&c. The consequence is, that we get no general scheme at all of any given verb, which, however, is perhaps the less to be regretted, inasmuch as there are no true verbs at all in the language. These Eastern Polynesian tongues have certainly got beyond the purely isolating state of the Chinese, in which each root passes in its unmodified state directly into the sentence, where it becomes a true word only in virtue of its position. But they have not yet reached the next, or agglutinating state, because in them all parts of speech are not yet clearly differentiated. The so-called verb is merely a nominal predicate with the various temporal, personal, and modal relations more or less clearly expressed by determining particles. Hence the so-called second person present *e pule* 'oe, here rendered "thou rulest," is made up of the enunciative *e* equally applicable to present and future time, to the infinitive and to other words such as all the numerals (*e tasi* = one, *e lua* = two, &c., with which cf. *a* hundred, *a* thousand, &c.), of the noun *pule* = order, command, rule, and of the pronoun 'oe = thou. Thus, the whole expression merely attributes the rule or command, that is, *the thing* in a vague way to the subject, and seems scarcely to convey the idea of action, that is, of the use of the thing as does the true verbal form *regis*, thou rulest, in which the original nominal conception is completely absorbed in the idea of action. We thus see that the verb, as a distinct part of speech, is not yet developed, though there is an evident tendency towards its evolution. Hence these so-called verbs are incapable of any change to express mood, tense, person, and even the plural forms, in which reduplication plays such a large part, are adjectival, as may be seen by comparing *sistina*, the plural of *sina* = white, with *nonofo*, the plural of *nofo* = to sit. On these plural forms the editor supplies some excellent supplementary matter at pages 13-16, which throws a strong light on the great influence of euphony in the development of language in its earlier stages. His remarks on the subtle distinction between the particles *a* and *o*, roughly corresponding to our possessive, are also very good. If to the active or transitive and passive or intransitive notions obviously involved in the use of *a* and *o* respectively, we add those of the *voluntary* and *involuntary* states, nearly all the difficulties will be removed, and the law may be confidently laid down that *a* is used with objects over which we have *free control*, *o* with those we possess, so to say, independently of ourselves, and which we must use in a definite way. Thus: *lona fale* = his house, *i.e.*, which he needs must use as a place of refuge or shelter; but *lana va'a* = his canoe, which he can apply to twenty different purposes. So also in the Tahitian: *ta'u va'a* = my canoe; *to'u fare* = my house; for such is the amazing homogeneity of these eastern Polynesian languages that the most delicate distinctions are often found to pervade the whole group from New Zealand to Hawaii, or from Samoa to Easter Island after a separation in some cases of certainly not less than six hundred years.

Mr. Whitmee's notes betray altogether such a deep insight into the true genius of this linguistic family that we earnestly hope, when another edition of this work is called for, he may be induced to suppress the author's grammar, and give us in its stead a thoroughly rational

treatment of the subject. It will then be also very desirable in all cases to give a literal, or at least a close, translation of the examples quoted in illustration of the various rules and principles laid down. Many phrases are given in the present edition which may be useful to those already acquainted with the language, but which, for want of such a translation, it is to be feared will be thrown away upon the ordinary student, who may not have the opportunity of consulting a teacher. In the actual condition of these languages particles necessarily play a very large part, and are constantly heaped up in the sentence to a degree that must be very perplexing to the beginner. Where possible these particles should be translated, and when this cannot be done, which is very often the case, their various functions in the sentence should always be carefully indicated. This may, no doubt, demand more space, but the space can be saved by giving fewer examples and explaining them thoroughly. A comparative table of Eastern Polynesian alphabets, illustrating the interchange of letters between the various dialects, and throwing some light on their peculiar phonetic system, would also be a desirable addition, and might be brought within the compass of one or two pages. But the essential point will always be to treat the language from a rational standpoint, independently of all fanciful Semitic, Aryan, or other affinities. The eastern Polynesian group has only just emerged from the isolating or lowest stage of human speech, and still hovers on the verge of the agglutinating or next stage, and must be dealt with accordingly. Hebrew, the classical tongues, English, French, and all others familiar to us, have passed upwards from the isolating through the agglutinating to the inflecting state, and have, therefore, little in common with Samoan, Maori, Tahitian, &c., beyond the faint reminiscences, still lingering on, of their former condition. When these simple truths are fully recognised grammarians may be expected to treat languages with some regard to their individual character.

A. H. KEANE

COAL AND IRON

Coal and Iron in all Countries of the World. By M. Pechar. (Manchester and London: John Heywood, 1878.)

AMONG the results of the International Exhibition at Paris which has just closed its doors, the reports and other permanent records of the actual condition of the great industries of the world are certainly not the least valuable. Even where, as in the case of the work now under review, the materials of comparison are not wholly or mainly derived from the Exhibition itself, still from it have been derived the desire and perhaps the opportunity to execute the work on so complete a scale.

