Robinson (B.)

ON

CERTAIN MORBID ALTERATIONS

OF

MUCOUS MEMBRANE;

THEIR INFLUENCE ON SPEECH, AND THEIR APPARENT RELATIONS WITH DISEASED NERVE-STRUCTURE.

BY

BEVERLEY ROBINSON, M. D.,

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ON CERTAIN MORBID ALTERATIONS OF MUCOUS MEMBRANE; THEIR INFLUENCE ON SPEECH, AND THEIR APPARENT RELATIONS WITH DISEASED NERVE-STRUCTURE.[1]

The majority of medical practitioners of the present day, and some among the specialists in matters of laryngology and laryngoscopy, take it for granted whenever there are evident symptoms of imperfection, hoarseness, or loss of voice, that the true cause of these troubles is to be found within the larnyx itself. Oftentimes they feel assured that we shall find evident localized pathological conditions which sufficiently explain all the resulting morbid phenomena; and, whenever such conditions are not visible, they will be, as it were, embarked upon a sea of doubt, and almost forcibly compelled to seek for refuge in the unsatisfactory haven of hypothesis. Now, although we fully admit that in very many instances abnormal appearances of the vessels, the glands, or of the entire mucous lining of the larynx, infiltration of the sub-mucous tissue which surrounds the laryngeal cartilages, and neoplasms of divers sorts, furnish all the evidence we require to indicate to us the cause of the trouble of speech, still we are equally well aware that among what are termed the nervous affections of the larynx (including those forms of paralysis and spasm of the intrinsic muscles of that organ so clearly and exhaustively described, several years since, by Dr. Morell Mackenzie, of London), there may be found a want of power, without *visible* changes of structure, affecting some particular muscle or muscles, and which is the apparent cause of loss of voice. This loss of approximative

[1] Read before the New York Society of Neurology and Electrology, January 18, 1875.

power, if it affects the adductor muscles more especially, is shown by the fact that the cords have lost their contractility, in part or wholly, and are not brought fully, or at times even appreciably, toward the median line during the effort of phonation.

The paralysis of the adductors may affect one or both sides of the larynx. On the other hand, there may be want of tonicity in the abductor muscles, and more or less dysphonia may be the result.

While, however, loss of contractility in muscular fibre may occasion imperfections of articulate speech, a contrary condition may bring about analogous or like trouble. Excess of action in the laryngeal muscles—spasm as we find it in a most marked degree in laryngismus stridulus—may render the voice high pitched and shrill for a certain lapse of time, or may be able temporarily to abolish the functions of voice altogether.

These affections, where the function of the laryngeal muscles is involved, have been well studied, as we have previously remarked, and much of their pathology and rational treatment is to-day the acquired property of every tyro in laryngoscopy.

It has been shown also that, although many affections of the intrinsic muscles of the larynx are under the dependence of organic lesion, the result of compression of the laryngeal nerves, still there are rare cases where neoplasms of malignant type have produced, by extension to the nerve-tubes, evident alterations in their structure, and, finally, perversion or abolishment of their conductive power.

Syphilis in its later stages has also been found to give rise to exudative deposit, and in subsequent atrophy, or even fatty degeneration of tissue, we readily find the proximate cause of a lack of vitality in the muscles attacked.

Hysteria and allied disorders, though imperfectly understood, have been dwelt upon in a commensurate degree with other causes of dysphonia and aphonia. This is true particularly of women who show to any extent a more than usual nervous type. So, too, we find that certain blood-changes, viz., anæmia, chlorosis, diphtheria (about which little is accurately determined when considered merely in regard to their influence over the function of the vocal cords), are made

accountable for what may very properly be termed "vocal asynergia." But, besides the causes of dysphonia which we have mentioned, there are others which have never been studied with sufficient care, in their relations with disordered vocal function or with nerve-changes.

First among these we would comprise some of those varied appearances and conditions which have been designated by the term "catarrh."

