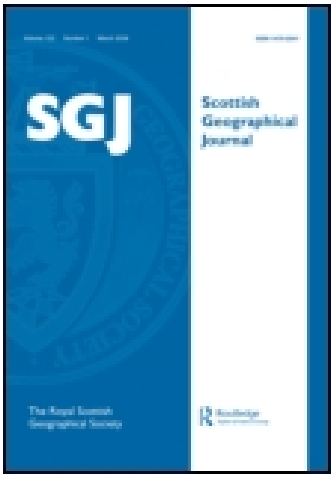

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Some meteorological results of the Scottish National Antarctic Expedition

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time when the corrie glaciers would come into existence, and it is this peat which now is in a state of rapid denudation.

The question of the succession of glacial epochs has been referred to in several places in this paper. As this is a point which touches upon the geological, geographical, and botanical aspects of the subject, it has been suggested to me by Professor Geikie that it would be advisable to add a general statement of the succession of events during the later phases of the glacial period. I do this with greater confidence, since Professor Geikie has kindly drawn up the following table:—

SUCCESSION OF THE LATER GLACIAL AND INTERGLACIAL STAGES IN SCOTLAND.

Upper Turbarian or Sixth Glacial Stage.
High-level corrie glaciers, with snowline at 3500 feet; peat overlying Upper Forest; raised beaches at 25 to 30 feet; somewhat cold and wet climate.

Upper Forestian or Fifth Interglacial Stage.
Upper Forest overlying Lower Peat; relatively dry and genial climate; land area somewhat more extensive than now.

Lower Turbarian or Fifth Glacial Stage.
Valley-glaciers, with average snowline at 2400 to 2500 feet; Lower Peat overlying Lower Forest; raised beaches at 45 to 50 feet; cold and wet climate.

Lower Forestian or Fourth Interglacial Stage.
Lower Forest overlying morainic accumulations of Fourth Glacial Stage; genial climate; land area of greater extent than now.

Mecklenburgian or Fourth Glacial Stage.
District ice-sheets and large valley-glaciers of Highlands and Southern Uplands; raised beaches at 100 to 135 feet; Arctic climate, with snowline ranging from 1000 feet in west and northwest to 1500 feet or thereabout in Central Scotland.

SOME METEOROLOGICAL RESULTS OF THE SCOTTISH NATIONAL ANTARCTIC EXPEDITION.

By R. C. MOSSMAN, F.R.S.E.

(*With Plates.*)

IN previous papers published in the *Scottish Geographical Magazine*,[1] I gave a general summary of the meteorological results of the Scottish National Antarctic Expedition viewed more particularly from a climatological standpoint. Since these were issued, the observations have been discussed in relation to the diurnal variation of the climatic elements, while thermal, baric, and other windroses have been computed for that portion of the *Scotia's* two summer cruises lying south of 60° S. As

[1] Vol. xx. pp. 113-120; vol. xxi. pp. 417-429.

some months will yet elapse before the final report appears, it seems desirable to give the preliminary results of the above discussion, in order that the data may be immediately available for comparison with the results obtained at the South Orkney Station during the year 1904, and with those of other Antarctic expeditions now in course of publication.

It may be recalled that the meteorological and magnetical station at Omond House, Laurie Island, South Orkneys, was taken over by the Argentine Government in February 1904, and that observations have been carried on there since, in connection with the Argentine Meteorological Office. Mr. Walter G. Davis, the able director of this department, has earned the grateful appreciation of all meteorologists by his successful efforts to extend our knowledge of the meteorology of the Antarctic and sub-Antarctic areas lying to the south and west of Cape Horn. Not only are continuous hourly observations now available for the South Orkneys since March 1903, but this year has witnessed the establishment of a new station at South Georgia Island, while the further installation of an observing station on one of the South Sandwich group and at Wandel Island in 65° 04′ S. is contemplated in the immediate future. The practical importance of this great work can hardly be overestimated, more particularly in relation to the maritime community, since it will result in the formulation of a system of rules which will doubtless enable the navigator bound westward round Cape Horn to determine the most favourable course for making this too often tedious and dangerous passage. It has been frequently observed that very good passages are made by standing well to the southward even as far as 61° S.; but until the accumulated data have been discussed and co-ordinated, and the course of cyclonic storms south of 40° carefully studied in relation to the different winds and weather in the immediate vicinity of the Horn, it would be premature to draw up a code of rules adopted to these different conditions. Hence the importance of this new network of stations in enabling a synchronous weather chart to be drawn for a wide area, extending as far as 65° S., between the meridians of 30° and 80° W.

In any discussion dealing with the thermal and other conditions experienced with different winds, it is necessary to have a knowledge of the climatological characteristics of the regions over which the winds blew before reaching the point of observation. The area dealt with in this inquiry being south of 60° S., and between the meridians of 10° and 49° W., refers almost wholly to a sea surface in which a uniform temperature obtained. Table I. shows the mean surface temperature of the sea south of 30° S., and it will be observed that in both cruises the sea temperatures recorded over the area under discussion range from 31·8° to 28·9° F., if we except the single reading of 33·2° recorded in lat. 61° 28′ S. long., 41° 55′ W., during the second cruise. The period covered by the first summer cruise in 1903 extended over the fifty-three days ending with 26th March, while the second embraced the thirty-eight days terminating on 31st March 1904, those periods corresponding to the late summer and early autumn of the southern hemisphere. The surface sea temperatures, as well as those taken at great depths, will be discussed in relation to general hydrography in the report dealing with oceanic circulation, and

TABLE I.—Showing the Surface Sea Temperature of the South Atlantic and Weddell Sea.

Note.—The means are in most cases the average of readings made every four hours.

Date.	Lat. S.	Long. W.	Sea Temp.
1902	° ′	° ′	°
Dec. 27	32 10	47 30	74·8
28	33 50	48 44	72·7
29	35 28	50 34	70·2
30	35 23	49 53	67·9
31	36 39	52 10	69·4
1903			
Jan. 1	39 01	53 40	66·0
2	41 38	54 40	57·9
3	45 29	56 03	55·0
4	47 37	57 25	49·8
5	49 55	59 44	48·1
First Antarctic Cruise.			
27	52 55	55 00	44·4
28	54 35	51 50	42·2
29	56 10	49 20	..
30	56 28	47 52	35·5
31	58 14	45 15	35·5
Feb. 1	59 32	43 10	33·5
2	60 28	43 40	30·4
3	60 23	44 00	30·3
4	60 47	44 00	30·0
5	61 06	43 40	30·3
6	60 10	42 35	31·6
7	60 03	39 44	30·3
8	59 44	36 40	30·7
9	59 42	34 13	29·8
10	60 05	32 10	29·5
11	60 03	32 31	29·7
12	59 49	31 32	29·6
13	59 43	30 44	30·0
14	59 33	27 37	30·2
15	61 37	26 10	30·6
16	62 52	25 00	30·8
17	64 18	23 09	31·5
18	66 05	23 46	30·9
19	68 33	24 31	29·6
20	69 39	22 58	29·0
21	69 46	19 10	29·3
22	70 21	17 00	29·0
23	69 57	16 53	29·0
24	69 52	17 22	29·0
25	69 44	18 02	..
26	69 36	20 20	29·1
27	69 32	24 00	29·0
28	69 22	26 36	29·1
Mar. 1	69 03	28 02	29·0
2	68 40	30 18	28·9
3	68 35	31 56	29·0
4	68 22	32 35	29·2
5	68 11	34 17	29·0
6	67 39	36 10	29·0

Date.	Lat. S.	Long. W.	Sea Temp.
1903	° ′	° ′	°
Mar. 7	67 33	36 35	29·5
8	67 22	37 36	28·9
9	67 10	39 00	29·1
10	66 40	40 35	29·3
11	66 32	42 20	29·0
12	65 29	44 06	28·9
13	64 48	44 26	..
14	64 32	43 45	29·8
15	64 12	42 15	28·9
16	63 51	41 50	..
17	63 08	42 30	29·6
18	62 10	41 20	..
19	61 22	42 05	29·0
20	61 05	43 20	29·4
South Orkneys to Buenos Ayres.			
Nov. 28	59 43	48 10	32·7
29	58 28	51 56	34·2
30	57 10	55 35	33·8
Dec. 1	54 55	57 28	42·0
2	52 11	57 55	44·9
12	44 08	57 30	49·2
13	42 30	59 18	50·0
14	40 32	58 33	54·8
15	38 24	57 42	61·8
16	Off C. Corientes		62·0
18	,,		63·0
19	,,		61·5
20	,,		67·2
Buenos Ayres to Falkland Islands.			
1904			
Jan. 23	36 57	55 45	73·0
24	39 24	55 02	58·2
25	40 59	55 04	61·6
27	43 33	55 07	60·0
28	45 31	55 21	56·1
29	47 47	56 08	54·2
30	50 03	57 58	50·2
Second Antarctic Cruise.			
Feb. 10	53 22	56 05	45·9
11	55 47	54 19	40·8
12	57 47	51 40	36·5
13	59 56	49 30	36·0
23	61 28	41 55	33·2
24	62 49	38 12	31·7
25	64 29	35 29	31·0
26	65 59	33 06	30·5

