

consists of (1) a central core of older volcanics and Eocene or Oligocene limestones; (2) beds of basalt, volcanic ash and thick masses of Orbitoidal (Miocene) limestones enwrapping the core; (3) masses of talus derived mainly from the Miocene rocks and covered by (4) a thick detrital limestone which is derived from the wear of the reefs which cover the higher portion of the island; (5) a raised reef of much later date which covers the foot of the different slopes composed of 4; and finally (6) the late Pleistocene or recent limestones bordering the sea which cling to the base of any of the older formations which may be exposed.

The history of the island seems to include the deposition of several hundred feet of Eocene limestone on a bank with a volcanic basis; the gradual deposition, with slow depression, of masses of Miocene limestone; then a gradual elevation, with oscillations, during which guano was deposited on low atolls, forming the origin of the present masses of phosphate of lime; and finally the attainment of the present status of an elevated limestone island with interbedded volcanic layers surrounded by a narrow fringing reef of coral.

The prevalent wind on the island is the south-east trade, which blows on the average 300 days in the year, with occasional violent northerly storms. As it is the violent rather than the regular winds which transport exotic organisms to isolated islands, it is natural that a large part of the life on the island should be, as it is, intimately connected with the Malaysian types. Nevertheless, there is a recognizable portion of the fauna which is related to that of Ceylon and another to that of Australia, though the latter country is over 900 miles away.

Of the 319 species of animals recorded, about 45 per cent. are regarded as endemic, though a better knowledge of the fauna of Java may diminish this number. Of the plants about 10 per cent. appear to be peculiar to the island. Of both plants and animals not peculiar many have a widespread distribution.

Of the five mammals, two rats and two bats are peculiar to this island; while the shrew is regarded as a variety of a species inhabiting farther India. Thirty-one species of birds are noted, of which seven land birds are endemic.

The other vertebrates include one snake (*Typhlops*), three skinks and two geckos, of which one skink and one gecko occur elsewhere. The pelagic species are not counted in the fauna, though three of them visit the island.

Of the landshells fourteen species are enumerated, of which six are local, but all belong to groups widely distributed in the Oriental region. Three out of nine butterflies, ten of the sixty-five moths, six of the nine Microlepidoptera, nine out of eleven Hymenoptera, fifty-six of ninety-four Coleoptera, four out of six Hemiptera, two of the five Neuroptera, fourteen of the twenty-two Orthoptera, three of the twelve Arachnids, and two of the four earth-worms are regarded as peculiar to the island.

The illustrations of the work are first-class, and the authorities of the Museum, Mr. Andrews and Sir John Murray, are to be congratulated on the manner in which the description of the island and the census of its organisms have been carried out. The work will doubtless long serve as a model for such investigations and it is to be hoped is the pioneer of many other monographs of a similar character.

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THE HUMANITIES IN HORTICULTURE.

THE second volume of the 'Cyclopedia of American Horticulture,'* of which the first volume was noticed in SCIENCE for June 1st, sustains the high character evidenced in that volume, and is of more than usual interest to the general reader because it happens to include such general topics as greenhouses, herbaceous borders, horticulture, house-plants, labels, landscape-gardening and lawns. These are all so handled as to be interesting and suggestive as well as instructive. Plates 14 (the formal garden at Mt. Vernon), 15 (a modern informal garden), and 16 (a modern cemetery with landscape planting) are especially commendable illustrations.

W. T.

* Bailey, L. H. and Miller, W. *Cyclopedia of American Horticulture*, in four volumes. Vol. 2. E.-M. New York, The Macmillan Company. 1900. \$5.00.