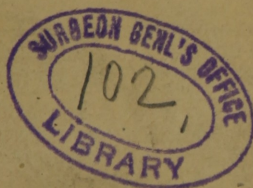


DUNGLISON

Clinical report

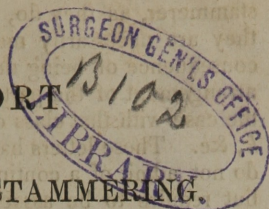
on
Robert Bates's Cure for
Stammering



CLINICAL REPORT

ON

ROBERT BATES'S CURE FOR STAMMERING.



Clinic of Jefferson Medical College. Services of **PROFESSOR DUNGLISON.**
February 21st, 1852.

(Reported by J. AITKEN MEIGS, M. D.)

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Washington, D.C.

I am, to-day, gentlemen, enabled, through the kindness of Mr. Bates, of this city, who is present, to bring before you three cases illustrative of the nature and treatment of that form of defective or imperfect speech, known as "stammering." It is a subject not often, perhaps, examined in a clinic, yet it is unquestionably a morbid condition, and no better opportunity than the present could offer itself to explain to you its phenomena, and to investigate their causes. Mr. Bates, who has the three persons now before you under his care, with that candor and liberality which ought to characterize every one connected directly or indirectly with our noble avocation, had expressed, when I proposed the matter to him, on his calling to explain his views on impediments of speech to me, his entire willingness to permit me not only to exhibit some of his cases to you, but also to be the expounder of the methods he adopts for its rectification; and, after having done so, I shall endeavor to deduce for you the inferences at which I have arrived in regard to the *modus operandi* of his means and appliances, and to the great principles of management that flow therefrom.

To-day, such an examination and inquiry are especially appropriate, as I have been engaged, during the past week, in another place, in expounding to you the physiology of phonation, and the modes in which the different vocal sounds are elicited in the glottis, and modified in the vocal tube. The vowels, as you well know, flow without obstacle, and consequently demand no consideration. They are simple modifications of the voice formed in the larynx, and are uninterrupted by the organs—as the tongue, lips, &c.—in their passage through the vocal tube; while the consonants require different, and, at times, complex and delicate movements of the tube; and, as their name imports, have to be sounded with the vowels.

Stammering is a temporary inability to enunciate, freely and distinctly, certain letters at the commencement of one or more of the syllables of a word. There is a broken or interrupted emission of the voice in the act of articulation, and a consequent disconnexion of the sounds; and you

will understand, that the consonants must afford great obstacles to the stammerer, as they do, also, to children learning to talk; inasmuch as they are necessarily more difficult of enunciation than the vowels, in consequence of being dependent upon an ever-varying disposition and arrangement of the parts composing the vocal tube. Especially is this the case with that class of consonants known as explosives—as *b, d, t, g, k*, &c. These letters have of themselves no sound, or are mutes. They do not admit of a continuous pronunciation like the *h, m, n, f, s, r, l*, but require to be associated with a vowel sound, before they can be enunciated.

Much difference of sentiment, you will find, has existed in regard to the essential cause of stammering; and views have occasionally been entertained, which are certainly far from tenable. By some of the best physiologists, all the varieties have been referred to a spasmodic closure of the glottis producing a sudden arrestation of the issuing column of air. That this is not always the cause of the affection, however, is shown, as we shall see, by the cases before us. The great fault lies in the spasmodic action of certain of the muscles concerned in the production of the voice, and in articulation. Often, as in Chorea or St. Vitus's dance, the slightest agitation serves to aggravate, in the most painful degree, the abnormal action. Indeed, the affection may not improperly be—as it has been—called, “Chorea” or “St. Vitus's dance” of the voice. The stammerer, on attempting to enunciate a word or syllable, experiences difficulty or resistance at the commencement, and having but an imperfect control over the voluntary muscles of the vocal apparatus, he at once loses all confidence in his ability to produce the sound required, and there consequently results an irregular or spasmodic action of those muscles, which, for a longer or shorter period and determined by the degree of spasm, effectually prevents enunciation. In the case of the explosive consonants, the total interruption of the breath, and the badly regulated and insufficient volition, give occasion to the most painful spasmodic efforts on the part of the muscles more immediately concerned in articulation. This may be even extended to the whole body, which is thrown into a most distressing state of agitation to overcome the obstacle. At length the spasm ceases with the accomplishment of the act of expiration. It will now, therefore, be understood, why the complete interruption to expiration in the enunciation of the explosive consonants should be the most common phenomenon observed in stammerers. In the case, however, of the continuous consonants, an additional phenomenon occurs, in the sound being prolonged by spastic action for a much longer time than necessary.