Date.	Lat. S.	Long. W.	Sea Temp.
1904	° ′	° ′	°
Feb. 27	66 26	31 25	29·8
28	66 21	28 30	29·8
29	68 08	27 10	29·6
Mar. 1	68 43	24 15	30·1
2	71 04	23 10	30·7
3	72 18	17 59	30·7
4	72 22	18 13	30·4
5	72 31	19 00	29·2
6	73 20	21 28	28·9
7	74 01	22 00	28·9
14	73 11	23 53	29·0
15	71 50	23 30	29·2
16	71 28	23 32	29·0
17	71 22	18 15	29·6
18	71 22	16 34	29·9
19	71 32	17 15	29·8
20	71 17	18 50	30·4
21	69 33	15 19	31·0
22	68 32	10 52	31·8
23	68 32	12 49	31·1
26	67 36	12 05	30·9
27	66 57	11 13	30·8
28	65 58	11 24	31·0
29	63 54	10 42	31·2
30	61 05	12 47	31·3
31	60 37	12 16	31·2
April 2	58 40	12 23	33·0
3	56 55	10 00	32·9
8	52 33	9 47	35·0
9	51 07	9 31	35·3
10	49 25	9 21	39·0
11	48 53	9 25	39·4
12	48 00	9 50	40·0
13	48 06	10 05	40·8
14	46 35	10 10	42·9
15	45 54	10 04	44·2
16	45 25	10 19	44·2
17	44 30	9 43	47·8
18	43 21	8 30	52·0
19	42 57	8 13	50·8
20	41 30	9 55	55·0
22	40 20	9 56	55·2
24	39 58	8 26	55·2
25	40 22	5 45	53·0
26	41 15	2 38	51·9
27	40 33	0 07E	51·4
28	40 08	1 50	52·4
29	39 48	2 33	53·8
30	39 27	5 50	55·5
May 1	39 25	10 25	55·5
2	38 06	14 32	64·9
3	35 37	15 03	64·7
4	34 58	17 00E	63·0

they are only referred to here in so far as they have relation to the meteorological characteristics of the winds over the area under consideration. Attention may, however, be drawn to the rapid fall in surface sea temperatures which takes place between 54° 30′ and 58° South latitude, between the meridians of 57° 30′ and 45° West, and between 48° and 52° 30′ S. lat. on the 10th meridian west of Greenwich, which have an intimate bearing on the course of cyclonic storms in those regions and the accompanying strong winds, which attain their greatest strength and persistence from 40° to 60° S., or over that portion of the South Atlantic where the fall in both sea and air temperature proceeds at a rapid rate.

Climatic Features of the Different Winds in the Weddell Sea.

Table II. shows the mean barometric pressure, temperature, etc., experienced in the Weddell Sea with different winds during the two summer and early autumn cruises of the *Scotia* in the years 1903 and 1904. Except for a few days in February 1903, when the track of the *Scotia* was sometimes a little to the north of 60° S., the data refer to a region south of this latitude, between the meridians of 47° and 11° West. The windroses of the different elements are graphically shown in the plate, Figs. 1 to 7, the data being the mean of all the observations. It may be remarked that the columns headed "Mean" in Table II. are not the averages of the values given in the columns for 1903 and 1904, but are the arithmetic means obtained by dividing the sums of the values for both periods by the total number of wind observations. The necessity of this is so obvious that further explanation is unnecessary. Table III. shows the departure from the general mean of the values obtained with different winds during each of the cruises, as well as for the whole period. In comparing the windroses of 1903 with those of 1904, it is necessary to bear in mind the difference between the extent and distribution of the pack ice in the two seasons. In 1903 the *Scotia* met the pack in 60° 20′ S., long. 43°50′ W., and, except for a few days when in the neighbourhood of the Antarctic Circle, was in the pack, which probably completely filled the south and west part of the Weddell Sea from Graham's Land to the point of observation. In 1904, on the other hand, an almost open sea prevailed, and no obstacle in the shape of pack was met with until off Coats Land in 72°18′ S., long. 17°59′ W. This doubtless had an important bearing on the track taken by depressions in the two seasons, which will be elucidated when the daily synoptic charts in course of preparation by the Deutsche Seewarte and the Meteorological Office are completed.

The following are the more prominent features of the windroses in the two seasons:—

Pressure.—In 1903 pressure was highest with winds from the SSW., secondary maxima being shown with winds from the N., ENE., and NNE.; on the other hand, the lowest mean pressures were with winds from the SSE. to E. In 1904 the maximum values were with S., SSE., and SE. winds, and lowest with ENE. winds.

Temperature in both seasons was, as might be expected, lowest with

TABLE II.—Showing the Mean Barometric Pressure, Temperature, Amount of Cloud, Wind Force, Relative Humidity, and Vapour Pressure experienced with winds from various directions in the Weddell Sea South of 60° S.

Note.—For 1903, the period to which the Observations refer is from February 2 to March 26, and in 1904 from February 23 to March 31.

	Mean Barometric Pressure. At 32° and Sea Level.			Mean Air Temperature.			Mean Amount of Cloud.			Mean Force of the Winds.			Mean Relative Humidity.			Mean Vapour Pressure.			Wind.			Wind.—Number of Observations.		
	1903.	1904.	Mean.	1903.	1904.	Mean.	1903.	1904.	Mean.	1903.	1904.	Mean.	1903.	1904.	Mean.	1903.	1904.	Mean.	1903.	1903.	Mean.	1903.	1904.	Total.
	Inches.	Inches.	Inches.	°	°	°	0-10.	0-10.	0-10.	0-12.	0-12.	0-12.	Per cent.	Per cent.	Per cent.	Inch.	Inch.	Inch.	Per cent.	Per cent.	Per cent.			
N.	29·185	28·780	29·014	28·9	28·7	28·9	9·8	9·5	9·7	2·1	2·9	2·5	81·8	90·8	85·6	·132	·146	·138	10·3	10·4	10·3	131	95	226
NNW.	29·050	28·830	28·975	29·4	28·3	29·0	9·7	9·7	9·7	1·9	3·0	2·3	86·6	91·1	88·2	·145	·142	·144	5·7	4·4	5·1	72	40	112
NW.	28·856	28·934	28·898	29·0	26·3	27·5	9·8	9·1	9·4	2·2	2·6	2·4	85·5	86·2	85·9	·138	·124	·131	6·5	11·0	8·4	83	100	183
WNW.	29·054	28·945	28·986	26·8	25·1	25·7	9·2	9·5	9·3	2·3	3·1	2·8	81·0	87·8	84·7	·119	·122	·121	2·2	4·7	3·2	28	43	71
W.	28·975	29·140	29·060	25·4	28·7	27·3	8·4	9·3	8·9	3·5	2·5	3·0	80·0	86·0	83·5	·111	·136	·126	5·6	10·9	7·8	71	99	170
WSW.	28·981	29·276	29·098	26·6	24·3	25·7	8·7	7·6	8·3	2·2	2·4	2·3	79·8	59·0	71·7	·139	·085	·118	3·8	3·4	3·6	48	31	79
SW.	29·048	28·779	28·911	27·0	26·1	26·5	8·9	8·0	8·5	1·8	2·4	2·1	79·3	69·2	74·3	·119	·106	·113	7·9	10·7	9·1	100	98	198
SSW.	29·249	28·935	29·100	22·6	22·0	22·3	9·3	8·0	8·7	1·9	2·5	2·2	85·9	63·2	75·5	·107	·083	·096	3·1	3·9	3·5	40	36	76
S.	29·130	29·307	29·184	22·6	20·6	22·0	8·7	6·4	8·0	2·2	0·6	1·7	81·1	77·0	79·5	·101	·089	·097	6·8	4·2	5·7	87	38	125
SSE.	28·914	29·203	29·012	23·7	25·8	24·4	9·4	6·7	8·5	2·8	1·2	2·2	84·7	78·6	82·6	·109	·112	·110	3·0	2·2	2·7	39	20	59
SE.	28·799	29·116	28·903	24·8	27·4	25·6	9·4	8·4	9·0	2·4	1·3	2·1	83·7	80·7	82·7	·112	·120	·115	5·5	3·7	4·8	70	34	104
ESE.	28·789	28·910	28·817	27·2	25·0	26·7	9·5	8·9	9·3	2·7	2·8	2·7	82·6	81·0	82·3	·124	·108	·120	4·2	1·8	3·2	54	16	70
E.	28·853	28·877	28·865	27·9	23·3	25·7	10·0	8·7	9·4	3·6	3·3	3·5	81·5	87·5	84·4	·126	·111	·119	5·1	6·8	5·8	65	62	127
ENE.	29·189	28·762	28·966	28·3	23·1	25·6	9·6	9·6	9·6	2·3	3·9	3·2	78·5	91·9	85·5	·123	·105	·113	4·2	6·5	5·2	54	59	113
NE.	29·110	28·957	29·070	27·3	25·9	26·9	9·7	8·3	9·4	2·6	1·9	2·4	83·8	86·9	84·7	·121	·136	·128	13·4	6·7	10·6	170	61	231
NNE.	29·185	28·787	29·099	28·0	27·9	28·0	9·8	9·5	9·7	2·0	2·9	2·3	85·0	92·5	86·6	·132	·142	·135	7·1	2·7	5·3	90	25	115
Calm	29·123	29·259	29·181	24·9	21·7	23·5	8·1	6·9	9·5	..	..	..	79·3	78·8	79·1	·109	·083	·098	5·6	6·0	5·7	70	55	125
Mean	29·044	28·960	29·009	26·8	25·7	26·4	9·4	8·7	9·1	2·4	2·6	2·5	82·9	82·7	82·8	·123	·118	·121	100·0	100·0	100·0	1272	912	2184

southerly and highest with northerly winds, there being, however, in 1904 a very pronounced secondary minimum with easterly winds, due to the prevalence of these winds when in the far south off Coats Land.

