

business. Rest is first named because it is of first importance, compliance with the other two cardinal principles being dependent on it. I have found business the major impediment to home treatment. It takes the courage of conviction to advise the sacrifice of a man's ambition, to say naught of his income, and yet it must be done or all other efforts, being deemed subservient to business stress, become but half-way measures; no hours are kept and no advice followed except as business permits. Mr. E. Z. was advised to this effect, made the sacrifice and reaped his reward in restoration to health and business capacity. Moreover, rest to the voice is so essential that business dictations must be strictly enjoined and even social conversations should be limited. In the treatment of tuberculosis of any other joint, as, for instance, the knee or hip, immobilization is quite the rule; why not so in the larynx?

It is good management at critical periods, and at some but not all other times, for laryngopulmonary patients to remain where skilful local treatment is available; hence, usually at or near their home city; and this plan becomes more feasible as the knowledge spreads that it is fresh air rather than any particular kind of fresh air which is required, and also more acceptable to patients since the inhospitable legend, "No case of tuberculosis received," is now so commonly found posted at resorts. Nevertheless, in the 20 per cent. of "arrests" which my series affords, it is evident that, following the completion, for a time, of the local treatment, a powerful curative influence was exerted by life in the open air, and, as this mode can be carried out with less friction amid sunshine and dryness, I have recommended at suitable periods, for the resistant types, a resort to favorable climates, giving preference to localities where, when needed, a continuation of local treatment is available, for by means of it the oft intensified distress of the patient can at least be greatly ameliorated. In fact, as it is impracticable in the long run for two physicians to be retained, it is proper to lay special stress in this connection on the recommendation that as soon as laryngeal tuberculosis is found to complicate a pulmonary case, the treatment not alone of the larynx, but of the disease as a whole, should be entrusted to one who is skilled in laryngeal technic, for the laryngeal involvement is the immediate life-threatening factor in the case and only in this way can the natural resistance of the patient be conserved and the general management of this especially desperate combination, laryngopulmonary tuberculosis, be placed in line with the present widespread determination, of which this congress is an exponent, to moderate the misery and mortality of the great white plague. Mr. E. Z. secured a house with grounds in a near-by suburb, where he fitted up a corner sleeping porch, equipped himself adequately for bodily warmth and, notwithstanding the severity of the winter season at Chicago, slept out of doors every night throughout the year, not excluding the wildest nights of wind and storm. Such an extreme limit of night exposure, however, is not usually commendable and may be positively detrimental. Laryngopulmonary patients, of the non-resistant type especially, can not endure inclement night exposure, as in them it tends, by aggravating the irritability of the larynx, to increase the pain in swallowing and to cut down the nourishment. At first on sleeping out, even the average cold at night and the early morning dampness generally excite coughing spells, but the re-

sistant types soon harden to a reasonable degree of cold, beyond which point discretion is the better part of valor.

#### CONCLUSION

The following points have been shown:

1. Tuberculous hyperplasia in the larynx has not infrequently undergone resolution, in whole or in part.
2. Unmistakable tuberculous ulcers have occasionally healed and remained healed.
3. Favorable negative qualities have characterized in common the cases which have proven to be capable of arrest or recovery; for instance, the laryngeal hyperplasia has been less progressive, less diffused and less prone to ulceration; the underlying pulmonary infection has been less extended; there were fewer tubercle bacilli, a lower pulse rate and less emaciation.
4. These qualities persisting, the cases which are capable at least of a hopeful resistance, can be differentiated, thus justifying every effort at any sacrifice to invoke the methods likely to arrest the disease and lead to recovery, including intralaryngeal surgery when the lesions in degree and kind are suitable for it.
5. In like manner the non-resistant type should be recognized and those patients guarded from the privation and distress which surely follow in the wake of an indiscriminate exposure to the elements and to the hardships of travel in distant climes. In them surgery is contraindicated, excepting to prevent air hunger and suffocation or to prevent starvation by the removal of some particularly painful impediment in swallowing.

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## ENLARGEMENT OF NASAL SINUSES IN YOUNG CHILDREN BY ORTHODONTIA

### RESULTS IN A NUMBER OF CASES \*

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My friend, Dr. G. V. I. Brown, of Milwaukee, in his excellent paper read before this section last year, refers to having used direct and rapid pressure to expand the maxillæ for some years prior to the report on this subject made by Dr. Nelson M. Black, also of Milwaukee, in 1901. Dr. Charles E. Quimby, of New York, reported one of his cases before the Academy of Medicine in 1903, in which report he described the straightening of the nasal septum by means of an apparatus constructed and attached by himself, which had opened the suture of the upper maxillæ.<sup>1</sup>

Dr. W. Pfaff, court dentist at Dresden, Germany, in 1904, read a paper at the Congress in St. Louis, entitled "Stenosis of the Nasal Cavity Caused by the Contraction of the Palate and Abnormal Position of the Teeth; Treatment by Expansion of the Maxillæ."

