## EDUCATIONAL PSYCHOLOGY AT THE PRINCETON MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

## ARTHUR I. GATES

Teachers College, Columbia University

Despite the fact that the visiting psychologists were divided between the session of Sections I and Q of the A. A. A. S. at Toronto and the Thirtieth Annual Meeting of the American Psychological Association at Princeton, at least 150 members appeared at the latter convention to participate in a thoroughly profitable session. In contrast with the meeting of a year ago, which was characterized by evidences of unrest, the Princeton meeting, as the result, probably, of the contentment following readjustment during a year of productive work, was marked by a cooperative good will and an enthusiasm for the solution of many of the traditional problems of the fundamental sort.

The outstanding feature of the meeting was the special session on "Psychology in its Social Relations," at which representatives of the medical, psychiatrical and psychological sciences freely discussed their mutual problems and misunderstandings. At this meeting, papers were read by R. C. Cabot (Harvard), S. Paton (Princeton), S. I. Franz (Government Hospital for Insane, Washington, D. C.), and C. M. Campbell (Boston Psychopathic Hospital), followed by informal discussion lead by W. McDougall (Harvard), F. L. Wells (Boston Psychopathic Hospital), R. S. Woodworth (Columbia), and C. E. Seashore (Iowa). The session on "Abnormal Psychology" was a continuation of the exchange of opinions among workers in these related fields.

Half-day sessions were arranged under the following titles: (1) General and Experimental; (2) Clinical; (3) General; (4) Mental Measurement; (5) Experimental; (6) Psychology in its Social Relations; (7) Industrial and Educational; and (8) Abnormal Psychology. There was considerable overlapping in the content of the several programs. Of the fifty papers presented, twenty-seven bore rather directly on specific problems of interest to Educational Psychology; of these, thirteen were concerned with tests or measurements, ten with learning, and four with the effects of fatigue, drugs, etc. on mental or motor efficiency.

and of the sections of the sample of the section of

There was abundant evidence in the content of formal papers and in the informal discussions that psychologists are keenly aware of momentous deficiencies in hypotheses that have been regarded, for purposes of application, as established principles. The warnings voiced with vigor at the Chicago meeting a year ago were obviously expressions of deeply rooted conviction. Generally speaking, the warmest approval, at Princeton, was given to those papers which presented investigations seeking for evidence on certain persistent problems of fundamental import.

## Papers Dealing with the Psychology of Learning

Among the studies of a fundamental problem whose relation to Educational Psychology is intimate, was one described in a paper by Warner Brown of the University of California. A large group of subjects practiced a variety of functions over a period of thirteen weeks. The results of this study disclosed a striking inadequacy of our technique for measuring improvement and the vagueness of our knowledge of the general mechanics of learning. While the correlation between initial and final status in a function is positive, many exceptional cases of a striking character were found and marked irregularities in the course of improvement suggested the need of more refined analysis. Improvement in one function does not generally indicate a similar improvement in other functions, nor at other stages in the same func-In a similar study, G. S. Gates (Barnard) found that improvement was extremely variable; that improvement over the first half of the practice period is not substantially correlated with improvement during the second half of the practice period, with initial or final status, in the same function, nor with improvement in others. ability in one function gave correlations of about 0.4, with final ability in others, these correlations being considerably higher than correlations between initial scores in the several functions. W. S. Hunter, University of Kansas, found correlations from 0.17 to 0.45 depending on the measures adopted, between ability in a pencil maze and scores on the Otis Intelligence test, whereas, in the case of rates, performances in maze tests were so variable that such a concept as "general learning ability" could not be justified. Such studies disclose the inadequacy of our knowledge concerning the capacity to learn, the uncertainty of the principles upon which educational guidance has been conducted,

and the necessity of more thorough research in the whole field of "practice."

That emphasis upon speed rather than on accuracy results in the most expeditious and effective learning was the thesis of a paper by Grace E. Bird, Rhode Island State College. "Rapid drill from the beginning 'focalizes' and initiates habit without superfluous behavior." This fact was said to obtain in the case of certain industrial processes, in adding and in reading. This is probably a matter in which generalization would be risky; and the need of research in each of the various school functions is suggested.

The effect of motivation in the form of a wage bonus on the improvement of abilities among hand compositors as reported by H. D. Kitson, Indiana University, was an increase in output of sixty-seven per cent. The results of this study parallel the outcome of measurements of school subjects in which the comfortable mediocrity of efficiency in reading, writing, etc. usually found in the later grammar grades may be greatly surpassed as the result of the provision of an incentive to improvement.

- A. S. Edwards, University of Georgia, found that instruction of school children in methods of study resulted in improvement in their work. Such instruction must be specific and apply directly to the tasks then being undertaken in the school room. A course of study in how to study is being constructed for use in the grades. This worker quite justly asserts that more than mere external motivation is essential to effective learning. Definite knowledge of what to learn, and how to learn it, is needed.
- A. I. Gates, Teachers College, reported a study, the purpose of which was to analyze reading and spelling into their constituent elements, to devise a technique for the diagnosis of backwardness in these functions, to ascertain the causes of such backwardness and to try out certain types of remedial treatment.

## PAPERS ON MENTAL TESTS AND MEASUREMENTS

The continuation of interest in the field of mental testing was evidenced by the fact that nearly one third of the papers dealt with measurement. The number of new tests presented was smaller than usual but the interest displayed in the critical evaluation of instruments now available was widespread.

