text-book. Such a work should appeal to the teacher and to the student as a work of reference, and also to the outsider, it may be a worker in another department of science, who wishes to understand what the science of chemistry now is without being confronted with all the bewildering and conflicting details of the subject, such as the advanced student may find in Watts's Dictionary or in many German works on chemistry.

Such a treatise, perfect as a broad and general description and discussion of the science of chemistry, has not yet been written in English. Roscoe and Schorlemmer's treatise, however, still remains the nearest approach to the ideal.

POPULAR EVOLUTIONARY THEORY.

Darwinism and the Problems of Life; a Study of Familiar Animal Life. By Prof. Conrad Guenther. Translated by Joseph McCabe. Pp. 436. (London: A. Owen and Co., 1906.) Price 12s. 6d. net.

THIS is a disappointing book. The idea of using the common sights and sounds of nature which are open to general observation as material for building up a detailed comprehension of evolutionary theory is a good one; there is much to be said for the inductive system of instruction as a supplement to the deductive methods more often employed. But in this particular instance the errors in matters of fact are so prominent and so numerous as to overshadow such merit as the plan of the work possesses. Some of these mistakes must be laid to the charge of the translator, who obviously is but imperfectly acquainted with the subject-matter of his original, and whose want of due care appears in the occurrence of such phrases as "the grouping of their elements is different from in dead albumen," "Pentastomum has little of the characteristics of a spider, to which it really belongs," and of such unwonted forms as "terrestrial," "adaption," "caracoid," "strepstera"—the last two being found more than once. "Sexually," on p. 301, is clearly intended for "non-sexually." "An example of a genius under the generic title" is capable of easy emendation, but "weel" (p. 220) almost baffles conjecture. Can it be meant for "valve"?

The "processionary butterfly" is, of course, a moth; the "tentacles" of the stag-beetle (p. 91) are apparently its mandibles; we hear for the first time of the "bones" of articulates, and that our muscles are "secretory products." It is implied on p. 143 that the adder is not poisonous. This is surprising until we find from other passages that the author's "adder" is not an adder at all, but the harmless ringed snake. A sentence on p. 226 is absolutely unintelligible, unless we may conjecture that the word "falls" is an attempt to render the German "Fälle," here obviously used in the sense of "cases."

It is charitable to the author to suppose that not he but his translator is responsible for the statement that "in the case of moths and grasshoppers there is not a very great difference in habits between the larva and the imago." But when we find it stated

that "in the grasshoppers the front extremities have become a powerful leaping apparatus"; that an insect is covered with "dust" by the "stigma" of a flower; that "if we take two beetles that seem absolutely like each other and only differ in size" they are of different species; that "the frogs have only one chamber to the heart"; and that "iron is always found combined with sulphur," it is difficult to avoid the conclusion that the author has to answer for mistakes of his own.

There are advantages in using the popular names of natural objects in a book intended mainly for the unlearned. But a protest must be entered against the slovenly habit, too common with translators, of contenting themselves with a literal rendering of such names into another language. How, for example, is the English reader to identify the "small nocturnal peacock's eye"? If the scientific name be disallowed, at least the recognised English popular title should be given.

Many of the author's conclusions on the main subject are sound enough. It is the more to be regretted that his statements of fact are so often open to adverse criticism, and that he has been, on the whole, so badly served by his translator. F. A. D.

OUR BOOK SHELF.

Aufnahme und Analyse von Wechselstromkurven. By Dr. Ernst Orlich. Pp. viii+117. (Brunswick: F. Vieweg and Son, 1906.) Price 3.50 marks.

IN the usual handbooks on alternating currents the methods of study of the wave-form of the alternations and the analysis of the curves of E.M.F. and current obtained are usually treated very scantily. Recently, however, the subject has attracted considerable attention, and its importance to a station engineer, who wishes to make alternators not identical in design run well in parallel, is now recognised.

Prof. Orlich, of the Reichsanstalt, has endeavoured in this little book to present a clear account of what is known on the subject. It begins by definitions and a short mathematical introduction to the use of Fourier series, &c. Then follow descriptions of various methods of taking curves by the point-to-point process, and of the apparatus of Rosa, of Callendar, and of Hospitalier's "Ondographe."

The Braun tube is described and illustrated, but no mention is made of the fact that owing to the kathode-ray bundle not being composed of rays of the same magnetic deflectability, and the consequent lack of sharpness of the moving image, its use for the study of alternating currents is limited rather to qualitative than to quantitative work. The next chapter deals with oscillographs in their various forms. Their theory is discussed, and the advantages of the different patterns of moving needle and bifilar instruments pointed out.

The recent experiments on telephony of Mr. Duddell, and the wonderful curves shown by him at his recent lecture at the Royal Institution on the analysis and transmission of sounds, show that substantial advances have recently been made in the construction of very sensitive oscillographs of his pattern, the curves of currents furnished by an ordinary microphone being readily shown to a large audience.

After a chapter on the phenomena of resonance, the concluding portion of the book deals with the analysis of curves, with descriptions of the best-known forms

of harmonic analysers, including those of Henrici, and the machine devised by Michelson and Stratton for their analysis of visibility curves of interference fringes.

The information given in the book seems, on the whole, fairly complete and accurate. The word "periode" seems used in a loose sense, sometimes as "time of a single oscillation" and sometimes as "frequency."

J. A. HARKER.

Cultures du Midi de l'Algérie et de la Tunisie. By C. Rivière and H. Lecq. Pp. xii+511. (Paris: J. B. Baillière et Fils, 1906.) Price 5 francs.

