

Dans son ouvrage, *La chronaxie chez l'homme*, il écrit: Les rapports entre la chronaxie et les fonctions des nerfs et des muscles à l'état normal sont si étroits, qu'il est facile de comprendre que la moindre modification fonctionnelle doit se traduire par une modification de la chronaxie. L'étude de la chronaxie nous conduit à modifier le point de vue sous lequel il faut considérer les troubles des réactions électriques en général.

Depuis ERB, les auteurs classiques ont cherché à établir un rapport entre l'état anatomique des nerfs et des muscles et des réactions électriques. Ce point de vue doit être radicalement abandonné. L'excitabilité aussi bien que la forme de la réaction sont des propriétés exclusivement physiologiques. Il ne faut donc tirer des réactions électriques que des conclusions physiologiques. En électro-neurologie, comme dans toutes les branches de la médecine, d'ailleurs, mais à un plus haut degré peut-être, il devient nécessaire de substituer à la pensée anatomique, la pensée physiologique.

La seule différence entre les troubles lésionnels et les troubles fonctionnels est, que les modifications de réactions électriques des premiers sont permanents et ne se modifient pas, tandis que les modifications des réactions électriques des seconds sont transitoires et variables d'un jour à l'autre.

BOURGUIGNON nous a montré que les muscles et les nerfs qui ont la même chronaxie, c'est-à-dire le même temps d'excitabilité, ont à la fois les mêmes fonctions physiologiques et les mêmes aptitudes pathologiques. La chronaxie varie non seulement avec les troubles localisés dans les neurones moteurs périphériques et les muscles, mais encore avec les troubles localisés dans des neurones fonctionnellement associés aux nerfs moteurs et aux muscles.

C'est ce que BOURGUIGNON appelle la loi de la "répercussion". Cette notion peut nous éclairer sur les relations entre l'excitabilité du diaphragme et le jeu des cordes vocales en phonasthénie.

On peut exciter directement le diaphragme, mais on réussit très bien son excitation indirecte par le nerf phrénique; la chronaxie d'un nerf et de son muscle étant toujours la même, on trouve le nerf phrénique externe du chef claviculaire du sterno-cleido-mastoïdien. Lorsque l'électrode est bien placée sur le nerf phrénique, chaque excitation produit un violent mouvement d'élévation avec projection en dehors des côtes de la moitié du thorax du côté correspondant au nerf excité.

La chronaxie du nerf phrénique est comprise entre $0 \sigma 20$ et $0 \sigma 32$. $\sigma = 1/1000$ sec.

Nous avons observé la chronaxie du nerf phrénique chez vingt malades; nous avons trouvé des chiffres supérieurs: entre $0 \sigma 40$ et $0 \sigma 60$. Dans l'état de fatigue de la voix ce phénomène se présente d'une façon encore plus nette.

La phonasthénie est alors caractérisée par une augmentation de la chronaxie du diaphragme, c'est-à-dire par une excitabilité bien diminuée. Je pense vous avoir montré clairement que le phénomène local de la phonasthénie est étroitement lié à un état de faiblesse du diaphragme dans le travail général de la respiration.

La question serait maintenant de savoir s'il est possible de constater dans le cas pathologique qui nous occupe, le même état d'excitabilité moindre des muscles du larynx; il est permis de croire que la loi de répercussion de BOURGUIGNON dont je vous ai montré une application pourrait nous conduire aux mêmes conclusions en ce qui concerne la pathologie des muscles plus directement intéressés au mécanisme de la phonation.

57. Miss E. C. MACLEOD (London): *The association of dyslalia, dyslexia and spelling difficulty in children of normal intelligence.*

In choosing a subject for this short paper, I must confess to a desire to receive rather than to give, to gain information with regard to the incidence and frequency of similar cases in countries where the system of orthography is strictly phonetic and where reading may logically be taught on a phonetic basis.

Lately many cases of dyslalia, with associated dyslexia and spelling difficulty, have come my way. Apart from the few which were obviously the outcome of dull mentality, of inherent lack of intelligence, the children proved to be rather above than below the average. I propose to describe one typical case in detail:

Peter, aged $8\frac{1}{2}$ years, whose speech was almost baby-talk, so many slipped sounds and consonant substitutions did it contain, yet his vocabulary was good. Spelling entirely fantastic and reading ability barely existent. Powers of concentration, nil. Morbid fear of failure and morbid anxiety to please.

Investigation into the child's history and a thorough physical examination brought to light many significant facts:

Physical

Well-grown, sturdy child. Strained, anxious expression.

Hearing: Normal throughout speech range, including upper frequencies. Audiometer test applied.

Sight: Normal.

Pitch: Good ability to discriminate pitch.

Sounds: Could make all English speech-sounds in isolation. Tendency to reverse some consonant combinations or to mispronounce them.

Rhythm: Very poor sense of rhythm.

