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A Bibliography of the Biological Aspects of Education

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A Bibliography
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by Professor Will Grant Chambers
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INTRODUCTION.

The preparation of this bibliography grows out of the fact that education is being interpreted in terms of life. The organism is the repository of all the experiences of the individual. His experiences are the material with which he interprets his environment. Education being an adjustment of the organism to its environment and the adjustment of environment to self, there is much biological literature that helps interpret this notion of education and life. Biological literature which is helpful to the teacher along this line is very much scattered. It is believed that this bibliography will save much time for teacher and pupil. This bibliography is not exhaustive, but it is sufficiently extensive for all purposes of the Normal School student who wants an interpretation of education from the biological standpoint.
RHYTHMIC AND INTERMITTENT ACTIVITY IN THE EXPENDITURE OF ENERGY.

I. RHYTHMS OF EFFICIENCY:


II. GENIUS AS A PECULIAR FORM OF THE EXPENDITURE OF ENERGY:

16. **Child Development as Factor in Producing Genius or Defective**: Oppenheim, Development of the Child, chap. 9, pp. 207-240.


**III. INFLUENCE OF CLIMATE, WEATHER, ETC.:**


4. **Suicide and The Weather**: E. G. Dexter, bound in volume with Conduct and The Weather, p. 12.

5. **Suicide—Cosmico-Natural Influences Which Act On**: Marselli, Suicide, chap. 2, pp. 36-79.


**IV. LEARNING PROCESS IN ANIMALS.**


V. RHYTHMIC PROGRESS IN THE LEARNING PROCESS:


6. The Psychology of Learning:
   a—Tossing and Catching Balls,
   b—Typewriting,
   c—Beginning a Language,
   Swift’s Mind in the Making, chap. 6, pp. 169-218.


VI. RHYTHM IN GROWTH OF CHILDREN.


8. Some Facts of Growth of Children, Physical Differences from Adults, etc., Nascent Periods, etc.: Drummond, Intro. to Child Study, chap. 8, pp. 118-137.


14. **Increase in Weight of the Body and of Its Parts, and Increase in Stature**: Donaldson, Growth of the Brain, chaps. 2 and 3, pp. 45-83.

**VII. DAILY RHYTHMS:**

1. **Diurnal Course of Efficiency in Vital, Sensory and Motor Activities**: Marsh, Diurnal Course of Efficiency (with accounts of experiments), part B, pp. 4-41.

2. **Diurnal Course of Mental Efficiency**: Marsh, Diurnal Course of Efficiency, Part C, pp. 42-70.

THE ORGANISM AS A LIVING MACHINE.

I. THE SOURCE AND ORIGIN OF ENERGY.


30. **The Story of the Living Machine**: H. W. Conn, Dynamics of Life, Forces Operating in the Organism, etc.

31. **Mind as a Machine**: Oppenheim, Mental Growth and Control, pp. 19-41, chap. 2.


II. **ECONOMY IN THE EXPENDITURE OF ENERGY**:


5. **Cerebral Hygiene and Economy in Student Life**: O'Shea, Aspects of Mental Economy, chap. 2, pp. 64-72.


III. **FOOD AND AIR IN THE PRODUCTION AND CONSERVATION OF ENERGY**:


5. **Relative Values of Foods in Production of Nervous Energy:** O'Shea, Aspects of Mental Economy, chap. 4, pp. 107-125.

**IV. RECREATION AND EXERCISE AS ENERGIC FACTORS:**


**V. MENTAL HYGIENE IN SCHOOL WORK:**


8. **The Cost of Mental Effort (Measured in Respiration, Circulation, etc.):** McMillan, Early Childhood, chap. 9, pp. 138-154.

10. **The Racial Brain and Education (Functional Development of the Nervous System and Application to Education)**: Swift, Mind in the Making, chap. 7, pp. 219-238.

**VI. SLEEP IN RELATION TO THE ENERGY OF THE ORGANISM:**


5. **Curiosities of Sleep**: Dr. Woods Hutchinson, American Magazine, October, 1908, pp. 572-578.

6. **Sleep of Children**: In Rev. of Education, Jan. 1902.

