

## TWO CHILDREN'S PROGRESS IN SPEECH.

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### I. INTRODUCTION.

This paper is the second on the general subject of the speech of children, being a continuation of an article showing the progress made in this direction by the author's daughter, Jane, up to the twenty-eighth month. The new material extends the observations concerning Jane to the thirty-sixth month, and presents those of her younger sister, Anne, through the first year.

### II. BIOGRAPHICAL.

The elder of the two children whose methods of acquiring the language of the race are here recorded was three years old March 14th, 1914, having been born at Tientsin, China, on that date in 1911. Nine months later she arrived in the United States with her parents, who since that time have lived chiefly in Montana, where Anne, the baby of the family, was born at Missoula, November 26th, 1912. Both the parents are college graduates and university teachers, the father of English-Welsh descent, the mother of English-Dutch-German. The children then are mostly English in inheritance, clearly showing this ancestry by their physical and mental characteristics. They are, however, in two lines of the fourth generation born in this country.

Both children have been continuously with their parents, living always in or near cities. They have not been much with other children, but have met many grownups at home and abroad, mostly of the university community. Both are systematically trained in self control and self help, their parents' attention being especially directed to this and to their health. They did not, therefore, receive any special instruction in speech, or other mental attainments, until Jane had passed her third birthday, after the taking of the vocabulary for that year. At that time Jane performed quickly, and correctly, all the modified Binet tests for children four years old and one of the tests for the next

year in age. She could have been taught to do others of these tests very easily, as was shown somewhat later when she drew circles, squares, and diamonds at will.

Both children have had almost perfect health since birth; the younger affected with the mildest of colds as literally her only ailment during the first twenty months of her life. Jane has not been quite so fortunate, but has had very little illness. Both are large, sturdy, and hard, the personification of health and happiness. Table I shows their heights and weights at successive periods.

TABLE I.

Jane	Birth	12 mos.	28 mos.	36 mos.
Height in inches . . . . .	19	29 25	35.5	37.5
Weight in pounds . . . . .	8	22	32 2	34.1
Anne				
Height in inches. . . . .	20	29		
Weight in pounds . . . . .	8 5	22.25		

### III. METHOD OF ACQUIRING DATA.

The same methods were used as described in the previous paper, except that three weeks were required instead of two.

During the three weeks beginning with the third birthday, somebody was with the child constantly, father, mother, or student assistant. All that the child said was recorded on large sheets of paper, but during the later part of the period words known to be already recorded were not written down. The vocabularies were compiled from these papers. The child was engaged in conversation on occasion to draw out infrequently used words, and was sometimes asked the names of objects, etc. An effort was made to have words in the earlier vocabularies used. In all cases only the spontaneous talking was recorded, but not obvious imitations of nursery rhymes, etc.

This time the child was more conscious from the beginning that her conversation was under closer scrutiny than usual, and after a few days understood what was going on. She then asked frequently if certain words were noticed, coming sometimes to repeat a word with the explanation, "I know that." She wished to see the written slips and examined them with great care in an apparent effort to discover what it all meant. In addition she

was particularly solicitous about "bridge," asking her father many times one afternoon if he had it down. After this she lost interest, and for the greater part of the three weeks took little further notice of the experiment. Some authors seem to see some danger to the validity of the results in such an interest on the part of the child, but none could be detected here.

#### IV. VOCABULARIES.

In the compilation of these vocabularies, the same principles were followed as before. Briefly these are as follows:

1. No proper nouns.
2. No variants of verbs and adjectives, except a few of the verb "to be."
3. All forms of pronouns are included.
4. No plurals unless the singulars were not used.
5. The same word is listed twice or more according to its grammatical use by the child.
6. Shortened and coined words are in quotation marks.

##### ANNE'S VOCABULARY AT TWELVE MONTHS.

Nouns —ball, chow, daddy.  
 Verb —see  
 Adjective —dear.  
 Adverbs —down, good-bye.  
 Interjections—boo, hello.

##### JANE'S VOCABULARY AT THIRTY-SIX MONTHS

- A. Nouns—animals, apple, appetite, apron, arm, ashes.  
 Verbs—am, ask.  
 Adjectives—a, afraid, all, another, any, asleep, awake.  
 Adverbs—again, almost, all, alright, around, away, awfully.  
 Prepositions—about, at.  
 Conjunction—and.  
 Interjection—ah.
- B. Nouns—baby, back, bacon, bag, ball, banana, bark, basket, bath, bath-room, beans, bear, bed, beef, beets, bell, belt, bench, bib, bit, bite, bird, birthday, biscuit, blackberry, blanket, block, boiler, bone, bonnet, book, bouquet, bottle, bowl, box, boy, bread, breakfast, bridge, broom, bruise, brush, buckle, butter, button, buttonhole.  
 Verbs—bake, bark, be, become, bite, blow, break, bring, brush, build, bump, button-up.  
 Adjectives—bad, better, big, blue, both, broken, brown.  
 Adverbs—back, beside, better.  
 Preposition—by.  
 Interjections—bang, boo.
- C. Nouns—cabbage, cake, can, candle, candy, cap, car, card, carrots, cart, cascara, casserole, cheek, cherry, cheese, chick, chicken, chin, chocolate, cat, cellar, chain, chair, charcoal, chow, clock, closet, clothes, clothes-line, clothes-pin, coal, coal-bucket, coat, cocoa, coffee, collar, cold cream, comfort, comb, corn-bread, cookie, cork, cotton,

