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LIP CHOREA

AND

PARESIS OF THE EXTERNAL PTERYGOID MUSCLES,

COMMONLY CALLED "STAMMERING."

BY

EDWARD BLAKE, M.D., M.R.C.S.,

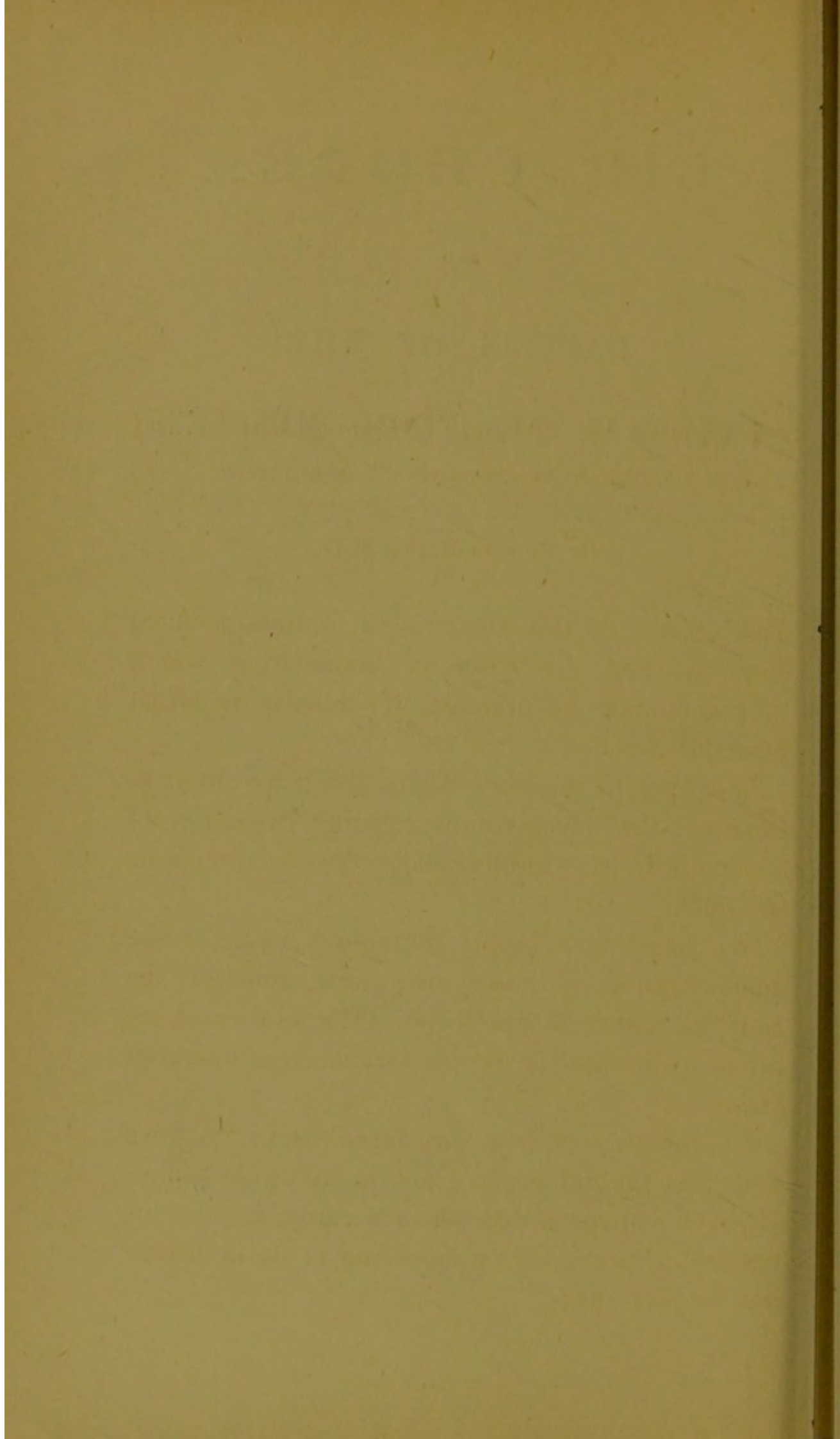
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*Paralysis of the External Pterygoid Muscles and
Lip Chorea, commonly called "Stammering."*

BY EDWARD BLAKE, M.D.

THE object of this essay is to induce medical men to treat the cases of stammering which they encounter in practice, on definite scientific principles.

