rather than as a great scientific responsibility. —New York *Evening Post.*

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

THE report of President Maclaurin, of the Institute of Technology, derives rather unusual interest as a fresh contemplation of old problems. These include the annual equation of making receipts equal expenditures, and the new questions of better salaries for instructors and a new location for the institute. Difficulty appears in keeping some of the best of the teaching force in the face of larger professional opportunities. The margin is frequently too great to be offset by the teacher's enthusiasm, and an appeal is made to the state to deal more generously with this institution. The present plant is criticized because of the noise, dirt and electrical disturbance to which it is subjected. The buildings are scattered and inconvenient and lack dignity. If a removal to some more favorable location is not soon made in ten years it will be inevitable, in the president's opinion, and the longer it is delayed the more difficult will it be to find a suitable situation. —The Boston *Evening Transcript.*

SCIENTIFIC BOOKS

Consciousness. By HENRY RUTGERS MARSHALL, M.A., L.H.D. New York, The Macmillan Co. 1909.

The intending reader will take this book in hand with a certain feeling of satisfaction due to first impressions. As a piece of bookmaking it is exceedingly well put together; and the analytic table of contents shows that it is the intention of the author to treat the various problems which he chooses to include under its title in an orderly and systematic way. The promise made by these first impressions is in the main well fulfilled. Moreover, the style of the book, although it is not always clear and is in spots positively obscure, is uniformly dignified and appropriate—recognizing obligations and differing with self-restraint and sobriety, and without resort to those kaleidoscopic turns and twists of argument and tricks of rhetoric which have cost the would-be science of psychology so dearly in this country.

The author announces in the preface (p. vii) such a "restatement of psychological doctrine" as shall "bring all related psychic facts into harmony with the theory" which he has defended in some of his previous writings. With the expert student of these facts, such a statement as this is certain to create grave misgivings. For at this somewhat late day in the history of psychology, as of any other of the so-called sciences, the temptations connected with the attempt at restatement of all its facts are almost irresistible. Of these temptations the following two are chief: first, the temptation to think that one is saying something new, because one is telling the same old story in a different and not infrequently a more uncouth language; and second, the temptation to force the facts into harmony with the new theory, under cover of a difference in the language used to describe them. Let us not forget, then, that in the development of any science, *restatement* can not create any new facts or justify any new interpretation of facts already known. At best, it is only a matter of convenience in the method of arrangement and exposition. Of late in psychology, in our judgment, most similar attempts have hindered quite as much as they have helped the discovery and the elucidation of its more fundamental truths.

Mr. Marshall divides the treatment of his theme into three separate books. Of these, Book I. treats of Consciousness in General; Book II., of The General Nature of Human Presentations, and Book III., of The Self. Each of these books is again divided into parts, divisions, subdivisions, chapters and numerous short paragraphs—giving an appearance to the whole not unlike that of Spinoza's "Ethica." Thus the form of presentation is made to accord quite strictly with the plan which, as we have seen, proposes to restate all the psychic facts in terms of a new theory that shall embrace and explain them all. At this point, the devoted psychologist can scarcely refrain from the prayer: Would to heaven that the attempt might be successful!

Before examining any of the particular problems dealt with by the author, it is de-

sirable that we should form some preliminary conception of the general theory which is to prove a solvent for them all. This theory is by no means difficult to state. It is that all the phenomena of consciousness (the inclusive title which the book bears) may be explained as due to "presentations," and groups and smaller and larger systems of presentations, and of their present and past reactions on one another. In this principle, and indeed in not a few of its applications, Mr. Marshall's theory closely resembles, and is a sort of *replica* of, Volkmann von Volkmar, whose masterly treatise (one of the most notable works on psychology of the past century), in spite of all the ado made by writers on pedagogy over Herbart (and Volkmann is the finished product of Herbartianism) is scarcely known at all in this country. Volkmann, too, accounted for all the psychic facts in terms of the combinations of *Vorstellungen,* both in the field of consciousness and "below the threshold." Volkmann, too, made use of elaborate and abstruse algebraic formulas to set forth the forms and laws of the actions and reactions of the *Vorstellungen*—a device which Mr. Marshall uses sparingly (see, however, pp. 72 ff.), but helps out with more strictly architectural material in the shape of geometrical diagrams.

