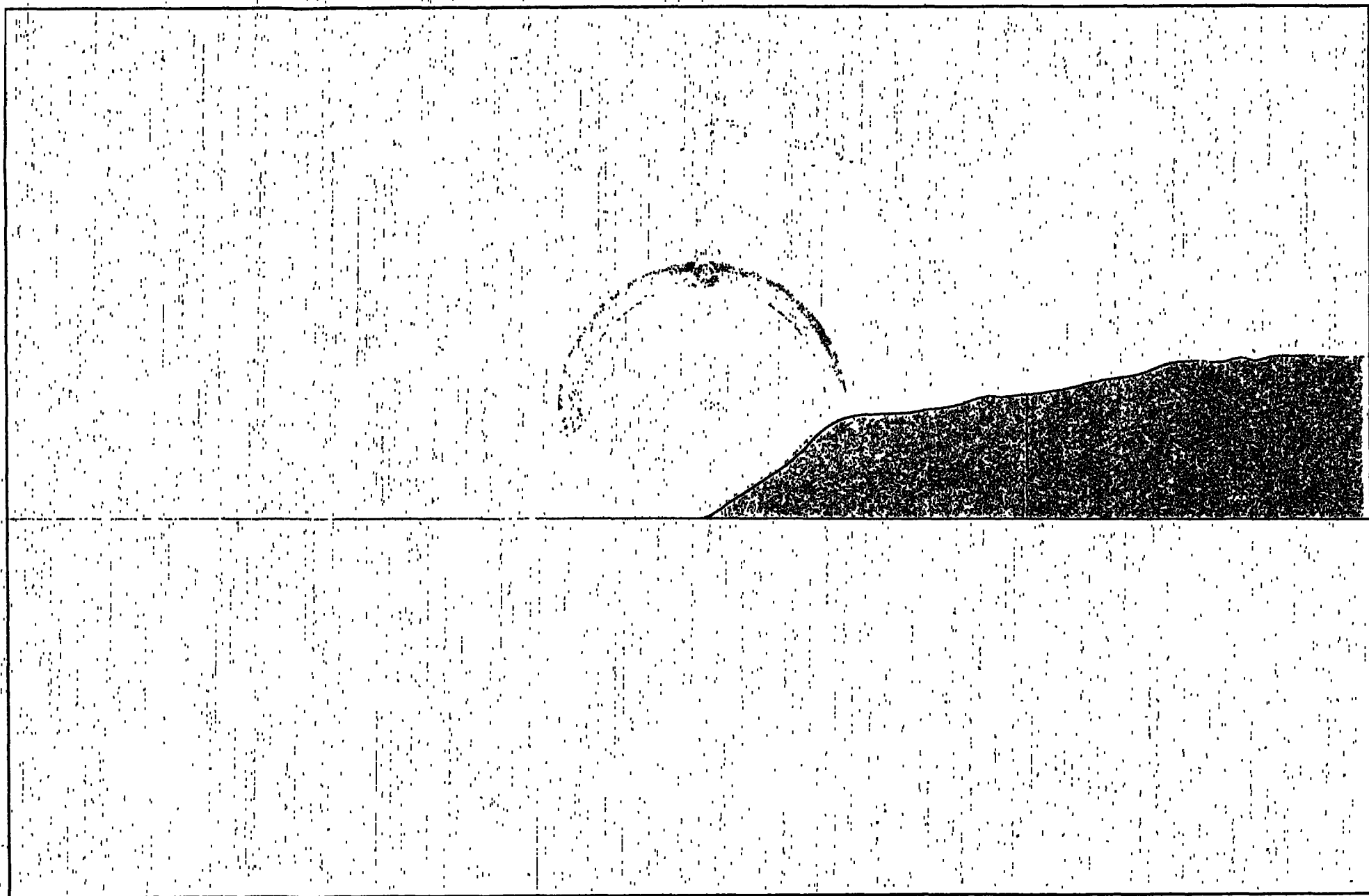


N^o 5. SOUTH.



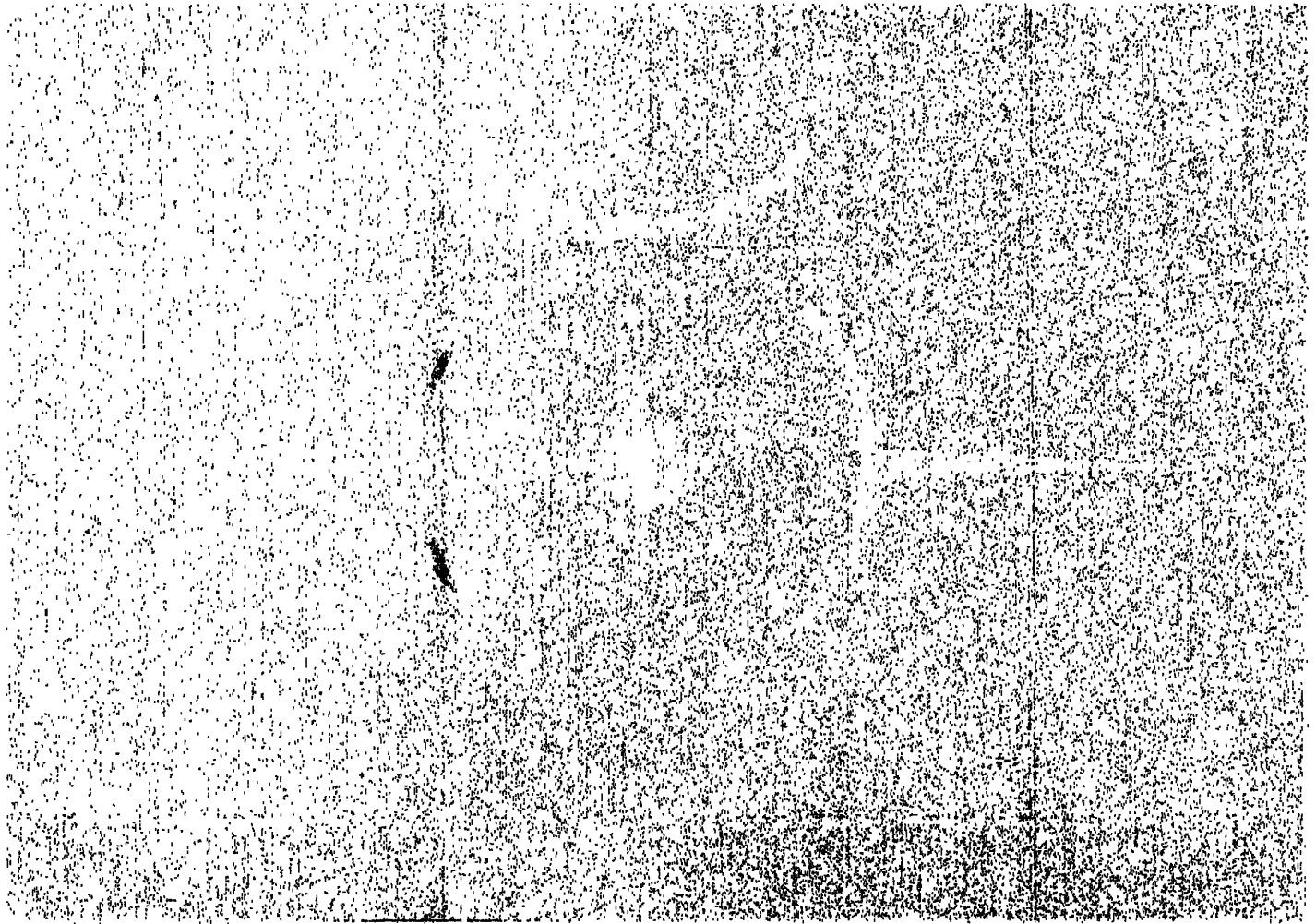
N^o 4. IN THE S. S. W.

F. Dangerfield, Lith. London.



F. Dangerfield, Lith. London

SOLAR PHENOMENON.
OBSERVED 10 A.M. 24TH SEPTEMBER 1875.

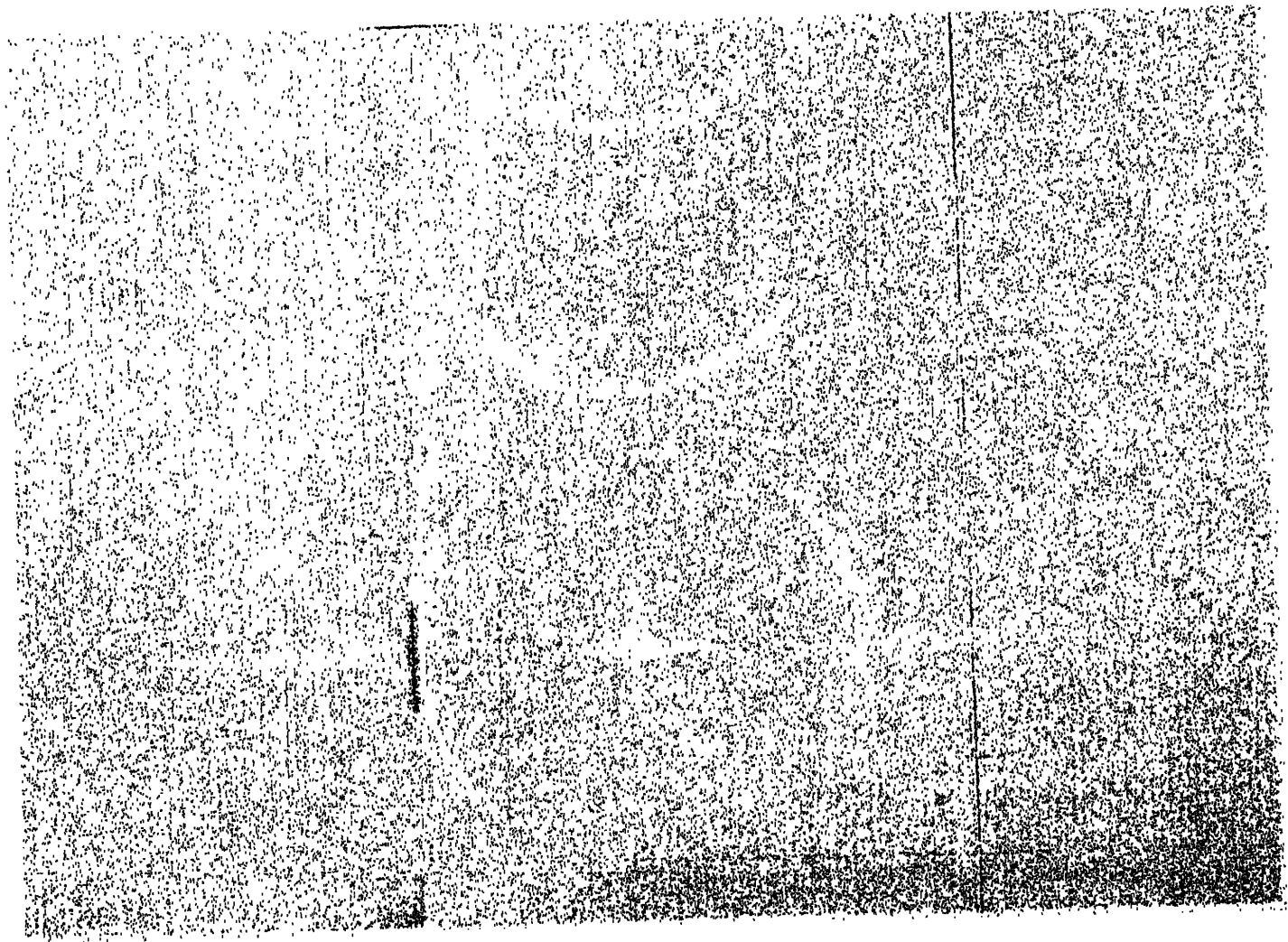


F. H. Newfield, Lith. London

LUNAR PHENOMENON.

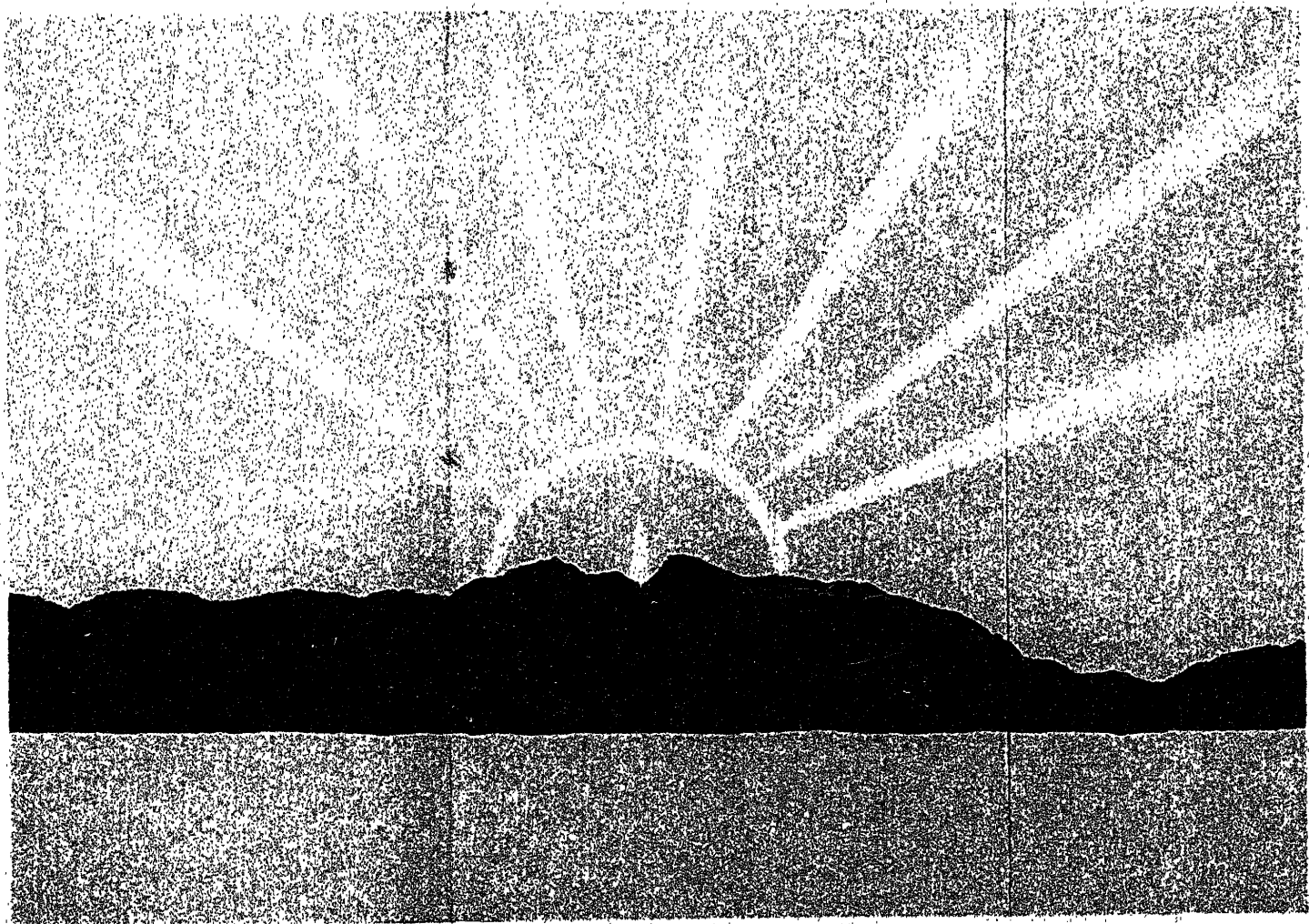
OBSERVED AT 4 P.M. 13TH NOV^R 1875.

C. J. M. Combe.



F. Duggerfield, with London

LUNAR PHENOMENON.
OBSERVED 9TH DECEMBER 1875.
C. V. M. Conybeare.



L. Thompson, 1876, Jan 13th

LUNAR PHENOMENON
OBS'D 5 10 P.M. 13TH JANUARY 1876
C. S. M. Combe, etc.



F. Dingyfield, Lith. London.

LUNAR PHENOMENON.
OBSERVED 9:15 A.M. 14TH JANUARY 1876.
C. J. M. Conybeare.

February 24th. *Discovery Bay*.—At midnight a very faint indistinct aurora from North to South was observed. Temperature 22° . Barometer 29.99 inches, steady. No wind. No clouds. Bright sky.

February 26th. Meteorological Register. *Floeberg Beach*.—10 p.m. Faint flash of aurora to the southward. 11 p.m. Faint flash of aurora to the eastward. Temperature -24° . Barometer 30.11 inches. Falling slowly. Light southerly wind. Misty. At 3 a.m. a S.S.W. squall, force 5, was experienced.

MARCH.

The moonlight prevented any aurora display being seen previous to the 10th, by which date the returning sunlight was too powerful, except between 9 p.m. and 3 a.m.

After the 23rd, it was so light at midnight that no aurora could have been distinguished.

A Report to the Hydrographer of the Admiralty, on the Results of the Magnetical Observations made by the Officers of the Arctic Expedition, 1875-1876, by Staff-Commander E.W. Creak, attached to the Admiralty Compass Department.

The Government having decided to despatch an Arctic Expedition in the spring of 1875, the Secretary of the Admiralty, in a letter dated 4th December 1874, invited the President and Council of the Royal Society to offer suggestions "in regard to carrying out the scientific conduct of the voyage."

Professor J. C. Adams, Lowndes Professor, Cambridge University, and Captain F. J. Evans, R.N., the Hydrographer of the Admiralty, were deputed by a committee of that body to prepare a Memorandum on the existing knowledge of the distribution of the magnetic elements in Arctic latitudes, together with instructions for the observers of the coming Expedition. The equipment of instruments was also to be arranged by them.

This Memorandum was published in the "Arctic Manual and Instructions" of 1875, accompanied by charts of the three magnetic elements, representing graphically the first-mentioned object of the Memorandum.

It having been directed that the two ships of the Expedition, the "Alert" and the "Discovery," should winter at different stations, a complete set of instruments was prepared for each vessel. They comprised the following:—

1. A portable unifilar magnetometer, for determining the absolute horizontal force at a fixed station.
2. A Barrow's circle, for determining the inclination; also fitted with Dr. Lloyd's needles, for determining the total force.
3. A specially constructed azimuth compass with levels and adjusting foot-screws, for determining the absolute declination.
4. A portable declination magnetometer, for differential observations at a fixed station.
5. Mr. Fox's apparatus, for observing the inclination and intensity in sledging or travelling parties.
6. Four three-inch prismatic azimuth compasses, for observing the declination when travelling, also seven sledge compasses for steering purposes, all specially fitted for Arctic service.

The complement of officers having been appointed to the Arctic ships, the following were selected for carrying out the magnetical observations:

H.M.S. Alert	}	Commander Albert H. Markham.
		Lieutenant George A. Giffard.
H.M.S. Discovery	}	Lieutenant Robert H. Archer.
		Lieutenant Reginald B. Fulford.

These officers were instructed in elementary magnetism, and in the use of Barrow's circle with its Lloyd's needles and Mr. Fox's apparatus, at the Hydrographic Department of the Admiralty by Staff-Commander E. W. Creak. Instruction in the use of the unifilar horizontal force and in the differential declination magnetometers was given by Mr. Whipple, at Kew Observatory. At this observatory the base observations were made and the constants of the several magnetical instruments determined, with the

exception of the compasses, which were, as usual, furnished directly from the Admiralty Compass Observatory at Deptford.

No arrangements were made for observations at sea, the Committee having decided to direct the attention of observers solely to those made on land or fixed ice.

With complete sets of instruments, and the observing officers familiar with the use of them, the "Alert" and "Discovery" left Portsmouth on the 29th May 1875.

The first magnetic observations made were those at Godhavn in Disko, where considerable differences were found in the values of the declination and inclination at various stations round the harbour, evidently caused by local magnetic disturbance.

Proceeding northward to winter quarters a few results in declination were obtained at intermediate stations.

On the 1st September 1875 the "Alert" reached her winter quarters at Floeberg Beach, in latitude $82^{\circ} 27' N.$ longitude $61^{\circ} 22' W.$ By the end of October the magnetic observatory was completed. It was situated on a slope of the hill adjoining the ship, and constructed entirely of snow. Entering by a doorway 200 yards from the ship, one branch to the right led to the horizontal force magnetometer and Barrow's circle houses, the other on the left, to the differential magnetometer house. These three houses were from 9 to 11 feet in diameter and $10\frac{1}{2}$ feet high, with a snow pedestal, 2 feet in diameter, and $3\frac{1}{2}$ feet high in the centre, upon which the instruments were mounted. The houses of the two absolute instruments lay in a north and south direction (true), 27 feet apart.

No stove was used, the object being to avoid rapid changes of temperature. The extreme range of the thermometer registered was from -10° to $+4^{\circ}$.

Here the series of observations, the results of which are given in the succeeding pages, were made during the winter. The following are the mean values of the several elements:—

Absolute declination	-	-	-	$97^{\circ} 57' W.$	
„ inclination	-	-	-	$84^{\circ} 42' N.$	
„ horizontal force (unifilar)	-	-	1.137	-	Total force = 12.309
Total force (Lloyd's needles)	-	-	-	-	= 12.258
Horizontal force (ditto)	-	-	1.134		

In his sledging journey to the extreme northerly position attained in the expedition (Lat. $83^{\circ} 20' 26'' N.$) Commander Markham made observations of the declination, and with the Fox circle.

The "Discovery" took up winter quarters at Discovery Bay, 53 miles S.W. of the "Alert," in lat. $81^{\circ} 44' N.$, long. $65^{\circ} 3' W.$, on the 26th August 1875.

By the 10th September 1875 the observatory house was completed. It was constructed of wood, with copper fastenings, 12 feet long, 7 feet broad, and 6 feet high, fixed at a distance of 197 yards from the ship. A copper stove warmed the building. The pedestals were formed of the ship's binnacles sunk into the ground, a covering of wood with radial copper grooves fitted to them. These were found to be very firm.

For the differential declination magnetometer an ice house was built 90 yards from the ship, dimensions, 7 feet long, $3\frac{1}{2}$ broad, and 6 feet high. By the evening of the 22nd October, after much care and trouble, the instrument was frozen to the pillars, and on the 23rd the observations were commenced and continued with only one important interruption of two days until the 29th of March.

The mean value of the several elements obtained at this station, of which the various details are recorded in the tables, are—

Absolute declination	-	-	-	$101^{\circ} 44' W.$	
„ inclination	-	-	-	$84^{\circ} 50' N.$	
„ horizontal force (unifilar)	-	-	1.131	-	Total force = 12.559
Total force (Lloyd's needles)	-	-	-	-	= 12.225
Horizontal force (ditto)	-	-	1.107		

One of the chief subjects of interest in the magnetical results of the observations at the winter quarters observatories is that of the diurnal variation of the declination, and frequent magnetic disturbances, the latter especially, as the ships wintered in a region remarkable as it proved for an absence of brilliant auroras, and in which no connexion was observed between the appearances of that phenomenon and movements of the declinometer magnet.

To follow up this remarkable feature, and in order to render the results of these observations directly comparable with other series obtained at stations on the North

American Continent, the forms of the several tables in this discussion have been assimilated to those adopted by Captain (now General Sir J. H.) Lefroy, in the published volume of his "Magnetical and Meteorological Observations at Lake Athabasca, &c." * Tables of a similar character are given by Mr. A. Schott in his discussion of Dr. Kane's observations at Van Rensselaer Harbour, † and thus the results at three stations in the neighbourhood of Smith's Sound may be readily compared.

The greatest range of the declination was observed on the 19th February 1876, about the same hours, at Floeberg Beach and Discovery Bay, reaching $5^{\circ} 9' 4''$ and $5^{\circ} 47' 9''$ respectively. The smallest range was observed on the 12th January, when only $0^{\circ} 4'$ was recorded at the first-named station, and $0^{\circ} 6' 9''$ at the last. On an average, about every eighth day the higher values of the daily range were attained, and comparing the highest with the lowest scale reading during the whole period, it shows that the magnet moved over 8° of arc.

The hours of the greatest easterly and westerly deflection of the declinometer magnet in its mean daily departure from the normal, differed considerably from those of the middle northern latitudes, where 8 a.m. and 1 to 2 p.m. are the well-established hours.

At Discovery Bay, when the disturbances are retained, the mean time of the greatest easterly deflection is 11 p.m., the greatest westerly deflection at 10 a.m. After rejecting assumed disturbances the extremes are reached an hour later or at midnight and 11 a.m. At Van Rensselaer Harbour, when the disturbances are eliminated, the extreme easterly deflection occurred at 2 a.m., the westerly at 1 p.m.

