

possible meeting places. (The proposal relating to the U.S.A. was made after the American members of the Congress had met and formulated a tentative plan for holding the Third Congress in America.)

SESSION FOR SPEECH THERAPY, VOICE PRODUCTION, ETC.

Chairman: Mr V. E. NEGUS, M.S., F.R.C.S.

55. Miss J. VAN THAL (London): *The relationship between faults of dentition and defects of speech.*

It is not uncommon for certain articulatory defects to be attributed to faulty dentition. In an effort to throw further light on the subject I have examined a number of children undergoing orthodontic treatment at the Royal Dental Hospital of London, in order to ascertain whether the state of their teeth had in any way affected speech.

The cases were taken at random, but all those already attending the speech department were excluded from the survey. Some were tested prior to, others during, and a few subsequent to orthodontic treatment. Altogether 180 children were examined, mostly between 8 and 14 years of age.

The test consisted of a list of words to be read or repeated, devised so as to introduce lingua-dental sounds in various positions, as it would of course be that group of sounds that was likely to be affected by the state of dentition; secondly, a passage to be read aloud; thirdly, a brief conversation took place so as to remove self-consciousness and give me a general impression of ordinary speech. Those wearing removable appliances did the test both with and without the appliance.

After making due allowance for age and environment it transpired that

Normal speech was present in	in	10 cases
Slight error of speech	in	40 cases
Gross error	in	55 cases
Minor defect of speech	in	69 cases
Major defect	in	6 cases

Cases of *slight error* showed only a mild inaccuracy on the sibilant. *Gross error* was the classification for a more marked inaccuracy, short of actually defective speech.

The 69 *mildly defective* speakers were without exception lispers; a proportion showed other articulatory defects as well; a number suffered from mild dysphonia, but this of course is not directly connected with their dentition.

The *major defects* of speech—*stammering, cluttering, dysphonia*—were in no way directly attributable to the teeth either; but each of the 6 cases under this heading suffered from a certain degree of sigmatism.

The commonest form of sigmatism was the strident, with the interdental form in the second place. An analysis of the figures gives the following result:

Type of sigmatism	Total	Mild	Medium	Gross
Strident	131	39	78	14
Interdental	91	50	36	5
Multilocular	26	18	6	2
Lateral	25	20	5	—
Para-sigmatism	2	—	—	—

Note. The apparent discrepancy between the total number of children examined and the total of cases of sigmatism is due to the fact that a large proportion had more than one form of defective enunciation of the sibilants.

The wearing of an appliance appears to have little effect on speech once the wearer has got accustomed to it. Only in 13 cases was articulation actually worse when wearing a plate or springs; and in 5 cases it was (strangely enough) better with the appliance than without it.

The heredity of dental anomalies was well illustrated by some of the subjects, and a comparison in these instances of the state of dentition and speech was of special interest. The following are a few examples:

Numbers 62, 63, 64. Three brothers, respective ages 9, 14, 11.

Dentition

Very similar arch formation. Protrusion of the upper incisors in each case, but most marked in 63. Marked irregularity of the lower incisors in 62, slight in 63.

Speech

62 multiple interdentalism; correct initial, but interdental final s. Articulation feeble on the whole; some hesitation. Tongue control bad.

63 interdental and occasionally lateral sigmatism. Strident j. General standard of speech passable apart from the lisp. Tongue control mediocre.

64 interdental and strident sigmatism. General standard of speech poor, somewhat cacuminal. Tongue control during speech obviously bad, but fairly good in test for tongue movement.

Dentition. 62 least defective, 63 most defective, 64 medium.
Speech. 62 most defective, 63 least defective, 64 medium.

Numbers 55 and 112. Brothers, respective ages 14 and 13.

Dentition

Similar formation of the upper arches, with gaps between the first incisors. 55 slight, 112 gross irregularity. Narrowness and crowding of lower arch. Both had lower lip everted, 112 lying behind upper teeth.

Speech

55 classed as gross error of speech, 112 minor defect.

55 slight interdental sigmatism. Articulation adequate in the test, rather indistinct in ordinary speech. Tongue control fairly good.

112 multiple interdentalism, with alternative stridency on s and j. General speech unsatisfactory. Tongue control very bad.

Numbers 151 and 152. Sisters, respective ages 15 and 13.

Dentition

Similar inferior arch formation. Similar protrusion of the upper incisors.

Speech

151 minor defect, 152 slight error.

151 interdental sigmatism, occasionally lateral (assimilation to l). Strident f. Voiced forms—voiceless. Feeble phonation and indistinct articulation on the whole. This girl was of an asthenic type. Tongue control fairly good.