Humidity.—In 1903 the values of relative humidity for different winds are somewhat irregular, the dampest being NNW., which, blowing from relatively warm regions, bring masses of water vapour to be chilled and condensed in the higher latitudes. The driest winds, on the other hand, were from the ENE., but winds from WNW. to S. were also characterised by low relative humidities, which is easily explained by the circumstance that there were no expanses of open water in these directions, the whole area being filled with pack ice. In the 1904 cruise winds from WSW. to SSW. were very dry, while those from E. round by N. to W. were damp, the excessive dryness of the former being due to the circumstance that they blew off the extensive land surfaces to the south-west indicated by the discovery of Coats Land, while in other directions there was open sea. The values for *vapour pressure* are much the same for both seasons, the greatest being with northerly and the least with southerly winds, while the amount of *cloud* shows substantially the same distribution. With regard to the strength of the *wind*, the observations indicate that the lightest winds are from the south and the strongest from the east. Now in the southern hemisphere the wind circulation in cyclonic systems is against the sun, so that north of the centre the winds are westerly, while south of the centre they are easterly. It is therefore evident that the steepest barometric gradients were associated with the passage of depressions whose centres were to the northward of the *Scotia's* track. It is interesting to note that practically all the east winds recorded during the two cruises of the *Scotia* were experienced to the south of the Antarctic Circle, so that the normal track of depressions in the Weddell Sea in summer was to the north of this latitude. The observations thus point to the presence of a high-pressure area over the Antarctic Continent, of which Coats Land forms the northern extremity, and to a comparatively steep barometric gradient between the anti-cyclone in the south and the cyclonic area to the north. The strength of the east winds in the Weddell Sea is no isolated feature in Antarctic meteorology. At Cape Adair, lat. 71° 18′ S., the heaviest gales were from the ESE. and SE., and these blew with a velocity above forty miles per hour on ninety-two days, forming 26 per cent. of the whole number of observations (see *Antarctic Manual*, p. 54). At the winter station of the *Gauss*, lat. 66° 02′ S., long. 89° 38′ E., 73 per cent. of the winds experienced were from the east, and 99 per cent. of the strong winds were from this quarter.[1] Frequent and strong winds from an easterly direction were also observed at the winter quarters of the *Discovery* and during the drift of the *Belgica*. The accumulated observations thus go far to support the supposition advanced by Dr. Supan (see *Meteorologische Zeitschrift*, vol. xvii. pf. 220-3) that the most northern extension as well as the greatest mass of the Antarctic

[1] W. Meinardus: *Ueber die Windverhältnisse an der Winterstation des* Gauss. Berlin, 1905.

TABLE III.—Showing the Departure from the Average of Mean Values of the Climatic Elements in the Weddell Sea, with different winds South of 60° S. during the cruises of the *Scotia* in 1903-1904.

1903

	N.	NNW.	NW.	WNW.	W.	WSW.	SW.	SSW.	S.	SSE.	SE.	ESE.	E.	ENE.	NE.	NNE.	C.	Mean.
Pressure, . .	·141	·006	*·188*	·010	*·069*	*·063*	·004	·245	·086	*·130*	*·245*	*·265*	*·191*	·145	·066	·141	·079	29·044
Temperature, .	2·1	2·6	2·2	*0·0*	*1·4*	*0·2*	0·2	*4·2*	*4·2*	*3·1*	*2·0*	0·4	1·1	1·5	0·5	1·2	*1·9*	26·8
Humidity, . .	*1·1*	3·7	2·6	*1·9*	*2·9*	*3·1*	*3·6*	3·0	*1·8*	1·8	0·8	*0·3*	*1·4*	*4·4*	0·9	2·1	*3·6*	82·9
Vapour Pressure, .	·009	·022	·015	*·004*	*·012*	·016	*·004*	*·016*	*·022*	*·014*	*·011*	·001	·003	*·000*	*·002*	·009	*·014*	·123
Cloud, . . .	0·4	0·3	0·4	*0·2*	*1·0*	*0·7*	*0·5*	*0.1*	*0·7*	*0·0*	*0·0*	0·1	0·6	0·2	0·3	0·4	*1·3*	9·4
Wind Force, . .	*0·3*	*0·5*	*0·2*	*0·1*	1·1	*0·2*	*0·6*	*0·5*	*0·2*	0·4	*0·0*	0·3	1·2	*0·1*	0·2	*0·4*	...	2·4
Wind Direction, .	4·4	*0·2*	0·6	*3·7*	*0·3*	*2·1*	2·0	*2·8*	0·9	*2·9*	*0·4*	*1·7*	*0·8*	*1·7*	7·5	1·2	*0·5*	...

1904

Pressure, . .	*·180*	*·130*	*·026*	*·015*	·180	·316	*·181*	*·025*	·347	·243	·156	*·050*	*·083*	*·198*	*·003*	*·173*	·299	28·960
Temperature, .	3·0	2·6	0·6	*0·6*	3·0	*1·4*	0·4	*3·7*	*5·1*	0·1	1·7	*0·7*	*2·4*	*2·6*	0·2	2·2	*4·0*	25·7
Humidity, . .	8·1	8·4	3·5	5·1	3·3	*23·7*	*13·5*	*19·5*	*5·7*	*4·1*	*2·0*	*1·7*	4·8	9·2	4·2	9·8	*3·9*	82·7
Vapour Pressure, .	·018	·024	·006	*·004*	·018	*·033*	*·012*	*·035*	*·029*	*·006*	·002	*·012*	*·009*	*·013*	·018	·024	*·035*	·118
Cloud, . . .	0·8	1·0	0·4	0·8	0·6	*1·1*	*0·7*	*0·7*	*2·3*	*2·0*	*0·3*	0·2	*0·0*	0·9	*0·4*	0·8	*1·8*	8·7
Wind Force, . .	0·3	0·4	*0·0*	0·5	*0·1*	*0·2*	*0·2*	*0·1*	*2·0*	*1·4*	*1·3*	0·2	0·7	1·3	*0·7*	0·3	...	2·6
Wind Direction, .	4·5	*1·5*	5·1	*1·2*	5·0	*2·5*	4·8	*2·0*	*1·7*	*3·7*	*2·2*	*4·1*	0·9	0·6	0·8	*3·2*	*0·2*	...

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Pressure, . .	·005	*·034*	*·011*	*·023*	·060	·089	*·098*	·091	·175	·003	*·106*	*·192*	*·244*	*·043*	·061	·090	·172	29·009
Temperature, .	2·5	2·6	1·1	*0·7*	0·9	*0·7*	0·1	*4·1*	*4·4*	*2·0*	*0·8*	0·8	*0·7*	*0·7*	0·5	1·6	*2·9*	26·4
Humidity, . .	2·8	5·4	3·1	1·9	0·7	*11·1*	*8·5*	*7·3*	*3·3*	*0·2*	*0·1*	*0·4*	1·6	2·7	1·9	3·8	*3·7*	82·8
Vapour Pressure, .	·017	·023	·010	*·000*	·005	*·003*	*·008*	*·025*	*·024*	*·011*	*·006*	*·001*	*·002*	*·008*	·007	·014	*·023*	·121
Cloud, . . .	0·6	0·6	0·3	0·2	*0·3*	*0·8*	*0·6*	*0·4*	*1·1*	*0·6*	*0·1*	0·2	0·3	0·5	0·3	0·6	*1·6*	9·1
Wind Force, . .	*0·0*	*0·2*	*0·1*	0·3	0·5	*0·2*	*0·4*	*0·3*	*0·8*	*0·3*	*0·4*	0·2	1·0	0·7	*0·1*	*0·2*	...	2·5
Wind Direction, .	4·4	*0·8*	2·5	*2·7*	1·9	*2·3*	3·2	*2·4*	*0·2*	*3·2*	*1·1*	*2·7*	*0·1*	*0·7*	4·7	*0·6*	*0·4*	...

Note.—The heavy figures indicate above the average and the italic figures below the average.

Continent is in the eastern hemisphere, but probably extending much further west than he indicates. Indeed the discovery of Coats Land and the soundings taken by the *Scotia* further east affords proof of the existence of land masses extending from Coats Land to Enderby Land. The remarkable persistence of easterly winds at the winter quarters of the *Gauss* indicates that the centres of cyclonic systems are located several degrees further north on this meridian than in the Weddell Sea area. This point will doubtless be elucidated when the daily synoptic charts are completed.

Mean Hourly Values.

Tables IV. and V. show mean hourly values of pressure, temperature, cloud and wind force, recorded during each month from February 1903 to January 1904, and in March and April 1904. For the ten months April 1903 to January 1904 the data refer to the observations taken at Scotia Bay, Laurie Island, South Orkneys. The means for February 1904 at this station, being incomplete, are not included, but a full report for the whole of 1904 is being published by the Argentine Meteorological Office. In February and March 1903 and in March 1904 the observations were taken on the *Scotia* during the cruise in the Weddell Sea, and in April 1904 in the South Atlantic. The mean hourly values given are the simple arithmetical means of the observations, to which is added a twenty-fifth hour, viz. "the previous midnight," in order to eliminate any distortion of the curves due to a general rise or fall that may have taken place during the whole day. In Tables VI. and VII., which show the departure of each hourly value from the mean of the whole day, the corrections thus introduced are given effect to, and the values have been smoothed by continuous three-hour groups. Thus the mean departure for 2 A.M. for any month is the mean of the departures at 1, 2, and 3 A.M., that at 3 A.M. the mean of 2, 3, and 4 A.M., and so on for each hour of the day.

Diurnal Range in the Weddell Sea.

The diurnal range of the climatic elements in the Weddell Sea, some of which are graphically shown in the plate, Figs. 8 to 11, is very small. Dealing first with the pressure, it will be seen that the characteristic features of the diurnal pressure curve for February 1903 were a strongly pronounced morning minimum at 5 A.M., and an irregularly defined maximum spread over the afternoon and early evening. In March 1903 we have the evening maximum emphasised and the afternoon minimum clearly defined, while the morning minimum is absent. In March 1904 the morning minimum is clearly marked at 5 A.M., but from 9 A.M. to 7 P.M. the values are above the mean of the day, although a very slight fall is apparent at 3 and 4 P.M. It is evident from an examination of the hourly barometric observations for ten-day periods that, in order to get an approximation towards the true diurnal period in high southern latitudes, it will be necessary to eliminate all days containing a barometric minimum. Indeed, for short periods, the curves

TABLE IV.—Showing Mean Hourly Values of Pressure, Temperature, Amount of Cloud and Wind Force at Laurie Island, S. Orkneys, Lat. 60° 44′ S., Long. 44′ 50° W. from April 1903 to January 1904.

Barometric Pressure at 32° and Mean Sea Level.

