

*American Social*

PAPERS ON INFANT DEVELOPMENT,

PUBLISHED BY THE

EDUCATION DEPARTMENT

OF THE

American Social Science Association,

JANUARY, 1882.



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EDITED BY

MRS. EMILY TALBOT,

66 MARLBOROUGH ST.,

BOSTON, MASS.

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TOLMAN & WHITE, PRINTERS, 383 WASHINGTON STREET, BOSTON.

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*Pam.*

PUBLICATIONS OF THE  
American Social Science Association.

**Journal of Social Science.** Containing the Transactions of the American Association. Nos. I.—V. 8vo, paper, each \$1.50. Nos. VI., XV., each \$1.00.

Numbers I. and IV. are out of print. All others can be furnished; also the Proceedings of the Conference of Charities for the years 1875, 1877-8-9, 1880-81. The contents of recent numbers of the Journal are as follows:

**CONTENTS OF NUMBER TEN.** Transactions of the Association, 1879. I. American Education, 1860-1879. Annual Address by President Gilman. II. The Method of Study in Social Science—William T. Harris. III. Report of the Department of Education—Mrs. I. T. Talbot. IV. The Voting of Women in School Elections—A. P. Peabody. V. Relations of Christianity to the Common Law—M. B. Anderson. VI. The Place of the Practical Man in American Public Affairs—Hamilton Andrews Hill. VII. Chinese Immigration—S. Wells Williams. VIII. The United States and the Declaration of Paris—Theodore S. Woolsey. IX. Recent Changes in our State Constitutions—Simon E. Baldwin. X. The Policy of Patent Laws—Frederic H. Betts. XI. The Sewerage of the Smaller Towns—George E. Waring, Jr. XII. Industrial Arbitration and Conciliation—Joseph D. Weeks.

**CONTENTS OF NUMBER ELEVEN.** Report of the Annual Meeting, 1880. List of Members. I. Southern Questions. 1. The Negro Exodus from the Gulf States—Frederick Douglass. 2. The Emigration of Colored Citizens from the Southern States—R. T. Greener. 3. Colored Schools in Virginia—Mrs. Orra Laughorne. II. Recent Changes in the West—Robert F. Porter. III. A Report on Protection from Casualties in the use of Machinery—Prof. William Watson. IV. International Coinage—Robert Noxon Toppan. V. Social Economy Papers. 1. Report of the Department of Social Economy—F. B. Sanborn. 2. The Care of Poor and Vicious Children—Charles L. Brace. 3. Social Economy in Illinois—Mrs. Harbert. 4. Co-operative Distribution—William A. Hovey. 5. Co-operation in England—James Samuelson. Saratoga Papers of 1877. 1. Extradition—Sheldon Amos. 2. Graduate Courses at Law Schools—Prof. S. E. Baldwin.

**CONTENTS OF NUMBER TWELVE.** Professor Peirce's Cincinnati Address: The National Importance of Social Science in the United States. President Gilman's Opening Address. Report of the General Secretary, by F. B. Sanborn. Report of the Treasurer and Publication Committee: Prof. Wayland and F. B. Sanborn. Papers of the Education Department: I. Report on Kindergarten Schools—Prof. Harris, Mrs. Talbot. II. The Relation of the Public Library to the Public Schools—Samuel S. Green. III. Educational Progress in England—Miss Edith Simcox. IV. Home Life in Some of its Relations to Schools—Miss Mary W. Hinman. V. The American Newspaper and American Education—Dr. J. M. Gregory. Libel and its Legal Remedy—E. L. Godkin. Papers of the Social Economy Department: I. Associated Charities. A. The Principle and Advantage of Association in Charities—Rev. D. O. Kellogg. B. General and Special Methods of Operation—Rev. O. C. McCulloch. C. The Need and Work of Volunteer Visitors—R. T. Paine, Jr. D. The Care and Saving of Neglected Children—Miss Anna Hollowell. II. The Principle of Volunteer Service—Mrs. Florence Bayard Lockwood. III. The Recreations of the People—George B. Bartlett. IV. The Justifying Value of a Public Park—F. L. Olmsted.

**CONTENTS OF NUMBER THIRTEEN.** Order of Business at Saratoga in 1881. Papers of the Jurisprudence Department: I. Pensions in a Republic—Frederick J. Kingsbury. II. Modern Legislation Touching Marital Property Rights—Henry Hitchcock, LL.D. III. The German Socialist Law of October 21, 1878—Henry W. Farnham. IV. The Study of Anatomy, Historically and Legally Considered—Edward Mussey Hartwell, M. A. Papers of the Health Department: I. The Treatment of Insanity in its Economic Aspect—Walter Channing, M. D. II. Adulterations in Food—Prof. S. W. Johnson. Debate on Adulterations. Remarks of George T. Angell. General Papers: I. Christianity and the Relations of Nations—Charles L. Brace. II. Indeterminate Sentences and their Results in New York—Z. R. Brockway. III. Changes in American Society—Julia Ward Howe. Appendix: Infant Development.

**CONTENTS OF NUMBER FOURTEEN.** I. The General Meeting of 1881—Death of President Garfield. II. Opening Address of Professor Wayland, President of the Association. III. The Three-fold Aspect of Social Science—Report of the General Secretary, F. B. Sanborn. IV. Civil Service Reform—Address by George W. Curtis. V. The American Newspaper—Charles Dudley Warner. VI. Prohibitory Legislation—P. Emory Aldrich. VII. Legislation and Intemperance—F. W. Bird. VIII. License and Prohibition—Rev. Leonard W. Bacon. IX. Moral Statistics of the United States—Dr. Woolsey. X. Divorce Laws—Prof. W. C. Robinson. XI. Lax Divorce Legislation—Rev. S. W. Dike. XII. Address on Health and Insanity—Walter Channing, M. D. XIII. Women Practising Medicine—Emily F. Pope, M. D. XIV. List of Members, Officers and Committees of the Association.

**CONTENTS OF NUMBER FIFTEEN.** I. Papers on Infant Development—Prof. Harris, Mr. Darwin, Mr. Alcott, Dr. Preyer, M. Taine, etc. II. Report of Mrs. Talbot. III. Religious and Moral Education of Children—Prof. G. S. Hall. IV. Treatment of Incipient Insanity—Mary Putnam Jacobi, M. D. V. Debate on Insanity—Prof. W. T. Harris, Dr. Channing, F. B. Sanborn, etc. VI. Papers on Building Associations—R. T. Paine, Jr., and Addison B. Burk. VII. Homes for the People in Washington, by John Hitz. VIII. Art in its Relation to the People—Martin Brimmer. IX. Miscellaneous Papers.

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CONSTITUTION OF THE AMERICAN SOCIAL SCIENCE  
ASSOCIATION.

I. This Society shall be called the AMERICAN SOCIAL SCIENCE ASSOCIATION.

II. Its objects shall be classified in five departments; the first, of Education; the second, of Health; the third, of Trade and Finance; the fourth, of Social Economy; the fifth, of Jurisprudence.

III. It shall be administered by a President, as many honorary Vice-Presidents as may be chosen, a Treasurer, a Secretary, and a Council, charged with general supervision; five Department Committees, established by the Council, charged with the supervision of their respective Departments; and such Local Committees as may be established by the Council at different points to serve as branch associations. The Council shall consist of the President, Treasurer, and Secretary, the Chairman and Secretary of each Department, and ten Directors, with power to fill vacancies and to make their own By-Laws. The President, Vice-Presidents, Treasurer, Chairman, and Secretaries of Departments, and Directors, shall be chosen annually by members of the Association, and shall hold office till their successors are chosen. The President, or in his absence, a Director, shall be Chairman of the Council. The Chairmen of the Local Committees shall be chosen at the pleasure of their respective committees. Whenever a Branch Association shall be organized and recognized as such by the Council, its President shall be *ex-officio* one of the Vice-Presidents of the American Association, and, together with the Secretary and Treasurer, shall be entitled to all the privileges of membership in that Association. And whenever a Local Department shall be organized and recognized as such by the Council, its Chairman shall become *ex-officio* a member of the parent Association. The Chairman and Secretary of each Department, with the consent of the President of the Association, may appoint such special Department Committees as they may think best. The General Secretary shall be elected for three years, unless he resigns or is removed by a two-thirds vote of the members present and voting in a regular meeting of the Council; and out of his compensation he may pay the salary of an Assistant Secretary, who may also be Secretary of one Department.

IV. Any person may become a member by paying five dollars, and may continue a member by paying annually such further sum as may be fixed at the Annual Meeting, not exceeding ten dollars. On payment of one hundred dollars, any person may become a life-member, exempt from assessments. Honorary and corresponding members may be elected, and exempted from the payment of assessments.

V. The Council shall have sole power to call and conduct General Meetings, and to publish the Transactions and other documents of the Association. The Department Committee shall have power to call and conduct Department Meetings.

VI. No amendment of this Constitution shall be made, except at an annual meeting, with public notice of the proposed amendments.

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Publications can be obtained and information had by addressing F. B. SANBORN, Concord, Mass., or the Publishers for the Association, A. WILLIAMS & CO., Boston, and G. P. PUTNAM'S SONS, New York.

## PAPERS OF THE DEPARTMENT OF EDUCATION.

### I. INFANT DEVELOPMENT.

The most interesting topic considered by the Department of Education at the Saratoga meeting of 1881, was Infant Development, which will, therefore, be first presented in the *Journal*, after Dr. Harris's opening address.

#### THE EDUCATION OF THE FAMILY, AND THE EDUCATION OF THE SCHOOL.

AN ADDRESS BY W. T. HARRIS, CHAIRMAN OF THE DEPARTMENT OF EDUCATION.

The Department of Education, in the Social Science Association, has to consider education in general, and not to limit its view to education in the school alone. It is an error frequently made, to demand of the school all kinds of education, — education for trades and business, education in religion, education in politics and statesmanship, education in habits which the nurture of the family should supply.

Education, in the sense that social science uses the term, includes the whole life of man, in so far as the different institutions of human life react upon the individual and educate him. These institutions of civilization are the family, the social community, the State, the church. Each one of these gives a special kind of education to man which cannot be given by any of the others; all education seeks to make the mere individual the possessor of the fruits of the labors and experience of the human race. The church is the highest educational institution, because it reveals the highest principle to man, — that of the creator of the world. In revealing this principle, it reveals the origin and destiny of the world, of nature, and of the world of man. If our religion were Buddhism or Brahminism, for instance, instead of Christianity, we should believe in a God without any form whatever, not even the form of

consciousness or personality. A world could not be a revelation of such a formless God. The human mind could not be in the image of a formless God. If God is not personal, an infinite reason, an absolute form, then man cannot be immortal, but must be destroyed, and lost when he returns to the first principle. Under such an education as a religion of Pantheism teaches, there can be only despotism in the State, slavery in the social community, and patriarchal rule in the family. But with the Christian ideal of a divine-human God there is all hope for the individual man. Christian civilization progresses toward the preservation and education of each individual. Each human being is an immortal soul infinitely precious to God, and institutions shall be established to reach out and bring within the influence of civilization all and each.

Next after the church, the education of the State is all-important. The influence of the form of government, its laws, and the efficiency of their execution, have a most powerful effect in forming the character of each citizen. What can school education do toward making a man of the citizen who is born under the blight of absolute despotism? The education of the State would dwarf such an individual more than the school could cause him to grow. But under a free government, where each citizen is permitted to assist in making the laws, this education is very powerful toward building up self-respect and strong individuality. The school is not chargeable with the corruption in politics, where the political machinery is so loose that it encourages demagoguery by permitting partisan success to follow as a result of bribery and fraud. Such a condition of things will corrupt the best young men who graduate from the school; the school is helpless against the temptation which is offered at the hand of the State.

Next in importance to the education of the State is that of the social community, or the business vocation of the individual. The business relation of man to his fellowmen continually educates the individual, and humanizes him or dehumanizes him, according as it is a rational employment or a brutish one.

The education of the family is of exceeding great importance. It furnishes the human being with his bundle of habits, his forms of behavior toward his superiors and equals; his habits of personal cleanliness, of proper dress, of proper eating and drinking, and, in short, of the general conduct of life. It gives the child the knowledge of his native tongue, ideas of right and wrong. All

other institutions presuppose in the child that he has learned these great fundamental lessons from family nurture. If he has been so unfortunate as to have missed the priceless blessings of family nurture, the other institutions can make very little of him. The State will be unable to permit him to exercise his liberty, because he lacks the habits which make him a safe person; he has not put on the forms which are essential to the individual for life in a civilized community. The State confines him in a jail, therefore, because his period of nurture has been an education into hostility to social forms.

The social community, with its industrial vocations, cannot receive the child who lacks family nurture; for he lacks the sense of social propriety, has no respect for the rights of property, is not honest nor truthful, and has no instinct for industry. The beggar is the symbol of the destruction of the social community. Even the school cannot compensate for the lack of family nurture. It cannot deal with the child who does not know language, nor can it take time to teach him all the personal habits he should know.

The growth of a Christian civilization for two thousand years, is marked all the way along by an increase in the power to reach and elevate the mere individual into the full enjoyment of the products of the labor and of the results of the experience of mankind. It enables the individual to participate through trade and commerce in the productions of every clime, and to share likewise in the wisdom collected by all mankind in all times and places. This principle has taken care of the well-being of the individual in the church, the State, the social community, the school.

The humblest individual is allowed, nay, encouraged, to participate in the spiritual education of the church; the State has become democratic, and admits him to the privileges of self-government; the social community has emancipated him from serfdom, and permitted him to choose his vocation and thrive by it; the school has come to his very door, and offered to every child its initiation into the wisdom of the race. But this Christian principle has not done so much for the education in the family. It has not equalized conditions in the family to the extent that it has equalized conditions in the school, the social community, the State, and the church. In the family, poverty and wretchedness are allowed to tell on the nurture of the child, and sow in him evil seeds which will grow through all after life, in spite of whatever the other

institutions may do for him. The criminal parent may bring up his offspring to vice. The ignorant parent may bring up his children to manifold bad habits of person and conduct toward others, which will prove embarrassments in after-life.