In 1905 I read a paper at the annual meeting of the British Medical Association, entitled "The Influence on Development of Arranging Irregularly Placed Teeth into Normal Positions."

The incentive to the preparation of this 1905 paper was the success that had seemed to follow certain opera-

\* Read in the Section on Stomatology of the American Medical Association, at the Sixtieth Annual Session, at Atlantic City, June, 1909.

1. In "Irregularities of the Teeth" by Dr. Eugene S. Talbot, 1901, page 74, attention is called to fourteen cases in which he opened the suture in children from twelve to sixteen years of age, previous to 1894.

tions on the temporary teeth of young children, which operations I began in 1899, and have been following up ever since.

These operations consisted in gradually spreading the arches of temporary teeth, when it became evident that Nature was not doing the work herself, thus carrying outward to the proper places the crypts of the permanent teeth, which then erupted more nearly where they belonged.

As a result of these operations I noticed in every case what seemed to me an increased development in the nasal passages, a straightening of the nasal septum, and a diminished tendency to take cold. I need not mention further the marked improvement in personal appearance, beauty, sonorousness of voice and ability to enunciate clearly and distinctly, as well as to masticate properly, and to have clean teeth not predisposed to decay.

Distrusting my own powers of observation, I began in 1906 to request assistance from several rhinologists, who were better able to make these observations than I, and who were at the same time unbiased.

These physicians have examined several children before anything was done to their dental arches; and later, when I had accomplished about all the spreading that I intended, they have in several cases examined again.

I shall have the honor to present at this time a report on two or three of these cases in which the arches could not have been subjected to rapid spreading, as the work was done on the temporary teeth. At the same time I shall report on some other cases that might have been subjected to rapid spreading with advantage, but for certain reasons it was thought best to work with the ordinary expansion arch. The results certainly are gratifying, although they seem to differ from the conclusions of Dr. Faught, even as Dr. Nelson Black in his paper before this section last year found his "clinical results entirely to disprove" Dr. Faught's assertion that expansion methods could not relieve stenosis due to adenoids or septal irregularities.

I have in perhaps twenty or thirty cases succeeded in relieving nasal stenosis by gradual expansion of the arches of temporary teeth, promoting thereby nasal breathing, which function, when it is performed, tends to produce a normally widened nasal passage. I shall allude to two apparent exceptions to this during my report.

My conclusion is that in those cases in which a rapid spreading of the upper maxillary is applicable—that is, in which permanent teeth are sufficiently developed and erupted for the operator to be able to attach his apparatus firmly and to apply the necessary force promptly—that method is distinctly preferable for the correction of the class of nasal stenoses that has been under discussion, and for the reasons given by Dr. Brown last year.

When, however, the difficulty is recognized early enough to have it corrected by means of apparatus attached to the *temporary* teeth, I have found that the latter method, being to a great extent preventive, becomes distinctly preferable.

When slight pressure is brought to bear in these regions to overcome the "restrictions in the region of the palate and alveolar structures," it is in the direction of normality that the pressure is applied, hence the resumption of the proper functions of the parts is soon brought about, and with the performance of function

comes development, and it comes so easily in many cases that we hardly realize that the deformity has been overcome until we see before us a normal condition.

On Nov. 10, 1906, Dr. T. Passmore Berens examined a little girl, 9 years 9 months old, and made the following note:

L. G. protruding upper teeth; rather high arch to the palate; nose shows deflection of the cartilaginous septum, extending into the vomer and perpendicular plate of the ethmoid, the deflection occupying the whole of the middle meatus of the nose from just above the anterior end of the inferior turbinate and causing a strong contact between the septum and the middle turbinate; tonsils present, but not enlarged; but very slight adenoid tissue in the vault of the pharynx. Left side of the septum shows a concavity of the deflection to the right.

On March 14, 1908, came the following report in regard to the same patient:

I have just examined L. G.'s nose, and find a most marked difference in her nasal septum in that it is now almost straight, and whereas before it was deflected sufficiently to be in contact with the left middle turbinate there is now perfectly free breathing space between these two parts. The concavity that was present on the right side is practically lacking.