1903.	MDT.	1	2	3	4	5	6	7	8	9	10	11	NOON	1	2	3	4	5	6	7	8	9	10	11	MDT.	MEAN.
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
April, . .	29·208	·205	·203	·198	·192	·193	·194	·191	·201	·203	·200	·193	·194	·194	·193	·192	·200	·211	·218	·223	·225	·226	·217	·216	·208	29·204
May, . .	29·298	·292	·294	·295	·299	·307	·313	·319	·334	·345	·349	·352	·354	·356	·352	·353	·352	·351	·346	·341	·336	·330	·317	·312	·306	29·329
June, . .	29·256	·255	·252	·250	·243	·243	·244	·244	·256	·259	·262	·266	·265	·265	·259	·253	·253	·260	·260	·259	·263	·260	·256	·254	·250	29·256
July, . .	29·181	·178	·172	·161	·143	·135	·126	·121	·129	·133	·130	·130	·136	·146	·144	·153	·169	·182	·186	·194	·197	·196	·195	·196	·191	29·160
August, . .	29·287	·282	·279	·276	·267	·261	·262	·267	·277	·281	·282	·286	·285	·291	·289	·291	·292	·299	·305	·305	·307	·305	·295	·290	·288	29·286
September, .	29·259	·257	·253	·251	·247	·243	·246	·244	·244	·243	·240	·237	·233	·230	·227	·222	·222	·225	·226	·231	·234	·241	·244	·242	·243	29·239
October, . .	29·336	·336	·338	·340	·345	·347	·350	·356	·355	·355	·353	·351	·347	·344	·338	·331	·329	·325	·326	·329	·331	·332	·329	·331	·331	29·340
November, .	29·123	·119	·113	·112	·117	·113	·112	·111	·113	·113	·112	·112	·113	·121	·122	·122	·119	·122	·122	·125	·128	·127	·128	·127	·124	29·119
December, .	29·201	·199	·198	·198	·203	·203	·205	·204	·202	·197	·195	·190	·189	·189	·190	·190	·193	·196	·204	·211	·212	·212	·210	·208	·204	29·200
January, . .	29·153	·145	·136	·135	·135	·139	·140	·141	·142	·143	·143	·145	·150	·159	·164	·167	·171	·179	·186	·187	·182	·183	·177	·173	·167	29·158
Mean	29.230	·227	·224	·223	·219	·218	·219	·220	·225	·227	·227	·226	·227	·230	·228	·227	·230	·235	·238	·240	·242	·241	·237	·235	·231	29·229

Mean Air Temperature.

1903.	MDT.	1	2	3	4	5	6	7	8	9	10	11	NOON.	1	2	3	4	5	6	7	8	9	10	11	MDT.	MEAN.
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
April, . .	20·6	20·7	20·6	20·8	21·0	20·6	20·3	20·5	20·5	20·7	21·1	21·2	21·2	21·2	21·2	21·1	20·6	20·4	19·6	19·6	19·7	20·1	20·4	20·2	20·4	20·6
May, . .	16·6	17·2	17·3	17·5	17·8	17·8	17·9	17·8	17·3	17·4	17·0	17·2	17·3	17·0	16·8	16·1	15·9	16·4	16·5	16·3	16·4	16·8	17·4	17·4	17·6	17·1
June, . .	9·5	10·2	10·0	10·4	10·1	9·8	9·8	9·1	9·2	8·7	8·5	9·3	9·4	9·5	9·1	9·1	9·2	9·0	9·4	9·8	9·9	9·9	9·5	8·9	9·3	9·5
July, . .	16·4	16·3	16·8	17·9	18·3	18·5	18·9	18·9	18·4	18·5	18·9	18·8	18·2	17·9	17·0	16·1	15·2	14·9	15·1	15·3	15·3	15·4	15·1	15·2	15·3	16·9
August, . .	18·9	19·0	19·1	19·1	19·2	19·1	18·6	18·2	18·0	17·9	18·3	18·9	19·1	19·3	19·0	18·9	18·4	17·9	17·6	17·6	17·7	18·1	18·1	18·6	19·0	18·6
September, .	12·2	11·8	12·2	12·0	11·8	11·6	11·9	12·4	13·2	13·7	13·9	14·2	14·7	15·3	15·6	15·6	15·1	14·4	13·6	13·3	13·2	13·0	12·8	13·1	13·1	13·4
October, . .	26·6	26·0	25·5	25·2	25·2	25·8	25·9	26·2	26·8	27·4	27·8	28·0	28·1	28·3	28·6	28·3	28·1	27·8	27·4	27·2	26·9	26·8	26·6	26·7	26·6	27·0
November, .	28·5	28·2	28·1	28·1	28·2	28·4	28·7	29·0	29·2	29·6	30·1	30·3	30·5	30·7	30·4	30·5	30·4	29·9	29·6	29·5	29·4	29·3	29·0	28·4	28·3	29·3
December, .	30·5	30·3	30·4	30·3	30·4	30·6	30·9	31·4	31·7	32·0	32·1	32·4	32·9	32·9	32·8	32·5	32·2	32·1	31·8	31·5	31·4	31·2	30·8	30·9	30·7	31·5
January, . .	31·4	31·4	32·0	32·0	32·1	32·1	32·0	32·1	32·4	32·5	32·8	33·1	33·2	33·2	33·0	33·0	33·1	32·5	32·4	32·2	31·9	31·6	31·4	31·5	31·3	32·3
Mean	20·6	21·1	21·2	21·3	21·4	21·4	21·5	21·6	21·7	21·8	22·0	22·3	22·5	22·5	22·4	22·1	21·8	21·5	21·3	21·2	21·2	21·2	21·1	21·1	21·2	21·6

Mean Amount of Cloud—Scale 0-10.

1903.	Mdt.	1	2	3	4	5	6	7	8	9	10	11	Noon.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	Mean.
April, . .	8·4	7·7	6·6	6·4	7·4	7·9	8·0	7·9	8·4	8·5	8·2	8·1	8·3	8·6	8·9	9·5	9·2	9·4	8·3	8·1	8·4	7·7	7·8	7·5	8·4	8·1
May, . .	7·8	7·4	7·8	7·1	7·6	7·5	7·3	8·1	8·4	8·6	8·3	7·3	7·4	7·5	7·3	7·5	7·4	7·4	7·1	6·7	6·9	6·7	7·3	7·6	7·8	7·5
June, . .	7·1	5·8	5·8	5·8	6·5	6·7	6·2	5·9	6·9	7·2	7·0	6·9	6·1	6·5	6·7	7·0	6·9	7·0	7·4	7·6	7·2	6·8	6·9	7·6	7·0	6·7
July, . .	7·3	7·6	7·6	7·1	7·6	7·0	7·6	8·4	7·8	7·9	8·4	8·3	8·3	8·2	7·4	7·1	7·8	7·2	6·4	6·9	7·4	7·0	7·2	7·5	7·5	7·5
August, . .	7·6	8·4	8·7	8·9	8·4	8·4	8·1	8·5	8·2	7·9	7·8	7·7	7·8	7·9	7·8	8·0	8·2	8·5	8·0	7·9	8·0	8·1	7·9	8·0	7·7	8·1
September, .	6·1	6·4	6·2	6·5	6·6	6·7	6·7	6·8	7·4	7·3	7·2	7·5	7·8	7·8	7·6	7·3	7·2	7·5	7·3	7·1	6·8	6·5	7·1	6·5	6·1	7·0
October, . .	7·6	7·4	7·3	7·5	8·3	8·3	8·6	8·4	7·9	8·4	8·2	8·6	8·6	9·1	9·0	9·1	9·1	9·1	9·5	9·3	8·8	8·5	7·6	7·9	7·6	8·4
November, .	8·3	8·4	8·4	8·0	8·8	9·5	9·6	9·1	9·1	8·5	8·7	8·3	8·5	8·9	8·6	8·3	7·7	7·9	7·6	7·8	7·6	7·5	8·5	8·8	8·3	8·4
December, .	9·5	9·7	9·9	9·7	9·3	9·1	9·0	8·9	9·6	9·2	9·2	8·7	8·6	8·7	8·9	9·1	9·4	9·3	9·6	9·5	9·6	9·6	9·8	9·4	9·5	9·3
January, . .	9·6	9·5	9·7	9·6	9·4	9·4	9·6	9·5	9·3	9·4	9·3	9·5	9·7	9·7	9·5	9·8	9·6	9·7	9·8	9·5	9·4	9·5	9·8	9·7	9·6	9·6
Mean, .	7·9	7·8	7·8	7·7	8·0	8·0	8·1	8·2	8·3	8·3	8·2	8·1	8·1	8·3	8·2	8·3	8·2	8·3	8·1	8·0	8·0	7·8	8·0	8·1	8·0	8·1

Mean Wind Force—Scale 0-12.

1903.	Mdt.	1	2	3	4	5	6	7	8	9	10	11	Noon.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	Mean.
April, . .	1·57	1·67	1·82	1·73	2·03	1·90	2·08	2·12	1·80	1·72	1·63	1·65	1·78	1·57	1·77	1·47	1·42	1·52	1·27	1·35	1·58	1·48	1·30	1·43	1·57	1·65
May, . .	2·23	2·37	2·22	2·21	2·29	2·66	2·65	2·55	2·13	2·00	2·15	1·77	1·85	2·18	2·16	1·92	2·03	2·05	2·27	2·32	2·61	2·13	2·16	2·07	2·31	2·21
June, . .	1·57	1·62	1·68	1·72	2·40	1·98	2·12	2·37	1·90	1·78	1·57	1·82	2·00	1·65	1·83	1·67	1·45	1·58	1·43	1·40	1·30	1·30	1·35	1·45	1·48	1·70
July, . .	2·48	2·56	2·76	2·66	3·05	2·73	2·65	2·90	2·16	2·19	2·27	2·32	2·07	2·13	2·02	1·97	1·87	1·87	2·13	2·24	2·32	2·32	2·37	2·34	2·50	2·35
August, . .	2·05	2·05	2·05	1·95	2·65	2·65	2·63	2·44	2·26	1·95	1·92	2·15	2·13	1·79	1·86	1·94	1·98	1·89	1·82	1·76	1·88	1·78	1·71	1·82	2·02	2·05
September, .	1·82	1·53	1·80	1·27	1·58	1·62	1·33	1·63	1·47	1·48	1·52	1·67	1·93	1·75	1·70	1·80	1·82	1·63	1·72	1·78	1·77	1·78	1·67	1·73	1·85	1·66
October, . .	1·50	1·73	1·73	1·65	1·65	2·15	2·10	2·10	2·18	2·21	2·15	2·10	2·00	2·27	2·03	2·11	2·24	2·32	2·36	1·94	1·98	1·73	1·73	1·85	1·66	2·00
November, .	1·90	1·87	1·93	1·88	1·68	1·63	1·62	1·78	1·65	1·67	1·57	1·63	1·58	1·75	1·62	1·63	1·62	1·53	1·57	1·53	1·52	1·60	1·67	1·63	1·82	1·66
December, .	1·35	1·42	1·35	1·16	1·08	1·23	1·23	1·26	1·44	1·32	1·27	1·24	1·32	1·26	1·23	1·22	1·15	1·24	1·31	1·24	1·40	1·35	1·27	1·27	1·35	1·27
January, . .	1·23	0·77	1·16	1·07	1·02	0·98	1·08	1·05	1·10	1·13	1·03	0·79	1·18	1·23	1·40	1·29	1·20	1·13	0·92	0·84	0·97	1·11	0·98	1·13	1·16	1·08
Mean, .	1·77	1·76	1·85	1·73	1·94	1·95	1·95	2·02	1·81	1·74	1·71	1·71	1·78	1·76	1·76	1·70	1·68	1·68	1·68	1·64	1·73	1·66	1·62	1·67	1·77	1·76