The method of eliminating disturbances adopted in the discussion of these observations, has been to select certain days of principal disturbance, and to reject the observations of the whole of such days from the mean. But an adopted method, which consists in deciding upon a separating value and rejecting all hourly observations exceeding that value, may also be said to have been satisfied, for out of 2,088 hourly scale readings at Discovery Bay, all those that exceeded the mean hourly value for the whole month by $30'$ of arc have been rejected, with the exception of 15 which differed $40'$ of arc.

A separating value of $30'$ at a station where the absolute horizontal force is 1.13, and the inclination $84^{\circ} 50'$, may be considered sufficient, when compared with those adopted by Sir Edward Sabine, viz., at Point Barrow, $22^{\circ} 87'$, with a horizontal force equal 1.88, and dip $=81^{\circ} 36'$, at Port Kennedy, $70'$, with horizontal force equal 0.35, and dip $=88^{\circ} 27'$. ‡

Before proceeding further with the question of disturbances, it may be remarked that it is difficult to fix upon any given day as free from disturbance. At Discovery Bay, for example, there is not a single day on which it may be said that the magnet moved progressively towards its extreme points of deflection without disturbance, during some hours of the twenty-four.

The erection of the declinometer houses of both ships on the ice floe (which rose and fell with the tide), renders the observed motions of the magnet open to the suspicion of disturbances other than those produced by magnetical causes. In the case of the "Discovery," comparisons were made between the declinometer on the floe and the unifilar magnetometer on shore during times of disturbances, and the magnets moved alike, with two exceptions. On February 2nd, the magnet on shore was much disturbed, that on the ice very steady; at midnight of February 28th, the reverse took place, the declinometer being disturbed in a peculiar manner, whilst the unifilar magnetometer remained nearly steady.

An analysis of the disturbances at Discovery Bay, is given in the discussion of the observations made by the officers of the "Discovery." The salient points of this analysis are,—that the disturbances were continuous—that the easterly disturbances prevailed over the westerly during the night from 7 p.m. to 7 a.m., and that the westerly predominated during the remaining hours of the day. Also, that the period of least disturbance occurred about the time of the solstice, and the greatest about the equinox.

Beyond this, there is what may be termed their semi-American, semi-Asiatic character. At Peking, Nertschinsk, and Discovery Bay the aggregate values of the westerly deflections decidedly predominate, the contrary obtains in America. In North America "the conical form (of the curves) characterizes the easterly deflections." The same occurs at Discovery Bay, but the double maximum—which is observed in the easterly deflections at Peking and Nertschinsk, and the westerly in North America—is common to both easterly and westerly deflections.

Of magnetic storms, the most remarkable observed were those of the 19th February 1876, and of the 25th to the 26th March. Although there is not complete evidence to indicate the exact time of these and other storms commencing and ending, yet suffi-

* See Section I. (Magnetic Declination) and "Irregular Fluctuations," &c., pages 74-75 of that work.

† See Smithsonian Contributions to Knowledge, Vol. X., 1858.

‡ See Phil. Trans., 1863, p. 656.

cient is known to show that they lasted through the same absolute hours at Kew and Discovery Bay. The direction of the deflections of the magnets was often opposite at the two stations, and in the March storm, whilst there was a continuous pull to the westward at the high northern station, at Kew easterly deflections were frequent.

Reference has been made to the charts of lines of equal declination, inclination, and horizontal force in Arctic latitudes, (prepared in the Hydrographical Department of the Admiralty,) published in the "Arctic Manual," 1875.

In their preparation the lines about Smith's Sound were for the most part drawn from the observations of Drs. Kane and Hayes, in the American Expeditions of 1853-1861. Although so many years have elapsed, little or no modification is required in the direction of the lines by the observations of 1875-76, this points to the important fact of the magnetic elements in this part of the world undergoing at present no secular change.

The numbers of results from the observations made during the voyage are—

"Alert"	}	Absolute declination	-	-	-	17
		" inclination	-	-	-	32
		" horizontal force	-	-	-	12
		Total force (Lloyd's needles)	-	-	-	25
		" Fox circles	-	-	-	1
"Discovery"	}	Inclination	-	-	-	6
		Absolute declination	-	-	-	34
		" inclination	-	-	-	54
		" horizontal force	-	-	-	13
		Total force (Lloyd's needles)	-	-	-	19
		" Fox circles	-	-	-	1
		Inclination	-	-	-	3

On the return of the Expedition on the 27th October 1876, the magnetical instruments were examined at the respective observatories as before starting.

In the following pages 123-129 "Alert," and 130-145 "Discovery," will be found abstracts of the whole of the magnetical results obtained in the Expedition.

As the instruments furnished to the Arctic ships for observing the magnetic elements were designed with the view of obviating some of the difficulties attending the use of instruments of the ordinary construction under the conditions of an Arctic climate, a short description is here given.

For declination or variation of the compass.—A compass with bowl of pure copper fitted with levels, and supported by foot-screws which rested on a suitable table and tripod. Azimuth circle of the same construction as the Admiralty standard compass. The magnetic needles were arranged on a brass frame as in the Admiralty standard compass, but the graduated card was dispensed with, and a light aluminium ring graduated to 360°, and each degree again divided into parts of 20' was added. The cap was also of aluminium. This compass is the shore azimuth compass of the text.

Differential declination magnetometer.—The chief peculiarity of this instrument was the size of the scale, which was graduated to record a range of 10° of the magnet (5° on either side of zero). The thumb-pieces of the levelling screws were of ivory, and a fixed mirror was added to the magnet box so as to avoid the loss of the zero at any time. The too near approach of an observer with possible magnetic substances on his person was provided against by arranging the focus of the observing telescope so as to ensure a sufficiently safe distance from the suspended magnet.

For inclination or dip, and total force.—The dip circles were of the ordinary construction known as "Barrow's Dip Circles." These were also fitted with Dr. Lloyd's needles for observing the total force, and deflection bars for ascertaining the distribution of the magnetism in the needles, with a view to rendering the results independently absolute.

For absolute horizontal force.—In the unifilar magnetometers there were considerable modifications of the ordinary form in order to simplify the work of observing. The usual copper box was dispensed with, and the mahogany box sufficed for both deflections and vibrations. The glass suspension tube was replaced by one of metal surmounted by a large torsion circle. All portions of the instrument likely to be frequently touched, such as screws and clamps, were ebonite.

Dip and intensity apparatus (by Mr. R. W. Fox, F.R.S.)—These were of the usual construction, but of a smaller and lighter pattern, for convenience in sledge travelling. Mr. Fox took the greatest interest in the construction of some of those furnished to the Expedition.

H.M.S. ALERT.

ABSTRACT OF DECLINATION OBSERVATIONS WITH SHORE AZIMUTH COMPASS, No. 1.

GODHAVN, DISKO.			
1875,	9 July	- 7.0 P.M.	- (Flagstaff) Lat. 69° 13' 56" N. Long. 53° 42' W. 67 12.8 W.
"	13 "	- - -	- (Maddougall Island) - - - 68 7.9 "
RITENBENK.			
"	16 July	- 6.40 P.M.	- Lat. 69° 45' 23" N. Long. 51° 7' 45" W. - 69 8.5 "
PROVEN.*			
"	21 "	- 4.20 P.M.	- Lat. 72° 22' N. Long. 55° 45' W. - - 75 32.0 "
EAST CAREY ISLANDS.			
"	27 "	- 8.40 A.M.	- Lat. 76° 42' N. Long. 72° 25' W. - - 105 20.7 "
PORT FOULKE.			
"	28 "	- 5.40 P.M.	- Reindeer Point - - - - 110 4.0 "
			- Lat. 78° 19' N. Long. 72° 55½' W.
ON ICE OFF EAST CAPE OF PIERCE FRANKLIN BAY.			
"	9 Aug.	- 5.40 P.M.	- Lat. 79° 25' N. Long. 75° 3' 15" W. - 110 49.2 "
			- 109 14.5 "
"	11 "	- 6.15 P.M.	- - - - - 111 13.2 "
DOBBIN BAY.			
"	14 "	- 6.30 P.M.	- Lat. 79° 40' N. Long. 73° 6' 15" W. - - 107 25.2 "
ON ICE OFF HAYES POINT.			
"	16 "	- 10.40 A.M.	- Lat. 79° 36' N. Long. 72° 24' W. - - 111 23.0 "
WINTER QUARTERS OBSERVATORY.			
"	10 Sept.	- 10.5 A.M.	- Lat. 82° 27' 2" N. Long. 61° 22' W. - 98 16.9 "
"	" "	- 4.15 P.M.	- - - - - 97 57.5 "
"	" "	- 5.30 P.M.	- - - - - 97 48.0 "
"	December mean from Declinometer		- - - - - 97 46.6 "
1876,	January	" "	- - - - - 98 01.8 "
"	February	" "	- - - - - 97 51.7 "

ABSTRACT OF INCLINATION OBSERVATIONS WITH BARROW'S CIRCLE, No. 26.

KEW OBSERVATORY (Departure.)				67 47.54 N.	Needle 1
1875,	May	-	-		
GODHAVN, DISKO.					
"	10 July	- 4 P.M.	- Lat. 69° 13' 56" N. Long. 53° 42' W.	81 42.3	} 81 43.7 {
"	" "	- 5.30 P.M.	- " "	81 42.5	
"	12 "	- Noon	- " "	81 47.1	
"	" "	- 4 P.M.	- " "	81 42.9	
WINTER QUARTERS OBSERVATORY.					
"	2 Nov.	- 11.30 A.M.	- Lat. 82° 27' 02" N. Long. 61° 22' W.	84 41.2	} 84 43.4 {
"	6 "	- Noon	- " "	84 44.6	
"	12 "	- " "	- " "	84 44.4	
"	19 "	- " "	- " "	84 42.7	
"	26 "	- " "	- " "	84 45.9	
"	29 "	- " "	- " "	84 41.5	
"	3 Dec.	- " "	- " "	84 42.7	
"	10 "	- 11 A.M.	- " "	84 49.8	
"	" "	- 5 P.M.	- " "	84 49.6	
"	20 "	- 11 A.M.	- " "	84 38.8	
"	24 "	- " "	- " "	84 43.2	
"	31 "	- " "	- " "	84 41.4	
1876,	7 Jan.	- 11.30 A.M.	- " "	84 43.5	
"	17 "	- 9.30 A.M.	- " "	84 41.5	
"	21 "	- 9.45 A.M.	- " "	84 38.6	
"	" "	- 5.30 P.M.	- " "	84 38.5	
"	24 "	- 11.0 A.M.	- " "	84 36.7	
"	31 "	- 10.45 A.M.	- " "	84 44.0	
"	8 Feb.	- 11.0 A.M.	- " "	84 39.4	
"	16 "	- 10.45 A.M.	- " "	84 38.4	
"	21 "	- 10.30 A.M.	- " "	84 39.8	
"	1 March	- 10.45 A.M.	- " "	84 42.7	
"	7 "	- 10.30 A.M.	- " "	84 37.8	
"	14 "	- 11.0 A.M.	- " "	84 43.8	
"	" "	- 3.45 P.M.	- " "	84 35.3	
1877,	2 Feb.	- 2.30 P.M.	- KEW OBSERVATORY (Return)	67 43.9	" 1
"	13 "	- 11.30 A.M.	- KEW OBSERVATORY	67 44.2	" 1

* On a small hill just left of Flagstaff. A rock at the place where the variation was observed had the marks cut into it—

ABSTRACT OF VALUES OF ABSOLUTE HORIZONTAL FORCE. UNIFILAR BY ELLIOTT, No. 36.

					X.	m.
1875,	May	-	-	-	Kew Observatory (<i>Departure</i>)	- 3·8762
					WINTER QUARTERS OBSERVATORY.	
"	5 Nov.	-	10.30 A.M. to 1.30 P.M.	-	Lat. 82° 27' 02" N. Long. 61° 22' W.	- 1·135
"	16 "	-	11.15 A.M. to 1.15 P.M.	-	" "	- 1·131
"	14 Dec.	-	11.0 A.M. to 2.10 P.M.	-	" "	- 1·134
"	16 "	-	11.30 A.M. to 2.20 P.M.	-	" "	- 1·137
"	21 "	-	11.0 A.M. to 0.25 P.M.	-	" "	- 1·137
"	28 "	-	10.45 A.M. to 1.15 P.M.	-	" "	- 1·142
1876,	12 Jan.	-	9.45 A.M. to 1.50 P.M.	-	" "	- 1·140
"	7 Feb.	-	10.45 A.M. to 12.45 P.M.	-	" "	- 1·140
"	15 March	-	11.0 A.M. to	-	" "	- 1·140
1877,	31 Jan.	-	Noon to 1.15 P.M.	-	Kew Observatory (<i>Return</i>)	- 3·8886
"	"	"	2.0 P.M. to 3.0 P.M.	-	Kew Observatory	- 3·8873

Assuming the mean inclination = 84° 42' N. during the period when the horizontal force was observed as above, the total force = 12·309 at Winter Quarters Observatory. The values of *m*, or magnetic moment of the vibrating magnet, show a nearly constant result during the observations at Winter Quarters, a real change only taking place after their conclusion, as shown by the return observations at Kew Observatory.

ABSTRACT OF TOTAL FORCE RESULTS AS MADE WITH LLOYD'S NEEDLES. BARROW'S CIRCLE, No. 26.

1875,	12 July	-	2 P.M.	-	GODHAVN, DISKO (Flagstaff Station)	12·530	X = 1·805
					Lat. 69° 13' 56" N. Long. 53° 42' W.		
					WINTER QUARTERS OBSERVATORY.		
"	6 Nov.	-	1 P.M.	-	Lat. 82° 27' 02" N. Long. 61° 22' W.	12·213	1·119
"	12 "	-	1 to 2 P.M.	-	" "	12·191	1·117
"	19 "	-	1½ to 2¼ P.M.	-	" "	12·251	1·129
"	26 "	-	1¼ to 2½ P.M.	-	" "	12·304	1·122
"	29 "	-	"	-	" "	12·114	1·121
"	3 Dec.	-	1.30 P.M.	-	" "	12·054	1·110
"	10 "	-	"	-	" "	12·127	1·093
"	"	-	5.45 "	-	" "	12·188	1·099
"	20 "	-	1.0 P.M.	-	" "	12·310	1·148
"	24 "	-	"	-	" "	12·217	1·125
"	31 "	-	"	-	" "	12·292	1·137
1876,	7 Jan.	-	12.30 P.M.	-	" "	12·221	1·124
"	17 "	-	Noon	-	" "	12·302	1·138
"	21 "	-	"	-	" "	12·334	1·152
"	"	-	4.30 P.M.	-	" "	12·307	1·151
"	24 "	-	1.0 P.M.	-	" "	12·375	1·163
"	31 "	-	Noon	-	" "	12·279	1·127
"	8 Feb.	-	"	-	" "	12·206	1·137
"	15 "	-	1.15 P.M.	-	" "	12·281	1·146
"	21 "	-	11.30 A.M.	-	" "	12·294	1·143
"	1 March	-	1.30 P.M.	-	" "	12·291	1·132
"	7 "	-	1.0 P.M.	-	" "	12·338	1·154
"	14 "	-	12.15 P.M.	-	" "	12·230	1·123
"	"	-	5.30 P.M.	-	" "	12·405	1·170
1877,	6 Feb.	-	11.45 A.M.	-	Kew Observatory (<i>Return</i>)	10·273	3·891

In computing the horizontal from the total force, the values of the inclination have been taken from those observed at the time of the total force observations.

ABSTRACT OF VALUES OF *P* OR CO-EFFICIENT OF MAGNETIC DISTRIBUTION. UNIFILAR, No. 36.

1875,	5 November	-	Winter Quarters Observatory, Distance	-	Feet.	<i>P</i> = -·0083
"	16 "	-	" "	-	1·1 to 1·3	= +·0178 Reject
"	23 "	-	" "	-	1·1 to 1·3	= -·0130
"	14 December	-	" "	-	1·1 to 1·3	= -·0331
"	16 "	-	" "	-	1·1 to 1·3	= -·0352
"	21 "	-	" "	-	1·1 to 1·3	= -·0339
"	28 "	-	" "	-	1·1 to 1·3	= -·0038
						<hr/> ·1273
						1st Mean = -·0212
1876,	12 January	-	" "	-	1·2 to 1·4	= -·0093
"	7 February	-	" "	-	1·2 to 1·4	= -·0201
"	15 March	-	" "	-	1·1 to 1·4	= -·0190
						<hr/> -·0484
						2nd Mean = -·0161
1877,	31 January	-	Kew Observatory (<i>Return</i>)	-	1·1 to 1·3	= +·0005 Reject
"	"	"	"	-	1·2 to 1·4	= -·0197

In the computation of the horizontal force, or X , the first mean has been used for observations in November and December, the second mean for the later months.

ABSTRACT OF VALUES OF LOG π^2k . UNIFILAR, No. 36.

1876, January	-	Winter Quarters Observatory	-	Temperature, Fahrenheit	4°	-	$\pi^2k = 1.66177$
1877, "	-	Kew Observatory (<i>Return</i>)	-	"	51°	-	" = 1.66085
" February	-	Kew Observatory	-	"	54°	-	" = 1.66074

ABSTRACT OF DECLINATION OBSERVATIONS MADE WITH SLEDGE AZIMUTH COMPASS.

1876, 6 May	-	Lat. 83° 16½' N. Long. 62° 40½' W.	-	102° W.
" 8 "	-	Lat. 83° 17½' N. Long. 62° 40½' W.	-	98° W.

ABSTRACT OF INCLINATION AND INTENSITY OBSERVATIONS MADE WITH FOX'S CIRCLES, No. 28.

Inclination.

1875, 9 to 13 July	-	Godhavn, Disko (Flagstaff Station)	-	Circle, No. 28	-	81 55 N.
		Lat. 69° 13' 56" N. Long. 53° 42' W.	-	" No. 2	-	81 44 "
" 16 July	-	Ritenbenk:				
		Lat. 69° 45' N. Long. 51° 08' W.	-	" No. 28	-	82 00 "
" 21 "	-	Proven:				
		Lat. 72° 22' N. Long. 55° 45' W.	-	" "	-	82 48 "
1876, 8 May	-	Northern Journey	-	" No. 2		
		Lat. 83° 17' N. Long. 62° 40' W.	-	" "	-	84 39 " Approximate
" 11 "	-	Lat. 83° 19' N. Long. 62° 39' W.	-	" "	-	85 20 " "

Intensity.

1875, 9 to 13 July	-	Godhavn, Disko (Flagstaff Station)	-	Circle, No. 28	-	12.561
		Lat. 69° 13' 56" N. Long. 53° 42' W.	-	" No. 2	-	12.578

RESULTS OF OBSERVATIONS MADE WITH THE DIFFERENTIAL DECLINATION MAGNETOMETER AT WINTER QUARTERS OBSERVATORY, FLOEBERG BEACH, 1875-76.

Lat. 82° 27' 2" N. Long. 61° 22' W.

Observations were commenced in November, but not in sufficiently connected numbers to give results. They were, however, resumed on the 7th December 1875, and the hourly series continued until the 18th, when an interval occurred. From the 6th to the 15th January, and from the 6th to the 22nd of February, the hourly series was continued, with the exception of an interval between midnight of the 8th January and 2 p.m. of the 10th, when a S.W. gale prevented communication with the observatory.

On days of magnetic disturbance special observations were made at frequent intervals, of which the following is a general description:—

1875, December 17, 18.—Great disturbance. Four readings of the scale per minute during intervals of 5 to 10 minutes were registered, both a.m. and p.m. each day.

1876, January 14, 18.—Disturbance. Quarter and half-minute observations, at intervals both a.m. and p.m.

" " 25.—Disturbance from 2 hours to 5 hours, quarter-minute observations from 2 hours to 3 hours, and 4 hours to 5 hours.

1876, February 10.—Between 6 hours and 7 hours, quarter-minute observations during two intervals of 7 minutes.

" " 11, 13.—Disturbances. From 5 to 6 hours, quarter-minute observations during two intervals of 7 minutes.

" " 19.—Great disturbance. From noon to 2 hours, quarter-minute observations during four intervals of 5 minutes each.

" " 20.—Continuous quarter-minute scale readings for 45 minutes between 1 hour and 2 hours.

Table I., showing the daily range of the declination, has been taken from the hourly series of observations and the extra scale readings on disturbed days, that is, the highest and lowest scale readings from whatever source during the 24 hours. The mean daily range for the three months, or the square root of the mean of the squares of all the daily ranges for each month, expressed in arc, is,—

$$\left. \begin{array}{l} 1875, \text{ December} = 71' \cdot 4 \\ 1876, \text{ January} = 68' \cdot 5 \\ 1876, \text{ February} = 110' \cdot 9 \end{array} \right\} \text{Mean} = 91' \cdot 5 \text{ for the whole period.}$$

The value of a division of the scale = $0' \cdot 4754$ of arc.

TABLE I.—DAILY RANGE OF THE DECLINATION.

Date.	In the Hourly Series.		Observed.		Range.		
	Highest Scale Reading.	Lowest Scale Reading.	Highest Scale Reading.	Lowest Scale Reading.	In the Hourly Series.	Total Observed.	Arc.
1875.							
December 7	770	654	—	—	116	—	0 55'10
" 8	822·5	670	—	—	152·5	—	1 12'43
" 9	712	639	—	—	73	—	0 34'67
" 10	738	619	—	—	119	—	0 56'52
" 11	706	657	—	—	49	—	0 23'27
" 12	695	659	—	—	36	—	0 17'10
" 13	832	650·5	—	—	181·5	—	1 26'21
" 14	712	663	—	—	49	—	0 23'27
" 15	710	631	—	—	79	—	0 37'52
" 16	712·5	471	—	—	241·5	—	1 54'71
" 17	777	478	—	—	299	—	2 22'02
" "	—	—	777	340	—	437	3 27'57
" 18	—	—	706	464	—	242	1 54'95
1876.							
January 6	746	626	—	—	120	—	0 57'00
" 7	728	685	—	—	43	—	0 20'42
" 10	727	674	—	—	53	—	0 25'17
" 11	728	675	—	—	73	—	0 34'67
" 12	720·5	712	—	—	8·5	—	0 4'03
" 13	778	631	—	—	147	—	1 9'82
" 14	802·5	489	—	—	313·5	—	2 28'91
" "	—	—	804·5	489	—	315·5	2 29'86
" 15	—	—	721	609	—	112	0 53'20
" 25	—	—	725	570	—	155	1 13'62
February							
6	745	718	—	—	27	—	0 12'85
" 7	768	646	—	—	22	—	0 10'47
" 8	756·5	708·5	—	—	48	—	0 22'85
" 9	839	702·5	—	—	136·5	—	1 04'97
" 10	825	682	—	—	143	—	1 8'07
" 11	786	552·5	—	—	233·5	—	1 51'14
" 12	772	591	—	—	181	—	1 26'15
" 13	781	397	—	—	384	—	3 2'78
" 14	791	672	—	—	119	—	0 56'64
" 15	807	697	—	—	110	—	0 52'36
" 16	853	642·5	—	—	210·5	—	1 40'20
" 17	929	713	—	—	216	—	1 42'81
" 18	928	637	—	—	291	—	2 18'52
" 19	1050	458	—	—	592	—	4 41'79
" "	—	—	1050	400	—	650	5 9'40
" 20	811	691	—	—	120	—	0 57'12
" 21	817	667	—	—	150	—	1 11'40

From this table it will be seen that the greatest range on any given day took place on the 19th February, and attained a value of $5^{\circ} 9' \cdot 4$. The lowest range on the 12th January, amounting to only $0^{\circ} 4'$. The difference of the lowest and highest scale readings throughout the period amounted to $5^{\circ} 37' \cdot 5$ of arc.

The next, Table II., contains the mean scale reading for each hour of the day during the month. The difference between this scale reading at each hour and the mean for the whole 24 hours, is the mean diurnal variation or diurnal inequality of the declination, which is here expressed in arc.

TABLE II.—MEAN DIURNAL VARIATION in the DECLINATION, also the MEAN HOURLY SCALE READINGS of the DIFFERENTIAL DECLINATION MAGNETOMETER for each Month.