- couch, crack, cracker, crayon, cream, cream pitcher, crumbs, crust, cube, cup, cupboard, curtain, custard.
- Verbs—can, can't, capsize, carry, catch, choke, chop, clean, come, cook, cool, cough, crawl, cross, crow, cry, cut.
- Adjectives—chocolate, clean, cold, cotton, cracked, crooked, cute.
- Adverbs—careful, careless.
- D. Nouns—daddy, darning, date, dessert, desk, diaper, dimple, dining-room, dinner, dirt, dish, ditch, dog, doll, door, drainer, drawer, draught, dress, dressing-gown, drink, drum, duck, duster.
- Verbs—dance, deserve, do, don't, drag, drain, draw, dress, drink, drop, dust.
- Adjectives—dark, dear, dirty, dizzy.
- Adverb—down.
- E. Nouns—ear, edge, egg, elastic, elbow, enough, everything, eye, eyebrow.
- Verbs—eat, excuse, expect.
- F. Nouns—face, feather, finger, fingernail, fire, fish, floor, flower, flour, fly, foot, fork, fun, fur, furnace.
- Verbs—fall, feel, fetch, fill, find, fit, fix, fly.
- Adjectives—fat, first, four, full, funny.
- Adverb—farther.
- Preposition—for.
- G. Nouns—garter, girl, glass, gloves, goat, goose, go-cart, "gran" (grandma), grape-juice, grease, ground.
- Verbs—get, give, go, grunt, gulp, gurgle.
- Adjectives—gold, good, great, grimy.
- Adverbs—good-bye, good-night.
- H. Nouns—hair, hand, handle, hammer, "hankie" (handkerchief), hash, hat, head, heat, heel, high-chair, hole, home, hook, horn, house, horse.
- Verbs—hammer, hang, have, hear, help, hit, hold, hunt, hurt, hurry.
- Adjectives—hard, heavy, hot, hurt.
- Adverbs—hard, here.
- Pronouns—him, his, he, her.
- Interjections—hello, ho, hush.
- I. Nouns—ice, icing, iron.
- Verbs—iron, is.
- Adjective—imaginary.
- Pronouns—I, it.
- Preposition—in.
- Conjunction—if.
- J. Nouns—jacket, jam, jar, jelly, juice.
- Verb—jump.
- Adjective—juicy.
- Adverb—just.
- K. Nouns—key, kiddie, kindling, kiss, kitchen, knife, knob.
- Verbs—keep, kick, kiss, knock, know.
- Adverb—kind-of.
- L. Nouns—lace, lamb, lap, leaf, leg, leggings, lesson, letter, library, lid, light, lips, "lots."
- Verbs—laugh, lay, lean, let, lick, lie (recline), like, listen, lock, look, love.
- Adjectives—last, little, long, lost, lovely.
- Adverbs—level, like, lot.

