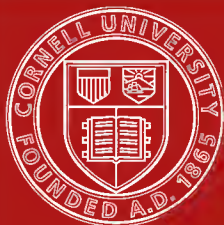


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The First 



Five Hundred

. . . . Days

....OF A....

∴ Child's Life ∴



....V....

LANGUAGE.



By MRS. WINFIELD S. HALL,
CHICAGO.

Reprint from "THE CHILD STUDY MONTHLY."
March, 1897.

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LANGUAGE

By MRS. WINFIELD S. HALL.

PREFATORY.

This paper is the last of a series of five, giving a detailed account of the early physical and psychical development of my child. Altho' he was born in Switzerland he is of purely Anglo-American ancestry. It may or may not be an important fact that the mother was engaged almost up to the day of the child's birth in the study of German and French.

The child has never been under the care of servants, nor has he been much with other children. His mother has been his only nurse and constant companion. During the first sixteen months of his life she was not absent from him more than half a dozen times during his waking hours, and then not to exceed three hours at one time.

All of the observations were made by the writer personally. As the child was under constant observation, the facts were noted as they occurred, and were written more carefully at the close of the day.

THE FIRST FIVE HUNDRED DAYS OF A CHILD'S LIFE. V.

II. PSYCHICAL DEVELOPMENT.

C. INTELLECT.

9. LANGUAGE.

Introductory.

Before entering upon a discussion of this subject it will perhaps be best to state some of the conditions under which the results have been obtained, inasmuch as a definite line of action was systematically carried out.

I. Each idea to be conveyed to the child was couched in the fewest possible words, which words were invariably used to represent this idea. For example, the idea, "Do you want your dinner?" was expressed by the one word "dinner" given with the rising inflection.

II. The child was not taught tricks or show performances, nor was he encouraged to repeat meaningless words and phrases. On the contrary, words were given to him only after he had the idea which they expressed.

III. The child's errors of pronunciation were neither imitated nor corrected; but care was taken that he should always hear words rightly pronounced.

IV. Only such words are recorded as were used independently, (at least one day after the child had heard them used) and used to convey an idea. Proper nouns are given in the vocabulary simply to show the child's method of pronunciation but are excluded from the final summing up of acquired words.

(a) Sounds and Signs.

Unfortunately, no account of the infant's babbling was kept, aside from the fact that in his very early days he "talked back" with the word "goo," which later changed to "ga goo," and that in the fifteenth week he often amused himself by making a continuous sing-song tone.

47th day

87th day

As the proper care of the child depended so much upon the right interpretation of his cries, much more attention was given them; and, by the ninth week, one could distinguish the *hunger*-cry, the cry of *pain* and *impatience* and one of *appeal*, which was used when, after crying from hunger, he saw his mother approaching his bed. In the eleventh week he added a mingled cry of *pleasure* and *impatience* by which he greeted the appearance of his dinner. In the nineteenth week when accidentally hurt, he cried in a way which showed plainly that not only his body but his feelings were hurt.

As early as the sixth week, pleasure was expressed by laughing, although he did not laugh aloud until the ninth week.

Very early in the imitative stage the lip movements 221st day accompanying such words as *mamma*, *papa*, and *bye-bye* were repeated. Two days later in response to a lady's farewell he imitated both gesture and word.

In the thirty-third week the child used a series of quick sounds made by a rapid inhalation and exhalation of the breath, to denote his satisfaction at his mother's approach. That the spontaneous use of a certain sound denoting a particular want, was at once understood and responded to, made the child very happy, and when after some experience he learned that this sound always commanded his mother's attention, he used it to denote other wants.

In the thirty-eighth week the syllable "uh! uh!" was adopted to call attention to any object of interest. A dog was denoted by a guttural sound similar to the German terminal *g*.

(b) *Understanding of Words.*

No evidence was given before the eighteenth week that words conveyed any idea. But when the child looked toward the speaker at the sound of his name, "*Albert*;" and into the mirror at the word "*baby*;" he must have had some idea as to the 122d day
150th day meaning of the words.

The words "*dinner*," "*mamma*," and "*papa*" were next 165th day comprehended.

The child was fond of throwing toys from his bed or car-

riage that he might have them returned to throw again. Having one day picked up and returned a toy fifteen times it was decided thereafter to leave them where they were thrown and to tell him "gone." He soon understood the significance of this word and threw only such things as he did not wish to keep. That the word carried its real significance is clear when he ceased to call for his papa after being told, "Papa, gone."

210th day

The words bath (213), tree (217), kiss (229) and horse were next understood, and by the thirty-fifth week the child would look in turn toward his grandma, grandpa, and aunt as their names were called.

238th day

In the thirty-seventh week when the meaning of the word "no-no" was dawning upon him it was sufficient to cause him to hesitate in an act, but it did not until the fifty-third week prevent him from accomplishing it.

267th day

Six days after *lamp* was recognized as referring to a particular hanging-lamp, the child showed, by pointing to a standing lamp in another room, that he had extended the word to embrace all lamps.

The way in which the word dog, first signifying a dog's image, was then applied to a small street dog, has been described (page 462).

The word ride had long been understood to apply to the child's daily outing, but when in the fortieth week he was taken each day to meet his father he came to recognize "Go find papa" as referring to this outing and greeted it with demonstrations of joy.

276th day

"Picture" meant one particular picture and was not for several weeks used in a general sense.

283d day

In response to a request to do so, the child took a handkerchief and wiped his nose, and at the word "blow" made a little blowing noise.

294th day

Immediately upon awakening from a nap his attention was attracted by two tennis rackets which were hung upon the wall during his sleep. Holding himself erect he pointed excitedly toward the unfamiliar objects, saying "uh! uh!" As often as he referred to them he was told "Papa's racket," and when

at evening he was asked "Where is papa's racket?" he turned toward them, but they were hidden by an open door, whereupon he leaned back until they came to view, and then cried, "Ah! ah!"

He would look in its place for "papa's cane," look about the room for a fly, in the cat's accustomed haunts for kitty, dissent or assent when asked if he wanted water, and look toward a tree near the window to find the "birdies in the tree."

The child's ability to understand is illustrated in the following incident:

Among his Christmas toys was a box of blocks of whose use he had no idea. The first time they were given to him he accidentally dropped one which his attendant picked up with a great flourish. The child proceeded then to treat them all in a similar manner. From this time he seemed to look upon this as the proper use for blocks.

