

'Shakespeare's knowledge of criminal psychology,' by Frank C. Sharp.

'Determinism, decrees and immutable law,' by Charles C. Caverno.

'Some recent observations on the migration of birds,' by H. A. Winkenwerder.

'The plankton of Green Lake and Lake Winnebago,' by C. Dwight Marsh.

'The cause of cleavage in rocks,' by C. K. Leith.

'The supposed lessening of geyser activity in the Yellowstone National Park,' by D. P. Nicholson.

'The orientation of stream channels as related to geological structure,' by William H. Hobbs.

'The old tungsten mine at Trumbull, Ct.,' by William H. Hobbs.

'The future of the clay and cement industry in Wisconsin,' by Ernest R. Buckley, Associate Director of the State Geological Survey.

The following papers were read by title:

'On the thermal conductivity of common woods,' by L. W. Austin and C. W. Eastman.

'The expansion of wood due to the absorption of water,' by L. W. Austin, G. S. Cassels and W. H. Barber.

FRANK CHAPMAN SHARP,
Secretary.

SCIENTIFIC BOOKS.

Foundations of Knowledge. By ALEXANDER THOMAS ORMOND, McCosh Professor of Philosophy in Princeton University. New York, The Macmillan Co. 1900. 8vo. Pp. xxvii + 528. Price, \$3.00.

Without mincing words, it may be affirmed at once that Ormond's work is a very considerable performance. Not only this. Symptomatic books on philosophy have been none too many these last twenty-five years, and the volume before us betrays many symptoms of interest in relation to matters fundamental. Accordingly, even if it be 'meant as a first rather than a final word on the topics with which it deals' (Preface, xxv), it cannot escape the sharp analysis that all primary achievements deserve and, indeed, demand. Further, the 'General Introduction' betrays so excellent a sense of the recent historical situation, especially in British-American thought, that the things Ormond has left unsaid throw no little light on those to which he has committed himself. As the book is a first word, and largely

epistemological at that, in view of favors to come, I should like to express the hope that, in Ormond's creed, things are lawful in epistemology which must be suppressed sternly in metaphysic.

The main body of the exposition has been divided into three 'Parts.' In the *first*, Ormond deals with 'Ground-Concepts of Knowledge.' What he attempts here might be called a clearing of the air. That is to say, centuries of discussion and of common usage have caused many hoary associations to cluster round certain terms. Every one is aware what the words, 'Experience, Knowledge, Reality,' mean; yet, equally, no one is aware. Otherwise, these counters cover so much that few stop to deploy their implications, and the interpretation alters with the ear that hears. Personal tendencies, customary environment of intellectual habit and the like, vary from man to man, from community to community. The 'experience meeting' of the pietist, the 'experience' demanded by electors to a vacant office, 'experience' with Mr. Spencer, and 'experience' as the latter-day idealist thinks of it, are by no means the same affair. Accordingly, with true instinct, Ormond proceeds, first, to state his view of the general implications of 'Experience, Knowledge, Reality,' and a very sensible, non-partisan view it is. "We may define experience as the sum of these personal activities by means of which a conscious self reacts upon its object or not-self, and translates it into realized content, these activities being inclusive of thought, feeling and will; or, objectively—the system in which these activities are included" (50). "The notion of reality includes a synthesis of being and manifestation" (64). "The method of knowledge, as we have conceived it, is an embodiment of the inner dialectical process by which the content of experience is reduced to the content of knowledge" (104). Such are the essential statements.

The *second* Part reviews the 'gradual development of the knowing processes,' and is entitled, 'Evolution of the Categories of Knowledge.' At this point, even if one have not noted its presence previously, the modern outlook of the work becomes abundantly apparent. To be specific, the contemporary de-

mand for a dynamic, as opposed to a static, view of experience receives satisfaction. After analyzing the nature of the categories, Ormond proceeds to thresh the old straw of Space, Time, Quantity, Quality, Cause and Substance, offering, however, certain stimulating novelties, particularly in his treatment of the two last; this, even if we demur to his allegations that 'The notion of agency is a persistent element of that of cause' (174), and that 'the category of substance represents the mode by which experience realizes those points of rest or permanence in its world which are necessary in order to render the series of changes possible' (192). Thence he passes to the subject so much agitated and so vitally interesting to-day—to 'Community or Interaction, the Dynamic Consciousness, the Æsthetic Categories, the Subject Consciousness, Categories of the Subject Consciousness, the World of Individuals, the Consciousness of Community.' The point at which he elects to take up the 'Subject Consciousness' is worthy of especial remark. Every praise ought to be accorded this abundant recognition of the newer insights and problems. Similarly, one cannot fail to be struck favorably with the frank manner in which Ormond tackles this task, even although he proceeds from presuppositions that antedate the dynamic categories, do not grow out of them, nay, as the strong probability runs, are forbidden, if not exploded entirely, by them.

