THE TREATMENT OF SPEECH DISORDERS.¶

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The following is the substance of an address which I had the honour to deliver for the Post-Graduate Course of the Fellowship of Medicine at the West End Hospital for Nervous Diseases on November 1st, 1933.

The subject with which I am to deal is that of the Treatment of Speech Disorders. As this has a wide range I have tried to give as comprehensive a view as possible by dividing my lecture into three parts, the first of which consists of a general classification of speech disorders; the second of a survey of what I believe to be the basic qualifications essential for the speech therapist, and certain general rules and principles on obedience to which successful work depends; and in the third I propose to treat briefly of some outstanding points of interest in certain specific defects and groups of defects, with a passing reference to as many as possible of the others. The impossibility of doing this in detail will be appreciated when it is realised that training in the theory of speech defects alone, apart from all other work involved, is a matter of several months of continuous work.

I am indebted to Dr. Worster-Drought, who very kindly helped me to draw up the following classification. The group on Aphonias and Dysphonias was drawn up in conference with Miss Eileen MacLeod. This classification must be regarded as tentative and incomplete.

CLASSIFICATION OF SPEECH DISORDERS.

Note.—Those cases marked with an asterisk are not suitable for Speech Therapy.

†Class I.—Defects due to simple causes; Usually easily adjustable.

Articulation, etc.

Lisping.
Lalling.
Glottal Stop (Use of).
Defects due to (a) Shortness of Frenum.
    (b) High Palate.
    (c) Dental Malformation (minor).
Retarded Speech (a) Simple Type.
    (b) Due to Adenoids.

Tonal and Vocal

Nasal Tone (a) Simple Type.
    (b) Following Operation for Adenoids.
Denasalised Tone (a) Due to Adenoids*.
    (b) Following Operation for Adenoids.
‡Voice-Strain (so-called).

†Most of these may originate in one of several causes, of which some make them difficult to adjust. Though the same type of defect, these latter would not be included in this class. The question of degree also enters.

‡Rarely, if ever, found in children.

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Class II.—Conditions of (a) Defective or Diseased Organs, (b) Injury to or Surgical Operation on Organs, of Articulatory, Tonal, Vocal or Aural Mechanism, resulting in Speech Deficiency.

**Defective Articulatory Mechanism causing Articulation Defects**
- Dental and/or Palatal Malformation.
  - *Tongue-Tie.
  - Hare Lip.
  - Cleft Palate (multiple defect).

**Defective or Diseased Tonal Mechanism Affecting Tone**
- Cleft Palate.
  - *Deflected Septum.
  - *Adenoids.
  - Post-adenoid Operation.

**Defective or Diseased Aural Mechanism causing Multiple Defect**
- Deafness (a) general.
  - (b) High-Frequency.

**Surgical Operation, &c. on Articulatory Mechanism, affecting Articulation**
- Palatotomy.
- Glossotomy.
- *Glossectomy.
- Injuries.

**Various Conditions (see heading) causing Aphonia and Dysphonia**
- Inflammatory.
- Spastic.
- Paralytic.
- Laxity.
- Constriction.
- Dilatation.
- Growth.
- Sclerotic.
- Injury.
- Surgical Operation.

Class III.—(a) Neurological Conditions Resulting in Speech Disorders. (b) Speech Disorders of Neurological Origin.

**Mental Disorders and Psychoses**
- Mental Deficiency (Amentia).
- Retardation (milder form of M.D.).
  - *General Paralysis of the Insane.
  - *Dementias.

**Cerebral Conditions**
- Heredito-Familial Ataxias (*e.g.*, Friedreich’s Ataxia).
- Thrombosis of Cerebral Arteries, with Aphasia.
- Chronic Encephalitis and After-Effects of Encephalitis Lethargica.
- Cerebral Hæmorrhage and Embolism.
- Cerebral Diplegias.
- Lenticular Degeneration.
- Degeneration of Basal Ganglian with Chorea-Athetosis.
- Localised Cerebral Agenesis.
- Abiotrophy of Motor Speech Centre.
- Dysphagia.
Aphasias

(a) Conditions Causing—
   Cerebral Diplegia  
   Cerebral Haemorrhage  
   Cerebral Thrombosis and Haemorrhage, usually with 
   Hemiplegia.
   Hemiplegia.
(b) Congenital Forms—
   Word-Blindness (Alexia).
   Word-Deafness with Idioglossia.
   Agraphia (connected with Speech).

