

endemic species of the genus, also of a peculiar liliaceous epiphyte, *Astelia montana*. As characteristic plants of the Solomon Islands there are figured the epiphyte *Polypodium quercifolium*, an expanse of "alang-alang" grass, *Imperata arundinacea*, and a huge specimen of *Calophyllum inophyllum* growing close to the sea. A fine photograph of the stilt-roots of a *Ficus* is contained in this part. Mr. E. Ule has contributed the photographs from the "campos" in the Brazilian State of Bahia. Various cactus plants are illustrated, also some of the abundant leguminous trees. The cluster of palms, *Copernicia cerifera*, the species yielding Carnauba wax, forms an imposing group. The number devoted to the Algerian Sahara is also a xerophytic study. The plates include representations of *Limoniastrum Feei*, *Aristida pungens*, and *Pistacia terebinthus*. In the final double number Dr. Schenck presents some excellent studies of plants in the Swiss and Tyrolean Alps. The photographs that more particularly evoke admiration are those showing cushions of *Androsace helvetica*, flowers of *Ranunculus alpestris*, clumps of *Thlaspi rotundifolia*, and straggling plants of *Salix retusa*.

*British Rainfall, 1907.* By Dr. H. R. Mill. Pp. 100 +[280]; with maps and illustrations. (London: E. Stanford, 1908.) Price 10s.

This excellent work, which has now reached its forty-seventh annual volume, has, by the energy and ability of its founders, established for itself a unique position among general rainfall publications. It deals with the distribution of rain in space and time over the British Isles during the year 1907, as recorded by more than 4000 voluntary observers, and is supplemented by articles upon various branches relating to that subject. As it has appeared in practically the same form for many years (which is a great advantage for the purpose of reference), there is little to be said about it that has not been previously mentioned; the work of the British Rainfall Organisation is continually expanding, and the author receives no pecuniary assistance in the onerous labour of preparation and publication of the report beyond some subscriptions from persons interested in rainfall work.

Among the articles we may specially refer (1) to an interesting discussion of the typical thunderstorms of July 21-22, showing distinctly the linear arrangement of heavy rainfall in such storms and its disregard of the configuration of the land, and (2) to an instructive note on mapping rainfall. The discussions of droughts and rain spells, and the monthly and seasonal charts illustrating the rainfall of the year, are also of exceptional interest.

*Arbeiten aus dem Gebiet der experimentellen Physiologie.* By Dr. Hans Friedenthal. Pp. xi+493. (Jena: G. Fischer, 1908.) Price 8 marks.

This is a collection of fifty-five papers written either by Dr. Hans Friedenthal or by the workers in his laboratory. Dr. Friedenthal does not appear to have any university or other official post, but is the happy possessor of a private laboratory at Nicolassee, near Berlin, and he seems to be a prolific and versatile worker. The first paper of the collection is an obstetric one, written in 1894, but subsequently the various branches of physiological investigation appear to have had greater attraction for him, and he has produced since that time publications dealing with such subjects as absorption, immunity, digestion, colloids and ions, cardiac and sympathetic nerves, cancer, syphilis, the urine, and histological methods. The papers themselves are of considerable interest, and the collection is one of which any investigator may well be proud.

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## LETTERS TO THE EDITOR.

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### Observations on the Active Deposit of Radium in Mid-ocean.

IN the month of May, 1908, by the kindness of the captain and officers of the ss. *Lake Erie*, observations were made between Montreal and Liverpool on the radio-active matter collected on a negatively charged wire exposed to the air for three or four hours. The wire was insulated by ebonite rods, suspended from the flag halyards, and charged by a Zamboni dry pile. After exposure it was coiled on a skeleton reel and placed in an electroscope clamped to a board, together with the observing microscope. There was no difficulty in obtaining satisfactory readings, in spite of the slight motion of the ship.

The results obtained in mid-Atlantic appear to approximate to those found in Canada or in England, but it must be remembered that the amount of active deposit determined at any given locality is liable to considerable variations.

To an arbitrary scale, after deducting the natural leak, the measurements of the active deposit were as follows:—

May 5.	Montreal	...	...	...	...	34
" 6.	"	...	...	...	...	26
" 14.	Ocean, lat. 50°, long. 45°	...	...	...	...	21
" 15.	" " 52° " 38°	...	...	...	...	64
" 16.	" " 54° " 30°	...	...	...	...	41
July 1.	Hornsea, E. Yorkshire Coast	...	...	...	...	28
" 2.	" " " "	...	...	...	...	80
" 15.	" " " "	...	...	...	...	53
" 20.	" " " "	...	...	...	...	60
" 22.	" " " "	...	...	...	...	48
Aug. 22.	Seascale, W. Coast, Cumberland	...	...	...	...	30
" 24.	" " " "	...	...	...	...	270

The large value at Seascale on August 24 was obtained on a vertical wire well exposed to a strong west wind. The small values at Montreal resulted from a horizontal wire on the roof of a house. An uncharged wire at sea gave no result.

These experiments, so far as they go, indicate that the active deposit due to radium is prevalent to nearly the same extent over land and sea. Observers have also found that the ionisation of the atmosphere, measured by Ebert's apparatus, is nearly the same over the ocean and over the land.

We may deduce, then, that in mid-ocean the radium emanation, which decays to half value in 3.8 days, and gives rise to the active deposit, cannot be entirely wind-borne from the land, but that the emanation enters the air from the ocean somewhat as from the ground.

This is contrary to expectation, for the average number of grams of radium per c.c. of rock is about  $3.5 \times 10^{-12}$  (Strutt) and per c.c. of sea water  $3 \times 10^{-14}$  (Joly). It is, however, probable that the emanation due to radium in solution in sea-water escapes more readily than the greater quantity generated in soil or rock. The emanation per c.c. in the atmosphere near the earth's surface would be in equilibrium with about  $6 \times 10^{-17}$  grams of radium.

Montreal, September 22.

A. S. EVE.

### The Indigo Question.

IN an admirable article, "A Contribution to the Indigo Question," which appeared in NATURE of July 30 (p. 296), Prof. Meldola discusses the report of the work carried on by Messrs. Bloxam, Wood, Orchardson, Gaunt, and Thomas in the clothworkers' laboratory at Leeds University, and agrees with the authors in the opinion they express that there is still scope for considerable improvement in the manufacture of natural indigo. On the other hand, the general secretary of the Bihar Planters' Association (Mr. T. R. Filgalt), in replying to this article (NATURE, October 1), makes the remarkable statement, "nothing further can be done in improving the main processes."