It is now the most beneficent effort in society that seeks to remedy the condition of the poor and ignorant, without depriving him of personal liberty. Social science teaches that the interest of the high and that of the low in society are one interest. No village can be healthy with a pestilential marsh adjoining it. No family, however elevated by rank or wealth, can shut up itself within its palaces so securely that an ignorant and degraded population surrounding it will not create for it a pestilential atmosphere. The piece of carrion corrupts the air far and wide. Life is perpetual participation in the totality of one's conditions. It is a continual readjustment to one's environment. The interest of each is accordingly the interest of all. If we wish to attain well-being ourselves, we must see to the well-being of our neighbors.

Social science is gradually concentrating its attention on this most important matter of family nurture. The problem is, how to assist the family without destroying its sacred privileges of privacy and self-management; how to interfere without undermining individual freedom; how to increase self-help instead of diminishing it. The first successful move in this direction is the study of the conditions of hygiene, and the provision for cleanliness, abundant pure air and pure water in the community. This is attended to by the department of health in our cities,—a recent institution, but one securing blessings to the family.

Efforts are now being made to improve the homes of the poor, to secure cleanliness, good ventilation, separate apartments for the members of the family, sufficient playground for children. These are great beginnings, but they are only beginnings, and are indirect contributions to the education of the family. The noble woman who, as Secretary of this Department of Education, has inaugurated a system of inquiry into infant growth and development (Mrs. Emily Talbot, of Boston,) has undertaken an enterprise which promises very great effects in the direct promotion of the education of the family. She has devised a plan by which to interest the mother in her child's growth, and which will induce her to watch and record the steps of development in the unfolding of the faculties of the soul.

It does not so much matter what the statistics will show, as it does matter that the mother shall learn to study the growth of her child, and learn what constitutes a stage of progress, and how to discover and remove obstacles to this growth, as well as to afford judicious aid to the child's efforts at mastering the use of his faculties. One intelligent woman who is interested in this subject will kindle an interest which will spread throughout an entire town. The wisdom gained through these observations will extend gradually to all families, and will elevate the character of infant education incalculably.

When the mother becomes observant of the actions of the child as a matter of education, and when there comes to be a stock of generalized experiences on this subject, how much will be done toward correcting evil tendencies upon their first manifestation! It is a trite remark, that the shaping of a tree is an easy affair if undertaken while it is a sapling, but impossible after the tree has attained its growth. The education that goes on within the family is the object which now calls with most importunity on us for our attention as students of social science.

#### REPORT OF THE SECRETARY OF THE DEPARTMENT.

That portion of Mrs. Talbot's Report having reference to the subject of Infant Development was as follows:

The importance of making some systematic effort to record the development of infant life has occupied the thoughts of many people in various countries for a long period, and observations of isolated cases have been made, such as those by Mr. Alcott, on a group of children fifty years ago, in Pennsylvania; that by Taine, on the "Development of Language in a Young Child;" that by Charles Darwin, on the "Expression of the Emotions," and by Professor Preyer, on "Psychogenesis." In a more modest way, and from the impulse of strong parental feeling and curiosity, rather than from any deliberate intention of making a scientific investigation, mothers here and there, in this and other countries have kept a diary of the physical and mental development of their children. It was suggested at the last General Meeting of this Association that in this field was a work which ought to be seriously undertaken, and that this Department should begin the difficult

task. The value of the suggestion was confirmed by discussion; advice was sought from men of science and psychologists, gentlemen eminent in their specialties; correspondence was opened with distinguished Europeans, and one result may be seen in a simple and concise register which, in the form of circulars and by reprints in many different newspapers in this country and in England, has reached tens of thousands of readers, and brought to this Department a wide and interesting correspondence. It is too soon to announce results; too soon to formulate any theory of the physical and mental development of children, but we are already in possession of interesting facts. We have hundreds of mothers engaged; many of whom have been trained in our universities and colleges to make investigations with accuracy, and to weigh evidence with candor. With patience and perseverance we hope that this Department may soon make such progress in the collection of facts as to justify the attempt, that in the course of the next decade a continued series of observations, in large numbers, may reveal order in the variations of phenomena, and that some portion of the secret of the mental and physical development of infants may be discovered. The interesting communications from Mr. Darwin and Mr. Alcott herewith submitted, will illustrate what the Committee have aimed to do, which will also appear in detail from the Register itself appended to this report:

LETTER OF MR. DARWIN.

DOWN, BECKENHAM, KENT,  
RAILWAY STATION, ORPINGTON, S. E. R.,

July 19, 1881.

*Dear Madam:*—In response to your wish, I have much pleasure in expressing the interest which I feel in your proposed investigation on the mental and bodily development of infants. Very little is at present accurately known on this subject, and I believe that isolated observations will add but little to our knowledge; whereas tabulated results from a very large number of observations, systematically made, would probably throw much light on the sequence and period of development of the several faculties.

This knowledge would probably give a foundation for some improvement in our education of young children, and would show us whether the same system ought to be followed in all cases.

I will venture to specify a few points of enquiry which, as it seems to me, possess some scientific interest. For instance, does the education of the parents influence the mental powers of their children at any age, either at a very early or somewhat more advanced stage? This could, perhaps, be learned by schoolmasters or mistresses, if a large number of children were first classed according to age and their mental attainments, and afterward in accordance with the education of their parents, as far as this could be discovered.

As observation is one of the earliest faculties developed in young children, and as this power would probably be exercised in an equal degree by the children of educated and uneducated persons, it seems not impossible that any transmitted effect from education could be displayed only at a somewhat advanced age. It would be desirable to test statistically in a similar manner the truth of the often-repeated statement that colored children at first learn as quickly as white children, but that they afterwards fall off in progress. If it could be proved that education acts not only on the individual, but by transmission on the race, this would be a great encouragement to all working on this all-important subject.

It is well known that children sometimes exhibit at a very early age strong special tastes, for which no cause can be assigned, although occasionally they may be accounted for by reversion to the taste or occupation of some progenitor; and it would be interesting to learn how far such early tastes are persistent and influence the future career of the individual. In some instances such tastes die away without apparently leaving any after effect; but it would be desirable to know how far this is commonly the case, as we should then know whether it were important to direct, as far as this is possible, the early tastes of our children. It may be more beneficial that a child should follow energetically some pursuit, of however trifling a nature, and thus acquire perseverance, than that he should be turned from it, because of no future advantage to him. I will mention one other small point of inquiry in relation to very young children, which may possibly prove important with respect to the origin of language; but it could be investigated only by persons possessing an accurate musical ear. Children, even before they can articulate, express some of their feelings and desires by noises uttered in different notes. For instance, they make an interrogative noise, and others of assent and dissent in

different tones; and it would, I think, be worth while to ascertain whether there is any uniformity in different children in the pitch of their voices under various frames of mind.

I fear that this letter can be of no use to you, but it will serve to show my sympathy and good wishes in your researches.

I beg leave to remain, dear madam, yours faithfully,

CHARLES DARWIN.

To MRS. EMILY TALBOT.

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MR. ALCOTT'S LETTER.

CONCORD, Massachusetts, August 31, 1881.

*Professor W. T. Harris, Orchard House, Concord:*

Dear Sir: You ask me to give you some extracts from my notes on Infancy, taken during the earliest years of my children. The following are now submitted to your perusal. In copying them from my manuscripts I beg you will remember that (while they may gain in scientific clearness) they may lose some of the attractiveness you found in them, when read in connection with the reflections and inferences made at the time of writing. The psychology must remain for the present untouched, but, in copying for your use, I allowed myself to improve the phraseology, making an occasional change for the sake of greater clearness. I confine myself to notes taken during the first three months of my eldest child's existence.

NOTES FROM THE DIARY.

March 16, 1831.—During the first days after birth she slept most of the time. As she gradually awoke and was exposed to the light, she opened her eyes as if intent on adjusting these for the purpose of seeing. Luminous objects particularly attracted her notice. While viewing these her hands moved instinctively, her arms were extended and drawn toward the mouth, which also appeared to be sensitive to the stimulus by frequent movements of the lips and tongue.

Tenth day after birth.—Her features are daily assuming a more sensitive and mobile expressiveness. To-day her attention was arrested by the contrasted colors of her mother's dress, and her attention was accompanied with a smile. She sleeps less, and is more observant (if I may say so) when awake.

Fifteenth day.—I notice an increased power of the sense of sight. A watch was held before her till she caught the sight of it, and followed its motion with her eyes while moved in various directions.

Twentieth day.—Her progress can be seen and marked daily, yet almost imperceptibly. Her existence is pleasurable, if the absence of crying, and her quiet moods, are trustworthy indications. If any sense brings the greater delight, it appears to be the sight; particularly when bright objects are placed at some distance they attract her notice. The morning hour, or the times of waking from her slumbers during the day, bring a freshness of perception.

Twenty-fifth day.—Her hands, when she is awake, are kept in constant motion, and these motions are becoming daily more energetic and direct, as being brought under the control of the will.

Thirtieth day.—When addressed, she turns towards the person speaking, as if eager to catch the tone of voice and distinguish the individuals; and the periods of attention are more prolonged and frequent. I am unable to discover that she distinguishes particulars from generals, as yet; or that recollection has dawned upon her, by which to discriminate one object from another. I imagine this belongs to a later stage of growth. Her progress has been chiefly indicated by longer-sustained efforts of attention to sounds, to form, and to motions, of which she appears to be already vaguely cognizant. Placed before a mirror to-day, she seemed for an instant to have caught the reflected image of herself and was lost in wonder at the vision, while this soon faded and itself became lost in the surrounding objects of the nursery. So the poet Shelley says:

The babe  
In the dim nearness of its being feels  
The impulses of these sublunary things,  
And all is wonder to the unpracticed sense.

Fortieth day.—Since the last record her progress has been marked and significant; she listens to voices for some instants, and is attracted by the soft and suppressed tones; violent notes displease her. Her hours of wakefulness become longer daily, and she fixes her attention for longer periods. She takes much satisfaction in looking from the window at objects and movements outside. She has not yet been taken out of doors.

Sixtieth day.—A vase of flowers standing upon the mantelpiece attracted her notice, as she lay on her mother's lap, and she showed her pleasure at the sight by a smile. Her sleep seems mostly undisturbed and dreamless. Careful attention is paid to her dress, a disregard of this and of air and bathing, under a nurse, being avoided by the care which her mother gives.

Sixty-ninth day.—Lying in her mother's lap to-day, she caught a glimpse of her mother's finger ring, set with amethyst, at which her pleasure was great, keeping her attention on it for several minutes.

Seventy-seventh day.—While lying on the sofa she observed the varied colors of its cover; the color of her dress also, which she attempted to seize and detain in her hands. She is now almost able to hold her head erect without other support. Six days ago, the emotion of terror was excited on beholding a distorted face (May 24), and manifested by loud outcries; she seeking protection from the face in her mother's arms. It was long before she was restored to her accustomed tranquility—the vision perhaps reappeared in memory, haunted her fancy and brought tears to her eyes.

Seventy-eighth day.—On being carried into the yard she seemed lost in wonder at the varied pleasure. The open mouth, hands motionless, eyes expanded, betrayed the new sensations. She has now obtained sufficient command over her hands to grasp objects presented and hold them at will. This affords her an apparent satisfaction.

In closing, I transcribe a single reflection from the notes:

How wonderful is the progress of infancy; how involved in mystery! Repeated and successive acts of the senses precede the emergence of the indwelling mind into the light; and all emotions of the mind are unlike the movements we note in matter. We cannot affirm of this, it is, as we hesitate not to affirm of that. Now this addition is to be made to it, and now that: now it is about exhibiting such and such specific modifications—new elements are being intermingled; now observe how it behaves! But while we thus note the mind's mysterious operations as these move ceaselessly and noiselessly on, behold! ere we are aware, it has assumed new forms, unexpected changes occur, progress has been made, and the mind is.

A. BRONSON ALCOTT.

In the absence of Mrs. Talbot, Mr. Sanborn read at the Saratoga Meeting of 1881, the cases reported by Mrs. Talbot from her correspondence with fathers and mothers, previous to August last. Several of these cases, as presented, with remarks by Mrs. Talbot, are given below, and following them will be found the essays of M. Taine, Mr. Darwin and Mr. F. H. Champneys, who have made careful observations in France and England. Mrs. Talbot's cases, with one exception, are from the United States,—the exception being the child of a Dutch family at Delft.

## CASE A.

In this case, the following observations and suggestions are of interest :

The father of these children is a teacher. Both parents were born in New England, but at present reside in Virginia. One of the children was born in North Carolina, the other in Virginia. The interest of this observation seems to have centered upon the comparative development of the two children at the same age. The weight of No. 1 at birth was seven pounds ; of No. 2, eight and a quarter. At the age of six months, the weight of each child was the same. No. 1 was nursed till he was sixteen months old, and liked fresh figs especially. No. 1 smiled when one day old. No. 2, when two days old. No. 1 sat alone on the floor when five months old. No. 2 is still too young for a comparison to be made on this point. No. 1 says "Titten" (Kitten) at 14 months. No. 2 appeared sensible to sound three hours after birth, held up his head and followed a light with his eyes at three weeks, noticed its hand at five weeks, and held a plaything at six weeks.

The mother writes to Mrs. Talbot, as follows :

ALEXANDRIA, VA., July 11, 1881.

*Dear Madam* :— You asked for suggestions, one or two of which I now make :

*a.* It seems to me that a question or two in regard to the character of food, frequency of feeding, etc., might be valuable in this connection, as observation teaches me that the mental development is largely influenced by these. *b.* My own children, brought up "by rule," and neither they nor their parents using any form of stimulating food, do not develop as early as their cousins, not under the same treatment, but are both of them exceedingly rugged.

Where in the series, whether first, second, or only child, is another determinative influence. My second child gives promise of excelling his sister because of her attention, example, etc.