TABLE V.—Showing Mean Hourly Values of Pressure, Temperature, Amount of Cloud, Wind Force, Relative Humidity, and Vapour Pressure in the Weddell Sea during February and March 1903 and March 1904, and in the South Atlantic in April 1904.

Barometric Pressure at 32° and Sea Level.

	Mdt.	1	2	3	4	5	6	7	8	9	10	11	Noon.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	Mean.	Range.
1903	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	
February,	29·075	·073	·069	·065	·053	·056	·062	·066	·066	·068	·074	·078	·081	·087	·084	·083	·085	·086	·088	·087	·088	·086	·085	·083	·077	29·076	..
March, . .	29·000	·999	·999	·998	·992	·990	·990	·993	·989	·994	·991	·987	·978	·986	·981	·980	·981	·984	·987	·991	·995	·996	·996		·995	28·989	..
1904																											
March, . .	29·026	·025	·022	·019	·013	·010	·011	·012	·012	·012	·015	·013	·011	·014	·010	·008	·006	·007	·007	·005	·995	·996	99	997	·996	29·009	..
April, . .	29·517	·514	·509	·508	·499	·501	·503	·513	·538	·547	·552	·556	·554	·534	·528	·524	·528	·531	·529	·543	·554	·558	·568	569	·567	29·535	..

Mean Air Temperature.

	Mdt.	1	2	3	4	5	6	7	8	9	10	11	Noon.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	Mean.	Range.
1903	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	
February, .	27·6	27·4	27·4	27·2	27·2	27·1	27·3	27·4	27·8	27·8	27·9	28·1	28·2	28·5	28·6	28·6	28·6	28·5	28·3	28·1	27·8	27·7	27·5	27·4	27·3	27·8	1·5
March, . .	25·2	25·2	25·1	25·1	25·0	24·9	25·0	25·0	25·0	25·2	25·1	25·2	25·2	25·2	25·2	25·3	25·2	25·2	25·0	24·8	24·8	24·8	24·7	24·8	24·7	25·0	0·6
1904																											
March, . .	24·5	24·1	24·2	24·4	24·3	24·2	24·6	24·9	25·3	25·5	25·5	25·7	25·9	26·0	25·9	25·6	25·5	25·4	25·3	25·1	24·9	24·7	24·8	24·5	24·6	25·0	1·9
April, . .	43·1	42·8	42·8	42·8	42·7	42·7	42·7	42·8	42·8	43·0	43·2	43·4	43·8	43·8	43·9	43·8	43·8	43·7	43·8	43·9	43·5	43·4	43·5	43·5	43·6	43·3	1·2

Mean Amount of Cloud 0-10.

	Mdt.	1	2	3	4	5	6	7	8	9	10	11	Noon.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	Mean.	Range.
1903																											
February, .	9·5	9·3	9·4	9·2	9·0	9·0	9·1	9·2	9·2	9·0	9·3	9·2	9·5	9·2	8·7	8·7	8·4	8·4	9·1	8·7	9·1	8·9	9·4	9·2	9·5	9·1	..
March, . .	9·0	9·4	9·4	9·8	9·8	9·6	9·8	9·1	9·6	9·3	9·1	9·2	9·4	9·8	9·9	9·9	9·8	9·7	9·9	9·9	9·7	9·4	8·9	9·4	9·0	9·5	..
1904																											
March, . .	8·3	7·5	7·9	8·2	8·2	8·4	8·4	8·6	8·8	9·1	9·3	9·4	9·2	9·1	9·2	9·0	9·2	9·0	9·2	9·4	9·1	8·7	9·0	8·0	8·3	8·8	..
April, . .	7·7	7·7	7·4	7·4	6·9	7·3	7·4	7·1	7·9	8·2	7·7	8·0	7·1	7·6	7·6	8·4	8·2	7·9	7·7	7·4	7·4	7·7	8·4	7·9	7·7	7·7	..

are so distorted that the adjustment for midnight differences utterly fails to get rid of the larger variations due to the irregular occurrence of barometric minima, which may take place at any hour of the day.

TEMPERATURE.

The diurnal range of temperature in the three months under review is well marked, the values being above the mean from about 9 A.M. to 9 P.M., and below the mean during the other half of the twenty-four hours. It is interesting to compare the curves during the very cloudy March of 1903 and the relatively clear March of 1904. In March 1903 the difference between the coldest and warmest hours was only 0·6°, but in March 1904 the difference was 1·9°, this comparatively large difference being largely due to the Continental influence exerted by the proximity of Coats Land, especially during the ten days March 11 to 20, when the difference between the coldest hour, 1 A.M., and the warmest, 1 P.M., was 4·5°. The diurnal period in the amount of cloud for the three months is somewhat irregular, but there is a decided tendency for a maximum in the afternoon, which is well marked in the Marches of 1903 and 1904. In February 1903, on the other hand, the minimum took place at this time, but in this month the diurnal period is very ill-defined. Of all the elements of climate in high southern latitudes the diurnal variation in the amount of cloud is the most irregular.

The force of the wind shows a distinct daily period in each of the three months under review, the values being below the mean during the time the sun was above the horizon, and above the mean when he was below the horizon, and the curves showing the mean relative humidity exhibit practically the same period. Vapour pressure, on the other hand, shows no defined variation through the hours of the day. For April 1904, when the *Scotia* was in the South Atlantic between 60° and 40° South latitude, the diurnal period in most of the elements is well defined. As regards pressure, we have the double maximum and minimum well marked. The morning minimum occurs at 5 A.M., after which pressure increases till 11 A.M. The afternoon minimum is clearly seen at 5 P.M., and the evening maximum at 11 P.M. Temperature is above the mean from 10 A.M. to 8 P.M. The difference between the warmest and coldest hours in this month was only 1·2°, being thus considerably smaller than that recorded in much higher latitudes during the previous month. The distribution of the amount of cloud through the hours of the day is again irregular, the most conspicuous features being a minimum in the early morning and a maximum in the afternoon. The force of the wind shows a minimum about 7 A.M. and a maximum at 10 P.M., the period below the mean strength for the whole day being spread over the sixteen hours ending with 6 P.M., while there is a pronounced maximum from 6 P.M. to 2 A.M. The curve of relative humidity shows a similar daily period, except that the minimum is recorded at 11 A.M. The vapour pressure shows a well-pronounced morning minimum, and a secondary very small minimum at about 6 P.M., while there are two maxima, one about 3 P.M. and the other at 10 P.M.

TABLE V.—*Continued.*

Mean Wind Force—0-12

	MDT.	1	2	3	4	5	6	7	8	9	10	11	NOON.	1	2	3	4	5	6	7	8	9	10	11	MDT.	MEAN.
1903																										
February, .	1·93	1·93	1·98	1·89	2·02	2·00	1·95	2·02	1·39	1·59	1·54	1·61	1·73	1·82	1·62	1·71	1·61	1·80	1·77	1·71	1·82	1·88	2·04	1·96	1·91	1·80
March, . .	3·06	2·92	2·68	2·58	2·29	2·23	2·23	2·48	2·02	2·19	2·16	2·39	2·27	2·56	2·47	2·68	2·56	2·69	2·63	2·60	2·82	2·77	2·76	2·79	3·03	2·53
1904																										
March, . .	2·77	2·85	2·85	2·82	2·66	2·71	2·68	2·58	2·60	2·65	2·50	2·60	2·63	2·55	2·53	2·68	2·73	2·74	2·79	2·94	3·05	2·87	2·90	3·14	3·08	2·76
April, . .	4·27	4·23	4·05	3·95	3·75	4·00	3·70	3·73	3·70	3·77	3·83	3·78	3·73	3·67	3·80	4·00	3·85	3·63	3·83	4·02	3·97	4·10	4·10	4·07	4·03	3·89

Mean Relative Humidity Saturation = 100

	MDT.	1	2	3	4	5	6	7	8	9	10	11	NOON.	1	2	3	4	5	6	7	8	9	10	11	MDT.	MEAN.
1903																										
February, .	84·8	85·1	85·2	86·4	85·9	85·4	83·9	83·8	82·9	81·2	80·1	81·2	80·9	81·0	81·6	81·0	80·5	80·0	79·5	80·9	82·6	82·6	83·8	83·9	83·9	82·6
March, . .	83·6	83·1	82·4	82·6	84·2	83·7	83·0	83·8	84·9	84·6	83·6	82·9	80·3	81·1	80·8	81·1	81·9	81·3	84·6	83·1	83·4	82·7	84·4	84·1	84·5	83·0
1904																										
March, . .	84·2	85·0	83·1	82·9	83·4	85·3	82·5	82·1	80·9	82·1	82·9	81·0	83·1	82·0	81·9	84·2	83·4	83·9	84·2	85·6	85·3	87·5	85·8	86·5	84·9	83·7
April, . .	87·7	86·6	88·6	87·8	87·8	86·1	86·4	85·7	85·2	85·3	84·7	84·0	84·7	85·5	85·9	85·9	87·0	86·4	84·6	84·8	86·9	88·3	88·4	87·2	87·2	86·4

Mean Vapour Pressure.