One day after giving him the blocks he threw two and was about to throw the third when the mother's warning, "No-no," stayed his hand as she continued "on the box; put it on the box." The child kept his eyes fixed questioningly upon his mother while she repeated the directions again and again. Then without removing his eyes from her face he slowly drew back his hand and set the block upon the box. The mother's approving "Good boy!" changed the questioning look to one of satisfaction. He then put the remaining blocks one by one upon the box. This was the beginning of his block-building. 365th day

Being obliged to leave him alone while preparing his supper I told him to play with his blocks while I got him an egg. He made no objection to being left alone, and when six or eight minutes later I returned with the egg concealed, he demanded "Egg!" and shouted with delight as it was disclosed. 427th day

Upon request the child extended the "foot" and "other foot" and later in the day pointed to the "ear" and "other ear;" he also pointed to the "eye", but when asked for the "other eye" he pointed to the "other ear." On the following day, however, he made no mistake when the questions were put. 429th day

440th day

Ten days later he was asked in the most confusing manner for Albert's eye and other eye, mother's ear and other ear etc., but again made no mistake. Finally he was asked for mother's nose, which he found, and then for mother's other nose. He looked at her nose, then at one side and the other of her face and at last turned away with a most puzzled expression.

By the sixty-second week the child would relinquish valued objects or do distasteful things if good reasons were given. For example, he was allowed each evening before going to bed to hold his mother's watch a few minutes. When it was time for him to go and he was told to put the watch back he objected until told, "Little watch must go bye-bye, put the watch in its bed," whereupon he laid it in its case and thereafter put it away willingly. If he was left alone in the room without explanation he protested vigorously, but if told, "Mother must go, but she will come back soon," he played happily until her return. While standing in his bed he said, "Sizzie, sizzie," wanting a little pair of blunt scissors which lay upon the table near him. The mother replied, "No-no, scissors while you stand, sit down and have scissors," and he let himself down to a sitting posture and waited expectantly for the scissors.

496th day

Creeping about the floor he backed under a piece of furniture. After trying vainly to extricate himself he called for mamma, who in reply gave him the following directions: "Put your hand out. Now, put your other hand out. Now, creep a little. Now, you can get up all alone." Having followed each direction he stood up looking very proud and happy.

(c.) *Words and Sentences.*

260th day

The word "bye-bye," said so unexpectedly in the thirty-third week, continued to be used until one day he refused to say it and did not again employ it for ten days, when he used it spontaneously and used it regularly thereafter. His father one morning offered him his finger, by which he might raise himself to a sitting posture in his bed. The child grasped the

291st day

finger, but made no effort to rise by its aid. After several trials his father left him saying, "All right, then, you can't sit up." Thereupon the child promptly pulled himself up by the aid of the bed, and waving his hand toward his father's retreating figure said, "Bye-bye."

The next word was boo-woo, first said in imitation of the dog, but very soon used in answer to "What does the dog say?" Great advancement was made in the understanding of words, but no new word was added until he exclaimed "Papa" as his father entered the room. 291st day

A watch was held to the child's ear and the words "tick-tick-tick" sounded in rhythm with the tick of the watch. After listening a moment he repeated "chi-chi-chi." When on the following day he was asked what the watch said he answered, "Chi-chi," a pronunciation which was soon changed to tick-tick. 309th day

Although familiar with the word kitty it was not articulated until spontaneously used in fright at the sudden appearance of a woolly object which he thought to be a kitty.

Bath, box, shoe (326), gone (331) and paper (333), were first imitated and in a few days used independently. The next word, doll, was first used spontaneously as a doll was put into his hands. 321st day
335th day

The first sentence, "Papa gone," though first repeated after his mother, was from that time used independently. One morning while lying in his bed, he peeped over the pillow saying, "Peek-a-boo," not very well pronounced to be sure, but carrying a definite idea. 338th day
339th day

A sudden appearance of the mother elicited the long-looked-for "Mamma," which heretofore had been used only as the mamma of the babbling period. 340th day

"Gone" was now applied not only to persons and objects that had passed out of sight or possession, but also to objects which he wished removed. After eating his dinner he also said, "Gone," and later "all gone." 362d day

"Papa" first included all men, then an exception was made in the case of the one who cared for the furnace who was

367th day "man." This word later became the general term for all men, while papa was applied to but one individual.

381st day One day after caressing his father, saying, "Papa" and his mother as he said "Mamma", he put one hand on each face, saying "Pa-mamma", "Ma-papa." This original compound was used several times subsequently and was then permanently dropped.

383d day The child approached forbidden objects, holding his finger as near to them as possible without touching them as he said "No-no."

387th day On one occasion he refused a picture book which was offered him, at the same time pointing to the bookshelf, saying, "Book-moo." The book whose cover was ornamented with a large picture of a cow was taken down and proved to be what he wanted.

401st day After putting the little watch to bed, as usual, he said with long pauses between words, "Tick-tick, gone, bye-bye," and the next day after watching his father's departure, said, "Papa, gone, bye-bye."

The songs and rhymes selected for his entertainment were always chosen with direct reference to the words which he understood, for example, when he was familiar with the words cat, cow, dog, dish and spoon, he was introduced to the classic "Heydiddle, diddle, the cat and the fiddle," which gave him the keenest delight. With the acquisition of birdie and tree, "Little birdie in the tree" was presented, and when he had seen the birds hopping about in the snow, he was ready to enjoy "Little birdie in the snow." Very soon he began to use a prominent word of each one as a request for that particular rhyme.

In the thirty-eight week the syllable "bü" was adopted to designate any want for which the child had no other word. Originally he used this syllable only as referring to food but gradually extended its signification to include all wants.*

411th day "Papa-shoe-black-box" meant papa blacks his shoes on that

*Several instances of invented words to signify particular things are recorded by Tracy, "Psychology of Childhood," page 130.

box, and "Bird, peep-peep" signified "the bird says peep-peep." One of the longest combinations at this time was "Papa dear gone—back home" i. e.; "Papa dear has gone, but he will come back home."

In the sixty-second week the child frequently joined a few words together with a string of meaningless syllables for example, mo-me, ma-mum, mo-me, *mamma*, or bo-be, bo-ba-ba, *baby**, etc., as it was some time since he had indulged in meaningless babble, it seemed probable that he was conversing to his toys in imitation of the conversations which he overheard and which must have sounded to him like a succession of unintelligible sounds with here and there a word. During this week he first supplied the rhyming words of his little songs and ditties (see page 525) and began calling himself and the members of the family by name.

He must have had a definite idea of ownership as he prefixed the names of objects with the owner's name. For example, *mamma-ear*, *papa-brush* Albert-shoe, frequently abbreviating them to "ma-ear, pa-brush, bā-shoe."