[I make a very incomplete account of this baby of three months.]

c. The question as to the earliest exhibition of consciousness, seems to me a little ambiguous. Conscious of hunger, of the difference between arms and the bed, certainly,—yet I doubt that being the meaning of the question.

My first child, at five months, moving her finger over a plaything, heard the scratching sound thereby occasioned, stopped and listened, repeating till she had evidently clearly established the relation between the motion and the sound. This I have been accustomed to consider her first intelligent act, yet she had long before learned to distinguish between her mother and other attendants.

Medical works give six to ten hours as the earliest time at which hearing is possible, but my boy, born at 1.30, certainly heard, and nervously started at the sound of the cock crowing at 4.30.

This mother has raised questions of great importance, which may well occupy the attention of our observers for a long period. The statement (a) that mental development may be influenced by the character of the food given, is a broad one, and will admit of experiment. The recorded experience of different parents on this subject of when and how to feed a young child, would be of great service. In the statement (b), this observer concludes that children brought up by rule, that is, fed regularly as to time and quantity, are thereby retarded in their mental growth; a gain, however, in physical strength is intimated. While considering this question of how to feed children, it is desirable that observers should read Pavy "On Food," or other authorities. Those who have already accepted the theory of "rule feeding," should recollect that an infant sometimes falls asleep before the needed amount of food is taken and will then fret for more before the appointed hour and thus, fatigued and faint, not be in a condition to easily digest food when it is next taken. The influence of undue prejudices must be guarded against in making observations, and because overfeeding sometimes induces illness care must be taken not to follow the other extreme and weaken a plump-looking child by the too long continued use of milk and farinaceous pap. The significance of the first appearance of the teeth should be noted and how long their legitimate use may with wisdom be delayed. Idiosyncracies of taste and cravings will often be observed, and

may well be regarded. Because this tender being is human, a moderate degree of change in its surroundings, and of variety in its food may be found essential to its physical and mental health. To pass safely through illnesses and to endure exercise and moderate excitements without fatigue will be the best test of these experiments, concerning food. Under (c), this observer expresses doubt as to what is meant by the "earliest exhibition of consciousness." To throw more light on the growth of self-consciousness in young children from the parents' point of view, is one of the objects of these studies. The subject has been examined and discussed by Prof. Preyer and Bernard Perez.\* The children under consideration are peculiar from the fact that they were observed to smile the first days of their existence. The state of the subject under observation should be carefully considered in deciding upon a sign of development like that of the first smile. The facts connected with the delivery, if rapid and easy or slow and difficult, with development, whether perfect or imperfect, with the natural disposition, if it be merry or otherwise,—all these circumstances should be considered.

It will be noticed that these children were born in a more southern latitude than those of any other recorded cases which have been made public. It will be well to inquire whether this fact tends to hasten or retard development, or if any special result from such a circumstance is noticed by any observer.

#### CASE B.

#### A STUDY ON HEREDITARY TRAITS IN THE CASE OF C. W. S.

(Madison, Wisconsin, May 9, 1881.)

It was the father's system to observe certain inherited traits or to seek for their exhibition. He did not come of a literary or voluble race. Neither the father nor mother of the child in question is fluent in speech. The father is rather reserved, silent, and is accused of sullenness, frequently, from distaste of exercising his vocal functions. He dislikes talk in others even to the extent of being prejudiced against lectures, preaching, society, and even singing, except, in the latter case, singing that is scientific, so to speak. The mother does not talk much, though having no such prejudice against it in others,—preferring it, rather. It might be expected that

\* *Les Trois Premières Années de L'Infant*. Patis, 1878. See *Mind* for October, 1878.

the child would not show his intelligence mainly by fluency in articulating words. It is the father's opinion that speech comes natural, without being taught. He has observed in this child a gradual increase of power in the exercise of the vocal organs with the gaining of the teeth, and the strengthening of the various muscles of the mouth and chest. He is surprised indeed to notice how loud a voice a child can produce, even a very young child, compared with young animals of other species. It is to be observed also that the child seems to take up at times a habit of amusing itself by making various tones, or producing varying inflections of the voice—a sort of sound like preaching heard at a distance, or a ranting like a poor actor, then a hallooing, and again, as at a year old, of sounds alternately high and low at short intervals, somewhat as a person learning to sing practices octaves. Although deficient in vocal tastes, the father has a perhaps exceptional facility in acquiring arts of manual dexterity. He plays readily on half a dozen musical instruments, violin, violoncello, flute, zither, piano, and, as secondary to these, the organ, which requires a different touch not so easily acquired by many good musicians. As a musician he has had good instructors, and appreciates and performs music of Bach, Beethoven, Mendelssohn, Wagner, Berlioz, etc., and takes pleasure in the literature relating to this art. Naturally a musician cannot be wholly either right or left handed. Both hands and arms must be developed. Therefore it was with some curiosity that the child was observed, whether he would show marked preference for either hand. He does not. He shows remarkable impartiality of hand, but still there is an implied exercise of the right, as in taking up his playthings and throwing them away when playing or tired of them.

This might easily be inherited, for though a musical education would develop both hands, to paint and write and draw and otherwise use one hand would give that an added vigor which would have its influence. Then, too, in doing a certain thing, it is certainly a disadvantage to try to do it in different ways when its perfect doing is the result of repetition, and of acquiring habits relating to unconscious action rather than a discipline. It is the difference between art and mere tentative attempting.

It was the desire of the father to have the child show a preference for his own art, that of painting. Therefore he encouraged every implied turning towards this temperament. The wish of the child to be out of doors, his contented pleasure when there, his enjoyment in riding both in a baby wagon and in a buggy, seemed to imply that pleasure in nature which was desired. Tests were made to see if he distinguished tones, by putting him upon the piano and playing softly, even from earliest days. It was, however, very lately that he implied any recognition of musical tones, though he early gave notice of delicacy of hearing, yet seemed insensible to sounds like thunder, or cannons firing, for several

months. Now he has learned to understand tones of voice, and if told not to do a thing, understands it as a prohibition, though he may not obey, having, of course, no fear of punishment from disobeying; therefore, he will sometimes scamper away when he sees any one coming to interrupt his destructive employments. Destructiveness seems prominently displayed. His pleasure is to tear things, paper, strings; a probably curable trait.

When the violoncello is played, he likes to get up along side, often leaning against it; not from love of music, but to be in the thick of the stir. He has to be watched lest he put things into the round holes, another of his traits.

That there are retrograde days, and days of progression, seems evident. Some days he will learn half a dozen new tricks, then he may go for a month without trying anything. When he gets some "new wrinkle," he is not satisfied unless he can be doing it all the time. When learning to bear his weight on his feet, he must be attempting it with wearisome pertinacity. I think such childish habits as squinting the eyes up, sticking the tongue out, putting the head one side or the other, or hiding it, playing "peep," or "pata cake," should be noticed as things easily to be dated. The pulling a handkerchief off his head and laughing heartily at it, occurred when but a few months old.

Considerations as to facility with his fingers and hands should be noticed; the power of picking up very small things, of putting a stick to a definite place, as through a hole, etc.

That a child does most of his actions by inherited instinct seems to me most plausible. I think, as comparing children with dogs, that, aside from the physical condition, the inherited taste is first shown. Little puppies of a retriever breed will begin to take things hither and thither in their mouths long before puppies of an uneducated ancestry, though there will be a difference in talent and exceptions. In children, besides the natural self-assertion of a young child, there will continually crop out a hint of an inherited facility, which he uses without being taught. Then there is association. Having always seen a dog about, he has no fear of a dog, wants to pull him and roll about with him, does not fear the bark of a dog, though a little startled, if sharp; but of horses he has fear, and a certain fascinated interest,—wants to know them, and yet is afraid.

I throw out these suggestions without much thought of their proving particularly valuable, but in a belief that your list of questions would, in a scientific sense, be made more valuable if extended to individual qualities, to determine exactly what is natural to all children, what peculiar to the exceptionally intelligent, and what is the result of heredity and association.

The child above described by his father was born April 14, 1880; his parents were born respectively in Ohio in 1840, and in Minne-

sota in 1851. He weighed  $8\frac{1}{2}$  pounds at birth, 14 at three months old, and 21 at a year old, when also he was  $29\frac{1}{2}$  inches in height, and was strong and healthy. He smiled at five weeks (?), exhibited consciousness at eleven weeks, noticed pain at two weeks, noticed the light before eight weeks; could creep at ten months, and stand alone at twelve months.

## CASE C.

ASHBURNHAM, MASS., July 18, 1881.

The children are twin boys, born June 5, 1881; the elder weighed 7 pounds, the younger 6, at birth. The elder had a thick, round head, plenty of dark hair, was stupid and sleepy; the younger had a head narrow and high, long from front to back, with no hair; he was active, with eyes wide open and restless; his mouth open and moving for food from the first. The elder seemed considerably the most mature. He recognized the light of a window (evidently) at the age of 20 hours,—as he was looking at it he was turned round so as to bring the other side towards the window, and at once turned his head towards it. He recognized sounds in a day or two. The younger recognized light and sound in the same way a day or two later,—in general he was a little later in all his developments.

June 15.—(Ten days old.) Both evidently noticed a piano played in another room,—stopped their incessant baby motions to listen, and put on the same listening look as adults do. This was repeated for a day or two, at times when the piano was played; but afterwards as the sound grew familiar they ceased to notice it.

June 25.—(Twenty days old.) Both lift their heads strongly, but cannot hold them up,—the elder, as usual, a day or two ahead. Between the third and fourth weeks they are beginning to fix their eyes on objects *as distinct*. The elder clearly looked at me as I talked to him, and also at a hand moved in front of him. Neither can yet follow an object, or knows which way to turn for a sound. They look at any one speaking, as yet, only occasionally and for a moment. They wink at a sudden sound, but not at a hand struck close to the eye. The nurse can wash through the eye at first, or throw water in it without their closing it. Tapping them all round the eye within half an inch of it, they do not move till the taps reach the nose near the inner angle, when they partially wink. They spring at sudden sounds, as of a door shutting.

July 2.—(Twenty-seven days.) The mother and babes moved to a new room down stairs. They looked round in wonder, stared evidently, in their new quarters. This soon ceased, in the main, so far as their new room was concerned, but is renewed when they are carried about.

July 4.—The bells and firing woke them rather early, and the younger soon grew nervous, so as to spring and throw up his hands at the explosion of a fire-cracker or other noise. This subsided as the morning clangor died away.

July 7-9.—(Fifth to sixth week.) They fix their eyes sharply on an object moving, or a person speaking, close in front of them. They begin to take evident pleasure in being talked to, drawing towards a smile occasionally when played with. They begin occasionally to turn their heads a little towards voices quite near,—that is, there seems to be the first dawn of an *intelligent* motion; mostly, however, mere aimless turning as yet. Their eyes, in their incessant rolling, usually move together, but not unfrequently they turn different ways, generally inwards; that is they look cross-eyed. This was not noticeable for the first three or four weeks, but evidently comes from the child's ill control of his muscles, now that he has gained the power, and attempts to look at objects definitely.

July 12-15.—The eldest has now no difficulty in looking at a person speaking to him, or at a near moving object, when directly in front of him. He evidently sees a person moving at a distance of 8 or 10 feet; the younger cannot do this yet. The elder now for a few days manifests pleasure in being talked or sung to, his face beaming, his arms striking out more vigorously, and himself often springing up towards the speaker. He looks at our *faces* now, with an intelligent look. The younger manifests all this in a less degree; that is, he traverses the same ground a few days later. The younger likes to be "cuddled" best; the elder has more of the "go it alone." Four or five of us are tending them, off and on, during the day, so that neither as yet seems to know the mother or any one in particular. If there is any special recognition it is occasionally of the housemaid, who comes in and sits with them while the family are at meals,—it does not amount to recognition, but to manifest liking of her voice and manner. They plainly know, as they lie on their mother's arm, her motion of preparing to nurse them, and change their hungry crying to an impatient brooding noise.

A singular thing was remarked by the nurse when she first undressed them (2d day), and has been noticeable ever since. As she expressed it, they "seemed to be afraid of falling to pieces." As they are being washed, and are turned over or raised or lowered, they clutch with their hands, spring, catch their breath, etc., precisely as if afraid of falling. This was very slight at first, but increases. The youngest, who is most nervous, shows it most. Both manifest this occasionally when dressed, but in a less degree. The younger shows the same feeling on being swung on the hands, and does not like it; while the elder enjoys the motion, and will often go to sleep that way. This fear of falling was not noticed when they were dressed for the first two or three weeks,—I doubt

if it was shown, for I several times looked for it. It evidently grows on them.

The most remarkable thing that I have watched so far has been the development of the *smile*. A baby does not smile or do any thing else *for the first time*. That is, nothing is clearly marked at first. The smile *begins* when the infant first begins to be conscious of outside things; attention gradually becomes closer, more fixed; the smile at this stage is the mere stare, vacant at first, but growing steadily more intelligent and wondering in its appearance. About the third week this begins to relax *very slightly* into the appearance of pleasure. At this point there comes first more and more of a glow on the face,—a beaming—then in a day or two a very slight relaxation of the muscles, increasing every day. Now—July 16–18 (sixth week), this is very noticeable in the elder,—his look of intelligence, of pleasure, of a dawning smile, is often very beautiful, but it is not as yet a smile. The younger is yet in the wondering, beaming, slightly pleasurable stage; he shows his satisfaction by pushing out his eyes and pursing of his mouth as if to whistle. The look (at this stage) in both may be described as one of satisfaction—self-satisfaction—rather than of pleasure. The smile is just now incipient, just beginning, in the younger, and well-nigh developed, *almost* a smile, in the elder. But I am confident no one will ever know the exact day when the baby fairly and intelligently for the first time *smiles*.