IN view of the fact that inside the British Empire agriculture is being practised under all sorts of tropical and semi-tropical conditions, there is a singular paucity of books in the English language dealing with the cultivation of exotic plants. The book before us, one of the "Encyclopédie agricole" series, reviews briefly the whole range of plants which are cultivated economically in the Mediterranean region belonging to France, i.e. in Provence, Algeria, and Tunis. This is a very special district possessing a characteristic flora adapted to its well-marked climatic conditions of insufficient rainfall which falls mainly in the winter, great heat and dryness in the summer, excessive radiation resulting in extreme variations of temperature, with sharp frosts in the winter, incessant wind, and an all-pervading sun. Under these conditions many forms of agriculture are only possible where irrigation water is obtainable, and much of the country is little better than bare rock or sand; there are, however, many important cultures, special to the district, which have been brought to a high state of perfection by the inhabitants of the Côte d'Azur.

The most distinctive example is perhaps the growth of plants for scent and essences which has its centre at Grasse, but which has been extended into both Algeria and Tunis; the rose, the orange-flower, the tuber rose, the violet, and the jasmine being the most important of the flowers thus cultivated. The olive, that most distinctive feature of all Mediterranean landscapes, is losing ground, we learn, being displaced by the competition of oils like cotton-seed and sesame; in Provence, also, the land is wanted for more intensive forms of cultivation, such as the production of early vegetables and cut flowers.

The book of MM. Rivière and Lecq suffers somewhat from the very extensive ground it has to cover; the accounts of each plant in cultivation have to be so curtailed that the details are insufficient for the needs of the practical man, who will, however, find an excellent series of references to more special books and articles on each subject. The book may be of considerable service to many of our colonists living in semi-arid countries and looking round for suitable and remunerative crops to grow; from it they can obtain both ideas as to possible introductions and such economic information as to the labour required and the probable value of the returns as may enable them to embark on the experiment with some prospect of success.

Tabulae Botanicae. (Part i., containing plates i. and ii.) Edited by E. Baur and E. Jahn. (Berlin: Gebrüder Borntraeger, n.d.) Price per plate: paper, 7 marks; cloth, 10 marks. Series of five, 25 marks.

UNDER this title the publishers announce a series of coloured illustrations of plants intended for lecture purposes, and arranged in sets for each subject, order, or class. The two diagrams received illustrate the Myxobacteriaceae, the one representing successive stages in the life-history of *Polyangium fuscum*, selected as a general type, the other depicting the fructification, spores, &c., of *Myxococcus* and

Chondromyces as special details. So far as one can judge from these specimens, the drawing entrusted to Ehrlich, of Berlin, promises to combine correct representation and artistic treatment, and the publisher's name is sufficient guarantee for good reproduction; the paper selected is not strong enough to withstand wear and tear, but at a somewhat higher price the plates may be obtained backed with linen and attached to rollers. The size of the diagrams, about 5 feet by 3 feet, is sufficiently large for most practical purposes. The short prospectus prefixed to the accompanying text provides little information, except to say that the plates will be designed two, three, or more to each subject, that the series will cover the whole field of the anatomy and the life-histories of plants, and that the lower plants will receive especially full treatment.

Reports of the Expedition to the Congo, 1903-5. Liverpool School of Tropical Medicine, Memoir xviii. Pp. 74. (London: Williams and Norgate.) Price 7s. 6d. net.

IN this report, the late Mr. Dutton and Dr. Todd contribute an important paper on gland-palpation in human trypanosomiasis, in which they show that most early cases of trypanosomiasis have enlarged glands, and can therefore be detected by gland-palpation. A second paper by the same authors discusses the distribution and spread of sleeping sickness in the Congo Free State. This is illustrated by four maps, which demonstrate very clearly the enormous extent of territory in which this terrible disease is now met with compared with twenty years ago. This is in great measure accounted for by the increase in travel following the opening up of the country. Two new Dermanyssid Acarids from monkeys' lungs are described by Mr. Newstead and Dr. Todd, and Dr. Stephens and Mr. Newstead contribute a paper on the anatomy of the proboscis of biting flies. It will thus be seen that the report contains matter of considerable interest, and the general "get up" leaves nothing to be desired.

Ten Years' Record of the Treatment of Cancer without Operation. By Dr. Robert Bell. Pp. 107. (London: Dean and Son, Ltd., 1906.) Price 2s. 6d. net.

IT is difficult to understand the *raison d'être* of this book, which consists mainly of a diatribe against the modern surgical treatment of cancer, and a veiled recommendation of the author's method of treatment by medicinal and hygienic measures. As regards any "record" of ten years' treatment by the author's methods we find little evidence—"several cases" eventually got quite well (p. 42), a case "recovered completely" (p. 43), a case in which "the tumour quite disappeared" (p. 63), three cases in which "recovery was complete" (p. 71). This constitutes the "record"; can the author be surprised if his views and methods be received with scepticism?

R. T. H.

The Opal Sea. By John C. Van Dyke. Pp. xvi+262. (London: T. Werner Laurie, 1906.) Price 6s. net.

PROF. VAN DYKE provides in these pages a readable account of many branches of modern oceanography expressed in a literary form too seldom found in works dealing with scientific subjects. As one would expect, the romance and poetry of science are given great prominence, and the attractive word-pictures reveal the fascinating nature of the work of the man of science. Many readers of these essays will be encouraged to undertake a more precise study of the physical geography of the sea from formal treatises.