ON DISORDERS OF ARTICULATE SPEECH*

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The aim of this paper is to show why some people, born and brought up in the same environment as ourselves, may yet develop a special form of speech, such as lisping or one of the allied disorders. For our purpose it is, I think, advisable to look first at the way in which Nature has developed articulation. The word "articulation" is of Latin origin; *articulus* is derived from the stem *ar-* "to join." When used to describe sounds the adjective "articulate" means "divided into distinct† and significant parts": "speaking intelligibly." The verb "to articulate" means the action that leads to the state expressed by the former. The word "significant" implies a conscious intention to make signs, and thus also a relation whose parts are: (i) the individual who makes the signs, and (ii) the individuals to whom they are directed.

Evolution of Articulation

To understand articulation, therefore, we must study its evolution—that is, the universal process of orderly change, through which characters have been modified from generation to generation through internal and external factors (Osborn). In accordance with Osborn's definition, given above, we can neglect those sounds which are produced by inanimate Nature, since they are "the effect of the physical impact" and merely report "what has happened or is happening" (Wilson, 1937). They are not significant. (The same applies to plant life.)

Any sound produced by animals—groans, grunts, etc.—is a sign of their present or immediately past state, but its chief meaning lies in its reference to some future event of which it is the intentional or purposive cause (Wilson, 1937). Are these sounds articulate? We must say that they are, for they (1) possess clearly perceptible differentiating characteristics, and (2) they are also significant in their parts. If we are tempted to say that they lack significance in their parts we do so solely through our own senses and differentiating faculties. But what about the animals to which they are directed? We may begin by saying that the sounds of animals are articulate as regards their own world but not always with regard to ours. In so far as we admit ourselves to be living in another world, we do not always know whether these natural sounds are, as Wilson (1937) assumes, "indefinite in significance" in point of being "the kind of the specific cause" of some state of mind. The discussion of the glottal stop will later illustrate this conclusion.

Before discussing human speech we have to recall a second rule—namely, Haeckel's fundamental principle of biogenetics: the development of the individual resembles a condensed recapitulation of the probable evolution of the race. Thus in the development of human speech we can distinguish various states, some of which have been mentioned already, since according to the principle given above their traces must be found to some extent in animal speech.

The first sounds to be observed in a baby of any race are cries which apparently correspond solely to emotional states of mind (pain, cold, hunger, etc.). These

cries are at first mere reflex activities. It is difficult to decide whether they are articulate or not, since as a rule our acoustic apperception is not sufficiently trained to differentiate distinct parts (see definition above). We are also almost certain that they are not purposive—that is, significant. If we thus regard the natural cries as inarticulate this may be applied to the very first weeks of life. The fact that they are reflex activities at this stage is intelligible, since they represent a step in the recapitulation of phylogenetic development (animals' cries). It is widely believed that most reflex activities have once been conscious and purposive movements.

"Between the second and fifth week," according to O'Shea (1907), "the primitive squall begins to be differentiated to denote special forms of discomfort . . . rapidly, so that soon all the child's vital experiences may be revealed in specialized ways." Among the special forms I may mention one particularly, because it shows already a primitive, and certainly very ancient, symbolization. This is the "glottal stop," which originally had been a necessary step for protection of the breathing organs against any danger. Since danger is connected with fear the glottal stop becomes a symbol of it and, in the end, of all negative emotions. Hence this primitive feature reappears in children or adults whenever negative emotions prevail—for example, in advanced stages of stammering, in accordance with a rule I shall mention below. To call this type of utterance "articulate" fits in with our definition. Further, all small children show a certain preference for nasal resonance in song and speech, like primitive peoples.

Soon the child produces the same groans, grunts, cluckings, and crows that are characteristic of animals, as we might expect in accordance with Haeckel's rule. There can be no doubt that these are a further step in developing and increasing the number of articulate sounds—that is, distinct, significant, and purposive utterances. The last characteristics are revealed by the child's behaviour.

Prelinguistic Babbling

In the babbling period (prelinguistic babbling, primordial babbling of Sully) there appear—from about 6 months—the so-called primitive sounds, Kussmaul's (1877) "Urlaute." This author assumed that these reflect the primitive sounds given to mankind and developed during innumerable generations into the sounds contained in the languages of to-day. Fenton (1925) verifies that "there is great richness and variety in the babble as a whole. Usually it contains a far wider range of separate sounds than the child will have use for in later life." Another characteristic of this period is lallation (lalling)—that is, the reiteration of syllables.

