

There was no evidence (after very careful experiment) of inter-communication to the effect of describing or indicating localities where food was to be had : when numbers come together to the same place, they must be supposed to follow one another by sight or to be guided by scent. Yet there seemed to be somehow a transmission of the simpler notion that more food was to be found in one of two directions than in the other.

**EDITOR.**

*M. Taine on the Acquisition of Language by Children.*—M. Taine contributed to the *Revue Philosophique* No. 1. (January 1876) a remarkable series of observations on the development of language in a young child, which are here made accessible by translation to English readers. Such a record has been too rarely attempted, and the psychological value of this one is very evident.

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

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

There is the same spontaneous apprenticeship for cries as for movements. The progress of the vocal organ goes on just like that of the limbs ; the child learns to emit such or such a sound as it learns to turn its head or its eyes, that is to say by gropings and constant attempts.

At about three and a half months, in the country, she was put on a carpet in the garden ; there lying on her back or stomach, for hours together, she kept moving about her four limbs and uttering a number of cries and different exclamations, but vowels only, no consonants ; this continued for several months.

By degrees consonants were added to the vowels and the exclamations became more and more articulate. It all ended in a sort of very distinct twittering, which would last a quarter of an hour at a time and be repeated ten times a day. The sounds (both vowels and consonants), at first very vague and difficult to catch, approached more and more nearly to those that we pronounce, and the series of simple cries came almost to resemble a foreign language that we could not understand. She takes delight in her twitter like a bird, she seems to smile with joy over it, but as yet it is only the twittering of a bird, for she attaches no meaning to the sounds she utters. She has learned only the materials of language. (Twelve months.)

She has acquired the greater part quite by herself, the rest thanks to the help of others and by imitation. She first made the sound *mm*

spontaneously by blowing noisily with closed lips. This amused her and was a discovery to her. In the same way she made another sound, *kraau*, pronounced from the throat in deep gutturals; this was her own invention, accidental and fleeting. The two noises were repeated before her several times; she listened attentively and then came to make them immediately she heard them. In the same way with the sound *papipapa*, which she said several times by chance and of her own accord, which was then repeated to her a hundred times to fix it in her memory, and which in the end she said voluntarily, with a sure and easy execution, (always without understanding its meaning) as if it were a mere sound that she liked to make. In short, example and education were only of use in calling her attention to the sounds that she had already found out for herself, in calling forth their repetition and perfection, in directing her preference to them and in making them emerge and survive amid the crowd of similar sounds. But all initiative belongs to her. The same is true of her gestures. For many months she has spontaneously attempted all kinds of movements of the arms, the bending of the hand over the wrist, the bringing together of the hands, &c. Then after being shown the way and with repeated trials she has learned to clap her hands to the sound *bravo*, and to turn her open hands regularly to the strain *au bous Juliette*, &c. Example, instruction and education are only directing channels; the source is higher.

To be sure of this it is enough to listen for a while to her twitter. Its flexibility is surprising; I am persuaded that all the shades of emotion, wonder, joy, wilfulness and sadness are expressed by differences of tone; in this she equals or even surpasses a grown up person. If I compare her to animals, even to those most gifted in this respect (dog, parrot, singing-birds), I find that with a less extended gamut of sounds she far surpasses them in the delicacy and abundance of her expressive intonations. Delicacy of impressions and delicacy of expressions are in fact the distinctive characteristic of man among animals and, as I have shown (*De l'Intelligence* I. b. i.), are the source in him of language and of general ideas; he is among them what a great and fine poet, Heine or Shakespeare, would be among workmen and peasants; in a word, man is sensible of innumerable shades, or rather of a whole order of shades which escape them. The same thing is seen besides in the kind and degree of his curiosity. Any one may observe that from the fifth or sixth month children employ their whole time for two years and more in making physical experiments. No animal, not even the cat or dog, makes this constant study of all bodies within its reach; all day long the child of whom I speak (at twelve months) touches, feels, turns round, lets drop, tastes and experiments upon everything she gets hold of; whatever it may be, ball, doll, coral, or plaything, when once it is sufficiently known she throws it aside, it is no longer new, she has nothing to learn from it and has no further interest in it. It is pure curiosity; physical need, greediness, count for nothing in the case; it seems as if already in her little brain every group of perceptions was tending to complete itself, as in that of a child who makes use of language.

As yet she attaches no meaning to any word she utters, but there are two or three words to which she attaches meaning when she hears them. She sees her grandfather every day, and a chalk portrait of him, much smaller than life but a very good likeness, has been often shown her. From about ten months when asked "Where is grandfather?" she turns to this portrait and laughs. Before the portrait of her grandmother, not so good a likeness, she makes no such gesture and gives no sign of

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

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

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

She makes imitative sounds with great ease. She has seen and heard

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

I now come to the word *tem*, one of the most remarkable and one of the first she uttered. All the others were probably attributives † and those who heard them had no difficulty in understanding them; this is probably a demonstrative word; and as there was no other into which it could be translated, it took several weeks to make out its meaning.