Mean Time at Place.	1875. December 7th to December 18th.		1876. January 6th to January 15th.		1876. February 6th to February 22nd.		REMARKS.
	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	
Noon	663.9	-13.5	666.8	-18.0	690.0	-22.2	From 1 a.m. of the 9th January to 11 a.m. of the 10th, the observations were discontinued, a S.W. gale preventing anyone leaving the ship. The large differences in the mean scale readings for each month are due to a new zero of increasing value having been taken for each month. Increasing numbers on the scale denote a movement of the magnet towards the east.
1	667.4	11.9	689.6	7.2	677.7	28.1	
2	671.4	10.0	672.8	15.1	683.5	25.3	
3	668.3	11.4	668.1	17.4	698.0	18.4	
4	674.8	- 8.7	679.9	11.8	711.2	12.2	
5	693.0	+ 0.3	692.6	5.7	714.0	-10.8	
6	697.4	2.4	691.2	- 6.4	742.5	+ 2.8	
7	715.6	11.0	714.9	+ 4.9	750.1	6.4	
8	704.4	5.7	722.9	8.7	755.7	9.1	
9	707.9	7.4	728.6	11.4	758.0	10.2	
10	707.5	7.2	725.1	9.7	775.0	18.2	
11	717.9	12.1	726.9	10.6	778.1	19.7	
12	721.4	13.8	718.3	6.5	793.9	27.2	
13	722.9	14.5	706.6	0.9	771.6	16.6	
14	703.6	5.3	727.6	10.9	776.1	18.8	
15	712.0	9.3	717.6	6.2	780.5	20.8	
16	712.9	9.7	714.9	4.9	753.8	7.9	
17	705.2	6.1	719.2	6.9	754.3	+ 8.4	
18	694.9	1.2	719.5	7.1	734.2	- 1.2	
19	697.4	+ 2.4	720.4	+ 7.5	739.3	+ 1.2	
20	689.9	- 1.2	701.1	- 1.7	719.8	- 8.1	
21	676.0	7.8	701.0	1.7	711.0	12.2	
22	645.0	22.5	689.7	7.1	705.4	14.9	
23	645.7	-22.2	696.6	- 3.8	708.8	-13.3	
Means	692.4		704.6		736.7		

The extreme deflections of the magnet (always regarding the mean position of the north end as being the magnetic north) took place,—

Westerly extreme	{	December, 10 a.m.	Easterly extreme	{	December, 1 a.m.
		January, Noon.			January, 9 p.m.
		February, 1 p.m.			February, Midnight.

From a mean value of the whole period the westerly extreme occurred at noon, the easterly at midnight, and the mean positions of the magnet were reached at about 6 p.m. and 7½ a.m. These general results are of course affected by disturbances, therefore Table III. has been prepared, in which are shown the mean diurnal variation of the declination computed from a number of days assumed to have no disturbance, or at least a minimum amount.

Days on which the extreme range of the magnet failed to exceed 60' of arc were selected as undisturbed. The reasons for this arbitrary selection will be found in the discussion of the differential declinometer results obtained by the officers of the "Discovery."

In December, out of 12 days' observations, 5 were rejected as disturbed; in January, out of 9 days, 3 days; and in February, 10 out of 16. We have, therefore, 18 disturbed and 19 undisturbed days.

The Table shows the effect of this elimination (arbitrary, it is true,) the extreme deflections of the magnet under these conditions taking place,—

Westerly extreme	{	December, 1 p.m.	Easterly extreme	{	December, 1 a.m.
		January, 2 p.m.			January, 10 p.m.
		February, 3 p.m.			February, 2 a.m.

The mean values of the 19 undisturbed days give a westerly extreme deflection at 10 a.m. and 1 p.m. of equal value; the easterly extreme at 1 a.m. The hours of the mean position of the magnet are but little affected by the rejection of the disturbed days.

The general effect of disturbance is therefore to accelerate the arrival of the magnet at its extreme westerly and easterly deflection by one hour.

Note.—A Table showing the mean results of the differential declination observations made by H.M.S. "Alert" and "Discovery," and those of Dr. Kane at Van Rensselaer Harbour in 1854, will be found appended to the "Discovery's" observations.

TABLE III.—MEAN DIURNAL VARIATION in the DECLINATION, rejecting Days of great Disturbance, also the MEAN HOURLY SCALE READINGS of the DIFFERENTIAL DECLINATION MAGNETOMETER for each Month.

Mean Time at Place.	1875. December 7th to December 18th.		1876. January 6th to January 15th.		1876. February 6th to February 22nd.		REMARKS.
	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	
Noon	677.4	- 7.8	689.1	- 8.8	716.0	- 8.8	Days on which the range of the magnet exceeded 120 divisions of the scale have been excluded from the means. From 1 a.m. of the 9th January to 11 a.m. of the 10th, the observations were discontinued, a S.W. gale preventing anyone leaving the ship.
1	662.1	15.1	695.9	5.6	715.2	9.2	
2	686.8	3.3	683.0	11.7	726.4	3.9	
3	689.0	- 2.3	691.7	7.6	706.8	13.2	
4	697.0	+ 1.5	686.3	10.1	715.9	8.9	
5	694.2	0.2	701.4	- 3.0	726.2	- 4.0	
6	699.9	2.9	712.5	+ 2.3	737.3	+ 1.3	
7	701.8	3.8	713.6	2.8	741.0	3.1	
8	701.9	3.8	721.5	6.6	744.8	4.8	
9	703.5	4.6	716.7	4.3	750.4	7.6	
10	702.1	4.0	723.6	7.6	753.8	9.2	
11	697.6	1.8	713.8	2.9	746.1	5.5	
12	709.6	7.6	717.1	4.6	740.4	2.8	
13	716.1	10.6	708.4	0.4	765.0	14.5	
14	700.7	3.3	719.1	5.5	767.0	15.5	
15	702.5	4.1	716.6	4.3	763.7	13.9	
16	705.0	5.3	715.3	3.7	741.0	3.1	
17	697.7	+ 1.4	716.8	4.4	747.6	+ 6.2	
18	690.1	- 1.8	716.9	4.4	730.4	- 2.0	
19	697.7	+ 1.9	714.3	3.2	727.0	3.6	
20	690.8	- 1.4	710.8	+ 1.5	722.3	5.8	
21	684.6	4.4	698.3	- 4.4	714.5	9.5	
22	671.2	10.7	694.5	6.3	707.5	12.9	
23	672.5	-10.1	705.9	- 0.8	721.6	- 6.1	
Means	693.8		707.6		734.5		

As the observations of the differential declination magnetometer at Floeberg Beach only extended over unconnected portions of three months, the question of disturbances in the mean diurnal variation of the declination has not been further examined. There exists also the doubt whether, from the observatory having been necessarily erected on the ice floe, all the disturbances observed proceeded from magnetic causes or partially from shocks received by the ice floe and communicated to the observatory.

AURORAS.

The appearances of auroras and the synchronous movements of the declinometer magnet were subjects of special observation during the stay of the "Alert" and "Discovery" at their winter quarters. Table IV. gives the dates and hours when auroras were visible. On all occasions they were observed to be faint, with none of those brilliant manifestations which are described by our own officers as seen at Point Barrow,* and by the Austro-Hungarian Expedition at Franz Josef Land,† where the magnetical instruments were so sensibly disturbed.

These phenomena were not observed either in the "Alert" or the "Discovery," especially no connexion between magnetical disturbances and the appearances of auroras could be traced.

This is quite in accordance with the remarks of previous observers within the region comprehended between the meridians of 60° and 90° West, and North of the parallel of 73° North. For example,—

In the Phil. Trans. 1826, Part IV., page 76, Captain Parry and Lieut. Foster remark, in the discussion of their magnetical observations at Port Bowen: "As far, however, as our own observations extended, we have reason to believe that on no occasion were the needles in the slightest degree affected by aurora, meteors, or any other perceptible atmospheric phenomenon."

Again, in the Smithsonian Contributions, Vol. X., 1858, Mr. A. Schott, in his discussion of Dr. Kane's observations at Van Rensselaer Harbour in 1854, remarks: "In conformity with the supposed periodicity of this phenomenon as recognised by Professor Olmstead, no brilliant and complete auroras have been seen; with an exception of very few, they may all be placed in his fourth class, to which the most

* See Phil. Trans. Roy. Soc., 1857, page 498.

† See "Austrian Arctic Voyage," 1872-74, pages 327-328.

“ simple forms of appearances have been referred.” * * * * The following statement is given in the same page as a foot note. “ The processes have no apparent connexion with the magnetic dip, and in *no* case did the needle of our unifilar indicate disturbance.”

TABLE IV.—TABLE of DATES when AURORAS were observed by the ARCTIC EXPEDITION, 1875-76.

Date.	H.M.S. Alert, Floeberg Beach.	H.M.S. Discovery, Discovery Bay.
1875, October 25	11.45 p.m.	Cloudy.
” ” 26	10 p.m.	10 p.m.
” ” 30	Sky obscured.	Ditto.
” November 1	Ditto.	Ditto.
” ” 2	9 to 10 p.m.	A few clouds.
” ” 21	Ditto.	9 to 10 p.m. and 10 to 11 p.m.
” ” 22	2 p.m. and 8 p.m.	Clear sky.
” ” 25	9.30 a.m.	Ditto.
” ” 26	10 a.m.	A few clouds.
” ” 26	Cloudy to 10 p.m. bright afterwards.	10 p.m.
” ” 27	Midnight.	11.40 p.m.
” ” 28	1 a.m.	Clear sky.
” ” 29	Cloudy, brighter at 11 a.m.	9.30 a.m.
” ” 30	A few clouds.	4.30 a.m.
” ” 30	5 p.m., 8 p.m., and 10 p.m.	5 p.m.
” December 2	Evening.	Clear sky.
” ” 3	1 a.m.	Ditto.
” ” 3	Bright sky.	2.30 p.m.
” ” 16	10 p.m.	11 p.m.
” ” 19	3 p.m. to 5 p.m., and 9 to 10 p.m.	Very clear sky.
” ” 22	10 p.m.	Ditto.
” ” 23	6 p.m.	Ditto.
” ” 24	Misty, a few stars visible.	9 a.m.
” ” 26	Very bright sky.	6 p.m.
” ” 29	Ditto.	6.15 p.m.
” ” 31	4 p.m.	Sky obscured.
1876, January 1	5 p.m. and 11 p.m.	A few clouds.
” ” 2	9 p.m.	9 p.m.
” ” 17	Very bright sky.	9.25 a.m.
” ” 18	9.45 p.m. and 10.5 p.m.	10.15 p.m.
” ” 19	Very bright sky.	9.45 p.m.
” ” 20	2 a.m.	2.30 a.m.
” ” 23	7.55 a.m. and 2 p.m.	8.45 p.m.
” ” 24	Bright sky.	2 a.m.
” ” 24	5 p.m. and 11.15 p.m.	Very clear sky.
” ” 27	2 a.m. to 3.45 a.m.	1 a.m. to 4 a.m.
” ” 27	Very bright sky.	8.30 p.m.
” ” 28	6 p.m. and 7 to 9 p.m.	7.20 p.m.
” ” 30	8 p.m.	7.50 to 9 p.m.
” ” 31	8.30 a.m. and 7.30 p.m.	8.25 a.m., 5.30 p.m.
” February 3	10 p.m.	Very clear sky.
” ” 11	Sky obscured.	11 p.m.
” ” 13	11 p.m.	Clear sky.
” ” 14	2 a.m., 9.15 to 10 p.m.	2 a.m. and 11.50 p.m.
” ” 19	9.45 p.m.	11 p.m.
” ” 20	2 a.m.	2.30 a.m.
” ” 22	2 a.m.	Very clear sky.
” ” 24	Bright sky.	Midnight.
” ” 26	10 p.m. and 11 p.m.	Sky obscured.

The following description of the aurora observed on 21st November 1875 is given by Commander Markham and Lieut. Giffard in their abstract of observations at Floeberg Beach :—

“ Between 10 and 11 p.m. bright broad streamers of the aurora appeared 10° or 15° above the north horizon, stretching through the zenith, and terminating in an irregular curve about 25° above the south horizon, bearing S.S.W. During the aurora's greatest brilliancy the magnet was observed during five minutes to be undisturbed.”

All other references to this phenomenon are accompanied by the words “ faint ” or “ very faint.”

H.M.S. DISCOVERY.

The magnetical instruments furnished to this ship were identical with those for the "Alert," and already described at page 122.

ABSTRACT OF OBSERVATIONS OF THE DECLINATION WITH SHORE AZIMUTH COMPASS,
No. 2.

DODHAVN, DISKO (Opposite side of harbour to Flagstaff).							
1875, 8 July	-	-	5 P.M.	-	Lat. 69° 14' N. Long. 53° 42' W.	-	68 7 W.
" 9 "	-	-	10 A.M.	-	" "	-	68 8 "
" 12 "	-	-	3.30 P.M.	-	" "	-	68 45 "
CAREY ISLANDS.							
" 27 "	-	-	5.10 A.M.	-	Lat. 76° 43' N. Long. 72° 25' W.	-	105 7 "
CAPE SABINE.							
" 31 "	-	-	4.0 P.M.	-	Lat. 78° 42' N. Long. 74° 20' W.	-	107 59 "
ON ICE.							
" 7 Aug.	-	-	2.45 P.M.	-	Lat. 79° 16' N. Long. 74° 10' W.	-	110 18 "
CAPE PRESCOTT.							
" 9 "	-	-	8.0 P.M.	-	Lat. 79° 26' N. Long. 74° 45' W.	-	110 59 "
" 11 "	-	-	5.40 P.M.	-	" "	-	109 33 "
DOBBIN BAY.							
" 14 "	-	-	4.0 P.M.	-	Lat. 79° 41' N. Long. 72° 53' W.	-	108 14 "
ON ICE (near C. Collinson).							
" 21 "	-	-	4.0 P.M.	-	Lat. 80° 3' N. Long. 70° 22' W.	-	106 1 "
HANNAH ISLAND.							
" 24 "	-	-	0.45 P.M.	-	Lat. 81° 7' N. Long. 63° 53' W.	-	97 46* "
WINTER QUARTERS OBSERVATORY.							
" 9 Nov.	-	-	10.0 A.M.	-	Lat. 81° 44' N. Long. 65° 3' 14" W.	-	101 43 "
			5.45 P.M.	-	" "	-	101 13 "
" 23 Dec.	-	-	5.30 P.M.	-	" "	-	101 49 "
			6.30 P.M.	-	" "	-	101 44 "
1876, 21 Jan.	-	-	5.30 P.M.	-	" "	-	101 26 "
" 17 Feb.	-	-	5.30 P.M.	-	" "	-	101 14 "
" 17 "	-	-	7.0 P.M.	-	" "	-	101 50 "
" 22 "	-	-	Noon	-	" "	-	101 53 "
" 1 March	-	-	4.30 P.M.	-	" "	-	102 7 "
" 22 "	-	-	4.30 P.M.	-	" "	-	101 33 "
" 3 July	-	-	-	-	" "	-	101 47 "
WINTER QUARTERS OBSERVATORY.							
Lat. 81° 44' N. Long. 65° 3' 14" W.							
1875, October	-	-	Mean from Declinometer			-	102 02.5 W.
" November	-	-	"	"	"	-	101 49.5 "
" December	-	-	"	"	"	-	101 47.5 "
1876, January	-	-	"	"	"	-	101 44.4 "
" February	-	-	"	"	"	-	101 40.2 "
" March	-	-	"	"	"	-	101 40.7 "
CAPE FRAZER.							
" 24 August	-	-	10.40 A.M.	-	Lat. 79° 47½' N. Long. 71° 19' W.	-	108 59 W.
(Near) C. LOUIS NAPOLEON.							
" 25 "	-	-	10.30 A.M.	-	Lat. 79° 40' N. Long. 72° 5' W.	-	109 46 "
DOBBIN BAY.							
" 29 "	-	-	10.4 A.M.	-	Lat. 79° 41' N. Long. 72° 53' W.	-	109 1 "
WALRUS ISLAND (on ice).							
" 7 Sept.	-	-	0.50 P.M.	-	Lat. 79° 24' N. Long. 74° 45' W.	-	111 12 "

* Doubtful result.

GODHAVN DISKO.

1876, 27 Sept. - - 11.45 A.M. - Lat. 69° 14' Long. 53° 42' W. - - 68 20 W.

EGEDESUNDE.

" 29 " - - 0.15 P.M. - Lat. 68° 43' N. Long. 52° 54' W. 67 2 "

ABSTRACT OF INCLINATION OBSERVATIONS WITH BARROW'S CIRCLE, No. 27.

1875, May - - - Kew Observatory (*Departure*) 67 47.5 N.

GODHAVN, DISKO.

Needle.

" 8 July - - 2 P.M. - Lat. 69° 14' N. Long. 53° 42' W. 81 49.5 } 81 48.2 { 1
 " 9 " - - 11.30 A.M. - " " " 81 46.9 } 2

WINTER QUARTERS OBSERVATORY.

" 10 Sept.	- - 5.0 P.M.	- Lat. 81° 44' N. Long. 65° 3' 14" W.	84 48.0	} 84 49.9	} 1
" 11 "	- - Noon	" "	84 56.9		
" 20 "	- - 10.30 A.M.	" "	84 46.3	} 84 45.5	} 1
" 25 "	- - 10.30 A.M.	" "	84 48.5		
" 19 Oct.	- - Noon	" "	84 44.1	} 84 45.5	} 1
" 19 "	- - 1.30 P.M.	" "	84 44.2		
" 20 "	- - 10.0 A.M.	" "	84 46.6	} 84 47.9	} 1
" 25 "	- - 10.0 A.M.	" "	84 47.0		
" 4 Nov.	- - 11.0 A.M.	" "	84 45.8	} 84 47.9	} 1
" " "	- - 3.0 P.M.	" "	84 47.8		
" 10 "	- - 11.0 A.M.	" "	84 46.0	} 84 47.9	} 2
" 20 "	- - Noon	" "	84 45.0		
" " "	- - 3.0 P.M.	" "	84 48.9	} 84 47.9	} 2
" 25 "	- - Noon	" "	84 45.7		
" " "	- - 6.30 P.M.	" "	84 51.8	} 84 49.9	} 2
" " "	- - 9.0 P.M.	" "	84 51.6		
" 26 "	- - 2.0 A.M.	" "	84 49.1	} 84 49.9	} 2
" 2 Dec.	- - 9.0 P.M.	" "	84 51.6		
" 7 "	- - 11.0 P.M.	" "	84 49.4	} 84 49.9	} 2
" 8 "	- - 11.0 A.M.	" "	84 51.5		
" " "	- - 5.0 P.M.	" "	84 52.4	} 84 49.9	} 2
" " "	- - 9.0 P.M.	" "	84 50.6		
" 9 "	- - Midnight	" "	84 54.0	} 84 49.9	} 2
" " "	- - 4.30 A.M.	" "	84 52.1		
" " "	- - 9.0 P.M.	" "	84 47.0	} 84 49.9	} 2
" 15 "	- - 2.0 P.M.	" "	84 45.9		
" 28 "	- - 11.0 A.M.	" "	84 44.3	} 84 49.9	} 1
1876, 7 Jan.	- - Noon	" "	84 48.7		
" 13 "	- - 5.0 P.M.	" "	84 50.6	} 84 50.2	} 2
" 21 "	- - 5.0 P.M.	" "	84 50.1		
" 28 "	- - 5.0 P.M.	" "	84 51.6	} 84 50.8	} 2
" 2 Feb.	- - 1.0 P.M.	" "	84 50.8		
" " "	- - 5.0 P.M.	" "	84 50.9	} 84 50.8	} 2
" " "	- - 8.30 P.M.	" "	84 51.5		
" 3 "	- - 12.40 A.M.	" "	84 49.6	} 84 50.8	} 2
" " "	- - 4.0 A.M.	" "	84 49.7		
" 9 "	- - 11.0 A.M.	" "	84 50.2	} 84 53.7	} 2
" 18 "	- - 11.40 A.M.	" "	84 51.9		
" 28 "	- - 11.20 A.M.	" "	84 51.9	} 84 53.7	} 2
" 13 March	- - 11.40 A.M.	" "	84 53.6		
" 14 "	- - 6.0 P.M.	" "	84 52.1	} 84 53.7	} 2
" 23 "	- - 1.0 P.M.	" "	84 55.5		
" 28 April	- - 11.0 A.M.	" "	84 47.8	} 84 48.2	} 2
" " "	- - 1.50 P.M.	" "	84 48.6		
" 12 June	- - 1.20 P.M.	" "	84 57.6	} 84 55.9	} 2
" 26 "	- - 12.30 P.M.	" "	84 54.2		
" 3 July	- - 8.0 P.M.	" "	84 51.1	} 84 53.6	} 2
" " "	- - Midnight	" "	84 56.2		

RAWLINS BAY.

" 21 August - - 9.0 P.M. - Lat. 80° 21' 5 N. Long. 70° 0' W. 85 6.5 - - 2

DOBBIN BAY.

" 29 " - - 5.0 P.M. - Lat. 79° 41' N. Long. 72° 53' W. - 85 14.9 - - 2

EGEDESUNDE.

" 29 Sept. - - 1.0 P.M. - Lat. 68° 43' N. Long. 52° 54' W. - 82 0.2 - - 2

Kew Observatory

1877, 14 Feb. - - 11.0 A.M. - (*Returns*) 67 44.7 - - 2

ABSTRACT OF VALUES OF ABSOLUTE HORIZONTAL FORCE, UNIFILAR BY ELLIOTT,
No. 37.

			X.	m.
1875, May	- - - - -	Kew Observatory (<i>Departure</i>)	3·878	-
WINTER QUARTERS OBSERVATORY.				
" 14 Oct.	- 5.30 P.M. to 7.40 P.M.	Lat. 81° 44' N. Long. 65° 3' 14" W.	1·133	·6539
" 5 Nov.	- 10.30 A.M. to 12.50 P.M.	" "	1·128	·6674
" 17 "	- 4.30 P.M. to 6.40 P.M.	" "	1·126	·6772
" "	- 8.0 P.M. to 10.50 P.M.	" "	1·142	·6611
" 7 Dec.	- 6.20 P.M. to 8.40 P.M.	" "	1·125	·6613
" 13 "	- 11.15 A.M. to 12.55 P.M.	" "	1·118	·6647
1876, 7 Jan.	- 4.30 P.M. to 6.45 P.M.	" "	1·117	·6581
" 9 Feb.	- 5.35 P.M. to 7.0 P.M.	" "	1·153	·6638
" 18 "	- 5.45 P.M. to 7.20 P.M.	" "	1·139	·6735
" 8 July	- 4.50 P.M. to 6.30 P.M.	" "	1·134	·6581
" " "	- 6.40 P.M. to 7.55 P.M.	" "	1·122	·6512
1877, 14 Feb.	- 3.5 P.M. to 4.24 P.M.	Kew Observatory (<i>Return</i>).	3·917	·6411

Assuming the mean inclination = 84° 50' N. during the period when the horizontal force was observed as above at Winter Quarters Observatory, the total force = 12·559.

ABSTRACT OF TOTAL FORCE RESULTS MADE WITH LLOYD'S NEEDLES,
BARROW'S CIRCLE, No. 27.

1875, 12 July	- 12 to 1 P.M.	GODHAVN, DISKO (on opposite side of harbour to flagstaff). Lat. 69° 14' N. Long. 53° 42' W.	11·387	X = 1·770
WINTER QUARTERS OBSERVATORY.				
" 20 Oct.	- 11.30 A.M.	Lat. 81° 44' N. Long. 65° 3' 14" W.	12·210	} 12·180 { 1·111 } 1·108
" 25 "	- 11.0 A.M.	" "	12·224	
" "	- 5.15 P.M.	" "	12·106	} 12·269 { 1·101 } 1·113
" 4 Nov.	- 12.10 P.M.	" "	12·252	
" 10 "	- 12 to 1 P.M.	" "	12·282	} 12·227 { 1·124 } 1·101
" 20 "	- 4.30 P.M.	" "	12·309	
" "	- 5.0 P.M.	" "	12·266	} 1·113 { 1·126 } 1·118
" 25 "	- 1 to 2 P.M.	" "	12·301	
" "	- 5.30 P.M.	" "	12·223	} 1·108 { 1·096 } 1·113
" 26 "	- 3.20 A.M.	" "	12·252	
" 2 Dec.	- 9.50 P.M.	" "	12·174	} 1·104 { 1·091 } 1·101
" 8 "	- 12.30 P.M.	" "	12·220	
" "	- 3.40 P.M.	" "	12·207	} 1·095 { 1·094 } 1·101
" "	- 10.0 A.M.	" "	12·231	
" 9 "	- 1.30 A.M.	" "	12·190	} 1·084 { 1·084 } 1·101
" "	- 6.0 A.M.	" "	12·167	
" "	- 10.0 A.M.	" "	12·265	} 1·115 { 1·122 } 1·101
" 15 "	- 11.0 A.M.	" "	12·286	
" 28 "	- Noon	" "	12·300	} 1·127 { 1·127 } 1·101

In computing the horizontal from the total force the values of the inclination have been taken from those observed about the time of the force observations.

ABSTRACT OF VALUES OF *P* OR DISTRIBUTION COEFFICIENT, UNIFILAR, No. 37.