(At a later date—Nov. 2, 1881.) There are some other items which I was not prepared to insert at the former time of writing. For instance, my wife insisted from the first that the boys were strikingly “marked” from the two pictures hanging in my library. The resemblance was indeed startling at first sight, but I was desirous of confirming it by more careful thought. The pictures were of Agassiz and Horace Mann, as unlike as could well be imagined. But there can be no question whatever that the elder boy had the features, expression, hair, short neck, etc., of Agassiz,—while the younger had the thin hair, sickly eyes, etc., of Mann’s picture. The hair on Agassiz’s head is parted on the right, and falls over to the left, giving the right a bald appearance. The babe has exactly this baldness, the hair growing an inch farther forward on the left side than on the right! The resemblance in the elder still continues (and may it ever, mentally and morally!) but the younger has mainly outgrown his resemblance to the other picture,—though my wife insists that the resemblance is only obscured, and will reappear when the baby plumpness passes away.

Another thing that has interested me has been the change in the head of the younger as indicated by the rough diagram enclosed. From being a little, weak, thin-headed baby, he has grown a strong, fat, round-headed boy.

But I weary you. I am so pressed with work that I have very little time to make observations, and still less to record them. But

the subject is very interesting and full of instruction, though so much beyond our reach.

## CASE D.

(DELFT, HOLLAND, 1877-81.)

The following study is of special interest from the facts that the birthplace of the subject is quite remote, the food on which the child was nourished in infancy is unlike that usually provided for young children in America, and he has been from birth and is still under careful observation by competent parents. The father is a native of The Hague, and is a doctor of science and professor of chemistry. The mother was born in Alkmaar; she is proficient in several languages, in literature and in music. They now reside in Delft, Holland, where the boy was born in January, 1877. He weighed at birth  $8\frac{1}{2}$  pounds, at  $2\frac{1}{2}$  years 33 pounds, at 4 years 44 pounds. During the first three weeks he slept 19 hours out of the 24. He laughed for the first time, but unconsciously, at the age of 3 weeks; and smiled wittingly in the 7th week. He followed a light with his eyes in the 6th week, held up his head in the 3d month, and cut two teeth in the 4th month. At the same age he held objects firmly in his right hand, and could also throw them with force. He had natural nourishment till 6 weeks old, then Liebig's food for infants was added till 3 months old, and after, that was the only food, when milk was given up. At present he likes all kinds of food, except butter, cheese and vinegar, but prefers bread, milk, and meat. At  $6\frac{1}{2}$  months he began to say *ada*, *aida*, *jaja*; at 9 months he said *papa* and *mamma*. At 21 months he could talk very well, and had an excellent memory; he could also sing correctly. At 20 months he could recite several little verses, and knew the letters of the alphabet, both large and small; he could also point out and name all the parts of the body. At 22 months he first spoke of "me" as a personality; he also knew the different colors. At  $2\frac{1}{2}$  years he could sing several songs with only the aid of the piano. His body is large and strong and his head well formed. It has always been difficult for him to pronounce the letter *l* and is still. He is now, at the age of 4 years, learning to play the piano. He has a very clear and sweet singing voice, and readily takes an octave either above or below any pitch given him.

A full diary of the development of this boy to the present time is at the disposal of the Committee should they desire it.

It is desirable to know more about the kinds of food given to very young children in Holland. Possibly the experience of another year will furnish further information on the subject. During the past summer a party of physicians staying in Rotterdam were greatly impressed with the clean, healthy and happy appearance of the children in the streets. Although a commercial town, and subject as other seaports are to a low moral influence, which is soon made manifest in the neglect and squalor of the young, nothing of the sort is to be seen in Rotterdam. The bright eyes and rosy cheeks of the infants tempted an inquiry of the parents as to their method of caring for their children. A daily bath, lightly boiled cold eggs morning and night, meat at noon, and all the bread and milk they desired in addition, was said to be the "custom" in Rotterdam. If this is correct, how far through Holland does it prevail? and how far is the same custom followed in other countries? A comparative study of some of the results of this manner of feeding the young, and of a milk and farinaceous diet would be of great value.

#### CASE E.

##### WATERTVILLE, MAINE.

Another comparative case is submitted, that of two boys, both of whom were born in Connecticut, together with their parents.

No. 1, at 8 weeks, "tries to smile;" No. 2, at 8 weeks, "smiles beautifully." Both held up their heads at birth; this was remarked by several persons. No. 1 sat alone on the floor at 8 months, No. 2 at  $5\frac{1}{2}$  months. No. 1 stood alone at 14 months; No. 2 stood alone in the middle of the floor at 10 months, and waved a wooden dumb bell. No. 1, at 1 year, could utter syllables, but no words. No. 2 could speak, at the same age, four words of his own, and imitate everything. At 15 months No. 1 could say a very few words; No. 2 everything, but verbs were given in the imperative. At 2 years old No. 1 talked exactly as No. 2 did at 18 months; while No. 2 was a perfect chatterbox. The weight of No. 2 at 2 years was 36 pounds, height 37 inches. The weight and height of No. 1 is not given when at the same age. It will

be seen in the following remarks made by the mother of these children, that the influence of the power of imitation has attracted her particular attention.

June 3, 1881.—I have kept records, but have concerned myself more with the *relative* development than the *absolute time* of the appearance of any new phenomena, and the dates are not those of the *first* time an act was noticed, but such time as the habit was well formed. (I think I was afraid of a mother's partiality!) I have, therefore, put down only so much as I found absolutely stated, and have put the two children together, that you may see how much ahead (*in time*) No. 2 is of No. 1, in *walking and talking*. I am curious to know if that is not apt to be the case. I have noticed very many things in which the children imitate each other, and they never talk very much alike. No. 2 had No. 1 to imitate, while No. 1 had no child to copy after. I put their height in answer to "strong and healthy?" because growth in that direction seems to me as important as that in weight. My children are not at all *precocious*, but I *am* rather proud of their physical development,—striving for *mens sana in corpore sano*. I have particularly desired to investigate the *lingual development* (order of parts of speech, &c.), as an indication of character, and last winter went so far as to prepare a circular to forward to my Vassar friends, but was prevented by sickness and removal to this place. I shall, therefore, look with great eagerness for results which may come through this attempt of the Social Science Association, and shall be glad if you will send me anything you may publish pertaining to the subject. I should vote that an enquiry be made into the "occupation" of the mother as well as of the father. Ruffles and frills *versus* "cultivation of brains" for instance—will it not make a difference in the weight of the baby? I think it does. I don't feel satisfied with Dr. Preyer's suggestion that fathers should take up this matter. Scientific observation of the baby ought to be the mother's compensation for the tedious routine of her daily duties.

#### CASE F.

M. G. D., born in Rockingham County, Virginia, Feb. 25, 1881, is the daughter of parents of more than common attainments. The mother, who has displayed great skill and success in developing the faculties of her family of seven children, from the first week of their existence, pays much attention to the formation of their habits. She is much opposed to corporeal, or any other severe punishment. This infant was strong and large at birth, and at 4 months weighed 17½ pounds. She noticed the prick of a

pin when 2 days old; when three weeks old she smiled; at 10 weeks she held up her head, and reached out and took a plaything at 12 weeks. The mother writes to the Committee as follows:

This baby is now four months old, and is thought by all to be a remarkably fine child. She is very large, sits up boldly when held on the arm, and shows evident preference for some members of the family; fretting to be taken by her father, who always carries her to the open air, and shows her little dogs and other pets. When sleepy or hungry, she frets to be taken by her mother, though at other times quite willing to be in the room with me, and carried by the nurse and older children. She has one tooth, a very unusual thing I think, for I never saw a child who had any teeth before six months, nor generally before eight, except one of my other children, a little girl now seven years old, who also had two teeth at four months. The baby resembles this little sister in physique, development, features, and color of hair, but not of the eyes. The little girl mentioned spoke nine words plainly at nine months of age. This we noticed at the time, as her father was reading the life of a Lord High Chancellor of England, an ancestor of the baby, and drew my attention to the fact that the mother of the distinguished jurist had mentioned in letters to friends that at eight months he could pronounce several words quite plainly. The fact of the relationship might have no psychological significance, being eight degrees removed, but that the same ancestor stands in equal degree of relationship to both father and mother of this child's father, and that there have been several marriages of cousins intervening.

Children vary greatly in the development of strength as well as sense. One of my boys at the age of 16 months could not speak a word or walk a step, but at his present age, 14 years and 1 week, he measures 5 feet 8 inches, and can walk 20 miles in a day.

I had supposed, from my experience with this boy, that girls developed more rapidly than boys, but a little boy  $2\frac{1}{2}$  years old was a precocious child, walking before he was a year old, and learning little hymns and songs when 16 months old. He also shows great powers of observation, as noticed by us all one day when he was about 23 months old. Several older members of the family were commenting upon the improved appearance of a cow which we had bought a few months before, looking at the time at an animal supposed to be the cow mentioned. Little Willie looked out of the window an instant and exclaimed, "dat is not our tow, dat is Mrs. Paul's tow in our yard,"—which proved to be the fact. Both cows were red with white spots, and had crumpled horns. This little boy, when less than 2 years old, would tell visitors accurately the pedigrees, for several removes, of the horses whose pictures his father has hung up about the house. This faculty, as well as his acute observation of animals, is a direct inheritance

from his father and paternal grandfather, both of whom had an impression that "blood is thicker than water," and were enthusiasts in genealogies and pedigrees (English characteristics), as well as "physical perfectionists."

One of the advantages ladies of the South can see in their adversity, which certainly seems at times "like the toad, ugly and venomous," is, that being deprived of the faithful "mammys" who guarded their own infancy, they are obliged to keep their little ones more under their own care, and can see that the senses, so early and keenly alive to impressions, shall have such care as will train and lead them in the right direction. This is a subject in which I feel great interest, for I think few mothers are aware how early children can be trained to habits of neatness, truth, love, etc.

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The Committee have received notes of many other cases, which will be presented hereafter; but the above examples will be sufficient to indicate the character and variety of the observations reported to the Department Committee, in response to Mrs. Talbot's Circular. It will be understood that the Committee disclaim all responsibility for the sentiments expressed by the writers of the various reports, which often indicate the influences under which the child is developed. The Register will be given on pages 51-52.

## M. HIPPOLYTE TAINÉ'S PAPER ON INFANT DEVELOPMENT.

(Reprinted from *Mind*, April, 1877, No. VI., p. 252.)

The following observations were made from time to time, and written down on the spot. The subject of them was a little girl whose development was ordinary, neither precocious nor slow.

From the first hour, probably from reflex action, she cried incessantly, kicked about and moved all her limbs, and perhaps all her muscles. In the first week, no doubt also by reflex action, she moved her fingers, and even grasped for some time, one's fore-finger when given her. About the third month she begins to feel with her hands and to stretch out her arms, but she cannot yet direct her hand; she touches and moves at random; she tries the movements of her arms and the tactile and muscular sensations which follow from them,—nothing more. In my opinion it is out of this enormous number of movements, constantly essayed, that there will be gradually evolved by gradual selection the intentional movements having an object and attaining it. In the last fortnight (at two and a half months), I make sure of one that is evidently acquired; hearing her grandmother's voice she turns her head to the side from which it comes. There is the same spontaneous apprenticeship for cries as for movements. The progress of the vocal organs goes on just like that of the limbs; the child learns to emit this or that sound, as it learns to turn its head or its eyes, that is to say, by gropings and constant attempts.

At about three and a half months, in the country, she was put on a carpet in the garden; there lying on her back or stomach for hours together, she keeps moving about her four limbs, and uttering a number of cries and different exclamations, but vowels only, no consonants; this continued for several months. By degrees consonants were added to vowels, and the exclamations became more and more articulate. It all ended in a very distinct sort of twittering, which would last a quarter of an hour at a time, and be repeated ten times a day. The sounds (both vowels and consonants), at first very vague and difficult to catch, approached more and more nearly to those we pronounce, and the series of simple cries came almost to resemble a foreign language that we could not understand. She takes delight in her twitter like a bird; she seems to smile with joy over it, but as yet it is only the twittering of a bird, for she attaches no meaning to the sounds she utters. She has learned only the materials of language. (Twelve months.) She has acquired the greater part quite by herself, the rest thanks to the help of others and by imitation. She first made the sound *mm* spontaneously by blowing noisily with closed lips. This amused her, and was a discovery to her. In the same way she made another sound, *kraaau*, pronounced from the throat in deep

gutturals; this was her own invention, accidental and fleeting. The two noises were repeated before her several times; she listened attentively and then came to make them immediately she heard them. In the same way with the sound *papapapa*, which she said several times by chance and of her own accord, which was then repeated to her a hundred times to fix it in her memory, and which in the end she said voluntarily, with a sure and easy execution (always without understanding its meaning), as if it were a mere sound that she liked to make. In short, example and education were only of use in calling her attention to the sounds that she had already found out for herself, in calling forth their repetition and perfection, in directing her preference to them, and making them emerge and survive amid the crowd of similar sounds. But all the initiative belongs to her. The same is true of her gestures. For many months she has spontaneously attempted all kinds of movements of her arms, the bending of the hands over the wrist, the bringing together of the hands, etc. Then after being shown the way, and with repeated trials, she has learned to clap her hands to the sound *bravo*, and to turn her hands regularly to the strain *au bois Joliette*, etc. Example, instruction and education are only directing channels, the source is higher. To be sure of this it is enough to listen for a while to her twitter. Its flexibility is surprising, I am persuaded that all the shades of emotion, —wonder, joy, wilfulness and sadness,—are expressed by differences of tone; in this she equals or even surpasses a grown-up person. If I compare her to animals, even to those most gifted in this respect (the dog, the parrot, singing-birds), I find that with a less extended gamut of sound, she far surpasses them in the delicacy and abundance of her expressive intonations. Delicacy of impressions and delicacy of expressions are, in fact, the distinctive characteristics of man among animals, and as I have shown (*De l'Intelligence* I. b. i.) are the source in him of language and of general ideas; he is among them what a great and fine poet—Heine or Shakespeare—would be among workmen and peasants; in a word, man is sensible of innumerable shades, or rather of a whole order of shades which escape them.

