

AN INTRODUCTION TO EDUCATIONAL PSYCHOLOGY

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PREFACE

There are at least four reasons why teachers do not get the practical help they have a right to expect from books on educational psychology. The same four reasons explain why it is that these books are read by undergraduate students simply as another one of the academic and, more often than not, uninteresting tasks required of them by a curriculum. In the first place, there are too many persons, mostly indolent in disposition, who suppose that the psychologist is a magician who has already discovered, or who will discover in the near future, a "fool-proof" formula that can be applied to students in the schoolroom with as much assurance as the engineer applies his formulae to bridge-building or to the fabrication of an automobile. These persons suppose that a little knowledge of psychology will make a task easy which, by nature, is full of perplexities, which requires many hours of devoted personal tutelage, and which demands a feeling for, rather than a knowledge of, human nature. There are, however, no standardized formulae for teaching and neither are there any easy processes of promoting growth which have been registered in the Patent Office.

In the second place, the teacher is an integral part of a whole configuration of events which does not admit of division into parts. The experimenter, on the contrary, must deal with parts. He must take one thing at a time, while assuming that other things have remained equal. It is a wonder, then, that the teacher and the experimenter ever get together. It is still more of a wonder that a book on educational psychology should be phrased both for the teacher and the experimenter. If this book is not so phrased, it is no better than some of the others. The author has earnestly sought, however, to keep both persons in mind, the one in order that the student may see what the experimenter is doing and the other in order that he may catch a glimpse of the very real problems which a teacher has to solve.

In the third place, there are too many people who suppose that the main facts about psychology are already known or that the particular brand of psychology to which they have been exposed is the final judgment of the science. In other words, it is commonly felt that the major concepts of educational psychology which were prevalent

a score of years ago (or even ten years ago) cannot be seriously questioned at the present time. When, therefore, a prodigiously active science offers evidence of change in its points of view, they draw the conclusion that psychologists are so instable that nothing serious can be expected of them.

It is not too much to say, perhaps, that the last ten years have seen more substantial progress in the experimental study of human nature than any preceding period of twice or thrice that length. In any case, the author has tried to create a distinct impression of the way in which educational problems must be reinterpreted if teachers are to do their work most effectively. He chooses this path even though it means that the book contains more psychology than education. If justification for this procedure is required, it lies in the simple fact that the first educational psychologies were similarly balanced. In other words, the books which laid out the foundations of educational psychology almost assumed that the psychological basis of education had been laid out once and for all. It was easy to suppose, therefore, that future books should be more "practical" in the sense that they should simply apply the fundamental principles already known. We shall try to show that a part of the "practical" side of education is to be found in a different psychological basis for teaching methods and in the constant discovery of new facts.

In the fourth place, many teachers, and especially those at the high school and university levels, work with a growth pattern that is nearing functional completion. That is, they work with persons who have already achieved considerable measures of stability or of fixity in the degrees of excellence with which they can use their several psychological functions. This fact holds true because learning processes quickly bring the average child to a practical limit of efficiency. When, therefore, teachers see the discrepancy between the maxims of an educational psychology, on the one hand, and the results of their attempt to use these maxims, on the other, they incline to the belief that the fault lies with educational psychology rather than with the character of the problems that must be solved.

Just as we have sought to phrase this book both in the language of practical teaching situations and in the language of educational and psychological experimentation, so we have sought to break down the discrepancy between maxims and actual teaching methods. We have felt that the chief way to do this was to establish our whole introduction to the study of educational psychology upon the facts and principles of genetic psychology. The growth of a human being is an essentially continuous process, and it takes, under the influence

of education, a particular form or pattern which must be viewed from end to end as well as from side to side. This means that one of the faults commonly found in surveys of educational psychology is derived from the failure to gain a sufficient measure of perspective over a field of forward-moving events.

Since teachers at the higher levels of schooling deal with persons the quality of whose psychological functions is already nearing maturity, and since many of these functions have behind them no recognizable educative process, one may leap easily to the conclusion that these functions and some of the services they render, as well, are hereditary or instinctive. In any case, various doctrines of original nature have played a very large part in methods of teaching and in educational philosophy. We shall discover in the following pages that the rapid development of a genetic psychology based wholly on experimentation has almost, if not quite, upset the balance that had been struck a few years ago between original nature and learning. We have considered it imperative, therefore, that the problems of teaching that may occur at any given level of schooling shall be met, in part, at least, with a perspective on the developmental events out of which the problems have emerged. Hence the genetic point of view.