7. **The Baby's Sleep**: Oppenheim, Care of the Child in Health, chap. 6, pp. 128-145.


**VII. MEDICAL EXAMINATION OF SCHOOL CHILDREN:**


VIII. SCHOOL HYGIENE:


IX. SCHOOL ROOM VENTILATION, SANITATION, LIGHTING, CROWDING, ETC.:


X. SCHOOL AND SOCIETY IN RELATION TO HEALTH:

XI. HEALTH OF CHILDREN:


XII. DISEASES OF CHILDREN:


**XIII. MALNUTRITION:**

1. **Nutrition of School Children:** Dr. Chas. Kerley, Teachers' College Record, vol. VI, March, 1905, pp. 43-8.

2. **Malnutrition and How It May Show Itself in School Children:** Derexa Morey-Errant, M. D., Child Study Mon. and Jr. of Adolesc., May, 1901, p. 441.

3. **Food-Aided Education:** Rev. of Reviews, vol. III, pp. 618-621.
MOTOR ABILITY AND BODILY CONDITION IN RELATION TO INTELLIGENCE.

1. PSYCHOLOGICAL STUDIES OF MOVEMENT:


12. **Motor Ability**: W. L. Bryon, with Notes and Discussions by Thorndike, Teachers' College Record, May, 1901, pp. 43-79.


**II. RELATION BETWEEN STIMULUS AND RESPONSE:**

1. **Reflex Arc Concept in Psychology**: Jno. Dewey, Contr. to Psychology, from the Chicago Laboratory, also Psychological Review.


4. **Stimulation, Interpretation, Expression**: chap 4, Bryon, Basis of Practical Teaching, pp. 32-42.


10. **Reaction Time; A Study in Attention and Habit**: J. R. Angell and Addison W. Moore, Contr. to Phil., from Psychological Lab. of Univ. of Chicago.


### III. MOTOR ABILITY AND EFFECTS IN RELATION TO THE SCHOOLS:


IV. MOTOR AND MENTAL CORRESPONDENCES:


V. BRAIN DEVELOPMENT AND MIND DEVELOPMENT:


4. Relationship of Physical and Mental Traits: Chap. 13, Thorndike, Educational Psychology, pp. 142-151.


7. **Biological Development of the Psycho-Physical Development**: Munsterberg, Psychology and Life, pp. 74-81.


**VI. PHYSICAL BASIS OF PRECOCITY, DULLNESS, ETC.:**


VII. MIND AND BODY:


VIII. RIGHT- AND LEFT-HANDEDNESS:


4. **Origin of Right-Handedness**: Baldwin, Mental Development; Methods and Processes, chap. 4, pp. 59-80.


7. **Standing on One Foot**: C. V. C., Child Study Mon., Dec., 1900, p. 234.


**IX. TYPES OF MOVEMENTS:**


10. **The Movements of the Child by His Expressions of Will:** Preyer, The Senses and The Will, chap. 8, pp. 188-200.


13. **Voluntary Activity,—Walking and Play:** Compayre, Later Infancy of the Child, chap. 4, pp. 118-152.

**X. HABIT AND HABIT FORMATION:**

1. **Formation of Habits in Infancy:** Oppenheim, Care of the Child and Health, chap. 9, pp. 108-203.

2. **Habits of Movements in Children:** Rowe, Physical Nature of the Child, chap. 11, pp. 105-114.

3. **Habit in Relation to Instinct:** Drummond, Intro. to Child Study, pp. 223-234.

4. **Development of Hand and Arm Movements:** Major, First Steps in Mental Growth, chap. 2, pp. 16-46.


6. **Some Experimental Observations on Practice and Habit:** Arthur Allin, Jr. of Ped., March, 1902.


10. The Bonds of Habit: Oppenheim, Mental Growth and Control, chap. 7, pp. 139-166.

REFERENCES IN HEREDITY.