At the end of the sixty-second week a list of the elementary sounds used in a day was made, as follows: 436th day

ā, ä, ä, á, b, d, e, f, g, h, i, k, l, m, n, o, ö, p, s, t, oo, oo,

consonant y and z. There were days when so many new words were added and so many notable incidents occurred that it was necessary to keep a pencil constantly in hand.

The first day of the sixty-third week was such a day. 437th day
The words hand, poker, shirt, chain, cup and fire were independently used without having been previously imitated. "Choo-choo," which had been used the day before when listening to the cars, was spontaneously used as "choo-choo-car" in describing what he had seen. From the sounds which they made he named dogs, "bow-wow" and birds, "peep-peep."

When he wanted a pencil he went to his father saying, 461st day
"Mark, pencil."

The child found the picture of a lady, which had been hung 465th day

*A similar use of meaningless syllables is recorded by Preyer, "The Development of the Intellect," page 132.

up for his enjoyment, blown down by the wind, and said "Blow-lady-down-floor." Some of the new combinations were "baby cry," "mamma sew," "choo-choo-car gone by," and "blacking cover," a name which he gave to the cover of the blacking box.

474th day

Upon seeing a little broom standing in the corner he said "Mamma-broom-corner-sweep;" i. e., "mamma's broom is in the corner; mamma sweeps with the broom." The word "corner" was at first always applied to objects standing in corners, as "papa cane, corner;" but its use was extended to include anything standing against the wall. During the progress of preparing the child's supper, he heard from an adjoining room the sound of the egg and spoon coming in contact, and cried out "Crack, egg!" This phrase was elaborated a few days later to "Crack *the* egg, spoon," thus introducing the first article. On the same day he greeted the sound of the breakfast bell with "dinner, egg, potato."

474th day

475th day

478th day

While watching for his father to come home he said, "Papa coming, nice papa." Looking at my hand he said, "You hand, mamma hand;" I replied, "Here is my hand, where is your hand?" After looking puzzled for a few moments his face cleared, and holding up both hands he cried, "There!"

478th day

Watches and *garters* were used in the plural, but as he had heard these words oftener in the plural than in the singular, it was not thought significant until five days later when, with a brush in each hand, he said, "Two papa brushes," (*bruche*) and pointing toward the side-board said, "Mamma dishes." As the child frequently used both of these words in the singular, it was clear that he intentionally expressed a plural idea.

479th day

A ride behind a Shetland pony was described as follows; "Pony, horsie—pony; boy walk, Anna walk, pony;" which really meant, "Albert had a ride with the pony—a little horse—boy and Anna walked, but Albert had the pony." The next morning he told his father, "Boy walk, Anna walk," and in answer to the inquiry, "What did Albert do?" he said, "Pony, ride, pony."

481st day

On the day when the word *away* was first used it appeared

in several sentences, as "papa gone away," and "bow-wow gone away," and when he had had sufficient dinner, he motioned the cup "away," again using the word. *Another*, was similarly introduced. While walking on the street he said, "Horsie;" then as we passed a second one, "*Another* horsie." Taking two books he said, "Book" and "Another book."

When little Anna came in with her hat on, he exclaimed, "Anna's hat!" The possessive 's being clearly enunciated. 481st day

In the fifty-ninth week the child often said, "Me," as he looked toward the window. By the sixtieth week I decided that to him it referred in some way to the birds, and that he had gotten it from the last line of the bird-song—"Sing a song to *me*." The word seemed pleasing to his ear, and he often said it. In the sixty-fourth week, I put my hand on his head saying, "This is me," afterward when I asked, "Where is little me?" he put his hand on his face saying, "There!" In the sixty-eighth week after coughing, he said, "Choke me." This sentence was used on several similar occasions.

In the seventieth week in reply to the question, "What is mother going to do?" he said, quite truly, "Wash me." In spite of these instances in which the word was correctly used, I believe that its true meaning was not understood, for on all other occasions he used his name in the objective. 485th day

In the family of which we formed a part, there were for a time three children, Florence, Anna, and Arthur whom the child called "boy." One day as I was singing: 485th day

"Mamma, said little Nellie, may brother Frank and I
Go out and catch the feathers that are falling from the sky?"

he constantly called "Anna." It finally occurred to me to substitute Anna's name for Nellie, whereupon the calling ceased. In a few moments, however, he suggested "boy," which was inserted instead of Frank. This seemed to please him very much for a time, but when it occurred to him that Florence had been forgotten he demanded "Florence." The second line was amended to include Florence, and the child was perfectly happy. Thereafter he insisted on having the revised version.

488th day At the sound of the scissors' grinder's bell he said "Scissor-man, ding-dong bell — take kitty out." His first thought seemed to be "There's the scissors-man; his bell says 'ding-dong bell,' " but the words reminded him of the rhyme the last words of which he added.

490th day That words expressing space-relations were beginning to be understood was made manifest when the child turned to look for something which he was told was behind him. A day later while playing he laid a toy shovel on top of a hair-pin, saying "Shovel on mamma pin," then putting the hair-pin to his teeth, added "Pin in mouth."

Something said at the table caused a general laugh in which the child joined, saying "Joke, funny!" No one knows how he acquired these words, but in some way he had learned to associate a laugh with these words. Somewhat later, when he expected a laugh, he said "Joke," but if no one laughed he said soberly "No joke at all," as had been said to him on one or two occasions when he had tried to make a laugh to cover up his shortcomings.

Some curious misunderstandings of words occurred in the sixty-ninth and seventieth weeks. Reference being made to Aunt Nell, whom he did not remember, his face brightened up as he said "Oat-meal." I again said "Aunt Nell," and as before, he responded "Oat-meal." His father, to whom he handed a pencil-eraser, took it, saying "Mamma's rubber." The child looked at his recently vaccinated leg which he often wanted rubbed, and said "Mamma rub it."

During a conversation to which he seemed to pay no heed, the words, "Yes, he knows," occurred. He immediately looked up, and with his hand on his nose repeated "He nose."

494th day Prepositions were introduced in many sentences, such as "dish of water," "mamma umbrella stand in the corner,"

495th day "water on he hand," and "papa-hat on Albert." Some of the other combinations were "comb and brush," "brush papa nose," and "two pencils to mark."

496th day A gentleman of whom the child was especially fond was the recipient of the first spontaneous "Good morning." As he did not hear it the child repeated "Morning Ayres."

The longest combination of words was, "Take a bath with soap be clean." 496th day

Possessives were not used after the one recorded above until he said, referring to some object, "mamma's" or "papa's."