Paralytic Conditions

Hemiplegia with Aphasia.
* Bulbar Palsy.
  Bulbar Dysarthria.
  Cerebral Diplegia.
  Disseminated Sclerosis.
  Spastic Paraplegia.
  Laryngeal Paralysis.
  Pharyngeal Paralysis.
  Palatal Paralysis:—(a) Congenital.
    (b) Post-diphtheritic.
    (c) Post-tonsillitic.
    (d) Hysterical.
  Glossal and/or Labial Paralysis.
* Myasthenia Gravis.
* Myotonia Atrophica.

Deafness

Psychic Deafness.
Hysterical Deafness.

Psycho-Neuroses

Hysterias (Various: e.g., Mutism, Aphonia, Deafness, etc., etc.).
Psychasthenia (Tics, Stammer, etc.).
* Neurasthenia (States of Fatigue of the Vocal Muscles).

Tics

Habit-Spasm (Psychasthenic).
Facial.
Glossal.
Diaphragmatic or Respiratory.

Miscellaneous N. Dis.

Chorea (various forms).
* Epilepsies.
  Disseminated Sclerosis.

Stammering

Various types.

Essential Qualifications for the Speech Therapist.

The basis of all speech therapy, from treatment of the simplest to that of the most complex case, is a thorough knowledge of phonetics, the science of the sound-contents of speech.

The speech therapist needs not only a keen ear; it must be also a trained ear, and the training needed is highly specialised. For instance, a person may have a keen ear for music, yet without training in the analysing of speech sounds this would not enable him to deal efficiently with speech defects.
The speech therapist must be able to detect the most subtle shades of difference in spoken sounds, and to imitate any incorrect or abnormal sounds made by the patient, so as to enable him to hear the contrast between the right and the wrong sound, for which the hearing of the correct sound only is insufficient. There is an art in hearing what occurs in one's own speech, and until fully acquired this needs a greater degree of concentration than is required for hearing aright the sounds produced by another person. She must also be able to show the patient exactly what to do in order to produce the correct sound.

The therapist will also require technical knowledge along other lines; for she is continually faced with problems which bear on speech, and yet diverge from it sufficiently to require specialised study for the understanding of them. All health conditions, whether physical or mental, bear either directly or indirectly on speech, which is intimately bound up with the personality as a whole. Thus the training of the speech therapist involves an elementary grasp of the principles of anatomy, biology, physiology and neurology, and a more than elementary study of psychology, both from the normal and the pathological standpoints. Needless to say this does not include any study of the technique of psychoanalysis, although lectures giving a broad outline of the principles involved are encouraged.

Some voice training is an advantage in certain types of speech defect; but this needs to be along lines so different from those of the average specialist in "voice-production" that it is often safest to let it alone altogether, and trust to the therapist's common sense, and escape from those devious ways of voice trainers of which it is sometimes said that singers sing in spite of them.

Further, to such technical equipment as I have outlined above, the therapist needs certain specific qualities, such as equability, both of outlook and manner; a quality which, while it is to be expected in members of the medical profession, sometimes has to be carefully instilled into the student of speech defects, who is frequently drawn from the ranks of teachers of elocution, a type of work requiring diametrically opposite handling.

Endless patience and a high degree of courage are also needed. Possibly the only other type of remedial work requiring quite so much patience is that of psycho-analysis; while, in a work which can present such infinitely discouraging features as this, without a plentiful supply of determination not to yield to discouragement the therapist would inevitably give up after a few years.

She will also need to be adaptable, and extremely versatile and inventive in the matter of discovering new ways of eliciting sounds, and of making the work amusing for the younger patients and easy for all.

Finally it seems to me at least desirable that she should possess the type of mind which lends itself to scientific investigation.

**General Principles.**

Certain rules which apply throughout the work may next be considered.