Mr. Bates, who is an ingenious and liberal mechanic, has been studying, for some time, the nature and treatment of these distressing impediments to speech, and, as I remarked, has been kind enough to bring here several of the persons now under his care, that you may see me examine them, and hear me explain the mechanical contrivances which he employs to obviate them. He was himself, for a long time, a most intense sufferer, and, in consequence, had his attention earnestly and assiduously directed to the discovery of some means of relief. He has overcome the difficulty in himself, and has happily succeeded in enabling

others to do the same. In the three cases now before you, and which are at present under his guidance, the spasm manifestly affects different muscles; and hence, although in each person the same amount of difficulty is perhaps experienced in enunciation, the difficulty may concern different sets of letters. Thus the resistance may more prominently affect the labials, dento-labials, linguo-dentals, linguo-palatals, or gutturals; and hence the value of the physiological knowledge which teaches us the intimate mode of their production.

[The patients were now brought, *seriatim*, before the class, and made to read words and syllables commencing with different consonants, especially with those of the explosive class.]

In the *first case*, (R—G—, æt. 26,) the utterance of the explosive letters is arrested, and accompanied by a singular and sudden spasmodic protrusion of the lower lip. In the attempt to articulate such words as *Boston, punch, boat, pill, pant, Pope*, &c. an arrestation of the sounding breath occurs, accompanied by such protrusion, and the patient is thus rendered incapable of completing or perfecting the sound.

In the *second case*, (R—S—, æt. 34,) the voice is arrested, and there is a sudden and energetic contraction of the lips. The voice cannot escape from the mouth, and the difficulty here is with those words commencing with *d, t, st*, as *doctor, Thomas, stone*, &c.

In the *third case*, (D—D—, æt. 25,) there is spasm of the muscles that close the glottis, so that on attempting to pronounce the gutturals in such words as *grey, goose, great, king, court*, &c., the glottis is quickly and spasmodically closed, and the current of air prevented from issuing, except by jerks.

The great object to be accomplished in the treatment of these cases, is to overcome the proximate cause—the neurosis, or irregularity of innervation, indicated by the spastic condition of the muscular apparatus brought into play in the process of articulation. To effect this, it appeared to Mr. Bates, and it was confirmed by experiments instituted on himself whilst suffering under the infirmity, that if a plan could be imagined to prevent the total interruption of expiration, which occurs in these cases, the patient would feel confidence in his being able to elicit the particular sound, and in this manner the spasmodic efforts might be prevented. He accordingly invented several well devised instruments and arrangements, adapted to the different varieties of stammering; either by preventing the spasmodic action of the muscles concerned, or by restraining, by appropriate pressure, the irregular contractions of the muscles. For example, *when the lower lip and chin, in the first case, were confined by means of a simple broad bandage*,* like the one I show you, and pressure was thus exerted upon the spasmodically contracted *musculus orbicularis oris* of the lower lip, so as to prevent the protrusion of the lips, the letters, which were such stumbling blocks before, could be distinctly enunciated, and with a daily decreasing amount of hesitation.

For the *second case*, Mr. Bates has contrived, as you here see, a small plate, fitting closely to the palate, and affording attachment to a light

* In the first case the *bandage* is not the instrument that is used for the labials; it is only used in extraordinary cases.

narrow tube, the posterior end of which opens into the mouth, looking towards the fauces, whilst the anterior projects between the lips. By this contrivance the current of air is made to be in part continuous, and the patient finds, to his surprise and delight, that he can produce the sound without any limitation other than his will.

The subject of the *third case* has been materially benefited, and is, indeed, in a fair way to be entirely cured of his unfortunate habit, by means of a neckerchief or cravat, in which is a little spring, pressing—as you observe—directly upon the projection of the thyroid cartilage, in such a manner as to relax the rima glottidis, by approximating the thyroid to the arytenoid cartilages; thus permitting the exit of air and preventing the spasmodic action of the muscles that close the glottis. The spring is so regulated, that the amount of pressure upon the thyroid cartilage can be increased or diminished, as occasion may require.

