

laid on Scottish examples. Dr. W. F. Hume, in his "Notes on the Petrography of Egypt" (*Geol. Mag.*, 1908, p. 500) gives a concise sketch that ought to be reprinted for the use of travellers. Mr. F. Kretschmer (*Jahrb. k.k. Reichsanstalt*, Bd. lviii., p. 527) describes the "Kalksilikatfelse" near Mährisch-Schönberg in the Sudetic, and shows them to have become mineralised by the granite of the chain, while (p. 571) certain dyke-like pyroxenepegmatites have arisen from the absorption of limestone into the invading igneous material. Dr. Hinterlechner and Mr. C. von John, in an elaborate paper on the eruptive rocks of the Bohemian Eisengebirge (*ibid.*, Bd. lix., p. 127), show that the alteration of the sediments into crystalline schists is not here dependent on the amount of dynamic influence. Where pressure has been least, the crystallisation is most marked, and is due to the intrusion of a mass that was once regarded as a primitive core. This, the earliest granite of the area, is later than Lower Silurian sediments, and Dr. Hinterlechner believes that it was intruded after the folding of the district. Since Devonian beds are here involved, this red gneiss may be of Upper Devonian or Carboniferous age. A paper of this kind emphasises the fact that in true petrology the laboratory merely subserves the work done in the open field.

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REPORTS ON CLIMATES.

THE results of the meteorological observations at the principal stations in the system of the Deutsche Seewarte for the five-year period 1901-5, and for the ten-year period 1896-1905, recently published, complete the series of these valuable statistics for the thirty years 1876-1905. They include the mean monthly, seasonal, and annual values, and extremes or other data relating to the various elements, deduced from observations generally made three times daily, and in practically the same form as in previous instalments. The heights of some of the barometers above sea-level have changed from time to time, but in order to permit easier comparison of one period with another, this inconvenience has been minimised by reducing the observations to agree with the levels given in previous publications. Otherwise, as usual in the case of barometrical observations at climatological stations, the readings are not reduced to sea-level.

The meteorology of Peru is discussed by Dr. J. Hann in the *Sitzungsberichte* of the Vienna Academy of November 4, 1909. The observations of the various stations on which the discussion is based have been published in the *Annals of the Harvard College Observatory*, to which we have previously referred; the tables were carefully prepared for publication under the direction of Prof. S. J. Bailey, of Arequipa, and are mostly printed *in extenso*, with mean values, but without discussion. In the present work Dr. Hann has submitted the results of the various elements to minute investigation by the laborious process of harmonic analysis. This brings out many interesting points; we propose here only to make a few general remarks on the most important station, on the summit of the Misti (lat. 16° 16' S., long. 71° 25' W.), at the great elevation of 5850 metres above sea-level. Dr. Hann points out that the agreement of the daily range of the barometer with that of the highest stations in Europe and America is very noteworthy; the principal maximum occurs between noon and 1h. p.m., and the minimum about 5h. a.m. The mean annual temperature (1893-5) was -7.8° C.; January, -6.0°; May, June, and August, -9.7°. The thermometer, even on very fine days, rarely rose above freezing point. Above 4600 metres, only snow or hail was observed; a certain amount of snow remains during nearly the whole year, but a few clear days suffice to clear off the greater part of a heavy snowfall.

A valuable paper on the climate of the Lower Guinea coast and hinterland, by Dr. R. Sieglerschmidt, appears in vol. xxiii., part i., of *Mitteilungen aus den deutschen Schutzgebieten*; it is the more important from the fact that, with the exception of a short discussion of the rainfall of the Cameroons by Fitzner in 1907, no general paper on the climate of that district has been published for some

years. Among the earlier papers may be specially mentioned the results of the Loango expedition (published in 1878), observations at Vivi and other places by Freiherr v. Danckelman (1884), and the reports by Lancaster and Meuleman on the climate of the Lower Congo (1897). Dr. Sieglerschmidt's article deals exhaustively with each of the meteorological elements, and the general results confirm those given by Dr. Hann in his "Klimatologie," that the air-pressure on the Lower Guinea coast has a single yearly range, and that the yearly means decrease from south to north, while the temperature (reduced to sea-level) increases considerably towards the interior, except in the extreme north. Rainfall increases along the coast from almost complete rainlessness to that of the second wettest district of the globe. The oceanic air-current, which from June to September (or October) extends from the north of Angola to the Cameroons far into the interior, has a great influence on the yearly range of temperature, rainfall, &c., while in the hinterland of the north and south districts the yearly range is determined by the alternation of summer warmth and winter cold of higher latitudes.

The climate of Berlin, part ii., air-temperature, by Prof. G. Hellmann (with the assistance of Messrs. G. v. Elsner and G. Schwalbe), forms part No. 6, vol. iii., of the *Abhandlungen* of the Royal Prussian Meteorological Institute. In this valuable and laborious investigation the observations are dealt with in great detail and for various periods from the year 1701. In the following table we quote the maximum and minimum readings for 1830-1907, and the mean monthly and yearly values for 1822-1907, in centigrade degrees:—

	Jan.	Feb.	March	April	May	June
Mean max. ...	1.4	3.3	7.0	12.9	18.5	22.5
Mean min. ...	-3.2	-2.0	0.2	4.3	8.8	12.8
True mean ...	-1.1	0.5	3.4	8.6	13.6	17.5
	July	August	Sept.	Oct.	Nov.	Dec.
Mean max. ...	23.8	22.8	19.0	12.9	6.3	2.7
Mean min. ...	14.3	13.9	10.5	6.4	1.6	-1.4
True mean ...	18.9	18.1	14.6	9.5	3.9	0.7

Yearly mean, 9.0; absolute maximum, 37.0 (July 20, 1865); absolute minimum, -25.0 (January 29, 1830, January 22, 1850).

The author points out that the earlier period was somewhat colder than the later; this was noticeable in all the winter months, especially in January, while greater heat in summer, especially in May and August, was observed, but he considers that it would be premature to assume that a permanent change of climate has taken place. The principal anomalies in the yearly range are the cold periods in the middle of February and June, and the warm periods near the end of September and middle of December. The cold spell of May 11-13, popularly known as the days of the Ice Saints, is not specially noticeable. The chief cause of these anomalies in the annual range of temperature is the distribution of air-pressure in Eurasia, especially the position of the barometric maximum.

A comprehensive discussion of the rainfall of northern Spain and Portugal, by Dr. W. Semmelhack, is contained in *Aus dem Archiv der Deutschen Seewarte* (1910, No. 2). It deals with many aspects of the subject, including horizontal and vertical distribution of amount and frequency, isohyets and tabular means of years and seasons, thunderstorms, &c., embracing a period extending from 1861 to 1900. The rainfall is affected chiefly by conditions of pressure over the Atlantic, Mediterranean, and the Continent, and its yearly distribution is therefore subject to considerable fluctuation. To give details would require much space, but a rough idea may be gained from the fact that about 4 per cent. of the area in question receives an amount not exceeding 12 inches; 53 per cent., approximately 12-27½ inches; 17 per cent., 27½-39½ inches; 23 per cent., 39½-59 inches; 3 per cent., more than this amount. The extreme values are 9.6 inches at Palencia (Old Castile) and 113 inches at Sierra d'Estrella. The monthly extreme values vary very greatly; the highest are met with on the N., N.W., and W. coasts. In March, 1886, 48.7 inches were recorded at Sierra d'Estrella, but in the dry districts of the central plateau the greatest monthly amounts are little above 6 inches; rainless months occur at times at nearly all the stations.