Speech and Civilization

By Sir Richard Paget, Bt.

IT is a very remarkable fact, little known to students of human speech, that uneducated deaf mutes, even to-day, have no inborn knowledge of any sign or symbol equivalent to a word. They naturally symbolize their ideas by a general pantomime describing events as a whole. They have not got the power of analysing their environment into separate categories of objects, actions, qualities, etc., or of symbolizing such separate elements by bodily signs equivalent to our spoken words.

The fact that intelligent human beings, skilful with their hands and capable of craftsmanship, are still in this primitive and unanalytic state of mind—in which they are unable to define anything because they have no units with which to define—seems to indicate that our present powers of analysis and of separate symbolization of the elements out of which our general impressions are composed, may be a comparatively recent acquisition of mankind. It also seems possible that the acquisition of this power may be closely allied to what we call 'civilization'.

Assuming that the development of true speech arose from primitive man's acquisition of the power of analysing his environment (as presented to him by his various senses) and of symbolizing the component parts in units and categories—equivalent to our 'parts of speech'—how did this process begin?

Perhaps the evidence of primitive man's artistic skill, for example, in his early cave drawing, sculpture and modelling, may give the clue.

Primitive man—keen hunter—skilled in recognizing shapes (cf. Pavlov's dogs)—must have often come across natural flints (which were of special interest as the raw material of his tools and weapons) of peculiar shape, which reminded him of certain animals—birds—or even human beings. Stones with curious holes through them—so that they could be made into 'knob-kerries' by pushing a stick into the hole—or smaller stones which could be threaded on a leather thong or a fibre string, and worn as ornaments, would also be very interesting, and 'magical' to him. It would not be long before man would try his hand at improving such finds, for example, by knocking off excrescences which 'spoilt' the form of a particular piece of natural sculpture.

It would also be natural that man should observe the plastic qualities of clay, and the way it preserved the imprints of animals and birds and of man himself, which appeared on it. As we know, he did make imprints of his hands on the walls of some of his caves.

Beginning thus with sculpture and modelling, it would not be long before man began outlining other objects, just as the imprint of his foot or hand on a soft surface of clay incidentally outlined the shape of the palm, or the sole of the foot.

The new factor in all this was that the artificial animal, bird or human, or the imprint or drawn outline symbolize the creature in question apart from its environment. The object symbolized could be considered by itself, apart from any environment; it could be viewed in any position, at any time, in any place where its owner chose to take it, or wherever he modelled or drew or impressed it.

Primitive man was not limited to the symbolizing of objects; he could also symbolize actions, such as hunting, dancing and other bodily movements or postures, namely, by drawing crude representations of the actions in question.

The same method of representing actions was later developed by the Red Indians of North America, so that it became a complete script. The Chinese, Sumerians and Egyptians developed a similar technique, which ultimately became formalized as the Chinese ideograph, cuneiform and hieroglyph, respectively.

Thus, it may be that primitive man acquired the art of analysis of impressions, and of the symbolization of separate elements of his impression, from his first observations of natural objects which he recognized as being like other objects!

The moment he began to study natural objects with the view of drawing or modelling them, he had to concentrate his mind on them and, in fact, to isolate them from their environment, for the act of drawing or modelling was in itself a symbolizing of the model, or of the action or quality which he portrayed.

It seems likely enough that this process of symbolizing by drawing or modelling should have been used very early, in magical practice; indeed, the power of producing stones, clay shapes or drawings, which looked like or suggested living forms, must have appeared highly magical to the tribal contemporaries of the earliest artists. It may well be that the artists were in fact the earliest 'priesthood'.

Turning now to the evolution of speech, the pre-analytic stage of sign language was, obviously, accompanied by an emotional 'gabble', due to the (Darwinian) sympathy of movement between man's hands and mouth. As man acquired the art of symbolizing animals, men, women, bodily actions, relative positions, sizes and other qualities, etc., namely, by drawing symbols of them on a flat surface, he would equally acquire the art of symbolizing these elements by bodily pantomime (including in this the art of outlining in the air) as educated Chinese to-day draw ideographs to be read by a Chinese who speaks a different dialect but uses the same method of ideographic writing. In this way, an analytic form of sign language would naturally grow up; combined, of course, with general (non-analytic) pantomime. The gabble would thus tend to be gradually combined with particular mouth movements (due to corresponding hand movements) which always meant the same thing—that is, with actual words.

It would be interesting to know whether a study of the speech of the most primitive tribes of mankind gives any evidence of this process—the use of bodily pantomime of a more or less free and unstandardized type (accompanied by an emotional vocal gabble) combined with the use of standardized words for such objects, actions, etc., as would naturally be symbolized in very early stages of human development. It would also be interesting to know whether

there are any primitive tribes on record who, when discovered, had not reached the stage of artistic imitation of any natural object.

On the theory above indicated, such a tribe might still be in the 'gabble' stage of speech, and, in fact, in the same stage of mental development as uneducated deaf mutes are to-day.

