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Its title-page reads: "Translated in the two general languages of this kingdom, Quichua and Aymará, Año de MDLXXXIII. Años," 4º, xiv. + 84 pp.

At La Paz, the Aymará scholars refer to Padre Bartonio's work, also mentioned by Sir Clements Markham, and quote from the introduction written by the Padre at Juli 1596: "There are many nations of Aymará Indians, such as the Canchis, Caunas, Collas, Collagues, Lupacas, Pacases, Carancas, Charcas, and others; and as they have different names, so they speak different tongues. There is taught in this book the Lupaca language . . . , which among all the Aymará tongues holds the first place. The Pacasas and Lupacas are in the midst of all the Aymarás."

The contention between Sir Clements Markham and his critics on the Andes, among whom is the cabinet minister, his Excellency M. V. Ballivian, the erudite President of the Geographical Society of La Paz, is extremely interesting, and the linguistic world, as well as the student of the history of the Inca empire, owe a debt of gratitude to Sir Clements for originating the controversy. He must be a profound Quichua and Aymará scholar who dare enter the arena, and must belong to the *retiarri* if he hope to entangle his adversary.

But Sir Clements has ample field for his 'Runa Simi' in a belt of the Andes 2500 miles in extent, and eastward, in several places, to the base of the cordillera. Even on the Javary river, boundary between Brazil and Perú, the tribes use Quichua to-day as a general tongue; but its spread down the eastern slopes of the Andes is due more to the Jesuit, Franciscan, and other missionaries than to the Incas themselves. The Portuguese missionaries carried Tupi as a *lingoa geral* up the Amazon to the boundary-line of the Spanish colonial possessions, where they met the Spanish Padres who had descended the Andes armed for their spiritual labours with the Quichua language, which, as a preliminary, they taught the various fragments of tribes from which they formed their missions, for they could find no one language among their neophytes which so well served their purpose. Hence at the colleges of Quito and Ocopa it was incumbent on every friar to learn Quichua before he departed for the scene of his labours among the savages whose territory once bordered the Inca empire.

All of the Quichua-speaking regions are now awakening to intense activity under the lash of modern progress. Perú and Bolivia especially are rapidly coming to the front. The commerce and internal development of the west coast of South America, including Ecuador, cannot be urged to their best possibilities without their representatives being equipped with some knowledge of the Quichua language, and Sir Clements Markham's timely little compendium of it offers an excellent medium for acquiring, not only an outline of its grammar, but an ample vocabulary for all essential purposes.

G. E. CHURCH.

AUSTRALASIA AND PACIFIC ISLANDS.

VEGETATION OF WESTERN AUSTRALIA.

'Die Pflanzenwelt von West-Australien südlich des Wendekreises. Mit einer Einleitung über die Pflanzenwelt Gesamt-Australiens in Grundzügen.' Von Dr. L. Diels. *Maps and Illustrations*. Leipzig: Wilhelm Engelmann. 1906.

Another very valuable addition to our rapidly increasing knowledge of the world's vegetation has been made by the appearance of a monograph by Dr. L. Diels on the plant-world of that part of Western Australia which lies to the south of the tropic. The most interesting portion almost of the whole book is the introduction. This places before the reader a concise summary of the characteristic features of the vegetation of the whole Australian continent. The vegetation of the great central plateau is tropophil or xerophil, exhibiting all possible modifications, till it becomes of the nature of a desert formation. Along the northern and

eastern coast of the continent there is a broad strip of more luxuriant plant-growth, with even a true rain-forest in one part. To the north-west and in the south along the great Australian bight, the steppe-like character of the plateau-vegetation reaches the coast. The south-western corner has only a narrow strip of hygrophil vegetation. Towards the end of the book Dr. Diels discusses the relation of the flora of extra-tropical Western Australia to other parts of Australia, and to other parts of the world. This flora is typically Australian, and thus shows distinct affinities with the eastern and northern districts. It exhibits, however, no real connection with any other part of the Earth. On the whole, also, there are very great differences between the vegetation of the Cape and that of Western Australia, although affinities have always been made much of. But the difference in species and types of vegetation is really more marked than the similarity. What there is of the latter may be explained by assuming a far-back common origin from an ancient southern-hemisphere flora, or by development along analogous lines. The working out of the history and development of these two floral districts is one of the important problems of plant-geography.

O. V. D.

MATHEMATICAL AND PHYSICAL GEOGRAPHY.

TWO TEXT-BOOKS OF SEISMOLOGY.

- (1) 'Earthquakes: an introduction to Seismic Geology.' By William Herbert Hobbs. New York: D. Appleton & Co. 1907. P. xxxi. and 336, 24 *Plates*, 309 *Illustrations in Text*. Price \$2 net.
- (2) 'La Science Séismologique. Les tremblements de Terre,' avec une Préface par M. Ed. Suess. Par Comte de Montessus de Ballore. Paris: Armand Colin. 1907. Pp. viii. and 579, 63 *Plates*, 540 *Illustrations in Text*. Price 16 fr.

Ne sutor ultra crepidam is a maxim which would lead to stagnation in science if carried to an extreme, but the cobbler who takes up another trade should learn it thoroughly before he begins to teach, and this Prof. Hobbs has not done. A geologist of reputation, he has developed a theory of earthquake origin which we accept in part, though not entirely; but as regards the science of seismology as a whole, his acquaintance with the work which has been done is imperfect, and as a guide his book is frequently misleading by its omissions. The title would lead us to expect a full treatment of the geographical aspects of earthquakes, but even here he passes by much of the work which has been done by others in establishing the fact that earthquake origins are much more extended than was at one time supposed, and he attributes the discovery of the principle of steepest slopes to de Montessus instead of to Prof. Milne. This principle, that the regions of great seismic and volcanic activity are those in which the average surface slope is highest and steepest, is one which, like the continent of America, could not escape discovery; its truth is more important, from a scientific point of view, than the name of the man who first gave expression to it, but if this is mentioned at all, it is well to be accurate.

The Comte de Montessus de Ballore is a seismologist of established reputation, whose work has lain in the domain of statistical and geographical seismology. In writing a general treatise on the science, he has had to deal with subjects which lie beyond the province of his labours previous to his acceptance of the post of director of the Seismological Service of the Republic of Chile, but, having read nearly everything that has been written, and remembered nearly everything he has read, writing, moreover, with the lucidity and precision of a Frenchman, he has produced a remarkably complete text-book of seismology. The only section with which we find serious fault is that dealing with instruments, where the want of experience in their use, or in the interpretation of their records, has led him