Dr. Berens, on April 4, 1908, examined the nose of a little girl, 14 years of age, and wrote:

Examination revealed a sigmoid deflection of the septum, the main portion of the deflection being high up on the right side, where the cartilaginous septum is in contact with the middle turbinate. The middle turbinate is not enlarged. The septum on the left side curls into the inferior meatus by a sharp edge occupies about one-third of the inferior meatus, and gradually diminishes to become lost in the vomer. There is a slight thickening of the septum on the right side near the floor.

April 21, 1909, the record of Dr. Berens' examination of this patient reads:

The effect on the nasal septum is very marked. In fact, the deflection that was present is now almost entirely absent, although the thickening on both sides persists.

The septum has almost entirely straightened, and this straightening necessarily has resulted in a complete opening of the nostril that was almost occluded by the previous deflection of the septum, so that I now consider the nasal passages to be in a normal condition.

The next is an experimental case: Miss J. J., aged 16; first examined by Dr. W. Sohler Bryant:

April 10, 1907: Nose and mouth-breather. Marked nasal insufficiency. Developmental nasal occlusions 3.9 mm. maximum nasal compressibility at edge of nasal bones; 2.3 cm. from apex of nasal arch to apex of spine of superior maxillary. Nasal orifices measured 4.7 mm. by 11.0 mm.

May 13, 1907: Nasal breathing easier.

June 13, 1907: Still further improvement in nasal capacity.

Oct. 21, 1907: Nasal air supply sufficient. Nasal fossæ and nares well open.

Nov. 1, 1907: Breathes well through nose most of the time. Nasal orifices, 5.5 mm. x 14.0 mm. Can get more than enough air through nose. Three cm. from apex of nasal arch to spine of superior maxillary bone. The dilator nasi motionless.

From the above observations, extending over six and one-half months, we see that the capacity of the nose increased greatly during the time the patient was under treatment for expansion of the dental arch.

The next case is that of a little boy, 7½ years old, for whom it was determined to spread the dental arches without removing the adenoids, his father recognizing no need for such procedure. Dr. Bryant's report is:

Feb. 18, 1907: Nasal insufficiency, but a nose-breather. Narrow, slightly vaulted palate. Nasal septum showed spur on the left side. Hypertrophied tonsils and adenoids.

May 3, 1907: Nasal breathing slightly improved. Adenoids and hypertrophied tonsils, and mucopurulent nasopharyngitis.

Feb. 11, 1909: Palate seems normally developed. Septum appears straight. No spur. Nasal fossæ large. Free nasal breathing.

From the appearance of the patient when I first examined him I expected that the nasal breathing would continue to deteriorate and that the nasal septum would become more irregular. Contrary to this expectation, when I saw the patient on February 11, the nasal breathing was much improved, and the nasal septum was normal. The patient still had hypertrophied tonsils and adenoids.

Dr. Charles E. Quimby writes:

The possibility of straightening more or less the bony nasal septum through change in the relations of the superior maxillæ is no longer open for discussion so far as I am concerned. I have done it. In the case reported the deformity was purely developmental and the result has been perfect and permanent restoration of nasal respiration. Any "spreading of the upper dental arch" which changes the relations of the maxillæ must affect the nasal septum. In my case the maxillæ were separated by apparatus acting on the teeth, as shown not simply by separation of the central incisors but by opening of the suture the entire length of the hard palate. In another case under my observation change in the dental arch was followed by slight enlargement of the nasal meatus, but without change in the septum.

It would seem obvious that this method of correcting nasal defects is applicable only to developmental deformities, and that the best results will be obtained before the maxillary suture is finally closed.

My two cases that seem to be exceptions were these:

A little girl, whose arches I began to spread when she was  $7\frac{1}{2}$  years of age, improved in health and strength and ruddiness constantly for two years from the time the apparatus was first put on. Letters from her father and her mother allude to this because they both were apprehensive that the strain would be too great for the child, who had scarcely recovered from a severe and dangerous illness. They were kind enough to write me of her good condition, and that she had not suffered a day during the operation. I was correspondingly pleased. I have just learned (after three years) that her father, who is a physician, finds the inferior turbinates hypertrophied on both sides, "so much so as to nearly meet the septum. On the right side the middle turbinate is in contact with the septum," and he fears an operation may be necessary.

The other case was that of a boy, about 15 years of age, who was brought to me by Dr. Bryant to inquire why there was still a deviated septum after the boy had undergone in Boston the ordinary operations for regulating the teeth.

A careful examination with measurements very soon revealed the fact that, while the teeth had, indeed, been regulated the arches had not been spread at all; hence there could have been no enlargement of the nasal passages or straightening of the septum, and I recommended the application of direct pressure by means of a screw and the prompt separation of the maxillæ.