Is this primitive speech articulate? One is tempted to say "Yes," since even the untrained observer notices the constituent syllables clearly. Hence they are articulate even although they are not always contained in the phonology of the mother tongue or even in European languages. On the other hand, these utterances are not at first purposive. Thus we must logically regard them not as articulate but as gradually becoming articulate, without changing their phonetic character.

By comparing the characteristics of primitive languages—for example, that of the Hottentots—with those of the babbling period—namely, primitive sounds and the repetition of syllables—we can convince ourselves that this period also is a recapitulation of one of the earliest phylogenetic periods of linguistic evolution. Bearing in mind our definition, we can agree with Tracy (1893), who asserts

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† Distinct—that is, possessing differentiating characteristics, clearly perceptible or discernible by the senses or the mind. (*Oxford Dictionary*.)

that they are articulate, only with the above mental reservation. We are thus made aware of the paradoxical fact that any sound may lose its articulate character, without changing its acoustic qualities, as soon as its mental background alters. According to Pollock (1878) a distinct intonation is to be observed from the age of 9 months. Imitation plays an important part from the same age (Wilson, 1937).

Linguistic Babbling

In the next period, which I should like to call linguistic babbling, in antithesis to prelinguistic babbling, the child attempts to express his wishes, and later his ideas, by using the sound symbols heard in his surroundings. This is effected merely by adapting the sounds heard to those already acquired, and is shown by the fact that the first purposive utterances (words) are, on the one hand, reduplicated syllables and, on the other, clear imitations of the words and sentences used by the grown-ups.

We must not forget that during the periods already discussed the child has been growing up. In particular its mind has gone through many experiences which lead it from individual life to social life. At the age of about 18 months the child begins to realize that he is a member of a group. This group seeks to enforce upon the individual certain rules of conduct contained in the group code, although these rules are not usually codified. "So far as the code goes, the members of a group are expected to behave alike" (Woodworth, 1922). This limitation requires a functional adaptation of the child's mental faculties. On the other hand, "the child's role is to be little and dependent, but, no less, to grow and become more and more independent" (Woodworth, 1922). The way in which the child solves this dilemma will depend on the skill of those around him in helping him to compensate his natural inferiority complex (which itself is not the cause of neurosis) and to find the best way to raise his position in society. Speech, to be sure, is such an important social link that the child has to adopt the group modes of behaviour in this respect or else the *raison d'être* of speech to a great extent disappears. There emerges a struggle between (a) naturally developing functions and (b) rules imposed by the social group. If the second tendency is victorious, if the rules of the group prevail, the natural development is stopped. This checking yoke is imposed by the most important conscious developmental factor of mankind—social feeling, produced during the evolution of herd life. In his very first attempts to get into harmony with his environment the child experiences a real defeat. The more complete this defeat the nearer to that which is standard does the child's speech afterwards become.

Conventionalized Speech

The articulatory movements of the growing individual—of whatever kind they be—become gradually canalized, and what was once forced is now conventionalized. This conventionalized speech is then the standard speech—in other words, a speech which answers to the rules and authoritative or recognized examples of correctness and perfection whose definitive degree is imposed by the social group. It is evident that the characteristics mentioned above are mere ideal qualities, imagined as perfect or fully developed. The linguist recognizes that there cannot be any speech standard. Language and speech change day by day, and each speaker has got his own patois, altering at each moment. The deviations of course are, and must be, very slight, so that they cannot always be differentiated. As a rule the dialect of the ruling class becomes

the standard speech. During childhood the ruling class is represented by the parents, nurses, etc., of the child. It will, I suppose, be agreed that they are not always the perfect examples that the definition assumes. But even if they present standards, these can never be reached or equalled, since this means either that they are perfect or that they have attained some definite degree. The former is impossible, since Nature does not know any finality—it is always changing; while the latter presumes a forced and thus unnatural stop.

The natural evolutionary tendency which is opposed to the characteristic conservative tendency of the grown-ups produces a paradox, excellently described by Curtius. Thus we are tempted to reduce the normal phonetic laws to a striving after comfort and ease—qualities that are almost abnormal. And the conservative tendency should, on the one hand, preserve the sound from atrophy and, on the other hand, interfere abnormally with legitimate tendencies leading to decay. Marty also has pointed out that any "logical" consideration of speech must be rejected if it regards as abnormalities, even as speech defects, all linguistic appearances not in accordance with certain patterns.