Work must always be made as easy as possible. It is of a totally different nature from that done in schools. There is no such object involved as that of testing or stimulating the intellect. The only two ultimate objectives in speech therapy are: (a) to make the speech of the patient intelligible to others; and (b) easy to himself. The former is placed first in importance because the cutting off of normal means of communication with his fellows implied in the deprivation
or unintelligibility of speech involves an even greater loss and hardship psychologically than does the necessity of some effort to make himself understood, despite the fact that this does imply hardship when applied to a function that is normally unconscious.

Thus one of the first cares is the elimination, as far as possible, of all effort on the patient’s part; and to this end the grading of work is made exceedingly close, each stage being founded on something which already is, or has been made, easy.

For children “exercises” become games; and a plentiful supply of toys, etc., is kept on hand. In cases of cerebral or mental defect in children the chief problem involved is that of gaining and keeping the child’s interest, which is all that concentration consists in. Imitation will follow when this has been gained.

Another golden rule is, “Begin with what you find there, no matter how little, and build on that.” It is so easy to make the mistake of starting the patient on something that is just too difficult for him at the initial stage, the result, of course, being failure.

The process of building up work must be systematic. After testing the sounds, practice is first given on single sounds, then on consonants before, after and between vowel sounds; next, one- and two-syllable words; short, then longer phrases and sentences, and then for children, rhymes, for older people, reading. There are, of course, types of speech disorder to which this procedure is not applicable.

One more important piece of systematisation must be referred to; that of the process of passing over from any work in which attention is focussed on the speech sounds, to spontaneous speech. This presents perennial difficulty and much disappointment to those who fail to realise that there is a big mental gap involved, and that however perfectly the patient has been doing his work, on reverting to unconscious speech he will inevitably also revert to his former mistakes. The counteracting of the habit element must be systematic; and it takes much longer relatively than does the first part of the work, the acquiring of correct sounds.

All such factors as family and personal history, health, tendencies, temperament and environment must, of course, be taken into consideration in every case.

Specific Defects and Groups of Defects.

Lisping, the mispronunciation of S, takes various forms, the commonest being the substitution of Th, in which the tongue is pushed too far forward, sometimes as a result of a habit acquired during the changing of the front teeth; or simply a slight thickening of the S, the degree of thickening depending on how far in advance of its proper position the tongue-tip is placed during breath emission. Other forms are the substitution of the voiceless L, of the gutteral Ch (as in the Scottish “loch”, German “Ich”, etc.), and sometime of T. Most cases of lisping can be easily corrected from the Th sound, sliding the tongue inwards along the teeth and palate during breath emission, until the sound is automatically produced. It must then be practised until it is easy, after which, working on the lines indicated above, it is first introduced into and then established in speech.

Lalling.—This is a stage in the speech development of every normal child. Sometimes, however, possibly owing to some interference with the emotional life, or failure to adjust properly, the speech, a very important side of the personality, fails to keep pace with development as a whole, with the result that the child is
using baby speech at an age when it should be talking properly. This defect frequently corrects itself during school life; but now and then the speech fails to come into line, and in this case the child needs help, or it will be retarded in other ways. Lalling is usually easy to correct. Generally all sounds taken singly are present; if any are lacking they are elicited without much trouble.

Deflected septum. Dental malformation.—Deflection of the nasal septum, if sufficiently pronounced to obstruct the passage, will result in the patient’s speech sounding as though he had a bad cold. This defect can only be remedied by an operation.

Dental malformation may cause such a defect as, e.g., the substitution of F for P, V for B, where the front teeth protrude over-much. This, and other forms of teeth hindrance can only be remedied orthodontically. In either of the above cases there may possibly be some slight habit residue after operation, in which case a little speech correction would be needed.

Adenoids.—The habit of wrong tone production is often retained after the removal of adenoids. The patient may sound as though he had a bad cold, owing to the former obstruction of the nasal passage; or, if there has been a heavy weight of adenoids pressing on the floor of the nasal passage, this, which is also the soft palate, may retain a lax condition after removal of the growth, and, the obstruction being removed, permit the exit of air through the nose, thus producing a nasal tone. Simple breathing and velum exercises, practice in voice-continuity and persuasion as regards keeping the mouth shut will obviate these conditions.