It is open to the gravest question if we ought to sanction the promiscuous herding together of stammerers in establishments devoted to their treatment.

We know how highly contagious many of the demonstrative neuroses are; how mimetic the neurotic nature is apt to be. The mild cases are prone to imitate the severe and more pronounced forms.

Of course it is, to a very large extent, our own fault that the public have lent an ear to the claims of pretended specialists who are ready, for obvious reasons, to prove that stammering is not a disease but "a mere gait."

I know that medical men will be the first to admit that they have not been at the pains to study the precise nature of stammering. The busy practitioner may be excused when he pleads that his life leaves no leisure for luxuries.

But the neurologist even, to whom these sufferers should, by right, be able to turn for relief, have not given this grave subject the serious attention it demands.

The distinction between stammering and stuttering, though sometimes convenient, is quite arbitrary and artificial. There is no pathologic difference between them; the subjects of both recover under the same treatment.

On the other hand it is beyond the range of doubt that wide differences reign between cases of stammering, which present a strong family likeness to the superficial observer.

We shall presently see that stammering has a very wide etiology. There is no royal road to the cure of every case of speech hesitancy. The successful management of stammering requires immense and most plastic resource. The plan of campaign must be at least as complex in character as the causation of the disorder. Above all each case calls imperatively for individualisation. Each must be treated on its own merits.

It is quite impossible for a layman to cover the whole ground needful either for a perfect recogni-

tion of the entire causation of stammering, or for the application of means necessary for a prompt and radical cure.

The following points will amply serve to show the truth of this statement.

A tall and slender professional man, aged 26, consulted me for stammering. There is a distinctly neurotic history on the father's side. The hesitation of speech dated from the age of seven. A neurotic boy, he had been ruined by being sent early to a bullying school, a fruitful source of such sorrows. I noted that the muscles supplied by the third, the fifth, the seventh, the eighth and the ninth pairs of cranial nerves, were affected. Even the pharyngeal constrictors had a clonus which at times abruptly stopped the process of swallowing. He stooped very much. On being requested to take a long breath he emitted, at the close of a deep inspiration, the characteristic bark of neglected pleurisy, with recent adhesions. What would be the use of trying to cure this case by means of rhetorical lessons?

Either nasal or post-nasal diseases frequently complicate the case. The commonest forms are polypus, hypertrophic rhinitis and adenoids.

Again, as we shall presently see, boys are often brought for an impediment of speech, with such a foul and phimotic state of the prepuce, that it would be palpably absurd to attempt the removal

of a neurosis like vocal chorea without first setting matters right locally.

A little thought will convince any man that the matter is an important one. Its magnitude comes home to us when we remember that the portals of the liberal professions are practically closed against the stammerer.

Being usually of the neurotic type, the stammerer is more sensitive than other men, often he suffers untold torture from the sense that he is divided like a leper from his fellow men.

If we take a male stammerer and seek to detect the cause of his inability to enunciate, we must begin by carefully divesting our minds of every kind of theory respecting the nature of the phenomenon.

We then proceed to watch him patiently as, exposed to a good light, he attempts to utter a sentence. We cannot fail to be struck first by the faulty and imperfect way in which the chest is both expanded during inspiration and retracted during expiration.

On timing the duration of his longest air-intake, we find that it rarely exceeds five seconds. Compare this with the maximum adult male intake lasting sixty seconds, and we can then see how poorly the lungs act, those bellows upon which vocalisation must primarily depend, and how defective must be the oxygenation of this man's blood.

Examining the larynx, which has so wrongfully been blamed for the causation of stammering, we find there, in certain cases, a spastic condition indeed, but it is a *reflex* spasm only. In many cases the glottis acts well, and when it is disturbed, it seems probable that, like the cough of pertussis, it partakes more of the nature of a reflex from the upper areas of the alimentary canal than of a primary disorder.

The same observation holds good of the tongue. We all know the poetic expression "the stammering tongue," it is emphatically poetical, and it is mythical as well. It originated, as far as we know, with a race who were good sanitarians and bad pathologists, viz., the Jews.

The fact is, the tongue is not necessary for audible speech. A man may stammer with the tongue perfectly under control, and intelligible speech may exist without any tongue.