- M.** Nouns—macaroni, machine, man, marble, mat, matches, matter, mattress, meadow-larks, meat, milk, minute, monogram, moon, mother, mountain, mouth, mouthful, muff, mush  
Verbs—make, mean, meet, move, muss, must.  
Adverb—more.  
Pronouns—me, mine, my, myself, my-own.
- N.** Nouns—nail, nose, neck, needle, new-skin, night, nightgown, noise, “nap-kum” (napkin).  
Verb—notice.  
Adjectives—nasty, naughty, new, nice.  
Adverbs—no, not, now.
- O.** Nouns—onion, orange, owl  
Verb—open.  
Adjectives—old, one, other.  
Adverbs—off, on, out outside, over.  
Prepositions—of, on, over.  
Interjections—oh, ouch.
- P.** Nouns—page, pail, paint, pan, panties, “pan-sweep” (dust-pan), paper, party, path, pease, peeling, pencil, penny, petticoat, people, piano, picture, pie, piece, pig, pillow, pillow-case, pin, pipe, plant, place, plate, plenty, plug, pocket, poker, pot, potato, prunes, pudding, pussy.  
Verbs—pat, peek, peel, pick, play, point, poke, pop, pull, put, push.  
Adjectives—pink, precious, pretty.  
Adverb—please.
- Q** Adverb—quick.
- R.** Nouns—racket, raisin, rattle, register, rice, ride, ring, rock, rockingchair, rompers, room, rooster, rubber, rug.  
Adjectives—raw, red, ready, round.  
Verbs—rain, reach, read, ride, rock, run.  
Adverbs—round, right.
- S.** Nouns—salt, salve, samples, sandal, sauce, schoolside, scissors, screen, screw, seeds, sheep, shirt, shoe, shoe-lace, shovel, sink, sister, sled, sleeve, slipper, snow, soap, sock, something, sound, soup, spanking, spider, spinach, spoon, squeaker, star, steam, stencil, steps, stink, stick, stone, stool, stove, strap, strawberry, string, stuff, suei' chow, sugar, sun, sunshine, swatter, syrup.  
Verbs—say, scratch, see, sew, shall, shave, shove, shut, sing, sit, sizzle, sleep, smell, sneeze, spank, spill, spit, sport, squeak, squeeze, stand, stay, step, straighten, strike, stop, suppose, swat, sweep  
Adjectives—shut, sick, soft, such  
Adverbs—so, some, sure.  
Pronoun—she.
- T.** Nouns—table, table-cloth, tablet, tail, taste, tea-pot, tea-party, tear, tear, teeth, thing, thimble, thumb, tea, thread, tie, time, toast, toe, toilet, tonight, town, towel, toys, tomatoes, tongue, train, tray, tree, trousers, trunk, tub, tube.  
Verbs—take, talk, tear, thank, think, thread, tickle, tie, touch, turn, try.  
Adjectives—that, the, this, thirsty, three, tight, tired, two.  
Adverbs—through, today, tonight, too.  
Prepositions—there, through, to.  
Pronouns—them, they, that, this.  
Interjection—there.

- U. Nouns—umbrella, underwear, university.  
Verb—undress.  
Adverbs—under, up.  
Preposition—up.  
Pronoun—us.
- V. Nouns—vase, vaseline.  
Adverb—very.
- W. Nouns—waffle, wagon, waist, walk, wall, wash-rag, water, way, wheel, whiskers,  
wind, window, wood, wood-pile, word, wringer, wrist.  
Verbs—wake, walk, want, wash, watch, wear, weave, will, write, would.  
Adjectives—well, wet, white, woolen.  
Adverbs—when, where, while, wide.  
Preposition—with.  
Pronouns—we, what.  
Interjections—well, whoa, whoop.
- Y. Adverbs—yes, yet.  
Pronouns—you, your

The following table shows the number of words of each initial letter classified as to grammatical form, the total number of words beginning with each initial letter, and finally the total number of words in the vocabulary.

TABLE II.

Initial	Nouns	Verbs	Adjectives	Adverbs	Pro-nouns	Preposi-tions	Conjunc-tions	Interjec-tions	Total
S.....	50	29	4	3	1	0	0	0	87
C.....	56	17	7	2	0	0	0	0	82
B.....	46	12	7	3	0	1	0	2	71
T.....	33	11	8	4	4	3	0	.1	64
P.....	36	11	3	1	0	0	0	0	51
W.....	17	10	4	4	2	1	0	3	41
D.....	24	11	4	1	0	0	0	0	40
H.....	17	10	4	2	4	0	0	.3	40
L.....	13	11	5	3	0	0	0	0	32
M.....	20	6	0	1	5	0	0	0	32
F.....	15	8	5	1	0	1	0	0	30
A.....	6	2	7	7	0	2	1	1	26
R.....	14	6	4	2	0	0	0	0	26
G.....	11	6	4	2	0	0	0	0	23
N.....	9	1	4	3	0	0	0	0	17
O.....	3	1	3	5	0	3	0	2	17
K.....	7	5	0	1	0	0	0	0	13
E.....	9	3	0	0	0	0	0	.0	12
I.....	3	2	1	0	2	1	1	0	10
J.....	5	1	1	1	0	0	0	0	8
U.....	3	1	0	2	1	1	0	0	8
Y.....	0	0	0	0	2	2	0	0	4
V.....	2	0	0	1	0	0	0	0	3
Q.....	0	0	1	0	0	0	0	0	1
X.....	0	0	0	0	0	0	0	0	0
Z.....	0	0	0	0	0	0	0	0	0
	<u>399</u>	<u>164</u>	<u>75</u>	<u>52</u>	<u>21</u>	<u>13</u>	<u>2</u>	<u>12</u>	<u>738</u>

Table III shows the percentage each part of speech is of the total number of words.

TABLE III

	Nouns	Verbs	Adjs.	Adv.	Prons.	Preps.	Conjs.	Ints.	Total
No. . . . .	399	164	75	52	21	13	2	12	738
Pct. . . . .	54 07	22 22	10 16	7.05	2 84	1 76	.27	1 63	100

In Table IV is shown the number of words beginning with each initial sound.

TABLE IV.