L. M. Terman, Stanford University, described an extensive project now under way in California, for the discovery and study of approxi-

Company of the first of the second of the

mately 1000 children of very superior mental ability. The study will embrace measurements of the important mental, physical, social, and temperamental traits, as well as a thorough survey of educational attainments, heredity, home surroundings, health, etc., and all told, promises to be the most extensive and thorough study of genius ever undertaken.

Bird T. Baldwin presented data concerning the relation between mental and physical growth based on consecutive measurements of individuals; a product of the admirable research, which is being conducted at Iowa by Baldwin and L. Stecher. These workers have found it possible to predict the stature at sixteen years of age from the measurements secured at ten with a PE of approximately 2.5 centimeters. The IQ can be predicted over a similar period with a PE of estimate of 6.3 points. In general, the curves of growth for physical and mental traits are very similar. The importance of physiological development in its bearing on mental, social and educational achievement, was stressed.

A new and expeditious method of computing multiple correlations was described by H. A. Toops, of the Institute of Educational Research of Teachers College, together with the general technique to be employed in the construction of scales for general occupational groups as contrasted with scales for specific vocations.

The several papers just mentioned disclose a situation in the progress of research which marks a new era; the organization of institutions whose personnel and equipment are entirely devoted to researc While the progress of the last two decades achieved by workers who s main task—that of instruction—has been great, the present decade with its organizations equipped wholly for research promises an unprecedented accomplishment.

A comparison of superior duplicate twins (IQs 183 and 181) by Arnold Gesell, Yale University, was a most interesting and convincing illustration of the infinite detail with which heredity may operate. The striking similarity of physical characteristics, even to the identity of slight peculiarities of teeth, of skin pattern or the appearance of a small mole, was paralleled by the correspondence of the results from a battery of educational and mental tests. This paper gave an admirable example of the thoroughness with which human traits may now be measured when the instruments of several sciences are employed.

A number of studies of the predictive value of tests or of groups or individual differences disclosed by them will be briefly summarized.

Control of the Control

- A. M. Gordan, University of Arkansas, correlated four well known tests of general mental ability with several criteria, finding some of them so specialized in their predictive value that particular exercises often gave higher correlations, e.g., with arithmetic, than the whole scale. The need of tests for native ability in each of many school and other functions was suggested. David Mitchell, New York City, gave results obtained from the measurement of the general mental ability of 1000 children of pre-school age. Ada H. Arlitt, Bryn Mawr College, found a slight superiority in IQ of white over negro children which increased with age. Joseph Peterson, Peabody College, employing an ingenious multiple choice test, found a marked superiority of white over negro children, particularly in the scores representing higher mental operations.
- C. S. Yoakum, Carnegie Institute of Technology, found certain items of the Downey Will-temperament test as modified by M. J. Ream, to be indicative of success in salesmanship, whereas tests of general mental ability, aside from assigning a minimum essential, had little predictive value. That certain specific reactions to ethical discrimination tests selected from the Stanford-Binet, are of value in predicting susceptibility to delinquency, was stated by Augusta F. Bronner of the Judge Baker Foundation.

Laura M. Chassell, Ohio State University, found that grades received in the preliminary examination for the degree of Ph. D. and ratings of the Doctorate thesis gave mean correlations of approximately 0.6 with various criteria of success in later work. Judgments based on letters of recommendation gave correlations with success ranging from 0.01 to 0.70, depending on the author of the letters. Correlations between moral traits and general mental ability, both determined by judgments of acquaintances, average approximately 0.5 according to an extensive investigation among college students by Clara F. Chassell, Teachers College.

STUDIES OF THE EFFECTS OF FATIGUE, DRUGS, ETC.

H. L. Hollingworth, Columbia University, in the course of an extended investigation of the effects of alcohol, discovered significant facts concerning the relation of proficiency to the susceptibility to the damaging effects of the drug which was suggestive of a promising line of research in pharmaco-psychology. It was found that those subjects who were most proficient in the tasks at the start, and those who improved the most during the practice showed the least susceptibility

with a second against the way to be a few and a supplementary of the first

to the drug. Since the various functions used constitute the equivalent of a measure of general mental ability, the implication is that the more intelligent adults have a superior general bodily equipment—"quality of the organism"—which is not only more adaptable to the environment in a general way but to such specific influences as alcohol.

Three papers on aspects of fatigue were read. F. C. Dockeray, Ohio Wesleyan University, constructed an apparatus after the pattern of the Dunlap low oxygen tests used in the Air Service, which betrays the periods of diminished attention occurring in states of fatigue. Buford Johnson, Johns Hopkins University, employed tests of the sugar content of the blood and urine as checks in an investigation of mental and motor work. The results were not conclusive. Florence R. Robinson, University of Chicago, persuaded a group of students to go without sleep for thirty hours, some of them for forty-eight hours, for the privilege of taking a series of mental and motor tests at intervals. The loss of efficiency was no greater than the amount of gain due to practice although "feelings of fatigue" were reported.

The address of the President, Margaret Floy Washburn, following the Annual Dinner, was an able defence of "Introspection as an Objective Method." This address will be printed in full in the Psychological Review.

The most important transaction of the Annual Business Meeting was the adoption of policies with regard to the technique of issuing licenses as "consulting psychologists" and the determination of qualifications for such licenses. The recommendations of the committee appointed in 1920 were, in all essentials, adopted.

The following officers were elected for the year 1922. President: Knight Dunlap, Johns Hopkins University. Members of the Council: Warner Brown, University of California, and F. L. Wells, Massachussetts General Hospital. Representatives of the National Research Council: J. McKeen Cattell, and E. G. Boring, Clark University. Twenty-three were elected to membership in the Association.

The meeting in 1922 will be held in Boston. F. L. Allport, Harvard University, was elected local representative of the Executive Committee.