In a late discussion before the New York Laryngological Society, Dr. Morris Asch, of this city, objected very properly to the use of this term as applied to very different states of the nasal mucous membrane. Ulcers, vegetations and chronic hypertrophy are frequently met with under the above name. A want of clearness and accurate nosological division is (in our estimation also) shown by the employment of such a manifest misnomer in wholly distinct affections.

This is the more to be regretted, as it certainly has led to much ignorant and mischievous practice.

But, the point to which we wish to draw especial attention in this connection is, the suggestion made to the Society by Dr. Andrew H. Smith, during the discussion which followed Dr. Asch's statement, on the subject of naso-pharyngeal catarrh. Dr. Smith at that time remarked that "the characteristic nasal voice, when persistent, indicated hypertrophy of mucous membrane, and that the thickening of the laminæ of the nose prevented perfect articulation of nasal sounds." Now, we have all observed this nasal tone of the voice, or "twang," as it is oftentimes called in common parlance, and it would appear to be somewhat special to Americans as a race. Foreigners, and more particularly Englishmen, speak laughingly or sarcastically of this national peculiarity. I do not think, however, that they, or we, are generally familiar with its true etiology, inasmuch as I am inclined to the belief that it is usually considered as being due to a faulty or improper use of the laryngeal muscles, or those of the palate, in our effort to produce phonetic sounds. This conviction, though popular, is unfounded in fact, and we feel quite sure that, in the large majority of instances, a nasal intonation of speech is correctly explained by the more or less complete closure of the nasal passages. And this blocking up renders it im-

possible for a sufficient quantity of air to pass freely through these cavities. Thus the distinct pronunciation of the so-called nasal consonants (*m*, *n*, *p*, *b*, etc.) is made more than difficult.

In the normal condition of the nasal passages, there is a rapid and considerable current of atmospheric air which passes backward and forward through them during every movement of inspiration and expiration. When they are obstructed from any cause, our articulation of certain words becomes thick, or, as it were, muffled and deadened, owing not so much to the fact that we talk in reality through the nose, as simply because, these air-chambers no longer existing except to a very limited extent, the normal resonance is no longer given to those sounds when uttered.

What, then, we desire to impress is, that nasal catarrh of a chronic character leads to, and is in fact characterized by, the so-called nasal sounds, and whenever we encounter this defect of speech we should examine and thoroughly explore the nasal passages, in order to become convinced whether or not hypertrophy of the mucous membrane exists.

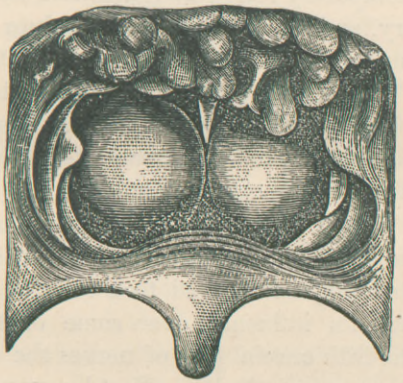
The following very remarkable history and drawing we owe to the courtesy of our friend Dr. Lefferts. In this instance the hypertrophy of the mucous membrane covering the inferior turbinated bones was so excessive as to produce *total occlusion* of the posterior nares:[1]

Case I. *Hypertrophy of the Mucous Membrane covering the Inferior Turbinated Bones.*—T. S., aged twenty-one; painter. The patient states that for years he has suffered from the ordinary symptoms of a *chronic nasal catarrh*, and that during the last four years the most noticeable symptom has been the change in the *voice*. Two years ago the right naris became gradually occluded, and six months later the same condition occurred in the left; the voice at the same time lost all resonance and became *dull* or *deadened*. He has ringing and *noises in the ears*, especially when speaking, but

[1] It will be remarked, in the perusal of this case, that the voice was "dull or deadened." As there was "marked adenoid hypertrophy," the cause of this *special* change of voice would be found *altogether* in this presence were the condition of the *inferior turbinated bones* not such as to exaggerate notably this feature of Dr. Lefferts's case.

there is *no diminution in the sense of hearing.* He states that at times, when about to speak, he apparently loses control of his voice, and that it requires a certain effort and a clearing of the throat of mucus before it can be regained. He complains of restless nights, and of suffering much inconvenience from the occluded state of the nostrils.