Sound	No. of Words	Sound	No. of Words
K	76	N	21
S	72	Th	20
B	71	O	17
P	51	Ch	14
T	44	E	12
D	40	Sh	11
H	40	I	10
L	32	Wh	8
M	32	J	8
F	30	U	8
W	30	Sc	5
R	29	Y	4
A	26	V	3
G	23	Q	1
			738

Proper Nouns—Bateman, Bille, Bobbie, Dr. Bolton, Miss Edmonds, Fido, Grandranch, Gretchen, Jane, Mr. Landmaid, Lennes, Mrs. Lombard, Mammy, Patsy, Percy, Sam, Miss Selfidge, Mrs. Siebert, Smith—nineteen in all.

If these were included in the vocabulary they would increase the total to 757, of which the proper nouns would constitute 2.50 per cent.

## V. DISCUSSION OF VOCABULARIES.

Number of Words—At twelve months Anne used nine words, while her sister at the same age used ten. The following vocabularies for one-year-olds have been published:

TABLE V.

Authority	Reference	No Words	Nouns	Verbs	Adjs.	Adv.	Interjs.
Hall. . . . .	7	24	19	2	0	0	3
Mickens. . . . .	9	3	2	0	0	0	1
Moore . . . . .	10	6	6	0	0	0	0
Pelsma. . . . .	12	10	7	1	0	1	0
Perez. . . . .	13	10	6	2	2	0	0
Tracy. . . . .	14	10	6	0	2	2	0
Tracy . . . . .	14	8	7	0	0	1	0
Bateman . . . . .	1	10	5	2	2	0	1
Bohn. . . . .	2	7	7	0	0	0	0

The average of the number of words in the vocabularies is 9.77; if the highest and lowest are left out, the average of the six remaining is 8.7, practically the same number comprising Anne's vocabulary. While the number of observations is small, it begins to appear that the ability to use 9-10 words at one year may furnish another form to show the mental development proper at this age.

Eight vocabularies appear to have been published for children three years old.

TABLE VI.

Author	Ref.	Total	Nouns	Verbs	Adjs	Advs.	Prons.	Preps.	Conjs.	Interjs.
Gale.	6	1176	675	238	143	53	33	17	7	10
Pelsma. . .	12	681	406	147	65	31	14	9	1	8
Whipple . . .	15	1771	993	391	209	89	33	24	8	24
Heilig . . .	8	2135								
Boyd . . .	14	1657	918	344	200	109	30	29	21	6
Bush . . .	5	1994	1042	506	214	75	50	33	11	14
Nice. . . .	11	1205	691	246	139	62	30	21	7	9
Brandenburg	3	2282	1171	732	198	98	36	20	12	15

Of these, that published by Boyd does not give a detailed vocabulary.

The average number of words is 1612. This is much higher than Jane's vocabulary of 738 words. Of the eight, however, that given by Pelsma is the only one based on the principles of elimination as used in this paper. Whipple includes proper nouns, variants of verbs and adjectives, as well as a number of onomatopoeic sounds and queer interjections. All together these words number 190, leaving 1571, or over twice 738.

Whipple states that Richard, whose vocabulary he is discussing, was "perhaps somewhat farther advanced in general physical and mental development than the average child of his age," and again "that the vocabulary is apparently much larger than the average for the age." The list furnished by Gale contains very few words which would have been excluded from Jane's vocabulary, and therefore is about half as large again as the latter. This author believes his lists to be too small, and fixes "700 words as a typical vocabulary for a two-year-old child," with a nearly doubling of this during the first half of the third year. Pelsma, who emphasizes that Elizabeth, the subject of his paper, "is in every way a child of only average ability," declares these figures too high since "the average for two years as published in the lists

above is only 518, for three years 1209, and for four years 1149." These figures are changed somewhat by recent publications to 1419 and 1818 for the latter ages, but the argument probably still holds good.

In Heilig's lists classes of words are added, some or all of which would be excluded from all the other lists. The surplus of 530, which would not be counted in Jane's vocabulary, includes an unusually large number of proper nouns, past and present participles. Alice, too, judging by her interesting musical ability, is decidedly precocious in this direction at least, and recalls accounts of musical *Wunderkinder*. Again, all words were counted in which were used over a period of five months, during the last three of which especial attention was paid to recording every word known to the child. In this respect the vocabulary is not comparable to the first three cited. Bush's vocabulary was culled over even a longer period, six months. Boyd's was not complete until two months after the birthday.

By such methods all "once words," which do not come into permanent use until much later, are included in the vocabularies many of which may be mere imitations used with little understanding. The two methods give quite different results. By using only a comparatively short period, a fairly complete cross section of the child's status in speech is obtained for certain ages. By using long periods of time the result is a sort of resumé of what has been done and is doing. The one method is naturally incomplete in that it fails to catch some infrequently used words and lists others which will be "once words" tomorrow. The time element minimizes the latter, however. The other method catches almost all the flotsam and jetsam. Numerically they act in opposite directions. The lists compiled according to one method may be said with more or less truth to show the child's status at three or four years, but the other method really sums up the activity between certain months. Furthermore, shortening the time does not seriously impair the size of the vocabulary, since by far the larger part is used during the first few days of observation, certainly during the first few weeks.