The same thing is seen, besides, in the kind and degree of his curiosity. Any one may observe that from the fifth or sixth month children employ their whole time, for two years and more, in making physical experiments. No animal, not even the cat or dog, makes this constant study of all bodies within its reach; all day long the child of whom I speak (at twelve months), touches, feels, turns round, lets drop, tastes and experiments upon everything she gets hold of; whatever it may be, ball, doll, coral or plaything when once it is sufficiently known it is thrown aside; it is no longer new, she has nothing to learn from it, and has no farther interest in it. It is pure curiosity; physical need, greediness count for nothing in the case; it seems as if already in her little brain every

group of perceptions was tending to complete itself, as in that of a child who makes use of language.

As yet she attaches no meaning to any word she utters, but there are two or three words to which she attaches meaning when she hears them. She sees her grandfather every day, and a chalk portrait of him, much smaller than life, but a very good likeness, has been often shown her. From about ten months, when asked "Where is grandfather?" she turns to this portrait and laughs. Before the portrait of her grandmother, not so good a likeness, she makes no such gesture, and gives no sign of intelligence. From eleven months when asked "Where is mamma?" she turns towards her mother, and she does the same for her father. I should not venture to say that these three actions surpass the intelligence of animals. A little dog, here, understands as well when it hears the word, *sugar*; it comes from the other end of the garden to get a bit. There is nothing more in this than an association, for the dog, between a sound and some sensation of taste, for the child between a sound and the form of an individual face perceived; the object denoted by the sound has not as yet a general character. However, I believe that the step was made at twelve months; here is a fact decisive in my opinion. This winter she was carried every day to her grandmother's, who often showed her a painted copy by Luini of the Infant Jesus naked, saying at the same time "there's *bébé*." A week ago, in another room, when she was asked "where's *bébé*?" meaning herself, she turned at once to the pictures and engravings that happened to be there. *Bébé* has then a general signification for her, namely, whatever she thinks is common to all pictures and engravings of figures and landscapes; that is to say, if I am not mistaken, *something variegated in a shining frame*. In fact, it is clear that the objects painted or drawn in the frame are as Greek to her; on the other hand, the bright square enclosing any representation must have struck her. This is her first general word. The meaning that she gives it is not what we give it, but it is only the better fitted for showing the original work of infantile intelligence. For if we supplied the word, we did not supply the meaning; the general character which we wished to make the child catch, is not that which she has chosen. She caught another, suited to her mental state, for which we have no precise word.

(Fourteen months and three weeks.) The acquisitions of the last six weeks have been considerable; she understands several more words besides *bébé*, and there are five or six that she uses attaching meaning to them. To the simple warbling, which was nothing but a succession of vocal gestures, the beginnings of intentional and determinate language have succeeded. The principal words she at present utters, are *papa*, *mama*, *tété* (nurse) *oua-oua* (dog), *ko-ko* (chicken), *dada* (horse, or carriage), *mia* (cat, puss), *kaka* and *tem*; the two first were

*papa* and *tem*, this last word very curious, and worth the attention of the observer. *Papa* was pronounced for more than a fortnight unintentionally and without meaning, as a mere twitter, an easy and amusing articulation. It was later that the association between the word and the image, or perception of the object was fixed, that the image or perception of her father called to her lips the sound *papa*, that the word uttered by another definitely and regularly called up in her the remembrance, image, and expectation of and search for her father. There was an insensible transition from the one state to the other, which it is difficult to unravel. The first state still returns at certain times though the second is established; she still sometimes plays with the sound, though she understands its meaning. This is seen in her later words, for instance, in the word *kaka*. To the great displeasure of her mother, she still often repeats this ten times in succession, without purpose or meaning, as an interesting vocal exercise, and to exercise a new faculty; but she often also says it with a purpose when there is occasion. Further, it is plain that she has changed or enlarged its meaning, as with the word *bébé*; for instance, yesterday in the garden, seeing two little wet places left by the watering-pot on the gravel, she said her word with an evident meaning; she meant by it *whatever wets*.

She makes imitative sounds with great ease. She has seen and heard chickens, and repeats *koko*, much more exactly than we can do, with the guttural intonations of the creatures themselves. This is only a faculty of the throat; there is another much more striking, which is the specially human gift, and which shows itself in twenty ways, I mean the aptitude for seizing analogies—the source of general ideas and of language. She was shown birds two inches long, painted red and blue on the walls of a room, and was told once “there are *kokos*.” She was at once sensible of the resemblance, and for half a day her great pleasure was to be carried along the walls of the room crying out *koko!* with joy at each fresh bird. No dog or parrot would have done as much; in my opinion, we come here on the essence of language. Other analogies are seized with the same ease. She was in the habit of seeing a little black dog belonging to the house, which often barks, and it was to it she first learned to apply the word *oua-oua*. Very quickly, and with very little help, she applied it to dogs, of all shapes and kinds that she saw in the streets, and then, what is still more remarkable, to the bronze dogs near the stair-case. Better still, the day before yesterday, when she saw a goat a month old that bleated, she said *oua-oua*, calling it by the name of the dog, which it is much like in form, and not by that of the horse which is too big, or of the cat which has quite a different gait. This is the distinctive trait of man; two successive impressions, though very unlike, yet leave a common residue, which is a distinct impression, solicitation, impulse, of which the final effect is some expression invented or suggested; that is to say, some gesture, cry, articulation, name.

I now come to the word *tem*, one of the most remarkable, and one of the first she uttered. All the others were probably attributives, and those who heard them had no difficulty in understanding them; this is probably a demonstrative word; and as there was no other into which it could be translated, it took several weeks to make out its meaning. At first, and for more than a fortnight, the child uttered the word *tem*, as she did the word *papa*, without giving it a precise meaning, like a simple twitter. She made a dental articulation ending with a labial articulation, and was amused by it. Little by little she associated this word with a distinct intention; it now signifies for her, *give, take, look*; in fact, she says it very decidedly several times together, in an urgent fashion, sometimes that she may have some new object that she sees, sometimes to get us to take it, sometimes to draw attention to herself. All these meanings are mixed up in the word *tem*. Perhaps it comes from the word *tiens* that is often used to her, and with something of the same meaning. But it seems to me rather a word that she has created spontaneously, a sympathetic articulation that she herself has found in harmony with all fixed and distinct intention, and which, consequently, is associated with her principal fixed and distinct intentions, which at present are desires to take, to have, to make others take, to look, to make others look. In this case, it is a *natural vocal gesture*, not learned, and at the same time imperative and demonstrative, since it expresses both command and the presence of the object to which the command refers; the dental *t* and the labial *m* united in a short, dry, and quickly stifled sound, correspond very well without convention, and by their nature alone, to this start of attention, to this sharp and decided outbreak of volition. This origin is the more probable because other and later words, of which we shall presently speak, are evidently the work, not of imitation but of invention,

(From the 15th to the 17th month.) Great progress. She has learned to walk, and even to run, and is firm on her little legs. We see her gaining ideas every day, and she understands many phrases, for instance: "bring the ball," "come to papa's knee," "go down," "come here," etc. She begins to distinguish the tone of displeasure from that of satisfaction, and leaves off doing what is forbidden her with a grave face and voice; she often wants to be kissed, holding up her face and saying in a coaxing voice, *papa* or *mama*, — but she has learned or invented very few new words. The chief are *Pa* (Paul), *Babert* (Gilbert), *bébé* (baby), *bééé* (goat), *cola* (chocolate) *oua-oua* (anything good to eat), *ham* (eat, I want to eat). There are a good many others that she understands but cannot say, — for instance, *grand-père* and *grand-mère*, — her vocal organs having been too little exercised to produce all the sounds that she knows, and to which she attaches meaning. *Cola* (chocolate) is one of the first sweetmeats that was given her, and it is the one she likes the best. She went

every day to her grandmother's, who would give her a lozenge. She knows the box very well, and keeps on pointing to it to have it opened. Of herself and without, or rather in spite of us, she has extended the meaning of the word and applies it now to anything sweet; she says *cola* when sugar, a tart, a grape, a peach, or a fig is given her. We have already had several examples of this spontaneous generalization; it was easy in this instance, for the tastes of chocolate, of the grape, of the peach, etc., agree in this, — that being all pleasant they provoke the same desire, that of experiencing once more the agreeable sensation. So distinct a desire or impulse easily leads to a movement of the head, a gesture of the hand, an expression, and consequently to a word.

*Bébé.* We have seen the strange signification that she at first gave to this word; little by little she came nearer to the usual meaning. Other children were pointed out to her as *bébés*, and she was herself called by the name, and now answers to it. Further, when put down before a very low mirror and shown her face reflected in it, she was told "that's *bébé*," and she now goes alone to the mirror and says *bébé*, laughing when she sees herself. Starting from this she has extended the meaning of the word, and calls *bébés* all little figures, — for instance, some half-size plaster statues which are on the stair-case, and the figures of men and women in small pictures and prints. Once more, education produced an unexpected effect upon her; the general character grasped by the child is not what we intended; we taught her the sound, she has invented the sense.

*Ham* (eat, I want to eat). Here both sound and sense were invented. The sound was first heard in her fourteenth month. For several weeks I thought it no more than one of her warblings, but at last I found that it was always produced without fail in the presence of food. The child now never omits to make it when she is hungry or thirsty, all the more that she sees we understand it, and that by this articulation she gets something to eat or drink. On listening attentively and attempting to reproduce it, we perceive that it is the *natural vocal gesture* of a person snapping up anything; it begins with a guttural aspirate like a bark, and ends with the closing of the lips as if food were seized and swallowed. A man among savages would do just the same, if with tied hands, and solely dependent for expression on his vocal organs, he wished to say that he wanted food. Little by little the intensity and peculiarity of the original pronunciation were lessened; we had repeated her word but in a milder form; consequently she left off making so much of the guttural and labial parts, and the intermediate parts came to the front; instead of *Ham* she says *am*, and now we generally use the word as she does. Originality and invention are so strong in a child, that if it learns our language from us we learn it from the child.

*Oua-oua.* It is only for the last three weeks (the end of her

sixteenth month) that she has used this word in the sense of something good to eat. It was some time before we understood it, for she has long used it, and still uses it, besides, in the sense of dog. A barking in the street never fails to call forth this word in the sense of dog, uttered with the lively joy of a discovery. In the new sense the sound has oscillated between *va-va* and *oua-oua*. Very likely the sound that I write *oua-oua* is double to her according to the double meaning she attaches to it, but my ear cannot catch the difference; the senses of children, much less blunted than ours, perceive delicate shades that we no longer distinguish. In any case, on seeing at table a dish she wishes for, she says *oua-oua* several times in succession, and she uses the same word when, having eaten some of it, she wishes for more; but it is always in presence of a dish and to point out something eatable. By this the word is distinguished from *am*, which she only uses to make known her want of food, without specifying any particular thing. Thus, when in the garden she hears the dinner-bell she says *am*, and not *oua-oua*; on the other hand, at table before a cutlet, she says *oua-oua* much oftener than *am*. For the last two months, on the other hand, she has left off using the word *tem* (give, take, look), of which I spoke above, and I do not think she has replaced it by another. This is no doubt because we did not choose to learn it, for it did not correspond to any one of our ideas, but combined three that are quite distinct; we did not use it with her, and therefore she left off using it herself.

On summing up the facts I have just related we arrive at the following conclusions, which observers should test by observations made on other children. At first a child cries and uses its vocal organs, in the same way as its limbs, spontaneously and by reflex action. Spontaneously and from mere pleasure of action it then uses its vocal organs in the same way as its limbs, and acquires the complete use of it by trial and error. From inarticulate it thus passes to articulate sounds. The variety of intonation that it acquires shows in it a peculiar delicacy of impression and expression. By this delicacy it is capable of general ideas. We only help it to catch them by the suggestion of our words. It attaches to them ideas that we do not expect, and spontaneously generalizes outside and beyond our limits. At times it invents not only the meaning of the word, but the word itself. Several vocabularies may succeed one another in its mind, by the obliteration of old words, replaced by new ones. Many meanings may be given in succession to the same word, which remains unchanged. Many of the words invented are natural vocal gestures. In short, it learns a ready-made language as a true musician learns counterpoint or a true poet prosody; it is an original genius, adapting itself to a form constructed bit by bit by a succession of original geniuses; if language were wanting, the child would recover it little by little, or would discover an equivalent.

These observations were interrupted by the calamities of the year 1870. The following notes may help to determine the mental state of a child; in many respects it is that of primitive peoples at the poetical and mythological stage. A jet of water, that the child saw under the window for three months, threw her every day into new transports of joy, as did also the river under a bridge; it was evident that sparkling running water seemed to her to be of extraordinary beauty. "*L'eau, l'eau!*" she goes on exclaiming (twenty months). A little later (two and a half years) she was very much struck by the sight of the moon. She wanted to see it every evening; when she saw it through the window panes there were cries of joy; when she walked it seemed to her that it walked too, and this discovery charmed her. As the moon, according to the hour, appeared in different places, — now in front of the house, now behind it, — she cried out "Another moon, another moon!" One evening (three years) on enquiring for the moon, and being told that it had set (*qu'elle est allée se coucher*) she replies "But where's the moon's *bonne?*" All this closely resembles the emotions and conjectures of primitive peoples, their lively and deep admiration for great natural objects, the power that analogy, language and metaphor exercise over them, leading to solar and lunar myths, etc. If we admit that such a state of mind was universal at any time, we could at once divine the worship and legends that would be formed. They would be those of the *Vedas*, of the *Edda*, and even of Homer. If we speak to her of an object at a little distance, but that she can clearly represent to herself from having seen it, or others like it, her first question always is, "What does it say?" "What does the rabbit say?" "What does the bird say?" "What does the horse say?" "What does the big tree say?" Animal or tree, she immediately treats it as a person, and wants to know its thoughts and words; that is what she cares about; by spontaneous induction she imagines it like herself, like us; she humanises it. This disposition is found among primitive peoples, the stronger the more primitive they are; in the *Edda*, especially in the *Mabinogion*, animals have also the gift of speech; the eagle, the stag, and the salmon, are old and experienced sages, who remember bygone events and instruct man.

