

M. Maistre, to which he transferred himself, and again crossed the Congo-Shari watershed, made friends of many of the native tribes, obtained treaties in the usual way, and, pushing onwards, in spite of considerable hardships, descended one of the tributaries of the Shari, struck westwards to the Benue, and so returned by the Niger. The expeditions, which were two of the most important of the last few years, did much valuable work in geography and natural history; indeed, M. Brunache insinuates that Dybowski was too much devoted to collecting specimens to make an ideal commander.

The book contains many interesting but unsystematic notes on a number of tribes which were visited for the first time by Europeans. Except the Bonjios on the lower Mobangi, and the Mohammedanised natives of the Sudan, they were all cannibals, eating their enemies killed in battle, and occasionally their slaves. Amongst all the tribes, women were well treated and consulted on affairs of importance. The costume and habits of the Saras, a particularly tall tribe, who inhabit the Shari basin between 8° and 9° N., are described, we believe, for the first time, and with such fulness and tact as only a Frenchman can employ. In their country the surveys of the expedition touched those of Nachtigal, who had penetrated so far southward across the Sahara, and thus completed the chain of modern European itineraries in West Africa from the Mediterranean to the Cape of Good Hope.

A number of reproductions of sketches exhibit types of the natives encountered, and specimens of their art and manufactures.

*Helical Gears.* By a Foreman Pattern Maker. (London: Whittaker and Co., 1893.)

THIS little book belongs to "The Specialists' Series"; it is entirely of a practical nature, and deals with a subject little understood by engineers who do not happen to be machine-tool makers. As there is probably no other text-book on this subject, the work will fill a useful purpose. The author observes that a large proportion of so-called helical gears are incorrectly made, and are therefore far worse than common gears. With this observation we certainly heartily agree. Cases are known where an otherwise good machine has been spoiled by the use of badly designed helical gearing.

The arrangement of the information is good. Illustrations and diagrams are freely used, so that what would otherwise be difficult to understand becomes clear and apparent. Patterns are clearly dealt with, and their manufacture fully described. It is here the hand of the practical man becomes evident. Many hints are given, and instructions formulated, which favour strongly of the "works." The author does not pretend to deal with the purely theoretical side of his subject, excepting in so far as the fundamental relationships of the helical gears to the true screw or helix is concerned. Beyond this the book is entirely of a practical character, being eminently fitted to fulfil the requirements of the drawing-office and the works. N. J. L.

*The Nests and Eggs of Non-Indigenous British Birds.* By Charles Dixon. Pp. 360. (London: Chapman and Hall, 1894.)

"THE present work," remarks Mr. Dixon in his preface, "forms the companion volume to 'The Nests and Eggs of British Birds,' and renders the subject of British Oology complete, so far as our knowledge now extends. It deals exclusively with the nidification of the birds that do not breed in the British Archipelago, but visit our islands regularly in winter, pass our coasts on passage, or pay them their more or less irregular visits as wanderers from their normal areas of disposal." Nearly two hundred species are described as belonging to this class. For each bird, information is given as to

the breeding area, breeding habits, range of egg colouration and measurement, and the diagnostic characters of the eggs. In an appendix, the author states his reasons for believing that the nests and eggs of the following species are at present unknown to science:—Rustic bunting, Pallas's grey shrike, Siberian ground thrush, needle-tailed swift, solitary sandpiper, Siberian pectoral sandpiper, curlew sandpiper, knot, Ross's gull, great shearwater, collared petrel, capped petrel, Cape petrel, and white-billed diver. A list of forty species, individuals of which have been said to occur within the limits of the British Isles, but which Mr. Dixon regards as doubtful British species, is also appended to the volume. It remains for the scientific naturalist to collect some definite information on the species enumerated in these lists.

*Commercial Geography.* By E. C. K. Gonner, M.A. Pp. 200. (London: Macmillan and Co., 1894.)

COMMERCIAL geography, dealing as it does with the facts that affect manufactures, commerce, and agriculture, ought to be widely studied in a nation having such pronounced shopkeeping proclivities as the English. It is right and proper that those who are to be the custodians of our trade in future should know something about the manner in which physical and political surroundings affect industry and commerce, and about the conditions of success in the various industrial branches. Prof. Gonner treats these matters in a way likely to impress students. His manual is divided into three parts, the respective subjects of which are (1) commercial geography and its principles; (2) the geography of the chief products and others; (3) countries, their agriculture, industries, and commerce. Trustworthy statistics are plentifully distributed throughout the book, and they serve to give an idea of the relative importance of different countries as regards different commodities, as well as being useful for reference. Of course, no student would be expected to commit these tabular statements to memory. If the main facts contained in this volume are grasped by students intended for commercial careers, British commerce will undoubtedly be benefited.

*Dynamometers and the Measurement of Power.* By John J. Flather, Professor of Mechanical Engineering, Purdue University. (New York: John Wiley and Sons, 1892.)

A USEFUL practical treatise on this subject, in a convenient form for Technical Students, containing also the mechanical theory required in the calculations.

The author has himself carried out a notable experiment in the measurement of the power of a full-sized American locomotive, which was jacked up, and the power taken off by heavy supporting wheels; a valuable object-lesson for the pupils of his Experimental Laboratory of Purdue University. The long-continued measurement of the power, coal and water consumption, &c., of a large engine in full work—for instance of a steamer, the *Meteor* and others—is one of the most interesting and instructive that can be provided for a class of enthusiastic students of mechanical engineering. G.

*Electric Light and Power.* By Arthur F. Guy, A.M.I.E.E. Pp. 346. (London: Biggs and Co., 1894.)

SOME books, like the pedlar's razors, are made to sell rather than for use. Mr. Guy's volume is not one of these. It has been issued "for the purpose of placing on record useful practical knowledge obtained by the author during several years' experience of central-station work, together with brief explanations of the laws which govern the action of electrical apparatus in general use for electric lighting." This brief description shows clearly the ground covered. There are many similar works in the market, but we do not know of one better suited to give the manipulator of electric dynamos an intelligent knowledge of the forces with which he has to deal.