In compiling their vocabularies Nice adds proper nouns but Brandenburg adds proper nouns and inflections of verbs and adjectives. The former author states that "it is misleading to include past tenses and present participles in the vocabulary of

any child who can form them well. As some three-year-olds do not inflect their verbs, it should be noted whether or not they do, but the vocabularies need not be inflated." Certainly it would appear in the opinion of other observers that plural forms should be added as well for the sake of consistency.

If all variants, proper nouns, etc., are added to Jane's vocabulary, it amounts to 1086 words. This includes also the names of the letters O, T, and A. In these signs she took much interest shortly before her third birthday, wishing to learn more of them. Her interest was, however, diverted to simple words.

If all words used by her and forgotten again for several months previously were added in, the total number would be considerably higher. In this connection the list of lost words noted later is interesting.

Brandenburg adds to his vocabulary a list of 183 words not used by the child during the taking of the vocabulary but used previously as remembered by the parents. This the author calls "the sub-conscious vocabulary." It would seem to be a rather doubtful proceeding, since it is difficult to tell whether a word is forgotten or only "pigeon-holed." The author's children appear to have really lost words entirely from the memory and have had to learn them over again as new concepts. In many of the children examined more than once, numerous words present in one vocabulary have been missing from another. If the "sub-conscious vocabulary" is large it provides pitfalls for a treacherous memory.

As regards rate of progress, 333 words were acquired in 226 days, or an average of three words every two days.

Considering the above facts it seems still true that we have too little and too conflicting data upon which to base an estimate of vocabulary size normal for children three years of age. The earlier published vocabularies are usually those of somewhat precocious children. We need many more studies of children as normal as possible for their ages in order to be able to fix any norms for their stages in speech development.

*Number Vocabulary:* At three years of age Jane made few mistakes in number relations up to four, the error being in connection with the latter figure. "Lots" was used for larger numbers. She frequently used "six," "nine," like "sixty," "a hundred," but had not the faintest idea as to their meaning, for which reason they have been excluded from the list.

*Color Vocabulary:* Blue, brown, pink, red, and white comprise the list. This is an increase of three terms, since only pink and white are found in the earlier vocabulary. All the above terms were used correctly in the majority of cases, while a few others—black, yellow, orange—were tried experimentally on various colors, though queerly enough none of these words were used during the three weeks the taking of the vocabulary was in progress. Whipple's boy used twelve color names and six terms such as dark, etc. The case reported by Gale shows the use of seven terms. Wolfe's (16) results show that five-year-old children recognize yellow the least readily of the primary colors including black and white. At least seven published vocabularies show that this term was not used at two years (indeed no color terms were used at all in three of these cases). Of the so-called secondary colors, green, orange, purple, none of Wolfe's forty-eight cases of five-year-old children could name the last, and only four named orange correctly. So tardy are children in general in acquiring those terms that Binet and Simon consider the correct naming of red, blue, green, yellow, as a mental test distinctive of the eight-year.

Pelsma's child knew an unusual number of color terms at three years of age. This the author attributes to the fact that "E's" mother used paints very frequently, thus interesting the little girl. This has not worked out in just this way with Jane, for while her mother, too, uses painting materials frequently, and Jane herself has always played with pastels and water colors, she seemed to take little interest in the color names themselves, and made many errors in tentative efforts to use them.

*Parts of Speech:* As was the case in the earlier vocabulary, the verbs form a larger part of the whole than found with any other child or group of children yet reported, the same being true of the adverbs. The disproportion between the nouns and verbs is less, however, than before. "What are you doing?" is Jane's favorite question, rather than "what's that?", which may account for the figures.

The following table shows the changes in this respect as well as the progress made during the first three years of life.

TABLE VII.

Parts of Speech	12 Months		28 Months		36 Months	
	Number	Per cent.	Number	Per cent.	Number	Per cent.
Nouns . . . . .	5	50	205	50.62	399	54.07
Verbs . . . . .	2	20	95	23.46	164	22.22
Adjectives . . . . .	2	20	47	11.60	75	10.16
Adverbs. . . . .	0	0	31	7.65	52	7.05
Pronouns. . . . .	0	0	12	2.96	21	2.84
Prepositions . . . . .	0	0	5	1.24	13	1.76
Conjunctions.. . . .	0	0	0	0.00	2	.27
Interjections.. . . .	1	10	10	2.47	12	1.63
Total . . . . .	10	100	405	100.00	738	100.00

The conjunction "and" was the first of this class, and not used until the thirtieth month.