[*The effects of these different forms of apparatus were exhibited on the stammerers before the class; and the action of each was clearly manifested.*]

By such contrivances, which are simple, and adapted to the accomplishment of the object in view, Mr. Bates succeeds in effecting a great desideratum,—the *restoration of self-confidence*,—the want of which is a main obstacle to improvement in all such cases; for as soon as the patient becomes thoroughly and practically convinced that there is no difference between his vocal organs and those of his friends, whom he hears speak without difficulty or hesitation, he becomes inspired with confidence in himself, and his exertions are thenceforth the commencement of his restoration.

REPORT
OF THE
COMMITTEE ON SCIENCE AND THE ARTS,
OF THE
FRANKLIN INSTITUTE OF THE STATE OF PENNSYLVANIA,
ON ROBERT BATES'S INSTRUMENTS FOR THE
CURE OF STAMMERING.

From the Journal of the Franklin Institute, April, 1854.

The Committee on Science and the Arts, constituted by the Franklin Institute of the State of Pennsylvania, for the promotion of the Mechanic Arts, to whom were referred for examination, "Instruments for the Cure of Stammering," invented by Mr. Robert Bates, of Philadelphia, Pennsylvania—REPORT:

That much discrepancy of opinion has prevailed as to the cause and consequent treatment of stammering. Many of the earlier writers have attributed all the varieties of this form of defective speech to some organic affection of the vocal apparatus, or malformation of the parts that compose the mouth and fauces; as, for example, hypertrophy of the tongue, a too low position of that organ in the mouth, enlargement of the tonsils, uvula, &c. The treatment based upon these erroneous and limited views as to the cause, was necessarily as various as it was unsuccessful. Thus rollers were placed under the tongue, to obviate its fancied depression, (Mad. Leigh's treatment;) the tonsils and uvula were excised, deep gashes made in the tongue to lessen its size, &c. Others, again, traced the defect to a want of nervous power in the tongue, occasioned by paralysis of the ninth nerve, and attempted to overcome it by the use of stimulating masticatories, electricity, &c.

In all these instances it is obvious that a *special* was mistaken for a *general* cause.

A more accurate knowledge of the anatomy and physiology of the organs of phonation led to an improvement on the above restricted conjectures. Schulthess, Arnott, Müller, and several other very eminent physiologists, maintained that stammering, in all its varieties, is dependent for its immediate cause upon a *spasmodic closure of the glottis*, pro-

ducing a sudden arrestation of the issuing column of air.* Later researches, however, have shown that this is true of the guttural sounds only.

Dr. Carpenter† is disposed to consider that the proximate cause, in the majority of cases, is a disordered action of the nervous centres of a centric origin. This is proved by the close analogy which prevails between the phenomena of stammering and those of the general disease, chorea. The great difficulty, in by far the largest number of cases, is to be sought for in the *spasmodic action of certain of the muscles concerned in the production of voice and in articulation*, which spasmodic action impedes or entirely arrests the column of sounding breath. This view is particularly contended for by Dr. Dunglison.‡

Dr. Arnott§ proposes, as a cure for the disease, that the patient should connect all his words by a vocal intonation, in such a manner that there shall be no stoppage of breath. This is, undoubtedly, the correct principle, although it often fails in consequence of the method advocated, not being able to carry out the principle in all cases. This was observed by Müller, who admits that the plan is founded on a sound physiological view of the nature of the affection, but urges the very proper objection, that though it may and does afford some benefit, it cannot do everything, since the main impediment occurs in the middle of words themselves. This is a legitimate objection, as shown by the fact, that the temporary inability to enunciate may occur at the commencement of either syllable of a word, especially those commencing with a consonant; the vowels being formed between the vocal cords, and issuing without change, while the consonants require for their enunciation difficult and often complex and delicate movements of the muscles concerned in articulation.

Mr. Bates, by an independent course of investigation and observation upon himself and others laboring under stammering, has arrived at the same conclusion concerning the difficulty to be overcome as is entertained by the modern physiological school.