"Horsie run" was changed to "horsie runs." As he started off one day to an adjoining room he explained "Find lady." Having found her and received a cookey he returned. As soon as the cookey was gone, however, he went again, this time, saying "Find lady, cookey." 500th day

The difficulties under which the child was laboring, while making this progress, will be better understood when it is remembered that from the sixty-second week he was learning to walk. In the sixty-fourth week he began cutting double teeth and wrestling with the whooping cough.

(d) *Pronunciation.*

The first six words articulated were words in which the syllable was doubled, as "Bye-bye."

Quite independently the child substituted onomatopœtic words for the name of the object, for example, tick-tick (watch), choo-choo (car), peep-peep (bird), bow-wow (dog), and moo (cow). Previous to the fourteenth month, terminal consonants were for the most part ignored, exception being made in *soap* and *sleep*, in which the terminal consonant only was sounded. From the beginning of the fourteenth month terminal consonants appeared in new words and were added to old ones.

The difficulty of pronouncing words beginning with a vowel was avoided by preceding the vowel by the consonant which followed it, ignoring *l*, as pap'-a (apple), Nanna (Anna), Baba (Albert), yi (eye). Initial *l* and *r* became *y* and *w*, ya'e (lady) yub (rub), but terminal *l* and *r* were well articulated. In tail and coal the effort to sound the *l* was so great that the words became tal'u, col'u. Both *l* and *r* when preceded by a consonant became *w*, as kwen (clean), bwoke (broke), *l* in the middle of a word became *y*, as poi'ya (pillow), Te'ya (Tillie), beyoom (balloon). Initial *s* usually became *f*, as in fōp (soap).

S followed by a vowel or in the combination *sh* was correctly pronounced as so (sew), shoo (shoe). *Ch* initial and *g* when followed by a vowel were well articulated, although *g* followed by *r* became *b*, as *beween* (green), *bewasse* (grass). *Ch* terminal was changed to *sh*, as [Fish (Fitch)].

From time to time pronunciations were amended, either as a result of better hearing of the true sounds, or because of an increased power of articulation. Just what these changes were may be seen by reference to the table of pronunciation.

(e) *Sentence Building.*

The first words used were interjections. A very natural beginning, as the interjection expresses more in itself than is expressed by any other part of speech and loses nothing by standing alone.

In the child's first observations, objects were seen as a whole without regard either to qualities or motions. Hence, the early appearance (forty-fifth week) and great preponderance of nouns. Action being the most attractive feature of an object it was next noticed and verbs were introduced to express it (forty-eighth week). With the acquisition of these most important parts of a sentence, came the first combination—*papa gone*—which, although elliptical, expresses a complete thought. It would naturally be expected that the observation of quality and location would follow upon that of motion and that adjectives and adverbs would soon appear, an expectation which was justified by their introduction in the fifty-sixth and fifty-seventh weeks respectively. It is interesting to note that "bye-bye", used interjectionally as the first word was in the fifty-seventh week employed to express the first adverbial idea—place—in the sentence, "Papa gone bye-bye."

Although the possessive idea was expressed in the sixty-second week the possessive form of the noun did not appear until the sixty-ninth week, nor did the plural form occur until that time. The first pure inflection was in the formation of participles in "mamma coming," "boy playing" and "papa washing" (sixty-sixth week).

The first adverbial phrases, "Shovel on mamma pin," etc., like the first adverbs, expressed location, but a phrase which was used in the sixty-seventh week, "crack the egg-spoon", although elliptical, was a phrase expressing manner. The article, appearing in the sixty-seventh week, may have been either definite or indefinite as the pronunciation was such as to make a decision impossible. The sense seeming to require the definite article it was so interpreted.

The use of *you*, *me* and *my*, although quite correct, was of such rare occurrence as to show that it was not an independent one.

The first interrogative sentence was used in the sixty-ninth week. As the child saw his father busy at a piece of work, he interrogated "Papa do?" (What is papa doing?)

Many familiar words were put together in compound words, as *soap-dish*, *dinner-dish*, *baby-powder*, (a baby-face ornamented the box).

The first adjective phrase came in the seventy-first week in the words, "dish of water."

In the seventieth and seventy-first weeks, besides the simple complete sentences, the child used many long but elliptical ones, such as "mamma hand in the water," "shoe gone away, funny shoe away." "Papa book, pretty book," "pencil write papa book" (I want a pencil to write in papa's book), "banana-man, window" (there's the banana-man; take me to the window). The infinitive appeared in "papa pencil to mark" (I want papa's pencil to mark). In the simple sentence, "mamma rub it" in the seventy-first week, the child used subject, predicate and object.

Words were joined by conjunctions in the seventieth week, as in "bread and meat," "comb and brush." In the seventy-first week a compound predicate occurred in the sentence already quoted, "Take a bath with soap, be clean," in which, if we supply the understood words to read "I will take a bath with soap and be clean," we have a sentence with subject, a compound predicate, an object and an adverbial modifier.

(f) Tabulated Results.

A complete list of the words used independently and the child's pronunciation of each is appended. That they might be classified it was necessary to reduce them to their elementary sounds, and to adopt a system of diacritical marking.

Table I explains this system, gives the day on which each elementary sound was introduced and the number of times it was used in different syllables.

Table II gives the words whose pronunciation was bettered from time to time with date of first use and date of changes.

Table III gives the entire vocabulary with the child's first pronunciation of each word and the date of its introduction.

Table IV summarizes the vocabulary and forms the basis for the chart which follows it.

The chart shows graphically the change in the proportion of different parts of speech at different periods during the 500 days. At the end of the 500 days it will be noted that the proportions closely approximate the proportions determined by Tracy* in his summary of 5,400 words of child-vocabularies. It will be seen that the lines are approaching the points reached by Tracy. But the fact that the children quoted by Tracy were older, makes it probable that in its further extension this child's vocabulary will approximate these averages.

The chart also shows the rate of acquisition of words by weekly periods. Beginning with the forty-fifth the weekly additions to the vocabulary are, respectively :

3,—2, 1, 3, 5—2, 1, 4, 1,—0, 2, 5, 8—1, 3, 5, 13,—8, 16, 14, 12—
10, 26, 32, 27—14, 18.

Inspection of this series of arithmetical differences reveals distinct accelerations and retardations, which in the curve of acquisition take the form of crests and troughs. The curve shows well-marked crests at the following points:

45-6th wk., 49th wk., 52d wk., 57th wk., 61st wk.,
63-4th wk., 68th wk.