*Coined Words:* Like practically all children Jane is constantly using many original expressions. They do not appear in the above list since they are not allowed to become fixed in the child's memory, the correct expressions being substituted. Many of them are ingenious, some even with a touch of "heaven-sent cleverness," but since the memory associations form so readily they are scarcely ever repeated by the parents. To show how habits of this kind persist, it may be mentioned that since she was ten months old Jane has had a white, woolly sheep, her most treasured possession. This she called at that time a "dog," her class name for all animals, and it is still affectionately termed the "dear old doggie." Now she knows well enough that it is not a dog and has learned to forestall visitors' surprise by informing them that it is a sheep-dog, a term she coined herself of course with no idea of making a pun.

In this connection mention should be made of a short list of sounds used by both children as a sort of private code. These had little resemblance to ordinary English words, and are difficult to reproduce phonetically. One, "ungoon," seemed a sort of signal to inform each other of their whereabouts. Another, "huwee," always caused gales of hilarious giggling. They were used but little when grownups were around, and lasted but a short time, so no adequate record of them was obtained. The whole thing was interesting as suggesting the beginning of an invented language.

In many cases names were invented for objects, such as "pan-sweep" for dust pan. Sometimes these names were surprisingly

good, showing much observation on the part of the child. Indeed she often correctly saw analogies between things which had not before appeared to her parents in that light.

*Objectionable Words, etc.:* "Darn," lasting but a short time, has been replaced by the almost worse "awful." But when everybody, including professors of English, qualify everything under the sun with this over-worked word, who can blame the child for thinking things are awful, too? An effort to replace "lots," which was acquired early, by "much" and "many" is succeeding slowly. Naturally many ungrammatical terms are used, but they do not become permanent parts of the vocabulary, some of them needing only a single correction to disappear. "Lie" and "lay" are now used correctly.

*Lost Words:* All of the words used in the twelfth month are found in the succeeding list, but 39 words or 9.6 per cent. of the second vocabulary are not found in the third. An attempt was made to discover why these words had been lost, with the following results:

The vocabulary taken at twenty-eight months was in the summer time during July, while that of thirty-six months was taken in the late winter, March. This accounts for the loss of the following words, all summer terms: grass, honey, lawn, mosquito, rake (verb and noun), sticker. The "cabinet" was in the house but a short time; the present house has no "coal-shed"; the pup was stolen; "darn" was executed; no "ribbons" were in evidence; "kerplunk" became bang, chick chicken, nightshirt nightgown, and button changed to button-up. As to the other lost words, no reasons could be seen for their disappearance. Moreover, the child has used many words for short periods which do not appear in any of the vocabularies. Changes of all kinds necessarily go on all the time in the materials the child has for self expression.

*New Words:* Since the increase in the vocabulary was over three hundred words, it was not found possible to remember which were old and new during the three weeks needed to compile it.

## VI. THE ACQUISITION OF SPEECH.

*Anne*—Anne's salutation to the world, expressed in very lusty fashion, consisted of short high-pitched cries not particularly expressive. In less than a minute they ceased abruptly, after

which the new-comer appeared quite comfortable, being discovered a few minutes later complacently looking at the light and chewing her fist. For about ten days the crying was like that described above, done apparently to do something rather than to express any emotion. Indeed the little life was so well regulated that there was small need to show hunger, pain, or discomfort. The "exercise cry" habit was instituted during the first week, at first in the nighttime, but training induced her to transfer this effort to the afternoon. After a few weeks two main styles of crying were to be distinguished, one the loud, more or less good natured, kind, in which were tried out different methods of vocalizing; the other of a low pitched, intermittent, fussy character, which ended when any attention was paid her.

During all of this no definite vocal sounds were heard, but the first of such was used during the eighth week. This was the long sound "A." Almost immediately the first consonant was prefixed to this, resulting in "ba." In a few days "o" was added together with "m"; after this all varieties and combinations of sounds were practised upon in very rapid succession. A great deal of this did not seem to be consciously directed, since the consonants prefixed to one vowel sound would change at random with accidental movements of the lips and tongue. On many occasions a new combination would catch the child's attention and be almost the only sound used for some time. Out of this grew in about the sixth month an especially favorite diversion; the repetition of variations on "uggle-guggle-guggle." During this time was developed, also, a beautiful, true vocal trill.

It was difficult to fix upon the first conscious imitation, but it was in full swing during the first part of the seventh month. Anne was anxious to imitate all done by her older sister, who in turn paid the baby the same compliment, although in a somewhat scornful spirit. The first word used with an appreciation of its meaning was "daddy," employed on the very day the youngster was ten months old. The next attainment was "ball," used proudly on all possible occasions, mostly mal-apropos, to which finally as a means of defense the grown-ups retorted with "shoe." The mild irony of this method or manner was readily perceived by Anne, who in a few days broke herself of the worst of the "ball" habit. On her first anniversary Anne was using nine words correctly and imitating many of those she heard used

around her. Her enunciation was good, but there was a tendency to leave off the final sound.