I. GENERAL:


3. Inheritance of Mental Traits: Thorndike, Educational Psychology, chap. 6, pp. 47-65.


II. THE PHYSICAL BASIS OF HEREDITY:


III. HEREDITY OF MENTAL CHARACTERISTICS:

1. Ribot, Heredity: Especially Part I, chaps. 3, 4, 5, 6, 7, and 9; Part III, chap. 3, and Part IV, chap. 2.
IV. TRANSMISSION OF ACQUIRED CHARACTERS:

1. Inheritance of Forms of Behavior: Yerkes, The Dancing Mouse, chap. 18, pp. 278-284.


18. **Transmission of Modifications Due to External Influences**: Davenport, Principles of Breeding, chap. 11, pp. 348-418.

### V. HEREDITY AND ENVIRONMENT:


3. **Heredity and Environment**: Galton, History of Twins, Teachers' College Record, May, 1901, pp. 96-110.


### VI. THEORY OF HEREDITY:

2. **Earl Pearson, Law Progress:** The Open Court, vol. XVIII, Feb., 1904, pp. 118-121.


4. **Inheritance of Acquired Characters:** Lamarck and Darwin, Theories; Morgan, Evolution and Adaptation, chap. 7.

5. **Heredity:** Conn, The Method of Evolution, chaps. 5 and 6, pp. 157-279.


**VII. MISCELLANEOUS:**

1. **Problems of Variations and Heredity:** A. R. Wallace, Darwinism, chap. 14, pp. 410-444.

2. **Variation and Heredity:** Morgan, Evolution and Adaptation, chap. 8, pp. 201-299.
MENTAL EVOLUTION.

I. CONSCIOUSNESS AND EVOLUTION:


II. MIND OF LOWEST ANIMALS:


III. PSYCHOLOGY OF CATS AND DOGS:

IV. PSYCHOLOGY OF MONKEYS AND ELEPHANTS:
V. PSYCHOLOGY OF BIRDS:


VI. PSYCHOLOGY OF INSECTS AND REPTILES:


VII. WILD ANIMALS VS. TAME ANIMALS:

1. Wild Traits in Tame Animals: A Series of Articles by Dr. Louis Robinson, North Amer. Rev.:
   a—The Horse, vol. CLVIII, pp. 477-483,
   b—The Donkey, vol. CLIX, pp. 722-727,
   c—Sheep and Goats, vol. CLX, pp. 43-48,
   d—The Pig, vol. CLX, pp. 735-739,
   e—Domestic Cattle, vol. CLXII, pp. 607-611,
VIII. ANIMAL REASONING AND SPEECH:


IX. ESTHETIC SENSE OF ANIMALS:


X. THE MORALS OF ANIMALS:


XI. EDUCABILITY OF ANIMALS:


XII. ANIMAL DEFENSE:


XIII. THE NATURE OF MIND:


XIV. EVOLUTION OF MIND:


XV. MENTAL DEVELOPMENT OF THE CHILD:


XVI. INSTINCTS:


3. **Heredity and Instinct:** Baldwin, Development and Evolution, chaps. 5 and 6, Part II, pp. 61-80.


15. **Classification of Instincts:** Kirkpatrick, Fundamentals of Child Study, chap. 14, pp. 51-64.

16. **Instincts and Emotions (As Social Products):** Baldwin, Mental Development; Social and Ethical Interpretations, chap. 6, pp. 185-246.

17. **Uses of Instinct:** Oppenheim, Mental Growth and Control, chap. 5, pp. 89-114.

18. **Instincts of Children:** Drummond, Intro. to Child Study, chap. 12, pp. 194-222.
19. **Natural Tendencies; Their Guidance and Education**: E. L. Thorndike, Teachers' College Record, Nov., 1903, vol. IV, pp. 51-54.


XVII. MISCELLANEOUS:


NERVOUS WASTE AND LEAKAGE OF ENERGY.

I. FATIGUE: TESTS, THEORIES, CAUSES, SYMPTOMS, ETC.:


7. **Fatigue and Feelings of Fatigue (Muscular and Mental)**: Marsh, Diurnal Course of Efficiency, Part D, pp. 77-87.


9. **The Substances Produced in Fatigue**: Mosso, Fatigue, chap. 5, pp. 103-128.