1875, 14 Oct.	- Winter Quarters Observatory	- Distance 1·3 to 1·6 feet	<i>P</i> = +·0678
" 5 Nov.	" "	" "	+·0613
" 17 "	" "	" "	+·0522
" "	" "	" "	+·0685
" 7 Dec.	" "	" "	+·0873
" 13 "	" "	" "	+·0401
			-·0164
			+·3608
		1st Mean	- +·0515
1876, 7 Jan.	- " "	- Distance 1·3 to 1·6 feet	- +·0521
" 9 Feb.	- " "	" "	+·0123
" 18 "	- " "	" "	0
" 15 March	- " "	" "	+·0435
" 8 July	- " "	" "	+·0647
" " "	- " "	" "	+·0019
			+·0146
			+·1891
		2nd Mean	- +·0270
1877, 14 February	- Kew Observatory (<i>Return</i>)	-	- +·0871

ABSTRACT OF VALUES OF LOG. π^2k OBSERVED, UNIFILAR No. 37.

1875, May	-	Kew Observatory (<i>Departure</i>)	-	+60° π^2k	=1.66290
1875, 13 Dec.	-	Winter Quarters Observatory	-	Temp. Fahrenheit +23°	" =1.661722
" 13 "	-	" "	-	" +27°	" =1.652240
1877, 14 Feb.	-	Kew Observatory (<i>Return</i>)	-	" +56°	" =1.646039
" 14 "	-	" "	-	" +58°	" =1.647629

ABSTRACT OF OBSERVATIONS OF INCLINATION AND INTENSITY WITH FOX'S CIRCLE,
No. 29.*Inclination.*

1875, 8 to 12 July	-	GODHAVN DISKO	-	Circle No. 29	81 56 N.
		(Station on opposite side of harbour to flagstaff station of "Alert.")			
		Lat. 69° 14' N. Long. 53° 42' W.			
" 21 "	-	PROVEN	-	"	83 4 N.
		Lat. 72° 22' N.	} Approximate.		
		Long. 55° 45' W.			
" 22 "	-	UPERNIVICK	-	"	83 12 N.
		Lat. 72° 47' N.	} Approximate.		
		Long. 56° 3' N.			

Intensity.

1875, July 8 to 12	-	GODHAVN DISKO	-	Circle No. 29	12.514
		(Station on opposite side of harbour to flagstaff station of "Alert.")			
		Lat. 69° 14' N. Long. 53° 42' W.			

RESULTS OF OBSERVATIONS MADE WITH DIFFERENTIAL DECLINATION MAGNETOMETER AT
WINTER QUARTERS OBSERVATORY, DISCOVERY BAY.

Lat. 81° 44' N. Long. 65° 3' 44" W.

These form a valuable addition to the existing knowledge of the diurnal variation and disturbances of the declination in Arctic regions, both on account of the geographical position of the observatory being in so high a north latitude, and from the extended series of observations made there.

At noon of the 23rd October 1875 the continuous hourly observations were commenced and carried on with only two omissions until the 28th March 1876. The first break in the series took place during the 8th and 9th November, when instrumental adjustment was necessary; the second for five hours of 3rd February, when stress of weather prevented communication with the observatory.

Extra observations were made on the following days in each month. The mean astronomical day was maintained throughout:—

1875, October 26.—Between 20 hrs. and 1h. 23m. of the 27th.

" November.—From 21 hrs. of the 1st to 1h. 19m. of the 2nd about every five minutes;

Also on 3rd, 4th, 5th, 10th, 11th, 12th, 13th, 29th, and 30th.

" December.—On the 1st, 2nd, 5th, 6th, 17th, 20th, and 21st, every five minutes during portions of each day;

Also on 20th, 24th, 25th, and 26th, every 30 minutes during portions of the day.

1876, January.—On the 4th, 5th, and 14th, every five minutes during the afternoons. On 13th, at intervals of two minutes and a half about midnight.

" February.—On the 19th and 25th, every five minutes during portions of the day.

" March.—On 12th, 13th, 24th, and 25th, every five minutes during the afternoons.

Among the objects of inquiry which these observations suggest are those of the daily range of the declination, its varied amount, and mean monthly value. Table I. has been constructed to show their values, and further to serve as a means of comparison with those of Arctic and other stations on the American continent.

It shows in the first two columns the highest and lowest scale readings in the hourly series of observations for each month. In the next two columns are the highest and lowest scale readings, whether in the hourly series or observations between the hours. Under the head "Range" is shown the differences of the highest and lowest scale readings in the previous columns, or range expressed in scale divisions and arc.

The value of one scale division = $0^{\circ} 6325$.

The highest scale reading recorded is 930, in the month of February, the lowest 170, in March; the difference of which equals 8° of arc. The greatest range on any given day was on the 19th February, when it attained a value of $5^{\circ} 47' \cdot 9$; the smallest on the 12th January, when it was only $0^{\circ} 6' \cdot 9$. The mean daily range (or the square root of the mean of the squares of the daily ranges) for each month was—

1875, October	=	93 ⁴ ·3
„ November	=	90·2
„ December	=	69·6
1876, January	=	72·3
„ February	=	93·7
„ March	=	108·2

The mean daily range, therefore, gradually declined in value from October to December, when the minimum range was reached, but again increased during the subsequent months of observation.

Comparing the results of the mean daily range during the whole period with those obtained at Floeberg Beach and Van Rensselaer Harbour—stations where the inclination and horizontal force differ so little from the same elements at Discovery Bay—it is found that the mean daily range at Van Rensselaer harbour was $2^{\circ} 28' \cdot 6$; Floeberg Beach, $1^{\circ} 31' \cdot 5$; Discovery Bay, $1^{\circ} 28' \cdot 0$.

The high value obtained at Van Rensselaer Harbour, as compared with the other two stations, may possibly be accounted for from being the result of only 17 days observations spread over a period of three months, when many days of probably small range have not been selected for observations.

MEAN DIURNAL VARIATION IN THE DECLINATION.

In Table II. are presented, for each month, the mean scale reading of the declinometer at each hour of the astronomical day during the month; the differences between this mean hourly scale reading and the mean for the whole month, expressed in arc, or the mean diurnal variation or inequality in the declination.

In this table we find that, taking the months separately, the hours of extreme westerly deflection (always regarding the mean direction of the magnet as pointing to the North) varied in the different months—between 10 and 11 a.m. in October, November, and December; and between Noon and 1 p.m. in January, February, and March.

The extreme easterly deflection occurred between 11 p.m. and Midnight, throughout the period.

In Table III. are given the values of the mean diurnal variation for the whole period of observation at Discovery Bay, Floeberg Beach, and Van Rensselaer Harbour, as observed.

Hours of extreme deflection at the three stations and Port Bowen, compared:—

Westerly extreme	{	Noon,	Van Rensselaer Harbour,	2 a.m.	}	Easterly extreme.
		Noon,	Floeberg Beach,	Midnight,		
		10 a.m.,	Discovery Bay,	11 p.m.,		
		11.49 a.m.,	Port Bowen,	10 p.m.,		

As it is probable that magnetic disturbances have had a certain degree of control over the determination of these hours of extreme deflection, it now becomes necessary to define as nearly as possible the amount of disturbance, and form tables of the mean diurnal variation of the declination, freed from such disturbance.

These are given in Table IV., formed in the same manner as Table II., after rejecting all observation made on certain days selected as days of disturbance. On the present occasion 69 days out of 156 have been rejected as disturbed during some portion of the 24 hours.

Two methods have been generally adopted for eliminating disturbance variation: one, in which an arbitrary separating value has been decided upon, and all hourly observations differing by that quantity from the mean hourly value have been rejected; another, in which the observations of the whole day during which any disturbance

occurred are rejected. In this discussion the latter method has been adopted, as the remarks of the observing officers as to days of disturbance seem to indicate a more accurate means of defining a disturbance than the selection of a separating value for certain hours.

The following remarks are taken from the "Discovery's" journal of magnetic observations, showing the days of disturbance noted :—

- 1875, October 31.—Disturbance at 22 hours, lasting until 7 hours November 1st.
 November 1.—Great disturbance at 21 hours, lasted 7 hours, the needle constantly to the westward of the normal.
 12.—Disturbance at 22 hours, until 4 hours of November 13th.
 29.—Disturbance at 21 hours, until 7 hours of November 30th.
 December 1.—Great disturbance at 21 hours, lasting 7 hours.
 2.—Disturbance from 21 hours to Noon.
 5.—Great disturbance in the forenoon, increasing during the afternoon, moderating at 6 hours of the 6th, increasing again during the night, and ending at 3 hours of the 7th.
 17.—Disturbance at 21h. 25m., lasting till 5½ hours of 18th.
 20.—Disturbance from 21½ hours, until 3 hours of 21st.
 24. }
 25. } All disturbed days at various times.
 26. }
- 1876, January 4.—Disturbance at 22 hours, continuing for 9 hours.
 13.—Great disturbance from 9 hours, until 15 hours.
 14.—Disturbance from 21 hours until 7 hours of 15th.
 22.—Disturbances from 22 hours until 7 hours of 23rd.
 30.—Disturbances during the night.
 February 19.—Great disturbance from 2 hours to 21 hours.
 25.—Slight disturbance from 2 hours to 5½ hours.
 28.—Very great disturbance at Midnight.
 March 12.—Disturbance from 22 hours to 7 hours of 13th.
 24.—Disturbance at 20 hours, lasting 11 hours.

We have here 22 days of undoubted disturbance. From an examination of the hourly scale readings at the above dates, it was found that the motion of the magnet was very irregular from hour to hour, and that there were other occasions (not noted in the previous list) when similar movements took place and might likewise be considered days of disturbance. It was further remarked that on all these days the daily range exceeded 60' of arc; therefore the excess of this value on any given day was accepted as the criterion of its being one of disturbance.

The rejection of the assumed days of disturbance has the following result, as shown in Table IV. In the monthly values the time of extreme westerly deflection is very little altered, but the easterly extreme is attained at hours varying between 9 p.m. and 4 a.m. The mean values for the whole period, as recorded in Table III., are—

Westerly extreme	{	1 p.m., 10 a.m. and 1 p.m., 11 am.	Van Rensselaer Harbour, Floeberg Beach, Discovery Bay,	2 a.m., 1 a.m., Midnight,	}	Easterly extreme.
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The general effect, therefore, of disturbance is to accelerate the arrival of the magnet at its points of extreme deflection by one hour, in addition to producing a much larger range in the diurnal variation. Thus, with disturbances included, the range is 35'·6; with their rejection it is only 16'·3 at Discovery Bay.

Curves illustrating Tables II., III., and IV. are appended. In diagram No. 3 the curves of the "Discovery" show the effects of disturbance very clearly in the difference between the red and black lines. The times of the magnet reaching its mean position are also sharply defined.

In Table V. are shown the values of that part of the mean diurnal variation of the declination which is produced by disturbances. In these, the effects of westerly disturbances are greater at certain hours than the easterly, but the latter are longer sustained.

ANALYSIS OF THE DISTURBANCES.

Although differential observations of the magnetic declination and analyses of the disturbances have been made at numerous stations on the North American continent, these have been generally at places where some connexion was assumed between appearances of the aurora and disturbances of the magnetic elements.

Discovery Bay may be considered to lie in a region within which all observers hitherto report their inability to discover connexion between disturbances and appearances of auroras. It possesses further the interest of being situated in the most remote northern latitude at which a prolonged series of observations has been accomplished.

The method adopted for computing the elements of Tables VI., VII., VIII., in which the difference is taken between the scale reading at each hour and the monthly mean at the same hour, the square root of the mean of the squares of these differences being called the mean disturbance at that hour, is one well known; the formula for a whole month or longer period being $\sqrt{\frac{\sum^1 (\psi_h - \bar{\psi}_h)^2}{N}}$. In this ψ_h represents the hourly scale readings, $\bar{\psi}_h$ the monthly mean at the same hour, N the total number of the observations, \sum^1 the sum of all the squares.

Turning first to the mean disturbance without regard to sign in Table VI., it is found that the disturbing force never ceases. It will be observed that in the declinometer abstracts there are solitary scale readings here and there which do not differ from the monthly mean at the same hour, but they are rare. It is evident from the monthly values in the tables that as the winter solstice is approached the disturbing force decreases, and increases again rapidly towards the equinox. Thus December gives the lowest values closely followed by January, but in March a sensible increase is apparent. This points to an accordance with the investigations by Mr. Broun, F.R.S., of the disturbances of declination in high northern latitudes, "that there are maxima at the equinoxes and "minima at the solstices."*

In the hourly values the maximum mean disturbance occurs between the hours of 9 a.m. and 3 p.m., and again from 9 p.m. to 2 a.m.; the minimum from 6 to 9 p.m. and 3 to 8 a.m. Comparing the results for the whole period at Van Rensselaer Harbour and Discovery Bay, a marked difference is apparent. Mr. Schott,† in his discussion of the observations at the latter place, says, "the disturbing force is least during the day (if "such an expression is admissible in this case) from 10 a.m. to 7 p.m., and greater and "equally regular during the hours of the night (?) from 8 p.m. to 8 or 9 a.m." Now at Discovery Bay the disturbing force during the day, that is, from 8 a.m. to 8 p.m., is considerably greater than that of the night between 8 p.m. and 8 a.m.

Whilst, however, pointing to differences in results, there are those in which marked agreement occurs. Again, quoting from Mr. Schott's discussion, he says, "At Van "Rensselaer Harbour we find the maximum disturbance at this very hour (noon) preceded "and followed by quite small values; this circumstance certainly deserves our particular "attention." Captain (now General Sir J. H.) Lefroy, in his *Magnetical and Meteorological Observations at Lake Athabasca, &c.*, also remarks, "There are indications in "each of the three curves (of declination for Lake Athabasca, Toronto, and Sitka) of a "small increase in the mean disturbance about noon."‡ These remarks are confirmed by the results in Discovery Bay as regards the hour of noon, and they may be supplemented by another as to the more marked disturbance at 11 p.m. when compared with the moderate disturbances of the whole night.

In the monthly curves of the mean diurnal variation of the declination, the effects of disturbance about noon are remarkably shown, more especially in the months of November, January, and March, by the decided break in an easterly direction of the prevailing curve of westerly deflection between 10 a.m. and noon.

Having considered the mean disturbances without regard to sign, it yet remains to be seen what was the *direction* of the disturbance during the hours of the day.

For this purpose Tables VII. and VIII. have been formed, in which the mean disturbance in the easterly and westerly directions are shown separately, the hourly values having been computed by the formula previously given. Taking the difference between the results in these tables, we obtain the elements of Table IX., or the excess of easterly over westerly deflections, and *vice versa*.

From these it is evident that the easterly disturbances prevail over the westerly during the night from about 7 p.m. to 7 a.m., and during the remaining hours of the day the westerly disturbances predominate.

At the bottom of each column are the means of the aggregate values, which show the easterly disturbances to be both moderate in amount and monthly change when compared with the westerly. Thus the ratio of the excess of westerly disturbances in December

* See *Trans. Roy. Soc. Edinburgh*, Vol. XXVII., Part IV., page 586.

† See *Smithsonian Contributions*, Vol. X., 1858, Art. III., page 18.

‡ Page 76.

to that in March is 3·25, but the ratio of the easterly excess in the same months is 1·32; the mean actual values being -11·7 and -38·1; +8·5 and +11·2.

Among the peculiarities of the disturbances at Discovery Bay are two which exhibit their semi-American semi-Asiatic character. *At Pekin and Nertschinsk "the aggregate values of the westerly deflections decidedly predominate, whilst in America the easterly deflections are no less decidedly predominant." In North America "the conical form (of the curves) and single maximum characterize the easterly deflections;" but "at Pekin and Nertschinsk the conical form (of the curves) and single maximum characterize the westerly deflections, whilst the easterly have the double maximum." Thus it will be seen that at Discovery Bay the aggregate values of the deflections have an Asiatic character, whilst the conical form of the curve of easterly deflection is American. The double maximum at this station occurs with both easterly and westerly deflections, and so presenting phenomena, one of which is peculiar to the two stations in Asia, and the other to those in America and Kew.

If it should be deemed scarcely admissible that the observations of a few months should be compared with those of as many years, it seems only necessary to point out that, as in the present instance, the period of observation includes one solstice and the following equinox, all the broad features of the disturbances have been rendered prominent. The latter portion of these remarks as to the law of disturbances at the equinoxes and solstices has been based upon the investigations of Mr. Broun (before quoted) of observations in high latitudes.

Before concluding this analysis, the question of how far the observed and assumed days of disturbance at Discovery Bay coincided with those at Kew Observatory seems worthy of examination. For this purpose Table X. has been drawn up, the days of principal disturbance at Kew having been kindly furnished by Mr. Whipple, Superintendent of the Observatory.

The period embraced by these observations was one of great disturbance, especially towards the end of February and the greater part of March, and the tabular values tend to show that the declinometers were, for the most part, affected on the same days. It was to be expected that at a station in high latitude, where disturbances are so marked, there would be an excess of days noted as disturbed over those in a middle latitude; but in January and February Kew has certain days in excess of Discovery Bay.

This may be partly accounted for by the fixed observatory at Kew having continuous photographic records to draw from,—the temporary observatory principally hourly observations, taken under circumstances of difficulty.

The two greatest disturbances or "magnetic storms," occurred on the 19th February and the 25th March, and the time limits at the two stations agree fairly in "absolute time,"† thus: the principal disturbances—

	<i>Kew.</i>	<i>Discovery Bay.</i>
19th February 1875	{ Commenced at 4 to 5 p.m. { Ended at 2 p.m. of 20th.	{ Commenced at 4 p.m. { Ended between 1 and 2 p.m. of 20th.
25th to 26th March 1875.		

The hours of disturbance at Floeberg Beach were about the same (in February) as at Discovery Bay.

During the second storm of the 25-26th March at Discovery Bay the magnet kept continuously to the westward of the normal from the commencement to 10.20 p.m. (absolute), and at 6.50 p.m. (absolute) it had deviated 4° 15' from the mean hourly position, whilst at Kew it was often to the eastward as well as to the westward, 18' being the greatest decrease in the declination; and at 6.50 p.m. it was 12' to the eastward of the normal.

Finally, it may be stated that the comparison of the disturbances at Kew and the two winter quarters observatories of the Arctic Expedition, 1875-76, appear to confirm M. Gauss's conclusion, that "the synchronous disturbances of the same element not only differ widely in amount, but occasionally appear to be even reversed in direction."

* See Phil. Trans. Roy. Soc., 1863, page 282.

† Or mean time at Greenwich.

TABLE I.—continued.

Date.	In the Hourly Series.		Observed.		Range.		
	Highest Scale Reading.	Lowest Scale Reading.	Highest Scale Reading.	Lowest Scale Reading.	In the Hourly Series.	Total Observed.	Arc.
1875.							o /
December 19	616	534	—	—	82	—	0 51·9
" 20	631	544	—	—	87	—	0 55·1
" 21	—	—	631	538	—	93	0 58·8
" 22	602	440	—	—	162	—	1 42·5
" 23	580	534	—	—	46	—	0 29·1
" 24	580	508	—	—	72	—	0 45·5
" 25	680	552	—	—	128	—	1 21·0
" 26	684	460	—	—	224	—	2 21·7
" 27	640	496	—	—	144	—	1 31·1
" 28	589	572	—	—	17	—	0 10·7
" 29	602	564	—	—	38	—	0 24·0
" 30	601	570	—	—	31	—	0 19·6
" 31	602	562	—	—	40	—	0 25·2
" 31	604	533	—	—	71	—	0 44·9

December.—Mean Daily Range = 69'·6

Date.	In the Hourly Series.		Observed.		Range.		
	Highest Scale Reading.	Lowest Scale Reading.	Highest Scale Reading.	Lowest Scale Reading.	In the Hourly Series.	Total Observed.	Arc.
1876.							o /
January 1	596	502	—	—	94	—	0 59·5
" 2	592	529	—	—	63	—	0 39·8
" 3	636	549	—	—	87	—	0 55·0
" 4	604	498	—	—	106	—	1 07·0
" 5	—	—	604	470	—	134	1 24·8
" 6	630	456	—	—	174	—	1 50·0
" 7	597	546	—	—	51	—	0 32·3
" 8	596	550	—	—	46	—	0 29·1
" 9	604	529	—	—	75	—	0 47·4
" 10	586	486	—	—	100	—	1 03·2
" 11	598	508	—	—	90	—	0 56·9
" 12	606	572	—	—	34	—	0 21·5
" 13	588	577	—	—	11	—	0 6·9
" 14	678	514	—	—	164	—	1 43·7
" 15	—	—	690	425	—	265	2 47·6
" 16	622	436	—	—	186	—	1 57·6
" 17	614	504	—	—	110	—	1 9·5
" 18	602	562	—	—	40	—	0 25·3
" 19	598	574	—	—	24	—	0 15·2
" 20	598	522	—	—	76	—	0 48·1
" 21	622	522	—	—	100	—	1 03·2
" 22	610	542	—	—	68	—	0 43·0
" 23	612	430	—	—	182	—	1 55·1
" 24	612	496	—	—	116	—	1 13·3
" 25	692	356	—	—	336	—	3 32·7
" 26	606	522	—	—	84	—	0 53·1
" 27	634	450	—	—	180	—	0 11·4
" 28	620	542	—	—	78	—	0 49·4
" 29	638	550	—	—	88	—	0 55·7
" 30	604	540	—	—	64	—	0 40·5
" 31	618	508	—	—	110	—	1 09·6
" 31	594	459	—	—	135	—	1 25·4
" 31	624	432	—	—	192	—	2 1·4

January.—Mean Daily Range = 72'·3

Date.	In the Hourly Series.		Observed.		Range.		
	Highest Scale Reading.	Lowest Scale Reading.	Highest Scale Reading.	Lowest Scale Reading.	In the Hourly Series.	Total Observed.	Arc.
February 1	616	569	—	—	47	—	0 29·7
" 2	604	578	—	—	26	—	0 16·4
" 3	606	543	—	—	63	—	0 39·9
" 4	628	558	—	—	70	—	0 44·3
" 5	676	568	—	—	108	—	1 8·3
" 6	606	569	—	—	37	—	0 23·4
" 7	604	528	—	—	76	—	0 48·1
" 8	603	570	—	—	33	—	0 20·9
" 9	679	569	—	—	110	—	1 9·5
" 10	664	558	—	—	106	—	1 7·0
" 11	612	554	—	—	58	—	0 36·7
" 12	618	530	—	—	88	—	0 55·7
" 13	702	406	—	—	296	—	3 7·2
" 14	624	561	—	—	63	—	0 39·8
" 15	628	534	—	—	94	—	0 59·5
" 16	704	568	—	—	136	—	1 26·0
" 17	642	573	—	—	69	—	0 43·6
" 18	606	518	—	—	88	—	0 55·7
" 19	824	380	—	—	444	—	4 40·8
" 20	—	—	930	380	—	550	5 47·9
" 21	598	560	—	—	38	—	0 24·0
" 22	642	512	—	—	130	—	1 22·2
" 23	602	546	—	—	56	—	0 35·4
" 24	610	518	—	—	92	—	0 58·2
" 25	632	518	—	—	114	—	1 12·1
" 26	688	396	—	—	292	—	3 4·7
" 27	—	—	688	346	—	342	3 36·4
" 28	664	462	—	—	202	—	2 07·8
" 29	635	386	—	—	249	—	2 37·5
" 30	606	530	—	—	76	—	0 48·1
" 31	628	552	—	—	71	—	0 44·9

February.—Mean Daily Range = 93'·7

TABLE I.—continued.

Date.	In the Hourly Series.		Observed.		Range.		
	Highest Scale Reading.	Lowest Scale Reading.	Highest Scale Reading.	Lowest Scale Reading.	In the Hourly Series.	Total Observed.	Arc.
1876.							° /
March 1	608	558	—	—	50	—	0 31.6
" 2	596	564	—	—	32	—	0 20.2
" 3	612	536	—	—	76	—	0 48.1
" 4	680	386	—	—	294	—	3 6.0
" 5	622	550	—	—	72	—	0 45.5
" 6	672	498	—	—	174	—	1 50.0
" 7	603	569	—	—	34	—	0 21.5
" 8	608	506	—	—	102	—	1 4.5
" 9	616	542	—	—	74	—	0 46.8
" 10	612	556	—	—	56	—	0 35.4
" 11	710	492	—	—	218	—	2 17.9
" 12	636	474	—	—	162	—	1 42.5
" 13	—	—	636	374	—	262	2 45.7
" 14	665	384	—	—	281	—	2 57.7
" 15	—	—	665	321	—	344	3 37.6
" 16	626	541	—	—	85	—	0 53.8
" 17	624	564	—	—	60	—	0 37.9
" 18	618	498	—	—	120	—	1 15.9
" 19	612	562	—	—	50	—	0 31.6
" 20	608	562	—	—	46	—	0 29.1
" 21	606	568	—	—	38	—	0 24.0
" 22	620	562	—	—	58	—	0 36.7
" 23	608	554	—	—	54	—	0 34.2
" 24	624	552	—	—	72	—	0 45.7
" 25	638	554	—	—	84	—	0 53.1
" 26	692	327	—	—	365	—	3 50.9
" 27	—	—	692	280	—	412	4 20.6
" 28	718	343	—	—	375	—	3 57.2
" 29	—	—	718	170	—	548	5 46.6
" 30	665	494	—	—	171	—	1 48.2
" 31	674	564	—	—	110	—	1 9.6
"	688	408	—	—	280	—	2 57.1
"	720	552	—	—	168	—	1 46.3
"	710	432	—	—	278	—	2 55.9
"	641	442	—	—	199	—	2 5.9

March.—Mean Daily Range = $108^{\circ}.2$

* From observations taken every two hours.