Epitomizing my experiences and those of all whom I have consulted, it would seem that the best results obtainable, both for nasal passages and the dental arches, are those which follow on orthopedic or orthodontic operations, commenced as early as the diagnosis can be clearly made; and these operations are accomplished by gradual pressure, stimulating normal growth; but when the child has reached 15 or 16 years of age or more the nasal septum is most promptly and easily straightened by the application of positive force, rapidly applied,

and retained until the nasal troubles are remedied, after which the dental arches can have the ordinary orthodontic treatment, which they may then be found to need, involving the osteoclastic changes on the further side of the pressure, with corresponding building-up on the hither side.

Since writing the above, two letters have been received—one from Dr. John J. Cronin regarding a little patient of his, 6 years old, supposed to be a perfectly healthy baby until attention was called to the fact that his temporary teeth were a little crowded, and that the permanent teeth would have difficulty in erupting properly. An examination revealed ten or more cavities in these temporary teeth requiring fillings.

The one thing that marred the picture was that seemingly insufficient exposure would often result in attacks of croup. A spreading apparatus was applied to the temporary teeth. After about ninety days the doctor writes:

The spreading of his dental arches is synchronous with a less irritable disposition. He has not had an attack of croup in the past three months, and, as far as one in good general practice can judge, there has been more croup than usually comes. The boy's general aspect has changed, and there can be no question that his nervous balance is greatly enhanced. The apparatus at no time has caused him the slightest inconvenience. From a thin peaked-faced child the boy has developed into a broad square-jawed individual. The nasal chambers have increased in size. I regret I could not follow out your request to measure the chambers before and after, as when I first visited the instrument shop they did not have the calipers.

The other letter to which I am permitted to refer is from Dr. W. K. Rogers, of Columbus, Ohio, to Dr. C. A. Hawley, now of Washington. Dr. Rogers writes:

The W. children, whose adenoids and tonsils I removed a year ago, were brought in for observation to-day (April 23, 1909). It is worthy of note that in the older child whose upper alveolar arch you have been treating, and in whom, as well as the younger, there was a distinct element of nasal stenosis when I first saw them, improvement in nasal respiration has been much more marked than in the younger child, for whom you have only just instituted this procedure.

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#### ABSTRACT OF DISCUSSION

DR. EUGENE TALBOT, Chicago: If the essayist had intended to take up the literature on the subject, it is strange he should not mention the 14 or 15 cases I recorded in the nineties in my work on "Osseous Deformities of the Head, Face, Jaws and Teeth" and "Irregularities of the Teeth." They were the first 14 cases ever placed on record. This operation is becoming one of the greatest for the relief of humanity.

DR. J. H. W. RHEIN, New York City: I want to echo the sentiments of Dr. Talbot on this matter, that the value of presenting this treatment, not only to the laryngologist and the general practitioner, but to the world at large, is of inestimable value in the correction of one of the most unfortunate deformities that we find in childhood. I do not know whether Dr. Bogue intended to present this as something novel, for not only is the work of Dr. Talbot in this respect well-known, but these results have certainly been understood in our specialty for the past twenty-five years and have been more or less generally practiced. My record books will show a number of cases of children started as early as these for the accomplishment of this result. I do not believe there is anything new in the past ten years in the handling of the jaws before the eruption of the permanent teeth. A number of the older men are constantly decrying the handling of the jaws of children before the permanent teeth are erupted, claiming that our interference in this respect is frequently called for before we see what nature will do for the child, but

it is the history of such cases as portrayed by Dr. Bogue that should put an end to criticism of this kind, because nothing is going to be more beneficial in the physical improvement of the individual than to eliminate insufficient breathing as early as possible in life.

DR. GEORGE V. I. BROWN, Milwaukee: Dr. Bogue's measurements show that he does get results. Fine spun theories are all very nice, but exceedingly busy men have not time to go into the details of these matters. They want things done so that they can recognize them, and done promptly. I was glad to hear Dr. Bogue report some cases that were not so successful. He has given us much food for thought in this direction. The fact that in one of his cases there appeared to be a tendency to reversion to the original condition, when it was apparently cured, is exceedingly interesting. I hope Dr. Bogue will follow this case up, determine the final results, and report later.

DR. ARTHUR ZENTLER, New York City: I happened a short time ago to speak to the former director of the Metropolitan Opera House School for voice production. This lady told me that whenever a young pupil applying for admission had defective sounds, she sent the applicants to the rhinologist for examination. After a time she found such improvements that she inquired what caused such good results. The rhinologist replied: "I send them to the orthodontist to spread the dental arch and get a larger opening into the nasal passages." I think this statement shows as much as possible the results Dr. Bogue has spoken of.