It is obvious that we must abandon this method of valuing deviations and disorders in favour of an evolutionary consideration of the psychic and linguistic aspects of speech.

Hughlings Jackson's Theory of Dissolution

Having dealt with the evolutionary phase I pass on to consider the disorders of articulation. In order to do this I have to introduce a third evolutionary rule which is most helpful in examining nervous disorders. This rule, clearly expressed in Hughlings Jackson's (1932) theory of dissolution, states that in the event of any nervous disturbance affecting an individual he behaves as though he had fallen back to an earlier stage of evolution, the characteristics of which therefore reappear.

Thus, in accordance with Hughlings Jackson's rule, we may find different kinds of articulation corresponding to the particular stage in evolution to which the individual has fallen back, whether the cause of this be organic or functional. Going down step by step, we shall get evidence that these forms of deviation are at the same time also degrees. May I recall, in order to be clear, that the meaning of "step" and "degree" was originally the same, meaning stages in an ascending or descending scale or process. To recognize this is of great diagnostic value, since we are thus able to assess through the symptoms the severity of a disorder in regard to speech and its mental background and to become independent of the often unreliable history. We can, further, make a more correct prognosis.

If the first of the two early conflicting tendencies prevails—namely, naturally developing functional tendencies—the child goes his individualistic way; he becomes unsocial, showing then certain neurotic symptoms such as being easily frightened, isolated when with other children, preferring to be alone, completely occupying the attention of the mother, and showing a wish to remain a little child (a dyslalic child of 6 never remembered how old he was, and constantly asked his father, "How old am I?"). Such patients often admit frankly that they have no wish to improve in their speech (Goldberger, 1933).

Paralalia: the First Degree of Disordered Articulation

These patients show us the first degree of disordered articulation, dyslalia (or paralalia)—that is, "the production of a

distinctly different sound from that desired or the constant substitution of one sound for another" (McCarthy, 1930) with all the characteristics described above. This disorder will increase in severity with an increase in the number of sounds concerned and in proportion to the amount of their deviation from the sounds of the mother tongue. The severest degree is called idioglossia, denoting an entirely new individual language not used in the group. On the whole such speech may be characterized by placing it under the catchword of "gibberish." The utterances are, in fact, more or less impossible to understand.

If we investigate this kind of speech by careful use of the rules for description and explanation of unknown languages we soon discover that it is by no means without form or rule, but is actually the outcome of certain definite laws governing it as a whole, like any other language. A few examples may make this clear.

An Austrian child 7 years old said "tishe" for *Kirche* (church). The sound-change of *ch* (like in German *ich*) into *sh* is due to the influence of the palatal vowel which follows it. The *t* substitution for *k* may be caused in the same way. It is interesting that many children who had been able to articulate *k* and *g* during the prelinguistic babbling period must learn their articulation again at this time; but Gumpertz's (Stein, 1937) palatographs show that the child's supposed attempt to use the "easier" articulation (*t*) for the more difficult (*k*), mentioned in many textbooks, is rather deceptive. The transition of *k* into *t* is gradual, since we find *k*- and *t*-articulations at the same time. The acoustic impression, therefore, is also deceptive. On the other hand, we find the *k* articulation clearly influenced by the surrounding vowels.

The sound-changes mentioned above may be easily compared with historical changes, such as Latin *canis* (dog), French, *chien*; old Bulgarian *dŭsa*, corresponding to a presumed *duchia* (soul)—the stem *duch* remains unchanged if not influenced by the suffix *-ia*: *duch* (ghost). The change of *Schere* (scissors) into "tere" and later into "tjere" proves that events of this kind progress much quicker and in a more unchecked way than in the evolution of language, where we can follow them up. Comparing the change of *Spatz* (sparrow) into "pas" and that of *Susi* (Susan) into "Tuti," we come to the conclusion that the child's inability is not due to difficulties in articulating, since *ts* = *s*, and *s* = *t*.

The same sound-series often substitutes different etymons—for example, "to" for *schon* (already) and *komm* (come), "bulei" for *Bügeleisen* (pressing-iron) and *Spielerei* (toys), "tleidn" for *Kleider* (cloths) and *Kreide* (chalk). The utterances thus become ambiguous: compare the Latin *centum* (hundred) and *quinque* (five), which both must have become *činė* in Rumanian; but *činė* for *centum* has been replaced by the Slav *suta* to avoid ambiguity. It has become clear that dyslalic children do not avoid this, because they live in another world (Stein, 1937).