Before the surgical skill of Chassaignac rendered the operation for removal of the tongue common, the lingual organ was viewed as the most important factor in audible speech. But it is now well known that a man may speak with fair clearness without a tongue. Nevertheless it has always been a widespread belief that our utterances depend chiefly on that member; this is shown by the fact that etymologically "tongue and language" are identical.

The Hebrews were necessarily poor pathologists

because their religion strictly forbade all needless touching of a dead body. Embalming, whilst common in Egypt, was not practised by the Jews; hence the study of anatomy, which originated probably in this custom, had no opportunity of development in Palestine. Yet to a Jewish poet of gentle birth, writing, circ. 700 B.C., in a series of denunciatory utterances, remarkable for their fire and vigour, yet full of a strange beauty and pathos, we are indebted for the information, of profound interest to us busy mortals of a later age, that stammering was well known to the Jews at that early date. On first reading Isaiah xxviii, 11, we might even credit the author with a wonderfully accurate acquaintance with the physiology of speech when we encounter the following words, "for with stammering lips and another tongue will he speak to this people." But on more careful scrutiny we find that the Hebrew word "lah-gehg" does not happen to mean stammering at all but "mocking"—see same word Psalm xxxv, 16. It is found twenty-seven times in the Old Testament, and is usually rendered either as "mock" or "laugh to scorn." The analogous word "gil-lehg" in Isaiah xxxii, 4, seems to really indicate "stammering," and it is the more interesting as being the solitary and unique reference to this form of speech impediment in the older Jewish writings. Later we shall see a curious reason why stammering was probably uncommon amongst the

Jews. Modern Jews consider that Moses' reference to his difficulty of utterance (Exodus iv, 10; vi, 12-30) means that he actually stammered, but there is no proof of this being really the case.

Returning to our stammerer whom we left standing, we observe that when asked a question, a very varied display of histrionic movements and gestures *radiating from the lower lip* are called forth in differing degrees of intensity. In bad cases the whole body may be thrown into violent convulsions *in the ineffectual effort to control the lower lip*.

On requesting that the lower jaw be thrust forward, there is found more or less inability to comply.

The sentence is started with an inadequate quantity of air in the lungs.

Then the subject, whilst occupied with the mental construction of the sentence, allows the air to escape, as the lips are not held firmly together before commencing to speak.

Next the mouth is not thrown open with sufficient vigour.

We see then that the chief elements of difficulty are connected with the jaw muscles.

Darwin has shown how widely the maxillary muscles are differentiated by sex in a state of nature. In that astonishing monument of patient labour, "The Descent of Man," he gives a great number of examples of animals in which the male alone is

vocal. In many animals the male is silent except during the pairing season.

There is a widespread belief amongst those who devote themselves to the treatment of stammering that this affection is rare in women. This is an opinion merely; it is by no means proved. The idea may have arisen from the very natural feeling amongst parents that an impediment in the speech in a girl is not so grave a hindrance to success in life as it is in a man. In the Jews' Free School in the East End of London there are, in this year 1890, 3,367 scholars. Of these 1,267 are girls, and 11 stammer. Of the 2,100 boys, 17 stammer, 6 very slightly. This shows one girl in every 115, whilst only one boy stammered in 123, or deducting the very slight cases, we get only one boy in 191: that is nearly twice as many female as male stammerers.

But there is a point which tells in favour of those who believe in the preponderance of masculine stammerers.

Whilst carefully scrutinizing my stammering males, I observed that most of them, though belonging to the better class, had a neglected and foul state of the preputium. One-third had phimosis with adhesions. If there be any connection between the phimotic condition and the vocal chorea, here is a reason why we should expect older Jews to be free from stammering.

Through the courtesy of Dr. B. W. Richardson I obtained an introduction to an eminent Jewish physician in the West End, who most kindly furnished me with some exceedingly useful and interesting information. He is acquainted with a great number of Jews and Jewesses of the well-to-do class, and he assures me that he cannot recall a single adult male stammerer. Christians in France are said to stammer in the proportion of 1 in every 1,000, in Germany 2 in every 1,000.

ETIOLOGY.

With regard to the causation of stammering, I regret, for the sake of humanity, to have to say that cruelty is amongst the commonest. That there should still exist in civilized countries, ignorant persons who beat their children, and thus induce a number of severe neuroses, is a very lamentable thing to think of. If doctors would agree to crush out this evil by example and by precept, a great diminution in the number of neurotic diseases would be the result.