DR. E. A. BOGUE, New York City: My only object in writing the paper was to bring testimony. As Dr. Rhein has stated, there is nothing new in it, but so many were inclined to cast discredit on the statements made by some orthodontists that I thought it worth while to get the testimony of the rhinologist who is entirely impartial. The only other feature worth mentioning was the one that my friend Dr. Brown mentioned in his paper, that this work can be done when rapid spreading is not possible.

## CONSERVATIVE SURGERY FOR THE TREATMENT OF DISEASES OF THE MANDIBLE \*

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Exsection and resection of the mandible are followed by greater mutilation and disfigurement than follow any other oral or facial surgery. When the continuity of the lower jaw is broken by the removal of considerable sections of the bone, facial deformity is at once and permanently made, and no means of restoration by prosthesis, or otherwise, has as yet been suggested or employed, which meets the demands either cosmetically or functionally in any degree satisfactorily, either to the surgeon or to the patient. This statement may be qualified in a slight degree by excluding a few cases in which only a small section of the mandible has been removed in the anterior part of the bone, and there are present in the two fragments of the jaw a number of good sound teeth firmly set to which a bridge may be secured; and even in such cases, owing to the heavy strain to which such teeth will be subjected, it is unreasonable to expect them to withstand permanently the necessary strain of mastication without finally becoming loosened and lost.

Those who have made staying appliances for this purpose realize the many difficulties in the way. Muscular force necessary for ordinary mastication exceeds the strength of any rigidly applied fixture. That such fixtures are frequently broken by the patient, even when they are most scientifically and carefully constructed, is

well known. Muscular traction on the remaining portions of an exsected mandible, in ordinary mastication, causes an outward rotation at the base of the bone, through the action of the masseter muscle on closure of the mouth, and the mylohyoid muscle turns the base of the jaw inward when the mouth is opened. If a rigid appliance is used for the support of the two remaining portions of the jaw, the metal employed for this purpose, if used in size practicable in the mouth, will, by reason of long continuous strain, crystallize and break, no matter of what metal it may be constructed. To construct such an appliance sufficiently strong to withstand mastication and not to loosen the teeth, joint must be employed on each side so that the two parts of the bone may have some free movement, thereby putting less strain on the metal connection and teeth to which it is attached.

As you will note, reference has been made to prosthesis for the most favorable cases only, that is: those in which a section has been removed from the anterior portion of the jaw. If the continuity has been broken by removal of a considerable section in the posterior portion of the jaw on one side or the other, the difficulties are greatly increased. If the remaining portion of a jaw in such a case is supported and held in its normal position until cicatrization has been completed, about all has been done that can be done in such cases. This may be done by wiring the teeth of the longer fragment to the corresponding teeth above, or by soldering a flange to bands cemented to the teeth of the remaining portions of the lower jaw in such a manner that when the mouth is opened the flange will rest against the buccal surfaces of the upper jaw, preventing cicatricial contraction from displacing the remaining part of the bone. Even though one of these methods be adopted, the function of the remaining part of the jaw is extremely poor. Following resection of the entire body of the jaw or even one-half of it, there is little hope for artificial restoration which can promise great value, either for mastication or for cosmetics.

When the surgeon realizes the truth of the foregoing statements he should be slow in deciding on an operation so radical as exsection or resection. He should be sure that the life of the patient can be saved only by such an operation; and I am of the opinion that it is good practice, even in some malignant types of disease, unless the bone throughout its entire thickness is involved, to do an operation which will save at least a small part of the body of the jaw in its continuity, taking some risk of recurrence rather than maiming the patient for life. Take, for instance, the most prevalent type of malignant tumor of the mandible, the giant-cell sarcoma. Since in this type of sarcoma metastases are not early formed, a conservative operation may first be done, then the case subjected to ray energy and watched closely. If the growth recurs, it is not yet too late for the more radical operation.

My experience has been such that I feel fully justified in this procedure. I have, in several instances, removed most of the jaw, leaving for support a sufficient part of the bone in which the diagnosis of giant-cell sarcoma had unmistakably been made, and there has been no recurrence after a period of fifteen years. I have done a much larger number of operations of this kind for similar cases, which after several years there is no indication of return. Unless the disease has progressed so far that an entire section of the bone is involved, I save that part which appears uninvolved, and feel justified, though there should occasionally be recurrence.

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