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Review

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Havre combined. Nor is a word said about Paris as a port, though it was far above Marseille in tonnage even as far back as 1913; and Prof. Demangeon's excellent article on the port (cf. *Journal*, vol. 57, p. 392) was published in November 1920. Of course Paris is only a local port, and the prosperity of Rouen may not be firmly established as yet; but a "logical and full" treatment of the town would have at least explained why it is now the chief port, and likely to remain so.

L. W. L.

#### ASIA

**The Mineral Resources of Burma.**— N. M. Penzer, with an Introduction by Colonel O. C. Armstrong. London: George Routledge & Sons, Ltd. 1922. Pp. viii. + 176. *Price* 31s. 6d.

Burma has come into prominence in recent years as a rich mineral province, and a great deal of information, statistical and descriptive, has been published on its mineral resources and their development, especially by the Geological Survey of India. Mr. Penzer in this book has brought together as much information as he has been able to collect from all sources on minerals in Burma. Such a work is almost invariably useful, and there must be many readers who will find this compilation a great saving of time and trouble.

An introductory chapter deals briefly with geographical and physical features, history, roads and railways, and weights and measures. The second chapter gives an account of the geology of Burma and the Shan States, based on the official gazetteer of the region. The remaining chapters are devoted chiefly to minerals in the following order: gems and precious stones; silver, lead, and zinc; tin and tungsten; iron, coal, and lignite; salt; miscellaneous minerals; petroleum. A Burmese glossary is included, and the last chapter consists of a fairly exhaustive bibliography.

Mr. Penzer's treatment of the subject, however, leaves much to be desired. He tells us in the chapter on tin and tungsten that "as there are so few mines in Burma which have mining plant of any considerable size, it is of interest to give details whenever possible," and he proceeds to give details of the Kanbank mining plant, but supplies no adequate description of the mining plant of the Bawdwin mines concerning which so much information has been published in recent years. Again, Columbite is said to occur in the Tavoy tungsten lodes, although the officers of the Geological Survey of India, whose observations extended over several years, failed to find any. Indeed, lack of up-to-date information is a serious defect throughout the book as regards statistics and technical details.

Misprints mar the pages in many places, but are not perhaps likely to give much trouble to one who knows his minerals, and is acquainted with mining terms. Far more exasperating, however, is the bad arrangement of the headings and subdivisions in the text, which spoils many parts of the book, but which is perhaps seen at its worst in the chapter on miscellaneous minerals.

The author will deserve the gratitude of readers of future editions if he will eradicate these and other defects, and bring the book up to date. T. C.

#### AFRICA

**The Canary Islands: their History, Natural History and Scenery.**— David A. Bannerman, M.B.E., B.A. (Cantab.), M.B.O.U., F.R.G.S., etc. London and Edinburgh: Gurney & Jackson. 1922. Pp. xv. + 365. With *Illustrations and Maps*. *Price* 30s. net.

The author of this book is a well-known ornithologist, whose work at the British Museum has been broadened by a long series of judicious and valuable

studies of bird-life in foreign lands. It was, therefore, as an ornithologist, in the first place, that he was led to explore "The Fortunate Islands"; but birds do not live to themselves alone, and he was soon convinced that a proper understanding of the problems which presented themselves could be reached only through a knowledge of the geological history, physical peculiarities, and vegetation of the islands. The results of his own observations in these fields and of those of earlier investigators are presented in this volume, which, bearing the marks of first-hand study and wide reading, forms a general and balanced guide to the islands themselves, and an enlightening study on the development of an island fauna.

The more serious theme of the book is preceded by an historical survey dealing with the discovery and early records of the islands, and approving Major's conclusion that before the coming of the Spaniards they were peopled by two distinct races, Berbers and Arabs; but the archipelago contains much unexamined anthropological material of early date which may yield a rich harvest to skilled examination.

The physical features of the islands are well known, and have been moulded upon a foundation of sedimentary rocks, by lavas resulting from a succession of four great periods of volcanic activity, the last of which has occurred within the memory of man; but the origin of the archipelago, a matter of prime importance in tracing the foundation of the fauna, has been the subject of much discussion. Since Plato first propounded the former existence of an Atlantis, now sunk beneath the waves, the legend that the isolated dots of the Canaries, Azores, Madeiras, and Cape Verde group were the peaks of the sunken continent has had many believers, the latest being the French geologist Termier, who in 1912 suggested that the submergence probably dated from early Pliocene or Miocene times. But the weight of the geological evidence points rather to a volcanic origin, and Mr. Bannerman's investigation of the affinities of the fauna and flora strongly supports this conclusion.