152 slight strident and interdental sigmatism. Tendency to interdentalism on the lingua-dental stops. Physique better than sister's. Tongue control very fair.

Numbers 98 and 61. Sisters, respective ages 10 and 11½.

Dentition

Arches dissimilar, but protrusion of the upper incisors in both cases. 98 has crowded teeth, 61 arch well formed.

Both have marked irregularity of the lower incisors. 98 was a thumb sucker.

Speech

98 gross error, 61 slight error.

98 somewhat strident and interdental sigmatism. Multiple interdentalism. General standard of speech adequate for environment, imperfect only on sibilants. Tongue control fairly good.

61 somewhat strident s. General standard of speech adequate. Tongue control poor (in test).

In spite of the high proportion of grossly erroneous and mildly defective speech found amongst these cases of dental anomaly we are not justified in jumping to the conclusion that the state of dentition is solely responsible for the faulty speech. Control tests on children with normal dental formation gave a very high percentage of stridency on sibilants, and some mild interdentalism too. There is sufficient evidence available to prove that adaptability and skill in the use of the tongue compensate for many dental malformations. It is where tongue control is inadequate that we get such a great number of lispers. Where we have this faulty tongue control, either alone or coupled with auditive difficulties, faulty dentition is an added complication. It may influence, but it does not cause the defect of speech.

It should be noted that all children examined by me were subjected to tests for tongue movement apart from speech, as well as to the speech tests, and that 86 per cent. were found to have unsatisfactory, if not actually in each case bad, tongue control.

Unfortunately it was not possible for me to give a hearing test as well.

To sum up, this investigation seems to confirm what has already been affirmed by FROESCHELS and the Vienna School, namely that while bad dentition has an unfavourable influence on speech we are not justified in regarding it as the actual cause of such articulatory defects as lipping; the cause lies rather in the faulty innervation of the lingual muscles.

There are of course other forms of sigmatism than those mentioned here, but these are obviously due either to quite different organic, or to functional causes, which are irrelevant to the present subject.

Finally, it must be borne in mind that in all disorders of speech

there may be functional and psychological as well as organic causes. For therapeutic purposes even the simplest form of such a defect as lipping has its psychological aspects.

Note. "Open bite", more than any other dental anomaly, is usually held responsible for a great deal of lipping, particularly lateral and interdental. No such case was available during the investigations the results of which are published above; at the last moment a five-year old girl with a marked open bite has presented herself, and it is especially important to note that there is no trace of a lateral lisp; a slight interdentalism occurs when her attention is drawn to speech, but in ordinary conversation her s is mildly strident—an almost normal condition for her age and environment.

56. Dr A. MITRINOVICZ (Warsaw): *Les troubles fonctionnels de la respiration en phonasthénie.*

La phonasthénie, "faiblesse de la voix", le mot indique que la chose est un trouble fonctionnel de la voix. Je me permets de vous rappeler que nous entendons par troubles "fonctionnels" des accidents auxquels ne correspond aucune lésion organique apparente ou directement constatable. Ainsi un malade atteint de phonasthénie ne présente à l'observation aucune détérioration anatomique: seul le jeu des fonctions est atteint. Il s'agit donc pour le médecin d'atteindre les causes profondes qui déterminent cet état pathologique.

On sait, que le langage extérieur est une coordination des trois fonctions suivantes: respiration, phonation, articulation. Chacune de ces fonctions est un travail des muscles; le langage extérieur est alors un mouvement.

Par conséquent, dans les cas pathologiques, on devra toujours examiner l'évolution respiratoire, le jeu des cordes vocales et aussi le mécanisme de l'articulation.

On ferait une erreur si on se contentait de l'examen seul des cordes vocales; ce serait une erreur analogue à celle du mécanicien qui vérifierait seulement les roues d'une machine en panne, sans pousser plus loin le champ de ses recherches. En étudiant à fond la pathologie de la phonasthénie, nous avons été amenés à pousser nos recherches dans le domaine respiratoire.

Il a été très souvent observé que, en phonasthénie, l'aspect des cordes vocales est tout à fait normal, on ne peut noter aucune lésion organique.

Exceptionnellement, on voit une certaine rougeur des cordes vocales et dans certains cas une prolifération de la muqueuse.

Mais cet état a un caractère passager qui change d'un jour à l'autre et qui est causé seulement par la contraction exagérée des cordes vocales; tandis qu'une lésion organique présente des phénomènes persistants.

Nos recherches sur la respiration en phonasthénie se sont portées sur trois examens différents:

1° examen graphique.