	MDT.	1	2	3	4	5	6	7	8	9	10	11	NOON.	1	2	3	4	5	6	7	8	9	10	11	MDT.	MEAN.
1903																										
February, .	·130	·130	·130	·130	·130	·128	·128	·129	·128	·127	·125	·128	·129	·130	·131	·131	·130	·129	·126	·127	·128	·126	·127	·128	·127	·128
March, . .	·116	·116	·114	·114	·116	·115	·114	·115	·117	·118	·116	·115	·113	·113	·113	·114	·114	·113	·116	·113	·113	·113	·115	·115	·115	·115
1904																										
March, . .	·115	·116	·115	·115	·116	·119	·115	·117	·115	·117	·118	·117	·120	·119	·118	·121	·120	·120	·119	·119	·118	·120	·118	·115	·117	·118
April, . .	·252	·250	·254	·249	·248	·244	·245	·244	·243	·245	·246	·247	·251	·253	·256	·256	·259	·256	·253	·253	·257	·257	·260	·256	·259	·252

South Orkneys.

Figure 12 shows the diurnal period of pressure, temperature, cloud, and wind force at Laurie Island, South Orkneys, latitude 60° 44′ S., long. 44° 50′ W., for the ten months, April 1903 to January 1904. Details for each month in this period will be found in the tables.

The pressure curve for the period under review shows a well-marked morning minimum at 5 A.M., and a very small afternoon minimum at 3 P.M., the principal maximum occurring at 8 P.M. Now this closely approximates to the typical curve for insular positions, such as the Helder in the north-west of Holland and Valentia in Ireland,[1] the most conspicuous feature of which is the retardation of the morning maximum. During at least eight of the ten months discussed the South Orkneys, owing to the freezing up of the sea to the south, were virtually on the edge of a continent, and this preponderating influence might be expected to strongly influence the diurnal period of pressure. At the South Orkneys the morning maximum (a very small one) is retarded till 1 P.M., while at the Helder it is reached between 10 and 11 A.M. The diurnal range of temperature is of a simple character, the maximum occurring at 1 P.M., and the minimum from 10 P.M. to midnight. It will be observed, on looking at the tables, that the disturbing effect due to the passage of cyclones in winter is so great that during this season the nights were warmer than the days. This must be looked upon as purely accidental, and will no doubt disappear when the three years' data (for two years of which we are indebted to the energy of the Argentine Meteorological Office) are discussed. From September to January the solar effect is well marked, the morning minimum and the midday maximum being well pronounced. As regards cloud, the diurnal period shows a slight maximum spread over the twelve hours, 6 A.M. to 6 P.M., and a minimum during the other twelve hours which is most pronounced at about 3 A.M. The force of the wind is greatest from 4 to 8 A.M., and least from 4 to 11 P.M. As regards the daily period of relative humidity and vapour pressure, the values for the winter have not yet been computed, but for the three summer months, November to January, both curves closely correspond to the temperature curve for this season, viz. the greatest relative humidity and the lowest vapour pressure occur in the early morning at the time of lowest mean temperature; and the least humidity and greatest vapour pressure occur in the early afternoon during the warmest hours of the day. The difference between the hourly values of relative humidity show an extreme variation of only 3·5 per cent., while in the vapour pressure the range is only 0·009 inch.

Falkland Islands.

During the visit of the *Scotia* to Port Stanley, Falkland Islands, in January 1903, a barograph was left at Cape Pembroke Lighthouse,

[1] See *Challenger Reports.* Physics and Chemistry, vol. ii. : Report on Atmospheric Circulation, by Dr. Buchan, pp. 12, 13.

TABLE VI.—Showing the Smoothed Departure from the Mean of Hourly Values of Pressure, Temperature, Cloud, Wind Force, Relative Humidity, and Vapour Pressure in the Weddell Sea and South Atlantic.

Barometric Pressure, Thousandths of an Inch.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	Mean.
1903																									
February, .	2	6	13	17	18	13	11	9	7	3	2	6	8	9	8	9	9	9	10	10	9	8	5	2	29·076 ins.
March, . .	8	8	5	2	0	1	1	2	1	1	4	5	7	6	8	6	4	0	4	7	9	9	9	9	28·989 ,,
1904																									
March, . .	1	0	3	6	7	6	4	3	0	1	2	3	3	4	2	2	3	4	1	1	2	0	1	1	29·009 ,,
April, . .	2	3	10	13	18	16	6	7	18	22	22	13	3	9	13	14	15	12	7	1	7	10	11	8	29·535 ,,

Temperature, Tenths of Degrees F.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	
1903																									
February, .	5	6	6	7	7	6	4	2	0	1	3	5	6	8	8	8	7	6	4	1	0	2	3	4	27°8
March, . .	1	1	1	2	2	2	1	0	0	1	1	2	2	3	3	3	2	1	0	0	0	0	1	0	25·0
1904																									
March, . .	7	8	7	7	6	4	1	2	4	6	7	9	9	8	7	5	4	2	1	1	1	2	3	5	25·0
April, . .	1	1	2	3	3	3	3	3	2	0	2	4	5	5	4	3	3	3	2	0	1	2	1	1	43·3

Cloud, Per Cent.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	
1903																									
February, .	3	2	1	0	1	0	1	0	1	1	2	2	0	2	5	6	5	4	1	2	0	1	3	2	9°1
March, . .	2	0	2	2	2	0	0	2	2	3	3	0	2	4	4	3	3	3	3	2	2	3	4	2	9·5
1904																									
March, . .	9	9	7	5	5	3	2	0	3	5	5	4	4	3	3	3	3	4	4	3	1	2	4	9	8·8
April, . .	1	2	5	5	5	4	2	0	2	3	1	1	3	2	4	5	2	0	2	2	1	3	3	1	7·7

Wind Force.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	
1903																									
February, .	**·14**	**·12**	**·15**	**·16**	**·18**	**·18**	*·02*	*·13*	*·29*	*·22*	*·17*	*·08*	*·08*	*·09*	*·15*	*·09*	*·07*	*·04*	*·03*	**·01**	**·12**	**·17**	**·18**	**·14**	1°80
March, . .	**·34**	**·20**	*·02*	*·17*	*·29*	*·23*	*·30*	*·31*	*·41*	*·28*	*·29*	*·16*	*·13*	**·04**	**·04**	**·12**	**·10**	**·12**	**·16**	**·21**	**·26**	**·25**	**·34**	**·39**	2·53
1904																									
March, . .	**·21**	**·22**	**·14**	**·08**	**·02**	*·02*	*·07*	*·09*	*·13*	*·14*	*·16*	*·16*	*·20*	*·19*	*·15*	*·09*	*·07*	*·01*	**·08**	**·10**	**·07**	**·09**	**·14**	**·22**	2·76
April, . .	**·18**	**·08**	*·07*	*·08*	*·15*	*·15*	*·24*	*·21*	*·16*	*·13*	*·13*	*·17*	*·15*	*·05*	**·02**	*·02*	*·07*	*·00*	**·12**	**·22**	**·26**	**·30**	**·29**	**·26**	3·89

Relative Humidity, Per Cent.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	
1903																									
February, .	**22**	**29**	**30**	**30**	**22**	**15**	**7**	*1*	*13*	*19*	*19*	*16*	*14*	*13*	*15*	*20*	*24*	*23*	*14*	*3*	**7**	**12**	**17**	**18**	82°6
March, . .	**5**	**1**	**4**	**8**	**9**	**7**	**11**	**16**	**12**	**8**	*7*	*15*	*23*	*21*	*18*	*17*	*6*	*2*	**5**	*2*	**2**	**4**	**9**	**8**	83·0
1904																									
March, . .	**9**	**3**	*3*	**4**	**2**	*2*	*17*	*19*	*16*	*16*	*13*	*17*	*14*	*10*	*5*	**1**	**1**	**10**	**15**	**26**	**27**	**32**	**23**	**21**	83·7
April, . .	**11**	**12**	**16**	**7**	**3**	*4*	*6*	*10*	*13*	*17*	*19*	*16*	*9*	*5*	*0*	**2**	*2*	*9*	*7*	**5**	**18**	**19**	**15**	**8**	86·4

Vapour Pressure, Thousandths of an Inch.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	
1903																									
February, .	**1**	**1**	**1**	*0*	*0*	*0*	*1*	*1*	*1*	*1*	*1*	**1**	**2**	**3**	**3**	**2**	**1**	*0*	*0*	*0*	*0*	*0*	*0*	**1**	·128 ins.
March . .	*0*	*1*	*0*	*0*	*0*	*0*	*0*	**2**	**2**	**1**	*0*	*1*	*2*	*2*	*1*	*1*	*1*	*1*	*1*	*2*	*1*	*1*	*0*	*0*	·115 ,,
1904																									
March, . .	*2*	*2*	*2*	*0*	*0*	*0*	*2*	*2*	*1*	*1*	*0*	**1**	**1**	**1**	**2**	**2**	**2**	**1**	*0*	*0*	*0*	*1*	*2*	*2*	·118 ,,
April, . .	**3**	**2**	**1**	*2*	*4*	*6*	*6*	*7*	*6*	*5*	*4*	*2*	**1**	**3**	**4**	**4**	**3**	*0*	*0*	**2**	**3**	**3**	**3**	**2**	·252 ,,

Note.—The heavy figures indicate above the average and the italic figures below the average.

TABLE VII.—Showing the Smoothed Departure from the Mean of Hourly Values of Pressure, Temperature, Cloud, and Wind Force at the South Orkneys from April 1903 to January 1904.