* *Psychology of Childhood*, page 145.

(g) *Conclusions.*

- (1) (I) The *first* language of the child was the primitive language of the species and consisted of sounds and signs.
(II) This language expressed elementary physical needs, and the lower order of psychical states—emotions.
(III) Every expression of this language would be perfectly understood by every adult member of the species.
- (2) The *second* language of the child—that of the first three months of articulate speech (223d day to 314th day)—was an interjectional, onomatopoeic race-language.
Of the vocabulary of this language, eighty-three per cent. consisted of words having duplicated syllables, thirty-three per cent. consisted of interjections and thirty-three per cent. of onomatopoeic words.
With the exception of the word “kitty,” acquired on the last day of the period, the whole vocabulary would probably be intelligible, when used by a child, to any adult member of the teutonic branch of the race.
- (3) The *third* language of the child was the vernacular language of the mother.
- (4) The vowel sounds were introduced in the following order:
I, oo, ä, I, e, Ö, a, ü, oo, ä, Ö, ä, á, é, oi, ow, ü
- (5) The consonant sounds were introduced in the following order:
b, p, t, k, sh, g, d, m, s, z, n, y, r, f, ch, l, h, ng, w, j.
- (6) The consonant sounds not used were:
v, th (asp.), th (voc.), wh, and zh.
- (7) (I) During the 8th, 9th, 10th and 11th months there were more vowels than consonants in use.
(II) During the 12th and 13th months there were as many consonants as vowels in use.
(III) During the remaining time the consonants were more numerous than the vowels.
- (8) (I) As to frequency of use in new syllables the vowels take the following order: e, I, ä, Ö, ü, I, oo, ä, á, ä, é, Ö, a, oo, ow, oi, ü
(II) As to frequency of use in new syllables the consonants take the following order:
b, n, t, k, p, m, w, d, y, f, s, sh, h, g, ng, z, r, l, ch, j.
- (9) As to frequency of use as initial sounds the letters take the following order:
b, k, p, t, f, w, d, m, h, n, g, y, s, sh, ä, ü, ch, I, Ö, á, e, r, ä, Ö, j, ü
- (10) Elementary sounds were acquired rapidly during the 8th-14th months and slowly during the remaining part of the period.
[See Table II] *and charts*

- (11) Words were acquired slowly during the 8th-14th months and rapidly in the 15th, 16th and 17th months. [See chart.]
- (12) (I) *The rate of development of this child's language has undergone alternating accelerations and retardations.* The accelerations are graphically expressed in the wave-crests in the Curve of Acquisition. [See Chart.]
- (II) From the beginning of the 11th month to the 500th day there are nearly seven (6 $\frac{2}{3}$) lunar months.
- (III) During this period there were seven crests in the Curve of Acquisition of Words.
- (IV) The seven periods of acceleration are so distributed as to fall, one within each lunar month.*

* For Conclusions on Pronunciation, Sentence-Building, Grammatical Distribution see these topics in the body of the article.

TABLE I.—SHOWING THE INTRODUCTION AND USE OF THE
ELEMENTARY SOUNDS.

| SOUND DEFINED AND DIACRITICALLY DESIGNATED. | Day of introduction. | Times used in new syllables. | SOUND DEFINED AND DIACRITICALLY DESIGNATED. | Day of introduction. | Times used in new syllables. |
|--|-------------------------|---------------------------------|--|-------------------------|---------------------------------|
| ä = a as in arm..... | 294 | 16 | b = b in bat..... | 223 | 48 |
| æ = a as in name..... | 385 | 13 | d = d in do..... | 335 | 25 |
| ā = a in man..... | 367 | 31 | f = f in fun..... | 399 | 14 |
| a = a in fall, aw inawl.. | 333 | 10 | g = g in go..... | 333 | 11 |
| á = a in America..... | 423 | 16 | h = h in how..... | 426 | 12 |
| e = e in me, ea in meat.. | 314 | 67 | j = j in jet, g in gem... | 490 | 2 |
| ē = e in met..... | 423 | 13 | k = k in kite, c in cat, } ch in chyle.... } | 314 | 43 |
| i = i in nine, y in by.... | 223 | 18 | l = l in lot..... | 417 | 5 |
| ī = i in sit..... | 314 | 41 | m = m in man..... | 342 | 32 |
| ō = o in uo..... | 384 | 27 | n = n in not..... | 384 | 45 |
| ó = o in not..... | 321 | 12 | p = p in pen..... | 390 | 36 |
| oo = oo in boot, o in do... | 291 | 17 | r = r in rest..... | 395 | 7 |
| oo = oo in book, u in put.. | 350 | 7 | s = s in so, c in cent.... | 364 | 13 |
| ū = u in tune..... | 478 | 1 | t = t in ten..... | 314 | 44 |
| ũ = u in run..... | 333 | 27 | v = v in vat..... | | |
| oi = oi in oil, oy in boy... | 432 | 4 | z = z in zest, s in has... | 364 | 9 |
| ow = ow in owl, ou in sound. | 444 | 7 | ch = ch in church..... | 399 | 5 |
| w = w in will..... | 447 | 32 | sh = sh in she..... | 326 | 13 |
| y = y in yet..... | 384 | 20 | ng = ng in sing..... | 433 | 11 |
| ēr = er in her, ir in fir.... | | 3 | (x = ks and qu = kw) { zh = z in azure. } { wh = wh in when. } | | |
| { th as in thin } | | | | | |
| { th as in the } | | | | | |

TABLE II.—SHOWING STEPS OF IMPROVEMENT IN PRONUNCIATION.