Every author of a textbook on educational psychology is faced with the choice of emphasizing a systematic arrangement of facts or of emphasizing instances drawn from the daily life of teachers in the schoolroom. In the one case, there is too much space devoted to laboratory research and to the formal presentation of facts independently of their practical and social values. In the other case, there is plenty of practical material but no coherent view of the one concept that is essential to the teacher, viz., the whole pattern of growth as it is promoted and guided by formal and informal schooling. If this book has come anywhere near a steady course between these extremes, it will have served a very useful purpose; for the experimental facts upon which education must be based have increased so rapidly during the last decade that practical instances of teaching problems lose meaning and importance where there is no appreciation of scientific progress or of systematic arrangements of new discoveries.

A note is in order, perhaps, concerning the use of this book in the classroom. In his teaching and writing, the author has experimented with several different sequences of presentation. The sequence actually followed in the book has proven useful; but it must be admitted that Chapters II-VIII are probably the most difficult in the book.

Some teachers, therefore, may find it wiser to begin with Chapter I and then proceed through Part Two and even through Part Three, before returning to the remainder of Part One. This can be done without prejudice to the continuity either of reading or discussion.

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CONTENTS

PART ONE

METHODS OF PROMOTING GROWTH

	PAGE
<i>Chapter I: THE BEGINNINGS OF THE EDUCATIVE PROCESS</i>	3
The Infant and the Adult: Introduction—Psychological Growth—Psychology and Education—The Purpose of the Chapter	
The New-Born Child: The "Zero Point" of Development—Prenatal Development—The Neonate	
Characteristics of the Preschool Child: Functions and Services—Psychological Equipment—Plasticity—Fixity	
Summary	
<i>Chapter II: THE DEVELOPMENT OF ACTIONS AND ATTITUDES</i>	44
The Method of Sectioning: Introduction—Mind and Behavior—Major Features of Behavior—Summary	
Properties of Behavior: Introduction—Speed—Coördination—Speed and Accuracy	
Types of Behavior: Introduction—Manual Skills—Verbal Skills	
Speech Disorders: Introduction—The Mechanisms of Speech—Speech and Handedness—Theories of Stammering—Methods of Cure	
Reading: Introduction—Reading and Eye Movement—Oral and Silent Reading—Reading and Comprehension—Summary	
Writing: Introduction—Origin of Writing Movements—Methods of Teaching—Speed and Style	
Sources of Training: Introduction—Play—Physical Education	
<i>Chapter III: TRAINING THE PERCEPTUAL FUNCTIONS</i>	94
Stimuli and Situations: Introduction—Relevant and Irrelevant Environments—Stimulus-Patterns	
The Major Types of Perception: Introduction—Visual Perception—Hearing	
The Development of Meanings: Introduction—Stimulus and Object—Comments on Introspective Psychology—Figure and Ground—The Development of Concepts—Sign Learning—Summary	
Sources of Training: Introduction—The Natural Sciences—The Experimental Sciences	
<i>Chapter IV: THE DEVELOPMENT OF ATTENTION AND INTEREST</i>	125
Sources of Action: Introduction—The Stimulus-Response Theory—Stimulus-Response Relations—The Phenomena of Selection—Attention and Interest—Purpose of Chapter	
The Problems of Attention: Introduction—Attention as a Faculty—The Concept of Prepotency—Varieties of Attention	

The Conditions of Attention: Introduction—External Determinants of Attention—Training—Attitude and Set—Biological Importance

The Nature of Interest: Introduction—Interest and Feeling—Acquired Interests

Measures of Interest: Introduction—Vocational Interests—Permanence of Interests—Interests and Abilities—Summary

Chapter V: THE PROBLEMS OF MOTIVATION 157

The "Why" of Human Action: Commonsense—Differences Between "What" and "How"—Purpose and Intention—Purpose of the Chapter

Theories of Motivation: Will Power—Motivation and Selection—Examples of Motivation

The Primary Desires: Introduction—Tissue Needs

The Development of Motives: Introduction—Initial Processes of Conditioning—Dependence of Motives on Previous Learning—Emotion and Motivation

Complex Motives: Introduction—The Nature of Purpose—Ideals—Sentiments

Sources of Training: Introduction—The Function of the Teacher—Biographies

Chapter VI: THE DEVELOPMENT OF EMOTIONALIZED ACTIONS 188

Introduction: Illustrations—The Teaching Problem—Purpose of the Chapter

The Bodily Basis of Emotionalized Actions: Introduction—The Autonomic System—Glandular Mechanisms—Emotion and Its Expression