Examination shows follicular pharyngitis, moderate hypertrophy of the tonsils, marked *adenoid hypertrophy* at the *vault of the pharynx, and total occlusion of the posterior nares, due to the hypertrophied tissues of the inferior turbinated bones impinging one against the other and occupying the whole posterior nasal space.* Between these masses and above can be seen a small portion of the septum narium. The orifice of the right Eustachian tube is pressed upon and nearly occluded; that of the left is intact.



Tumors of divers sorts, and especially mucous polypi, taking origin in the mucus lining, or bony walls of the nasal fossæ, and filling them up more or less completely, may and do produce this same nasal intonation, but their existence is much less frequent than the condition previously mentioned, and therefore less important, viewed in this aspect. Besides, these neoplasms present features, as a rule, which lead readily to their recognition, whereas simple hypertrophy of the pituitary membrane, to a limited extent at least, may remain ignored for a long period of time, unless special attention be directed toward it as the cause of defective speech.

We shall not enter into details in regard to treatment by

the employment of the ordinary atomizer (which is in familiar use) with medicated sprays of the astringent sort, in weaker or stronger solution, and varied a great deal according to fancy, routine, or real or merely supposed efficacy.

When these sprays have been used for a considerable time, with almost if not entirely negative results, we should have recourse to compression by means of laminaria digitata, sponge-tents, or urethral bougies, of the soft variety, or made of metal sufficiently flexible to permit our bending them to any required curve or angle, in the event of our meeting with a deviation of the septum, or with an abnormal conformation of any other portion of the osseous walls of the fossæ. These bougies must, of course, be suited in calibre to the diameter of the choanæ, which will vary in individuals and also in earlier or advanced stages of disease. When compression has led to mere temporary relief, cauterization, by means of the galvano-cautery, and through an ear-speculum or other convenient instrument destined to protect adjacent parts against the action of the heated platinum wire, has been employed with variable success. If such an operation should be deemed too severe, and objected to by the patient—for what, after all, is at times a very supportable and even slight infirmity—recourse may be had to the use of the galvanic current. By its frequent employment during several weeks or months, the parts implicated may be restored to a state of healthy nutrition. Through its influence over some of the peripheral branches of the fifth cranial pair of nerves the absorbents are made to act more energetically; effused serum or plastic deposit is in this way got rid of, and permanent benefit has resulted to the patient.[1]

In some instances, the hypertrophied condition of the yituitary membrane is not considerable; it causes but slight obstruction of the nasal passages, and does not sufficiently account for the nasal sound given to the articulation of certain words.

Under these circumstances the soft palate has frequently participated in the chronic inflammatory changes of the Schneiderian membrane, and has become more or less thick-

[1] In Dr. Lefferts's case the results of treatment are not as yet accomplished.

ened and infiltrated in its mucous covering and sub-mucous layer. We may then have slight paresis of the muscular fibres which are intrinsic to this organ, and which is the efficient cause of a want of coaptation of its free border with the posterior wall of the pharynx, both in deglutition and in the enunciation of certain words which require for their pure and correct delivery a perfect physiological action of this organ. Is it merely the muscular fibre which is here diseased, compressed, or atrophied, and degenerated, as a normal consequence of contiguous inflammation; or, are the terminal nerve-filaments of the spinal accessory, glosso-pharyngeal, and the branches of the facial which distribute themselves to the glosso-palatin muscles on either side, affected with chronic neuritis?