TABLE II.—MEAN DIURNAL VARIATION in the DECLINATION, also the MEAN HOURLY SCALE READINGS of the DIFFERENTIAL DECLINATION MAGNETOMETER for each Month.

Mean Time at Place.	1875. October 23rd to October 31st.		1875. November 1st to November 30th.		1875. December 1st to December 31st.		REMARKS.
	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	
Noon	552.7	-20.7	535.3	-23.6	560.8	-9.5	From the 8th to 10th November the observations were discontinued, the zero of the scale being out of adjustment. Increasing numbers on the scale denote a movement of the north end of the magnet towards the east.
1	566.1	10.6	543.9	19.5	555.0	13.2	
2	575.4	6.3	548.6	15.2	554.2	13.7	
3	581.7	2.3	545.6	17.1	556.7	13.1	
4	582.0	-2.1	563.2	-7.3	568.4	4.7	
5	603.3	+11.5	573.8	+0.7	574.7	-0.7	
6	591.8	4.1	574.1	0.9	576.9	+0.1	
7	592.8	4.7	586.6	8.8	586.2	6.6	
8	608.4	12.0	585.4	8.0	583.9	5.1	
9	602.0	10.5	588.1	9.7	583.4	4.8	
10	607.1	13.8	589.5	10.6	588.3	7.9	
11	615.4	19.0	604.3	20.0	594.0	11.6	
12	605.8	12.9	599.6	17.0	598.7	14.5	
13	603.3	11.3	602.5	18.8	595.1	12.9	
14	612.0	16.9	594.5	13.8	594.4	11.8	
15	602.0	10.5	594.6	13.8	588.6	8.0	
16	600.2	9.4	592.4	12.4	586.6	6.8	
17	590.6	+3.3	586.2	8.5	583.7	4.4	
18	581.3	-2.6	576.5	+2.4	582.2	4.0	
19	573.6	7.4	567.6	-3.2	579.4	+2.3	
20	574.1	7.1	564.0	5.5	555.2	-13.0	
21	567.8	11.1	548.5	15.3	567.3	5.4	
22	584.6	32.1	535.0	23.8	550.5	16.0	
23	525.0	-38.2	545.6	-17.1	555.5	-12.8	
Means	585.3		572.7		575.8		

TABLE II.—*continued.*

Mean Time at Place.	1876. January 1st to January 31st.		1876. February 1st to February 29th.		1876. March 1st to March 28th.		REMARKS.
	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	
Noon	550.0	-18.4	559.3	-17.8	550.3	-23.1	On 3rd February, from 15h. to 21h. the observations were stopped by bad weather.
1	547.0	20.3	560.8	16.9	556.1	19.4	
2	549.7	18.6	560.5	17.0	553.3	21.2	
3	563.3	10.0	565.3	14.0	562.1	15.6	
4	561.4	-11.2	573.6	8.0	564.6	14.1	
5	582.8	+ 2.4	579.0	- 5.3	574.3	7.8	
6	578.7	- 0.2	590.4	+ 1.9	581.5	- 3.3	
7	590.5	+ 7.2	597.0	6.1	600.2	+ 8.5	
8	592.1	8.2	605.3	11.3	607.2	12.9	
9	594.4	9.7	603.6	10.2	606.8	12.7	
10	597.0	11.3	603.8	10.3	613.3	16.8	
11	593.4	9.1	613.8	16.7	615.9	18.4	
12	595.2	10.2	610.4	14.5	618.1	19.8	
13	590.3	7.1	602.7	9.7	608.8	13.9	
14	593.5	9.1	602.3	9.4	606.5	12.5	
15	594.0	9.4	602.2	9.3	601.1	9.0	
16	591.8	8.0	602.8	9.7	605.0	11.5	
17	591.4	7.8	598.4	6.9	608.7	13.9	
18	591.4	7.8	595.6	5.2	599.4	8.0	
19	586.8	+ 4.9	592.8	+ 3.4	591.0	+ 2.7	
20	576.1	- 1.9	574.6	- 8.1	579.5	- 4.6	
21	565.3	8.7	571.2	10.3	557.9	18.3	
22	553.9	15.9	572.8	9.3	552.1	22.0	
23	569.4	- 6.1	561.5	-16.4	568.3	-11.7	
Means	579.1		587.5		586.8		

TABLE III.—MEAN DIURNAL VARIATION in the DECLINATION at WINTER QUARTERS and at DR. KANE'S WINTER QUARTERS at VAN RENSSELAER HARBOUR, 1854.

Mean Time at Place.	Van Rensselaer Harbour.		H.M.S. Alert.		H.M.S. Discovery.	
	Mean Diurnal Variation as observed.	Mean Diurnal Variation Disturbances eliminated.	Mean Diurnal Variation as observed.	Mean Diurnal Variation Disturbances eliminated.	Mean Diurnal Variation as observed.	Mean Diurnal Variation Disturbances eliminated.
Noon	-37.8	-29.2	-17.9	- 8.5	-18.8	- 8.9
1	35.0	34.4	15.7	10.0	15.8	7.0
2	26.3	25.7	16.8	6.3	15.3	8.2
3	21.2	13.6	16.8	7.7	11.3	5.6
4	7.0	6.9	10.9	5.8	- 7.7	4.5
5	24.3	23.7	5.4	- 2.3	+ 0.1	- 1.2
6	-11.8	- 6.0	- 0.4	+ 2.2	0.6	+ 0.3
7	+ 3.2	+ 3.8	+ 7.4	3.2	7.0	3.9
8	13.5	9.3	7.8	5.1	9.5	5.7
9	20.8	16.4	9.7	5.5	9.6	6.9
10	21.0	12.5	11.7	6.9	11.8	6.2
11	21.8	22.5	14.1	3.4	15.8	6.3
Midnight	28.2	34.7	15.8	5.0	14.8	7.2
13	28.3	27.3	10.7	8.5	11.9	5.1
14	29.0	35.1	11.7	8.1	12.2	5.5
15	27.8	34.1	12.1	7.4	10.0	6.4
16	27.8	26.0	7.5	4.0	9.6	5.9
17	23.1	20.1	7.1	4.0	7.4	3.4
18	+10.5	+ 8.0	2.4	0.2	4.8	2.3
19	- 0.8	- 9.0	+ 3.7	+ 0.5	+ 0.4	+ 0.6
20	12.2	19.0	- 3.7	- 1.9	- 6.7	- 3.9
21	17.4	23.3	7.2	6.1	11.5	7.7
22	30.6	30.0	14.8	10.0	19.8	8.1
23	-29.6	-29.0	-13.1	- 5.7	-17.1	- 9.1

TABLE IV.—MEAN DIURNAL VARIATION in the DECLINATION, rejecting Days of Disturbance, also the MEAN HOURLY SCALE READINGS of the DIFFERENTIAL DECLINATION MAGNETOMETER for each Month.

Mean Time at Place.	1875. October 23rd to October 31st.		1875. November 1st to November 30th.		1875. December 1st to December 31st.		REMARKS.
	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	
Noon	581.2	- 6.9	553.7	-11.9	565.8	- 7.5	Days on which the range of the magnet exceeded 100 divisions of the scale have been excluded from the means. Increasing numbers on the scale denote a movement of the north end of the magnet towards the east.
1	591.2	0.5	559.0	8.6	563.8	3.8	
2	577.0	- 9.1	564.2	5.3	566.8	6.9	
3	593.7	+ 1.1	563.2	5.9	569.4	5.2	
4	588.5	- 2.2	568.5	2.6	567.4	6.7	
5	591.0	- 0.7	569.4	2.0	576.5	0.7	
6	593.0	+ 0.6	569.7	- 1.8	576.6	- 0.7	
7	593.5	0.9	580.7	+ 5.2	584.7	+ 4.5	
8	604.0	7.6	578.5	3.8	584.3	4.2	
9	611.0	12.0	578.5	3.8	585.7	5.1	
10	602.2	6.4	577.9	3.4	584.7	4.5	
11	604.5	8.3	579.4	4.3	584.1	4.1	
12	600.5	+ 5.4	583.8	9.1	589.4	7.4	
13	592.0	- 0.1	583.9	7.2	588.4	6.8	
14	598.4	+ 4.0	584.8	7.8	587.2	6.1	
15	600.5	5.5	588.3	10.0	585.7	5.1	
16	594.5	+ 1.8	581.6	5.7	586.9	5.9	
17	591.0	- 0.7	577.8	+ 3.3	583.6	3.8	
18	591.2	0.6	572.0	- 0.3	582.3	+ 3.0	
19	592.0	0.1	569.0	2.2	576.8	- 0.5	
20	584.2	5.0	569.9	1.7	575.9	1.1	
21	580.5	7.3	561.7	6.9	571.0	4.2	
22	574.0	11.4	564.7	5.0	564.9	8.1	
23	580.0	- 7.6	561.8	- 6.8	563.4	- 9.0	
Means	592.1		572.6		577.7		

Mean Time at Place.	1876. January 1st to January 31st.		1876. February 1st to February 29th.		1876. December 1st to December 31st.		REMARKS.
	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	Mean Scale Reading.	Variation in the Declination.	
Noon	563.8	-10.9	575.8	- 7.0	574.3	- 9.4	Days on which the range of the magnet exceeded 100 scale divisions have been excluded from the means.
1	567.5	8.6	577.8	5.7	573.9	9.7	
2	567.3	8.7	578.7	5.2	566.7	14.2	
3	566.3	9.3	572.9	8.8	580.7	5.4	
4	567.4	- 8.6	577.3	6.0	587.3	1.2	
5	581.3	+ 0.2	584.6	- 1.4	585.0	- 2.6	
6	583.2	1.4	588.0	+ 0.7	591.9	+ 1.7	
7	587.4	4.0	593.8	4.4	595.8	4.2	
8	590.6	6.1	597.5	6.7	598.2	5.7	
9	590.8	6.2	595.2	5.3	603.6	9.1	
10	593.3	7.8	596.7	6.2	603.3	9.0	
11	589.3	5.2	598.3	7.3	602.5	8.5	
12	590.1	5.7	599.6	8.1	601.3	7.7	
13	589.3	5.2	596.9	6.4	597.1	5.0	
14	587.6	4.2	594.4	4.8	599.3	6.1	
15	590.3	7.9	596.3	6.0	595.7	4.2	
16	590.4	7.9	601.0	9.0	597.2	5.1	
17	588.7	4.9	594.2	4.7	596.4	4.6	
18	589.6	5.4	592.8	3.8	592.7	+ 2.3	
19	586.4	+ 3.4	591.8	+ 3.1	589.1	0	
20	579.7	- 0.8	573.6	- 9.4	578.7	- 6.6	
21	567.2	8.8	568.1	11.9	578.3	6.9	
22	570.3	6.8	572.8	8.9	576.0	8.3	
23	565.8	- 9.6	567.4	-12.3	574.7	- 9.1	
Means	581.0		586.9		589.1		

TABLE V.—MEAN HOURLY VALUES of the DISTURBANCES from the ASSUMED NORMAL VARIATION in the DECLINATION.

Mean Time at Place.	1875. November 1st to 30th.	1875. December 1st to 31st.	1876. January 1st to 31st.	1876. February 1st to 29th.	1876. March 1st to 28th.	REMARKS.
Noon	-11.7	- 2.0	- 7.5	-10.8	-13.7	This table is compiled from the differences of the variation in the declination given in Tables II. and IV., or the differences between the black and red curves in the diagrams.
1	5.9	4.4	11.7	11.2	9.7	
2	9.8	6.8	9.9	11.8	7.0	
3	11.2	- 7.9	0.7	5.2	10.2	
4	- 3.4	+ 2.8	- 2.6	2.0	12.9	
5	+ 2.8	0	+ 2.2	- 3.9	5.2	
6	2.7	+ 0.8	- 1.6	+ 1.2	- 5.0	
7	3.5	2.1	+ 3.2	1.7	+ 4.3	
8	3.5	+ 0.9	2.1	4.6	7.2	
9	6.0	- 0.3	3.5	4.9	3.6	
10	7.3	+ 3.4	3.5	4.1	7.8	
11	15.7	7.5	3.9	9.4	9.9	
12	7.8	7.1	4.5	6.4	11.7	
13	9.3	6.1	1.9	3.3	8.9	
14	5.8	5.7	4.9	4.6	6.4	
15	3.7	2.9	1.5	3.3	4.8	
16	6.5	0.9	0.1	0.7	6.4	
17	5.0	0.6	2.9	2.2	9.3	
18	+ 2.4	1.0	2.4	1.4	5.7	
19	- 1.2	+ 1.8	+ 1.5	0.3	2.7	
20	4.0	-11.9	- 1.1	0.3	+ 2.0	
21	8.6	1.2	+ 0.1	+ 1.6	-11.4	
22	18.7	7.9	- 9.1	- 0.4	13.7	
23	-10.9	- 3.8	+ 3.5	- 4.1	- 2.6	

TABLE VI.—MEAN DISTURBANCE of the DECLINATION, without regard to SIGN, at each HOUR during the several MONTHS, and also for the WHOLE PERIOD, expressed in ARC.

Mean Time at Place.	1875. October 23rd to 31st.	1875. November 1st to 30th.*	1875. December 1st to 31st.	1876. January 1st to 31st.	1876. February 1st to 29th.	1876. March 1st to 28th.	Mean Disturbance for the whole Period.	Mean Disturbance at Van Rensselaer Harbour, 1854.
Noon	31.1	28.0	19.8	25.0	28.5	42.7	28.3	†60
1	23.5	17.9	21.0	32.6	28.4	28.1	25.9	46
2	12.6	14.1	21.8	27.3	34.2	33.0	26.3	39
3	15.2	29.3	25.7	19.1	12.5	28.5	24.7	45
4	8.3	14.3	10.3	19.9	21.8	24.0	18.0	41
5	11.9	13.4	9.3	11.8	16.8	17.8	13.5	31
6	3.7	7.4	5.8	16.2	13.2	19.3	12.8	41
7	10.7	9.5	9.7	12.8	9.0	13.7	10.8	37
8	14.3	14.4	6.5	6.2	18.8	19.3	13.6	47
9	15.6	10.9	5.7	7.1	15.4	10.6	10.1	49
10	11.2	11.6	10.6	14.2	13.5	16.2	13.2	50
11	20.9	7.9	17.0	10.4	28.4	18.1	21.7	46
Midnight	19.6	15.4	18.7	7.9	19.0	20.4	17.0	52
1	12.3	20.8	16.7	7.6	14.8	17.8	15.8	51
2	17.2	17.5	17.6	9.0	13.2	17.8	15.7	47
3	6.6	13.4	9.7	9.0	10.6	15.9	11.6	50
4	7.3	8.7	9.3	7.3	13.5	19.5	13.0	53
5	8.1	11.4	6.1	7.6	10.0	17.7	10.9	49
6	12.8	6.4	6.8	5.0	8.1	14.2	8.8	42
7	24.0	9.3	12.3	5.9	16.0	13.2	12.9	54
8	23.0	8.2	12.6	9.2	16.5	11.2	12.1	48
9	17.2	15.6	11.2	13.4	13.7	42.6	21.8	46
10	36.0	23.6	25.0	24.6	10.3	44.5	27.9	31
11	42.5	23.1	21.3	20.2	18.3	19.2	22.5	46
Sums	405.6	352.1	323.5	329.5	408.5	535.3		

* No observations were made on 8th and 9th November.
† Principally due to a very large disturbance.

TABLE VII.—MEAN EASTERLY DISTURBANCE of the DECLINATION at each HOUR during the several MONTHS, expressed in MINUTES of ARC; also the MEAN VALUE of the same during the WHOLE PERIOD.

Mean Time at Place.	1875. October 23rd to 31st.	1875. November 1st to 30th.	1875. December 1st to 31st.	1876. January 1st to 31st.	1876. February 1st to 29th.	1876. March 1st to 28th.	Mean Easterly Disturbance.
Noon	15.9	19.2	8.0	16.1	14.5	17.2	15.6
1	17.5	16.8	12.5	16.2	14.2	15.0	15.1
2	11.8	11.4	12.9	16.9	15.4	16.7	14.5
3	8.6	18.9	12.8	16.1	12.5	15.8	14.1
4	6.2	9.0	8.2	16.2	13.7	17.6	13.3
5	8.6	15.3	8.7	11.1	9.3	13.2	11.6
6	4.3	7.4	5.6	8.0	19.3	9.6	9.8
7	12.3	9.9	15.6	23.7	8.8	15.5	14.2
8	29.7	14.2	7.8	6.6	34.7	27.5	19.4
9	17.3	13.1	6.5	11.1	30.6	11.3	13.5
10	12.9	16.1	14.2	22.2	21.2	27.1	19.5
11	28.4	32.6	29.7	13.8	51.6	31.1	30.6
Midnight	27.6	21.0	30.0	10.9	23.7	33.0	24.4
13	12.6	37.5	24.7	7.7	19.3	21.3	20.8
14	17.6	19.9	23.3	13.9	15.2	20.5	18.9
15	7.1	16.8	11.3	10.2	15.4	14.8	13.5
16	13.4	9.7	10.7	8.0	19.9	24.8	15.2
17	9.1	18.3	4.9	9.2	12.8	29.9	14.4
18	7.1	6.5	7.6	5.9	9.9	20.3	10.3
19	12.5	6.6	16.1	5.3	23.0	15.4	13.9
20	14.3	8.3	13.2	5.9	12.7	11.8	11.4
21	8.9	11.4	8.3	9.4	8.1	18.1	12.8
22	28.5	19.0	13.7	15.2	9.7	18.3	16.5
23	33.4	14.6	11.7	6.9	12.9	13.1	14.2

TABLE VIII.—MEAN WESTERLY DISTURBANCE of the DECLINATION at each HOUR during the several MONTHS, expressed in MINUTES of ARC; also the MEAN VALUE of the same during the WHOLE PERIOD.

Mean Time at Place.	1875. October 23rd to 31st.	1875. November 1st to 30th.	1875. December 1st to 31st.	1876. January 1st to 31st.	1876. February 1st to 29th.	1876. March 1st to 28th.	Mean Westerly Disturbance.
Noon	51.3	38.7	16.8	36.8	46.4	106.6	40.8
1	33.5	19.7	29.8	55.8	57.0	50.0	41.3
2	13.2	20.1	30.3	39.0	61.4	60.2	40.7
3	24.5	48.8	35.7	22.5	37.3	46.6	34.4
4	15.2	20.8	14.1	24.2	31.4	37.0	25.1
5	12.6	11.8	10.4	12.4	26.7	25.7	15.8
6	3.7	8.1	5.9	26.2	9.7	30.9	16.3
7	10.6	9.5	7.4	5.7	9.1	13.0	8.6
8	6.3	14.7	5.9	4.4	7.6	12.7	9.2
9	14.3	9.2	4.2	4.7	9.2	10.2	7.7
10	9.1	8.9	7.3	7.1	8.1	8.5	8.2
11	13.6	19.6	8.8	8.5	12.8	10.5	12.6
Midnight	14.9	10.4	10.4	5.7	14.7	11.9	11.2
13	11.9	13.6	8.3	7.6	11.6	15.0	11.7
14	16.7	15.7	12.1	7.8	11.3	15.7	13.0
15	7.6	10.4	8.3	8.0	7.8	17.2	10.2
16	5.4	8.0	7.3	7.8	6.6	15.7	9.5
17	6.8	6.6	7.4	6.2	9.9	11.0	8.5
18	20.8	6.1	6.6	4.1	6.8	9.1	7.8
19	47.7	14.1	8.3	6.6	10.0	11.2	12.0
20	42.8	8.3	4.5	13.7	20.9	11.1	15.6
21	34.1	17.6	13.9	18.2	20.9	86.8	30.7
22	42.2	35.3	39.5	35.6	11.1	99.8	43.7
23	53.1	33.8	32.2	30.6	27.5	28.7	33.0

TABLE IX.—DIFFERENCES of the MEAN EASTERLY and MEAN WESTERLY DISTURBANCES of the DECLINATION at each HOUR, expressed in ARC.

The sign - indicates an excess of Westerly over Easterly deflections.
The sign + indicates an excess of Easterly over Westerly deflections.

Mean Time at Place.	1875. October 23rd to 31st.	1875. November 1st to 30th.	1875. December 1st to 31st.	1876. January 1st to 31st.	1876. February 1st to 29th.	1876. March 1st to 28th.	Differences of the Mean Easterly and Westerly Disturbances for the whole Period.
Noon	-35.4	-19.5	- 8.8	-20.7	-31.9	-39.4	-25.2
1	16.0	2.9	17.3	39.6	42.8	35.0	26.2
2	1.4	8.7	17.6	22.1	46.0	43.5	26.2
3	15.9	29.9	22.9	6.4	24.8	30.8	20.3
4	9.0	-11.8	5.9	8.0	17.7	19.4	11.8
5	- 4.0	+ 3.5	1.7	1.3	-17.4	12.5	4.2
6	+ 0.6	- 0.7	- 0.3	-18.2	+ 9.6	-21.3	- 6.5
7	1.7	+ 0.4	+ 8.2	+18.0	- 0.3	+ 2.5	+ 5.6
8	23.4	- 0.5	1.9	2.2	+27.1	14.8	10.2
9	3.0	+ 3.9	2.3	6.4	21.4	1.1	5.8
10	3.8	7.2	6.9	15.1	13.1	18.6	11.3
11	15.2	13.0	20.9	5.3	38.8	20.6	18.0
Midnight	12.7	10.6	19.6	5.2	9.0	21.1	11.2
13	0.7	23.9	16.4	0.1	7.7	6.3	9.1
14	+ 0.9	4.2	11.2	6.1	3.9	+14.8	5.9
15	- 0.5	6.4	3.0	2.2	7.6	- 2.4	3.3
16	- 8.0	1.7	+ 3.4	0.2	13.3	+ 9.1	5.7
17	+ 2.3	11.7	- 2.5	3.0	2.9	18.9	5.9
18	-13.7	+ 0.4	+ 1.0	+ 1.8	3.1	11.2	2.5
19	35.2	- 7.5	7.8	- 1.3	+13.0	4.2	+ 1.9
20	27.5	0	+ 8.7	7.8	- 8.2	+ 0.7	- 4.2
21	25.2	- 6.2	- 5.6	8.8	12.8	-68.7	17.9
22	13.7	16.3	25.8	20.4	1.4	81.0	27.2
23	-19.7	-19.2	-20.5	-23.7	-14.6	-15.6	-18.8
Mean Values	{ -16.1 + 6.4	{ -11.2 + 7.2	{ -11.7 + 8.5	{ -14.8 + 5.5	{ -19.8 +13.1	{ -38.1 +11.2	{ -17.1 + 7.4

TABLE X.—DATES of PRINCIPAL DISTURBANCE of the DECLINATION at KEW OBSERVATORY and of ASSUMED DISTURBANCE at DISCOVERY BAY, compared.

Kew.		Discovery Bay.		Kew.		Discovery Bay.	
1875.			1875.	1876.			1876.
October - -	24 25 26 27 —	24 25 26 27 31	October.	January - -	19 21 — 23 25 26 27	19 21 22 23 25	January.
November - -	— 3 — — — 9 10 — 12 13 — — 21 22 29 —	1 2 3 4 6 7 — 10 11 12 13 14 20 21 22 29 30	November.	February - -	5 9 10 11 13 14 15 16 16 17 18 19 19 20 — 21	5 9 10 13 — — — 16 16 — — 19 19 — — 24	February.
December - -	— — 6 — — 17 18 19 — — 25 26	1 5 6 13 16 17 18 — 21 24 26 26	December.	March - - -	— — 25 26 27 1 4 6 — 11 12 13 — 24 25 26 27 28 29 30 31	— 24 25 26 27 — 4 6 8 11 12 13 16 24 25 26 27 28 29 30 31	March.
1876.			1876.				
January - -	1 8 — — — 18 14 —	— — 4 5 9 13 14 15	January.				

Atmospheric Electricity.