II. FATIGUE IN ANIMALS:


2. Fatigue in Migration of Birds, etc.: Mosso, Fatigue, chap. 1, pp. 1-29.

III. ARREST OF DEVELOPMENT DUE TO OVERPRESSURE IN SCHOOL WORK:


IV MUSCULAR FATIGUE:

1. Muscular Construction and Rigidity (In Relation to Fatigue): Mosso, Fatigue, chap. 6, pp. 129-149.


V. MENTAL FATIGUE AND SCHOOL WORK:


5. Lectures and Examinations in Production of Fatigue: Mosso, Fatigue, chap. 10, pp. 240-290.


**VI. NERVOUS DISEASES OF CHILDREN:**


9. **Reflex Neuroses and Their Relation to Development (Far-reaching Effects of Eye Strain, Adenoids, etc.)**: Swift, Mind in the Making, chap. 4, pp. 116-143.


VII. INSANITY, OR ENERGY RUN WILD:


VIII. DEFECTIVE CHILDREN AS ILLUSTRATING INSUFFICIENT OR WASTED ENERGY:


PLAY AND WORK AS COMPLEMENTARY FORMS OF EXPENDITURE OF ENERGY IN NORMAL DEVELOPMENT.

I. ETHICS, PSYCHOLOGY AND PEDAGOGY OF PLAY:


15. **Educational Value of Play:** Dr. J. E. Bradley, Rev. of Educ., Jan., 1902.

16. **Play in Education:** Johnson, Education by Plays and Games, Part I, chap. 2, pp. 26-64.


20. **Play as an Aid to Invention:** Baldwin, Social and Ethical, Interp., chap. 4, pp. 139-146.


II. **RELATION OF PLAY AND WORK:**

1. **Work and Play:** Alice H. Putman, Rev. of Educ., April, 1902.


10. **Work and Play and Practical Consequences; Necessary Elements in:** Geraldine O'Grady, Rev. of Educ., Sept., 1901.
III. PLAY AND IMAGERY:


IV. WORK IN EDUCATION:


V. TYPES OF PLAY:


**VI. CHILDREN’S PLAY:**


2. **A Course of Plays and Games Up to Age of Fifteen**: Johnson, Education by Plays and Games, Part II, pp. 83-222.


4. **Play—Record of One Child's**: Major, First Steps in Mental Growth, chap. 12, pp. 239-249.

5. **Play of a One-Year-Old Baby**: Major, First Steps in Mental Growth, Appendix 6, pp. 351-356.


7. **Play of the Child**: Compayre, Later Infancy of Child, chap. 4, pp. 141-152.


**VII. EXERCISE—PHYSICAL TRAINING:**

1. **Periods of Childhood and Their Relation to a Course of Plays and Games**: Johnson, Education by Plays and Games, Part I, chap. 3, pp. 65-82.


7. **Physical Training in Public Schools**: Laura W. Sanborn, Child Study Mon., Dec., 1900, p. 213.


**VIII. CHILD LABOR:**


**IX. CHILDREN'S POSTURES:**


**X. SCHOOL DESKS AND SEATS:**


I. GENERAL ARGUMENTS FOR AND OBJECTION TO EVOLUTION:


17. Darwinism Defended: Kellogg, Darwinism To-day, chaps. 6 and 7, pp. 164-182 and 187-212.


24. What Evolution is; The Evidence Upon Which It Rests: Locy, Biology and Its Makers, chap. 16, pp. 345-367.

II. ARGUMENTS FROM EMBRYOLOGY:


2. Embryology and Evolution: Jordan, Footnotes to Evolution, chap. 4, pp. 105-117.

4. Embryology: Conn, Evolution of To-day, chap. 4, pp. 120-160.


7. Embryology: Duckworth, Morphology and Anthropology, chaps. 7 and 8, pp. 155-216.


III. ARGUMENTS FROM GEOLOGY AND PALEONTOLOGY:


8. **Argument for Evolution from Paleontology:** Lecture 3 of Marshall's Lectures on the Darwinian Theory, pp. 53-77.


10. **Paleontology:** Duckworth, Morphology and Anthropology, chap. 17, pp. 496-542.

11. **Theory of Descent; from Paleontology:** Claus, Elementary Text Book of Zoology, pp. 163-177.