Barometer at 32° and Mean Sea Level. Thousands of an inch.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	MDT.	MEAN.
April,	1	2	6	10	11	11	9	6	3	5	8	10	10	11	9	3	9	17	21	21	19	16	10	6	29·204
May,	28	32	30	26	20	14	5	5	15	21	23	25	25	24	22	22	19	15	10	5	3	9	16	22	29·329
June,	5	6	10	13	15	14	9	4	2	6	8	9	7	3	0	0	3	5	7	7	6	3	0	2	29·256
July,	22	15	3	13	22	30	22	31	28	28	27	22	18	13	6	7	17	24	29	31	32	32	30	27	29·160
August,	3	7	9	15	19	23	17	11	6	2	1	2	2	4	5	8	13	17	20	20	16	11	5	1	29·286
September,	10	8	5	2	1	1	2	2	1	1	3	6	9	12	14	14	12	8	4	1	6	10	11	11	29·239
October,	6	4	1	2	6	10	13	14	13	12	10	7	3	2	7	11	12	12	10	8	7	7	8	7	29·340
November,	0	4	5	5	5	7	7	7	6	7	7	4	0	3	2	2	2	4	6	8	9	9	7	4	29·119
December,	1	1	1	2	5	5	5	2	2	6	9	11	11	10	9	7	3	3	8	11	10	9	6	3	29·200
January,	7	13	17	17	16	14	13	13	13	13	11	6	1	5	8	12	18	23	23	22	18	14	8	2	29·158
Period,	2	4	7	9	10	10	8	5	3	2	2	1	1	1	1	2	5	9	11	12	11	9	5	2	29·229

Temperature—Tenths of Degrees F.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	MDT.	
April,	1	0	1	1	1	2	2	0	2	4	6	6	6	6	4	1	4	7	9	7	4	3	2	1	°20·6
May,	4	7	8	10	11	10	8	6	4	4	3	2	1	5	9	11	10	9	10	9	6	3	1	2	17·1
June,	3	6	6	5	3	0	2	5	7	7	4	1	2	3	4	4	3	1	3	5	4	0	2	0	9·5
July,	9	4	3	0	13	16	16	15	15	17	16	13	8	2	7	13	16	15	14	12	13	12	12	11	16·9
August,	4	4	4	4	3	1	4	6	6	2	2	5	5	5	2	2	6	8	9	7	5	2	1	3	18·6
September,	9	10	10	13	14	12	7	1	3	6	9	14	18	20	19	15	8	2	3	5	7	8	8	9	13·4
October,	8	12	17	16	13	10	7	2	3	7	10	11	13	14	13	11	8	5	2	0	2	3	4	4	27·0
November,	11	13	13	12	10	7	4	0	3	7	10	12	12	12	11	10	7	4	3	2	0	3	6	10	29·3
December,	10	11	10	10	8	5	1	2	4	7	10	12	14	12	10	8	5	3	0	2	5	6	8	9	31·5
January,	7	5	3	2	2	2	1	0	3	5	7	9	8	8	7	6	4	1	1	4	7	8	9	9	32·3
Period,	4	4	3	2	2	1	0	1	2	4	7	8	9	7	5	2	1	3	4	4	4	5	5	5	21·6

NOTE.—The heavy figures indicate above the average and the italic figures below the average.

where regular meteorological observations are taken every four hours by Mr. John Pearce, the principal keeper, and his assistant. Mr. Pearce having kindly forwarded the barograph sheets for the three years 1903-1905, I am now able to give hourly values for the two years 1903 and 1904. The third year's observations, those for 1905, are at present being reduced, but the broad features of the diurnal variation of pressure are apparent from the two years' observations. In this connection I am indebted to Dr. W. N. Shaw, F.R.S., Director of the Meteorological Office, for the loan of the barograph curves since May 1904, and to Mr. James Miller (late first assistant at the Ben Nevis Observatory), for measuring and tabulating the hourly values. In the table given will be found the hourly departures of the barometric pressure for each month and the year, these values being graphically shown in the plate, Fig. 13. These values are corrected for midnight differences, but have not been smoothed in any way. The results of this inquiry have been given to afford data for study and comparison with those from the South Orkneys, Weddell Sea, and the South Atlantic, already referred to, and I propose at present merely to draw attention to some of the more pronounced features of the curves. It is seen that the morning maximum takes place at times varying from six to ten o'clock, the hour of earliest occurrence being in summer, and the hour of latest occurrence in winter. The curves for these two seasons are quite distinct. Taking January as typical of the summer, and July as illustrative of the winter type, we note the following. In January the most pronounced feature is the large morning maximum and deep afternoon minimum, while the morning minimum all but vanishes, and the evening minimum is much reduced. In July, on the other hand, the morning maximum is so small as almost wholly to disappear, while the afternoon minimum is still a salient feature of the curve, the larger maximum occurring in the evening. It is interesting to note the pronounced character of the morning minimum during the six months April to September, and how this is succeeded in summer by a decided maximum in these hours. It will further be noted how the afternoon minimum deepens in the summer as compared with the winter months. Doubtless, as more years' observations are taken, the merging of the one type into the other will be shown in a less abrupt manner, while anomalies such as that presented by the month of December will be eliminated. The smallest amplitude is in May, viz. 0·017 inch, and the largest in October, 0·038 inch. With a view of seeing how far the geographical position of the station influenced the diurnal variation of the barometer in comparatively high southern latitudes, I have examined the mean annual values from South Georgia (lat. 54° 31′ S., long. 36° 05′ W.), Orange Bay near Cape Horn (lat. 55° 31′ S., long. 68° 5′ W.), and during the drift of the *Belgica* between the latitudes of 69°50′ and 71° 30′ S., and longitudes from 87° to 95° W., the data being obtained from the respective official accounts of the three expeditions. The results have been plotted along with those from Cape Pembroke and the South Orkneys (see plate, Fig. 14). With regard to the *Belgica*, it may be said that the diurnal range all but disappear, there being a range of only 0·007 inch between the highest and lowest mean hourly values.

TABLE VII.—*Continued.*

Cloud—Per Cent.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	Mean.
April, . .	*5*	*12*	*13*	*9*	*3*	*2*	*0*	**2**	**3**	**2**	**1**	**2**	**5**	**9**	**11**	**13**	**9**	**5**	**2**	*0*	*1*	*4*	*2*	*2*	8·1
May, . .	**2**	*1*	*0*	*1*	*0*	**1**	**4**	**9**	**9**	**6**	**2**	*1*	*1*	*1*	*1*	*1*	*2*	*4*	*6*	*7*	*5*	*3*	**1**	**1**	7·5
June, . .	*5*	*9*	*6*	*4*	*2*	*4*	*4*	*0*	**3**	**3**	*0*	*2*	*3*	*0*	**2**	**3**	**4**	**6**	**7**	**5**	**3**	**4**	**5**	**1**	6·7
July, . .	**1**	**1**	*0*	*2*	*0*	**2**	**5**	**5**	**5**	**7**	**8**	**8**	**5**	**1**	*1*	*1*	*4*	*7*	*7*	*5*	*4*	*4*	*0*	**1**	7·5
August, . .	**2**	**6**	**6**	**5**	**2**	**2**	**2**	**1**	*1*	*3*	*3*	*3*	*3*	*2*	*1*	**1**	**1**	*0*	*1*	*1*	*1*	*1*	*2*	*1*	8·1
September, .	*8*	*6*	*6*	*4*	*3*	*3*	*0*	**2**	**3**	**3**	**5**	**7**	**7**	**6**	**4**	**3**	**3**	**3**	**1**	*2*	*2*	*3*	*4*	*7*	7·0
October, . .	*10*	*10*	*7*	*4*	*0*	*0*	*1*	*2*	*2*	*0*	**1**	**4**	**5**	**7**	**7**	**7**	**8**	**8**	**8**	**5**	*1*	*4*	*7*	*8*	8·4
November, .	*0*	*1*	*0*	**4**	**9**	**10**	**9**	**5**	**4**	**1**	**1**	**2**	**3**	**2**	*2*	*4*	*7*	*7*	*8*	*8*	*5*	*1*	**1**	**1**	8·4
December, .	**4**	**5**	**3**	**1**	*2*	*3*	*1*	*1*	*0*	*3*	*5*	*6*	*6*	*4*	*2*	*0*	**1**	**2**	**3**	**3**	**4**	**3**	**3**	**2**	9·3
January, . .	*0*	*0*	*0*	*1*	*1*	*1*	*1*	*2*	*3*	*2*	*1*	0	0	**1**	0	**1**	**1**	**1**	*0*	*1*	*0*	**1**	**1**	*0*	9·6
Period, .	*2*	*3*	*3*	*2*	*1*	*0*	**1**	**2**	**2**	**2**	*0*	**1**	**1**	**2**	**1**	**2**	**1**	*0*	*1*	*2*	*2*	*1*	*1*	*1*	8·1

Wind Force.