At first and for more than a fortnight the child uttered the word *tem* as she did the word *papa* without giving it a precise meaning, like a simple twitter. She made a dental articulation ending with a labial articulation and was amused by it. Little by little she associated this word with a distinct intention; it now signifies for her *give*, *take*, *look*; in fact, she says it very decidedly several times together in an urgent fashion, sometimes that she may have some new object that she sees, sometimes to get us to take it, sometimes to draw attention to herself. All these meanings are mixed up in the word *tem*. Perhaps it comes from the word *ties* that is often used to her and with something of the same meaning. But it seems to me rather a word that she has created spontaneously, a sympathetic articulation that she herself has found in harmony with all fixed and distinct intention, and which consequently is associated with her principal fixed and distinct intentions, which at present are desire to take, to have, to make others take, to look, to make others look. In this case it is a *natural vocal gesture*, not learned, and at the same time imperative and demonstrative, since it expresses both command and the presence of the object to which the command refers; the dental *t* and the labial *m* united in a short, dry, and quickly stifled sound, correspond very well, without convention and by their

\* "When the Romans first saw elephants they called them Lucanian oxen. In the same way savage tribes have called horses on seeing them for the first time 'large pigs'." (*Lectures on Mr. Darwin's Philosophy of Language* by Max Müller, p. 48 (1873).

† Max Muller, *Lectures on the Science of Language*, 8th edition. Vol. I. p. 309, 6th ed. The roots of a language are 400 or 500 in number, and are divided into two groups, the attributive and the demonstrative.

nature alone, to this start of attention, to this sharp and decided outbreak of volition. This origin is the more probable that other and later words, of which we shall presently speak, are evidently the work, not of imitation but of invention.\*

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

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

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

*Ham* (eat, I want to eat). Here both sound and sense were invented. The sound was first heard in her fourteenth month. For several weeks I thought it no more than one of her warblings, but at last I found

\* A neighbour's little boy had at twenty months a vocabulary of seven words, and among them the word *ça y est*, somewhat analogous to *ten*, and like it untranslatable into our language, for he used it to say *there, I have it, it's done, he has come*, and meant by it the completion of any action or effect.

† In the same way the above-mentioned little boy of twenty months used the word *téte* (*pomme de terre*) to designate potatoes, meat, beans, almost everything good to eat except milk, which he called *lolo*. Perhaps to him *téte* meant every thing solid or half solid that is good to eat.

that it was always produced without fail in presence of food. The child now never omits to make it when she is hungry or thirsty, all the more that she sees that we understand it, and that by this articulation she gets something to eat or drink. On listening attentively and attempting to reproduce it, we perceive that it is the *natural vocal gesture* of a person snapping up anything; it begins with a guttural aspirate like a bark, and ends with the closing of the lips as if food were seized and swallowed. A man among savages would do just the same, if with tied hands and solely dependent for expression upon his vocal organs he wished to say that he wanted food. Little by little the intensity and peculiarity of the original pronunciation were lessened; we had repeated her word but in a milder form; consequently she left off making so much of the guttural and labial parts, and the intermediate vowel came to the front; instead of *Hanum* she says *am*, and now we generally use the word as she does. Originality and invention are so strong in a child that if it learns our language from us, we learn its from the child.

*Oua-oua.* It is only for the last three weeks (the end of her sixteenth month), that she has used this word in the sense of something good to eat. It was some time before we understood it, for she has long used it and still uses it besides in the sense of dog. A barking in the street never fails to call forth this word in the sense of dog, uttered with the lively joy of a discovery. In the new sense the sound has oscillated between *va-vu* and *oua-oua*. Very likely the sound that I write *oua-oua* is double to her according to the double meaning she attaches to it, but my ear cannot catch the difference; the senses of children, much less blunted than ours, perceive delicate shades that we no longer distinguish. In any case, on seeing at table a dish she wishes for, she says *oua-oua* several times in succession, and she uses the same word when, having eaten some of it, she wishes for more, but it is always in presence of a dish and to point out something eatable. By this the word is distinguished from *am* which she only uses to make known her want of food, without specifying any particular thing. Thus, when in the garden she hears the dinner-bell she says *am* and not *oua-oua*; on the other hand, at table before a cutlet she says *oua-oua* much oftener than *am*.

For the last two months, on the other hand, she has left off using the word *tem* (give, take, look) of which I spoke above, and I do not think she has replaced it by another. This is no doubt because we did not choose to learn it, for it did not correspond to any one of our ideas, but combined three that are quite distinct; we did not use it with her and therefore she left off using it herself.

On summing up the facts I have just related we arrive at the following conclusions, which observers should test by observations made on other children.