That detestable form of vulgarity, known as practical joking, is answerable for a considerable number of cases to my knowledge.

Will dental disease induce stammering?

I cannot from personal observation say this; but there seems to be good ground for supposing it to

be true. If decayed, crowded, or uncut teeth are enough to induce such grave neurotic disturbances as epilepsy and blindness, it is quite conceivable that they might cause chorea.

Certainly the teeth should be carefully overhauled, carious ones removed or stopped, crowded teeth seen to, buried wisdoms sought for and liberated, and lost teeth replaced.

Dr. Robert Cooper has shown that the presence of adenoids in the pharyngeal vault is occasionally associated with stammering; he has himself seen stammering disappear, without further treatment, on removing these neoplasms.*

The case which I will describe is a capital example of adenoid stammering, combined with a paretic state of the external pterygoid muscles.

This lady is 22 years of age; she has stammered during thirteen years. On presenting herself for treatment our attention is at once arrested by two points.

1. The lips do not meet.
2. The concave contour of the chest, even during inspiration.

After more careful scrutiny two other peculiarities attract our notice.

1. Patient is unable to protrude lower jaw (pterygoid paresis).
2. Unable to breathe through the nose with any freedom.

* Mr. Yearsley, in his work on the tonsils, published in 1866, noticed that stammering improved after excision of enlarged tonsils.

On being directed to close the mouth, and then to shut the right nostril, she inhales with difficulty. This is due in part to a hypertrophy of the erectile tissues of the left middle turbinate bone, in part to a small group of adenoids in the neighbourhood of the eustachian orifice. The flat probe stops at 7.5 centimetres, and returns stained with blood, due to the presence of the adenoids.

On being told to inspire through the right nostril only, she does so with more freedom, but not with complete ease. The rhinometer passes to 7 centimetres, and comes to a sudden stop with hard resistance, due to an exotosis at the base of the right pterygoid plate of the sphenoid.

The inflation of the lungs is very defective, the longest forced inspiration lasting only eleven seconds. The chest measures, after expiration, 24 inches; after inspiration, 27 inches. The usual recurrent bronchial *râles* were found.

We noticed that this patient cannot thrust forward the lower teeth beyond the upper incisors; this is common to most stammerers. It was observed as occurring in himself by Charles Kingsley, but he attributed it to quite an erroneous cause. It is a much more important matter than appears at first sight. The muscles which push out the lower jaw are the external pterygoids. We may remember that they arise from the pterygoid ridge on the great wing of the sphenoid, from

the outer surface of the external pterygoid plate, and from the intervening portion of bone. The fibres pass back and out to be inserted into the condyle of the lower jaw, and into the interarticular fibro-cartilage.

These muscles, in order that they may act in concert with those of labial prehension and those of deglutition, derive their nerve supply from the inferior maxillary of the trigeminus.

These are the muscles which, when acting in concert, protrude the lower jaw.

Owing to the peculiar direction of their two bundles of fibres they are, when acting alternately, the grinding muscles, the most important for nutrition in the whole body. In civilized life, the knife and fork take the place of the prehensile and the biting muscles.

One can readily see that if these pterygoids do not act, the food is not prepared for digestion, and in consequence, the nervous system suffers seriously from innutrition. But unfortunately, the lower molars in this lady are not in a condition to bear any pressure, so that, without doubt, the food is too soon dismissed from the cavity of the mouth.

The treatment of this case was as follows:—

1st. The left hypertrophic rhinitis was removed by means of the electro-cautery.

2nd. The peri-eustachian adenoids were scraped away.

3rd. External pterygoid muscles were educated in two ways.

(a) By direct electric stimulation.

(b) By appropriate active, passive, and resistant movements.

First an electrode was passed up behind the soft palate to the inner aspect of the lower fibres of the external pterygoid muscle just in front of the eustachian orifice. A well-wetted disc was then applied over the malar bone of the corresponding side, and a combined current, consisting of faradic-gentle secondary: voltaic-1 milliampere gradually raised to 2, using the commutator to prevent injury to the skin, was employed during two minutes at a sitting.

4th. A trained masseuse applied electro-massage to the poorly developed muscles of respiration, by means of—

(a) Effleurage slow.

(b) Petrissage firm.

(c) Tapottement smart.