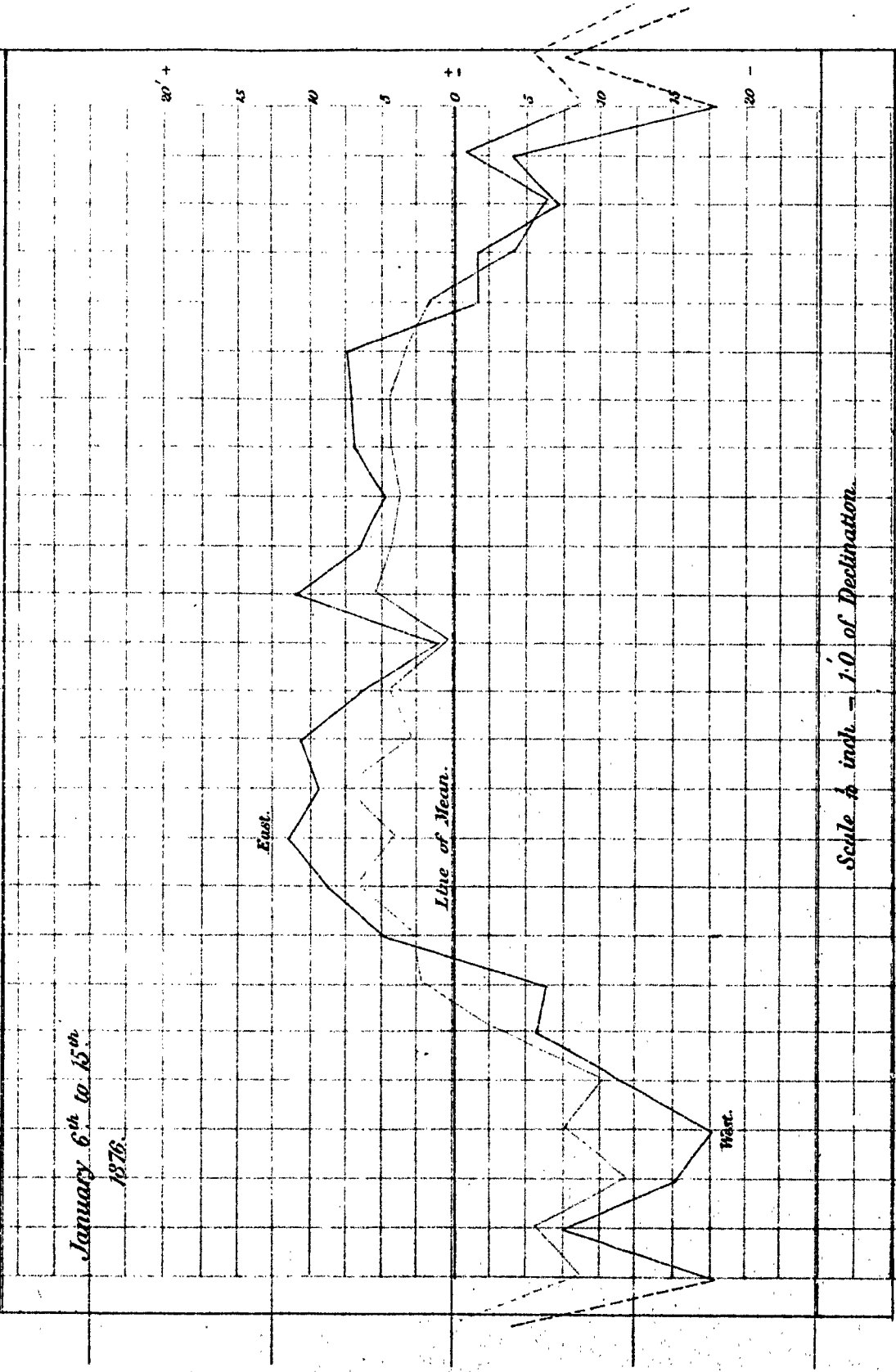
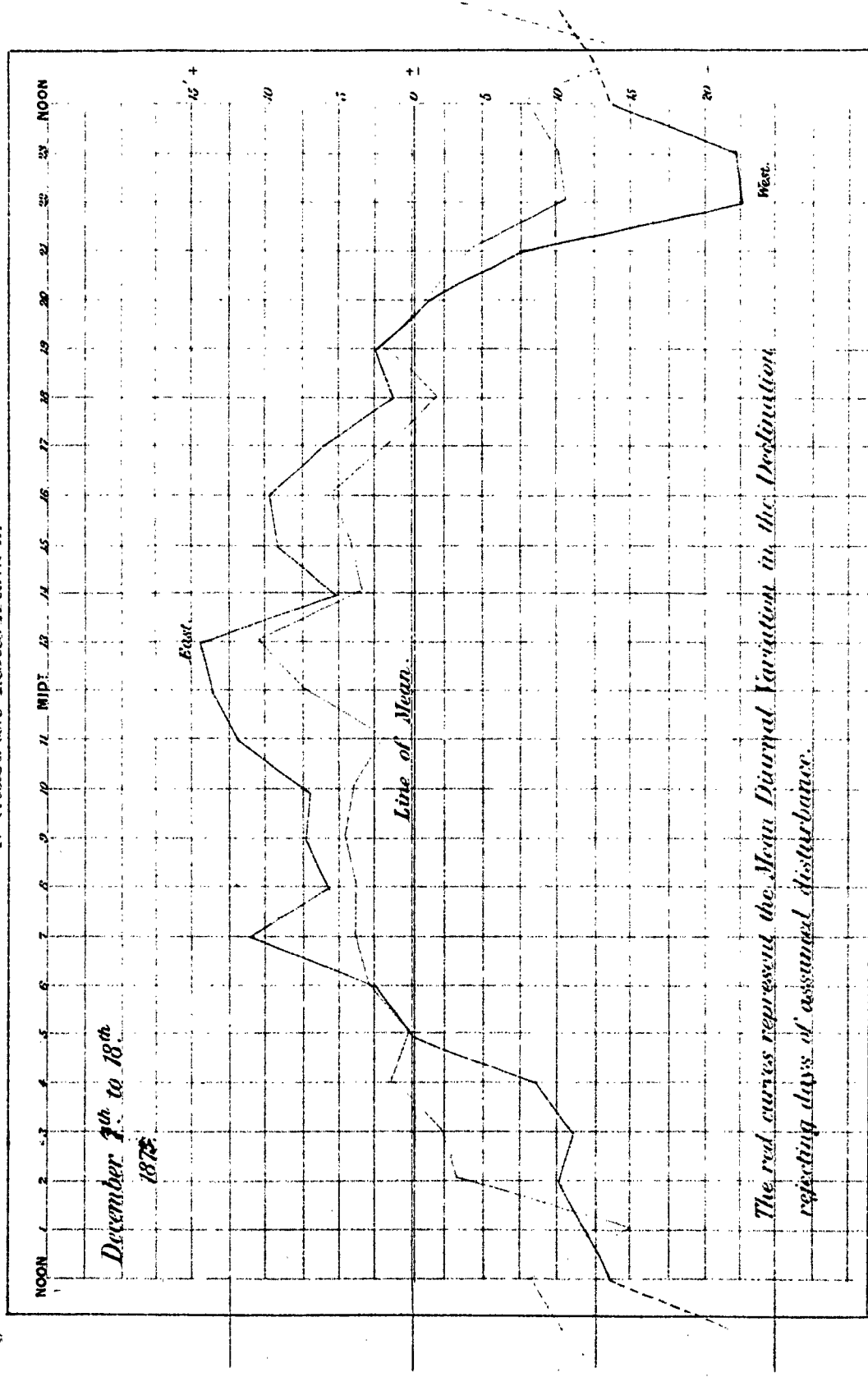
EXTRACT from pages 15 and 16 of the "Report on Atmospheric Electricity," by Professor J. D. Everett, M.A., D.C.L., Queen's College, Belfast; published by authority of the Meteorological Council, London, 1878:—

" 28. The late ARCTIC EXPEDITION was furnished with two of Sir William Thomson's portable electrometers, which were committed to the charge of Captain Parr of the "Alert," who has furnished a report of the results obtained.

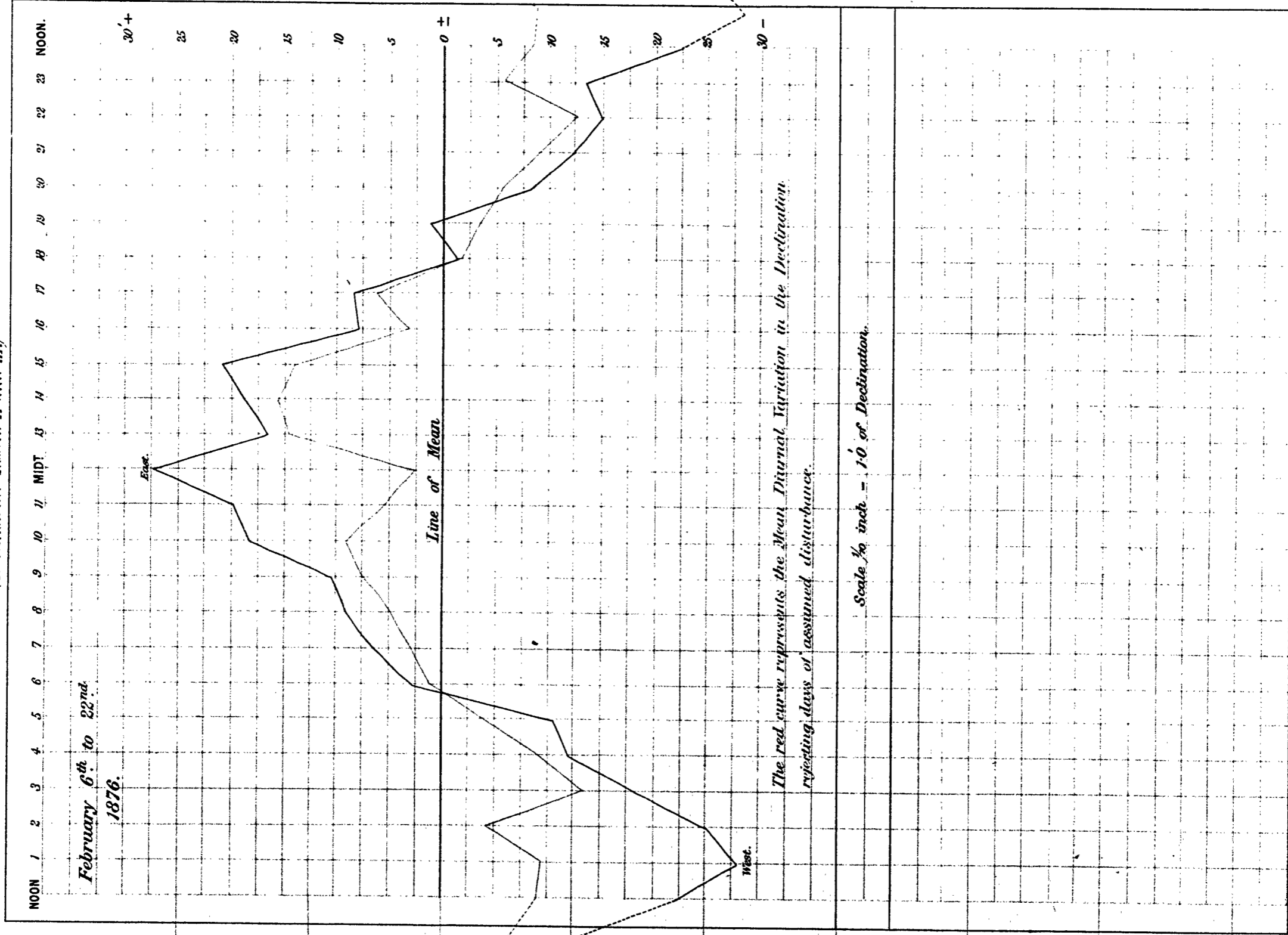
" Observations were taken at Disco and other places further north, from July 9th to November 22nd; the first observation at the winter quarters of the ship being on September 9th. The potential observed was almost always positive, and does not appear to differ materially from what is observed in temperate climates. The observations, however, are too scanty to furnish a very exact comparison. The electrometer with which the observations were made was broken on November 22nd, and Captain Parr was never able, either before or after this accident, to make any use of the other electrometer.

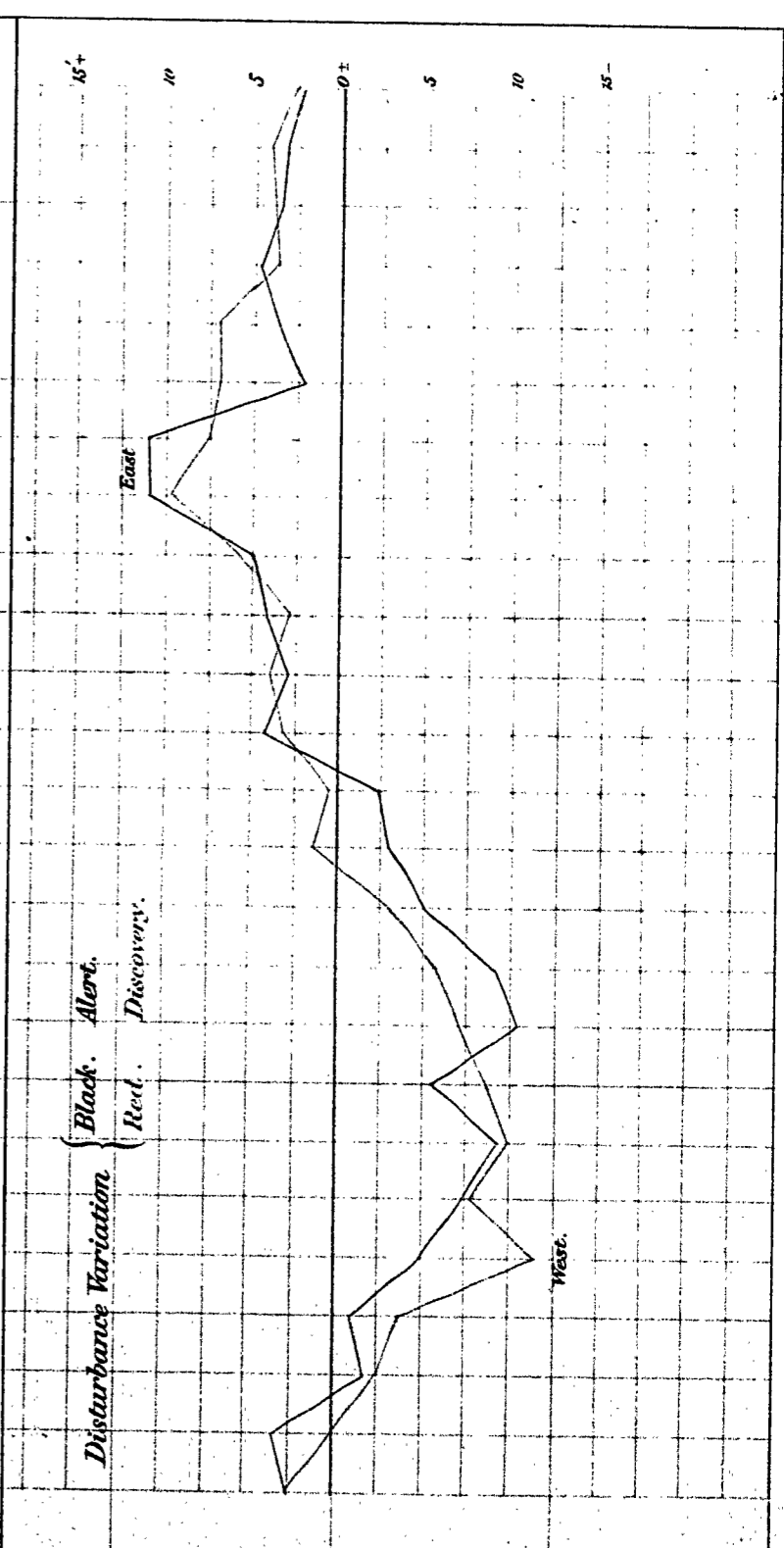
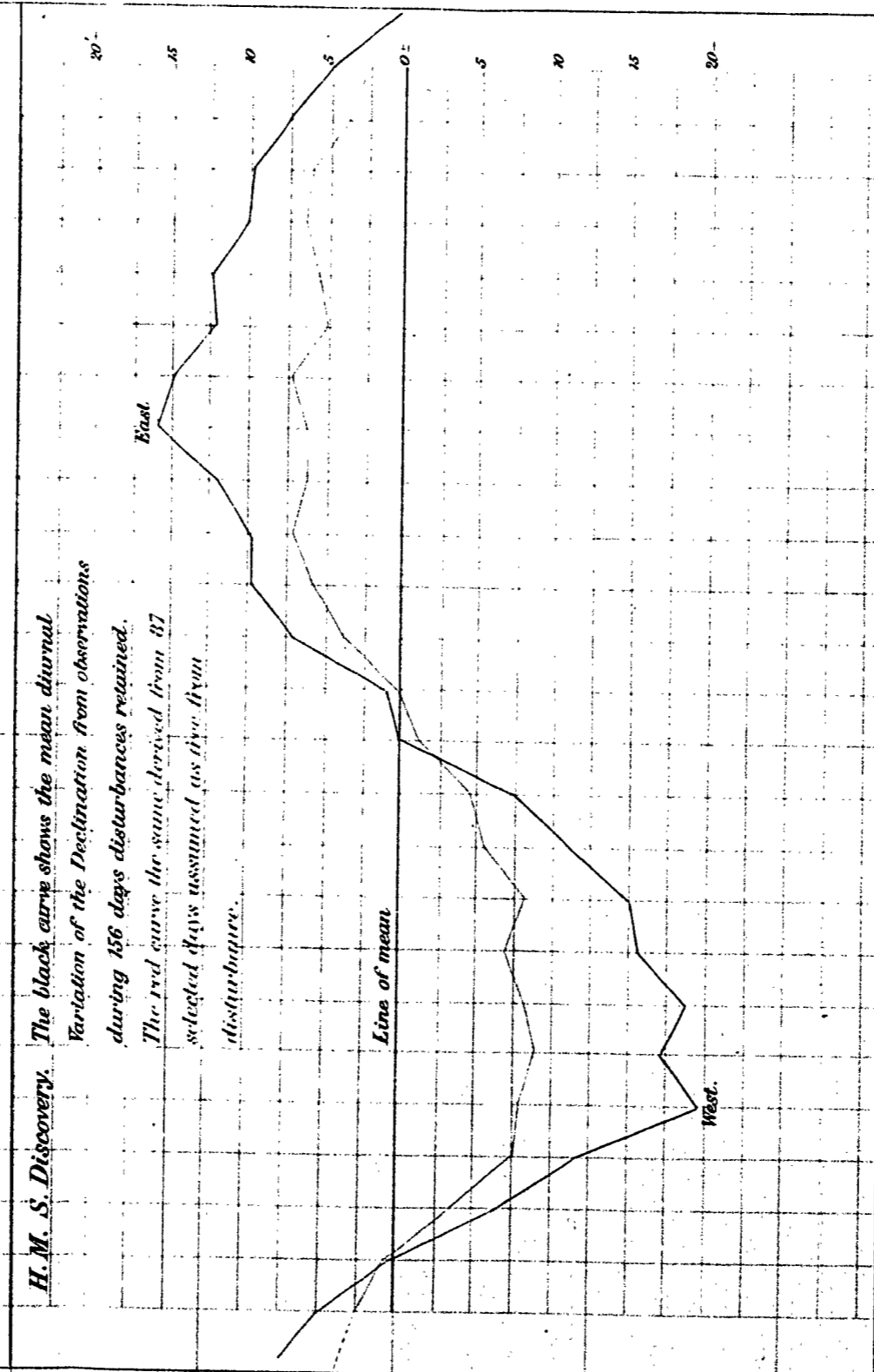
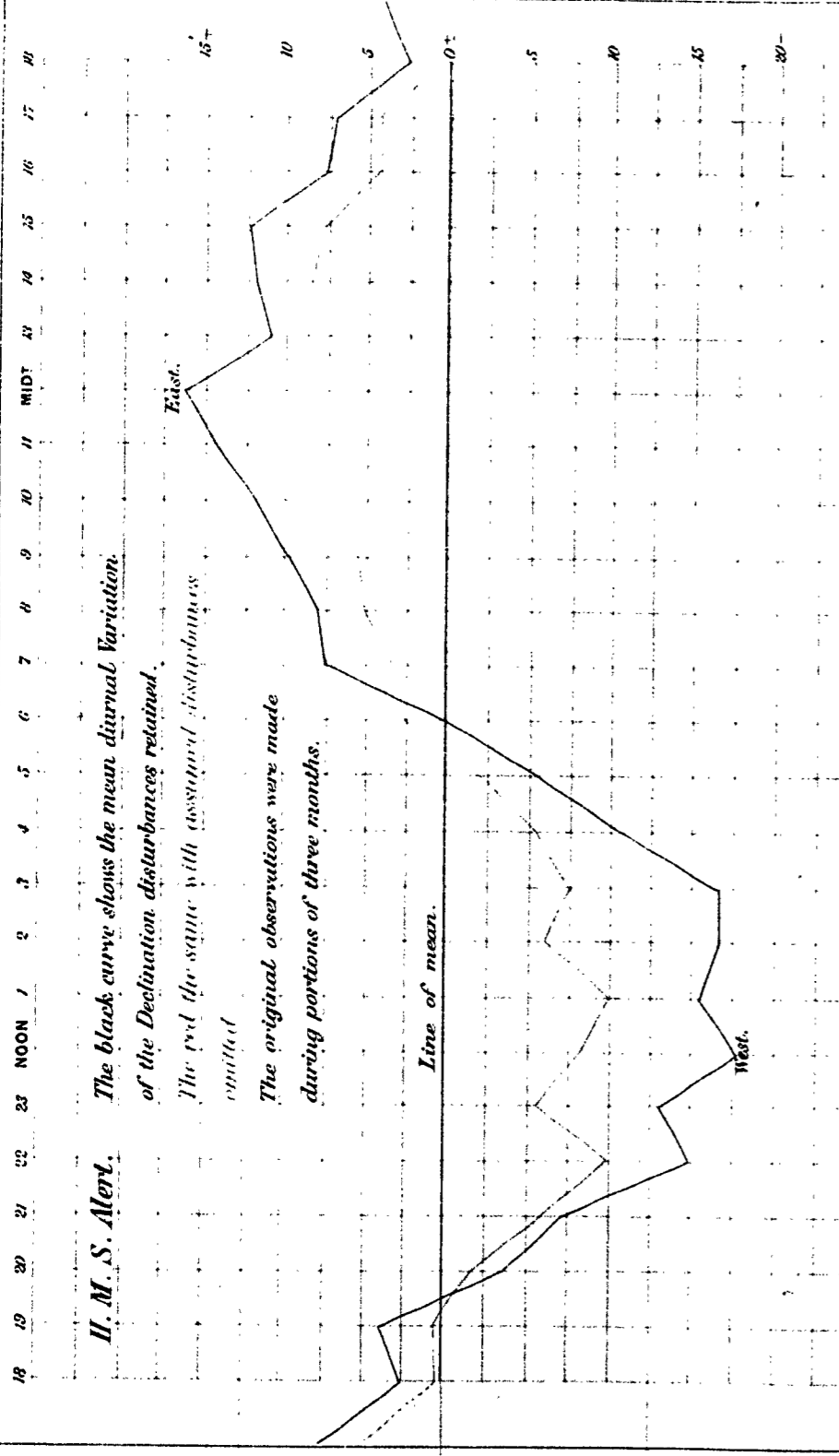
" 29. The most notable circumstance connected with these observations was the difficulty of getting a sufficiently good earth-connexion, owing to the non-conducting quality of the snow and ice; a quality which became more marked as the temperature fell. On October 26th, with the thermometer at 12 below zero Fahrenheit, the ice was found to give a sufficiently good earth for the measurement of difference of potential between the earth and a point in the air, although it had been found insufficient for the operation of charging the Leyden jar. On November 22nd, with the thermometer at -37° F., it was found insufficient even for the measurement of difference of potential; and it was in the attempt to remedy this want by a connexion with the ship's cable that the accident occurred which destroyed the instrument."

