EDUCATIONAL PSYCHOLOGY AT THE CLEVELAND MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION.

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Of the fifty-seven papers on the program of the last session of the American Psychological Association and its joint meetings held at Cleveland, December 30 to January 1, at least a score or more have a specific bearing on educational psychology and experimental education. For convenience of discussion the papers may be grouped around the problems in *general psychology*, including among other subjects that of *Ideo-motor action* by President Thorndike, *Behavior as a psychological category* by Angell, *Heredity* by Cattell, and *Physiological psychology* by Dearborn (G. V. N.); *religious psychology*, including papers by Leuba and Krueger on *magic and religion*; *abnormal psychology*, including discussions by Aikens on *amnesia*, Southerd on *Structure versus function in psychopathology*, and the *Psycho-physiological effects of a prolonged fast* by Langfeld; *animal psychology*, including experimental studies in *Delayed reactions* by Hunter, *Reactions to a temporal series of stimuli* by Gregg and McPheeters, *Sound discrimination* by Shepherd (W. T.), *Vision* by Tugman and Haggerty, *Instinct* by Shepard (J. F.) and Breed, *General intelligence* by Yerkes and Bassett; and *Educational psychology*, including psychological tests for evaluating stages of mental development or progress in economy of learning in criminal women, delinquent girls, feeble-minded children, normal children and adolescents; tests in writing and tachistoscopic reading; reactions in methods of measuring association time; standards of mental efficiency, general mental tests, and the reliability of school grades; and Stoelting's exhibits of psychological apparatus and tests.

The papers in general psychology by Thorndike and Angell will have a marked influence on the presuppositions and categories of educational psychology. The former sets forth in a foreful and lucid manner the thesis that "experimentally ideas of acts do not *per se* produce them." The theory of ideo-motor action as held at present by the majority of psychologists is a relic of teleological thinking and is a direct descendant and homologue of primitive man's belief in a sympathetic magic. The latter writer maintains, with equal clearness, but without special experimental data, that "theoretically it should be possible to state differences of mental condition in terms of overt behavior." While the fallacies of the introspective method differ little in kind from those of other sciences the tendency to discount this method is a wholesome one "in so far as it looks toward the betterment of methodological procedure. It is unprofitable as it proposes to do away with resort to introspection."

In his elaborate paper on "*Families of american men of science*," Cattell makes a distinct contribution to the study of heredity, giving eighteen detailed tables in which he shows, among other results, that of the 917 families listed 660.5 are of American parentage. In the occupations of the fathers of the scientific men professional men rank first (43 per cent.), including in the following order—clergymen, teachers, physicians, lawyers and other professions. The average age of fathers, and lawyers. The average age of marriage for the father was 27.9 years, for the mother 22.8 years. The fathers were on an average 34.9 years old at the birth of the sons and the mothers 29.7 years. There is a tendency for both the wives and men of science to marry a little later than their parents. and to have, on the average, smaller families; the families from which scientific men come have on the average 4.64 children, and married scientific men whose families are complete have on an average 2.22 children. The central theme of this paper furnished a discussion of the causes and effects of decreasing birth rates and death rates and the influence of heredity and opportunity in determining scientific advancement. Space will not permit, at this time, a discussion of the papers on religion and magic, the *Study of man* by Ladd, nor the *Rela-*

tion between the *anschaulich* and the *unanschaulich* contents of consciousness and the *Functions of a visual image in memory and imagination* by Martin. Neither will it be possible to do more than to mention in this communication the papers on *imagery* by Ogden and by Fernald, nor the work in *vision* experiments by Ferree, by Geissler and by Adams, all of which furnish data that the educational psychologist will necessarily be required to take into consideration in his analysis of the elements of consciousness and the process of learning. Meyer, on the frequently recurring problem of *left-handedness*, defends the thesis that during the first few months of life left-handedness is a necessary accompaniment of right-handedness of adult life, the change occurring approximately between the sixth and fifteenth months, during which there is a period of ambidexterity. This is explained (on *a priori* grounds) by the fact that left-handedness in the infant seems to have its neurological basis similar to that of right-handedness in the adult.

The papers on animal psychology will make an important contribution to this important field of psychology, and, while several of the papers will throw light on the nature of learning in animals, and therefore *probably* in children, the two which impress the writer as being of particular significance to teachers are those of Hunter on *Delayed reactions in animals and children* and the *Relative effects of maturation and use on the development of an instinct* by Shepard (J. F.) and maturation. Practice was prevented by confinement in representative function in the behavior of animals and children. He found, by means of a series of control tests with rats, dogs, raccoons and children, that in successful responses some guiding cues must be developed within the subjects' bodies. While the behavior of cats and dogs can be stated in terms of habit, the raccoons require an ideational function whose content may be either sensory or imaginal, according to one's general theory of consciousness. The maximal delays of the reagents were: rats 6"-9"; dogs 15"-5"; raccoons 15"-30"; children 50"-20'. Shepard and Breed observed "the pecking instinct of chicks" and constructed for a standard, a curve of development showing the "improvement in accuracy of the pecking co-ordination from birth to the twenty-fifth day." An

attempt was then made to determine, by testing twenty-three chicks, the relative contribution to the improvement by use and maturation. Practice was presented by confinement in a dark room, the chicks being fed artificially. "The most interesting features of the results are the equally poor initial records of the chicks and the rapidity with which they attained the normal level of accuracy. We may accordingly regard the first two days of the curves as the necessary practice component and the remainder a record of maturation."