Reasoning by analogy, and according to what we shall determine a little farther on, in considering cases of chronic pharyngitis, we would say that in these cases both explanations may be given, and both are in a measure acceptable, as *true* explanations of a loss of functional power. To substantiate the reality of instances of paralysis of the soft palate following chronic nasal catarrh, we beg leave to cite a case of Dr. Cohen's ("Diseases of the Throat," p. 144). The abstract of this history reads as follows: "A male, thirty-five years of age, had been successfully treated for chronic nasal catarrh, where the mucous membrane of the turbinated bones was much thickened. A portion of the membrane was removed with the forceps, and the local use of salt-water injections adopted. Several months after treatment was interrupted, the patient returned to Dr. Cohen, complaining of dysphagia. In every attempt made to swallow liquids, there was regurgitation through the nose. There was no trouble in swallowing solids. Examination revealed paralysis of the elevator muscles of the palate. Treatment by electricity was employed and after a time the lost powers of deglutition were restored."

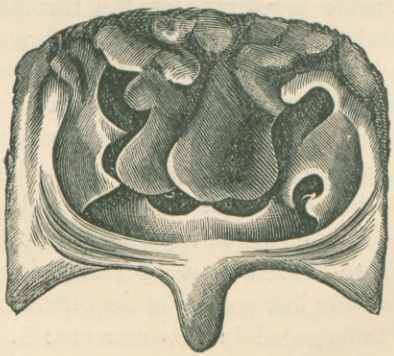
The facts to be noted in this case are: 1. The possibility of paralysis of the soft palate following nasal catarrh. 2. Its *début* after cure of the disease for which the patient was originally treated. 3. The good results of an electrical treatment. (In the case just reported, the induced current was brought into requisition.)

There is another defect of speech, occasionally met with,

and which differs from the preceding (in uncomplicated cases) in a marked degree; and this is one where *m* and *n* are pronounced as *b* and *d*, viz., instead of the patient saying, when called upon to do so, "common," he will say "cobbod," "sodg" in place of "song." The enunciation of different words is wanting in clearness; the nasal passages have lost their normal resonance and there is a peculiar stuffy, "dead" pronunciation whenever the nasal consonants are sounded.

With this defect of speech we find the patient is prone to complain of a sensation as that of a foreign body in the naso-pharyngeal cavity. There is a great deal of thick, grayish or greenish mucus which constantly trickles down behind the velum. Occasionally the sputa are tinged with blood, especially in the morning. The nose takes a flattened, pinched, contracted form from side to side, and a decidedly broader configuration at its base than is usually met with. This is almost characteristic, and differs at all events very much from the reddened and swollen appearance around the nares and in the interior of the nasal passages which we encounter in chronic cold of this portion of the respiratory tract.

The following abstract of a detailed history, generously given us by Dr. Lefferts, affords a very striking example of this disease in one of its multiple varieties:[1]



"A. W., aged nineteen, suffering from obstruction of nasal passages, associated with progressive deafness. Voice changed; marked deficiency in the nasal sounds, the tones of *m* and *n*

[1] The accompanying drawing places us under additional obligation to Dr. Lefferts.

resembling those of *b* and *d*. Rhinoscopic mirror exhibited, as shown in the drawing, a most remarkable glandular hypertrophy of the adenoid tissues at the vault of the pharynx."

Treatment for four months by all the means usually recommended, without attaining any marked result.

Reduction of the mass finally by means of the posterior pharyngeal forceps, followed immediately by thorough cauterization with solid nitrate of silver.

The affection under consideration, fortunately not very common with us in the United States (at least in its most typical variety), appears to be frequently found in certain countries of Europe, and especially is this true of Denmark, where it has first been thoroughly described by Meyer, of Copenhagen. He treats of the affection under the title of "Adenoid Vegetations," using the term "adenoid" on account of the very great resemblance which exists in point of structure between these vegetations and that of lymphatic glands. There is little doubt, to-day, after the exhaustive researches of Luschka into the normal histological structure of the pharynx, that these so-called adenoid vegetations are formed essentially by an excessive development, or hypertrophy of the glandular tissue, which enters, for a large part, into the normal structure of the posterior wall of the pharynx, and more particularly of the fornix of this organ. These vegetations are of varied consistence and configuration. Sometimes they are hard and resistent; more frequently they are soft and vascular, giving rise to abundant hæmorrhage after rough contact of any sort; or, again, after a paroxysm of coughing or sneezing. They are flattened, hemispherical, cylindrical, fimbriated, or tesselated. They may fill up the entire naso-pharyngeal cavity; or, again, they may be limited to the posterior portion of the vault. Whenever we meet with the symptoms, as first cursorily detailed, the existence of this glandular enlargement of the pharynx should be strongly suspected. In certain cases it may be absolutely affirmed, provided, however, we are quite sure that the affection is uncomplicated; but this is very rarely the case, and chronic infiltration of the mucous lining of the nasal passages is a common cause of error. Nevertheless, if these passages have been successfully treated by divers local applications already, and if