In general it may be noticed that Anne passed through the same stages in the same order as her sister before her, except that she reached the various stages in acquiring speech somewhat earlier than the latter.

#### VII. PROGRESS IN SPEECH.

*Jane*—Since her twenty-eighth month, Jane has gone on increasing her means for expression, using the same methods as outlined in the earlier paper. By imitation, observation, practice, and asking questions, she has acquired words, grammar, and ideas. The number of new words was on the average about three for every two days, although there was nothing regular about the rate. Some days there would be a flood of new terms, while during other periods the acquisitions were correspondingly sparse. Sometimes the rapidity of learning led to confusion. Thus on one evening she learned to use "hook" (for garments) and "elbow" correctly. The following morning, however, she began calling her elbow her hook and continued to do so for some time in spite of correction, later on using both names for the elbow, while giving a hook its proper name. In the same way at Christmas she confused "oyster" with some portion of her anatomy, but which part was not ascertained, since it seemed to be at different times her back, side, or shoulder. The derivation of "squeak" for her abdomen is obvious. In this connection it might be mentioned that Jane took a particular interest in feet, holding conversations with her own, ascribing emotions to them, blaming them for leading her in forbidden places, etc. She betrayed much surprise and interest in discovering her father's feet to be built on the same plan as her own. G. Stanley Hall, who has commented on this trait in children, found it not uncommon.

The amount of energy used by children in speech activity has often been spoken of. Hundreds of words will be uttered in an hour, including a large number of different words. In the course of a day the total number of words used is very large, especially with talkative children. In Jane's case it was found impossible to accurately determine these figures, long-hand not being sufficiently nimble to catch every word. On one occasion from a

twenty-minute count approximately three hundred and sixty words were heard, over two hundred being different. At this rate eight thousand to ten thousand words would be used in a day.

The gain in definite concepts for words noted has undergone another step forward. It may be remembered that "dog" was used first in its proper meaning, then applied to nearly all moving objects, next as a class name for animals, finally restricted to its proper place. These changes occurred during the fourteenth to the seventeenth month. In the thirty-second month the word "animal" was first used correctly as a class name, such expressions as "that cow is a animal" and "is the rooster a animal?" showing that the child had a very definite idea as to its meaning.

In grammar there has been a steady progress. At the beginning of the fourth year all parts of speech were in use including conjunctions which were not used at twenty-eight months. The parts of speech occurred in the following order: an interjection was the first word used, but nouns were the first as a class employed in the tenth month, verbs next in the eleventh, adjectives in the twelfth, adverbs fourteenth, pronouns sixteenth, prepositions seventeenth, conjunctions thirtieth. This order corresponds closely with that determined by other observers, except that the conjunctions appeared later than in most vocabularies. As regards sentences, the writer is of the opinion that practically all, if not all, of the child's talking has been done in sentence form. Even when only one word was uttered it was accompanied by gestures or actions, or inflected in such a way as to disclose that it meant complete thought. Just what was meant in many cases was not grasped by the parents, but in others the play of expression on one word came to mean very definite things to both them and the children. The word "drink" meant "I want a drink" or "give me a drink," when used with a certain expression; but said "that is a drink," "here's a drink," or "you are drinking," spoken with another inflection. In the sixteenth month combinations of two words were used such as "want drink," "go out," "I go," "your hat." At twenty months these had developed into "I want a drink," "you are going out?" "I'll go in the bathroom." Next, after an interval of confusion and apparent retrogression, longer and more complete sentences of many types were in use in the twenty-sixth month. Finally

with the addition of conjunctions in the thirtieth month, still more complex sentences were possible. As is the case with most children, parts of speech were interchanged, especially nouns and verbs, but this tendency grows less with age. At three years the distinction between adjectives and adverbs was clearly felt as shown by the use of careful, carefully, etc. Ungrammatical terms are used by applying to new words the rules already found to be true, such as joining regular forms to irregular verbs and plurals, or vice versa. "Flyed," "goed," "tooths," "feets," "cowses," and the like are used by all children as well as expressions like "I are," and "Did he went?" A single correction frequently eliminates some of these, although others are more persistent. In an environment of good English, however, none become permanent parts of the vocabulary except that even cultured parents sometimes injudiciously foist upon the child by repetition many of these oftentimes quaint expressions, which only become a nuisance to it later on. In this connection the persistent use of diminutives by many persons is as unwise, the child being forced to live in a world of "horsies," "doggies," "dollies," "pussies," "footsies," "toesies," "housies," until he gains the idea that English is built on the plan of the children's familiar "pig-Latin."

