

*Botanical Observations on the Azores.* By WILLIAM TRELEASE. 8th Annual Report, Missouri Botanical Garden, 1897.

The title of this work, and the appearance of its pages—crowded with names and bibliographical references—do not suggest anything of general interest. Nevertheless there is perhaps more to attract the general naturalist than the specialist in botany, on closer examination; for while the new species and varieties are few and mostly of minor interest, the list of the flora—complete to date—forms a valuable contribution to our knowledge of plant distribution.

Dr. A. R. Wallace, in *Island Life* (2d Ed., 1892), has given us an excellent summary of what is known about the natural history of the Azores, showing that they are truly oceanic islands, but that the number of endemic forms is comparatively small. There is one peculiar bird—a bullfinch; there are fourteen peculiar beetles, including two peculiar genera of weevils; of the sixty-nine land shells, as many as thirty-two are said to be peculiar; of the flowering plants, Dr. Wallace, following Mr. H. C. Watson, cites 40 as endemic; Dr. Trelease reduces these to 36, and not all of this smaller number are as distinct as might be wished. The genera containing the endemic plants are as follows:

**PHANEROGAMS:** *Cardamine*, *Cerastium*, *Hypericum*, *Vicia*, *Rubus*, *Sanicula*, *Ammi* (3), *Chærophyllum*, *Scabiosa*, *Bellis*, *Tolpis*, *Picris* (2), *Lactuca*, *Campanula*, *Vaccinium*, *Erica*, *Lysimachia*, *Myosotis* (2), *Veronica*, *Euphrasia*, *Persea*, *Euphorbia* (2), *Habenaria* (2), *Luzula*, *Carex* (2), *Holcus*, *Deschampsia*, *Festuca*, *Juniperus*.

**PTERIDOPHYTES:** a *Selaginella* and an *Isoetes*; no endemic ferns.

**MUSCI:** *Sciaromium*, *Astrodonium*, *Bryum*, *Breutelia*, *Glyphomitrium*, *Hypophila*, *Campylopus* (2), *Sphagnum* (3).

**ALGÆ:** *Bryopsis*. **LICHENES:** *Lecidia*.

Dr. Trelease remarks: "More evidently than is the case with the Canary Islands, the endemic flora of the Azores appears to be undergoing a gradual reduction, partly because of the utilization of all available land for agricultural purposes. In some of the islands even the high-lying pasture lands are being restocked with foreign plants from the European and

American continents, in the belief that they are more valuable than those native to the islands; but, as a rule, such changes as are taking place above the zone of cultivation are fought out on the lines of the survival of the fittest." Again he remarks: "It is observable that a large percentage of the species referred to on Mr. Watson's authority only have not been detected since the days of his own collecting and that of Mr. Hunt, a half century ago."

This rapid change, due to the direct and indirect influence of man, has doubtless already obliterated much of the native fauna and flora. But, as Wallace shows, the islands must in past times have been exposed in a lesser degree to invasions of foreign organisms, and each species which established itself must have disturbed the existing balance. It is said that scarcely a storm occurs in spring or autumn without bringing one or more species of birds foreign to the islands, and it is not necessary to point out how these numerous stragglers must have brought seeds from time to time.

Nevertheless the islands contain some remnants of an ancient fauna and flora, and the proportion of endemic forms, as seen from the above data, differs in the different groups. Following the train of thought suggested by Wallace, we may probably establish the following law: *The percentage of endemic forms in any group in the Azores is approximately in inverse ratio to the facilities that group has for reaching the islands from elsewhere.* In other words, those groups which show very ancient members are precisely those which have least been disturbed by competitors from without.

It is, from this point of view, easy to understand why the land mollusca show so many endemic types, including a slug (*Plutonia atlantica*) belonging not only to a peculiar genus, but a peculiar subfamily. On the other hand, we see why there is only one endemic bird, and that not very distinct. Applying the same rule to the flowering plants, it seems that the endemic species belong on the whole to genera which would not be very easily introduced by birds or by the wind. This, however, is a matter which needs to be critically examined by a botanist, and it would be especially interesting to know how well the seeds of the genera con-

cerned withstand vicissitudes, as of warmth or moisture. It is to be observed that in *Cardamine*, *Sanicula*, *Ammi*, *Chærophyllum*, *Bellis*, *Lactuca*, *Vaccinium*, *Erica*, *Lysimachia*, etc., there are either no species but the endemic ones, or the other species are rare or local—probably usually of recent introduction.

We are naturally led to ask why the ancient fauna and flora, which must have been composed of a fair number of species, was so little able to acquire or preserve distinctive characters, when such islands as the Caymans in the West Indies, only a short distance from land, have many peculiar species, even of birds. One of the endemic beetles has its nearest ally in Madagascar, while one of the mosses is declared by M. Cardot to be *Philonotis obtusata*, described from Madagascar. These and other indications suggest that the population of the islands included, at least in part, forms which were not able to withstand the competition of westward-migrating types upon the continents, and which were liable to be driven out from their last stronghold on the islands by those same types as soon as they appeared upon the scene. It is probable that long isolated forms might lose the power of resisting disease or evading enemies, so that when these reached the islands continental types introduced at about the same time would have the advantage. Still again, if the islands have undergone changes of level and consequently of area, the competition must at times have become very severe, leading to the extinction of many species when the area was reduced; while an increased area would afford exceptional facilities for the immigrants.

T. D. A. COCKERELL.

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*The Antiquities of Tennessee and the Adjacent States.* By YATES P. THRUSTON. Cincinnati, The Robert Clarke Co. 1897. Second Edition. Illustrated. Pp. 369.

It is only by a considerable stretch of bibliographic courtesy that this can be called a second edition of Mr. Thruston's book. It is, in fact, the signatures of the first edition, to which some pages, distinguished by letters, have been added, and two new plates. The

index does not include the additional material. As a treatise on the specimens of aboriginal art discovered in the area of the State, this volume must be preferred to others. The author has endeavored to verify the finds and to avoid the dangers of deception from 'fakes.' He is right in his conclusion that the remains reveal a condition of culture higher than that which obtained among the resident tribes at the period of the discovery. D. G. BRINTON.

*Beiträge zur Völkerkunde der Deutschen Schutzgebiete.* By FELIX VON LUSCHAN. Berlin, Dietrich Reimer. 1897. Mit 46 Tafeln und 48 Text Abbildungen. Folio. Pp. 87.

In this handsomely published volume Dr. von Luschan presents a mass of interesting material relating to various African tribes, notably the Massai, Swaheli, Togo, Cameruns, and also the New Britains. The earlier portions are devoted to physical anthropology, the measurements having been made in accordance with a very complete scheme which is detailed on page 6. Among the subjects may be noted two female dwarfs, in size about that of a nine-year-old child, but in functions, developed women. They apparently belonged to some of the interior pygmy races. The numerous accurate photographs which accompany these measurements add to their interest.

The ethnographic material represents a variety of articles of native manufacture. Among the decorations is a well marked 'svastika,' from the Togo district, undoubtedly locally developed there, and which is clearly traceable to a conventionalized lizard (p. 46). Such examples should suggest caution to those writers who are wont to make so much of this common figure.

Another object (described and depicted, pp. 65, 66) is the 'throwing-stick.' It is common in New Holland and in various parts of Oceania, and, as is well known, recurs in several areas of North and South America. Mortillet has pointed out that it was familiar to the men of the 'reindeer period' of France; but the idea of von Luschan that, wherever it occurs, we should suppose it borrowed from those ancient hunters, will scarcely recommend itself to sober readers.