The Nature of Mood and Emotion: Introduction—Physical Analogies—Sources of Energy—Genetic Views of Emotion—The Nature of Emotionalized Action

The Education of the Emotions: Introduction—Maturation—Conditioned Emotions

The Rôle of Emotion in Tutored Behavior: Introduction—Emotion and Reason—The "Higher" Feelings—Aesthetic Feelings

Chapter VII: THE DEVELOPMENT OF PROBLEM-SOLVING 221

Commonsense Views of Thinking: Introduction—Thinking and Remembering—Thinking and Sign Learning—Thinking and Imagination—Thinking and the Syllogism—Thinking and the Mind

The Nature of Problem-Solving: Introduction—Tools—The Delayed Reaction—The Field of Thinking

The Bases of Problem-Solving: Introduction—Freedom from a Temporal Order—Teaching Problem-Solving

Sources of Training: Introduction—Preschool Training—Progressive Schools—School Subjects

Chapter VIII: THE DEVELOPMENT OF PERSONALITY AND CHARACTER 258

Short-Time and Long-Time Views of Human Nature: Introduction—Personality—Animal Personalities—Infant Personality—The Genetic View

CONTENTS

xi
PAGE

Contemporary Definitions of Personality: Traditional View of Personality—Personality and Instinct—Personality and the Nervous System—Personality and Behavior—Summary	
Specificity and Configurationism in Personal Development: Introduction—Experimental Studies	
Personality Types and Traits: Introduction—Differences in Imagery—Physical Types—Chemical Composition	
The Development of Personality Traits: Introduction—Introversion—Extroversion—Jealousy—Obstinacy—Leadership—Ethical Traits	
The Influence of Special Factors on the Development of Character Traits: Hereditary Factors—Physical Condition—Intelligence—Family Relationships—Social Factors	

PART TWO

ORIGINAL NATURE AND LEARNING

Chapter IX: THE PROBLEMS OF ORIGINAL NATURE 291

Directed Growth Patterns: Introduction—The Directedness of the Pattern—Hereditary Factors—Learning Situations—The Purpose of this Chapter	
The Evidence for Psychological Inheritance: The Commonsense View of Heredity—The Doctrine of Innate Ideas—Human and Animal Instincts—Family Resemblances—Constancy of the I.Q.—Individual Differences and Training	
The Problems of Original Nature: Introduction—The Reaction Against Instincts—Criticisms of Studies on Family Resemblances—The Interpretation of the Constancy of the I.Q.—Individual Differences and Acquired Fixity	
The Logic of Research on Hereditary Factors: Introduction—The Importance of Chromosomes—The First Principle of Genetic Research—The Second Principle of Genetic Research—The First Assumption of Genetic Research—The Second Assumption of Genetic Research—Summary	
Chromosomes and Their Environments: The "Part" vs. the "Whole"—The Inertia of Parts—Field Relationships—The Origin of Intrinsic Properties—The Inertia of Germ Plasm—The Principle of Buffering—Summary	
Some Major Features of Development: Temporal Sequences—Types of Environment—Environmental Control, Physical Methods—Environmental Control, Psychological Methods—Summary	

Chapter X: THE ORIGINAL NATURE OF MAN 344

Psychological Inheritance: Introduction—What is Psychological Inheritance?	
The Minima of Original Nature: Introduction—Examples of Original Nature	
Hereditary Neural Connections: Introduction—The Meaning of "Organism"—The Maturation Factor—Plasticity—Intelligence	
General Principles of Development: Maturation—Causative Principles of Development—Descriptive Principles	
Original Nature and the Art of Teaching: Introduction—Logic and Practice—Particular and General Environments	