Of the factors entering into the acquisition of some words and the neglect of others, the difficulty of length or enunciation seems to be the least potent. In this vocabulary the use of such words as casserole, imaginary, library, monogram, and university among others illustrate the point, and examples are to be found in all vocabularies published. Whipple and Gale believed service, ability, and interest, or the emotional content, to be more important factors than ease of pronunciation. With regard to enunciation there is again little to note. Always speaking very distinctly, on her third birthday Jane could imitate almost perfectly anything said to her. The word napkin still presents some difficulty, but has changed from "nakum" to "napkum," so that the difficult "pk" sound has been overcome. For some time it was thought that pillow and the like were perfectly pronounced but later it was found that the real sound used was "plo," a very much shortened sound of "i" being heard. Later still this became "pidlo," while Billy was called "Biddy." This was corrected shortly after the third birthday. The consonant

sounds in the middle of words between two vowels are the most difficult to enunciate clearly, besides the above examples "v" being converted into "b" being noted. Other difficult sounds, "th," "s," "r," have caused no trouble especially as initial sounds. The most of the latter at thirty-six months were K, S, B, P, T, D, H, as contrasted with the order K, B, S, P, H, T, at twenty-eight.

#### VIII. MIND CONTENT.

At twenty-eight months Jane's answers to such questions as "What is a hat?" "What do you do with a spoon?" and "What are your feet for?" showed only associative memory, no true definition, and little mind content for individual words. At regular intervals these questions were repeated and answered in the same way until one evening in the thirty-fourth month. Then in answer to "What are your feet for?" she replied "To walk with on the ground. See my feet; there's your feet." Responses of this kind were rare, however.

The following shows some examples obtained at thirty-six months:

animal—The dog's a animal and the sheep.

bed—I go to sleep in my bed.

bathc—We go in the tub.

cup—Is to drink with.

chair—There's a chair. It's a rocking chair.

feet—To walk on. My feet jump.

handkerchief—To wipe my nose with.

shovel—I play with it.

tub—Jane gets clean in the tub.

trousers—Why do *you* wear trousers?

Thus in eight months some gain in concept has been won and considerable advance made in general comprehension of the questions asked and the kind of information expected. As is the case with all reported answers given by children in this way, the above replies are usually couched in terms of action related to concrete objects, and have no resemblance to the academic definitions given by older children in the grades and high school. It may be noted, however, that in many cases as complete definitions are made as are possible with the child's limited linguistic material. Webster's definition of "cup" is "a small vessel used

to drink from," and of "handkerchief" "a cloth to wipe the face with." Here the child's definitions are approximately as good, while they fail entirely with shovel, for instance. Again, even dictionary makers have much trouble with many words often the most commonplace, so that a child's definition of big as "big is big—a big book—and it isn't little now," does not fall so far behind the "bulky, large, huge," etc., of the dictionary.

Such conversations with the child are most interesting as showing its range of thought and ideas, its appreciation of fact, its emotions and interests, its correlation with life, as well as the new materials necessary to foster further mental development.

## REFERENCES.

1. BATEMAN, W. G. *A Child's Progress in Speech*. Journ. Ed Psychol., Vol. V, 307-320.
2. BOHN, W. F. *First Steps in Verbal Expression*. Ped. Sem., Vol XXI, 578-593.
3. BRANDENBURG, G. C. *The Language of a Three-year-old Child*. Ped. Sem., Vol. XXII, 89-120.
4. BOYD, W. *The Development of a Child's Vocabulary*. Ped. Sem., Vol XXI, 95-124.
5. BUSH, H. D. *The Vocabulary of a Three-year-old Girl*. Ped. Sem., Vol. XXI, 125-142.
6. GALE, H. *The Vocabularies of Three Children in One Family at Two and Three Years of Age*. Ped. Sem., Vol. IX, 422-435.
7. HALL, W. S. *First Five Hundred Days of a Child's Life*. Child Study Mo., Vol. II, 585-608.
8. HEILIG, M. R. *A Child's Vocabulary*. Ped. Sem., Vol. XX, 1-16.
9. MICKENS, C. W. *Vocabulary*. Child Study Mo., Vol. III, 203-205.
10. MOORE, KATHLEEN. *The Mental Development of a Child*. Psych. Rev. Mon. Sup., No. 3, 1886.
11. NICE, M. M. *The Development of a Child's Vocabulary in Relation to Environment*. Ped. Sem., Vol. XXII, 35-64.
12. PELSMA, JOHN R. *A Child's Vocabulary and Its Development*. Ped. Sem., Vol. XVII, 328-369.
13. PEREZ, B. *The First Three Years of Childhood*, London, 1889. 2d Edition—Syracuse, 1894.
14. TRACY, F. *The Psychology of Childhood*. Boston, 1895.
15. WHIPPLE, G. M. *The Vocabulary of a Three-year-old Boy*. Ped. Sem., Vol. XVI, 1-22.
16. WOLFE, H. K. *On the Color Vocabulary of Children*. Neb. Univ. Studies, Vol. I, No. 3, 205-234.