5th. With the legs and pelvis supported on a table, the trunk unsupported, the attendant aided the patient to go through all the spinal movements, viz., flexion, extension, rotation, and circumduction, especially using the dorsal portion of the spine to increase its flexibility, thus adding to the mobility of the ribs at the same time. It is a good plan to request the patient to count slowly during these

movements, to avoid the possibility of inducing an abdominal hernia.

Between each of the manoeuvres a quick forced expiration through the mouth is enjoined on the patient, the attendant firmly pressing in the lower ribs at the same time. This is followed by a very long and very slow inspiration through the nose. The air is retained as long as possible, and is then liberated quickly through the mouth.

Marked improvement was seen at the end of the first week, and soon afterwards this lady gave evidence in a law court without hesitation.

A most careful scrutiny should be made in order to detect all possible sources of peripheric irritation, for certainly many, probably most, choreas are essentially reflex. That points of irritation are more common in boys than in girls, at the period of puberty, may give a partial explanation of the supposed greater frequency of stammering in male than in female subjects.

To recapitulate, stammering is probably largely spinal. Audible speech is essentially a spinal function, though under control of a cerebral centre.

Vocalization demands three elements, viz., wind, a vocal instrument, modifying methods.

These are represented by—

- (a) The lungs.
- (b) The larynx.
- (c) The lips.

Of course the voice is modified by every part with which sound comes in contact on its way from the glottis, but with *timbre*, tone or quality we are not here concerned. Intelligibleness, depending more on clearness of enunciation, is the matter in hand, and that is directly related to the mobility of the lower jaw and the plasticity of the lower lip—two conditions which are usually, though not necessarily, coexistent.

That the brain may be a positive hindrance to a stammerer is shown by the following case:—

Miss —, aged 30. Paternal grandfather had heart disease. Father has aortic obstruction. Mother subject to rheumatism. Had scarlatinal dropsy at four, and has stammered ever since. Has a stammering brother who is also epileptic.

Has lateral spinal curvature, enlarged tonsils and cervical and aural catarrh, memory and spirits bad; has a dull and stolid look, gets recurrent vertical headache, and is much troubled with flatulence. Very shallow breathing. The right lung was much compressed owing to a lumbar curve to the right.

The erector spinæ of the left side was carefully developed by passive and active movements, and by electro-massage.

The patient was taught the rare art of breathing. The lips and lower jaw were educated to greater play and power. She read aloud daily in French,

a long breath preceding each word. The mouth was firmly closed after the inspiration, then opened wide. It was impressed upon the patient that every little word must be uttered with the utmost clearness and precision. The short words are often the most significant in the sentence.

I watched this case, seeing her at progressively longer intervals, for five months, and at the end of that time she could always avoid stammering if she wished. The general health had considerably improved.

In the autumn she went on the Continent, and whilst there she became acutely maniacal, and had to be put for a time under restraint. The interesting point is that whilst insane she poured forth an unceasing stream of incoherent speech in various languages without the slightest trace of hesitation.

We see that the suspension of brain control completely removed the stammering in this case.

A young Oxford man, aged 24, is a brother of the patient whose case has just been described. Had want of bladder control for a short time at two years of age.

As a boy he suffered from so-called "bilious" headaches.

Was exposed to rough practical joking between five and six, and then developed the hesitation of

speech. Had *petit mal* from 12 years of age, and became distinctly epileptic after being bullied at school at 16. At 17 had marked photophobia with oscillating vision. Has a long, dirty, and adherent prepuce and a very contracted state of the meatus urinarius. Gets a bad fit every month; these reached their maximum at the age of 18 when he had as many as fifty-one fits in the year. This was whilst taking a drachm of ammonium bromide every day.

He improved very much on leaving this off, and had only 12 attacks next year. He was circumcised in 1886, and next year went six months without an attack; during this time he led a life of rigid temperance. Indulgence in alcohol, of which he was inordinately fond, always induced an attack.

Before the removal of the prepuce, this patient was annoyed by incessant erotism, which entirely disappeared after the operation. The stammering improved under treatment similar to that adopted for the sister. Mosetter of Carlsruhe finally cured the stammering by making him beat time with each consonant. Thus teaching this young man a new habit, by way of curing his old one!

M. L. S., a young military officer, aged 24, has stammered as long as he can remember. He came on 13th December, 1888.

There is a great deal of general facial distortion during the utterance of the labial consonants.

He is a fine, well-built, broad-shouldered man, with fair skin and reddish hair.

Longest inspiration is 20 seconds; his chest measures 35 inches when expanded to its full extent.

