of it. "The abstract concept of identity," he says (p. 41³), "like all concepts, is the reflex or representative in the mind of something real in that which the mind knows and reflects upon. The application of a concept to anything is the assertion that there exists in the thing a reality corresponding to the concept, known by the concept. . . . Personal identity, is however (p. 51²), no more identical with self identification than blue is with the concept of blue. When we waken in the morning we feel ourselves to be the same without any over assimilation of the new experience to the idea of ourselves; the idea may not arise at all. There are times when the idea of self is in abeyance, as when we work quietly; yet there is a sense of familiarity which pervades all experience and is the abiding identity within it." A second point which is stressed is the fact that the feeling of personal identity persists during great disturbances of *cœnæsthesia* and of memory. "Personal identity," Parker says, "can be more or less. . . . From birth to death there is a continual acquisition of new experiences; a partial preservation of these through the residua of memory; a re-emergence of old activities; the loss again of these; the irreparable loss of some" (p. 50¹). We usually," he adds, "call a man another man when he fails to recognize himself—when he applies to his experience a different concept of self from the one which we have been accustomed to (p. 50²). . . . Yet identity may exist here as elsewhere. . . . Experience may in some measure be familiar still."

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Applied Psychology. H. L. HOLLINGWORTH & A. T. POFFENBERGER.
New York: Appleton, 1917. Pp. 337.

This book is the first attempt in English to cover in one volume the entire field of applied psychology. Such an attempt, especially in a volume of medium size, must needs be cursory, but the authors are content "if it assists in systematizing" the field,—which it certainly does. According to the preface the work is intended alike for teacher, student and the general reader. It might very well serve as a nucleus on which to build a course in applied psychology and it is sufficiently non-technical to be understood by the business or professional man who is interested in the subject.

The first chapter touches upon the modern behavioristic trend, pointing out that in practical situations it is behavior (in the broad sense) which is of importance. Exception is taken to Munsterberg's

separation of applied psychology from psychotechnics but there is agreement with his other proposition that applied psychology should deal with means and not ends. Then follow a few pages on the history of applied psychology and its relation to efficiency. Finally the fundamental fact is emphasized that applied psychology must "rest upon a knowledge of the laws of individual behavior."

After this introductory chapter the first half of the book is devoted to factors which affect the personality and efficiency of the individual. The latter half considers specific human purposes,—business, law, medicine, etc.

Heredity is discussed from three standpoints,—species, race and family. The first of these includes a catalogue of some reflexes and instincts and other characteristics such as sensation, attention and memory. Under the second there is mention of Woodworth's form-board studies of different races and a study of school marks of negro vs. white children. It is doubtful whether this chapter (II) adds much to the book aside from making it appear more systematic. However the topical arrangement here, as elsewhere, is very commendable. Under family inheritance mention is made of the statistical studies of Galton, Thorndike's study of sibs and twins, Goddard's *Kallikak Family* and others. The eugenic implications of the facts are emphasized and the present legal status of the control of marriage and procreation in defective cases is described.

In the chapter on "Efficiency and Learning" the salient facts concerning the acquisition of skill are outlined. One point not always mentioned in such discussions is brought out, viz., the incentive of competing with ones own record. Then follows a good summary of economy of memory, the unimportance of imagery for learning and typical results showing lack of transfer of training and the reduction of variability by practice. The chapter is one of the best in the book.

We now turn to differences due to sex and age. The overlapping of the two sexes in mental traits, measured and estimated, is clearly shown by tables and examples and data is presented controverting the familiar claim of greater variability in the male sex. Curves are given for results of mental and physical tests at different ages and the importance of mental vs. chronological age is emphasized.

Two chapters are devoted to "Environmental Conditions." The results of the New York Ventilation Commission are drawn upon to show that the paramount questions in ventilation as affecting mental efficiency are temperature and humidity rather than

oxygen and carbon dioxide. Climatic and weather influences are reduced to these same two factors. Diurnal rhythms in mental and motor processes are discussed, showing maximum mental efficiency in the forenoon and maximum motor in the afternoon. Ferree's work on illumination is summarized,—the desirability of uniform illumination, unglazed paper and opaque eyeshades lined with white, etc., because of the peripheral sensitivity of the retina to glare and the impulses to turn or accommodate the eyes. The effect of distractions in sometimes using up additional energy even if the distraction is overcome is noted. The effect of monotony is shown to be a question of incentive and interest rather than environment.

Chapter VIII discusses work, fatigue, rest and sleep,—the difficulty of finding any adequate measure of fatigue; the importance of determining the proper rest periods; and the difference in the amount of sleep required by different individuals.