	PAGE
<i>Chapter XI: MAJOR VARIETIES AND THEORIES OF LEARNING .</i>	380
The Significance of Learning: Introduction—Environmental Influences—Learning and Growing—The Importance of Teaching	
Types of Learning: Introduction—Rote Learning—Trial-and-Error Learning—Associative Learning—Conditioning—Sign Learning—Learning by Insight	
The Laws of Learning: Introduction—The Law of Exercise—Criticisms of the Law of Exercise—The Law of Effect—Criticisms of the Law of Effect	
A Theory of Learning: Introduction—Points of Similarity—Points of Dissimilarity—Conclusion	
<i>Chapter XII: ENGINEERING THE LEARNING PROCESS . . .</i>	426
Theory and Practice: Introduction—Purpose of the Chapter	
Whole vs. Part Learning: Introduction—Historical Note—Meaning—Intelligence—Practical Conclusions—Conclusion	
The Distribution of Practice and Rest Periods: Introduction—Experimental Results—Explanations of Distributed Effort—Conclusions	
Types of Inhibition: Introduction—Experimental Results—Practical Consequences—Associative Inhibition	
Learning and Recitation: Introduction—Experimental Studies—Learning and Understanding—Summary	
Motivation and Learning: Introduction—Incidental Learning—Incentives	
Order of Presentation: Introduction	
Retention and Recall: Introduction—Measuring of Retention—Recall	
<i>Chapter XIII: THE TRANSFER OF TRAINING</i>	469
Specialization and General Training: Introduction—Identities in Training—Differences in Training—Formal Discipline—Particular Discipline—The Nature of the Controversy—Purpose of the Chapter	
Experimental Studies on Transfer: Introduction—Relationships Between Learning Periods—Cross-Education—Laboratory Studies on Transfer—Transfer in School Situations	
Explanation of Transfer: Introduction—The Theory of Identical Elements—Generalized Habits and Attitudes—Experimental Methods—Growth and Transfer—Conclusion	
<i>Chapter XIV: THE ART OF TEACHING</i>	502
Science and Practice: Introduction—The Genetic Point of View—The Teacher's Point of View	
The Functions of the Teacher: Introduction—The Rôle of the Teacher—Psychological Growth—Types of Teaching Effort—Summary	
The Qualities of a Teacher: Introduction—Ratings—Causes of Success and Failure	
Types of Teaching Procedure: Introduction—Recitation Method—Project Methods—Laboratory Methods	
Classroom Management: Introduction—The Warming-up Effect—Class Size	
Measuring the Results of Teaching: The Examination—Objective Examinations—Achievement Tests—Nonmeasurable Factors	

PART THREE

CONCEPTUAL AND METHODOLOGICAL TOOLS
OF EDUCATION

Chapter XV: THE NATURE OF INTELLIGENCE 533

The Nature of Conceptual Tools: Introduction—Facts and Concepts—Purpose of the Chapter

Current Definitions of Intelligence: Varieties of Intelligence—Motor and Mechanical Intelligence—Perceptual Intelligence—Intelligence and Attention—Intelligence and Learning—Intelligence and Problem-Solving—Intelligence and Adjustment—Intelligence and Character

Manufacturing an Intelligence Test: The Basis of Intelligence—Empirical Measures of Intelligence—Experimental Measures of Intelligence—The Stanford Revision—The Meaning of Test-Intelligence—Summary

Practical Uses of Intelligence Tests: Intelligence and Achievement—Individual Differences—Homogeneous Grouping—Achievement and Ability—Elimination—Individual Instruction

Chapter XVI: PROBLEMS OF TEACHING CREATED BY INDIVIDUAL DIFFERENCES 565

The Part and the Whole: Introduction—An Illustration from Physics—Statistical Averages—Individual Differences

The Problem of Psychological Differences: Individual and Social Psychology—Normative Psychology—Types of Individual Differences

Age, Sex and Race Differences: Introduction—Age Differences—Sex Differences—Race Differences

The Problem of Exceptional Talent: Introduction—Qualities of Gifted Children

Deficient Children: Introduction—Feeble-mindedness—Special Deficiencies

The Nature of Individual Differences: Introduction—Range—Qualitative and Quantitative Differences—Effects of Practice on Individual Differences

The Origin of Individual Differences: Introduction—Environmental Constancy

Application of Individual Differences to Education: Introduction Summary

Chapter XVII: THE SOCIALIZED PERSON 604

The Concept of the "Self": Introduction—The Origin of Socialized Action—Purpose of the Chapter

The Development of Social Behavior: Things and Persons—Early Social Behavior—Types of Social Behavior—Sources of Socialized Behavior

Normal Social Behavior: Norms and Values—Reaction Patterns—Information and Knowledge—Emotionalized Actions—Character Traits—Conclusion