Experimental educational psychology is rapidly acquiring a more definite scope and refinement of methods of procedure. Since the remaining papers belong primarily in this field they will be of particular interest to the readers of *THE JOURNAL*. Monroe finds, after testing three hundred girls and three hundred boys between the ages of three and six years in matching and naming the six standard colors in the Binet test, that from three to six the girls excel the boys in color perception tests, except at the age of five, and in the color naming tests the girls excel the boys at all ages. In regard to the Binet tests the sex differences are not so marked, the girls leading the boys in the third year and in the seventh year, and the boys leading the girls in the fifth year. On retesting 82 children by the Binet tests (1911 revision) after an interval of one year, Berry concludes there is an average gain in rank of one year, with an average deviation of .26 of a year for normal children, with a gain of .96 of a year for those who tested below normal age, 1.02 for those at age and 1.17 years for those above age. Of the 40 mental defectives the average gain was .5 of a year with a deviation of .31 of a year, with an individual variation of a loss of .6 of a year to a gain of 1.2 years. He finds a close correlation with the results of the original tests and the "average gain of the normal children who tested above age, in 1911, was 20 per cent. greater than that of the children who tested below age in 1911; that the average gain for the defectives of 15 and under was 50 per cent. greater than for those above that age." Goddard discovers, after three annual testings of 352 feeble-minded children, that 109 remain absolutely the same, 232 have not varied more than two points in the two years and twenty-two

have gained more than five points—that is more than one year in two years. Of the 2000 public school children 464 have been retested three times, and of these 49 per cent. make normal or more than normal progress—five points per year; 47.2 per cent. make approximately one-half normal progress; 1.25 per cent. make no progress. These facts, the speaker claims, are strong evidence that “the scale in the hands of a trained person is thoroughly reliable.” This optimistic viewpoint is vigorously challenged by Weidensall in her paper on *Psychological tests applied to criminal women*, and the writer deeply regrets that no abstract of her paper has been obtainable.

In a very comprehensive *Report of a series of tests administered to 800 fourteen-year-old children*, Woolley and Fischer make the following generalizations on children leaving school to go to work: the girls are superior to the boys in height, weight, and perfection of co-ordination, while the boys are superior to the girls in strength, rapidity of motion, and vital capacity; the girls are somewhat superior to the boys in all the mental tests; the tests of physical development show a slight correlation with grade, and the tests of mental ability a more marked correlation. Jones tested delinquent girls for the purpose of determining their educability. The five series of tests represented types of association of controlled association, the form-board, crossing out A's and rapid naming of words. The results show it is possible to make a classification of the subjects which, the writer optimistically concludes, “seemed fully as accurate as the results obtained by applying the Binet scale. It is far more easily and more rapidly applied with just as good results.” B. T. Baldwin's paper is a comparative study of *The progress of learning of adolescent delinquent white and negro girls* as shown by a wig-wag code adapted for this purpose and applied for sixteen consecutive days. He finds this type of material furnishes a very reliable means for evaluating learning capacity irrespective of school standing for children who can read. The 76 practice curves show a wide range of individual differences and significant periods of acceleration and retrogression. As a group, the negro girls are inferior to the white girls; they accomplish less work, are less accurate, less easily enthused

and are more controlled by moods. In a *Pictorial completion test* Healy describes a picture type of form-board from which parts are cut, these parts to be replaced by the examinee. With individuals above nine years of age the ability to complete these spaces varies little among those of the same grade of mental ability; below nine years of age, and for the group below fair or ordinary ability, the type and number of final errors rapidly changes. Schmitt tested 150 normal children with five tests described in Healy and Fernald's monograph. The results indicate that the child's ability to deal successfully with abstractions of representative material is developed somewhat earlier than his ability to deal in a planned way with the functional necessities in concrete material. The papers given by Pyle will appear in full in this JOURNAL.

School subjects received little attention at these meetings, but Freeman's paper called attention to the *Need of a dual standard in testing handwriting*, since it is not only essential to test the quality and speed of writing on account of their practical importance, but also on account of variations which are found in different school grades in the same school, in the same grade at different times of the year, and in different schools or individuals when compared with one another. *Individual differences in the attention fixated during reading and a comparison of differences in types of reaction* furnished the subject of Pinter's investigation. It was found "observers could be classified according as they tended to fixate sharply or to let their attention fluctuate, and characteristic differences of the manner of reading resulted from these different forms of attention." Children tend, in most cases, toward the fluctuating type. There are sensory, motor and natural types of reactors, and the mean variation of the first two is comparatively small when compared with the latter; the fluctuating reader approximates to the type of natural reactor and allows his attention to wander between the stimulus and the reaction, while the fixating reader fixates either the stimulus or the reaction.

In his work on the *Reliability and distribution of grades* Starch calls attention to the problem of "How small steps are distinguished and what proportion of persons should

ordinarily receive the various grades." The former depends on the reliability of the assignment of grades, and was determined by having two papers in English graded by 142 teachers, and one in geometry by 118 teachers. A very wide variation was found, ranging from a mark of 28 to 92 in the case of the geometry paper. In order to test the factor of different standards in different schools, ten freshman English papers were graded by ten English instructors in the same institution "with a mean variation of 5.3 which is not materially different from the above variation." The individual standards in marking were then eliminated through a system of weighting and a comparison made with the accuracy of measurement in another field.

Though there is a strong tendency for educational psychology to differentiate its field more and more from general psychology of the introspective and philosophical type, the writer believes it is neither possible nor desirable to try to formulate or teach educational psychology without a substantial background in the science which is the source of our data and methods. General psychology furnishes the substratum on which we must build, with equal detail of experimental procedure, the new sciences of educational psychology and experimental education.