It takes much time and many steps for a child to arrive at ideas which to us seem simple. When her dolls had their heads broken she was told they were dead. One day her grandmother said to her, "I am old, I shall not be always with you, I shall die." "Then shall you have your head broken?" She repeated this idea several times and still (three years and a month) with her "to be dead" is to have the head broken. Day before yesterday, a magpie, killed by the gardener, was hung by one foot at the end of a stick, like a fan; she was told that the magpie was dead and she wished to see it. "What is the magpie doing?" "It is doing nothing, it can't move, it is dead." "Ah!" For the first time the idea of final

immobility entered her head. Suppose a people to stop short of this idea and not define death otherwise; the other world would be to it the *scheol* of the Hebrews, the place where the immovable dead live a vague, almost extinct life. *Yesterday* means to her *in the past*, and *to-morrow in the future*, neither of these words denoting to her mind a precise day in relation to today, either preceding or following it. This is another example of too extended a meaning which must be narrowed. There is hardly a word used by children which has not to undergo this operation. Like primitive peoples they are inclined to general and wide ideas; linguists tell us that such is the character of roots, and consequently of the first conceptions, as they are found in the most ancient documents, especially in the *Rig-veda*. Speaking generally, the child presents in a passing state the mental characteristics that are found in a fixed state in primitive civilizations; very much as the human embryo presents in a passing state the physical characteristics that are found in a fixed state in the classes of inferior animals.

This lively paper having been published in *Mind*, was immediately followed by some observations of much earlier date, (but later than those of Mr. Alcott) which had been recorded by the great naturalist, Darwin. Mr. Darwin called his paper (published in July, 1877),

#### A BIOGRAPHICAL SKETCH OF AN INFANT.

BY CHARLES DARWIN.

M. Taine's very interesting account of the mental development of an infant, translated in the last number of *Mind* (p. 252), has led me to look over a diary which I kept 37 years ago, with respect to one of my own infants. I had excellent opportunities for close observation, and wrote down at once whatever was observed. My chief object was expression, and my notes were used in my book on this subject; but as I attended to some other points, my observations may possibly possess some little interest in comparison with those by M. Taine, and with others which hereafter, no doubt, will be made. I feel sure, from what I have seen with my own infants, that the period of development of the several faculties will be found to differ considerably in different infants.

During the first seven days various reflex actions, namely sneezing, yawning, stretching, and of course sucking and screaming, were well performed by my infant. On the seventh day, I touched the naked sole of his foot with a bit of paper, and he jerked it away, curling at the same time his toes, like a much older child when tickled. The perfection of these reflex movements shows that the extreme imperfection of the voluntary is not due to the

state of the muscles, or of the co-ordinating centres, but to that of the seat of the will. At this time, though so early, it seemed clear to me that a warm soft hand applied to his face excited a wish to suck. This must be considered as a reflex or an instinctive action, for it is impossible to believe that experience and association with the touch of the mother's breast could so soon have come into play. During the first fortnight he often started on hearing any sudden sound, and blinked his eyes. The same fact was observed with some of my other infants within the first fortnight. Once, when he was 66 days old I happened to sneeze, and he started violently, looked frightened, and cried rather badly; for an hour afterwards he was in a state which would be called nervous in an older person, for every slight noise made him start. A few days before this same date, he first started at an object suddenly seen; but for a long time afterwards sounds made him start and wink his eyes much more frequently than did sight; thus when 114 days old, I shook a pasteboard box with comfits in it near his face and he started, whilst the same box when empty, or any other object shaken as near or much nearer to his face produced no effect. We may infer from these several facts that the winking of the eyes, which manifestly serves to protect them, had not been acquired through experience. Although so sensitive to sound in a general way, he was not able, even when 124 days old, easily to recognize whence a sound proceeded, so as to direct his eyes to the source.

With respect to vision, his eyes were fixed on a candle as early as the 9th day, and up to the 45th nothing else seemed thus to fix them; but on the 49th day his attention was attracted by a bright colored tassel, as was shown by his eyes becoming fixed and the movements of his arms ceasing. It was surprising how slowly he acquired the power of following with his eyes an object if swinging at all rapidly; for he could not do this well when seven and a half months old. At the age of 32 days he perceived his mother's bosom when three or four inches from it, as was shown by the protrusion of his lips and his eyes becoming fixed; but I much doubt whether this had any connection with vision; he certainly had not touched the bosom. Whether he was guided by smell or the sensation of warmth or through association with the position in which he was held, I do not at all know.

The movements of his limbs and body were for a long time vague and purposeless, and usually performed in a jerking manner; but there was one exception to this rule, namely, that from a very early period, certainly long before he was 40 days old, he took the sucking-bottle (with which he was partly fed) in his right hand, whether he was held on the left or right arm of his nurse, and he would not take it in his left hand until a week later, although I tried to make him do so; so that the right hand was a week in advance of the left. Yet this infant afterwards proved to be left-handed, the tendency being no doubt inherited, his grandfather, mother and

a brother having been, or being, left-handed. When between 80 and 90 days old, he drew all sorts of objects into his mouth, and in two or three weeks' time could do this with some skill; but he often first touched his nose with the object and then dragged it down to his mouth. After grasping my finger and drawing it to his mouth, his own hand prevented him from sucking it; but on the 114th day, after acting in this manner he slipped his own hand down so that he could get the end of my finger into his mouth. This action was repeated several times, and evidently was not a chance but a rational one. The intentional movements of the hands and arms were thus much in advance of those of the body and legs; though the purposeless movements of the latter were from a very early period usually alternate as in the act of walking. When four months old, he often looked intently at his own hands and other objects close to him, and in so doing the eyes were turned much inwards, so that he often squinted frightfully. In a fortnight after this time (*i.e.*, 132 days old) I observed that if an object was brought as near to his own face as his own hands were, he tried to seize it, but often failed; and he did not try to do so in regard to more distant objects. I think there can be little doubt that the convergence of his eyes gave him the clue and excited him to move his arms. Although this infant thus began to use his hands at an early period, he showed no special aptitude in this respect; for when he was 2 years and 4 months old, he held pencils, pens, and other objects far less neatly and efficiently than did his sister who was then only 14 months old, and who showed great inherent aptitude in handling anything.

*Anger.* It was difficult to decide at how early an age anger was felt; on his eighth day he frowned and wrinkled the skin around his eyes before a crying fit, but this may have been due to pain or distress, and not to anger. When about ten weeks old, he was given some rather cold milk, and he kept a slight frown on his forehead all the time he was sucking, so that he looked like a grown-up person made cross from being compelled to do something which he did not like. When nearly four months old, and perhaps much earlier, there could be no doubt, from the manner in which the blood gushed into his whole scalp and face, that he easily got into a violent passion. A small cause sufficed; thus, when a little over seven months old, he screamed with rage because a lemon slipped away and he could not seize it with his hands. When eleven months old, if a wrong plaything was given him, he would push it away and beat it; I presume the beating was an instinctive sign of anger, like the snapping of the jaws of a young crocodile just out of the egg, and not that he imagined that he could hurt the plaything. When two years and three months old, he became a great adept at throwing books, or sticks, etc., at any one who offended him; and so it was with some of my other sons. On the other hand, I could never see a trace of such aptitude in

my infant daughters; and this makes me think that a tendency to throw objects is inherited by boys.

*Fear.* This feeling is probably one of the earliest which is experienced by infants, as shown by their starting at any sudden sound when only a few weeks old, followed by crying. Before the present one was four and a half months old I had been accustomed to make, close to him, many strange and loud noises, which were all taken as excellent jokes, but at this period I one day made a loud snoring noise which I had never done before; he instantly looked grave, and then burst out crying. Two or three days after I made, through forgetfulness, the same noise with the same result. About the same time (viz., on the 137th day), I approached with my back towards him and then stood motionless; he looked very grave and much surprised, and would soon have cried, had I not turned round; then his face relaxed into a smile. It is well known how intensely older children suffer from vague and undefined fears, as from the dark, or in passing an obscure corner in a large hall, etc. I may give as an instance that I took the child in question, when two and a quarter years old, to the Zoological Gardens, and he enjoyed looking at all the animals which were like those he knew, such as deer, antelope, etc., and all the birds, even the ostriches, but was much alarmed at the various larger animals in cages. He often said afterwards that he wished to go again, but not to see "the beasts in houses;" and we could in no manner account for this fear. May we not suspect that the vague but very real fears of children, which are quite independent of experience, are the inherited effects of real dangers and abject superstitions during ancient savage times? It is quite conformable with what we know of the transmission of formerly well-developed characters, that they should appear at an early period of life, and afterwards disappear.

*Pleasurable Sensations.* It may be presumed that infants feel pleasure while sucking, and the expression of their swimming eyes seems to show that this is the case. This infant smiled when 45 days, a second infant when 46 days old; and these were true smiles, indicative of pleasure, for their eyes brightened and their eyelids slightly closed. The smiles arose chiefly when looking at their mother, and were, therefore, probably of mental origin, but this infant often smiled then, and for some time afterwards, from some inward pleasurable feeling, for nothing was happening which could have in any way excited or amused him. When 110 days old, he was exceedingly amused by a pinafore being thrown over his face, and then suddenly withdrawn; and so he was when I suddenly uncovered my own face and approached his. He then uttered a little noise which was an incipient laugh. Here, surprise was the chief cause of the amusement, as is the case to a large extent with the wit of grown-up persons. I believe that for three or four weeks before the time when he was amused by the face

being suddenly uncovered, he received a little pinch on his nose and cheeks as a good joke. I was at first surprised at humor being appreciated by an infant only a little above three months old, but we should remember how very early puppies and kittens begin to play. When four months old, he showed in an unmistakable manner that he liked to hear the piano-forte played; so that here, apparently, was the earliest sign of an æsthetic feeling, unless the attraction of bright colors, which was exhibited much earlier, may be so considered.

*Affection.* This probably arose very early in life, if we may judge by his smiling at those who had charge of him, when under two months old; though I had no distinct evidence of his distinguishing and recognizing any one, until he was nearly four months old. When nearly five months old, he plainly showed his wish to go to his nurse. But he did not spontaneously exhibit affection by overt acts until a little above a year old, namely, by kissing several times his nurse who had been absent a short time. With respect to the allied feeling of sympathy, this was clearly shown at six months and eleven days by his melancholy face, with the corner of his mouth well depressed, when his nurse pretended to cry. Jealousy was plainly exhibited when I fondled a large doll, and when I weighed his infant sister, he being then fifteen and a half months old. Seeing how strong a feeling jealousy is in dogs, it would probably be exhibited by infants at an earlier age than that just specified, if they were tried in a fitting manner.

*Association of Ideas, Reason, etc.* The first action which exhibited, as far as I observed, a kind of practical reasoning, has already been noticed, namely, the slipping his hand down my finger so as to get the end of it in his mouth; and this happened on the 114th day. When four and a half months old, he repeatedly smiled at my image and at his own in mirror, and no doubt mistook them for real objects, but he showed sense in being evidently surprised at my voice coming from behind him. Like all infants he much enjoyed thus looking at himself, and in less than two months perfectly understood that it was an image, for if I made quite silently any odd grimace, he would suddenly turn round to look at me. He was, however, puzzled at the age of seven months, when being put out of doors, he saw me on the inside of a large plate-glass window, and seemed to doubt whether or not it was an image. Another of my infants, a little girl, when exactly a year old, was not nearly so acute, and seemed quite perplexed at the image of a person in a mirror approaching her from behind. The higher apes which I tried with a small looking glass, behaved differently; they placed their hands behind the glass, and in doing so showed their sense; but far from taking pleasure in looking at themselves, they got angry and would look no more.

When five months old, associated ideas, arising independently of any instruction, became fixed in his mind; thus, as soon as his hat

and cloak were put on, he was very cross if he was not immediately taken out of doors. When exactly seven months old, he made the great step of associating his nurse with her name, so that if I called it out he would turn round and look for her. Another infant used to amuse himself by shaking his head laterally; we praised and imitated him, saying, "Shake your head;" and when he was seven months old, he would sometimes do so on being told, without any other guide. During the next four months, the former infant associated many things and actions with words; thus, when asked for a kiss, he would protrude his lips and keep still, would shake his head and say in a scolding voice, "ah," to the coal-box, or a little spilt water, etc., which he had been taught to consider as dirty. I may add that, when a few days under nine months old, he associated his own name with his image in the looking-glass, and when called by name would turn towards the glass, even when at some distance from it. When a few days over nine months, he learnt spontaneously that a hand, or other object, causing a shadow to fall on the wall in front of him, was to be looked for behind. Whilst under a year old, it was sufficient to repeat two or three times at intervals any short sentence to fix firmly in his mind some associated idea. In the infant described by M. Taine, the age at which ideas readily became associated, seems to have been considerably later, unless, indeed, the earlier cases were overlooked. The facility with which associated ideas, due to instruction and others, spontaneously arising, were acquired, seemed to me by far the most strongly marked of all the distinctions between the mind of an infant and that of the cleverest full-grown dog that I have ever known. What a contrast does the mind of an infant present to that of a pike, described by Prof. Möbius, who during three whole months, dashed and stunned himself against a glass partition which separated him from some minnows; and, when, after at last learning that he could not attack them with impunity, he was placed in the same aquarium with these same minnows, then in a persistent and senseless manner, he would not attack them.

Curiosity, as M. Taine remarks, is displayed at an early age by infants, and is highly important in the development of their minds; but I made no special observation on this head. Imitation likewise comes in play. When one infant was only four months old, I thought he tried to imitate sounds; but I may have deceived myself, for I was not thoroughly convinced that he did so until he was ten months old. At the age of 11½ months, he could readily imitate all sorts of actions, such as shaking his head and saying "ah," to any dirty object, or by carefully and slowly putting his forefinger in the middle of the palm of the other hand, to the childish rhyme of "pat it, and pat it, and mark it with T." It was amusing to behold his pleased expression after successfully performing any such accomplishment. I do not know whether it

is worth mentioning, as showing something about the strength of memory in a young child, that this one, when three years and twenty-three days old, on being shown an engraving of his grandfather, whom he had not seen for exactly six months, instantly recognized him and mentioned a whole string of events which had occurred whilst visiting him, and which certainly had never been mentioned in the interval.