Thus far considered, the theory of the "systemic" nature of human consciousness, although it involves not a few highly conjectural elements, is essentially a psychological affair. For presentations, like *Vorstellungen,* are psychic facts, so far as they have any existence at all. And this is to say that our theory explains some psychic facts by other psychic facts. But an equally important side, or half, of the complete theory of Mr. Marshall's book is what the author calls "neururgic." These neururgic facts, which are to constitute this other half of the complete theory, are, of course, happenings in the human nervous system. As facts, they can be known only by prolonged and expert and purely "objective" research; and the sciences that discover and explain them are physiological chemistry, histology, physiology, etc. Now, thirty-five or forty years of devoted, although somewhat intermittent, study of the subject has convinced the writer of this critical review that all the attempts hitherto made to establish a scientific theory, at once precise and inclusive, of the relations between the "neururgic" facts and "all the psychic facts" prove on examination premature and even delusive. But in Chapter I., which treats of Noetic Correspondences, Mr. Marshall adopts a theory of complete parallelism between the two classes of facts. Every fact of sentience, even the unknown or the essentially unknowable, corresponds to some fact of a definite neururgic character. Nowhere, however, are we told what is the effective nature of this alleged correspondence.

In order to orientate ourselves the better for understanding the positions taken in the later chapters, let us pause a moment in the point of view held in this first chapter. From this point we behold two parallel lines drawn, which are to include within them the entire domain of the science of psychic facts. One of these lines—the psychic—consists in part of undoubted psychic phenomena, which are established in the only way in which such initial facts can be established; and this is by the awareness of the subject who experiences them. Such facts are, however, only spots, more or less detached from one another, in the total line. Between and surrounding them, are parts of the line which consist of psychic facts of which no one is ever directly aware, but which have a certain claim to reality because of the service they render as explanatory of undoubted facts; but the greater part of this line consists of purely conjectural occurrences, to which, although they are never in consciousness at all, terms are given the applicability of which can be verified or disproved only by self-consciousness. Parallel with this line is another—the so-called "neururgic"—the facts of which are of a quite different order, and which, as facts, are scarcely touched upon by our author; but the rest of this line—*i. e.,* the most of it—is made up of unverified and unverifiable conjectures. This becomes a case, then, where not only is the general theory conjectural (and yet of the

nature of a permissible hypothesis), but where the alleged facts are largely conjectured in support of the theory; and this along both the parallel lines—facts of sentience and facts called neuroses.

How this general theory works in its attempts to deal with definite psychological problems we shall now test in a number of selected particulars. We hasten to say that where Mr. Marshall approaches any psychological problem without emphasizing his general theory for explaining "all psychic facts" by correspondences between largely conjectural facts of sentience and almost wholly conjectural neururgic facts, he is much at his best. In such cases he shows the candor, learning and depth and breadth of insight, from the more general exercise of which an improvement of psychological science, now so severely threatened with disintegration and degradation, might reasonably be expected.

Mr. Marshall makes clearly and well the distinction between consciousness as sentience, the universal characteristic of all psychical life, and consciousness as the "awareness" of an object, whether percept of thing or consciousness of self. But, in our judgment, he weakens the value and mistakes the significance of this distinction when he speaks of "sub-attentive consciousness," and fails to see that some at least faint share in the distribution of attention is necessary in order that any particular part of the field of sentience may lay claim to being part of this field at all. Nor is this a point of no importance for our general psychological theory. For since all the earlier and simpler conative manifestations of mental life are connected with attention, the failure to recognize them on the lowest levels of this life renders the theory lacking in the prime requisite of all modern science; we will call it "*dynamic* quality." It is not surprising, then, that our author, having only presentations and systems of presentations to deal with, so frequently overlooks or minimizes the "energetics," or active aspect of—not the presentations, but of the being whose are the presentations.