To readers of SCIENCE, the *third* Part presents much matter of genuine interest. Greatly daring, Ormond has christened it 'The Transcendent Factor in Knowledge.' But names need not frighten us, when we discover that he places within these dread limits that vital modern problem, the relation between science and philosophy. Moreover, in outlining this relation, he formulates what must be taken as his characteristic contribution to pending metaphysical inquiries—the concept of *transcendency within experience*. "We have seen that science deals with the transcendent and that metaphysics has something to do with experience. * * * The discussion * * * has put us in a position to see that one of the points of difference consists in the fact that the aim of science, in so far as it finds it necessary to recognize the

transcendent at all, is simply to employ the concept of it in determining the nature of the relative in experience. This accounts for the fact that science stops in its attempt to define the transcendent at that point where that process ceases to be necessary to the definition of the relative. Metaphysics, on the other hand, is directly concerned with the determination of the transcendent, not so much as a principle for the definition of the relative in experience, as for the complete determination and satisfaction of the relative experience as a whole through the grounding of it in that which is absolute and complete. Having for its aim then the grounding and completing of the relative experience itself in that which transcends it, the determination of this transcendent nature becomes a matter of direct interest to it, and its attitude toward the transcendent is from the outset, therefore, different from that of science" (323-4).

At this point precisely, one must take issue with the author. If what he says about the mission of metaphysics be true, then science may once more say to philosophy what she has sometimes said before: 'All right, I'll keep the inside of the house, you may do as you will with the outside.' For, by definition, the transcendent happens to be the super-experiential, that concerning which anything may be said; and we cannot too often recall that anything and nothing are identical. To attempt to fill out this word with meaning, as Ormond seems to do again and again, is, of course, to negate transcendency. The fact is that Ormond (this is part of his great interest) represents a point of view which, unconsciously, mediates between the old pre-Kantian dualism and the desiderated organic monism—a theory still in the air, but, nevertheless, the sole defensible ground of scientific dualism, and also of the conservation of those aspects of experience which Ormond has in mind when he writes 'transcendent.' Had he ploughed longer with the heifer of science, he might have earned vouchers admitting him to this philosophical paradise; as it is, he who runs may read the flaw in the credentials presented here.

Consider the following passages, for example. "The real, then, is possible content of con-

sciousness and will be found to be a transcendent term in relation to an actual consciousness. It will include the realized content of the actual consciousness; also that which is simply present *in* or *to* consciousness, together with an extra-conscious sphere which exists as yet only as implicate or postulate" (90). The *extra-conscious* as implicate of consciousness! Are we able to attach any clear idea to what is either unthinkable or else a concatenation of mere words? Again, in Ormond's definition of Category, the cloven-hoof of the Devil whose delight lies in shattering human experience, plants itself firmly. "A category may then be defined; subjectively, as the constitutional mode through and in which the subject-consciousness penetrates its world, and reduces it to ideal content, and objectively, as the form which the world or not-self is obliged to assume in order to present itself to and in consciousness and become content of its world-idea" (117). 'Obliged' were truly a symptomatic term. The problem of the unity of experience seems to be trebled here. For we have a hint of no less than three universes, to wit, a subject-universe, an object-universe and a category-universe. The conception that ideas are forms (the conception, be it remembered, which has retarded so seriously metaphysical advance, and progress in unitary understanding of the world, by rendering science and philosophy alien from each other) has once more elbowed out the hopeful contemporary insight, that ideas are forces; that 'matter,' in so far as amenable to scientific treatment, is intelligent, because intelligible; that the universe is a universe, because built in one piece, and all inclusive. Yet again, (1) "Without cause no beginning of change would be conceivable, but without substance the very notion of change would be absurd. Cause is the principle in accordance with which changes are organized into a mutually dependent system; substance is the principle which in its notion of permanence supplies the condition which our world demands in order that the system of changes may be possible." * * * (2) "The points of rest are relative, therefore, and have their common presupposition in the central activity of self-consciousness"

(192-3). Here a very old friend puts in appearance, no doubt with face washed or smeared somewhat, yet with character unaltered. So far as the statement of *process* goes, (1) and (2) land at last in mutual exclusions, as they have ever done.

