RECENT PUBLICATIONS.

Barometric Gradient and Wind Force. Report to the Director of the Meteorological Office on the Calculation of Wind Velocity from Pressure Distribution, and on the Variation of Meteorological Elements with Altitude. By ERNEST GOLD, M.A. Published by the Authority of the Meteorological Committee. London, 1908. 4to. 44 pp. and 15 pl. Official Copy, M.O. No. 190.

This paper is divided into two sections. The first deals with the calculation of wind velocities from the distribution of the isobars according to the theory of Ferrel, and Guldberg and Mohn. The second contains an account of the results obtained from kite and balloon ascents in Germany and in England during 1905 and 1906, and a comparison between the values obtained for the wind velocity and direction at 1000 metres altitude by experiment and according to calculation.

Dr. Shaw, in the preface to this Report, points out that the relation of wind force to barometric gradient is a fundamental question in modern meteorology.

Maryland Weather Service. Volume II. Baltimore, 1907. 8vo. 515 pp.

This is the second of a series of *Reports* dealing with the climatic features of Maryland. The first volume issued by this Service was general in character, and presented all that was then known regarding the physiography and meteorology of the State. The present volume contains a very exhaustive "Report on the Climate and Weather of Baltimore and Vicinity," and represents the results of many years' study of the Baltimore region. It is doubtful if the weather of any district has been so thoroughly studied as this region has been by Dr. Fassig.

The Report is divided into two parts. The first deals with the average and extreme values of the meteorological elements recorded in the city of Baltimore. The discussion is based upon observations extending over a period of nearly a century. The second part deals with types of weather experienced in Baltimore and the vicinity. The Report is profusely illustrated, being accompanied by 24 plates and 173 illustrations, many of which are in colours.

A summary of the principal climatological results for the years 1871-1904 are given in the following table:—

MONTHLY RESULTS OF CLIMATOLOGICAL OBSERVATIONS, BALTIMORE, 1871-1904.

Months.	Pressure.	Temperature.						Relative Humidity.	Amount of Cloud.	Rain.	
		Means.			Extremes.						
		Min.	Max.	Range	Mean.	Min.	Max.			Amount.	No. of Days.
	ins.	°	°	°	°	°	°	%		ins.	
January	29·995	27·4	40·6	13·2	34·0	−6	73	69·5	5·9	3·20	12
February	29·968	28·5	42·4	13·9	35·5	−7	78	66·5	5·0	3·70	11
March	29·889	34·4	49·6	15·2	42·0	5	82	64·9	5·3	3·99	13
April	29·877	44·8	61·6	16·8	53·2	24	94	60·1	5·7	3·27	11
May	29·852	55·6	72·9	17·3	64·3	34	96	63·0	5·8	3·63	12
June	29·851	64·5	81·8	17·3	73·1	47	99	66·6	5·1	3·78	10
July	29·850	69·4	85·8	16·4	77·6	55	104	66·4	4·9	4·66	12
August	29·869	67·3	83·3	16·0	75·3	51	100	69·2	4·6	4·20	11
September	29·946	60·4	76·5	16·1	68·4	39	101	70·4	4·3	3·85	9
October	29·942	49·2	65·6	16.4	57·4	30	90	67·6	5·0	2·99	9
November	29·976	38·7	53·1	14·4	45·9	15	79	65·8	4·9	2·99	10
December	29·988	30·3	43·8	13·5	37·1	−3	73	67·2	5·0	3·07	11
Year	29·917	47·5	63·1	15·6	55·3	−7	104	66·5	5·1	43·33	131

National Antarctic Expedition, 1901-1904. *Meteorology, Part I. Observations at Winter Quarters and on Sledge Journeys, with Discussions by Various Authors.* Prepared under the Superintendence of the Director of the Meteorological Office with the Co-operation of a Committee of the Royal Society. Published by the Royal Society, 1908. 4to. London. (14 + 548 pp., 15 plates, and 5 charts.)

The meteorological work of this Expedition was under the charge of Lieutenant C. Royds, who gave a very interesting account of the work done, and the difficulties which had to be contended with, at the Meeting of the Royal Meteorological Society in November 1904. (*Quarterly Journal*, 31, 1905, p. 1.)