Environmental

The boy had been moved from country to country, and from place to place before the age of four years. England, Ireland, Switzerland, Italy and again England.

His father stammered, but is said to have got over it, except for occasions, before the child was born.

Peter went first to a Convent School, where he was taught first the names of the letters and later reading—*c-a-t* spells *cat*.

A year later he went to a Froebel School and was taught the supposed sounds of the letter shapes and "phonetic" reading—*k-æ-t* is *kæt*.

Again, a year later he went to a boys' preparatory school where he was expected to be able to read, so he was not taught this subject at all. However, he could only manage very short words except on occasions when he correctly read and pronounced an isolated long and difficult word. This led the masters to think the boy was merely pretending not to be able to read in order to save himself the trouble of preparing his lessons.

Psychological

Parents unhappily married.

Child not wanted because he prevented the separation of the parents.

Mother saw the Father's "slowness" reproduced in the boy.

Father saw Mother's "instability".

Child had no feeling of security and sensed that he was not wanted, hence his intense anxiety to please, which caused him to rush and dash at anything in the hopes of chance success, but constant failure under such conditions had merely increased his own feeling of inefficiency and plunged him into despair.

An indication of the state of mental confusion regarding reading, writing and spelling in which I found the boy may be gained from the written answers he gave to the following spoken questions:

What are the capital cities of France, Germany, Italy and Denmark?

Answers. *Alwþjem. Clob. Ahmewbh. Mjorf.*

His answer paper was given up and next day he was asked to read the answers from it. This he was unable to do, because, as he himself explained to me to mitigate his failure, he could not remember the order of the countries which had been asked. He therefore hopefully gave a list of all the capital cities he could think of, trusting to luck to help him, which unfortunately it did not. The questions were then repeated and he at once gave every answer correctly and sometimes, in addition, the name of the appropriate river, in order to counteract his previous failure and to gain a little approbation.

It will be noticed that the number of letters in his written words bears no relationship to the actual length of the word in his mind, neither is there any attempt at a phonetic rendering. Yet, whilst he was writing, which he did slowly and painfully, he was murmuring the first sound of each word correctly under his breath.

An investigation into the words he unexpectedly recognized and read correctly revealed the fact that they included such words as:

<i>Liverpool Street</i>	<i>Bayswater</i>	<i>Transport</i>
<i>General</i>	<i>Holborn</i>	<i>Shepherd's Bush</i>
<i>Passenger</i>	<i>Green</i>	<i>London Bridge</i>
<i>Oxford Circus</i>	<i>Through</i>	<i>Service</i>

and the explanation was that Peter was extremely interested in buses, trams and tubes (Underground Railways), knew all the routes and where to change from one route to another. He had taught himself to recognize the street and place names which he had seen on the buses passing his home, and having secured a bus and tram map and timetable, he set out to find the same letter-groups and to follow the route on the map, until he came to another recognizable point, of which he knew the name. Thus, in this laborious way, he had taught himself to make use of the timetables and maps, but he said to me he could not read, he just knew what the words were when he saw them!

Working on this principle, it was a comparatively simple matter to extend his stock of recognized units, and he quickly learnt to read sentences, taking sometimes the word and sometimes the whole phrase as a single ideagram.

But spelling, writing and dictation—the dissection and combina-

tion of words into letters and letters into words—remained untouched. Unfortunately these processes in English follow no logical progression, therefore it is a matter of learning the conventional letter-combination for each word in the language. This is best accomplished by abandoning any attempt at being logical or phonetic, and by developing the visual and kinaesthetic senses. It is a matter of eye-training and shape-memory, which is helped by the kinaesthetic memories of the movements of writing the various word combinations. The letter-shapes are regarded as named pieces of a jigsaw puzzle, which, when correctly completed, forms a word.

There is no time to go into details of the material used or the selection and grouping of certain letter combinations, but in general an all-round attack was instituted and he was encouraged to ring the changes on the procedure of *look, write* (copy), *write* (from memory), *look* (compare), *spell aloud, say*, etc.

Happily, perseverance on these lines gave satisfactory results, and the latest report, received last week, is that Peter, now aged ten, is at a preparatory boarding school. He can read as well as the others in his class, writes well, and his spelling, though not by any means perfect, is not worse than many of the others of his age. His speech is quite normal; he is no longer upset by failures, concentrates well, and is good at games, which shows that his sense of rhythm has improved, as he previously used to kick at the football before it had reached him, or after it had passed him. I should just mention that both the speech adjustment and the development of an appreciation of rhythm were handled as part of the whole and not as separate considerations.

It is, of course, a well-known fact that psychological factors play a great part in such cases, accounting for lack of concentration and lack of rhythm. In Peter's case a stable environment has been secured for him at school, where he is very happy, and he no longer feels inferior to the other boys because of his speech, reading or writing.