| First Date. | Word. | Second Date. | Pronunciation. | Sound introduced | First Date. | Word. | Second Date. | Pronunciation. | Sound introduced |
|-------------|------------|--------------|--------------------|------------------|-------------|---------|--------------|----------------|------------------|
| 321 | bath | | bä | oi | 429 | broom | | moom | |
| | | 499 | bäf | | 454 | | 454 | bwoom | |
| 333 | paper | | pü | | 435 | Albert | | Bä-bä | |
| | | 393 | pä-pē | | 495 | | 495 | Bä-bōō | |
| 339 | boy | | b a | | 500 | | 500 | Äb-ēt | |
| | | 432 | boi | | 436 | dinner | | dīn-nē | |
| 342 | peek-a-boo | | ä-bōō | | 437 | cup | | dīn-nä | |
| | | 361 | pē-bōō | | 468 | | 468 | püp | |
| 346 | soap | | p | | 468 | flower | | küp | |
| | | 454 | pföp | | 442 | | 468 | foi yä | |
| | | 484 | fwöp | | 445 | pillow | | fow-ä | |
| 363 | pug | | pü | | 448 | button | | poi-yä | |
| | | 476 | pük | | 448 | | 487 | plä-ō | |
| 391 | brush | | bü | | 449 | balloon | | büp-nē | |
| | | 494 | bwüşh | | 461 | | 461 | büt-nē | |
| 395 | car | | är | | 468 | | 468 | büt-n | |
| | | 483 | kä | | 467 | cover | | bē-yoom | |
| 396 | bottle | | bō ^{oo} | | 471 | | 471 | bē-yōon | |
| | | 438 | bök-ä | | 460 | sing | | hā-wä | |
| 397 | coal | | gō | | 463 | | 467 | kü-wē | |
| | | 436 | kō-lü | 463 | Florence | | hīng | | |
| 399 | hook | | kō ^{oo} k | 494 | | 494 | sīng | | |
| | | 447 | hō ^{oo} t | 463 | | 469 | Häm-e | | |
| | | 449 | hō ^{oo} k | 475 | | 475 | Fän-e | | |
| 411 | Fitch | | Fīsh | 484 | | 484 | Fä-nē | | |
| | | 440 | Hīch | 468 | umbrella | | Fä-nis | | |
| | | 445 | Shīch | 494 | | 494 | bwē-wä | | |
| 417 | card | | är | 470 | green grass | | ü-bēd-ō | | |
| | cards | | kä-īs | 471 | | 480 | bēn bā | | |
| 422 | lady | | yä-e | 471 | horse | | { bwēn | | |
| | | 465 | dä-dē | 477 | | 482 | { bwäs-sē | | |
| 424 | coat | | tō | 477 | Lincoln | | h ä-tē | | |
| | | 429 | kō | 481 | | 487 | h ä-sē | | |
| | | 438 | köt | 477 | | 487 | nīngk-nē | | |
| 424 | egg | | yēg | 481 | away | | īngk-n | | |
| | | 476 | yēt | | | 500 | wä | | |
| 427 | Anna | | Yä-yä | | | | ä-wä | | |
| | | 434 | Nän-nä | | | | | | |

TABLE III—VOCABULARY.

| 8th, 9th and 10th Month | | | | | 14th Month | | | | |
|-------------------------|-------------------|----------------|-----------------|--------------------|------------|-------------------|----------------|-----------------|--------------------|
| Date | WORD. | Pronunciation. | Part of Speech. | Sounds introduced. | Date | WORD. | Pronunciation. | Part of Speech. | Sounds introduced. |
| Day | | | | | Day | | | | |
| 223 | bye-bye | bī·bī | interjection | b-I | | | | | |
| 291 | boo-oo | bōō·ōō | noun | ōō | | | | | |
| 294 | ah-ah | ā·ā | interjection | ā | | | | | |
| | 11th Month | | | | | 14th Month | | | |
| 309 | papa | pā·pā | noun | p | 399 | fall | gh a, fa | verb | f |
| 314 | tick-tick | tīk-tīk | noun | t-ī-k | 399 | choke | chō | verb | ch |
| 314 | kitty | tī-ē | noun | ē | 399 | hook | kōōk | noun | |
| 321 | bath | bā | noun | | 401 | dish | dīsh | noun | |
| 321 | box | bō | noun | ō | 411 | back | bāk | adverb | |
| 326 | shoe | shōō | noun | sh | 411 | Fitch | Fīsh | P. noun | |
| 333 | gone | gə | verb | g-ə | 412 | bird | bērd | noun | ēr |
| 333 | paper | pū | noun | ū | 417 | stick | tīsh | noun | |
| 335 | doll | dō | noun | d | 417 | pull | pōol | verb | l |
| | 12th Month | | | | 417 | card | ār | noun | |
| 339 | boy | bə | noun | | 418 | Starkey | Tār | P. noun | |
| 342 | peek-a-boo | ā·bōō | interjection | | 419 | Ayres | Yār | P. noun | |
| 342 | mam-ma | mā·mā | noun | m | 422 | lady | yā-ē | noun | |
| 343 | soap | p | noun | | 423 | dear | dē-ā | adjective | ā |
| 343 | pipe | pī | noun | | 423 | bed | bēd | noun | ē |
| 350 | ball | bā | noun | | 424 | coat | tō | noun | |
| 350 | book | bōō | noun | ōō | 424 | eye | yī | noun | |
| 351 | spoon | pōō | noun | | 424 | egg | yēg | noun | |
| 362 | all | gā | adjective | | 424 | Tillie | Tī-yē | P. noun | |
| 363 | pug | pū | noun | | 426 | bag | bā | noun | |
| 364 | spool | pōō | noun | | 426 | tree | chē | noun | |
| 364 | scissors | sīz-ē | noun | s-z | 426 | hot | hōt | adjective | h |
| | 13th Month | | | | 426 | tick-tock | tīk-tōk | noun | |
| 367 | man | mā | noun | ā | 426 | home | h m, hōm | noun | |
| 384 | no-no | nyō-nyō | interjection | n-y-ō | | | | | |
| 385 | baby | bā·bē | noun | ā | | | | | |
| 387 | moo | mōō | noun | | | | | | |
| 389 | black | bā | adjective | | | | | | |
| 391 | see | sē | verb | | | | | | |
| 391 | brush | bū | noun | | | | | | |
| 393 | snow | nyō | noun | | | | | | |
| 393 | machine | shēn | noun | | | | | | |
| 394 | block | bō | noun | | | | | | |
| 395 | car | ār | noun | r | | | | | |
| 396 | bottle | bā-ōō | noun | | | | | | |
| 397 | coal | fō | noun | | | | | | |
| | | | | | | 15th Month | | | |
| | | | | | 427 | Anna | Yā;yā | P. noun | |
| | | | | | 428 | ear | yē-ā | noun | |
| | | | | | 428 | nose | nyō | noun | |
| | | | | | 428 | pretty | pīt-tē | adjective | |
| | | | | | 428 | broom | mōōm | noun | |
| | | | | | 431 | shirt | shāt | noun | |
| | | | | | 433 | ring | nīng | noun | ng |
| | | | | | 433 | come | kū | verb | |
| | | | | | 434 | teeth | tē | noun | |
| | | | | | 435 | Albert | Bā-bā | P. noun | |
| | | | | | 435 | apple | pāp-ā | noun | |
| | | | | | 436 | dinner | dīn-nē | noun | |
| | | | | | 436 | tail | tā-yā | noun | |
| | | | | | 436 | top | pōp | noun | |
| | | | | | 437 | cup | pūp | noun | |
| | | | | | 437 | hand | hēnd | noun | |
| | | | | | 437 | poker | pō-pē | noun | |