H.M.S. Alert. Winter Quarters Observatory. Mean Diurnal Variation in the Declination.
 (To illustrate Tables II and III)

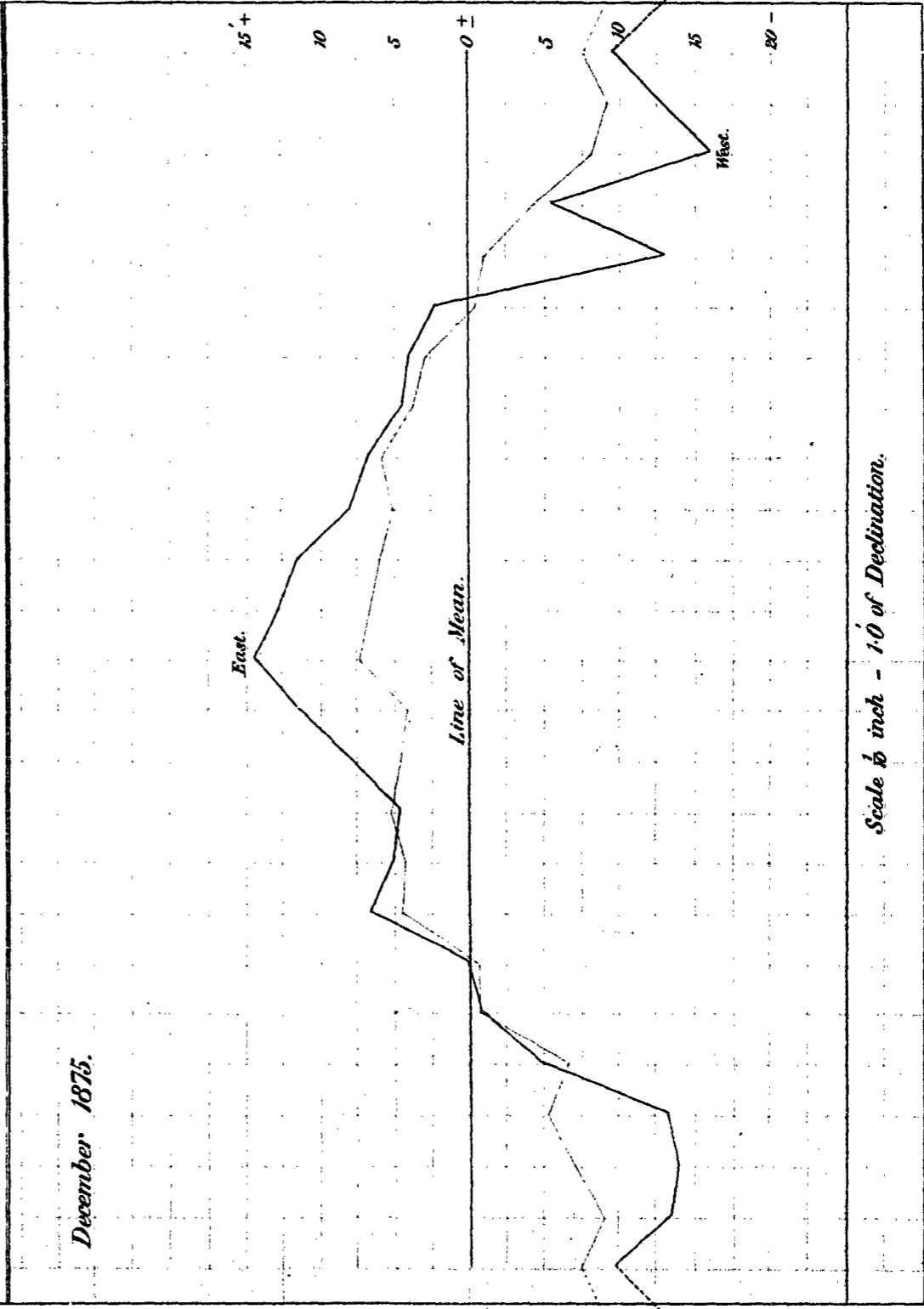
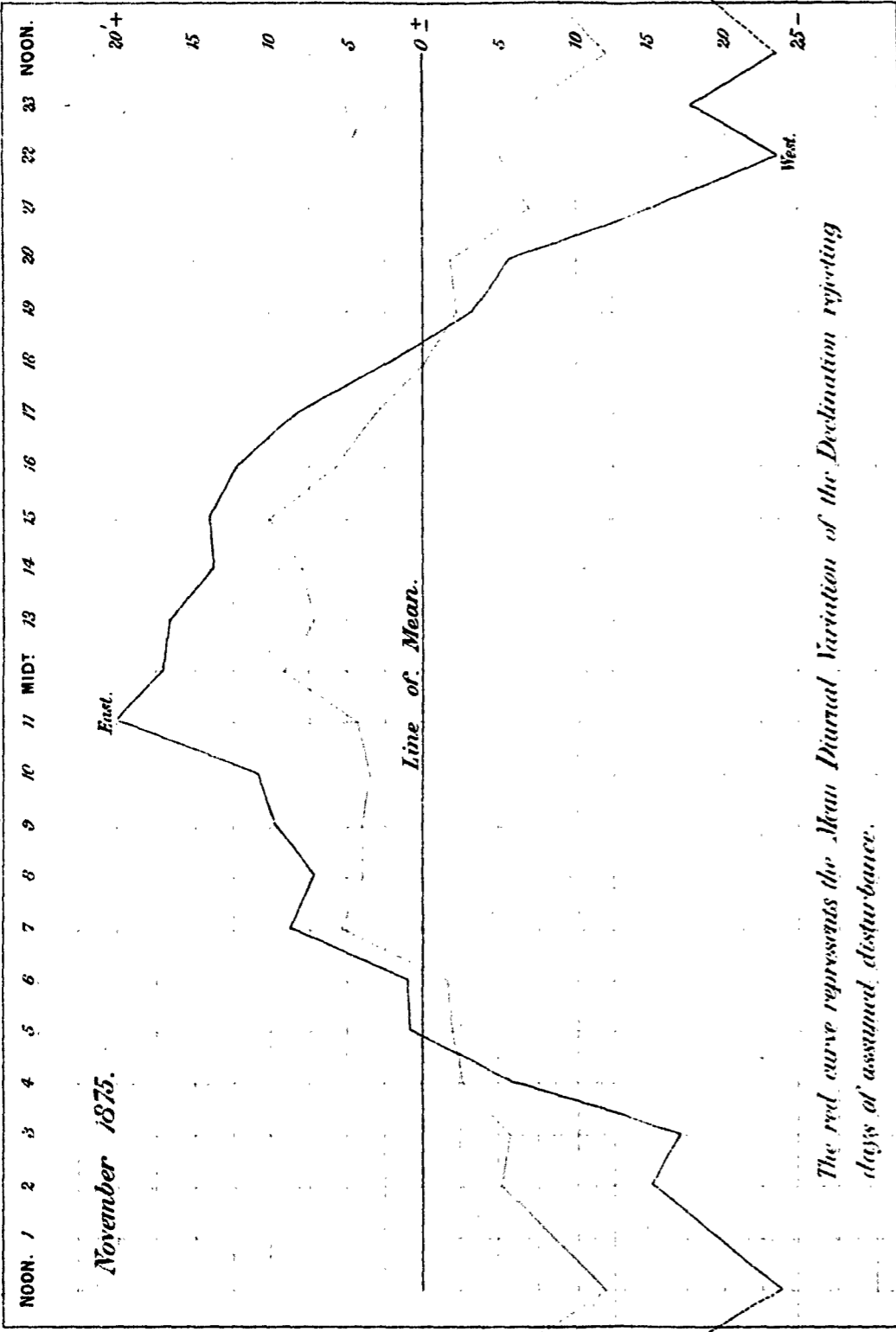


*H.M.S. Alert. Winter Quarters Observatory. Mean Diurnal Variation in the Declination.
(To illustrate Tables II and III.)*

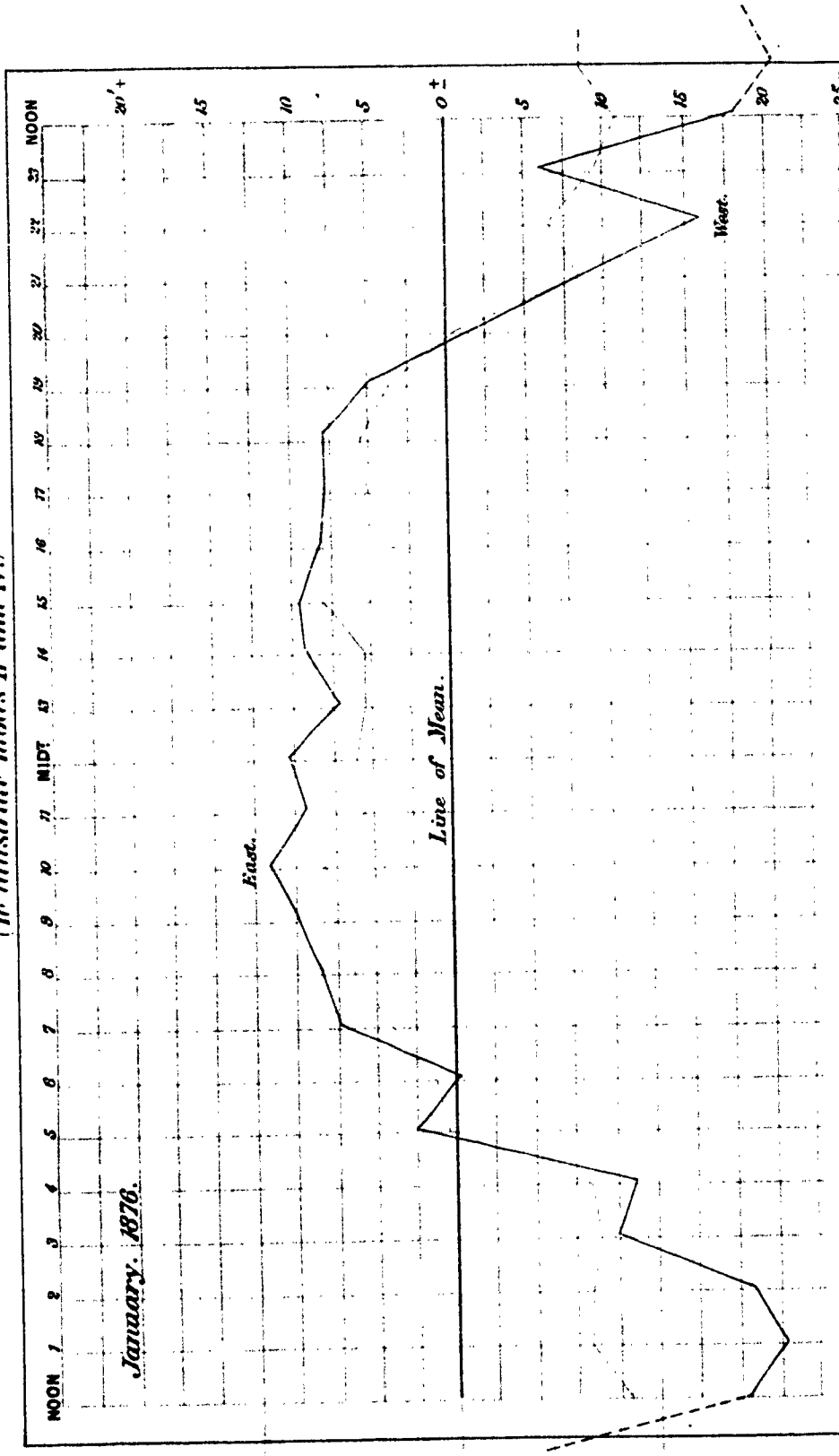




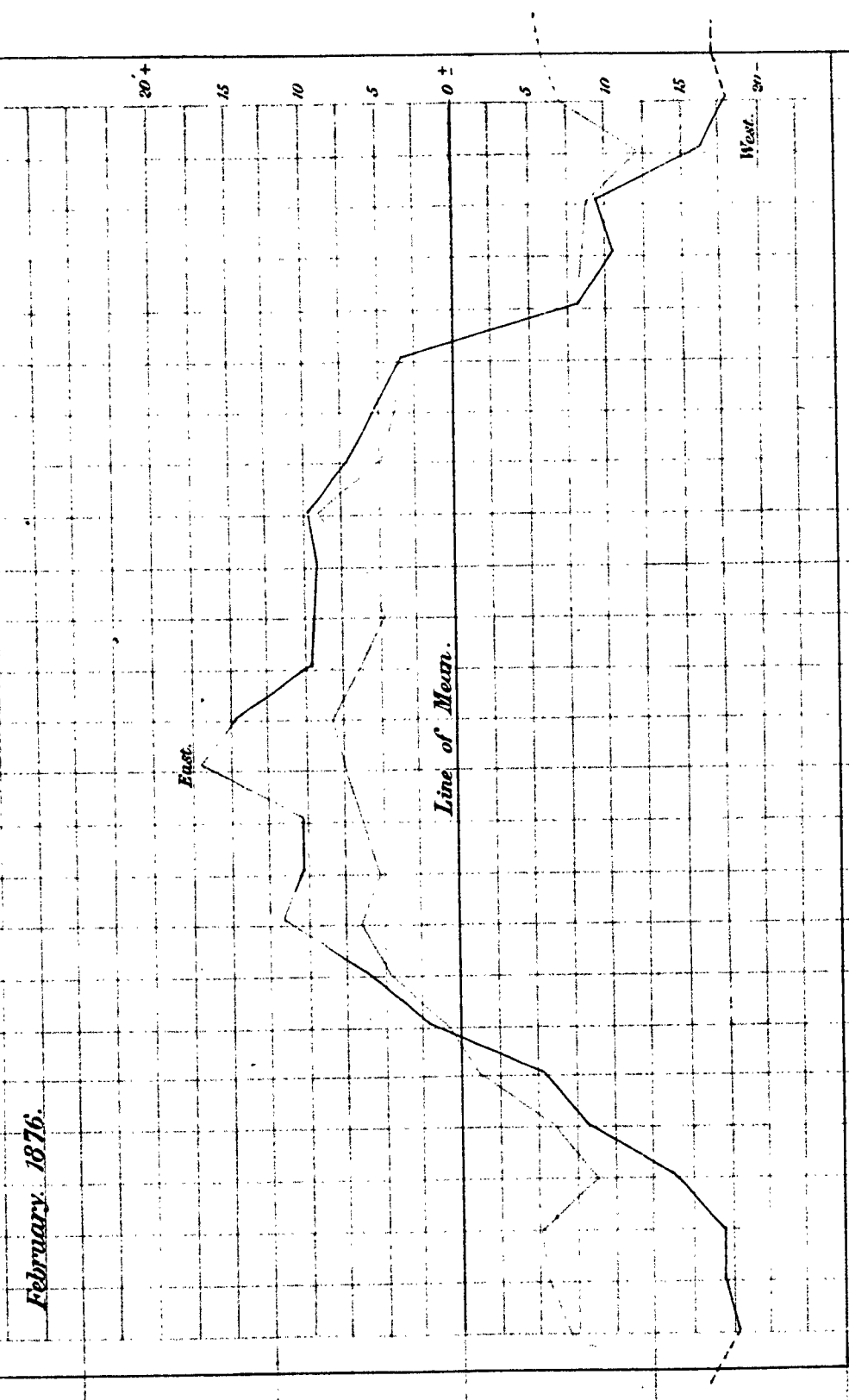
*H.M.S. Discovery. Winter Quarters Observatory: Mean Diurnal Variation in the Declination.
(To illustrate Tables II and IV)*



U.S.S. Discovery. Winter Quarters Observatory. Mean Diurnal Variation of the Declination.
(To illustrate Tables II and V.)

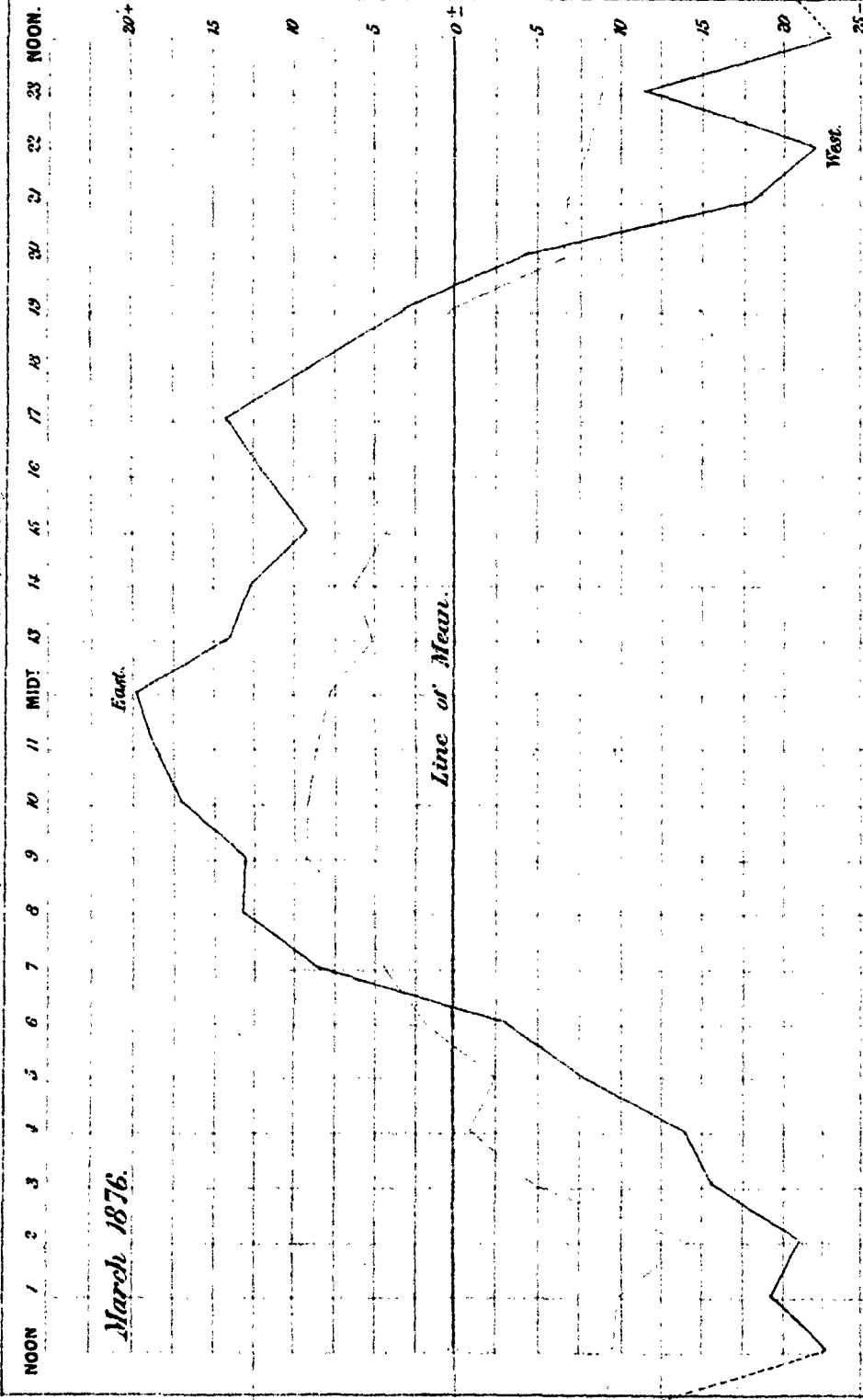


The red curve represents the Mean Diurnal Variation of the Declination rejecting days of assumed disturbance.



Scale 1/10 inch = 1.0' of Declination.

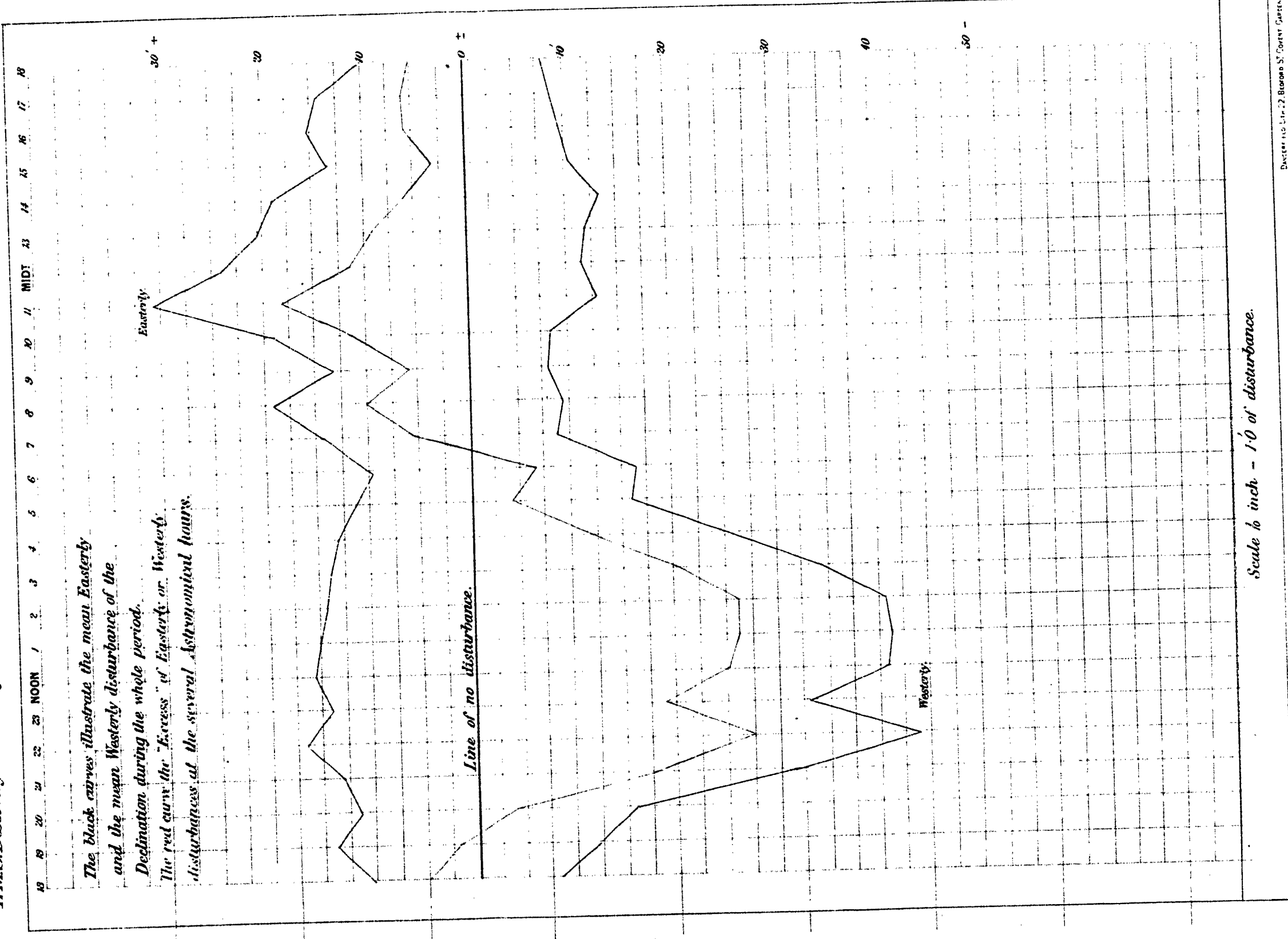
*H.M.S. Discovery: Winter Quarters Observatory. Mean Diurnal Variation of the Declination.
(To illustrate Tables II and IV.)*



The red curve represents the Mean Diurnal Variation of the Declination rejecting days of assumed disturbance.

Scale 1/10 inch = 1.0 of Declination.

H.M.S. Discovery: Winter Quarters Observatory. Curves of Disturbances from Tables VII, VIII, IX.



The black curves illustrate the mean Easterly

and the mean Westerly disturbance of the

Declination during the whole period.

The red curve the "Excess" of Easterly or Westerly

disturbances at the several Astronomical hours.

Line of no disturbance.

Scale 1/10 inch = 1'0 of disturbance.

II.

MEDICAL REPORT

ON THE

ESKIMO DOG DISEASE.

Stoneham House, Winchester,
8th January 1877

SIR,

I HAVE the honour to forward the enclosed paper on "Eskimo Dog Disease," drawn up by Fleet Surgeon Belgrave Ninnis, M.D., late of H.M.S. "Discovery."

The information contained in the paper is of great value, and particularly so to the Danish authorities on the coast of Greenland, and the Eskimo on the west side of Baffin's Bay, where no remedy for the disease, which is constantly occurring, has previously been discovered.

I have, &c.

G. S. NARES,
Captain, R.N.

The Secretary of the Admiralty.

Eskimo Dog Disease: Its Symptoms, Treatment, and Pathology.
By Belgrave Ninnis, M.D., Fleet Surgeon, Royal Navy.