Tongue-tie.—This defect is rare, although parents frequently get alarmed about the shortness of their child’s tongue, and ask whether it does not need cutting. If the frenum is extra short it should be exercised and stretched, which is quite possible. A high palate increases the difficulty; but if the tip of the tongue can touch the outside of the upper lip it is long enough to form T and D, etc. For real tongue-tie there is no remedy but cutting, an operation to be avoided where possible.

Cleft Palate.—In cleft palate cases the two main objectives are: (1) to induce functioning of the soft palate where, as in most cases after operation, it is short or otherwise deficient; and (2) to establish the power of voluntarily directing the breath through the lips, instead of permitting it to escape through the nose, thus producing the strongly nasal tone characteristic of these cases.

The clear articulation of many of the consonants, particularly the plosives B, P, D, T, and also of S and similar sounds obviously depends on this; while the production of K and G depends on the ability to make the closure with the back of the tongue and velum.

Few people realise the extent to which it is possible to control the direction of the breath-stream emitted in speech or song, but in work on cleft palate cases this possibility can be clearly demonstrated.

The patient is made to hold the nose between finger and thumb in the early stages of the work, to prevent the nasal escape of breath, but is trained at the same time not to depend on this means of aid, but to focus thought on the lips. He is got to realise, through difference of sensation, the contrast between the two ways of breath-emission. Gradually he is able to do without the artificial means of help.

Lack of space forbids consideration of the different types of cleft palate, or of the difference made by plates, obturators and orthodontal correction.
The use of the gutteral Ch is a valuable aid towards attaining the closure for K, G. If not present, there are various ways of eliciting it without much difficulty, though it may take longer to attain the full closure. Velum and breath-directing exercises are also given.

The use of the glottal stop for plosives is a difficulty which has to be met and overcome; and even when all sounds are clearly enunciated the speech generally has a staccato quality, to remedy which, further special work is needed.

In the early stages clear articulation requires some physical effort; but as the patient advances, the less effort he makes, the clearer and better will the sounds tend to be.

Cerebral Conditions.

The speech of cerebral ataxia, as of some cases of post-encephalitis and other cerebral diseases, is characterised by unusual slowness, blurring and thickening of articulation, the dropping of syllables or words, etc.; that of disseminated sclerosis by "scanning" or punctuated speech. With such conditions one can do nothing but give practice in the clear enunciation of sounds and words, and persuade the patient to take his time and not mind being slow, and to give some attention to enunciating his words clearly and slowly during speech.

Congenital or infantile cerebral haemorrhage and cerebral diplegia both present a degenerated mental condition, with correspondingly affected speech. Again the main problem is to attract and keep the interest, which can be done in all kinds of simple ways, and need by no means be elaborate. The use of a mirror is constantly called for throughout speech work, and can in itself provide quite a good means of enlisting interest in such cases as the foregoing. Choreo-athetoid conditions where there is general lack of control over movements, call for much patient work on all sounds, and especially the sequence of sounds; and also for a certain type of rhythmic work.

In all such cases skilled medical investigation is necessary. It is fatally easy for anyone without specialised knowledge to mistake such unusual cases as, e.g., localised cerebral agenesis or abiotrophy of the motor speech centre for either mental deficiency, some form of deafness, or aphasia—both the prognosis and treatment for the speech of all these being quite different from either of the above, as from each other. Of the last-named condition the only case I have had was in all probability unique. Speech began at the usual age, developed up to a point, and then gradually faded out. At six-and-a-half the boy was as completely speechless as a deaf-mute. After three months of constant work he was only just beginning to produce a few isolated words. At the end of this time, unfortunately, he had to return to New Zealand with his parents, but I have since heard that the speech development continues.

Aphasia.—In all aphasic conditions it is essential that practice in association should be given. In alexia (word-blindness) emphasis is placed on associating the visual symbols of spoken language with the sounds for which these stand and the object or action for which, in turn, the sounds stand. Words such as articles, prepositions, etc., obviously cannot be visually represented except by written symbols, so here practice must be confined to these.

