

nuelle, qu'une société linguistique isolée peut rester fidèle à son système phonologique, et le garder intact, parmi les innovations inévitables, voire même conserver les proportions numériques précises de la fréquence des divers phonèmes.

*Discussion:*

Professor P. FOUCHÉ demande à M. VAN GINNEKEN quelques éclaircissements sur la répartition en France de ce qu'il appelle le type méditerranéen „labial” et le type alpin „laryngal”.

Professor J. VAN GINNEKEN répond, que dans les dialectes du centre de la France, où selon les anthropologues habite la race alpine, il a trouvé beaucoup de consonnes vélares et de voyelles laryngalisées; tandis que dans les dialectes du Nord de la France, la tendance labiale prédomine.

Pour le Midi de la France, il ne croit pas que les Français méridionaux ont eu une grande influence sur le développement de la langue française.

13. Sir RICHARD PAGET, London: *The Evolution of Speech in Men.*

All the early or primitive languages of which we have knowledge to-day – from old Sumerian to the present speech of the most primitive savages – are the results of hundreds of thousands, or possibly millions, of years of evolution. The languages are all highly elaborated.

Speech, as we now find it, is a code of mouth and throat gestures, whereby all races of men (except the deaf) express their thoughts by means of a series of very simple movements of their tongue, lips, and the other moveable “organs of articulation”.

These movements of articulation only produce speech sounds if the air inside the vocal cavities is disturbed and set into resonant vibration – namely, by blowing air through or into the cavities. The enclosed, vibrating air produces a characteristic audible sound – depending mainly on the volume and size of orifice of the cavities in question. If we blow a jet of air through the cavities, we get a rather feeble resonance which is known as unvoiced or breathed or whispered speech. If we blow rhythmically vibrating air through the cavities, we get a more sustained resonance – namely, that of voiced speech or song.

Here is an organ reed which I will use as a producer of rhythmical vibrations, like the vocal cords in man. If I blow the organ reed by itself, you hear as it were a sound of phonation without any resonance.

If I add a resonating cavity formed by my clasped hand, and use three fingers as a moveable tongue, and the thumb and first finger of the other hand as lips – and if I then move these fingers at random while the organ reed is vibrating, you will hear the sounds of the organ reed converted into Baby Language.

By controlling the hand movements it is possible to form actual words – for example, the sentence: “Hullo London, are you there?” It will be seen, therefore, that in speech we are really dealing with two separate arts. First, the art of phonation (equivalent to the action of the organ reed) which is the language of the emotions, and which resembles the emotional language of the anthropoid apes and higher monkeys, to-day – and secondly the art of articulation, which corresponds to the movement of my fingers which

produced changes of resonance. The movements of articulation are the language of ideas. In voiced speech and song, we combine the two arts of expressing ideas and emotions together.

To investigate the evolution of speech, we must study the movements of articulation which carry the meaning – for the sounds of speech are only the acoustic consequences of those movements.

In the absence of speech, all men express their ideas by pantomime. The pantomime of deaf-mutes, for example, is a universal language; man “acts” the action, or imitates some characteristic of the object or quality or spacial relation to which he refers.

But – as CHARLES DARWIN pointed out in his book, “The Expression of the Emotions” – there is a sympathy of movement between man’s hands and his mouth, so that children learning to write move their tongues as they move their fingers, and that persons cutting with scissors move their jaws in unison with their hands. These sympathetic mouth movements are performed quite unconsciously.

In the beginning, man used bodily gestures to explain his ideas to his fellow men. As he developed a gesture code for his ideas, he (unconsciously) developed a code of mouth gestures which accompanied the body gestures. The mouth gestures meant the same thing as the body gesture.

These mouth gestures would produce no sound unless the gesticulator blew air through his vocal cavities while he was gesticulating. But it would be natural that he should make an emotional sound, or blow air forcibly through his vocal cavities, to draw attention to his bodily gestures, or to express his emotional condition of impatience, eagerness, etc.

If he did blow air, or phonate, while he was gesticulating – “speech” would result – and every body gesture which became standardised to mean some given idea would automatically acquire a vocal counterpart, due to the sympathetic mouth gesture which accompanied the bodily gesture. The vocal gesture, energised by air from the lungs, had the great advantage that it could be recognised in the dark, or out of sight of the gesticulator. The bodily gestures were therefore gradually dropped as superfluous – but we still use body gesture to some extent, even to-day, as an assistance to speech.

If this theory be true, we should expect to find similar root-words in all the principal language groups of the world – at all events in the case of ideas which can be easily expressed in pantomime. I have made some study of the words of this type in Aryan, Semitic, Chinese, Sumerian, Polynesian, Bantu and Arawak, and have frequently found the same roots in all of them.

There is not time to give more than a very brief indication of the method of research. Let us take for example the case of the symbolism of the vowel sounds – *a*, *i*, and *u*.

The sound *a* is due to a flat tongue – it therefore commonly means that which is flat – e.g., the surface of water. Thus, in Sumerian, *a* means water; in Latin, *a-qua* is the water that may be qua-ffed, whereas *ab* in Sumerian, or *m-a* (as in *mare*) is the shut-mouthed water of the sea. In archaic Chinese, *am*, means salt or brackish (Karlgren. 148).

The vowel sound *i* is due to a high and forward posture of the tongue – producing a little mouth; *i* is therefore commonly associated (as is well known) with that which is little, or high, or near.

The sound *u* is due to a long, hollow mouth with protruded lips, and there-

fore commonly denotes that which is hollow, or long, or tubular, or extended, or full, or huge. Hence (as I pointed out last year at Geneva), words having the elements *u*, *hu*, *ku*, or *gu*, may mean tube, or hollow, or hole, or full, in many unrelated languages, in Europe, Sumeria, China, Africa, and South America.