	1	2	3	4	5	6	7	8	9	10	11	N.	1	2	3	4	5	6	7	8	9	10	11	Mdt.	
April, . .	**·04**	**·09**	**·21**	**·27**	**·35**	**·38**	**·35**	**·23**	**·07**	**·02**	**·04**	**·02**	**·08**	*·05*	*·10*	*·18*	*·25*	*·27*	*·25*	*·18*	*·20*	*·25*	*·22*	*·09*	1·65
May, . .	**·10**	**·10**	**·07**	**·21**	**·35**	**·43**	**·25**	**·03**	*·10*	*·23*	*·28*	*·27*	*·15*	*·13*	*·18*	*·22*	*·11*	*·02*	**·17**	**·12**	**·06**	**·13**	**·07**	**·03**	2·21
June, . .	*·12*	*·06*	**·21**	**·30**	**·44**	**·43**	**·41**	**·30**	**·04**	**·01**	**·09**	**·12**	**·13**	**·02**	*·04*	*·12*	*·20*	*·21*	*·30*	*·34*	*·35*	*·30*	*·23*	*·17*	1·70
July, . .	**·26**	**·33**	**·48**	**·47**	**·47**	**·42**	**·22**	**·07**	*·14*	*·09*	*·13*	*·18*	*·18*	*·31*	*39*	*·44*	*·39*	*·24*	*·13*	*·07*	*·02*	*·02*	**·04**	**·11**	2·35
August, . .	*·01*	*·04*	**·16**	**·36**	**·58**	**·51**	**·38**	**·16**	*·01*	*·04*	**·02**	*·03*	*·12*	*·19*	*·12*	*·11*	*·15*	*·22*	*·22*	*·23*	*·25*	*·27*	*·19*	*·08*	2·05
September, .	**·07**	*·12*	*·10*	*·16*	*·13*	*·12*	*·17*	*·13*	*·17*	*·10*	**·05**	**·12**	**·13**	**·09**	**·11**	**·09**	**·06**	**·04**	**·09**	**·11**	**·07**	**·06**	**·08**	**·04**	1·66
October, . .	*·27*	*·23*	*·26*	*·13*	**·02**	**·17**	**·16**	**·19**	**·20**	**·17**	**·09**	**·13**	**·10**	**·13**	**·11**	**·20**	**·28**	**·17**	**·05**	*·17*	*·24*	*·29*	*·32*	*·28*	2·00
November, .	**·20**	**·20**	**·14**	**·04**	*·07*	*·01*	*·00*	**·02**	*·04*	*·05*	*·07*	*·02*	*·01*	**·01**	*·03*	*·05*	*·07*	*·10*	*·10*	*·08*	*·03*	**·01**	**·09**	**·13**	1·66
December, .	**·10**	**·04**	*·07*	*·11*	*·12*	*·03*	**·04**	**·07**	**·07**	**·01**	**·01**	*·00*	*·00*	*·03*	*·07*	*·07*	*·04*	*·01*	**·05**	**·06**	**·07**	**·03**	**·03**	**·08**	1·27
January, . .	*·05*	*·10*	*·02*	*·08*	*·07*	*·06*	*·02*	*·00*	*·00*	*·10*	*·08*	*·01*	**·19**	**·23**	**·22**	**·14**	**·02**	*·10*	*·15*	*·09*	*·07*	*·01*	**·01**	*·05*	1·08
Period, .	**·03**	**·02**	**·08**	**·11**	**·19**	**·21**	**·16**	**·10**	*·01*	*·04*	*·03*	*·01*	**·01**	*·02*	*·04*	*·07*	*·08*	*·09*	*·08*	*·08*	*·09*	*·11*	*·07*	*·03*	1·76
Miles pr. hour	**0·2**	**0·1**	**0·6**	**0·7**	**1·3**	**1·4**	**1·0**	**0·7**	*0·1*	*0·3*	*0·2*	*0·1*	**0·1**	*0·1*	*0·3*	*0·5*	*0·6*	*0·7*	*0·6*	*0·6*	*0·7*	*0·8*	*0·5*	*0·2*	12·3

Note.—The heavy figures indicate above the average and the italic figures below the average.

TABLE VIII.—Showing the Hourly Departure of Barometric Pressure from the Mean of the Day at Cape Pembroke, Falkland Islands, for the years 1903 and 1904.

Thousandths of an Inch.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
A.M.													
1	**2**	**4**	**6**	*2*	*4*	*3*	**8**	*2*	**10**	**14**	**10**	**3**	**4**
2	*1*	*0*	**6**	*7*	*6*	*2*	**5**	*4*	**6**	**12**	**4**	*3*	**1**
3	**3**	*0*	**6**	*9*	*7*	*5*	**3**	*10*	**2**	**11**	**1**	*4*	*1*
4	**8**	**3**	**8**	*7*	*8*	*7*	*4*	*11*	*2*	**11**	**2**	*4*	*1*
5	**12**	**6**	**10**	*5*	*7*	*6*	*5*	*10*	*4*	**9**	**2**	*1*	*0*
6	**14**	**14**	**12**	*5*	*6*	*3*	*4*	*6*	*4*	**12**	**1**	**3**	**2**
7	**12**	**18**	**15**	*1*	*2*	**1**	*2*	*2*	*0*	**11**	**1**	**3**	**4**
8	**8**	**16**	**14**	**1**	**1**	**5**	*0*	**4**	**3**	**8**	*4*	*1*	**4**
9	**2**	**14**	**9**	**2**	**4**	**10**	**4**	**6**	**2**	**1**	*8*	*4*	**3**
10	*0*	**10**	**4**	**1**	**4**	**15**	**4**	**7**	*0*	*5*	*12*	*4*	**2**
11	*2*	**2**	*0*	*1*	**2**	**11**	**3**	**5**	*4*	*11*	*15*	*3*	*1*
Noon	*5*	*4*	*6*	*5*	*0*	**4**	*4*	**2**	*8*	*17*	*16*	*4*	*5*
1	*6*	*10*	*14*	*7*	*2*	*1*	*12*	*5*	*16*	*20*	*12*	*7*	*10*
2	*9*	*14*	*19*	*7*	*3*	*8*	*16*	*10*	*20*	*23*	*12*	*7*	*13*
3	*14*	*18*	*22*	*4*	**1**	*7*	*14*	*8*	*18*	*23*	*10*	*7*	*12*
4	*16*	*19*	*22*	**1**	**4**	*3*	*10*	*2*	*16*	*23*	*10*	*5*	*10*
5	*18*	*14*	*17*	**5**	**6**	*2*	*6*	**3**	*9*	*18*	*5*	*4*	*7*
6	*16*	*14*	*11*	**8**	**8**	**2**	*2*	**6**	*0*	*7*	*0*	**1**	*2*
7	*7*	*9*	*4*	**9**	**9**	**1**	**2**	**9**	**8**	**1**	**6**	**2**	**2**
8	*0*	*4*	*1*	**9**	**7**	**3**	**6**	**9**	**12**	**8**	**12**	**7**	**5**
9	**4**	*0*	**1**	**9**	**4**	**1**	**9**	**6**	**14**	**11**	**18**	**11**	**7**
10	**8**	**4**	**3**	**9**	**2**	**1**	**10**	**3**	**14**	**14**	**21**	**14**	**8**
11	**8**	**6**	**4**	**3**	*2*	*1*	**10**	**2**	**14**	**15**	**20**	**10**	**7**
Mdt.	**4**	**6**	**6**	*0*	*2*	*1*	**10**	*0*	**12**	**15**	**15**	**8**	**6**

NOTE.—The heavy type indicates above the average and the italic type below the average.

TABLE IX.—Showing the Departure from the Annual Mean of the Hourly Values of Barometric Pressure during the drift of the *Belgica*, and at the South Orkneys, South Georgia, Orange Bay, and the Falkland Islands.

Thousandths of an Inch.

	Belgica.	S. Georgia.	S. Orkneys.	Orange Bay.	Falkland Is.
A.M.					
1	*2*	**4**	*2*	**1**	**4**
2	*1*	**1**	*5*	*0*	**1**
3	**1**	*2*	*6*	*3*	*1*
4	**1**	*4*	*10*	*5*	*1*
5	**1**	*2*	*11*	*3*	*0*
6	**1**	**2**	*10*	*1*	**2**
7	**2**	**4**	*9*	*0*	**4**
8	**1**	**7**	*4*	*0*	**4**
9	*0*	**11**	*2*	*3*	**3**
10	*1*	**10**	*2*	*4*	**2**
11	*0*	**6**	*3*	*3*	*1*
Noon	**1**	*0*	*2*	*3*	*5*
P.M.					
1	**2**	*5*	**1**	*7*	*10*
2	**2**	*9*	*1*	*7*	*13*
3	**3**	*12*	*2*	*7*	*12*
4	**2**	*12*	**1**	*2*	*10*
5	**2**	*10*	**6**	*0*	*7*
6	**2**	*6*	**9**	**3**	*2*
7	**2**	**1**	**11**	**5**	**2**
8	*0*	**4**	**13**	**9**	**5**
9	*2*	**6**	**12**	**8**	**7**
10	*3*	**5**	**8**	**7**	**8**
11	*4*	**5**	**6**	**6**	**7**
Mdt.	*3*	**5**	**2**	**6**	**6**

NOTE.—The heavy type indicates an excess and the italic a defect.

It is interesting to note that the curves for the South Orkneys and Orange Bay closely resemble each other, while those for South Georgia and the Falkland Islands also show many points in common, although differing markedly from the first pair. As regards the South Orkneys and Orange Bay, they may both be regarded as on the edge of a continent, for, as already stated, during nearly the whole time covered by the observations at the Orkneys the Austral seas were frozen over. In South Georgia and the Falklands the situation is essentially oceanic; hence are found marked differences in the diurnal range of pressure. The characteristic features of the daily period of pressure at the South Orkneys and Orange Bay are a long-drawn-out minimum and a pronounced evening maximum at both places. At Orange Bay there is an indication of the morning maximum at about 7 and 8 A.M., and it is an open question whether the curve for this station is not more closely allied to that of South Georgia and the Falklands than to that of the South Orkneys. At the South Orkneys the morning minimum is relatively deep compared to the other three places. South Georgia and the Falklands possess a diurnal period of pressure essentially the same, the only pronounced difference being in the morning maximum, which is much smaller at the Falklands than at South Georgia. It will further be observed that the morning maximum and afternoon minimum occur about one and a half hours earlier at the Falklands than at South Georgia.

In connection with the phases of the diurnal range of pressure in this region, much interest will attach to the publication of the results of the Swedish and French Antarctic Expeditions, as well as to the observations made for some years by the Argentine naval officers at New Year's Island, in the proximity of Cape Horn, and those taken under the direction of the Argentine Meteorological Office.

PROCEEDINGS OF THE ROYAL SCOTTISH GEOGRAPHICAL SOCIETY.

LECTURE.

SIR HARRY H. JOHNSTON, G.C.M.G., K.C.B., closed the Lecture Session in Edinburgh on March 27th, when he delivered an Address on "Liberia," Professor James Geikie, D.C.L., LL.D., President of the Society, presiding. On the motion of Sir James Russell, LL.D., a hearty vote of thanks was awarded the Lecturer.

MEETING OF COUNCIL.

The following resolution was adopted by the Council of the Royal Scottish Geographical Society, and submitted to the Secretary of State for India in Council:—

In view of the great regret felt in geographical circles throughout the world that the proposed expedition down the Brahmaputra to Assam did not take place