he has collected from the published records of various travellers, such as Livingstone, Serpa Pinto, Fritsch, and others.

He limits the area of his discussion by biological considerations, as he defines the extreme southern limit of tropical Africa to be that fixed by the cultivation of the date-palm and the existence of the tsetse fly.

We have said that the records of observations are somewhat scanty, and this remark will be justified when we point out that from many stations the results for two years, or even less, are printed. The figures, such as they are, have been, however, most conscientiously discussed.

The area is divided into four great districts, classified according to the period of occurrence of the rainy season, viz. (1) the winter rains, (2) the intermediate region of spring and autumn rains, (3) the heavy summer rains, (4) the West Coast. Under (1), as subdivisions, we have the South-West Province, the Western Karroo, and the Little Namaqua Land. Under (2), the South Coast, South Karroo, North Karroo, and the South-East Mountain Land. Under (3), the Table-land of the Upper Orange River, the North Transvaal, the Kalahari, and the Great Namaqua and Damara Land.

After treating of these several regions at considerable length, Dr. Dove proceeds to discuss the possible development of agriculture in the different districts. His panacea for the Kalahari and some other tracts, with pure sandy surface, in the northern part of the area, is to introduce the date-palm.

He concludes the work with a discussion of the rainfall and its distribution, with some remarks on the question of the alleged deterioration of the climate by the drying up of the country. This effect he considers, with Mr. Gamble, to be merely the outcome of reckless forest destruction.

He points out the brilliant results obtained, at comparatively small cost, by the construction of reservoirs, as at Beaufort and at Van Wyk's Vley. R. H. S.

Chambers's Encyclopædia. New Edition. Vol. III. (London and Edinburgh : W. and R. Chambers, 1889.).

IT may be enough to say of the third volume of the new edition of "Chambers's Encyclopædia" that it falls in no respect below the high level maintained in the preceding volumes. The editor is working upon a well-conceived plan, and he has every reason to be satisfied with the manner in which individual subjects are dealt with by his contributors. Scientific subjects continue to receive the attention which properly belongs to them in such a work as this. The treatment of coal, coral islands, and geology generally has been intrusted to Prof. James Geikie, and his articles are admirable examples of compact and lucid exposition. Mr. J. Arthur Thomson writes of caterpillars, cells, crabs, &c.; Dr. Leonard Dobbin, of chemistry; Dr. Alexander Buchan, of climate; Mr. R. T. Omond, of clouds; and Dr. R. A. Lundie, of colour-blindness. Mr. C. J. Woodward has an article on crystallography, and Dr. W. Peddie treats of dew and diffusion. Of the articles on Darwin and the Darwinian theory, the former is contributed by Mr. Grant Allen, the latter by Prof. Patrick Geddes. There are a good many geographical articles, among which we may especially note the article on China, by Prof. Legge; that on the Congo, by Sir Francis de Winton; and that on Constantinople, by Mr. Stanley Lane-Poole. So far as we have been able to test the various papers, we have found them carefully written and thoroughly trustworthy.

The Elementary Principles of Electric Lighting. By A. A. C. Swinton. Second Edition. (London: Lockwood.)

THE author explains generally the different apparatus used in electric lighting, and the broad princples of their working, using the "water-works" theory of the electric current, but at the same time carefully explaining that this is only done for the sake of convenience. An unfortunate mistake has been made in the diagram of the continuous-current dynamo (p. 24), where the coils are shown as wound in a different *sense* on the two limbs of the field-magnet. The book is, however, a remarkably clear exposition of the subject, and at the same time a model of conciseness.

The Natural History and Epidemiology of Cholera. By Sir J. Fayrer. (London: Churchill, 1888.)

THE above formed the subject of the annual oration delivered by Sir Joseph Fayrer before the Fellows of the Medical Society.

The author deals at length in a most interesting way with the history of the disease, and then proceeds to enlarge upon its geographical distribution, habits, conditions, and epidemic movement. The ætiology of cholera is then dealt with, together with a review of those general and special precautionary measures it is desirable to adopt.

Throughout, the essay is written in a clear and interesting manner, and from the vast experience of the author in the subject the oration will well repay a careful perusal. WILLIAM ROBERT SMITH.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Halo and Mock Suns.

THIS morning a very distinct halo accompanied by mock suns on either side was seen here. As the latter, owing to the altitude of the sun, were at a considerable distance outside the halo, I think the following details are worth putting on record. At 11h. 12m., Berne time, the sun's altitude being 48° 30′, the distance from the halo to the left-hand mock sun was 9° 15′. The parhelic circle was plainly visible, reaching from the sun slightly beyond the mock suns. Each of the latter consisted of a reddish patch shading off into white and then into blue on the side away from the sun. From the brightest red to the brightest blue was about 2°, and the measurement 9° 15′ was taken from half-way between these to the nearest point of the circle dividing the red from the blue of the halo. It is difficult or impossible to measure such faint objects with the sextant. So I held a pencil at *both* arms' length, and noted the length on the pencil corresponding to the desired angle. Holding the pencil with both hands gives it a very definite distance from the eye, provided the position of the body and the altitude of the object be not much altered. Paying attention to these points I measured the angle subtended at my eye by a certain length on the side of a house, both with the pencil and a sextant. The angle 9° 15′ was found thence by simple proportion. I think the error of this measurement can hardly exceed 30′. The halo of course was the common one of 22°. JAMES C. MCCONNEL.

Davos Platz, April 5.

On the Connection between Earth Currents and Changes in Solar Activity.

MAY it not be that, in the recent experiments of Mr. Hertz on the effect of ultra-violet light on electric discharge, we have an explanation of the relation existing between disturbances on the solar surface and disturbances in earth currents?

The evidence for such a connection is obtained from the Greenwich records.

If we make the not very violent assumption that two clouds differ in potential from each other and from the earth, it will be seen that the earth will act as a condenser, and underneath each cloud will be collected a charge of opposite sign.

With sunlight, Hertz failed to find any marked effect, prob-