A general account of the Gesture Theory will be found in my book, "Human Speech". As methods of testing its validity the following are examples. In KARLGRÉN'S Dictionary of Archaic Chinese, there are 28 words meaning tube or hollow or hole; 23 out of the 28 words (i.e., about 88 %) have the vowels *u* *ü*, or *i<sup>wo</sup>*, made by tubular or hollow mouth gestures. The remaining 5 refer to a pit or pitfall or trap – in which the idea is that of closure, and these all have *m* or *ng* – i.e., a mouth or throat closure.

Or we may take all the simple words which contain a particular mouth gesture, and see what proportion of those words have meanings appropriate to the mouth gesture. I will take English, which is rich in monosyllabic words. There are 22 words which end in *-ip* – a small mouth gesture closed – words like dip, nip, tip, pip. All except one (ship) refer to small objects or actions, enclosed or brought to a sudden end – a proportion of 95 %.

There are 99 English words that begin with *sp* – a mouth gesture of drawing out to a point or end – words like spade, spark, splice, spit – 82 % of these have appropriate meanings.

There are 11 English words that end in *-sp* – words like grasp, wasp, whisp. Again, 82 % are found to be pantomimic. Such percentages cannot be due to chance.

As to the evolution of different languages – these would naturally be produced as the result of different gestures which various communities naturally used to express the same ideas.

The figurative uses of gesture give, of course, great scope for variation. The development of Homophones – words of similar sound but different meaning – arises quite naturally from the fact that a given mouth gesture may be (unconsciously) construed in many different ways. Thus, the Sumerian word *zig* (according to Professor LANGDON) has seven different meanings, all of which are consistent with the mouth pantomime which produces it.

In conclusion, I would plead for the co-operation of a group of linguists – each of whom has special knowledge of some one language group – to investigate the gesturable root words of the various language groups. I would plead also for the help of one or more Mathematician, who would calculate the chances against the statistical results being due to coincidence.

I can confidently promise "good hunting" to those who have the courage and enterprise to join in this investigation.

#### Discussion:

Miss J. H. VAN THAL: Although the speaker was able to prove that a large proportion of words carry out his theory, I can think of several that flatly contradict it. Off hand – the German "Liebe", Dutch "liefde", French "immense" do not describe small things – a quality which he attributes to the vowel *i*. How would he account for this?

Sir RICHARD PAGET: The vowel *i* does not only symbolise little – it also

symbolises that which is high or near. It depends whether we consider the resulting size of the mouth or the attitude of the tongue. These different points of view produce the Homophones.

Professor G. O. RUSSELL: Would you write the phonetic symbols on the board for each of the vowels you produced artificially?

Will you illustrate how a double cavity is produced with your cupped hands for each such vowel.

I should like to call attention to the fact that in Sir Richard's artificial reproduction no small round pipe-like front cavity was produced for any front vowel and only one large back cavity for the back.

Sir RICHARD PAGET: The two sentences performed by hand may be transcribed thus:

*lou lʌndn, a: iou dæə?*

*lu lʌilə, li lʌv iou!*

The cupped hands do produce a double cavity, namely one behind and one in front of the artificial tongue which is made by the 2nd, 3rd and 4th fingers held close together within the cavity formed by the opposite hand.

14. Dr. J. A. BIERENS DE HAAN, Amsterdam: *Physiologische und Psychologische Unterschiede zwischen Tier- und Menschensprache.*

Es scheint mir ein guter Gedanke von den Organisatoren dieser Tagung gewesen zu sein, hier, wo die äussere Form und der innere Aspekt der menschlichen Sprache Gegenstand vielseitiger Betrachtungen sein wird, auch einen Moment jemandem das Wort zu verleihen, der über die Form und die Bedeutung der tierischen Sprache sprechen möchte. Denn einerseits muss für einen jeden, der auf evolutionistischem Standpunkte steht, die Tiersprache der Boden sein, aus welcher sich die reiche Blüte der menschlichen Sprache entwickelt hat; andererseits tritt gerade durch ein Neben- und Gegenübereinanderstellen der Tier- und Menschensprache der Wert der letzteren als Äusserung der menschlichen Psyche deutlicher hervor.

Den Begriff der Sprache kann man bekanntlich weiter oder enger fassen. In seiner weiteren Fassung umfasst dieser Begriff alle Bewegungen eines Individuums, die Ausdruck irgendeines inneren Erlebnisses sind, und durch welche ein anderes Individuum, sei es derselben oder einer anderen Tierart, Auskunft erhält über ein solches Erlebnis des Individuums, das die Bewegungen macht. Solche Ausdrucksbewegungen finden wir bei den Tieren (jedenfalls bei den höheren) ebensogut wie beim Menschen. Wir erkennen das Erschrecken des Pferdes, das seine Ohren nach hinten legt und mit weit geöffneten Augen nach einem ihm unbekanntem Gegenstand blickt, die Freude des Hundes, der bellend und schweifwedelnd an seinen Herrn empor springt, und die Begierde des Affen, der seine Hände nach dem vorgehaltenen Futter ausstreckt. Ähnliche Ausdrucksbewegungen finden wir auch bei dem Menschen, und die Ausdrucksbewegungen der Menschen und Tiere stimmen in ihrem Wesen sehr überein.

Meistens wird aber der Begriff der Sprache enger gefasst. Zum Sprechen werden dann nur solche Ausdrucksbewegungen gerechnet, die Laute erzeugen