

want of space, been sometimes compelled to omit or skim over certain points in a very arbitrary fashion, at the same time using material which plainly interests him, but is less germane to the matter in hand. This is distinctly a fault in so all-comprehensive a book, and indicates that a more modest programme would have been better. There is no doubt, however, that he has essentially succeeded in giving unity to the subjects treated, and his volume, with the above qualifications, is strongly to be recommended. As to the wisdom of the choice of his particular point of view, there can be little doubt. Haber has been credited with the remark that the basis of physical chemistry in the future will be one part thermodynamics and three parts theories of radiation and quanta. And when one considers the manifold ways in which these theories have already been applied—to specific heats, photo-electric effect, Röntgen rays,  $\gamma$ -rays, radioactive changes, the emission of free electrons during chemical changes, thermoelectromotive force, electrical resistance, &c.—one will not feel inclined to dispute his prophecy. The growing importance of atomic and molecular mechanics in comparison with classical thermodynamics is undoubtedly the outstanding feature of physical chemistry at the present moment.

#### VETERINARY PHYSIOLOGY.

*A Manual of Veterinary Physiology.* Fourth edition. By Major-General F. Smith, C.B., C.M.G. Pp. xii+808; 259 illustrations. (London: Baillière, Tindall and Cox, 1912.) Price 18s. net.

AS pointed out by the author, this work is essentially a veterinary, and not a comparative, physiology, and an endeavour has been made to render it of service, not only to the student of theoretical veterinary physiology, but also to the clinician. Throughout the book the author has taken every opportunity of pointing out the clinical application of various physiological facts, and further indicating how various pathological conditions are purely derangements of physiological conditions.

The work as a whole is excellent, and this edition must rank as the standard text-book on the subject in English. If any sections of the book stand out from the others, they are probably those on "locomotion" and on "the foot." The chapter on the former is really a masterly exposition of the subject; all paces are carefully considered, and the text is made very easy to follow by means of several series of excellent notations. There is also a very interesting discussion on the

influence of age on the capacity for work, and attention is directed to the apparent considerable difference between man and the horse in this respect.

There are some features, however, which call for criticism. On referring to the paragraph on blood platelets, the author says: "It is probable they are distinct elements." Other authorities, however, do not agree with this view, Buckmaster and others going so far as to state that there are no blood platelets in circulating blood. The question is dismissed too shortly in one small paragraph. On p. 152 the author refers to "broken-wind" in horses, and after admitting that the condition is one in which the lungs lose their power of elastic recoil, he states that "one of the fundamental errors in veterinary pathology is to attribute this condition to emphysema or asthma." Here we join issue with the author, and while agreeing that the condition is not asthma, would point out to him that a suitably prepared section of the lung of a broken-winded horse shows quite clearly that the loss of elastic recoil in a chronic case is due to the rupture of the vesicular walls, and is, in fact, "chronic vesicular emphysema."

A list of *corrigenda* has been inserted at the front of the book, but one mis-spelt word has been overlooked on p. 192, "attending" appearing for "attending." There is also an exhaustive index and a list of authorities quoted in the text. The printing and binding and general make-up of the book are in Messrs. Baillière's usual good style.

#### POPULAR ASTRONOMY.

*Astronomy.* By G. F. Chambers. Pp. xxiv+335+cxv plates. (London: Hutchinson and Co., n.d.) Price 5s. net.

*Daytime and Evening Exercises in Astronomy.* For Schools and Colleges. By Dr. Sarah F. Whiting. Pp. xv+104. (Boston and London: Ginn and Co., n.d.) Price 3s. 6d.

*The Ways of the Planets.* By M. E. Martin. Pp. v+273+vi plates. (New York and London: Harper and Brothers, 1912.) Price 5s. net.

(1) IN this volume Mr. Chambers has aimed at giving the man of ordinary education—too often, alas, deficient of any precise ideas regarding the fundamental truths of the oldest of the sciences—a clear and simple insight into the astronomy of to-day; and he has accomplished his part of the task with characteristic success. Abstruse problems are not sprung upon the young astronomer, nor are they obviously evaded, but at all times is he encouraged to observe phenomena for himself, and thereby to grasp more thoroughly