Other particulars in Book I. with which we find ourselves in agreement are the "systemic" view of consciousness, as against all attempts to regard it as a "blooming confusion" or to ridicule the efforts to analyze it into elements or factors, if only these latter words are understood in accordance with the unity of consciousness; with what is said (p. 94 f.) about the unsatisfactory assumptions connected with the customary theory of the "association of ideas"; with the doctrine that pleasure and pain are not sensations, but "general qualities of all presentations"; and with the view that other than human consciousness is of necessity described and explained in terms of our consciousness.

We also note with peculiar satisfaction Mr. Marshall's discussion and rejection of the theory of Lange and James concerning the muscular and peripheral origin of the emotions (the central determining conditions of which we have ourselves discussed at great length, elsewhere); and as well, the unwarrantable and almost unintelligible contention of Stumpf and James that some special quality or specific element, to be called "extensity," belongs to the material content of every sensation. In a word, this first book, being, after the theory of parallelism is once stated, little burdened with that theory, is perhaps of all three books the most satisfactory.

Book II., which, as we have already seen, treats of The General Nature of Human Presentation, in its doctrine of their intensity and complexity, presents no features worthy of special attention. But the case is not the same with Mr. Marshall's views as to what he calls the "realness" of certain presentations. This qualification he seems to resolve into the one element of persistence or stability (pp. 221 ff.). It might properly be objected that many of the impressions of the *real*, both in ourselves and in outside objects, are among the most sudden, sharp and unstable of all our presentations. But the entire following discussion shows how inadequate is the basis laid in this way for the subtle, exceedingly complex and eminently intellectual and profoundly metaphysical, human conception which answers to the word "reality." Nor does the

somewhat dubious and partial acceptance of Professor James's theory of the will to believe as the creator of reality much help out the matter. More light would have been thrown on this obscure subject if the author had thoroughly worked out the suggestion received in a private letter from Professor Gildersleeve: "To the Greek the world was first 'Wille'; then 'Vorstellung.' The consciousness of the not-me comes from the putting forth of will." This most important truth, so early recognized by Greek thought, we have ourselves elaborated at great length in various writings, and as it appears both from the modern psychological and from the metaphysical points of view. It is worth mention in this connection, that the same view is extensively adopted by physicists who are interested in the psychological and metaphysical aspects of their particular science.

The physiological theory of the pleasure-pains, which resolves the fundamental difference in character and all the differences in the intensities of the two series, into the efficiency or inefficiency of the neural elements to respond to stimuli, like all similar theories, offers an explanation of only *some* of the phenomena. The discussion of the time concept, while it assumes the correct position that its entire basis in experience is given in the fact, that presentations actually occur in succession, is obscured by the use of the misleading term, the "specious present"—misleading, because the so-called *specious* present is the only *real* present; it is the actual "now" comprised within the grasp of consciousness. But the present conceived of as a mathematical point is not, and never can be, actualized. A similar misconception has been the source of a lot of silly puzzles, such as that of the inability of Achilles to overtake the tortoise, of the arrow to fly, etc, which have tormented the brains of men, to no good purpose, through centuries of misspent time. How often does the student of psychology, who wishes to arrive somewhere, wish also that such phrases as "specious present," "stream of consciousness," and many similar phrases, had never been born!

It is in his treatment of the Qualities of Relation (Chapter XIII.) that the author begins to show the more serious results of his general theory. So far as the relations of so-called presentations can be considered objectively, or better passively, no serious objection to the treatment is to be urged. On the contrary, it is, in several respects, excellent; but there is nowhere any clear recognition of the fundamental truth that relations between presentations, objectively considered, can come into existence only as the result of "discriminating consciousness," or the mind's relating activity. While, then, attention is again recognized as "a very general aspect of consciousness" (p. 314) and the statement that the distinction between involuntary and voluntary attention is largely, oftentimes, a matter of degrees is quite true; and while it must be admitted that attention is not all of will, although it is "the very essence of connation"; the general theory of psychic facts as due to correspondences between neururgic facts and facts of sentience, seems to us utterly to break down when it faces the experiences and the developments of man's intellectual life. *Thinking and the cognitive judgment can never be explained—and, indeed, the facts can not even be stated—in terms of either neururgics or the mechanism of presentations.*

