quent references to original articles are cited in the foot-margins.

This is the first American text-book on purely physical crystallography, and, containing, as it does, the sum of what is at present known on the subject, it must commend itself to every student of the science.

A. S. EAKLE.

HARVARD UNIVERSITY.

Algebra for Schools. By GEORGE W. EVANS, Instructor in Mathematics in the English High School, Boston, Mass. New York, Henry Holt & Co. 1899.

This book is a fresh treatment of the topics commonly found in algebras for schools. It is by no means a mere compilation or reprint with slight alteration of texts now before the public. While, of course, it is not, nor pretends to be a contribution to knowledge, it is distinctly what the author has sought to make it, a real contribution to the art of presenting knowledge to the beginner. Ordinary algebra is, in its elements at least, nothing but an extension and refinement of common sense applied to number. Consistently with this idea, the author's arrangement of topics, as well as his method of attack —in both of which respects there is a noticeable departure from tradition—are well adapted 'to preserve the pupil from the besetting sin of conceiving algebraic operations as a species of legerdemain.' An appeal is invariably made, in the first instance, to the reader's practical sense. Theory is not slighted; being approached through concrete examples, it is, however, rather produced than presented, and its correctness is not so much demonstrated as its *reasonableness* is shown. As instances of this procedure may be cited the treatment of signs, imaginaries and exponents. In case of the latter two themes the spirit is particularly commendable. Among other specially praiseworthy features are the chapter on the abbreviation of rules by means of symbols; the prominence given to identities, together with the clear distinction between the latter and equations of condition; the geometric interpretation of the simplest equations; the extended and accentuated treatment of factoring and of the quadratic equation; the discussion of the notions of constant, variable and limit, and the abundance and variety of exercises not copied from other works. An easily detectable slip in logic occurs on p. 105 in justifying steps (4) and (6) by reference to axiom *A*. The proper justification is that such equations are satisfied if either factor be equated to zero.

An adequate characterization of the book is impossible in so short an account. That it is immensely superior to the average of its rivals is obvious on comparison. It should be added that the book is written in excellent English, and is well printed and well bound.

C. J. KEYSER.

COLUMBIA UNIVERSITY.

The Emotion of Joy. By GEORGE VAN NESS DEARBORN, A.M., M.D. New York, The Macmillan Company.

This monograph opens with a rather extended vindication of parallelism, but the writer cannot keep to this point of view, *e. g.* pages 8, 13, 14, 16. But at any rate parallelism at present is metaphysical, exact coincidence of external expression and internal emotion is yet to be shown experimentally, and, as assumption, it is obscurrantist in breaking up the universal causal nexus, which is the basis of science, and putting a bare dualism for rational coordination. Of course the difficulty of experiment seems insurmountable, since the agent can only indicate to us the moment of his emotion by an expression. After outlining the general parallelistic doctrine of emotion, Mr. Dearborn presents some experiments which are so hypothetical as to be only of the slightest value in revealing the opinions of fourteen persons as to how they would feel and act if given sums of money from ten to ten thousand dollars. Much the most interesting and valuable part of this paper is that which reports researches on the effects which pleasantness and unpleasantness have upon the involuntary muscular movements. It is particularly interesting to notice that "the left hand appears much more sensitive to involuntary reaction than the right, and this was to be expected, perhaps, most of the subjects being right-handed and, therefore, with their right hand 'civilized,' so to say, away from the original biological habits of emotional con-

comitance.'' Of course this is a wider field than mere joy as specific emotion, but inclusive of it. It may be surmised that the expansive movement for the pleasant and contrary for painful stimulus—which is reinforced by these experiments—is simplest biological reaction concerned with appropriation and rejection in feeding by primitive organisms. However, joy as specific emotion is later and must be studied more introspectively in its functional activity than Mr. Dearborn has done. In neurasthenia joy does not act, as I recall in my own case, once receiving news which normally would have brought great joy but left me quite listless at the time.

HIRAM M. STANLEY.

BOOKS RECEIVED.

The Races of Europe, a Sociological Study. WILLIAM Z. RIPLEY. New York, D. Appleton & Company. 1899. Pp. xxxii+624.

A Selected Bibliography of the Anthropology and Ethnology of Europe. WILLIAM Z. RIPLEY. New York, D. Appleton & Company. 1899. Pp. 160.

Plant Relations. JOHN M. COULTER. New York, D. Appleton & Company. 1899. Pp. 264.

Industrie des matières colorantes azoïques. GEORGE F. JAUBERT. 1899. Pp. 167.

Transactions of the American Microscopical Society. Edited by the Secretary. Lincoln, Neb., Hunter Printing Co. 1899. Vol. XX. Pp. 369.

Report of the Meteorological Service of Canada for the year ending Dec. 31, 1896. R. F. STUPART, Director. Vol. I., pp. 295; Vol. II., pp. 796.

The Soluble Ferments and Fermentation. J. REYNOLDS GREEN. Cambridge, University Press. 1899. Pp. xiii+480. 12s.

SCIENTIFIC JOURNALS AND ARTICLES.

THE June number of the *Bulletin of the American Mathematical Society* contains a report of the April meeting of the Society, by the Secretary; 'Surfaces of Revolution in the Theory of Lamé's Products,' by Dr. F. H. Safford; a review of 'Picard's Algebraic Functions of Two Variables,' by Arthur Berry, M.A.; 'Note on Page's Ordinary Differential Equations,' by Dr. L. E. Dickson; a review of 'Tannery's Arithmetic, by Professor James Pierpont; 'Notes,' and 'New Publications.' The July number of the *Bulletin*, which concludes volume 5 of the new series, contains 'The Asymptotic Lines of the Kummer Surface,' by Dr. J. I. Hutchinson; 'On a Definitive Property of the Covariant,' by Mr. C. J. Keyser; 'The Known Finite Simple Groups,' by Professor L. E. Dickson; a review of 'Schoenflies's Geometry of Movement' and of its French translation by Speckel, by Professor F. Morley; a review of the new edition of 'Weber's Algebra,' by Professor James Pierpont; 'Shorter Notices;' 'On Elliptic Functions,' by Professor James Pierpont; 'Notes;' 'New Publications;' annual list of papers read before the Society and subsequently published, and an elaborate index of the volume.

THE June number of the *Botanical Gazette* opens with a morphological study of the common May apple, *Podophyllum peltatum*, by Mr. Theo. Holm, illustrated by ten figures drawn from nature by the author. Mr. Holm discusses the mode of germination, the distribution, relation and arrangement of the leaves and buds. Some structural details of the mature plant are also given. The study shows clearly that *Podophyllum* is closely related in its habits and ecological peculiarities to a little natural group of plants: Diphylleia, Jeffersonia, Caulophyllum, Actæa and Cimicifuga. He thinks it better to associate these plants than to separate them by the insignificant floral characters which have been used to put them into separate orders. Capt. John Donnell Smith continues his description of new plants from Guatemala and other Central American republics. Mr. T. S. Brandegee also describes a considerable number of new species of Western plants. Dr. C. O. Townsend discusses the effect of ether upon the germination of seeds and spores. He finds that a weak atmosphere of ether tends to hasten the time of germination, while a larger amount of ether retards or prevents it. Dr. A. P. Anderson figures and describes a new Tilletia parasitic upon the cultivated rice. An appreciative biographical sketch of the late Dr. Alvin Wentworth Chapman is contributed by Dr. Charles Mohr, a long-time friend of Chapman. It is accompanied by a small but excellent portrait of Dr. Chapman. Professor F. A. Waugh discusses the application of the name *Prunus insi-*