In a fortnight he was able to inhale for 40 seconds and his chest girth had increased to 38 inches.

It is very comical and provocative of mirth to hear the words of command uttered in the following manner—

Pup—pup—pup—port arms!

Mum—mum—mum—march!

It irresistibly reminds one of a pathetic appeal to his parents rather than a stern command addressed to resolute warriors.

In this case the tongue, supplied by the hypoglossal or ninth pair, was compromised, but this is really unusual in stammerers.

Treatment consisted in—

1. Removing all nervines as tea, tobacco, &c.
2. In enjoining scrupulous local cleanliness of all parts, preputium to be kept retracted.
3. The nutrition and the functional activity of the muscles of lip, tongue and jaw were stimulated

by applications of gentle combined current—voltaism and faradism—ten minutes at a sitting.

4. The spinal column was made more mobile and flexible by means of Ling's exercises.

5. The muscles of extraordinary respiration were developed by the various kinds of massage associated with electricity, the attendant having one electrode attached to his arm, the other being kept applied to the nape of the patient.

6. This gentleman practised the art of enunciating by reading aloud from a French book very slowly, taking care to give especial emphasis to the short and insignificant words.

7. The words employed in military command were then uttered in the following way:—

The stammerer stands, hands resting supported with palms everted, chin kept in and a long breath is taken after a forced expiration, the lips are tightly closed, then suddenly opened wide to say "Close order, march."

After a fortnight of this treatment, there was very little stammering, so this gentleman joined his regiment. Returning to me in May, 1890, I found him much developed in physique and stammering slightly only.

At this stage I galvanised the external pterygoid muscles and with the best result, for this young officer can now speak without any hesitation at all, when he elects to take ordinary care.

PROGNOSIS.

Are there any dependable elements of forecast as to the curability of a particular case? There certainly are.

The favourable nature of our opinion depends on the usual conditions which influence us in prophesying as to the probable future of a neurosis.

Heredity, age, sex, environment and habits. Occupation and climate; some stammer at the seaside only.

Cardiac chorea often complicates St. Vitus' Dance of the lip; these cases are not easy to treat with success.

I have found it quite impossible to cure those who do not want to be benefited.

The molluscous, invertebrate, irresolute youth is past hope; it is wiser not to undertake such a case.

APPENDIX.

ON THE RELATION OF SYSTEMATIC LUNG DEVELOPMENT
TO ATHLETICISM.

It is of the utmost importance that the art of breathing should be taught before any athletic exercises are undertaken. It is quite erroneous to suppose that athleticism teaches breathing. My worst breathers have been hill climbers, cricketers, football and tennis players, cyclists, and distinguished oarsmen.

To breathe properly is not innate. We are not born breathing any more than we are born clean or courteous. Breathing, like benevolence, is an acquired art; the mass never learn it, or average life duration would be materially prolonged.

To acquire the uncommon art of breathing one should stand behind a chair, with loosened clothes, and rest the back of the hands on the upper rail of the chair back. Now bend the middle of the back quickly, at the same time blowing out swiftly through a small opening in the mouth, as if blowing out a candle. *It is necessary that the opening in the mouth should be very small.*

Then close the mouth and very slowly straighten the back, drawing in air through the nostrils. *This process cannot be conducted too slowly.* Now

retain the air as long as possible and then let it escape suddenly through the mouth.

1. Blowing out should occupy three seconds.

2. Drawing in should take sixty seconds in a man, forty in a child.

3. Retention the same as inspiration, viz., 60 secs.

The fact that careful breath education must precede all gymnastic exercises, should be impressed on drill-sergeants in the army, as well as in schools.

It seems probable that pulmonary emphysema and tuberculosis would become extremely uncommon if this were conscientiously carried out.

I am glad to say that its gravity is just beginning to be recognised. The headmaster of a northern school writes to say:—

“I have commenced your lung-drill with my boys. I find it valuable and very popular. We do it out of doors so as to ensure fresh air.”

It is interesting to note that punishments are not required in this school, *because the hand is educated with the head*. This principle underlies the systems of Froebel and of Pestalozzi. It is the method which has been found to work so admirably in Pennsylvania. It turns out useful citizens instead of crammed chicken who know all that nobody in this world wants, and absolutely nothing of the real needs of man. Few things on earth are as useless as the average “Public School” boy, when he is turned loose on the world.