The best procedure, I have found, is to set up what one might call a mental cycle*, which is done in the following way. Some object, of which the name is

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*I am indebted to the writings of Mary Everest Boole for the evolving of various ideas of this type.
a word of two, three or four letters (not more), e.g., cap, hat, bag, foot, etc., is shown to the patient, and he is asked to name it, in doing which, of course, he finds no difficulty. He is next got to analyse the sound-contents of the word, and say them separately, e.g., b-a-g. The therapist will then go to a blackboard and write on it the name of the object chosen in block letters, script and ordinary handwriting. The patient is now asked to repeat the word three times, looking as he does so at the written symbols. He now returns to the object itself, picks it up or points to it, and again repeats the name, thus having got back to the point from which he started. This last I believe to be the important thing. It is as though a wheel has been set revolving in the patient’s mind, and in so doing lays the thread of communication, which had previously been lacking, between the appearance of the visual symbols and the sound of the words for which they stand. The patient’s powers of association are, as a whole, as intact as those of normal people, but for some reason which we do not understand they fail along this particular track.

The method of approach sounds absurdly simple; yet results are sometimes almost startling in their rapidity. An alexic patient working on these lines may in two or three weeks be reading words and phrases when he had previously not been able to learn to read more than a few one-syllabled words in as many years. It is important that the complete process be gone through repeatedly. Plenty of practice on words will also be needed.

In word-deafness emphasis in training will be both on hearing and the spoken word, with, of course, association.

Word-deafness is easily confused with hearing deafness, and sometimes with mental deficiency. Word-deaf patients should not be, as unfortunately they are at present, sent to schools for the deaf. The prognosis for the word-deaf patient is better than that for the deaf-mute; but if he be mixed up with the latter he will come to depend on lip-reading, which means that his hearing and speaking powers will not have the chance of being improved and developed as they can be.

Recent research work done by Dr. Worster-Drought and Dr. Allen, tends to show that practically all cases of idioglossia (in which the patient apparently evolves a speech of his own) implies some degree of word-deafness. The extent to which this speech varies from the normal is a relative indication of the degree of word-deafness present. In severe cases of word-deafness usually some sound-deafness (variable) is also present. Mild idioglossia is easily confused with lalling, but the speech is much more difficult to re-educate. Word-deafness being called an aphasia, idioglossia is placed in this class.

The adult aphasic presents an altogether different problem from that of the congenital type, chiefly from the psychological standpoint. The patient who has grown up in the possession of normal speech powers, and then suddenly lost them through some accident, presents a pitiful picture of baffled impulse. The child who has never known what it is to talk does not consciously miss speech. But the adult aphasic shows not only the very natural conscious anxiety as to when or whether he will regain his speech, but also a peculiar condition of haste and impatience, which I believe to be referable to an underlying dread state directly connected with the inhibition of speech, and inversely comparable to an experience which we have no doubt all known at some time or other, the momentary deprivation of speech through shock and a sense of dread; the great difference, of course, being that, whereas with most of us such an experience is only momentary, the aphasic’s condition is more or less permanent.
The connexion between speech and the emotions is extremely intimate; and where this normal outlet is suddenly blocked in adult life the tendency would probably be for a dread state to be set up in the unconscious, showing itself outwardly in such undue haste as is invariably present in these cases.

The aphasic always tries to repeat the sound or word he thinks one is going to say, instead of waiting to hear what it actually is. Since the mental process of auditory reception, appreciation and either imitation or, response to sounds or words takes longer in the aphasic than in normal people, not only must he learn to wait until the sound or word is completed; he must wait still longer, in order that there may be time for this to take place. Thus the principal work of the therapist with the aphasic will be along the line of persuasion in this connexion, and she herself must speak more than ordinarily slowly and gently, and will require literally inexhaustible patience. Unless one understands this aspect of the disease, and realises it as such, one is not likely to succeed with aphasics.

Paralytic Conditions.—Of this group I need only say that in all forms of paralysed palate, and in bulbar dysarthria, the work is of the same type as that for cleft palate, with the addition, in the last-named case of exercises for developing lip (obicularis oris) and tongue movements. Where actual bulbar palsy is present I doubt if the speech can be helped.

Deafness.