The next chapter deals with drugs and stimulants. This includes Bush's study of decrease in mental efficiency after tobacco smoking, with the greatest effect in imagery, perception and association; Dodge and Benedict's finding of a reduction in reflex and sensory processes after alcohol; the effects of alcohol on learning in rats; the correlation of alcoholism with feeble-mindedness; Hollingworth's study of caffeine and Poffenberger's of strychnine.

The remainder of the book is devoted to the application of psychology to special fields. This may be done in three ways: (1) applying the psychological attitude,—analysis,—an attitude not so characteristic of the other sciences; (2) applying psychological knowledge,—the findings of modern experimental psychology; (3) applying psychological technique,—the methods of the psychological laboratory.

"Psychology and the Executive" deals first with the selection of employees by mental tests and lists tests used by various investigators in a dozen vocations and the correlation coefficients of such tests with vocational ability. There is no mention of the theory of partial correlations which will probably afford the most striking progress in this field in future. Then there is mention of functionalizing in industry, measurement of performance by psychological technique, absence of any instinct for workmanship in the practical situation, standardizing work to fit the habits of the worker, the use of published records of performance and a workman's competition with his own record, environmental factors

already alluded to and dynamogenic factors such as rhythm. Much of the chapter is rather general. Some of the points might well be elaborated more specifically.

"Psychology in the Workshop" includes the undesirability of shifting the mental set in a mixed series of operations (for example, dishwashing); the distribution of work from the standpoint of fatigue (pig iron handlers); routing the path of movement; and motion study such as Gilbreth's.

"Psychology and the Market" takes up the question of trademark infringement as studied in recognition experiments; a general outline of the possibilities in the psychology of advertising (but only an outline); and a few pages on salesmanship.

Under "Psychology and the Law" we have as methods of accumulating evidence the association reaction experiment and expressive methods (breathing) to detect falsehood. In evaluating testimony comes the suggestive effect of variously worded questions. In connection with determining of responsibility are the facts of prevalence of mental defect among criminals. Finally an experiment is described in which individuals ranked the deterrent effect of a series of sentences varying from life imprisonment with almost absolute certainty of escape to ten days imprisonment with almost absolute certainty of punishment. There seem to be some individuals for whom the certainty and others for whom the penalty is the deterrent factor.

In "Psychology and the Social Worker" the prevalence of mental defect is shown in unemployment and delinquency and the normal distribution curve is mentioned.

Medicine may profit from psychological tests on patients to determine deviation from the normal or to check the efficacy of some treatment. Researches on the effect of drugs are of value to medicine. The importance of control doses and control squads in such experiments is duly emphasized. Psychoanalysis is alluded to with a final injunction that "the therapeutic success of a technique in no way constitutes a proof of such speculations as the practitioner may incidentally indulge in." The negative findings of Mrs. Hollingworth as to the mental effects of periodicity in women are noted. The advantages of the psychological clinic are pointed out. Finally it is suggested that training in experimental psychology would be valuable for medical students.

In relation to education we have the psychological attitude of analysis, for example, breaking up a given learning process into its

elements. The content of psychology is applied in all the laws of learning, memory, attention etc. and also in the differentiation of normal from abnormal. The psychological technique is applied in actual school-room experiments upon distribution of practice and the like and in the development of scales for special functions.

The final chapter deals with the future of applied psychology. The present means by which practical problems are being approached are far from satisfactory. Professional jealousy between physician and psychologist in the clinic, the acquiring of a smattering of psychology by the business man or the acquiring of a business knowledge by the psychologist while pursuing academic work are all undesirable. The immediate solution will be the placing of psychological experts in the factory, school, court, etc., and later will come the need for the engineering type of psychotechnic expert, —the consulting psychologist.

It is unfortunate that books of this sort have to be written with a view to the public as well as the psychologist. In writing for the layman considerable space must be devoted to matters that are almost trivial to the psychologist and in some instances generalities must be used to conceal the scarcity of psychological knowledge on a special topic. The student would gladly face the facts and would appreciate a fuller exposition of the topics which have been more thoroughly worked. One cannot help imagining a similar book (perhaps in two volumes) which takes for granted the fundamentals of psychology, presents specifically our scanty knowledge on certain topics without attempting to magnify that knowledge, treats other topics as systematically as in the present case but in considerably more detail and includes references to the principal studies and monographs utilized in the discussion.

The arrangement of the book is excellent and it would form a systematic outline for courses in the subject. It will undoubtedly be used as the basis of the majority of such courses for some time to come. The topical treatment in parts that are briefly summarized is very commendable. Considerable data is included that had been published since Münsterberg's *Psychotechnik* appeared in 1914.

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