Thus although twelve genera of plants have distinct American affinities at the present day, they belong to groups widely distributed in the Old World in former times, and the mass of the endemic vegetation, some 333 plants out of a rich island flora of about 1250 species, are clearly of Mediterranean origin, while the origin of the bulk of the remainder may be set down to the transporting power of oceanic currents or migratory birds. And so with the bird-life. For the birds of the islands, numbering 61 resident species, and excluding the 156 species of the migrants which can shed no direct light on the origin of the islands, have distinctly defined Mediterranean affinities, the majority having their closest relatives in Southern Europe, and the minority in Northern Africa. The suggestion is that the Canaries were stocked from the adjacent continents, and the migratory birds of to-day point to the mode of arrival of the original stock. The absence of indigenous mammals, apart from the flying bats, is also a strong argument against the presence of a continental bridge in post-Miocene times.

But the birds reveal still more of the islands' history; for of the 61 resident species no less than 42 are species or racial forms peculiar to the Canaries, while 10 more are not found without the ambit of the Atlantic islands. This surely points to a far distant colonization, since which the forces of nature have gradually driven one isolated form after another along paths divergent from those of their continental ancestors. Even more significant of the opportunity given by isolation for individual development are those interesting cases

of four or five distinct varieties (as in the Canarian Titmice and Chaffinches) almost each of which is confined to its own little island.

In the course of his wanderings and investigation of the luxuriant vegetation, the author came upon many traces of the influence of man upon topography and fauna through his destruction of the woodland. The great forests of laurel, chestnut, and pine, which in the beginning of the nineteenth century clothed the hillsides of Gran Canaria in a "beauty that appeared fabulous" to the early travellers, have been destroyed by the inhabitants for fire and charcoal-making. And with the destruction of the woods the numbers of many of the birds have diminished, and some, such as Bolle's Pigeon, have become extinct. Others are on the verge of extinction, and the author makes a strong appeal to the sportsman and bird-collector to spare the waning elements of an unique island fauna.

J. R.

**Historical Atlas of South Africa.**— Eric A. Walker. Humphrey Milford (Oxford University Press). 1922. Pp. 26 and 26 *Maps*. Price 10s. 6d. net.

Mr. Walker, Professor of History in the University of Cape Town, has done a very useful piece of work in producing this atlas—history at a glance, on a sound geographical basis. Besides those of South Africa, maps are given illustrating the connection of the Cape with Europe, the East Indies, and other places, from the fifteenth century onward; also a map showing the partition of Africa south of the Congo. The value of the atlas is much enhanced by the letterpress, which gives explanatory notes on each map, quotes original authorities freely, and shows that Mr. Walker has thoroughly mastered his subject. The system of colouring and of marking boundary-lines adopted is bold and effective; only one map (No. 16), that to illustrate the Griqualand West dispute, have we found difficult to "read." Here the letterpress helps without making that very tangled story perfectly clear. (The Platberg line can, however, be found marked on Map 14.) Of special interest are the maps illustrating the growth of Cape Colony; they embody the result of much research, and make accessible information hitherto hard to come by.

In the partition map (No. 24) the frontier shown between Nyasaland and German territory differs from that shown in the map (23*b*) of German East Africa, and both maps are incorrect on this point. It is a small matter, but meticulous accuracy is desirable in an historical atlas. The Anglo-German frontier was the middle of Lake Nyasa, and not either the eastern or western shore.

F. R. C.

**Impressions et Observations dans un Voyage à Tenerife.**— Jean Mascart.

Paris: Ernest Flammarion. [N.D.] Pp. 366. 212 *Illustrations*. 5 *frs*.

The author of this volume has made a valuable contribution to the literature on the island of Tenerife, more particularly as the principal subjects with which he deals have not previously received much attention.

Monsieur Jean Mascart—then astronomer at the Paris Observatory, and now Director of the Lyons Observatory—was a member of the scientific mission organized by Prof. Pannwitz with the double object (1) of studying the influence of the climate on the human body under certain conditions; and (2) of taking meteorological and astronomical observations and photographing Halley's Comet.

Tenerife was chosen for the experiments in preference to other high stations by reason of the exceptional climatic conditions which that island enjoys during the greater part of the year. A clear atmosphere, sun, and altitude being the principal factors necessary for success, the expedition built a wooden

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