TABLE III.—VOCABULARY—(CONTINUED.)

| Date. | WORD. | Pronunciation. | Part of Speech. | Sounds introduced. | Date. | WORD. | Pronunciation. | Part of Speech. | Sounds introduced. |
|-------|----------------------------------|----------------|-----------------|---------------------------------|-------|----------------------------------|----------------|-----------------|--------------------|
| | 15th Month (Continued) | | | | | 16th Month (Continued) | | | |
| 437 | fire | fī | noun | * [See table on pronunciation.] | 461 | pencil | pěnt-nē | noun | |
| 437 | chain | tā | noun | | 462 | coming | tūm-in | verb | |
| 439 | hat | hāt | noun | | 463 | handle | hāng-l | noun | |
| 440 | cane | hān | noun | | 463 | sing | hīng | verb | |
| 440 | hair | hēr | noun | | 463 | Florence | Hām-ē | P. noun | |
| 440 | bloomer | bōō-mē | noun | | 465 | calendar | kād-ná | noun | |
| 441 | there | ēr | adverb | | 465 | girl | gūl | noun | |
| 441 | bottle | bā-ká | noun | | 465 | blow | bō | verb | |
| 442 | flower | foi-yē | noun | | 465 | floor | fōr | noun | |
| 442 | foot | fōot | noun | | 466 | brownie | bow-mē | noun | |
| 442 | toe | tō | noun | | 466 | English | Ing-īsh | P. noun | |
| 443 | tight | tīt | adjective | | 466 | bump | būmp | verb | |
| 444 | down | dōwn | adverb | | 466 | collar | kā-yá | noun | |
| 444 | stocking | tōt-nē | noun | | 466 | cuff | kūf | noun | |
| 444 | clock | kōk | noun | | 466 | knee | nē | noun | |
| 445 | pillow | poi-yá | noun | | 467 | drink | bwīngk | noun(verb) | |
| 445 | mouth | mōw | noun | | 467 | milk | mē ūk | verb | |
| 447 | whiskers | wīt-tē | noun | | 467 | pie | pī | noun | |
| 447 | grandma | bām-ā | noun | | 467 | playing | pā-īn | noun | |
| 447 | toy | toi | noun | | 467 | blacking | bwāk-īn | verb | |
| 447 | Bridgeman | Bīm-ēn | P. noun | | 468 | chicken | chīk-n | noun | |
| 448 | button | būp-nē | noun | | 468 | cry | kī | noun | |
| 449 | choo choo [car] | chōō-chōō | adjective | | 468 | by | bī | verb | |
| 449 | balloon | byōom | noun | | 468 | umbrella | bwē-wá | preposition | |
| 450 | postman | pū-mán | noun | | 469 | letter | yēt-tá | noun | |
| 451 | walk | wāk | verb | | 469 | pig | pīk | noun | |
| 451 | more | mō-ē | adjective | | 469 | camel | kā-mē | noun | |
| 451 | Bingo | Bīm-bō | P. noun | | 469 | blue | bōō | adjective | |
| 453 | bell | bē | noun | | 470 | green | bēn | adjective | |
| 453 | comb | kām | noun | | 470 | grass | bās-sē | noun | |
| 453 | Alice | Ā-wē | P. noun | | 470 | music | mōō-ē | noun | |
| 454 | door | dō-ē | noun | | 470 | sew | sō | verb | |
| 454 | Mary | Mā-mē | P. noun | | 471 | horse | hā-tē | noun | |
| 455 | bib | bīb | noun | | 471 | spank | pāngk | verb | |
| 456 | potato | tā-tō | noun | | 472 | finger | fīng-ē | noun | |
| 456 | pin | pīn | noun | | 472 | garter | gā-tē | noun | |
| 456 | water | wat-nē | noun | | 472 | open | ōp-nē | verb | |
| | 16th Month | | | | 472 | raining | wā-nīn | verb | |
| | | | | | 473 | sheep | shēp | noun | |
| | | | | | 473 | deer | dē | noun | |
| 460 | cover | hā-wá | noun | | 473 | donkey | dūk-ē | noun | |
| 460 | pen | pān | noun | | 473 | Fish | fēsh | noun | |
| 460 | owl | wōw | noun | | 473 | cake | kāk | noun | |
| 461 | pants | pāng | noun | | 473 | bread | bwēt | noun | |
| 461 | mark | mārt | verb | | 473 | oatmeal | ōt-mē | noun | |

TABLE III.—VOCABULARY—(CONTINUED.)