As Ormond is aware, no modern thinker would deny the existence or the potency of the element which he calls 'transcendent.' But the moment you term it 'transcendent,' you turn it into a kind of waste-paper basket, the convenient receptacle for every sort of inconvenient question. For instance, gravitation is an undeniable fact for the physicist's experience. But whenever you suggest its 'transcendency,' as Ormond's reasoning would, you leave the realm of experience and serve yourself some fine, mysterious feeding. The truth is that gravitation, like other 'ultimates,' is transcendental, and in the sole legitimate sense of this term; that is to say, it is constitutive. Here we come to ourselves again, and well within the sweep of experience. This solid footing reached, we cannot forbear to make the somewhat cruel point that the 'transcendent' is all too apt to provide tranquilizing refuge for those who have learned nothing and forgotten nothing. With these mummies of intellect Ormond has no commerce. But he has wandered perilously near their catacombs; nearer than he knows, possibly, when he writes thus: "There is no reason to suppose then that the distinction between the absolute and relative is other than ineradicable, but, on the contrary, the whole trend of experience tends to confirm what is also a necessity of thinking; namely, that the grounding of any distinction in the absolute is the highest guarantee we can have of its reality and permanence" (419-420). Moreover, the results of this excursion into a field so perilous crop out continually in the curious attitudes he adopts so often in the third Part. What is the man, who is looking for guidance from the very last word uttered in metaphysics, to make of this? "The notion of revelation will be completed then in the idea of the direct function of the transcendent other in introducing a new and superordinary content into our consciousness, the subjective condition of the reception and realization of which is that state of

the subjective consciousness to which the term inspiration "is applicable" (491). As a piece of acrobatic audacity, excellent! Yet we may well doubt whether a thinker standing with one foot firmly planted on the Rock of Ages, the other pointing heavenward, has struck the attitude most conducive to progress. Of course, he is so interesting that we should dearly love to secure his photograph to show to our scientific friends, who would be tickled rather than impressed.

To make an end; this book constitutes one of the freshest and most stimulating contributions to philosophical inquiry that we have had for many a day. It represents an enormous advance on Ormond's earlier work. And if the author could but shake himself free from the hypnotic suggestion now exercised over him by the 'transcendent,' he might very easily, in that further discussion hinted in his Preface and looked for with lively expectation by the present writer, produce a book as superior to this as this is to 'Basal Concepts in Philosophy.' In short, Ormond stands on the very edge of the pathway to really constructive leadership.

It remains to say that the publishers have executed their part admirably. Printed at the famous Glasgow press, the book, despite its 540 pages, is light to hold and easy to read. In another edition the usefulness of the index might be much enhanced.

R. M. WENLEY.

UNIVERSITY OF MICHIGAN.

Chemie der Eiweisskörper. Von DR. OTTO COHN-HEIM. Braunschweig, F. Vieweg und Sohn. 1900. Pp. 315.

In recent years no book dealing with the proteids and their derivatives has appeared which is so comprehensive and satisfactory as Cohnheim's '*Chemie der Eiweisskörper.*' The references to the literature of the subject are unusually exhaustive and include practically every important contribution made prior to 1900. The work of American physiological chemists is cited mostly from abstracts, and some of the more recent papers have not yet found their way into the book; it is to be hoped, however, that the time is approaching

when American papers will be studied at first hand in all European laboratories. Cohnheim's '*Eiweisskörper*' is something more than a mere compilation of the results of the chemical investigation of the proteids. The author's critical study of the voluminous literature on the subject is indicated by the discriminating judgment with which he has treated many controversial topics and by the succinct manner in which many of the unsolved problems are pointed out. The book is essentially a critical review, and the mode of presentation (for example, of heat coagulation and other physical modifications of the proteids) is decidedly more suggestive than that of most recent writers. In the classification of the proteids Cohnheim follows the latest edition of Hammarsten's '*Text-book,*' without claiming for this grouping anything more than a temporary usefulness. The author has proposed, as an innovation, to class those proteids usually termed nuclealbumins, of which casein is the best defined type, with the simple proteids (*Eiweisskörper*) under the name of phosphoglobulins; the latter would thus be differentiated more clearly from the true nucleoproteids (in the sense of German writers) to which they bear resemblance only in a few superficial characters. The vegetable globulins (*Phytoglobuline*) are also treated in the old group of nuclealbumins, although in the light of our present knowledge they compare more closely with the globulins of animal origin, and many of them, at least, are free from phosphorus.

Without giving a detailed survey of Dr. Cohnheim's book, a few of the better features may be referred to. The analogy in chemical behavior between the proteids and the 'pseudobases' of Hantzsch is pointed out, and a very complete account of the decomposition products of proteids is given, especially of the carbohydrate groups lately identified by various investigators. The sulphur content of the proteids is discussed in detail; and the literature regarding the nitro- and halogen compounds—almost entirely the outcome of very recent work—is collected and reviewed for the first time. In his treatment of the albumoses and peptones the author follows the classification introduced by Hofmeister and his pupils, although the