*Moral Sense.* The first sign of moral sense was noticed at the age of thirteen months; I said, "Doddy" (his nickname), "won't give poor papa a kiss; naughty Doddy!" These words, without any doubt, made him feel slightly uncomfortable; and, at last, when I had returned to my chair, he protruded his lips as a sign that he was ready to kiss me; and he then shook his head in an angry manner until I came and received his kiss. Nearly the same little scene recurred in a few days, and the reconciliation seemed to give him so much satisfaction, that several times afterwards he pretended to be angry and slapped me, and then insisted on giving me a kiss. So that, here we have a touch of the dramatic art, which is so strongly pronounced in most young children. About this time it became easy to work on his feelings, and make him do whatever was wanted. When two years and three months old, he gave his last bit of gingerbread to his little sister, and then cried out with high self-approbation, "Oh, kind Doddy, kind Doddy." Two months later, he became extremely sensitive to ridicule, and was so suspicious that he often thought people who were laughing and talking together were laughing at him. A little later (two years and seven and a half months old), I met him coming out of the dining-room with his eyes unnaturally bright, and an odd, unnatural or affected manner, so that I went into the room to see who was there, and found he had been taking pounded sugar, which he had been told not to do. As he had never been in any way punished, his odd manner certainly was not due to fear, and I suppose it was pleasurable excitement struggling with conscience. A fortnight afterwards, I met him coming out of the same room, and he was eyeing his pinafore, which was carefully rolled up; and again his manner was so odd that I determined to see what was within his pinafore, notwithstanding that he said there was nothing, and repeatedly commanded me to "go away," and I found it stained with pickle juice; so that here was carefully planned deceit. As this child was educated solely by working on his good feelings, he soon became as truthful, open, and tender as any one could desire.

*Unconsciousness, Shyness.* No one can have attended to very young children without being struck at the unabashed manner with which they fixedly stare without blinking their eyes at a new face; an old person can look in this manner only at an animal or inanimate object. This, I believe, is the result of young children not thinking in the least about themselves, and therefore not being in

the least shy, though they are sometimes afraid of strangers. I saw the first symptoms of shyness in my child when nearly two years and three months old; this was shown towards myself, after an absence of ten days from home, chiefly by his eyes being slightly averted from mine; but he soon came and sat on my knee and kissed me, and all trace of shyness disappeared.

*Means of Communication.* The noise of crying or rather of squalling, as no tears are shed for a long time, is of course uttered in an instinctive manner, but serves to show that there is suffering. After a time the sound differs according to the cause, such as hunger or pain. This was noticed when this infant was eleven weeks old, and I believe at an earlier age in another infant. Moreover, he appeared soon to learn to begin to cry voluntarily, or to wrinkle his face in a manner proper to the occasion, so as to show that he wanted something. When 46 days old, he first made little noises without any meaning to please himself, and these soon became varied. An incipient laugh was observed on the 113th day, but much earlier in another infant. At this date I thought, as already remarked, that he began to try to imitate sounds, as he certainly did at a considerably later period. When five months and a half old, he uttered an articulate sound "da," but without any meaning attached to it. When a little over a year old, he used gestures to explain his wishes; to give a simple instance, he picked up a bit of paper and, giving it to me, pointed to the fire, as he had often seen and liked to see paper burnt. At exactly the age of a year, he made a great step of inventing a word for food, namely, *mum*, but what led him to it I did not discover. And now instead of beginning to cry when he was hungry, he used this word in a demonstrative manner or as a verb, implying "Give me food." This word, therefore, corresponds with *ham*, as used by M. Taine's infant at the later age of fourteen months. But he also used *mum* as a substantive of wide signification; thus he called sugar *shu-mum*, and a little later after he had learned the word "black," he called liquorice *black shu-mum*,—black-sugar-food.

I was particularly struck with the fact that when asking for food by the word *mum* he gave to it (I will copy the words written down at the time) "a most strongly marked interrogatory sound at the end." He also gave to "ah," which he chiefly used at first when recognizing any person, or his own image in a mirror, an exclamatory sound, such as we employ when surprised. I remark in my notes that the use of these intonations seemed to have arisen instinctively, and I regret that more observations were not made on this subject. I record, however, in my notes, that at a rather later period, when between 18 and 21 months old, he modulated his voice in refusing peremptorily to do anything by a defiant whine, so as to express "That I won't;" and again his humph of assent expressed "Yes, to be sure." M. Taine also

insists strongly on the highly expressive tones of the sounds made by his infant before she had learnt to speak. The interrogatory sound which my child gave to the word *mum* when asking for food is especially curious; for if any one will use a single word or a short sentence in this manner, he will find that the musical pitch of his voice rises considerably at the close. I did not then see that this fact bears on the view which I have elsewhere maintained that before man used articulate language, he uttered notes in a true musical scale, as does the anthropoid ape *Hylobates*.

Finally, the wants of an infant are at first made intelligible by instinctive cries, which after a time are modified, in part unconsciously, and in part, as I believe, voluntarily, as a means of communication, by the unconscious expression of the features, by gestures, and in a marked manner by different intonations, lastly by words of a general nature invented by himself, then of a more precise nature imitated from that which he hears; and these latter are acquired at a wonderfully quick rate. An infant understands to a certain extent, and as I believe at a very early period, the meaning or feelings of those who tend him, by the expression of their features. There can hardly be a doubt about this with respect to smiling; and it seemed to me that the infant whose biography I have here given understood a compassionate expression at a little over five months old. When 6 months and 11 days old, he certainly showed sympathy with his nurse on her pretending to cry. When pleased after performing some new accomplishment, being almost a year old, he evidently studied the expression of those around him. It was probably due to differences of expression, and not merely of the form of the features, that certain faces clearly pleased him much more than others, even at so early an age as a little over six months. Before he was a year old, he understood intonations and gestures, as well as several words and short sentences. He understood one word, namely, his nurse's name, exactly five months before he invented his first word *mum*; and this is what might have been expected, as we know that the lower animals easily learn to understand spoken words.

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These papers of M. Taine and Mr. Darwin having appeared in *Mind* in 1877, (M. Taine's first came out in the *Revue Philosophique* for January, 1876,) were followed by several contributions of more or less value, one of which we reprint below from *Mind*, January, 1881.

## NOTES ON AN INFANT.

The following notes, based on Mr. Darwin's most interesting and accurate report of the unfolding of the senses, emotions, &c., in one of his own children (MIND VII.), are offered as a small contribution to this interesting subject, on which observations, so constantly at hand, ought to be more often carefully made. They concern the writer's infant son, and extend from the moment of birth through a period of nine months.

*Sucking.*—The first thing the child did when left alone a few minutes after birth, was to suck the blanket in which he was wrapped.

When hungry, he would cram his hands into his mouth with varying precision, and suck them hard. This was observed ever since birth, and seemed to be adopted without hesitation as a means for temporarily appeasing hunger.

At 4 days old he pushed away his mother's breast when satisfied.

The touch of a warm hand did not induce sucking movements.

No practice seemed to be required for directing the hands to the mouth.

*Sneezing* was always accompanied by violent movements of all the limbs, the thighs being flexed on the abdomen, the forearms bent, and the elbows thrust forward.

The purpose of the flexion of the thighs on the belly was probably partly to relieve the tension of the suddenly contracted abdominal muscles, but the movements of the arms (and partly those of the legs also) probably had for their cause the necessity for relief of what is called a "nervous discharge" of great amplitude, such as a sneeze.

*Crying* was performed at first without any squaring of the mouth. The sound can be exactly expressed by "ngä" as pronounced in German. This must have been produced by closing the fauces by the contact of the pillars of the fauces and the soft palate, so as to send all the sound through the nose; the vowel sound being then produced by separating the soft palate and pillars of the fauces and allowing the sound to come through the mouth.

The child appeared to cry at first for three reasons: (1) from a feeling of loneliness or fright on awakening from sleep, which was relieved by being taken in the mother's or nurse's arms, or even by a touch; (2) from hunger; (3) from pain. The cries seemed to be all different in character.

*Smiling* was reported at 5½ weeks, but not certainly observed before the end of the 8th week. It was often accompanied by sucking movements. This shows the association of two pleasurable ideas.

*Weeping.*—Tears were shed two days before the end of the 14th week.

*Seeing.*—The eyes were first fixed on a candle when a week old. On the same day, the eyes were fixed on one of the parents for the first time.

Opening of the eyes was accompanied by wrinkling of the skin of the forehead; the wrinkles, being horizontal, were due to the frontalis muscle. They resembled those produced in adults during an effort to open the eyes when tightly closed, either on account of very dazzling light or of a foreign body in the eye; but were probably only necessitated by redundancy of skin, which is very observable in a young child and most young animals. This wrinkling gradually ceased.

The ninth day was the first on which anything like habitual opening of the eyes occurred.

It was not before the 14th day that the child *took notice* of persons or moving objects.

From the time that he began to use his eyes, bright light gave him much pleasure, and he never blinked except on a change from comparative darkness to bright light; when the moment of this change was past, he would gaze for a long time with much apparent delight and with wide-open eyes at a lamp or at the gas, however bright. This fact makes it unlikely that the frowning mentioned above was due to being dazzled. He was first able to see himself in the glass at 8 weeks old, the experiment having been often used before.

*Hearing.*—During the first week the child would not start at any noise however sudden, when unaccompanied by vibration of the room or bed. For instance, no notice was taken of hands loudly clapped close to his ear; but slamming of a door made him start. Just the same starting was observed immediately after birth when the scale in which he was being weighed went down with a jerk.

It was very difficult to decide when the child really heard first. At 14 days old he would turn his eyes to his mother when she spoke to him, but even then did not start at sudden noises however loud, unless accompanied by jerks or vibrations; so that the apparent power of hearing his mother's voice may have depended on his feeling her breath on his face, for it was only when her face was turned towards him while she spoke that he turned his eyes towards her.

In connection with the late appearance of this sense, we must remember that the tympanum at birth is packed with areolar tissue which only gradually becomes absorbed after birth.

*Reflex Actions.*—Among these may be noticed the spasmodic start which occurred on any jar or vibration, previously noticed, and also the fact that micturition was always or nearly always indicated by a slight shiver.

The slight provocation necessary for producing a convulsion in children is a well-known sign of their great irritability to nervous stimuli.

Exactly at 4 weeks old the child started at sudden noises if unexpected, but would not start twice at the same noise if not excessively loud.

*Taste.*—The child rejected all things given to him cold, even milk, but would take various things not especially nice (such as cod liver oil) if warm. The temperature seemed to be of more consequence to him than the taste.

*Voluntary Movements.*—The arms were far more purposive in their movements than the legs from the very first. The movements of the arms from the first were like those of striking with the fists, the fists, however, being only partially clenched.

*Walking.*—When one day less than 19 weeks old, the trial was made of supporting the child on the floor with the feet just touching the ground, and moving him forward. The movements of the legs were always alternate and purposive, each step being perfectly formed; though the feet were lifted unnecessarily high, there was no hesitation nor irregularity. Only when he was lifted too high for one or other foot to touch the ground was this alternate movement interrupted, the foot which failed to reach the ground making a fresh step. It was obvious that the contact of one foot with the ground was the stimulus for moving forward the other foot.

*Attempts at Talking.*—From nine months the child distinctly imitated the intonation of the voice when any word or sentence was repeated in the same way several times.

About the 13th week he began to appear to attempt to join in the conversation with a variety of articulate sounds, if talking was going on in the room.

*Fear.*—The first symptom of fear was noticed at about 9 months. It was excited by an unusual sound in the room, but not in the child's immediate neighborhood; he opened his eyes very wide and burst out crying. The second occasion was at about 10 months, when sound was again the exciting cause; a toy was given him which squeaked on pressure, he burst out crying, and cried whenever it was offered him, but in a short time he got used to it, became very fond of it, and made it squeak himself.

I have one or two remarks to make on Mr. Darwin's paper. He says: "On the 7th day I touched the naked sole of his foot with a bit of paper and he jerked it away, curling at the same time his toes, like a much older child when tickled." Such reflex movements can be provoked *in utero*, and can be utilized in obstetric operations for distinguishing a hand from a foot, the hand closing on the finger. Kicks can be excited even through the abdominal walls by sudden movements and by direct contact in the way of tickling.

With regard to the words "mum" used by Mr. Darwin's child, and "ham" used by M. Taine's to express food, I would suggest that both were invented subsequently to the use of solid food, for

Mr. Darwin's invented "mum" at twelve months, and M. Taine's invented "ham" at 14 months. Both words seem to be the result of a vowel sound during mastication. Let any one try to eat or move his mouth as in eating, pronouncing at the same time any vowel sound. He will find that each vowel is closed by the letter "m" which is common to "mum" and "ham." "Mum" is the result of "u" with the mouth first shut, then opened, then shut. "Ham" (probably without the "h" aspirated, especially as an aspirated "h" is too much for the recti abdominis muscles of an infant) is the result of an "a" similarly treated.

That "m" is one of the earliest acquired consonants, appears from the word "mama."

I would also suggest that the word "mumble," used of a dog growling while gnawing a bone, is probably onomatopoeic, and to be similarly explained. I do not know the etymology of the Latin word "mando."

F. H. CHAMPNEYS.

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#### A GERMAN CHILD.