The international character of the book is obvious from every part, even of the title-page; this is the authorised English edition; the subject it professes to treat is Coal and Iron in all Countries of the World; its author, M. Pechar, is a railway director in Teplitz, Bohemia. And it must be confessed that the contents of the book do not belie the title-page. Indeed, the first page of the General Remarks which introduce us to them would lead us to suppose that we were going to be treated to a

review not merely of all terrestrial space but of all terrestrial time as well, we are carried back "over an incalculable number of thousands of years" to the prehistoric time of crude tools of flint, bone, horn, and the like, and so by rapid strides through stone and bronze and iron to these last days, on which the age of steel is dawning.

This, however, is only by way of prelude, and the author straightway settles down to his facts and figures. These latter are naturally so numerous that the general reader will hardly find the book as a whole a light or entertaining one; yet apart from the very high value of the statistics for purposes of reference, there is much in the book to interest every one who cares for his country's or the world's welfare.

First, a few words with respect to the character of the statistics. These of course vary in completeness and in accuracy with the respective development or otherwise of the countries concerned, or of these special industries. With respect to our own country tabular statements are given of the number of pits for certain years between 1854 and 1876; of the production in each coal-district for the year last named; of the total produce in each year since 1854 as well as for certain years previously; of the percentage of increase in production and in value; of the chemical constituents of all the more important coals (sixteen in number); of the comparative heating power and general utility of certain English and Westphalian steam-coals used by the German navy; of the average price of coal for each year from 1865 and for certain years before; of the chief purposes to which the coal is applied and in what proportions; of the growth of British railways, and of the coal traffic thereon as well as by sea and canal; of the growth of British shipping; of the coal exports, and of the chief countries importing these, with the weight and value of their respective amounts. Add to these similar tables for the iron and steel industries of Great Britain; and multiply the total by a similar number of tables according to their degree for other great coal and iron producers such as Germany, United States, Belgium, and France; add also every available form of statistics for other parts of the globe, from the Arctic Circle to the Cape of Good Hope, and from Japan to Morocco, and one will readily admit that as a book of reference the work must be invaluable.

But the book is no mere statistical abstract. These tables, numerous as they are, are only scattered here and there throughout a very full and valuable text. The history of the rise and development of the great coal and iron industries here and elsewhere is stated briefly but sufficiently: the relative advantages and disadvantages of the several competing countries in their material and social aspects are well indicated: such questions as those of labour, increased or improved means of transport, the near prospects of such inventions as the Siemens-Martin and Bessemer steel processes, Barff's process for preventing iron from rusting, electric lighting, &c., are also discussed; and finally, the *literature* of the subjects dealt with is shown under each head at length, so that those whose special requirements demand more than even this work can give them, are at least shown where they may find the information they desire.

At a time of such profound depression in both these important industries, one naturally is eager to discover

any rift among the clouds which the large accumulation of facts here contained, or the conclusions of so wide and an accurate an observer, may disclose. There is doubtless a consolation of a selfish kind to be got from observing that the state of affairs as to depreciation in the value of collieries and ironworks, in the prices of iron and coal, and in the wages of the workmen, is apparently quite as bad among our competitors as among ourselves. Thus the average price of coal in Germany was, in 1873, 10s. 9d., and in 1877, 5s. 7d.; the wages, after rapidly rising, have now fallen back to the rates prevalent ten years ago, while the character of the workmen has deteriorated, and their relations to their employers have been changed in every way for the worse. In the iron trade the 125 joint-stock companies lost in 1877 alone a sum equal to 8.9 per cent. of their aggregate capital, which amounts to £24,335,709; and this capital at present represents, according to the quotation of the Berlin share-market, a current value of about £7,335,000 only. One regrets to notice that M. Pechar's chief remedy for these evils appears to be a return to protective tariffs so far as they have been abolished, and an aggravation of them where they exist. He is profoundly convinced that for many years to come no country in the world can hope to compete in the world's markets or even in their respective home-markets, with Great Britain in any but minor special products.

M. Pechar, however, has good hopes for the iron industry generally and consequently for the coal industry, whose fortunes depend so closely on those of iron. He expects that in most of the *present* applications of iron, steel will shortly supplant it, but that the iron industry will not therefore perish, but on the contrary will find new and larger spheres, partly as subsidiary to steel, partly by in its turn ousting wood and other substances from many of their present uses, as for example in buildings.

But it is unfair to summarise M. Pechar's conclusions apart from the many considerations by which he supports them, and we must therefore refer the reader on this and other points to the book itself. It will amply repay his perusal.

J. MARSHALL

OUR BOOK SHELF

Natural History, Sport, and Travel. By Edward Lockwood. (London: Allen and Co., 1878.)

MONGHYR is a large district in Bengal, divided into two nearly equal portions by the Ganges. Here Mr. Lockwood has spent many years as magistrate, and during that period had the inclination and the capacity to gather much knowledge of the district and its people. He laments in his preface that during twenty years' service he met only one Englishman (a Professor of Botany) who could identify the most common trees and plants. This is certainly lamentable, especially for the ignorant themselves, who thus miss a great and constant source of enjoyment and a fine opportunity of adding to a knowledge of the productions of one of our most important dependencies. This modest little volume is a good example of what may be done by a man who makes no pretensions to have more than a "desultory" knowledge of natural history. Mr. Lockwood is a very good observer, and his book contains many valuable notes on the animals and plants to be met with in the district of Monghyr. He has much