For many years there has existed among the Eskimo dogs of the western coast of Greenland a disease which has resisted all attempts at successful treatment, and which threatens, if not at once grappled with and overcome, to annihilate the breed, in which case, as the inhabitants of many settlements along the northern coast are almost entirely dependent upon their dogs for the means of locomotion and hunting, it becomes a question whether, in saving the lives of these most useful and much maligned animals, we are not really preventing the Greenland Eskimo from becoming extinct. It would be out of place in a paper like the present, which is intended to give some practical hints relative to the nature of this disease, its symptoms and treatment, to enter deeply into the origin of the Eskimo dog; but a few remarks respecting those which were on board H.M.S. "Discovery," 1875, 1876, and amongst which the following cases occurred, may not be without interest. We embarked 25 dogs at Retenbenk, to all appearance sound and in good health. From the accounts we had received of their ferocity and wolfishness they were confined to one side of the deck, but this being found inconvenient, they were allowed to run loose on the top-gallant fore-castle. The usual battles of course took place, but not with the usual result, for instead of the one assuming unlimited sway over the rest, after the manner of Eskimo dogs, the pack was divided into two factions, the leader of the second one yielding but very reluctant homage to the "king." Among the most rebellious were two grisly but fine-looking animals exactly alike, apparently brothers. These never submitted to either faction, but held themselves aloof from both. In vain did the "king" attempt to enforce his authority. No sooner did he attack one, than the other hastened to his assistance, and fighting shoulder to shoulder, they beat the enemy off, unless overpowered by numbers, when they were frequently cruelly bitten. Lamed each in a hind leg, they still retained their freedom until one died. The

existence of the other was now one of constant fighting for dear life, until the "king," having companions, gave him a good thrashing, and then took him under his protection. He might now have led a quiet life, had he not been found paying attention to the "lady whom the 'king' delighted to honour," when his troubles recommenced. Constantly fighting, torn, bleeding, covered with wounds, but undebated, every "dog's teeth" against him, he passed a stormy winter. Early in the spring, after a more than usually severe *mêlée*, it was found that amongst other wounds he had one penetrating the abdomen, through which a portion of intestine protruded, to the extent of more than two inches. I attempted to reduce the protrusion, but ineffectually; and as he did not appear to be suffering, I determined to leave him to his own devices for 24 hours. During the day he constantly licked the part, and would get up and stretch himself, lying down again in a few minutes. In the morning the protrusion had disappeared, the wound found to be very small, and the animal apparently as well as ever. He worked well during the spring sledging, but his spirit appeared to be broken. One day, in the summer of 1876, he was not to be found. Days elapsed, when his mangled body was discovered not far from the landing place where the other dogs were encamped, evidently killed by his unforgiving fellow creatures.

On becoming better acquainted with our dumb companions, we soon found that they were not by any means so savage as we were led to expect. "Don't feed them more than twice a week, and if they show any signs of insubordination, knock them down with a marling spike," or, "if they attempt to come near you, kick them; it is the only way to prevent them biting you." Such were the instructions given us on their coming on board. But sailors are notorious for making pets, and our men were no exception to the rule. The dogs were soon all named, and instead of kicks, blows, and starvation, they were to be seen sharing the rations of the blue-jackets, behaving in as sociable and decorous a manner as if brought up in a cottage.

They "littered" several times, four to ten being the number at a birth, but the pups died, generally from being born at an unfavourable time of the year. Those born in the spring or early summer did well.

The full-grown dogs stood the cold well. It was not at all an uncommon thing to find long icicles hanging from the hair on their backs, rattling as they trotted about. On one occasion I found a dog fastened to the "floe," his tail having become frozen to it. He howled, but soon got himself free.

Our dogs never quarrelled with, or attempted to bite the bitches, or young pups. I have seen a bitch and sometimes the pups eating off the same meat or piece of skin as a dog, unmolested. The first appearance of the disease was on August 9th, when one of the young females fell off the topgallant forecandle on to the deck and thence down the hatchway, in a fit, foaming at the mouth; it was thrown overboard, and the shock appeared to revive it. There was no inclination to bite. She had a similar fit on the 15th instant, soon recovered, and again on the 16th, but apparently quite as well after as before it came on. On the 20th she was observed to run wildly about amongst the others, snapping at any in her way. No foaming at the mouth. In a few minutes she fell down convulsed, teeth clenched, head thrown back, back curved in, tail curled over the back, legs extended. This lasted about 1½ minutes. She then suddenly jumped up and began running about, but in a "tottering" way, as if the hind legs were partially paralysed, snapping at anyone who approached. It was not without risk that she was pushed overboard, when she swam to the "floe." I gave her two grains of opium, and she soon after crept into a boat and slept quietly for many hours, awaking apparently quite well. During all this time she took food and drink quite readily.

On the 22nd she had another fit and fell off the topgallant forecandle on to the deck. Opisthotonos extreme appearing as if the back must break from the excessive curving, grinding of teeth, movement of the legs as if swimming. This lasted about a minute, but fit succeeded fit in rapid succession, and she died apparently from exhaustion. During the fits breathing seemed to be suspended.

Five grains of opium was given as soon as the mouth could be opened, succeeded in half an hour by 30 minims of Tr. Opii, but death took place before any effect could be produced.

Sectio Cadaveris. 1½ hours post mort. temp.

Rigor mortis subsiding; brain and spinal cord, with their membranes, apparently healthy; larynx, healthy; brown foam about epiglottis and rima. Chest: walls flattened laterally. On introducing a knife, air entered with a hissing noise, and chest

expanded. Lungs collapsed to a degree, healthy; heart firmly contracted, healthy; liver healthy. Gall bladder full.

The two following cases occurred in young dogs, belonging to our Eskimo Hans, which he brought on board at Proven. They were seized with fits of a mild description similar to the preceding, but, as is the custom amongst the natives, Hans shot one and put the other on the "floc," when he speedily ran away and we saw him no more.

CASE No. 4.

This dog was observed to be ailing for two or three days, and on the 14th August he fell overboard into the water in a fit. He was picked up, and being quite unconscious and very wet, was put by the side of the galley fire, where he remained for about an hour. He then got up and began running about. A rope was fastened around his neck and he was taken on deck, where he very soon had a fit which lasted two minutes, foaming at the mouth, shallow respiration, working of the legs as if swimming, very offensive diarrhœa during the fit. On recovering he was put on the "floc" too feeble to move, and some rum and water poured down his throat, when it was found that he was bleeding from the mouth. He remained quiet for an hour, and then had another fit which lasted two minutes, and during which he rolled completely over. At the commencement his back was curved inwards, head thrown back, and tail curled over the back, but towards the close the back was arched, all four feet and his head being drawn together. The fit left him scarcely able to stand. He remained curled up for the next five or six hours (6 p.m.) as if asleep, when some walrus meat was given him, which he took greedily. He likewise had some more rum and water and appeared quite comfortable. On the 15th at noon he had a fit and fell into the water, and although he was quickly picked out he was drowned. He did not attempt to swim.

CASE No. 5.

This case was peculiar on account of the rapidity with which it proved fatal. It appeared, from what I could learn from the men, that this dog had been ailing for several days, but did not have any fits. On the morning of 17th August he became very excited, trying to get overboard, and snapping at the other dogs, who snapped at him in return. He was immediately removed from the topgallant forecastle, when he ran swiftly to the stern of the ship, fell down and convulsed, and died before anyone could get to him.

Sectio Cadaveris. 15 minutes post mortem.

Rigor mortis well marked; marks of bites on the left ear, both hips, and face; small indurated ulcer under the right side of the tip of the tongue; no frothing or bleeding from the mouth; jaws closed and fixed; legs stretched out at right angles to the body; brain firm and healthy, a little fluid in the lateral ventricles; larynx healthy, no spasm or obstruction; chest contracted, expanding on admission of air; lungs pink and healthy, but quite collapsed. Heart: left ventricle hard and contracted, right side full of semi-fluid blood; stomach contained about six ounces of greenish fluid and two pieces of partially digested bone, one a little larger than a walnut, the other smaller and resembling "gristly honeycomb," and firmly fixed close to the pylorus; gall bladder full; liver healthy.

CASE No. 6.

This dog jumped from the topgallant forecastle, 17th August, on to the "floc" and refused to be caught; he appeared to be quite well. He was caught on the 18th and brought on board. On the 20th he began to run about in an excited manner, trembling, but not attempting to bite, even when patted. He was secured by a rope, but tried to get loose, howling and barking, until, in a few minutes, he fell down in a regular epileptic fit, foaming, &c. &c., which lasted about a minute, when he got up and appeared quite well. As there was tenesmus, five grains of calomel were administered. He took walrus meat and drank water greedily. The medicine operated in about 10 hours, the stools being "pity" and offensive, and containing some blood. The next day he was much better, the medicine was repeated, and the evacuations gradually assumed a normal appearance. He quite recovered, worked well through the sledging season, and was landed at Disco on our way to England. He did not suffer any relapse.

CASE No. 7.

This dog, when first seen by me, was trembling and looked frightened, not attempting to bite, but very restless; no foaming at the mouth. At times he ran about wildly, so was put into my "dog hospital," which consisted of a sheep-pen roofed in by a strong net. He soon became savage, snapping at anyone who appeared, and struggling to break out. On attempting to feed him, he snapped viciously at the spoon, leaving his teeth marks on the metal, whining, barking, and howling as if frightened. Under these circumstances he was covered up, so that he could not see people passing his abode. In about an hour and a half he had a typical epileptic fit, which lasted about two minutes, followed in 20 minutes by another of three minutes' duration, during which he bit his tongue. In the meantime he constantly ran round in a circle from left to right as if after his tail. At times he appeared as if he saw something frightful, the expression of abject terror reminding one of a person suffering from delirium tremens. He constantly rushed at his food and water, but did not attempt to eat or drink. About two hours before he died the fits became almost incessant; his look of terror was extreme, crouching in a corner of the "pen," and then dashing wildly forwards. On one occasion, having seized the iron bars of his "hospital" in his teeth, a fit came on so suddenly that he remained in that position, smashing his teeth, and bleeding from the mouth. The naturalist in endeavouring to assist me in administering a sedative narrowly escaped a severe bite, the animal's teeth pinching the skin over the ball of the thumb so as to raise a "blood vesicle," from which, however, no ill effect followed.

In less than six hours after the commencement of the first fit he died. The head and tail almost touching from the extreme curving in of the back, legs stretched out, lips drawn up, exposing the teeth, penis protruded, but not erected.

Sectio Cadaveris. 12 hours post mortem.

Brain and spinal cord removed together; membranes of the former somewhat injected, as was likewise the case with the latter over the origin of the brachial and lumbar plexuses; but this increased vascularity did not extend to the brain or cord itself, both of which were, to all appearances, healthy. Chest: lungs collapsed, as in the former cases, but quite healthy. Heart: fibrous clots in both ventricles, coagula in all the cavities. Liver, healthy; gall bladder full.

CASE No. 8.

This dog when first seen was observed to be standing quiet but trembling violently. He soon began to run round as if after his tail; no foaming at the mouth. The day previously (17th August) he passed blood and pus per anum. Pupils contracted, took food and water eagerly. He was conveyed to my "hospital," and two grains of opium administered. He did not sleep much, but dozed for nearly 12 hours; he then became restless, growling when approached. Two more grains were given him, and some food and water, which he took. He passed a quiet night, and early the next morning I administered four grains of calomel, which operated freely, the evacuations being dark, but fairly healthy. Two days afterwards he was convalescent. He worked well all through spring sledging, and was landed at Disco on our way to England.

CASE No. 9.

A bitch, very thin and small, was reported to me as having just had a fit, August 21st. The fit lasted about a minute, with foaming at the mouth. I did not give any medicine, but had her removed from among the others and regularly fed and tended. There was no return of the fits until September 8th, when she had two or three slight ones of a tetanic character. She appeared as if in pain in the abdomen, alvine evacuations scanty, and like pitch. Five grains of calomel were administered, and some food and water supplied. The medicine operated freely, bringing away a great deal of very dark matter, and she was convalescent on the 11th.

She worked well during the sledging season, and was landed at Disco on our way to England, 1876.

CASE No. 10.

A fine large dog, chief of the rebel faction; he had a fit of an epileptic character, August 21st, followed by great weakness of his hind legs. As the bowels were not moved during the day, five grains of calomel were given, and as this did not have any effect another five grains was given on the 22nd, which was followed by copious

"pitchy" evacuations. No return of fits, took his food and water well. As the "pitchy" stools continued, on the 24th another five grains of calomel was given. He was discharged from the "hospital" quite well on the 26th.

This dog has turned out one of the finest of the pack, was invaluable during the sledging season, and was also landed at Disco on our way home.

CASE No. 11.

This dog had an epileptiform fit, 22nd August, and fell off the topgallant forecastle; no inclination to bite, foaming at the mouth. As he appeared quiet I did not give him any medicine, but had him tied up. The next morning he had several well-marked tetanic convulsions, in one of which he died, his head and tail almost touching, from the violence of the downward curve of his spine. Opium was administered, but his death was too rapid to have any effect.

Sectio Cadaveris. Two hours post mortem.

Rigor mortis subsiding; head and spine not examined; chest contracted, and lung collapsed, as in the other cases; heart healthy, firmly contracted. Abdomen: liver healthy; gall bladder full; spleen and pancreas healthy; stomach contained a quantity of biscuit; large intestines contained a large quantity of irregular lumps of hardened fæces. In the immediate neighbourhood of the ileo-cæcal valve semi-livid spots were noticed. On slitting up this portion of the intestine the inner surface of the colon was found studded with a number of greenish bodies, hard to the touch, and having depressed centres; they did not extend into the ileum. For some distance on either side of the valve the surface was coated with a tenacious substance much resembling pitch. Bladder healthy.

CASE No. 12.

This animal had a well-marked tetanic fit, August 25th; no foaming at the mouth. Took his food and water well; some weakness in his hind legs; "pitchy" evacuations. One drop of croton oil was given, which operated freely, causing a copious and very offensive black excretion. On the 26th he was very feeble, had twitching of the legs on the right side, and constantly opened his mouth. Two grains of opium were given, and repeated in 12 hours, as he appeared to be in pain, howling, and restless. On the 29th this dog was drowned; he did fair to make a good recovery, as he had no return of fits, took his food well. Stools normal, and did not appear to suffer. All the dogs were at this time landed, and he got into the sea, but whether in a fit or not I do not know.

CASE No. 13.

Up to the present case the dogs were kept on board, and under my personal observation, but some of the remaining reports I quote from hearsay.

This dog was reported to me as having died on the evening of the 29th August. All I could learn was, that he had had a fit the same morning. A post-mortem examination was made, with the following results:—

Sectio Cadaveris. 36 hours post mortem.

The body was extremely stiff, but whether through rigor mortis, or caused by the cold, I could not determine (temperature + 25·2). Chest contracted, and lungs collapsed, as in the previous cases. Intestines contained the same "pitchy" tenacious substance as did the others, and three or four inches on each side of the ileo-cæcal valve was studded with umbilicated elevations, evidently ulcers.

CASE No. 14.

This dog died on the evening of September 5th. From what I could learn, after the event, he had had several fits during the preceding 24 hours; no inclination to bite, no foaming at the mouth; he was not under treatment.

Sectio Cadaveris. Two hours post mortem.

Rigor mortis subsiding; head and spinal canal not opened; chest contracted, and lungs collapsed, as in the former cases; heart healthy; abdomen, liver, spleen, pancreas, and kidneys healthy; ileum and cæcum contained the usual "pitchy" substance; intestines on either side of the ileo-cæcal valve ulcerated; coagula adherent to some of the ulcers, which were not so hard as in the previous cases, nor were the edges so elevated.

CASE No. 15.

A fine, handsome black bitch, in pup. She was brought on board from shore September 7th, being scarcely able to stand. Very contracted about the loins, and with twitchings of the hind legs. She was very quiet, and made no attempt to bite when touched. Some food and water were readily taken, and five grains of calomel given, soon after which she slept quietly. On the 8th she was better, but the "twitchings" continued. Bowels freely moved, dark greenish evacuations, no blood. Opium two grains. She slept well during the night, and on the 9th was put on the "floe," as the ship was being cleaned out. She occasionally ran about, and then fell down, but there was no convulsion of any kind, although she was perfectly unconscious. The opium was repeated at intervals, and food and water given regularly, the bowels acting regularly, but retaining the same character of stool. On the 11th she was discharged convalescent; on the 28th she had a litter of 10 pups. October 14th she had a fit, and several more on the following day, alvine evacuations "pitchy," and scanty. She was very thin, and did not go near her pups (now seven in number). Some water and meat were "thawed," of both of which she partook greedily. Calomel, five grains. On the 17th she continued free from fits, and was progressing favourably, but as the pups were evidently too much for her, they were removed and fed by hand. From this time she gradually gained strength, and passed through the winter well. All her pups died, but did not show any signs of fits.

Towards the end of February she had a slight fit; she was very thin, and had been sledging. She had two or three more of a similar character in June, when she was on a sledge journey, but they did not interfere with her working. On July 15th, 1876, she had another litter of pups, five in number; she appeared much distressed all day. During the next few days she had two or three fits of a mild character, and as she was very thin and would not eat, although quite quiet and docile, her pups were taken from her and fed by hand with preserved milk, which they took readily.

The mother died July 9th, apparently exhausted, her last fit being very slight and of an epileptic character.

CASE No. 16.

A very fine black and white animal, almost as large as a Newfoundland dog; he had a mild fit when sledging, September 15th. On being unharnessed he began to whine, ran round, and then fell down, when he lay motionless for almost a minute. He then got up, ran about, occasionally stopping, and snapping at his loins. He continued in this state four or five hours, refusing food and water, at which time five grains of calomel were given him. Next morning he appeared much better. Where he had passed the night there were three patches of florid blood on the snow, which was seen to pass per anum. The next 24 hours were spent apparently sleeping, but he continued to growl if approached. As the bowels had not acted lately, five grains of calomel were given with good effect; stools dark and offensive. He ate and drank well. On the 21st he was so far recovered as to be considered fit for work, and he went sledging, returning on the 24th, during which time he had several fits, but of a very slight nature and of short duration. He gradually recovered his health, and was in fine condition when we left for England.

CASE No. 17.

This dog was of the most unsociable disposition from the time he was first embarked. He was reported to me (July 15th) as having had a "fit," but as I did not see it and as he appeared very thin I had him fed and secured. He did not have any return of "fits" during the remainder of the time he was under treatment (July 21st), but he had "pitchy" stools which yielded to the calomel treatment, and he became a useful animal, although never getting thoroughly sociable. He was landed at Disco on our way to England.

CASE No. 18.

This, the last case that I shall mention, was that of a pup that I was bringing to England. He was one of eight born May 16th, 1876, and his mother, a young bitch, never to our knowledge had a "fit" up to the time of his birth. When the pups were about two months old, and still taking nourishment from her, she had some mild epileptiform fits; she was, however, subject to them on our way home.

The weather in Baffin's Bay and indeed during all the way to England was extremely tempestuous. The only place for the dogs was on the topgallant fore-castle, where they were constantly wet and rendered cold by the wind out of the head-sails. Under these circumstances it is scarcely to be wondered that many dogs and pups died. She had a slight fit and rolled overboard. Five out of the six pups died. At Disco we landed all the dogs excepting my pup "Hans" or "Boxer," as the men called him. After leaving Disco he was removed to a warmer and less exposed position on the upper deck and appeared to be doing well. About the 5th September he had an epileptiform fit, foaming at the mouth, and all the legs drawn together; this lasted a minute, and he then appeared quite well. I noticed his evacuations were "pitchy," so gave him six grains of calomel, with the best results. He remained quite well for nearly three weeks, when he again had "pitchy" and offensive evacuations. Calomel was again given with equally good result, and he was kept in the engine room, where he had spent much of his time lately. In the course of three or four days he being on deck in the sun, I heard him give a whine such as is common with these dogs when in pain. I went to him, and whilst patting him he had a most violent tetanic convulsion lasting nearly five minutes and leaving him apparently lifeless. I happened to have a bottle of chlorodyne in my hand, and as he lay on his side with his mouth partially open I poured about a drachm into it, most of which he retained. In a few minutes he lifted his head and looked at me, wagging his tail feebly, and then lay quite quiet. I repeated the dose, and in a few minutes he got up and went into his kennel. He had eaten very little food for some weeks, as he seemed to dislike the preserved meat on which he had been fed since leaving our winter quarters. I tried him with scraps from our table, but he ate very little, and as he appeared in great pain he was kept under the influence of morphia. The bowels were confined. The usual dose of calomel having failed, another was given (16 grains in 24 hours), the only result of which was to produce salivation. A drop and a half of croton oil was placed on his tongue, which operated in an hour, the evacuation being a large quantity of perfectly transparent slime and some blood. He from this time improved, took his food well, even ravenously. The day before reaching Ireland his stools again became dark and scanty. Calomel was again given with benefit. At Queenstown I left the ship, which proceeded to Portsmouth, but before the vessel arrived the pup had died in a fit.

From the above cases, it will be seen that this disease differs from rabies in there not being the same inclination to bite, and in the animal taking food and water eagerly. Whether dogs bitten by one suffering from the disease become diseased in their turn is a question very difficult to determine, inasmuch as there was not one amongst our pack but that was scarred in numerous places by bites. Case No. 7 I look upon as an exception; that was evidently rabies, and to the circumstance of his early confinement within my "hospital" we owe, in all probability, the safety of our dogs as well as of ourselves. A brief summary of the foregoing cases may assist us in arriving at an opinion on this most important question.

Twenty-five apparently healthy dogs were embarked on board ship in the middle of July 1875, subsequently increased to 27 by the addition of two young ones. We were given to understand that feeding twice a week was amply sufficient, that the worst possible personal treatment was too good for them, and meat in any stage of decomposition a perfect luxury to their fastidious palates.

Seven-and-twenty animals confined to a space where the utmost attention was scarcely sufficient to keep habitable, constantly quarrelling and fighting for dear life, exposed to sun, snow, dew, and wet generally, and without a chance of a run ashore, it was not to be wondered at that they began to show signs of disease. The first attacked was a young female 25 days on board, and she had a fit and died in 13 days. Others became attacked. One was summarily shot, one ran away and was seen no more. Two were accidentally drowned; seven died from the disease; six recovered; one died mad.

Of the whole number, 12 only were under medical treatment; one had rabies and died; one so far recovered as to have two litters of pups, and then died ten months after her first fit, and two or three days after her last litter. Two fell into the water when in fits and were drowned. Two died notwithstanding everything that was done to cure them, and six recovered and were landed at Disco.

The symptoms were disinclination to move, accompanied by a very contracted appearance of the loins, which, however, were not tender to the touch tenesmus, and scanty pitchy stools.

These symptoms were followed in two or three days by a fit, with foaming at the mouth. No disposition to bite.

As the disease progressed the fits became frequent and altered somewhat in character. Instead of lying quietly on their side only slightly convulsed, the fits lasted about a minute, then leaving the animal apparently as well as before. The animal now struggled violently, the head thrown far back, spine curved deeply in, and the tail curled over the back, almost touching the head, legs stretched out, teeth exposed, violent contraction of the muscles of the chest, rendering the cavity greatly reduced in size and rigid, and thus arresting respiration. These fits sometimes succeeded each other rapidly, and left the dog so exhausted as to be scarcely able to move, and he died in one of these fits. The post-mortem examination showed healthy brain, spinal cord, heart, lungs, liver, pancreas, and kidneys.

The chest in all cases was exceedingly contracted and the lungs collapsed, and in all cases where the intestines were examined they were found to contain the "pitchy" substance noticed above, as forming one of the earliest and most certain symptoms of the disease, and also ulcerations of the inner surface of the gut to the extent of at least four inches on either side of the ilco-cæcal valve, which in some cases were found covered with coagulated blood.

The treatment found most beneficial and which I recommend is, on the first signs of pitchy stools, or tenesmus, give five grains of calomel, followed by croton oil, if necessary, and repeated at intervals, until the stools become more natural. If there appears to be much uneasiness, or if the animal whines, I have given 40 minims of solution of morphia, and kept him under its influence, repeating the dose every four hours if necessary.

As the patient is generally hungry, I prefer to keep him from roaming, and give him the best of water and good food, in small quantities, and frequently. I think, if taken at this stage, very few would die. As the disease advances there is less time for the action of medicine, therefore larger doses and more active remedies must be used.

In conclusion, I consider the ulcerations in the intestines quite sufficient to account for the symptoms. The cause of these ulcerations would be difficult to trace, but the effect of such, acting as an irritant to the nervous system, and causing convulsions, is, in my opinion, a highly probable circumstance.

The following List of Papers published in connection with the Natural History results of the Arctic Expedition, 1875-76, will no doubt be useful for reference.

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- Birds of the North Polar Basin. By H. W. Feilden, C.M.Z.S.; "Proc. Zoo. Soc.," 1877, pp. 28-31.
- Birds observed in Smith Sound during Arctic Expedition, 1875-76. By H. W. Feilden; "The Ibis," 1877, pp. 401-412.
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- Surface-fauna, Arctic Seas. By E. L. Moss, M.D.; "Linnean Soc. Journ., Zoology," Vol. XIV., pp. 1-4.
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- Sponges, Arctic and Antarctic. By H. J. Carter, F.R.S.; "Annals and Mag. Nat. Hist." July 1877, pp. 37-42.
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