Is this speech now articulate? We must answer, "Yes." In all respects it is distinctly marked and divided into definite and significant parts (of whatever kind they may be from the grammarian's point of view). The individual really wants to utter his thoughts and also expects them to be intelligible. This kind of speech can be followed like any other foreign language if the addressed person understands it. It must, however, be admitted that, owing to certain deviations of articulation and grammar, this speech is not intelligible to all members of the social group in which the speaker has grown up.

This tendency to sound-change, on the other hand, plays an important part in the evolution of normal languages. Many deviations considered abnormal in regard to their over-rapid development and their excessive difference from the group speech appear to be normal changes from the historian's and the linguist's points of view. Left to develop by themselves, these deviations, as in some African tribes, become a new language after about thirty years. Rousselot found that *l'* had been made into *j* in a French patois from one generation to the next. And this must have been considered abnormal by the older generation. Lucian, in a pleasant dialogue,

describes how the Sigma has become plaintive about the Tau, which has expelled it step by step from the nouns and verbs of its inheritance.

Progressive Paralia

If we consider the peculiarities of symptomatology it may be made clear that paralia is not a regression. This is shown by the fact that the sound-changes are the same as those regarded as progressive in language. The only apparent difference—namely, the great speed of the sound-changes—is not essential in paralia but helps to explain the paradox that a rather advanced stage of speech is at the same time a disorder. It originates from the destruction of the harmony of the two functions of language—an instrument of thought and gesture and a means of communication. The former appears rather advanced; the latter is more or less useless. In consequence of the psychic peculiarities described above speech strives forward unchecked, hence too rapidly, while its social function gets lost. Expressed in physiological and anatomical terms, higher levels of the brain cannot acquire, or have lost, their influence on the activities of lower ones. Paralia, therefore, regarded from the psychological, analytic, physiological, and evolutionary angle, certainly possesses an infantile character. It may be caused through functional disturbance, by deficient maturation, or by organic disease. Delayed speech also plays its part in impeding psychic and linguistic adaptation. The same vehemently progressive paralia can be found in such mental diseases as paranoia (a psychosis characterized by fixed and systematized delusions) (Warren, 1935) if the patient's attitude is childish. Advanced cases of general paralysis of the insane show similar articulatory deviations (not caused by nerve paralysis!)—for example, "tanjiff" (*Schlangengift*), "fripipp" (*Friedrich*), "jutbitter" (*Gutsbesitzer*), "autetiehn" (*ausgestigen*) (Liebmann and Edel, 1903).

Functional cases of developmental paralia which have not been treated systematically improve in proportion to the extent to which later education tries to socialize them; but in the meantime deviations of articulation have become ingrained so deeply that the patient cannot find the proper co-ordination, though he may try to do so. This inability is aggravated by the fact that the acoustic impression of his own wrong sounds becomes so strongly connected with his deviated articulation, and also with the written letters and sounds heard from other people, that he loses the realization and the appreciation of his articulatory defects. Many cases of sigmatism (defective utterance of the sound *s*), particularly the palatal sigmatism described by myself (*s* = *ʃ*), and kappacism are the results of such developments (Stein, 1925). Functional treatment, therefore, will not always succeed unless psychotherapy is added.

Other Stages of Speech Disorder

Second Degree: Nasality with Preserved Articulation.—This is very often to be found after organic disease affecting the cortical layer of the brain (encephalitis) without causing mental defects, although feeble-mindedness also sometimes shows this symptom. This disorder of articulation is easily interpreted from Jackson's point of view if we consider the predilection of savages and primitive peoples for nasal speech and singing.

Third Degree: Persistent Prelinguistic Babbling.—The symptoms have already been described. This disorder can also be found in deaf children, since the primordial sounds of this stage are not due to acoustic imitation. In older children it is always a sign of imperfect maturation; if they are deaf, prelinguistic babbling disappears in the course of their general development and prepares the way for dumbness. All kinds of degeneration, such as dementia paralytica, mental enfeeblement, etc., which begin after speech has been acquired, lead sooner or later to this stage. For the same reason we may find babbling temporarily as a symptom of poisoning of the cerebrum—for example, by alcohol. Clicks* signify a lower

* "A clicking sound, or sharp non-vocal sound formed by suction, with the sudden withdrawal of the tongue from the part of the mouth with which it is in contact." (*Shorter Oxford English Dictionary*.)

degree of this third stage, since from the phylogenetic standpoint they mark the earliest period—what we might describe as one of the archetypes of articulation. Most imbecile children are affected.