Conclusions which may be drawn from this and similar cases:

1. Psychological and environmental factors are significant.
2. Dyslalia is, in such cases, associated with the emotional condition rather than with any organic or functional disability.
3. The treatment should be such that eye, ear, mouth and hand are educated together, and advantage should be taken of oral and graphic kinaesthetic sense. In this way the quicker sense-perceptions help the slower and do not displace them.
4. In English, the unit should first be the word, and only later the processes of dissection and combination should be introduced.
5. So-called phonetic methods of reading instruction are to be avoided, being an unnecessary process for those children who have no personal difficulty in learning to read, and a dangerously confusing complication for those who have such difficulty.
6. "Look and say" reading followed by the routine of learning the conventional spelling is the soundest and safest method to adopt for English children.

And now I would ask—Is this type of case frequent in countries where the orthography is phonetic or at least follows clearly defined rules, or is it chiefly the result of a language such as English where sounds and letters are almost unrelated to each other?

58. Mr T. POMFRET KILNER, M.B., F.R.C.S. (London): *The provision of speech mechanism in cleft lip and palate cases: the surgical aspect.*

The time has passed when the surgeon interested in Cleft Palate surgery requires a torch and a tongue depressor to judge his or his colleagues' results. He is no longer seriously interested in the look of the repaired palate, but he is intensely interested in its function. Given a functional result he may with justifiable pride exhibit a good anatomical result: and it certainly proved encouraging to me when on one occasion a colleague was unable to find evidences of my repair operation and insisted that no cleft of the palate had ever been present.

It is impossible in the very short time at my disposal to enter into any detailed discussion of operative technique, and I propose therefore merely to indicate by diagrams the steps which I take in an average case to obtain a good functional result. I lay no claim to originality of technique: some fifteen years' experience of cleft palate surgery has indicated quite clearly to me that the man who writes up a new technique for cleft palate repair is merely relating his particular selection from a number of procedures, many of which, alone or in some other combination, were introduced many years previously. I have operated on a large number of cases myself, I have seen other surgeons' work and heard their speech results, and gradually I have accumulated a "bag of tricks" which, in my opinion, promises best to give the desired result.

What are the essentials for the development of good speech in cleft-palate cases? What is it that must be provided by the surgeon if he is to put the speech-trainers out of work? Palato-pharyngeal sphincteric control—provided at a time before the child has seriously tried out his faulty speech-mechanism and run the risk of developing all those tricks of speech (which we all know too well) to overcome his deficiency. Operation must therefore be early, and I usually operate at or about the first birthday. Palato-pharyngeal sphincteric control is, however, in many cases so difficult to achieve that it is unlikely that there will be any serious falling off of work for the speech-trainer.

The all-important muscles are the Levatores Palati and the Superior Constrictor of the pharynx and of the latter more especially the palato-pharyngeal sphincter fasciculus described in the *Journal of Anatomy* by WILLIS in 1930.

If a cleft palate consisted simply of a divided sphincter, then effort need only be directed towards efficient suturing of the cleft, and indeed until comparatively recent years all procedures had this as their main or only object.

It is obvious, however, that in the majority of cases the two parts of the palate could never together make a whole palate of normal proportions, and when one sees, in addition to this, an abnormally wide and deep naso-pharynx (Fig. 1), one realises immediately that the provision of palato-pharyngeal sphincteric control is not going to be easily achieved.

What steps then are to be taken?

One attempts to narrow the naso-pharynx in both diameters by the pharyngoplasty procedure of WARDILL. By this operation (Fig. 2) a reef is taken in the posterior half of the sphincter mechanism. The diagrams describe this better than words. A good result exhibits very considerable side-to-side narrowing with an exaggeration of the ridge of Passavant. The tonsils come to look more forward than the

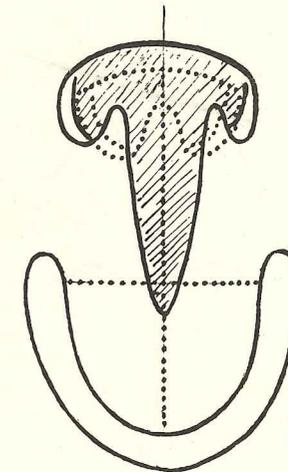


Fig. 1. The oro-nasal gap is too wide from side to side and from before back.

normal and the over-wide naso-pharynx frequently appears considerably over-corrected (Fig. 3).

This operation is a simple one, and since it can be performed in 7 minutes or so and as I am convinced from careful observation of WARDILL's own cases and a long series of my own that it definitely improves speech results, I do it as a routine as the first step in every cleft-palate closure.

In the palate itself everything is concentrated on the production of a long, supple, mobile soft palate placed well back in the pharynx in such a position that it, together with the shortened posterior half of the palato-pharyngeal sphincter, can occlude the oro-nasal isthmus. No single step should be taken which considers mere closure of the cleft at the expense of this desideratum.

The Tensor Palati muscles are concerned probably entirely in deglutition. They may be released from their pull around the hamular processes certainly without interfering adversely with speech and,