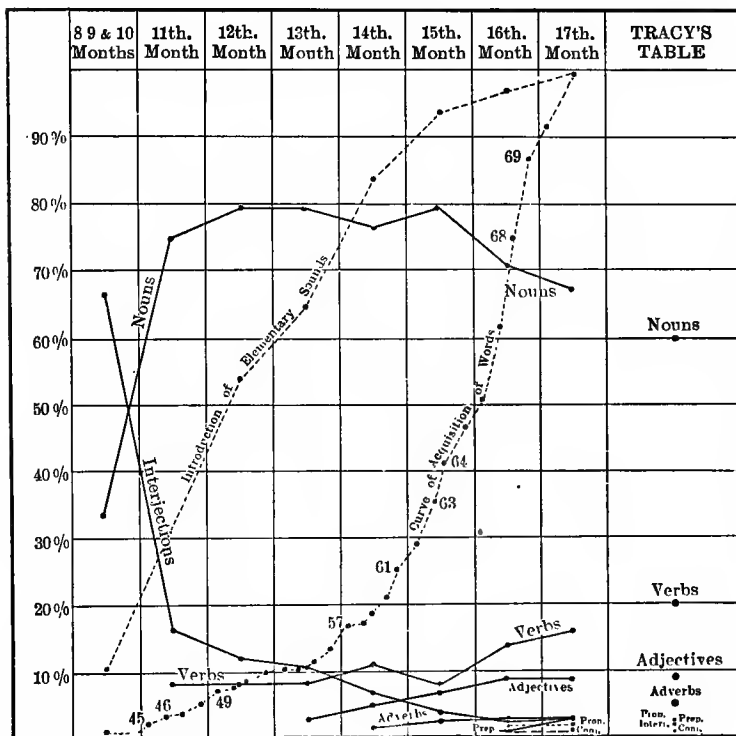
| Date. | WORD. | Pronunciation. | Part of Speech. | Sounds introduced. | Date. | WORD. | Pronunciation. | Part of Speech. | Sounds introduced. |
|-------|----------------------------------|---------------------|-----------------|--------------------|-------|----------------------------------|--------------------|-----------------|--------------------|
| | 16th Month (Continued) | | | | | 16th Month (Continued) | | | |
| 473 | glasses | gāt-tē | noun | | 484 | meat | mēt | noun | |
| 473 | bite | bīt | verb | | 484 | broken | bwōk | adjective | |
| 473 | Brainerd | Bīn-nē | P. noun | | 484 | powder | pow-dē | noun | |
| 473 | college | kōd-ē | noun | | 485 | do | dō | verb | |
| 474 | big | bīg | adjective | | 487 | shovel | shūd-á | noun | |
| 474 | corner | k ^a -nē | noun | | 487 | thimble | fīm-l | noun | |
| 474 | sweep | fwēp | verb | | | 17th Month | | | |
| 474 | street | kwēt | noun | | 488 | ding-dong | dīng-dang | noun | |
| 474 | jacket | gwāk-ē | noun | | 489 | run | wūn | verb | |
| 474 | crack | kwāk | verb | | 490 | on | ōn | preposition | |
| 475 | light | yIt | noun | | 490 | in | īn | preposition | |
| 475 | washing | w ^a -shē | verb | | 490 | dig | dīk | verb | |
| 475 | fly | fwI | noun | | 490 | joke | jōk | noun | |
| 475 | kiss | kīs | verb | | 490 | funny | fūn-nē | adjective | |
| 475 | nice | nīs | adjective | | 492 | good | goot | adjective | |
| 477 | bunnie | būn-ne | noun | | 492 | drink | bwīngk | noun | |
| 477 | banana | nān-ō | noun | | 492 | of | ū | preposition | |
| 477 | Lincoln | Nīngk-nē | P. noun | | 494 | rub | wūb | verb | |
| 477 | Schermerhorn | Skēm-ē | P. noun | | 494 | scratch | krāsh | verb | |
| 478 | abdomen | dō-mē | noun | | 495 | wet | wēt | adjective | |
| 478 | hole | kō-á | noun | | 495 | his | ē | pronoun | |
| 478 | cat | kāt | noun | | 495 | stand | tān | verb | |
| 478 | waist | wāts | noun | | 495 | supper | fwūp-ē | noun | |
| 478 | Gilbert | Dīb ēt | P. noun | | 495 | write | wīt | verb | |
| 478 | stone | stōn | noun | | 496 | morning | m ^a -nē | noun | |
| 478 | matches | māch-ēz | noun | | 496 | sunshine | sū-shī | noun | |
| 478 | up | ūp | adverb | | 496 | carriage | kād-īj | noun | |
| 478 | the | ū | adjective | | 496 | with | wī | preposition | |
| 478 | you | ū | pronoun | ū | 496 | find | fīn | verb | |
| 479 | pony | pō-nē | noun | | 496 | drawer | dwa | noun | |
| 479 | ride | wīd | verb | | 497 | cow | kow | noun | |
| 479 | clean | kwen | adjective | | 497 | peeking | pē-kīng | verb | |
| 479 | club | kwūb | noun | | 498 | [of] course | [ū] kōs | noun | |
| 480 | one | wūn | adjective | | 498 | O dear! | Odē-á | interjection | |
| 480 | mother | mū-ē | noun | | 500 | towel | tow-dē | noun | |
| 480 | busy | bīd-īs | adjective | | 500 | quilt | twīlt | noun | |
| 480 | tadpole | tā-pō | noun | | 500 | noise | noiz | noun | |
| 481 | away | wā | adverb | | 500 | bonnet | bōn-nē | noun | |
| 481 | window | wīn-ō | noun | | 500 | cookey | kōok-ē | noun | |
| 482 | my | mī | pronoun | | 500 | shut | shūt | verb | |
| 482 | another | nūn-ē | adjective | | | | | | |
| 483 | eat | ēt | verb | | | | | | |
| 484 | and | á | conjunction | | | | | | |

TABLE IV.—SHOWING THE ACQUISITION OF WORDS AND THEIR GRAMMATICAL DISTRIBUTION.

| | 8th, 9th and 10th. | 11th Mo. | 12th Mo. | 13th Mo. | 14th Mo. | 15th Mo. | 16th Mo. | 17th Mo. |
|--------------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Words Acquired. | Words Acquired. | Words Acquired. | Words Acquired. | Words Acquired. | Words Acquired. | Words Acquired. | Words Acquired. |
| | Total to Date. | Total to Date. | Total to Date. | Total to Date. | Total to Date. | Total to Date. | Total to Date. | Total to Date. |
| | Per Cent. | Per Cent. | Per Cent. | Per Cent. | Per Cent. | Per Cent. | Per Cent. | Per Cent. |
| Vocabulary | 3. 3 100 | 9 12 100 | 12 24 100 | 14 38 100 | 20 58 100 | 48 106 100 | 98 199 100 | 33 232 100 |
| Interjections..... | 2 2 66.0 | 2 16.6 | 1 3 12.5 | 1 4 10.5 | 4 6 9 | 4 3 7 | 4 2 0 | 1 5 2.2 |
| Nouns..... | 1 1 33.0 | 8 9 75.0 | 10 19 79.2 | 11 30 79.0 | 14 44 76.0 | 40 84 79.3 | 57 141 71.0 | 15 156 67.2 |
| Verbs..... | ... | 1 1 8.3 | 1 2 8.3 | 1 3 7.9 | 3 6 10.3 | 2 8 7.5 | 20 28 14.0 | 9 37 16.0 |
| Adjectives..... | ... | ... | ... | 1 1 2.6 | 2 3 5.1 | 4 7 6.7 | 10 17 8.5 | 3 20 8.6 |
| Adverbs..... | ... | ... | ... | ... | 1 1 1.7 | 2 3 2.8 | 2 5 2.5 | 5 2.2 |
| Prepositions..... | ... | ... | ... | ... | ... | ... | 1 1 0.5 | 4 5 2.2 |
| Pronouns..... | ... | ... | ... | ... | ... | ... | 2 2 1.0 | 1 3 1.3 |
| Conjunctions..... | ... | ... | ... | ... | ... | ... | 1 1 0.5 | 1 0.4 |

CHART,

SHOWING THE ACQUISITION OF WORDS AND THEIR GRAMMATICAL DISTRIBUTION.



March, 1897.

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