

With respect to the Ethiopian region—the field-work of Sir Andrew Smith, Livingstone, and Du Chaillu—46 are mentioned, and 40 on the Indian region, which has been so much investigated by those who, from other reasons, have had to take up their residence in our Eastern empire. There are 25 works referred to respecting the Nearctic region, and as many as 138 on the Neotropical, which demonstrates how rich a field South America has proved to the students of biology, it being remembered that Mr. Darwin himself obtained the bulk of his practical experience of animal life in that continent. Forty-one works on the Australian and nine on the Pacific region include the remainder of the list. Mr. Sharpe's edition of Layard's "Birds of South Africa," Mr. Hume's "Stray Feathers," Lord Walden's Memoirs on the Birds of Celebes and the Philippines, Mr. Scammon's "Marine Mammals of the North-Western Coast of North America," Messrs. Baird, Brewer, and Ridgway's "History of North American Birds," Dr. E. Coues' "Birds of the North-West," Prof. T. R. Jones' "Manual of the Natural History, Geology, and Physics of Greenland," Messrs. Sclater and Salvin's "Nomenclator Avium Neotropicalium," Mr. A. W. Scott's "Elementary Treatise on the Mammals of New South Wales," the late Mr. J. Brenchley's "Cruise of the *Curacoa*," Dr. Buller's "Birds of New Zealand," being the most important works which have appeared during the last two or three years, on the regions other than the Palearctic, above referred to.

That several works have appeared since Mr. Sclater's address was delivered—including, among the most important, the late Mr. Blyth's "Catalogue of the Mammals and Birds of Burmah," edited by Dr. J. Anderson, Dr. Dobson, Lord Walden, and Mr. Grote, a special notice of which we hope very shortly to give—and that Mr. Wallace's important two volumes on the "Geographical Distribution of Animals" may be expected very soon, shows how much stress is now being laid on the fauna of different regions, and adds further to the importance and value of the encyclopædic address, the contents of which we have brought before the notice of our readers on the present occasion.

OUR BOOK SHELF

An Elementary Treatise on Curve Tracing. By Percival Frost, M.A. (London: Macmillan and Co., 1872.)

On the Transcendental Curve whose Equation is—

$$\sin y \sin my = a \sin x \sin nx + b.$$

By H. A. Newton and A. W. Phillips. (From the *Transactions of the Connecticut Academy*, vol. iii., 1875.)

MR. FROST'S work is an elementary one, inasmuch as no advanced acquaintance with the differential and integral calculus is required; nor do his methods turn upon the higher algebra, nor upon the science of projections. Indeed he is careful to restrict himself for the most part to fairly elementary processes. It is not a complete treatise, as he does not touch upon roulettes or upon curves, given by intrinsic equations. These latter curves have been, as is well known, discussed and fully illustrated in the late Dr. Whewell's two memoirs in the *Cambridge Philosophical Transactions* (vols. viii. and ix.) We miss, too, all account of curves of historical interest. Occasional notices of these have been given by different writers, but we should like a sketch of them drawn up by some competent hand, with an account of their origin and applications.

Reasons have weighed with Mr. Frost in making these omissions, and we do not grumble at his taking his own line in his treatment of the subject as he has given us a full treatise, abundantly illustrated by figures, of curves, ranging from simplicity to considerable complexity of form. The preface is an interesting one (though by the way, the author was rather unwilling to write it), and in it attention is called to the fact, among other reasons, why junior students should devote some little time to curve-tracing, that the subject of graphical calculation is coming more into use, being applied to problems in statics (see Culmann's "Graphische Statik"), engineering, and crystallography.

We cannot here give any detailed sketch of the contents of the work, further than to draw attention to the last chapter, which treats of the inverse problem, viz., given the form of a curve to investigate its equation, or an approximation to it. We do not remember to have seen the attempt made elsewhere. Should the subject be taken up and carried on with success, we may look for the equation to one's name taking the place of the name on an address card.

The majority of the curves discussed and traced in Mr. Frost's book are algebraical ones.

Messrs. Newton and Phillips write that from the form of a transcendental curve it is not easy to state the equation that will represent it. So instead of taking up the inverse problem, they have selected from out of the host of transcendental equations, and exhibit twenty-four pages of plates of the plane curves furnished by assigning different values to the constant quantities a , b , m , and n in the equation given above.

These forms, as might be imagined, are all symmetrical, and much resemble carpet patterns. The tract is an interesting evidence of the patience and skill at draughtsmanship of the authors.

Kurzes Chemisches Handwörterbuch zum Gebrauche für Chemiker, Techniker, Aerzte, Pharmaceuten, Landwörter, Lehrer, und für Freunde der Naturwissenschaft überhaupt. Bearbeitet von Dr. Otto Dammer. (Berlin: Robert Oppenheim, 1876.)

To keep pace with the rapid growth of chemical science would be almost a hopeless task, were it not for the literary organisation and classification undertaken from time to time by such writers as the author of Watts's "Dictionary of Chemistry," and Dr. Dammer, the compiler of the present volume. To writers of this class who take upon themselves the laborious drudgery of "stock-taking," workers in the ranks of science owe a debt of gratitude which cannot be too highly estimated.

In coupling together the names of Mr. Watts and Dr. Dammer, it is by no means our intention to imply any similarity between the respective "dictionaries." Dr. Dammer's work is perhaps more truly a dictionary in the proper signification of the term than Mr. Watts's seven volumes, for while the latter contain full, and in many cases, exhaustive information on the various subjects treated of, the whole of the former is comprised in one volume royal octavo, of some eight hundred pages. The justly esteemed "dictionary" of English chemists need fear, therefore, no rival in the present volume, the two works rather bearing to each other the relationship of a chemical encyclopædia to a glossary of chemical terms.

The longest articles in the present volume are those on absorption, equivalents, alum, ammonia, aniline, aromatic bodies, ashes, animal respiration, atmosphere, atom, base, benzoic acid, benzene, succinic acid, beer, blood, soils, bread, chemistry, chromic acid, steam, diffusion, albumin, electricity, petroleum, nutrition of plants and of animals, acetic acid, acetates, colouring matters, fats, flesh, galvanic batteries, gases, tan, glass, coal, hydrocarbons, madder, crystal, copper, illuminating gas, solution, magnetism, metals, metalloids, microscope,