Antisocial Conduct and Delinquency: Introduction—The Causes of Delinquency

Special Social Problems: Introduction—Only Children—Birth Order

Chapter XVIII: ADJUSTMENT AND MENTAL HYGIENE . . . 628

Physical and Mental Hygiene: Introduction—Psychological Excellence—Mental Hygiene and Education—Purpose of the Chapter

Types of Adjustment: Hygiene and Adjustment—Adjustment and Adaptation—Adjustment and Efficiency

Conflict: Introduction—Sources of Conflict—Tissue Needs and Conflict—Summary

Methods of Resolving Conflicts: Introduction—Trial-and-Error—Non-Adjustive Reactions—Regressive Reactions—Repression—Compensatory Actions

Mental Hygiene: Introduction—Environmental Changes—Conclusion

Chapter XIX: THE CONCEPT OF EFFICIENCY IN THE SCHOOL-ROOM . . . 656

Adjustment and Efficiency: Ratios and Values—Efficiency—Purpose of the Chapter

Psychological Work: Introduction—Mental and Physical Work—Measures of Work

The Effect of Physical Conditions on Efficiency: Organic Conditions—Environmental Conditions

Sources of Loss in Efficiency: Introduction—The Typical Work Period—Fatigue and Efficiency—Causes of the Work Decrement—Monotony—Rest and Relaxation

The Effect of Drugs on Efficiency: Introduction—Alcohol—Nicotine—Caffeine—Conclusion

Chapter XX: POINTS OF VIEW IN PSYCHOLOGY . . . 690

The Genetic Point of View: Introduction—Points of View—Purpose of the Chapter

The Psychological Background of Education: Introduction—Primitive Psychology—The Origin of the "Soul"—Rational Psychology—Experimental Psychology

The Rational View of Education: Introduction—Primitive Education—Scholastic Education

Mind and Behavior in Education: Introduction—Empirical Behaviorism—Behaviorism

A Psychological Way of Describing Behavior: Introduction—The Nature of Psychological Experimentation—Animal Experimentation—Reactions and Mental Processes

Definitions of Educational Psychology: Introduction—Education as Applied General Psychology—Educational Sociology—Education and Animal Psychology

The Genetic Approach to Education: Introduction—Recapitulation—The Genetic View—Conclusion

INDEX . . . 737

PART ONE

METHODS OF PROMOTING GROWTH

CHAPTER ONE

THE BEGINNINGS OF THE EDUCATIVE PROCESS

I. THE INFANT AND THE ADULT

1. *Introduction:* Were we to come upon it for the first time, the passage of a human being from a state of helpless infancy to a state of competent maturity would strike us as one of the most amazing events to be found anywhere in nature. Our amazement would, no doubt, be all the greater in proportion as we were able to summarize or condense the first twenty years of a person's life and thus get a short-time view of what is, so far as our own immediate human experience goes, a fairly lengthy process. Even our memories of the process, especially those drawn from the first three or four years, would be sufficiently exciting, if only, by taking thought about the matter, we could revive some of the major episodes for further inspection.

That the growth or development of a human being does not strike us with amazement is due, in part, to the fact that we have seen it take place so many times as to let familiarity breed indifference and, in part, to the fact that, until fairly recent times, neither parents nor teachers have really pretended to take an objective (that is, a scientific) interest in what happens to an educable child. From at least one point of view, society has been more concerned about the stars, about bridges and dams, about automobiles and other symbols of our technical culture than it has about the more immediate environmental factors which are known to transmute an infant into an efficient workman or a cultured gentleman. In other words, the technical spirit which has refashioned the physical world in which we live has not penetrated very far into the domain of social and personal becoming.¹ This is, no doubt, one reason why the claim is made that education should stand out as a major social enterprise.

There is, in human development, a size factor which is not without considerable interest. The weight of the human ovum from

¹ The student will find great value in reading Mumford, L., *Technics and Civilization*. New York: Harcourt, Brace and Co., 1934. The author writes a story of the technical attitude and cites some of the pressing social problems created by our devotion to the machine.