In their case, as was said above, and as is well known to those who are concerned with the education of deaf mute children, the deaf mute naturally expresses himself by free pantomime. The elements of meaning are not analysed into their component parts (as objects, actions, qualities, spacial relations, etc.) each represented by a separate invariable symbol, but are represented as 'events as a whole'.

Indeed, the main difficulty in the education of the deaf mute arises from the fact that he cannot—by Nature—understand what a word is, and has no gestures corresponding to words. He can perfectly appreciate events and invent for himself a pantomime which will bring the same event to the consciousness of his fellow deaf mutes, and this pantomime is so natural and expressive that (as is well known) the deaf mutes of all nations have no difficulty in communicating with one another.

The importance of a verbal type of gesture language (with separate, invariable signs for each element of meaning) lies in the fact that with this power of separate symbolism comes the power of making new syntheses, and that this power may have been almost wholly lacking before the necessary analytical and symbolic powers were evolved. Man's 'inventive' power would then have been on the same plane as that of the animal world.

It is evident that words, depending on mouth gesture, associated with hand gesture of a standardized (analytic) type, could only at first express concrete ideas; namely, such objects, actions, spacial relations, qualities, etc., as could be symbolized by bodily attitude or movement—posture or gesture.

The faculty of symbolizing abstract ideas depended entirely on the use of man's 'poetic' faculty, especially the faculty of seeing analogues between abstract and concrete, as, on our hypothesis, he had seen the analogy between a curiously shaped stone and a bird or animal.

Thus, to the Red Indian, *joy* was *sunshine (in) heart*; sunshine and heart are both easy ideas to symbolize in signs. So joy can also be symbolized. Similarly:

sorrow	was	*heart on the ground*
ambition	,,	*man push rise*
truth	,,	*(the) straight trail*
false	,,	*(to speak with) two tongues*
mean	,,	*heart small*
luck	,,	*turn up (in the Indian gambling stick game).*

It is entirely on this principle that all words for abstract ideas have been formed throughout the world. Thus (Greek) metaphor is, literally, to carry across, that is, from the concrete to the abstract.

Or take the idea of fear. This is commonly symbolized by the use of a concrete symbol meaning to shrink, or draw back (as in the Red Indian hand gesture for fear) or by reference to one of the concrete effects of fear, trembling, paralysis or the like, or to some concrete action calculated to cause fear.

Thus, in archaic Chinese, out of 14 separate words meaning fear (according to Karlgren[1]), 6 are produced by what are in fact drawing-back actions of the tongue, or lips and tongue (with or without a preliminary forward motion)—KING, LAK, KUNG, SUK, $^{w}\hat{E}$I, T'IEUT; 2 are produced by mouth gestures related to shivering—LI$\check{E}$T, LIEM; 4 are related to concrete gestures meaning to bind, grip or seize, scatter or strike—L ^{w}O, P'A', P'UO', D'ÂN—and only 2—KI, G'$\hat{I}$U—which might mean to drop at the back, and to pour out, respectively—are not obviously related to any concrete action connected with fear.

Such instances of the developments of abstract signs (or words) by the poetical use of concrete symbols could be multiplied almost indefinitely. The few which have been given may suffice to show how important the poetic instinct in man has been in providing a ready means for expressing abstract ideas by the 'metaphorical' use of concrete symbols. It is probably true to say that but for the poetic instinct man might for ever have been limited to the narrow field of concrete ideas.

But what really distinguished man from the higher apes was that he had become a symbolizing animal, and that symbolism was the mother of invention.

[1] "Analytic Dictionary of Chinese."

Presentation of the Kelvin Medal to Sir J. J. Thomson

THE Kelvin Medal, which was founded to commemorate the work of Lord Kelvin, is awarded triennially by a committee in London consisting of the presidents of eight of the leading engineering institutions of Great Britain, after consideration of recommendations received from similar bodies in all parts of the world. Sir J. J. Thomson was selected as the recipient of the award for 1938 (see NATURE, May 7, p. 825) and the presentation was made on May 3 in the Great Hall of the Institution of Civil Engineers by Lord Rayleigh on behalf of the Kelvin Medal Award Committee. Lord Rayleigh's address is printed below.

It is more in accordance with the natural order of things that a master should present a prize to a pupil than that a pupil should present one to a master. Those who stood in the relation of master to the man that we are met to honour to-day (and I am proud to remember that my own father was among them) have passed into silence: and the duty falls to one of a younger generation.

Sir J. J. Thomson tells us in his "Recollections and Reflexions" that he was originally intended for the career of an engineer. Fate had apparently decided otherwise; but the most direct route is not necessarily the only one. In spite of this apparent renunciation, he is here to-day to receive the Kelvin Medal, perhaps the highest distinction which the engineering profession has to confer. It is a tribute to the breadth of view of the profession that this should be so. When the Faraday centenary was in