they appear to be tolerably free, we are further justified in recurring to our diagnosis of "adenoid masses of the naso-pharyngeal space." We have two methods by which we may recognize these vegetations: 1. Rhinoscopy; 2. Digital exploration. The first of these methods, when it is practicable, is by all means to be made use of. Unfortunately, the obstructed condition of the passages to be investigated—the want of any appreciable space between the posterior margin of the velum and the pharynx—which often exists (making, as we are aware, *rhinoscopy* almost impossible), chronic hypertrophy of the tonsils, and excessive intolerance of the small mirror, which is occasionally present—*all* these difficulties become so great at times, that in reality examination of this kind is utterly fruitless. Digital examination is then our only sure means to arrive at a correct diagnosis. And, with the index-finger of the right hand passed gently behind the velum, we shall generally have that peculiar tactile sensation, almost impossible to describe, which reveals to us in an absolute manner the presence of this hypertrophy of glandular tissue. Injections of astringent solutions behind the velum, or the applications of caustics by means of a brush, sponge, or curved probe, directly to these vegetations, are rarely, if ever, crowned with success. Recourse, in a few cases, may be had to a method of procedure recommended by Meyer, and which consists "in the crushing or scraping off of the tumors as near their base as possible." For this purpose an instrument is used which he thus describes: "It consists, first, of a little ring of a transverse, oval shape, having one edge sharp, although not absolutely cutting, and the other one rounded off; and, secondly, of a slender, stiff, but at the same time flexible stem, bearing the ring at one extremity, fixed into a roughened handle at the other."

We shall now describe, briefly, the operation, employing pretty nearly Meyer's own words: "This instrument is passed, with much delicacy, through the nose, keeping the long axis of the ring perpendicular, and making its blunt edge glide along the septum. The point of the index-finger and the instrument having been made to meet behind the posterior nares, the finger should now press each vegetation separately upward against the ring, while the latter should

be moved in a downward direction, so that its sharp edge crushes them off as near their base as possible, the nail or the point of the finger serving as a *point d'appui* for the instrument."

The following case shows the efficacy of this treatment: "I had cleared the obstructed passage," writes Meyer, "through the nose, removed the enlarged tonsils and the swelling of the throat and soft palate, but the manner of *speaking* remained as defective as ever. The patient, a young lady, now underwent a regular course of training in pronunciation, but with no better result." By digital examination, soft masses were recognized as almost entirely filling up the naso-pharyngeal cavity. These growths were removed by the operation cursorily described above, and "the result was most satisfactory; the voice became clear almost immediately, and the patient was able to breathe freely through the nose." Eighteen months after the operation the patient was still enjoying good health, "both as to speech and hearing."

In a certain number of cases Meyer's operation is unsuccessful in a measure, for it is found to be impossible to remove, after this method, all traces of vegetations from the naso-pharyngeal cavity. Under these circumstances we would do well to make use of the galvano-cautery. Voltoline, of Breslau, has cured cases of an obstinate and difficult type by means of this instrument. Other practitioners there are who have likewise employed it with marked benefit to their patients. We regret that we have no individual experience to record under this head.[1]

[1] The *typical* cases described by Meyer are (as we have previously remarked) rarely, if ever, seen by specialists in the United States. For our part we have never seen a single example, though we have made very numerous rhinoscopic examinations in search of them. In those instances where great hypertrophy of glandular tissue was recognized, it existed under the form of solid, adherent masses—not of pendulous vegetations.

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