This volume contains the meteorological Journal of the *Discovery*, giving two-hourly observations from February 9, 1902, to February 15, 1904, and in addition the meteorological observations made at Erebus Island Camp, lat. 77° 51′ S., long. 166° 45′ W., and on the various sledge journeys from winter quarters, are printed *in extenso*. These observations extend over 246 pages. Summary tables of the *Discovery* Expedition, and of the German, Swedish, and Scottish National Expeditions, are also given, together with those of the relief ship *Morning*. The results have been discussed in the following papers, which are printed in the volume:—"Climatology of South Victoria Land, and the Neighbouring Seas," by M. W. Campbell Hepworth; "Notes on the Observations of Temperature of the Winter Quarters of the *Discovery*," by Dr. Charles Chree; "Notes on Open-air Temperature, Stream Temperature, and on Terrestrial Radiation," by W. H. Dines; "Notes on the Readings of the Aspiration Psychrometer and of the Dry and Wet-bulb Thermometers, and on the Observations of Evaporation and Precipitation, and of the Evaporation of Ice," by W. H. Dines; "Notes on the Observations of Barometric Pressure," by R. H. Curtis; "Discussion of the Observations of the Direction and Force of Wind at Winter Quarters and on the Sledge Journeys," by R. H. Curtis; "Notes on the Records of Sunshine and the Observations of Clouds," by R. H. Curtis; and "Discussion of the Observations of Atmospheric Electricity," by C. T. R. Wilson. Lieutenant Royds contributes some notes on the meteorological instruments and their exposure; and Dr. E. A. Wilson a series of beautiful plates illustrating solar and cloud phenomena. Dr. Shaw, in the preface, sums up what appear to be the salient features of the climate, according to the two years' experiences of the explorers, as follows:—

"Although the winter quarters were regarded as an exceptionally warm position in relation to others in the locality, temperature ranged from a maximum of only 42° F. to a minimum of −58°·3 F. Fluctuations are extraordinarily rapid and violent at all seasons; they are sometimes, but not always, associated with changes of wind direction. Polar winds often bring with them an increase of temperature.

"The daily range is large in consequence of the sudden fluctuations, but the mean diurnal variation, as represented by the average of the two-hourly readings, amounts to only 3° in midsummer and 1° in midwinter. The time of maximum, as regards the latter, is rather dubious, but there is evidence of a diurnal and semidiurnal oscillation of temperature even in the Antarctic night.

"The summers were remarkably cold. Very few days gave a mean temperature above the freezing-point. The highest mean temperature for any month was 26°·2 F., the lowest −21°·0 F. The air is remarkably dry and transparent, fog is comparatively infrequent; precipitation is slight, but there may be deep drifts of snow. Sunshine is remarkably abundant; the total for 1903 equalled that for Scilly, and in December of that year an average of 16 hours per day was registered. The sun's rays are intensely hot, and terrestrial radiation extremely vigorous.

"Pressure ranged between 30·181 and 28·140 ins., the two extremes occur-

ring in consecutive months of 1902. The barometer stands high as compared with the values obtained for other positions in the Antarctic. The sequence of pressure changes as shown on the barographic records presents no very noteworthy peculiarities, and the use of the barometer for anticipating coming weather is less effective than in this country.

"The pressure observations show the common semidiurnal oscillation. It amounts to 0·002 in., with maxima at about 10 a.m. and 10 p.m. at all seasons of the year. The variation of 24 hours' period has, on the average, an amplitude of twice that amount, but the times of maximum are different at different seasons.

"The changes of pressure in high southern latitudes may be regarded as associated with the passage of cyclonic depressions much in the same way, *mutatis mutandis*, as elsewhere.

"The surface winds are chiefly Easterly. Northerly and Southerly winds occur, but winds from between the South-west and North-west are almost unknown. The chief characteristic of the wind is its gustiness. Gales are experienced from every quarter between North-east round to South-west on the Eastern side, but, on the whole, they are not so frequent as in the British Isles.

"The direction and motion of the lower clouds may be from any point of the compass. The resultant is a moderate frequency from the South-east; there is a marked deficiency as regards the West.

"The resultant motion of smoke from Mount Erebus is from the South and West, and that of the upper clouds from the West.

"Subject to some uncertainty on the state of the instrument, the mean electric force potential is rather lower than at Kew, but abnormally high in drifting snow or ice crystals. A diurnal variation is shown in summer with a maximum in the middle of the day, and a minimum in the early morning hours. The seasonal variation has a maximum in summer and a minimum in winter.

"No relation is shown between potential and aurora."

The observations and results given in this volume are a most valuable addition to our knowledge of the conditions of the Antarctic regions.

There still remain for publication the discussions of the special features of the traces from the recording instruments, obtained at the winter quarters, and of about one thousand synchronous charts of the regions south of 30° S. lat. which have already been prepared from the daily observations at Greenwich noon contributed by international co-operation.

METEOROLOGICAL LITERATURE.

The following titles of papers bearing on Meteorology have been selected from the contents of some of the periodicals and serials which have been received in the Library of the Royal Meteorological Society. This is not a complete list of all the published meteorological articles, but only shows those that appear to be of more general interest.

Abbot, C. G., and Fowle, F. E., Jr.—Recent Determinations of the Solar Constant of Radiation. *Terrestrial Magnetism, Baltimore*, **13**, 1908 (79-82).

Angot, A.—Sur le calcul des observations pluviométriques. *Ann. Soc. Mét. France, Paris*, **56**, 1908 (125-128).

Angot, A.—Sur la mesure de la neige. *Ann. Soc. Mét. France, Paris*, **56**, 1908 (157-159).

Barnes, H. T.—Formation of ground- or anchor-ice, and other natural ice. *Nature, London*, **78**, 1908 (102-104).