13. **The Paleontological Record:** Scott, Darwin and Modern Science, chap. 11, pp. 185-199; Plants, chap. 12, pp. 200-222.


15. **Paleontology:** Metcalf, Organic Evolution, pp. 103-111.

**IV. ARGUMENTS FROM GEOGRAPHICAL DISTRIBUTION:**

1. **Argument for Evolution from Geographical Distribution:** Romanes, Scientific Evidences of Organic Evolution, pp. 48-62.

2. **Theory of Descent; from Geographic Distribution:** Claus, Elementary Text Book of Zoology, p. 159.

3. **Evolution; Geographical Distribution of Evolution:** Wallace, Darwinism, chap. 12, pp. 338-374.

4. **Geographical Distribution:** Conn, Evolution of To-day, chap. 5, pp. 165-202.

5. **Evolution and Geographical Distribution:** Oscar Schmidt, Doctrine of Descent and Darwinism, chap. 10, pp. 222-247.

6. **Evidence of Evolution from Geographical Distribution:** Romanes, Darwin and After Darwin, chap. 6, pp. 204-250.


V. ARGUMENTS FROM MORPHOLOGY AND COMPARATIVE ANATOMY:


VI. ARGUMENTS FROM RUDIMENTARY ORGANS, REVERSIONS, DEGENERATION, ETC.:

1. Evidences of Evolution from Tails, Limbs, and Lungs: A. Wilson, Chapters on Evolution, chap. 6, pp. 97-120.


VII. **EVOLUTION AND MAN**:

1. **Evolution of Man**: Conn, Evolution of To-day, chap. 8, pp. 228-238.


VIII. FACTORS IN EVOLUTION:


5. **External and Internal Factors in Evolution**: Morgan, Evolution and Adaptation, chap. 9, pp. 300-339.


**IX. SELECTION—NATURAL, ORGANIC, SEXUAL, ETC.:**


7. Theory of Natural Selection; Evidences and Criticism: Romanes, Darwin and After Darwin, chaps. 7 and 9, pp. 251-378.


16. Artificial Selection: Plumb, Types and Breeds of Farm Animals, pp. 1-553.

17. Artificial Selection: Davenport, Principles of Breeding, chaps. 16-20, pp. 577-676.


X. VARIATIONS AND MUTATIONS:


14. **Kinds of Variation**: Davenport, Principles of Breeding, chaps. 1-6, pp. 7-140.

15. **Causes of Variation**: Davenport, Principles of Breeding, chaps. 7-10, pp. 141-345.

16. **Mutations**: Davenport, Principles of Breeding, chap. 6, pp. 110-139.

17. **Variation**: DeVries, Darwin and Modern Science, chap. 4, pp. 66-84.


**XI. EVOLUTION AND LIFE:**


**XII. EVOLUTION AND THEOLOGY:**


17. Evolution and Faith: Tyler, Man in the Light of Evolution, chaps. 6 and 7, pp. 115-162.


XIII. DIFFERENT MEN'S THEORIES OF EVOLUTION:


5. Present Standing of Darwinism: Kellogg, Darwinism To-day, chap. 12, pp. 374-396.


21. Weismann and DeVries: Locy, Biology and Its Makers, chap. 18, pp. 3-17.
22. **Darwin's Predecessors**: Thompson, Darwin and Modern Science, chap. 2, pp. 3-17.

23. **Lamarck, His Life and Work**: Packard.

**XIV. SOCIAL ASPECT OF EVOLUTION:**

1. **Mutual Aid and Communal Life Among Animals**: Jordan and Kellogg, chap. 18, pp. 369-397.

2. **Family and Society**: Tyler, Man in the Light of Evolution, chap. 3, pp. 41-60.

3. **Social Environment**: Tyler, Man in the Light of Evolution, chap. 9, pp. 184-209.


6. **Mutual Aid; A Factor in Evolution**: Kropotkin.

**XV. GENERAL AND MISCELLANEOUS:**

1. **Evidences of Evolution from Classification**: Romanes, Darwin and After Darwin, chap. 2, pp. 23-49.

2. **Evidences of Evolution from Development**: A. Wilson, Chapters on Evolution, chaps. 9-12, pp. 167-257.


