

us. The young and aspiring teacher may be commended for his zeal in writing a text-book for his own use—authorship invariably impresses a literary headmaster and a governing body—but it is a question whether his time would not be better spent experimenting in the laboratory and in keeping well abreast of modern developments. It is another matter if he has something really novel to say, or some new method of arrangement or presentation. Unfortunately, however, originality seems to be somewhat elusive since the salad days of Ostwald, Alexander Smith, and Armstrong, and the present little work, like scores of others, does not excel in this respect. The book has its merits; it is well written and particularly well spaced; the explanations are clear, and there is very little to criticise on the score of choice of experiments or of accuracy (but *any* chloride would not do instead of salt for making hydrogen chloride, p. 94). The main defect is a too strict adherence to the old-fashioned, cookery-book style; the pupil who believes all he is told in this book, and performs religiously the rites prescribed, will certainly learn much that is useful and interesting, but they will not help him to acquire or develop the scientific habit of mind, a possession of far greater value than a passive knowledge of the *minutiae* of chemical change.

*Contributions from the Jefferson Physical Laboratory and from the Cruft High-Tension Electrical Laboratory of Harvard University for the Years 1922 and 1923.* Vol. 16. 47 papers, unpagged. (Cambridge, Mass.: Harvard University, n.d.) n.p.

THIS volume covers a rather longer period than is indicated in its title, the earliest paper dating from February 1921 and the latest April 1924. Ten of them are by Prof. Bridgman, and deal with the properties of materials under high pressure, and several of these have been noticed in our columns. Eleven others are due to G. L. Clark, National Research Fellow, and Prof. W. Duane, and deal mainly with X-rays and their use in crystal analysis. In their method of investigating crystals the continuous spectrum of X-rays between  $0.12$  and  $0.80 \times 10^{-8}$  cm. is utilised, and this allows of the use of an ordinary X-ray tube with tungsten target run at a high voltage. The substance examined may be a single crystal or a powder. The wave-length of a ray which is reflected at a given angle from the material is calculated from the quantum equation  $Ve\lambda = hc$ , where  $V$  is the least voltage applied to the tube which will cause it to emit the line  $\lambda$ ,  $e$  is the electronic charge,  $h$  Planck's constant, and  $c$  the velocity of light. The tube being run from a storage battery,  $V$  can be determined accurately. Prof. Lyman contributes three papers on a new vacuum spectrograph and the extreme ultra-violet spectrum.

The volume maintains the high standard established by its predecessors and shows that Harvard believes in extending as well as imparting knowledge.

*Beach Grass.* By C. W. Townsend. Pp. xii + 319 + 42 plates. (Boston, Mass.: Marshall Jones Co., 1923.) 3.50 dollars.

THE reader who expects under this title to find a dissertation on *Psamma arenaria*, the marram grass of the coasts of the British Isles, will be disappointed, for the plant is scarcely mentioned. But the book is well

worth reading. It is a breezy, refreshing account of many aspects of Nature on the sand-dunes that form the coast line in the neighbourhood of Ipswich, Essex Co., Massachusetts, U.S.A. The author is a naturalist in the widest sense of the word, and has here set down a number of observations, illustrated by some admirable photographs, that will interest alike the serious student of physical geology, the ornithologist, the forester, and indeed all whose scientific tastes take them into the open air. The description of the ice-bound sand-dune coast, and the effects of frost both on the shore and on the sea itself, and the bizarre scenery produced and most successfully illustrated, are truly wonderful. In the chapters dealing with birds, biologists will find some shrewd remarks on sexual selection, and interesting accounts of the courtship of many species of birds. Incidentally there are quoted authentic examples of the economic value of several birds of prey and of some of the insectivorous birds. The book would perhaps be of more direct use to the British reader if the scientific names of the birds were inserted: the popular American names are not very familiar on the eastern side of the Atlantic.

*Reason and Morals: an Enquiry into the First Principles of Ethics.* By Dr. Israel Levine. Pp. xi + 177. (Glasgow: MacLehose, Jackson and Co.; London: Simpkin, Marshall and Co., Ltd., 1924.) 6s. net.

THE author received the degree of D.Litt. from the University of Glasgow for this thesis, and though primarily dealing with a subject of philosophy, it is of peculiar scientific interest. The moral law is generally held up to wonder and veneration as something utterly unintelligible on ordinary scientific principles, indicating a supernatural origin and bearing witness to a divine purpose in individual lives. Dr. Levine, in a clear and trenchant argument, sweeps this whole conception away. The moral law is shown to be the simple condition on which human society can exist. Without morals common life is impossible, and without common life the survival of the human species is impossible. The existence and maintenance of social life are the inevitable expression of the life-impulse itself. The essay concludes with a brief historical survey, in which it is claimed that the rational tradition in moral theory has received in modern times its complete vindication in the discoveries of psychology.

*Die Grundgedanken der Machschen Philosophie: mit Erstveröffentlichungen aus seinen wissenschaftlichen Tagebüchern.* Von Prof. Dr. Hugo Dingler. Pp. 106. (Leipzig: J. A. Barth, 1924.) 3 gold marks.

AN excellent short account of the leading thought and ground-principle of the most philosophically minded of the German physicists. When only fifteen, he had read from his father's library Kant's "Prolegomena" and Fechner's "Tagesansicht," and he seems even then to have formed a fixed resolution to eschew metaphysics and follow in all his researches a pure inductive method. He had throughout his life an almost English aversion to apriorism and to transcendental systems of philosophy. The book contains a most interesting selection from his note-books from 1880 to 1882 with memoranda for his "Mechanik." It recalls the "Common-place Book" of our own Berkeley.