4 INTRODUCTION TO EDUCATIONAL PSYCHOLOGY

which a child grows amounts to about $\frac{1}{100}$ thousandth of a gram. The weight of an average man or woman, on the contrary, is about 100,000 grams, and a very stout man may weigh as much as 1,000,000 grams. The male germ cell is even smaller than the female cell, its weight probably amounting to less than one-billionth of a gram. In other words, it weighs about as much as a red corpuscle.²

Even more striking are some of the facts concerning complexity. At the time of fertilization, both the male and the female cells are single units of protoplasmic material. From one point of view they may be described as relatively simple. By way of comparison, an adult human body is composed of upwards of twenty-six trillion cells, twenty-two and one-half trillion of which float around in the blood stream as corpuscles. It is estimated that there are about thirteen billion nerve cells in a human brain and more than two-thirds of these—as a matter of fact, about nine billion—lie in the outer rind or cortex of the cerebrum. It is hardly necessary to argue that any object which passes within a relatively short period of time (say, twenty years) from a stage so simple as a germ cell to the size and complexity of a normal adult might well be regarded as the seat of an amazing series of changes.³

2. *Psychological Growth*: From the point of view of education, however, these physical aspects of human growth are not the most important that can be named. Still more amazing is the story of how the seven or eight pounds of an “animated vegetable” grows toward or acquires what are commonly recognized as the psychological and social traits of a normal adult.

A. ACTION SYSTEMS: For purposes of general orientation, let us take several typical examples from the psychological growth pattern. A more nearly complete picture of the principal features of this pattern will appear in due time. In the first place, many of the movements of a new-born infant are about as awkward and as devoid of social value as could be imagined and yet, within a few years, they will have become so highly specialized and coördinated that a Liszt concerto may be played on a piano, an oration delivered from a platform, or a gracious entrance made into a social group. The contrast between these two extremes would stand out even more clearly were it possible easily to observe the types of movement which an infant

² For an illuminating table of comparative sizes, see Haldane, J. B. S., and Huxley, J., *Animal Biology*. Oxford: The Clarendon Press, 1927, pp. 276-280.

³ Some of the main stages in the growth of the individual will be described later on. In the meantime, refer to Jennings, H. S., *The Biological Basis of Human Nature*. New York: W. W. Norton and Co., 1930, Chapters III and IV. Also Herrick, C. J., *Brains of Rats and Men*. Chicago: Univ. of Chicago Press, 1926.

can make some weeks before it is born. We shall describe some of these movements in the next section, for they stand near the beginning of the educative process which is the topic of this book.

B. PERCEPTUAL SKILLS: Contrasts of equal significance may be discerned among the range of objects and events to which an infant, on the one hand, and an adult, on the other, can react in an effective or adequate manner. The word "adequate," when used in this manner, means either that actions should resemble those of a competent, mature person, or that they are generally approved by society. There is, of course, no final or absolute definition of adequacy.

It is only with difficulty that a new-born infant can be stirred into action by the events which are taking place around it. As an example, no one of the words spoken to it will have any psychological or social significance.⁴ Before many months have passed, however, the growing infant will be taking note of and reacting to words and to a variety of objects and situations which is almost beyond calculation. Most of its first movements will be made in response to stimulus-situations which are produced within its own body; but by the time it has attained the age of twenty it will be able to respond "intelligently" and in an immense variety of other ways to thousands of forms and figures printed upon pieces of paper, to an equal number of sounds spoken by the human voice, and to a host of other objects and events as well.⁵

C. LEARNING PROCESSES: It is sometimes said by the poetically minded that new-born infants act as though they cherished memories of the celestial home they have just left; but there is no evidence to support this assertion. It does not seem possible to say that the new-born infant remembers anything and the number of "skills" it has acquired during the period of gestation may be counted almost on the fingers of one hand. Beginning with birth, however, and continuing with great speed during childhood, a series of psychological changes will take place within the infant for the description of which language is not yet sufficiently exact.

⁴ Many of the principal facts about language development have been summarized by McCarthy, D., "Language Development," in Murchison, C. (Ed.), *Handbook of Child Psychology*. Worcester, Mass.: Clark Univ. Press, 1933, Chapter VIII. See also De Laguna, G., *Speech, Its Function and Development*. New Haven: Yale Univ. Press, 1927, *passim*.

⁵ The student of educational psychology should always make use of some of the important books on child psychology. See, for example, Curti, M. W., *Child Psychology*. New York: Longmans, Green and Co., 1931; Johnson, B. J., *Child Psychology*. Springfield, Ill.: C. C. Thomas, 1932; Murchison, C. (Ed.), *Handbook of Child Psychology* (2nd ed.). Worcester, Mass.: Clark Univ. Press, 1933; Goodenough, F. L., *Developmental Psychology*. New York: D. Appleton-Century Co., 1934; Morgan, J. J. B., *Child Psychology* (2nd ed.). New York: Farrar and Rinehart, 1934.