But the inadequacy of the theory is more conspicuous when the attempt is made to explain in its terms the Object-Subject Relation (Chapter XV.). We are here told that it is "the correlation of realness (or stability) and manifoldness" of the presentations which gives us the object-subject relation (p. 345). But Mr. Marshall, who is usually so clear in style, becomes increasingly unclear, as he attempts to show us how a mere correlation in presentations can beget a self-consciously active "empirical ego." Nor does the already much over-worked function of "a will to believe" by any means serve to supply all the missing links between this machine-controlled field of conscious and unconscious presentations and a "real, live man." The obvious reason is that unless a will, that counts for something, is recognized at the start, it can

not be introduced afterward as the gift of either the nervous system or of the system of presentations.

No wonder, then, that when, in Book III., the same general theory is applied to the profound and difficult problems offered by such a conception as that of the human self, we come almost immediately upon the following statement (p. 475 and note): "We are bound thus to assume that all animals which experience a stream of presentations must have selves not fundamentally dissimilar from human selves." We refuse to recognize any such obligation. And this because we do not find that any semblance of a real self, human or otherwise, can be constructed by any system of presentations, no matter how manifold or skilfully compounded.

The book closes with discussions of the problems of moral responsibility and immortality. This seems to us the most interesting and suggestive part of the entire treatise. But the general theory is carried, in the attempt at a solution of these problems, to its consistent logical result. What appears to the self as free will, even when it culminates in choice, is but the triumph of the stronger over the weaker group of presentations. Character is the general fact that such, rather than other presentations, are accustomed to triumph in the conflict for realization of presentations in the successive fields of consciousness; its basis is laid in an inherited neururgic system. The empirical ego and the self, being a series of presentation compounds, can not, of course, reasonably maintain even the hope of an immortal life. In these important particulars, Mr. Marshall's views resemble more closely the Buddhistic doctrine of *Kharma* than those of western writers generally, when uninfluenced by oriental philosophy.

GEORGE TRUMBULL LADD

SOME NEW CHEMICAL BOOKS

An Elementary Treatise on Qualitative Chemical Analysis. By J. F. SELLERS, Professor of Chemistry, Mercer University, Georgia. Revised edition. Boston, Ginn & Co.

The revised edition of Professor Sellers's manual is a very good book. The author bases analytic reactions on the dissociation theory, and introduces a number of questions, answers and examples, showing the student in a very helpful way just how this theory explains so many phenomena met in analysis.

A Manual of Qualitative Chemical Analysis. By J. F. MCGREGORY, Professor of Chemistry and Mineralogy in Colgate University. Revised edition. Boston, Ginn & Co.

The revised edition of Professor McGregory's manual is also a good, thorough, well-written book. The author does not think it advisable to introduce the dissociation theory at this stage, and prefers old well-tried methods of separation. Many teachers agree with him.

These two manuals—each excellent—are examples of radically different methods of teaching analysis. A few years ago an occasional book appeared written more or less (generally less) on physical-chemical lines. Now, as a matter of fact the reverse is true. Within the last few years some excellent methods of separation have been devised by Noyes and his co-workers and by others. The conservative manual, rejecting new theories and clinging to the old methods of analysis, is slowly disappearing. The same tendency is even more noticeable in elementary text-books of chemistry; the next three books we have under consideration are text-books, and while each is markedly different from the others all have the common factor of explaining the action of acids on bases and many other phenomena, by the dissociation theory.

Elementary Modern Chemistry. By WILHELM OSTWALD, Emeritus Professor of Chemistry in the University of Leipzig, and HARRY W. MORSE, Instructor in Physics in Harvard University. Boston, Ginn & Co.

Ostwald's little book is probably intended for schools; he touches only the leading facts in chemistry, omitting much that others would retain, while introducing many physical experiments which others would omit. Writers of quite elementary books generally reduce theory to a minimum; Ostwald makes the proportion of theory much greater in this