##### OBSERVATIONS BY PROFESSOR PREYER.

[The General Secretary takes occasion to add here some portions of a translation made by Miss MARION TALBOT, of Boston, from Professor William Preyer's work on Mind in Infancy, (*Die Seele des Kindes*) and published in the American bimonthly *Education*, for January, 1882. The speculative parts of the translation are here omitted, and the special observations of Dr. Preyer on his own child are cited, as a continuation and contrast, in some respects, to the other observations on infants cited in this number of the *Journal of Social Science*. Dr. Preyer says:]

But little help in developing the notion of the Ego is gained from the first movements of the hands, which the infant puts in his mouth at an early period, and which must give a different sensation from other objects when he sucks them. The fact that my child for months pulled at his hands as if he would tear them apart, and struck at his head when experimenting with his hands, shows how far removed from self-consciousness these movements are. At the end of the first year my child had a predilection for striking hard objects against his teeth, and took delight in grating his teeth. On the four hundred and ninth day, when he was standing in his crib and holding on to the railing, he bit his bare arm so hard that he instantly screamed with pain. The marks of the teeth

could be seen for a long time afterward. The boy did not bite his arm a second time, but later he bit his finger, and inadvertently his tongue.

The same child, who liked to hold a cracker to the mouth of any one he was kindly disposed towards, offered one to his own foot in the same way, and sitting on the floor, held the cracker to his toes, evidently taking pleasure in doing so. This occurred several times in the twenty-third month.

How little the difference between the parts of the body and external objects is recognized even at the end of the first year, follows from some singular experiments which the child tried quite independently. He sat near me at the table, and struck it frequently and quickly with his hands; first soft, then hard, next hard with the right hand alone, and then suddenly hit his mouth with the same hand. After holding his hand to his mouth for a short time, he struck the table again with it and then suddenly struck his head above the ear. This experiment seemed for the first time to impress the child that it was one thing to strike one's self, one's own hard head, and another to strike a foreign hard object (forty-first week). In the thirteenth month the child still hit his head while experimenting with his hand, and seemed astonished at its hardness. In the sixteenth month he was in the habit of pushing and striking the left thumb against the left side of the head, and the right thumb against the right side, while holding the fingers outstretched, which made him open his eyes and caused a singular expression of wonder. This movement is neither imitated nor inherited, but learned from experience. The child without doubt gains experience in a similar way in regard to holding the head, shaking the head, resistance of the body; perhaps, too, management of the head. The objectivity of the finger became known a short time before, when it was involuntarily bitten; for in the fifteenth month the child bit his finger so hard that he cried with pain. Pain is the most powerful master in learning the difference between subjective and objective.

I particularly observed the way in which the child looked at his body, and also at his reflected image. In relation to the first I made the following notes:

Seventeenth week. In grasping movements, which are still imperfect, the gaze is directed partly towards the object, partly towards the hand, especially if it has once grasped correctly.

Eighteenth week. The very attentive observation of the fingers in grasping is remarkable, and should be daily noticed.

Twenty-third week. When the infant, who frequently moves his hands aimlessly about in the air, by chance grasps one with the other, he watches attentively both hands, which are often casually clasped.

Twenty-fourth week. The child fixes his eyes for several minutes upon a glove which he himself holds in his hands, and changes the fingers which grasp it.

Thirty-second week. The child, while lying on his back, often looks at his legs stretched upright, and more especially at his feet, as if they were something not belonging to him.

Thirty-fifth week. In every possible position the child tries to seize one foot with both hands and put it in his mouth, and frequently succeeds. This apish movement seems to afford him peculiar pleasure.

Thirty-sixth week. The hands and feet are no longer watched so frequently without special cause. His gaze is attracted by other new objects, which he attempts to grasp.

Thirty-ninth week. When in the bath, the child sometimes looks at and touches his skin with evident delight, and sometimes gazes at his legs, which he bends and stretches in every direction.

Fifty-fifth week. The child watches attentively, for a long time, a person who is eating, and follows every movement with his eyes; reaches out towards the person's face, and looks at his own hands after striking his head. He likes to play with other's hands and takes delight in their motions, evidently comparing them with those of his own fingers.

Sixty-second week. He gazes continuously at his own fingers, and plays with them as if he would tear them out. One hand is pressed by the other flat upon the table, so hard as to cause pain, as if it were a strange plaything, and is constantly looked at with an air of wonder.

Thereafter the child's inclination to watch the parts of the body noticeably abated. He knew them by their form, and had gradually learned to distinguish them from extraneous objects as parts of himself; but by no means had he as yet reached the thought, "The hand is mine, what was taken hold of is not," or "The leg belongs to me."

Darwin observed (1840) of one of his sons, that in the fifth month he repeatedly laughed at the reflections of his father and himself in the glass, and thought them real bodies. But he was surprised that his father's voice came from behind.

I made the following observations of my boy:—

In the eleventh week he did not see himself in the mirror. When I knocked against the glass he turned his head in the direction of the sound, but his image did not make the slightest impression upon him.

In the fourteenth and fifteenth weeks he looked at his image with perfect indifference. His glance was directed towards the eyes in the image, without any expression of pleasure or displeasure.

In the sixteenth week the mirror was still either ignored or regarded with indifference.

At the beginning of the seventeenth week, on the one hundred and thirteenth day, the child looked at his image with unmistakable attention, and his countenance wore the same expression with which he was in the habit of gazing at the face of a stranger. It

was evident that he observed himself for the first time, but the impression seemed to awaken neither pleasure nor displeasure. Three days later the child positively laughed at his image.

When I held the child before the mirror again in the twenty-fourth week, he saw my image, became very attentive, and turned suddenly to me, apparently to convince himself that I was near him.

In the twenty-fifth week he for the first time stretched his hand towards the image, thinking he could grasp it.

In the twenty-sixth week it pleased the child to see me in the glass; he turned towards me and compared the original with the image.

In the thirty-fifth week the child reached out towards the image with eagerness and interest, and was astonished when his hand touched the hard, smooth surface.

This continued from the forty-first to the forty-fourth week; the child regularly laughed at his image and tried to seize it.

All these observations were made before a full-length mirror. But in the fifty-seventh week I held a hand-glass close to the child's face. He looked at his image and then put his hand behind the glass, moving it about as if in search of something. He next took the glass himself, looked at it, and touched it on both sides. When I held the glass before him again after several minutes, the same manoeuvres were repeated. This agreed with the observations made by Darwin on anthropoid monkeys, which I have mentioned.

In the fifty-eighth week I showed the child his cabinet photograph under glass in a frame. He turned the picture about like the hand-glass. Although the photograph was much smaller than the reflected image, they seemed to him to be alike. On the same (four hundred and second) day, I again held a hand-glass before the boy, showing him his image; but he obstinately turned away, again like an intelligent animal. Here the incomprehensible in a literal sense was troubling him; but very soon came the insight which the quadruped lacks. In the sixtieth week the child saw his mother in the glass, and when asked, "Where is mamma?" pointed to the image, and then turned laughing to his mother. Whereas the child formerly made cunning mistakes, there is no doubt but that at this age—fourteen months—the original and the image were distinguished as such, and the photograph no longer excited surprise.

Nevertheless, even in the sixty-first week the child tried to touch his image, and licked the glass in which he saw himself, and also in the sixty-sixth week struck it with his hand. In the following week I saw the child making faces for the first time before the glass, and laughing at it. I stood behind him and called him by name. He immediately turned round, although he saw me plainly in the glass. He evidently knew that the voice did not come from the image.

In the sixty-ninth week signs of vanity were perceived; the child frequently took pleasure in watching himself in the glass. If any one placed something on his head and said "pretty," his expression changed and became peculiarly self-satisfied, his eyebrows were lifted and his eyes were dilated.

In the twenty-first month, the child put on a piece of lace or embroidery, let it hang from his shoulders, looked around as it trailed, stepped forward, and then stood still, intent on making new folds in it. Here monkeyish imitation and vanity are mingled.

In the seventeenth month, the child showed a predilection for standing before the glass and making grimaces; these experiments with the mirror were, therefore, discontinued. They point out the transition from the condition in which the infant cannot see clearly, and has no feeling of self, to that of the developed Ego, which consciously distinguishes itself from its own image, as well as from other people and their images. But there is for a long time a certain cloudiness in respect to pointing out objects. In the twenty-first month the child laughed at his image and pointed to it when I asked, "Where is Axel?" and to my image when asked, "Where is papa?" But when questioned seriously, the child turned about with a doubtful air. One evening I placed a large mirror near my child's bed when he was asleep, in such a position that he should look in it immediately on awaking. He saw his image directly after he awoke; appeared greatly astonished by it; stared at it; and when I asked, "Where is Axel?" he pointed, not to himself, but to his image (six hundred and twentieth day). In the thirty-first month it still gave him great pleasure to watch his image, and he laughed at it continuously and heartily.

As is well known, animals conduct themselves quite differently in this respect. A pair of Turkish ducks kept themselves quite apart from other ducks. When the female died, to my astonishment, the drake betook himself to a cellar window in which could be seen his reflection, and stood there daily for hours at a time. He evidently thought his image was his lost companion. A young cat before whom I held a mirror, seemed to take the image for a second cat; for when the mirror was raised, she went behind and around it. Many animals are frightened by their images, and run away.

The discovery of their shadow also causes fear to little children. At first my child showed signs of fear at his shadow, but in the fourth year, took delight in it, and to the question, "Where does the shadow come from?" gave this remarkable answer, "From the sun."

## CIRCULAR OF APRIL, 1881.

We have been made familiar with the habits of plants and animals from the careful investigations which have from time to time been published, — the intelligence of animals, even, coming in for a due share of attention. One author alone contributes a book of a thousand pages upon “Mind in the Lower Animals.” Recently some educators in this country have been thinking that to study the natural development of a single child is worth more than a Noah’s Ark full of animals. Little has been done in this study, at least little has been recorded. It is certain that a great many mothers might contribute observations of their own child’s life and development, which would at some future time be invaluable to the psychologist. In this belief the Education Department of the American Social Science Association has issued the accompanying Register, and asks the parents of very young children to interest themselves in the subject, —

1. By recognizing the importance of the study of the youngest infants.
2. By observing the simplest manifestations of their life and movements.
3. By answering fully and carefully the questions asked in the Register.
4. By a careful record of the signs of development during the coming year, each observation to be verified, if possible, by other members of the family.
5. By interesting their friends in the subject and forwarding the results to the Secretary.
6. Above all, by *perseverance* and exactness in recording these observations.

From the records of many thousand observers in the next few years it is believed that important facts will be gathered of great value to the educator and to the psychologist. A letter from Prof. Preyer, of Jena, Prussia, on the literature of the subject, may be found in No. XIII. of the *Journal of Social Science*, published by A. Williams & Co., Boston; while the English quarterly *Mind* has been printing for four or five years past contributions, the more important of which are reprinted in No. XV. of the *Journal of Social Science*.

## CIRCULAR OF JANUARY, 1882.

The Education Department of the American Social Science Association, early in 1881, issued the accompanying Register, with an explanatory Circular. The same Department Committee would now call the attention of parents to the second issue of the Register of Observations on the development of infants, and beg their continued interest. In pursuing the study of this subject the Committee hope to attain several results :

1. True records of the order of development, and facts illustrating it.

2. More thoughtful attention, by both parents, to the idiosyncracies in dispositions, and to the needs of each child.

3. The discussion of unsettled questions, such as the inheritance of traits, the development of speech, intelligent consciousness, the influence of food, race, climate, etc.

4. Assistance to parents in the formation of more intelligent and systematic plans of education.

In reply to the query why these questions are asked, and certain others are not, it is proper to say that the form in which the Register is presented only suggests lines of study open to parents. It is hoped that sufficient curiosity and interest will be excited in the subject to tempt divergence from the method here presented. Each observer is therefore invited to broaden the field of observation by suggestions and by original research, and to report the results of investigation to this Committee.

The monographs of Darwin and Taine on this subject are reprinted, as a guide to the manner of proceeding with the work of observation.

Will the observer have the kindness to carefully answer as many as possible of these questions and return this circular before July 15th, 1882, to

MRS. EMILY TALBOT,

*Secretary of the Education Department of the American Social Science Association,*

66 MARLBOROUGH STREET, BOSTON, MASS.

BOSTON, January 1, 1882.

## REGISTER OF PHYSICAL AND MENTAL DEVELOPMENT OF

(Give the Baby's full name).....

Name and occupation of the father?.....

Place and time of father's birth?.....

" " mother's " ?.....

" " baby's " ?.....

Is it a first, second or third child?.....

Baby's weight at birth?.....at 3 months?.....at 6  
months?.....at 1 year?.....

How fed?.....

Is the baby strong and healthy, or otherwise?.....

At what age did the baby exhibit consciousness, and in what  
manner?.....

At what age did the baby smile?.....

" " " recognize its mother?.....

" " " notice its hand?.....

" " " follow a light with its eyes?.....

" " " hold up its head?.....

" " " sit alone on the floor?.....

" " " creep?.....

" " " stand by a chair?.....

" " " stand alone?.....

" " " walk alone?.....

" " " hold a plaything when put in its hand?  
.....

- At what age did the baby reach out and take a plaything?.....
- “ “ “ appear to be right or left handed?.....
- “ “ “ notice pain, as the prick of a pin?.....
- “ “ “ show a like or dislike in taste?.....
- “ “ “ appear sensible to sound?.....
- “ “ “ notice the light of a window or turn  
towards it?.....
- “ “ “ fear the heat from stove or grate?.....
- “ “ “ speak, and what did it say?.....

How many words could it say at 1 year?.....at 18  
months?.....at 2 years?.....

(Please observe and report the order of the Parts of Speech.)

Are these observations made from memory?.....from a  
diary?.....or from week to week?.....

Observers are referred to the following publications among  
others :

*Psychogenesis* by Dr. W. Preyer. (In *Journal of Speculative Philosophy*,  
April, 1881. New York: D. Appleton & Co.)

*Education*, Jan. 1882. New England Publishing Co.

*Die Sprache des Kindes*, by Fritz Schultze. Leipzig: E. Günther.

*Observations et réflexions sur le développement de l'intelligence et du  
langage chez les enfants*, by M. E. Egger. 3d Edition. Paris: A. Picard.

*Die Seele des Kindes*, by Dr. W. Preyer. Leipzig: Th. Grieben Verlag.

*Les trois premières années de l'enfant, L'Éducation dès le Berceau*, by  
Bernard Perez. Paris: Germer Baillièrre et Cie.

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