The instruments invented by him are all based upon the same principle, and, in the opinion of the committee, are more efficient in obviating the vocal defect in question than any other contrivance or method with which they are acquainted. As the spastic difficulty obviously accompanies different sets of letters in different persons, Mr. B. has invented three varieties of instruments, as applicable to all the forms of stammering, all having the same object in view, however—the maintenance of an uninterrupted current of sonorous breath.

His instruments are as follow :—

1. A narrow, flattened tube of silver, $\frac{7}{8}$ ths of an inch in length, very light, thin, and smooth. The diameter of the calibre of the tube, measured from the inner edge of one side to the inner edge of the other, is $\frac{3}{8}$ ths of an inch, while the depth, measured from the anterior inner edge to the posterior, is $\frac{1}{16}$ th of an inch. This is applied to the roof of the mouth, in the median line, in such a manner that the anterior end is

*Müller.—Elements of Physiology,

†Carpenter's Principles of Human Physiology.

‡Medical Examiner, July, 1852.

§Elements of Physics, Vol. I.

lodged just behind the teeth, while the posterior opens into the mouth, looking upwards and backwards towards the fauces. In this position it is maintained by a delicate piece of wire or thin slip of india rubber fastened to one end of the tube, the other passing between the incisor teeth of the upper jaw.

This tube is intended to overcome the difficulty in the pronunciation of the linguo-palatal letters, which are formed by the application of the tongue to the palate. This it accomplishes by preserving a continuous current of air, thereby preventing spasm, allowing the letter in fault to be properly elicited, and thus restoring the self-confidence of the sufferer.

2. For the explosive consonants, the labials, dento-labials, &c., the contrivance consists of a hollow, bi-convex disk, from one end of which projects a silver tube, which, passing out between the lips, keeps up the communication between the atmosphere and the oral cavity. The current of air from the glottis enters by means of a small hole at one side of the disk, and escapes through the silver tube. Finding that the saliva was apt to accumulate in the disk, and thus obstruct the entrance and exit of air, the inventor has recently substituted for this lateral opening a small tube, passing from the upper edge of the disk, and bent at an acute angle upon itself.

3. For the accurate elimination of the guttural sounds, Mr. B. has contrived a belt, made of patent or glazed leather, or any other strong material, and lined with morocco. This belt is concealed in an ordinary stock or cravat, and in this manner secured around the neck. In the middle and on the anterior surface of this belt is fitted a metallic plate through which passes a regulating screw. On the inner side of the belt, and just opposite the plate, is a metallic spring covered with kid or any other soft material, and firmly sewed by both ends to the strap. When this apparatus is adjusted about the neck, the regulating screw resting upon the spring causes the latter to be forced inward, so as to press more or less strongly upon the thyroid cartilage, thus relaxing the rima-glottidis by approximating the thyroid to the arytenoid cartilages. In this manner the exit of air is provided for, and the spasmodic action of the muscles that close the glottis is overcome. The pressure upon the larynx can be increased or diminished, as may be required.

From the above description it will be seen that the efficiency of these instruments is entirely dependent upon the unobstructed channel which they preserve for the egress of the vibrating column of breath from the larynx, through the mouth, into the open air. Muscular spasm is necessarily removed, and the self-confidence of the stammerer restored—undoubtedly the great desideratum in this affection. When the patient is fully convinced that he can really enunciate the opposing letters as distinctly as his friends, he rapidly overcomes the disease, by the judicious and effective exertions which renewed confidence begets.

An advantage of some importance possessed by this apparatus is, that it can be worn without attracting notice, two of the pieces—the tube for the palatal and the belt for the guttural sounds—being entirely concealed; while the tube which projects externally from the silver disk may be disguised by slipping over it the barrel of a quill, cut like a tooth-pick.

Moreover, each of the pieces can be most easily and expeditiously applied, as occasion may require.

In consideration of the advantages here set forth, the committee would recommend that the first premium be awarded to Mr. Bates, for the instruments deposited by him at the last Exhibition of the Institute; and furthermore, that the Scott legacy premium be awarded him for his ingenious and useful invention.

By order of the Committee,

WILLIAM HAMILTON, *Actuary.*

January 12th, 1854.

