coast. Also as they have traveled over an ocean surface, which is at a rather low temperature, their moisture contents are small, and they lose practically all their moisture when they strike the extreme southwest of Africa. The northeasterly winds which prevail during the summer months have traveled over much warmer water surfaces and, although they deposit the greater amount of their moisture along the Drakenberg Range, which runs parallel to the East Coast, have sufficient left to convey moisture well into the interior. The result of this is that the western half of the Union is, on the whole, much drier than the eastern half. The strip of land along the Natal coast has a rainfall of between 35 and 50 inches per annum, whereas the greater part of the Cape Province, excepting the southwest and south coastal regions, receives only between 5 and 15 inches a year.

Roughly speaking, the mean annual temperature over all parts of the Union is very nearly the same. The higher temperature which would naturally result from an interior situation is almost balanced by the effect due to the greater elevation of the interior. For example, whereas the mean annual temperature at Capteown is 62°, that at Bloemfontein, the altitude of which is 4,400 feet, is 61°.

The variations of temperature are, however, much greater over the interior than at coastal places. Frosts are practically unknown near the coast, but over the interior, owing to the intense radiation from the earth during the dry clear nights they are of frequent occurrence between May and September.

At Capetown, the average shade maximum temperature in January is 78.5°, and the average shade minimum in July is 47.2°, the difference being 31.3°. At an interior town, Kimberley, the average shade maximum in January is 90.5° and the average shade minimum in July is 36.5°, a difference of 54°. The diurnal range of temperature at an interior station as against a coastal station is even more marked than this.

Owing to the fact that the warm Mozambique current flows down the East Coast of South Africa whereas the cold Benguela current flows up the West Coast, the temperatures along the East Coast are higher than those along the West Coast. Durban and Port Nolloth are in very nearly the same latitude, but the mean annual temperature at Durban is 70.8°, that at Port Nolloth 57.5°. It is chiefly due to the influence of this current that the climate of the coastal strip of Natal is rather more tropical than semitropical.

AUSTRALIAN RAINFALL.[1]

HUNT, H. A., Editor. **Results of rainfall observations made in South Australia and the Northern Territory, including all available annual rainfall totals from 829 stations for all years of record up to 1917.** 421 pp.; maps, diagrs. Bur. of Meteorol., Commonwealth of Australia, Melbourne, 1918. 10s. 6d. 12 x 9¼.

The activity of the Australian Commonwealth Bureau of Meteorology is remarkable. A steady stream of important publications continues to flow to the reviewer's desk. Even the war brought no interruption, only delay. The present volume is one of a series, of which three numbers (New South Wales, Victoria, and Queensland) have already been issued, leaving two more still to come (Western Australia and Tasmania). In the issue before us we have tabulations of all the available annual totals of rainfall and of wet days for 829 stations—surely a very large number considering the area concerned—up to the year 1917. For about 200 stations there are also monthly totals to 1915. Such complete information for these sections of Australia has not before been embodied under one cover. Owing to delays due to the war the annual totals for 1916 and 1917 appear in supplementary form. In order to have the work complete for reference and for comparison, authentic annual (for the individual years 1878–1917) and also average annual and monthly rainfall and monthly rainfall maps are included. There are notes on the annual variation and monthly distribution of the rainfall, and a record of notable meteorological events. The incidence of the summer and winter rainfalls and the resultant wheat yields in South Australia are given special attention, the data being presented in both tabular and map form. The monthly and annual meteorological elements and normals for Adelaide and Darwin are given in appendixes.

This mere enumeration of the contents of the volume will serve to show how very complete and extensive is the informatuon it contains. There is a remarkable abundance of excellent maps and of diagrams. While the details are of immediate concern only to those who are making special studies of Australian weather and climate, the volume is one which surely deserves mention in the Review. Those who, for one reason or another, have occasion to look up the rainfall conditions of the Australian Commonwealth will realize their lasting indebtedness to Mr. Henry A. Hunt and to his excellent staff of assistants and observers.—*R. DeC. Ward.*

[1] *Reprinted from* Geographical Review, New York, June, 1919, p. 432.

THE AUSTRALIAN ENVIRONMENT ESPECIALLY AS CONTROLLED BY RAINFALL.[1]

By Dr. GRIFFITH TAYLOR,

Commonwealth Bureau of Meteorology.

[Review—Summary[2] by Dr. S. S. Visher, Indiana University.]

This excellent treatise is the third of a series dealing with climatic control of settlement and production in Australia.[3] It is primarily a systematic study of the rainfall of Australia. The rainfall of each of the 15 regions into which the area is divided for the purpose of this study is discussed in some detail. The annual average precipitation for each section is shown in detail by isohyets, lining, and stippling on brown, relief maps (scale 1:5,000,000), compiled by Dr. Taylor.[4] Graphs of the distribution of rainfall throughout the year are given for several stations in each section. Conclusions as to the important sources of rainfall were derived from a study of the daily weather maps for the five-year period

[1] The Australian Environment (especially as controlled by rainfall). A regional study of the topography, drainage, vegetation and settlement; and of the character and origin of the rains. By Griffith Taylor, Physiographer in the Commonwealth Bureau of Meteorology, Commonwealth of Australia. Advisory Council of Science and Industry, Memoir 1, large 4to (10 by 12 in.) 25 by 31 cm., 188 pp., 15 colored contour maps, a Solar Control Model; 111 typical daily weather charts, 15 annual rainfall groups, and 42 other maps and diagrams. Selected bibliography. Government Printer, Melbourne, 1918.

[2] Cf. other reviews: *Scottish Geogr. Mag.*, July, 1919, pp. 259–261; *Nature* (London), Aug. 7, 1919, pp. 447–448; *Quart. Journ. Roy. Meterological Soc.*, July, 1919, pp. 260-261.

[3] The other two memoirs in the series are "The Control of Settlement by Temperature and Humidity," Bulletin 14 of the Meteorological Bureau, 1916, and "The Climatic Control of Australian Production," Bulletin 11 of the Meteorological Bureau (reviewed in *Geographical Review*, Nov. 1917, pp. 401–403, and Jan. 1918, p. 86). See also "The Settlement of Tropical Australia," *Monthly Weather Review*, 1917, 589–590; and "The Climatic Factors Influencing Settlement in Australia," 14 pp., in *Year Book of the Commonwealth of Australia*, No. 11, 1918.

[4] The maps here published were the basis of the first official orographical map of Australia, recently issued by the department of lands at Sydney.

NOTE.—The prompt publication of the present memoir by the bureau in which it was prepared being prevented by lack of funds, it was published by the Council of Science and Industry.