This presents some interesting problems. Deaf-mutes are not speech cases. There is a specialised form of training for them, quite different from speech therapy. But in partial organic, and certain other forms of deafness much can be done to develop both hearing and speech, which last, of course, depends on the presence of the former.

The outstanding points to remember are these: (1) The increase of the power to hear depends on the ability to distinguish difference between sounds even more than to discern specific qualities in sounds. Therefore ear-training is carefully arranged to this end, and particular attention is paid to the subtle differences between the subordinate vowel sounds a (at), e (et), i (it), etc.; (2) Patients suffering from deafness are easily tired, as attention in listening calls for a high degree of concentration. This difficulty can be met in two ways, (a) by making all test work into games, or some form of amusement which puts the patient on his mettle; and (b) by varying these, and any practice work, as much as possible.

One of the most interesting forms of deafness, recently discovered by Prof. Ewing, of Manchester University, by means of the audiometer (an instrument giving far more accurate test results than had hitherto been possible) is that known as high-frequency deafness. In this the patient can hear those speech sounds which contain a preponderance of the lower frequencies of vibration, but not those in which the higher frequencies preponderate.

Hysterical Conditions.

The special point of interest with regard to hysteria is that it can simulate practically any known form of disease.

In speech therapy one uses persuasion as a part of the treatment; but there are one or two points to add. First, whatever exercises, etc., would be called for in an organic presentation of the patient's symptoms should also be given to the hysterical. It would be useless to say to him, e.g., "there is nothing organically wrong with your palate or throat; therefore you can speak if you want to." He
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would accept it—and not come again. He must first be got to prove to himself the truth of this, by a judicious approach of such a nature that the hysterical element will not interfere. He needs to feel that something definite is being done about it.

Secondly, the patient should be talked to and treated as a thoroughly sensible person (which he usually is), just like oneself. One does not avoid the word "hysteria", but explains it, and that there is no opprobrium attached to it. One puts, in fact, all one's cards on the table, showing him that, as a matter of course, one expects him to co-operate fully; and he does so.

Tics.—In tic conditions the objective is to release undue tension, and in so doing set up rhythmic conditions which free the functioning of the part affected.

Stammering is classed by neurologists among tic conditions; but this being a subject of peculiar interest, owing to the frequency of its incidence, and the difficulties it presents, I propose to deal with it in a separate paper.

My own way of approaching tics, other than stammering, is to adapt the rhythmic principle of a complete cycle involving tension, relaxation, and a period of repose (corresponding in duration) to the part or parts affected.

Aphonia and Dysphonia.

The aphonias resulting from serious injury to the vocal mechanism, or from laryngectomy or tracheotomy, present great difficulty, and there is not space to discuss them here. In a case of tracheotomy in which I was able recently to restore the voice, the original trouble (papillomata on the cords) was clearing up after several years of treatment, and the tube being less and less depended on for respiration.

In inflammatory conditions of the larynx and pharynx the principal thing is rest at first, and after a longer or shorter period, gentle humming. Ernest White has a system of voice production (and restoration) known as Sinus Tone Production, which I have found very helpful; but his conclusions are debatable.

In hysterical aphony a certain amount of external stimulation to the larynx(1) helps—more by suggestion than by virtue of any intrinsic merit. Here again I find the Sinus Tone method valuable.

In conclusion, the question as to whether it is worth while to treat any given speech defect resulting from nervous disease raises two others, on the answers to which depends that to the first:—(1) is the disease progressive? (2) if so, is it arrestable? If it is progressive and non-arrestable it is not worth while, because the morbid conditions will all the time be undermining whatever work is done on the speech. If, however, it is arrestable, it is often possible to help the patient by speech re-education.

Where the disease is regressive it is always worth while to treat the speech, even where it would in the normal course return as the disease disappeared, because through re-education the period over which the patient is deprived of his speech is greatly diminished; and only those who have possessed the full powers of speech, and lost or partially lost them, know what this means, or what a privation is thereby suffered.

(1) An electrical stimulator, which synchronises the note (variable pitch) produced by the vibrations with the tactile stimulation is used at the West End Hospital. Headphones are attached and the patient is persuaded to hum the note he hears. The device was invented by Miss MacLeod and Dr. Johnson of King's College Hospital.