Fourth Degree: Purposive and Significant Intonation without Distinct Articulation.—This occurs in cases of severe developmental check or organic brain disease acquired in later life.

Fifth Degree: Grunts, etc.—These are more or less purposive sounds referring to passing emotional states. If behaviour shows them to be reflex, and thus without significance, they must be regarded as inarticulate. They are to be found in idiocy.

It is hardly necessary to say that my classification is not put forward as final and conclusive, and the degrees are not inevitably fixed. Many exceptions may occur and additions may prove necessary. In any case, I hope to have contributed to the systematizing of our knowledge of articulatory deviations. Our search after a proper diagnostic classification must always be led by therapeutic purposes. Taking the view that dyslalic patients live to some extent in a world of their own, we must not only try to cure the expressive side of speech but also do our best to lead the defective speaker back into our world.

Summary

Articulate speech communicates thought and feeling and develops from the harmonious interaction of biological forces in the individual and controlling forces in the social environment. Parallel processes can to a certain extent be traced in biological evolution.

Disorders of articulate speech seem to be due to a disharmony between the two groups of forces mentioned above, and are manifestations of a personality which is incompletely integrated from the social point of view. These disorders can be graded in accordance with Hughlings Jackson's theory of the dissolution of the nervous system, since each disorder corresponds to a phase in the development of function in the nervous system. The greater the disorder of speech the lower the level of function to which speech has regressed.

Dyslalia, a certain type of nasality, prelinguistic babbling, clicks, intonation without articulation, and grunts can be explained on this basis.

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The membership of the Committee appointed by the Minister of Labour and National Service to advise him on medical questions arising in connexion with the examination of men by civilian medical boards appointed under the National Service (Armed Forces) Act, 1939, was set out in last week's *Journal* at p. 875. The joint secretaries of the committee are Dr. A. E. Hallinan, M.C., of the Ministry of Health, and Mr. E. W. Hoyle, of the Ministry of Labour and National Service.

GROUP MEDICAL PRACTICE

AN AMERICAN STATEMENT

The carrying on of practice by organized groups of medical practitioners has been a growing feature of recent medical developments. In this country such a group has usually been constituted by a number of general practitioners, in partnership or in systematic association, one or more of whom specialize to a definite extent, but not exclusively, in certain branches of medicine or surgery; or by a number of practitioners each of whom is a specialist in his own branch who jointly undertake the complete examination of patients but do not as a rule assume the responsibility or do the work traditionally assumed by the general practitioner or family doctor. In the latter case the group may be organized in connexion with a hospital or a public clinic, or may form an establishment of a purely private character. In America, of late, there has been a tendency for the organization of such a group to be more varied and for its functions to become more mixed. Some undertake to provide general medical care under voluntary prepayment schemes. In a recent pamphlet on *Group Medical Practice*, giving a "tentative statement of principles and procedures," published by the Committee on Research in Medical Economics, New York,¹ it is held by the special committee studying group practice that this is the proper line of development; that the professional group should supply preventive services to individuals, general medical care and specialist services, and that it may be well for a group to arrange with public or voluntary agencies or with organized bodies of patients on a prepayment or other basis. It is contemplated that medical groups may sometimes be organized under Governmental agency or non-medical auspices, with a responsible executive officer. Some of these conditions would not be welcomed in Great Britain and, indeed, they are unnecessary in view of the established National Health Insurance system and the extensions thereof which must come about soon after the end of the war. It is clear, however, that group practice has definite advantages, though these are accompanied by serious dangers and disadvantages. The chief of them perhaps is the dissipation of individual responsibility and personal relationship. It must be remembered also that group practice, even more disastrously than individual practice, if only at its weakest point, may become substandard; and that, far from reducing the cost of proper medical care (one of its purported objects), it may very easily increase it. These points are not overlooked, though they are minimized, in the "statement" of the American committee. It is noteworthy, nevertheless, that they insist upon the principles that "a particular physician should be responsible for the supervision of each patient," that "continuity of relationship between the patient and a particular physician should be encouraged," that this "co-ordinating physician" should be "the patient's adviser whenever needed," and that he should be "chosen by the patient or by the physician referring the patient to the group." This is in accordance with the best professional opinion everywhere; but there is little or no advantage in such further pronouncements as that standards of work should be high, that equipment should be adequate, that technical personnel should be competent and sufficient, that administration should be economical, that the remuneration of the staff should be appropriate.

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