and a program is projected for another volume which will complete the work.

Perhaps the point of chief interest to the student of science in this volume is Baldwin's solution of the dualism of inner and outer controls developed especially in Volume II. It may be remembered that the actual and the imaginative are there contrasted with each other and traced to the external world, on the one hand, and to the self on the other. This knowledge and semblance "is the universal and ever-present contrast in the meanings of cognition." The imaginative rendering is always instrumental to the actual and the true. "We make-believe in order that we may believe." "The two controls (the inner and the outer) are now adjusted to each other through the mediation of ideas or thoughts." That is to say, the imagined or merely thought, under the inner control of the self, is instrumental to the attainment of truth. The work then distinguishes two sorts of knowledge to the attainment of which the imaginative is instrumental, namely theoretical knowledge and practical. Hence arises the question "whether there are other types of apprehension which either set up still further ends or in some way reduce or reconcile the duality disclosed by these two." To this question Baldwin replies, "There is a type of imaginative cognition, I wish at once to say, that does not allow of description under either of the two foregoing headings; a type which is motived not by the interest of completeness of knowledge or thought, nor yet by the interest of seeking satisfactions or working practical effects. There is a way of treating a content, usually and properly called 'esthetic,' that we may describe as both *over-logical* and *over-practical,* as not being strictly either of these, although involving both of them" (13). "The outcome of our investigation is that in the esthetic mode of experience so defined, we have the only inkling of the way that the self-reality of inner control which is the postulate of the practical and the worthful, and the thing-reality of external control which is the presupposition of knowledge and truth, *can in the process of experience come together after having fallen apart* in the development of cognition."

The last statement may be regarded as the main thesis of this third volume. It means that we are interested in practical and in theoretical knowledge because of a profound esthetic impulse which finds satisfaction now in the one and now in the other. The fundamental categories of the ethico-political consciousness as well as those of the scientific consciousness are esthetic. The objects of both kinds of knowledge are comprehended in a Whole beautiful which is known in contemplation. In that Whole both the self and the world of scientific knowledge find their fulfillment and satisfaction. It is their reality.

The intellectual project of this work, and its genetic method of investigation, are most interesting; but many will find difficulties in the final results. To the present writer, the dualism of inner and outer controls seems to be a presupposition of Baldwin's entire treatment of cognition, and consequently his esthetic experience, like Kant's purposive *Urtheilskraft,* can have only phenomenal validity. Moreover, we find Baldwin's discussion of the practical quite unsatisfactory. Does Baldwin mean that *practise* can be reduced to terms of knowledge-of-practise? The section on the "Logic of Practise" is devoted to the subject of affective logic, in the sense of Ribot, and we do not find in it a recognition of the world of human action with its rights and obligations, its freedom and responsibility. Finally, the question occurs to us whether Baldwin's beautiful Whole differs much, except in name, from Bradley's Absolute; for that also is a form of immediate experience. That method of Bradley's great book and that of Baldwin's are radically different, but are their results so far removed from each other as their methods?

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Lehrbuch der Algebra. Von Heinrich Weber. Kleine Ausgabe in einem Bande. Braunschweig. Vieweg und Sohn. 1912. Pp. x + 528.

Among the advanced text-books on algebra

there is probably none which is more favorably known than Weber's "Lehrbuch der Algebra" in three large volumes. The great extent of the work doubtless discouraged many beginners as well as those who have only time to learn the fundamental principles of this vast subject. Hence the small volume before us should find a hearty welcome among many students of mathematics who understand the German language.

The present book begins with a study of the elementary properties of determinants and their applications in the solution of a system of linear equations. The remaining fourteen chapters bear the following headings, in order: Numbers and integral functions, symmetric functions, roots, cubic and biquadratic equations, Sturm's theorem, approximation of the roots, groups, the Galois theory, cyclic equations, divisions of the circle, solution of the cyclotomic equation, algebraic solution of equations, numbers and functions of an algebraic realm, applications to cyclic realms.

From these chapter headings it is evident that the book under review is not confined to the most elementary matters, which can be found in nearly all the text-books on this subject. On the other hand, it does not presuppose very much, but develops from the beginning most of the subjects which it treats. As the book is a final effort, on the part of a great scholar and excellent writer, to present the main subjects of advanced algebra, it has a peculiar interest, both as regards the choice of material and the methods of treatment.

Although most students who are in position to profit much by the study of such a work can read German, yet there is doubtless a considerable number to whom an English translation would be very helpful, since there is no algebra in the English language which covers the same ground. The excellent "Introduction to Modern Algebra," by Professor Bôcher, for instance, does not enter into the Galois theory of equations and the theory of algebraic numbers—theories which occupy a prominent place in the present work.

In the preface it is stated that the author was assisted by his colleagues, especially by Messrs. Löwy, Epstein and Levi, while correcting the proof. These names, together with that of H. Weber, are a sufficient guarantee that no important errors appear in the book. Among the minor errors the statement that Dedekind first divided a group into double co-sets, which appears as a foot-note on page 196, is of especial interest. It is well known that Frobenius developed this method extensively in an article which appeared in *Crelle's Journal* in 1887, while Dedekind's article appeared seven years later.

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Measures of Proper Motion Stars Made with the 40-inch Refractor of the Yerkes Observatory in the Years 1907 to 1912. By S. W. BURNHAM. Washington, D. C. Published by the Carnegie Institution of Washington. 1913.

This handsome volume of iv + 311 quarto pages is so fully described by its title, given above, that comment upon it may be brief. To the astronomers of old time the stars were "fixed," *i. e.*, abiding eternally in the same celestial place without any trace of motion relative to their fellows. Less than two centuries ago, it was found that a few of the brighter stars appeared to be exceptional in this respect. Since increasing refinement of observation indicated a slow but continuous progression across the sky, peculiar or "proper" to a few stars that were forthwith assumed to be nearer than the others. The search for and determination of these proper motions has been one of the standard problems of astronomy since the time of Halley and the present volume is a contribution to that end. Its fundamental idea is that perceptible motion, being an unusual stellar attribute, may be assumed limited to the brighter stars and may be determined by measuring the change in the position of these exceptional stars by reference to any of the fainter ones about them. Possibly some suspicions with regard to the assumed fixity of the fainter stars finds expression in the author's introductory words, "It goes without