At first a child cries and uses its vocal organ, in the same way as its limbs, spontaneously and by reflex action. Spontaneously and from mere pleasure of action it then uses its vocal organ in the same way as its limbs, and acquires the complete use of it by trial and error. From inarticulate it thus passes to articulate sounds. The variety of intonations that it acquires shows in it a superior delicacy of impression and expression. By this delicacy it is capable of general ideas. We only help it to catch them by the suggestion of our words. It attaches to them ideas that we do not expect and spontaneously generalizes outside and beyond our *cadres*. At times it invents not only the meaning of the word, but the word itself. Several vocabularies may succeed one another in its mind by the obliteration of old words, replaced by new

ones. Many meanings may be given in succession to the same word which remains unchanged. Many of the words invented are natural vocal gestures. In short, it learns a ready-made language as a true musician learns counterpoint or a true poet prosody; it is an original genius adapting itself to a form constructed bit by bit by a succession of original geniuses; if language were wanting, the child would recover it little by little or would discover an equivalent.

These observations were interrupted by the calamities of the year 1870. The following notes may help to determine the mental state of a child; in many respects it is that of primitive peoples at the poetical and mythological stage. A jet of water, that the child saw under the windows for three months, threw her every day into new transports of joy, as did also the river under a bridge; it was evident that sparkling running water seemed to her to be of extraordinary beauty. "*L'eau, l'eau!*" she goes on exclaiming (twenty months). A little later (two and a half years) she was very much struck by the sight of the moon. She wanted to see it every evening; when she saw it through the window-panes there were cries of joy; when she walked it seemed to her that it walked too, and this discovery charmed her. As the moon according to the hour appeared in different places, now in front of the house now behind it, she cried out "Another moon, another moon!" One evening (three years) on inquiring for the moon and being told that it had set (*que elle est allée se coucher*) she replies "But where's the moon's *bonne*?" All this closely resembles the emotions and conjectures of primitive peoples, their lively and deep admiration for great natural objects, the power that analogy, language and metaphor exercise over them, leading them to solar and lunar myths, &c. If we admit that such a state of mind was universal at any time, we could at once divine the worship and legends that would be formed. They would be those of the *Vedas*, of the *Edda* and even of Homer.

If we speak to her of an object at a little distance but that she can clearly represent to herself from having seen either it or others like it, her first question always is "What does it say?"—"What does the rabbit say?"—What does the bird say?"—"What does the horse say?"—"What does the big tree say?" Animal or tree, she immediately treats it as a person and wants to know its thoughts and words; that is what she cares about; by a spontaneous induction she imagines it like herself, like us; she humanises it. This disposition is found among primitive peoples, the more strong the more primitive they are; in the *Edda*, especially in the *Mabinogion*, animals have also the gift of speech; the eagle, the stag and the salmon are old and experienced sages, who remember bygone events and instruct man.\*

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

\* Similarly she says, "My carriage won't go, it is naughty".

the immovable dead live a vague, almost extinct life. *Yesterday* means to her *in the past*, and *to-morrow—in the future*, neither of these words denoting to her mind a precise day in relation to to-day, either preceding or following it. This is another example of too extended a meaning, which must be narrowed. There is hardly a word used by children which has not to undergo this operation. Like primitive peoples they are inclined to general and wide ideas; linguists tell us that such is the character of roots and consequently of the first conceptions as they are found in the most ancient documents, especially in the *Rig-Veda*.

Speaking generally, the child presents in a passing state the mental characteristics that are found in a fixed state in primitive civilisations, very much as the human embryo presents in a passing state the physical characteristics that are found in a fixed state in the classes of inferior animals."

#### IX.—NOTES.

*The Meaning of 'Existence' and Descartes' 'Cogito'.*—In dealing with very difficult abstractions, logicians inculcate the practice of resolving them into the corresponding particulars. The prescription is well put by Samuel Bailey thus:—

"If the student of philosophy would always, or at least in cases of importance, adopt the rule of throwing the abstract language in which it is so frequently couched into a concrete form, he would find it a powerful aid in dealing with the obscurities and perplexities of metaphysical speculation. He would then see clearly the character of the immense mass of nothings which constitute what passes for philosophy."

Certain abstractions are difficult to handle from their complexity; such is 'Life'. The rule to refer to the particular things is especially called for in this case. Less complex is the notion of 'Force'; still the particulars are so different in their nature, that we must be sure to represent all the classes—mechanical or molar forces, molecular forces, and the forces of voluntary agents. The danger here is that we coin an abstraction distinct from matter altogether, like Plato's 'Ideas' and Aristotle's 'Form'.

If any abstract notion stands in need of all the aids that logic can supply, it is 'Existence'. Try it then by the method of particulars. What are the things that are said to exist? There is no difficulty in finding such things; stars, seas, mountains, minerals, plants, human beings, kingdoms, cities, commerce,—exist. It is not for want of particulars, therefore, that we are in any doubts about the meaning of 'Existence'; it is rather for the opposite reason—we have too many particulars. In fact, the word 'exist' means everything, excludes nothing. In all other notions, there is a division of the universe into objects possessing the attribute, and objects devoid of it; 'Life' both includes and excludes. But 'Existence' is the entire Universe—extended and unextended, matter and mind. Is there not a risk that when you mean everything, you mean nothing?