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Observe — Compare — Reflect — Record.

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ner in dentistry might as well make up his mind from the first that he cannot hope to have for a patient every person who consults him. He must learn to discern character, and will do himself the greatest service, in not a few instances, by letting some patients go. If he expects to be a man of recognized character in his community, he must insist, first of all, on a relationship of dignified reserve with most of his patrons. He must remember that his patrons' time is often quite as valuable, if not more valuable, than his own. He must be truly conscientious, or he will soon be found out. And he must not be afraid to charge for every service he thinks he should be paid for, even if his patient objects.

Many dentists drag out a miserable existence, after a few years of practice, simply because they have allowed matters to drift into a shape permitting of their receiving but little money for their services. They are missionaries in the field, and that without even the honor of being recognized as such; imposed upon by the poor and the well-to-do alike; waking up in the end to find others around them, merchants, artizans, clerks, and laboring

men even, far more successful in the long race after this world's goods. These men are pitiable indeed. What such dentists need is pluck to charge adequate fees. Insist on a professional fee! Give patients plainly to understand that they must economize in some other direction than on their dental bills; as a well-known dentist once said, "I find my patients rate me just about as I rate myself."

A dentist should never lose sight of the fact that in devoting his life to dentistry he has denied himself the privilege of many men around him, namely, to make a fortune. Yet nothing requires of the dentist more careful judgment and discrimination than the making of fees.

All the foregoing may be of little significance to many readers of the *Cosmos*. But there are many who need to reform themselves, their methods, their patients. It is never too late to begin. Raise your standards of excellence; raise your fees, openly, avowedly.

Of course this whole matter resolves itself into the question of what is in the man, the dentist—as we all, no doubt, understood in the first place.

RHINOLOGY AND ITS RELATION TO ORTHODONTIA.

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(Read before the Section in Orthodontia of the First District Dental Society of New York, December 31, 1908.)

THE relation of obstruction in the upper air-passages and mouth-breathing to irregularities of the teeth and jaws has been frequently discussed, and thereby a closer relationship has been established between the dental practitioner and the rhinologist. Experience has demonstrated the value of co-operation in the two specialties in the advancement of preventive medicine and surgery.

The scientific dentist should no longer be satisfied with a thoughtless extraction or a mouth filled with beautiful mechanical work, neither is it sufficient for the rhinologist to simply clear the nasal and post-nasal passages. Defects in occlusion and asymmetry of the jaws and face should be noted as well as the pathological condition of the nose and nasopharynx; besides, the habits formed by each patient should be studied. Inspec-

tion is especially important in patients between four and twenty, for during this developing or plastic period the best results of corrective surgery of these parts can be obtained. Much can be learned by external inspection and palpation with the mouth closed. Good health, as well as facial beauty, depends on a normal, harmonious, symmetrical development of the mouth, teeth, and nose. The dentist guards one of these important avenues, the rhinologist the other, and both have much in common. As the nose and nasopharynx demand care at the very beginning of life, so the teeth demand attention from their first appearance, and this care should continue regularly to the end.

Obstruction, faulty development, bad habits, and malocclusion can be largely avoided in the beginning. By care and watchfulness much can be done to bring about symmetry. At birth we have very little face in comparison with the rest of the head. This develops afterward, and does not reach its full development until about twenty. A slight deformity of any portion during its growth is likely to throw the other parts of the face out of line. Defects and faults are apt to enlarge with development and become less easily corrigible. Heredity has much to do with the general shape of the face. Its functional usefulness, however, depends largely on development and habits. The nasal fossæ at birth are usually well formed and functionate properly. The method nature has devised for the infant to acquire food enforces *nasal* respiration in the very beginning. With no preceding teeth to influence it the deciduous denture in the healthy child is usually regular in alignment and occlusion. In order to have the maxilla and mandible develop right occlusively, it is important that the arches of the deciduous teeth should be unimpaired.

With the expansion of the jaws for the other and larger teeth of the second denture, irregularities become frequent and noticeable. Guided by the deciduous teeth, the first permanent molars usually erupt correctly. It is generally accepted that these are most important factors in the future development of the jaws;

they should therefore be well cared for, and normal locking of the cusps should be obtained.

Angle has examined several thousand cases of malocclusion with the following results:

	Per cent.
Arches in normal mesio-distal relation	69.2
Lower arch distal to normal in its relation to the upper arch	26.6
Lower arch mesial to normal in its relation to the upper	4.2

The causes of the two latter, contributing approximately 31 per cent. of malocclusion, are interesting.

Nothing in nature is absolutely symmetrical—nutrition, development, and habits govern the final result. The shape of the face depends much on the second dentition. Until this period development has been mainly in the cranium; then the accessory sinuses enlarge, the nasal fossæ increase in height, and the alveolar arches also enlarge. The face develops. Equality of the size of the nasal fossæ and the proper use of these passages is most essential at this period. The future size and shape of the nasal fossæ depend on the size and the descent of the antra of Highmore, the symmetry of the hard palate and the premaxillary wings. Likewise the shape of the mouth depends on the symmetrical development of the halves of the hard palate, and the proper position of the premaxillæ and the maintenance of the normal occlusion of the teeth. Most of the deformities occur in the upper jaw, and when one thinks of the many changes occurring during dentition and the liability to accident, faulty nutrition, and deforming habits, it is wonderful that nature unaided is so harmonious. As aids to the proper eruption of the second denture you all recognize the importance of saving the deciduous teeth; on the other hand, too long retention of these teeth causes trouble. The early loss of a tooth is often an important factor in malocclusion and asymmetrical growth, for each tooth is needed in the construction and maintenance of the normal arch. In malocclusion we also recognize the influence of tardy eruption of permanent

teeth, supernumerary teeth, disuse of teeth and accident, also an abnormal frenum. Habits, the leverage from sucking the thumb, lip, tongue, coat-sleeve, or nipples, if persisted in, are also frequent factors in malocclusion and deformed arches. Mastication is also important in developing the dental and maxillary arches.

Of all the various causes of asymmetry in the development of the face and the dental and maxillary arches, mouth-breathing is the most potent and to my mind most constant. This, unfortunately, is especially common in early years during the formative period, just when its effect in causing asymmetrical development is greatest. The development of the muscles, bones, and functions of the nose, cheek, and tongue are interfered with, as well as the occlusion of the teeth, of course depending on the degree of mouth-breathing, the length of time it is practiced, and the period of development.

Before discussing mouth-breathing from a rhinological standpoint, it is necessary to have certain facts well impressed. The normal entrance of the air to the lungs is through the nose and not the mouth. Departure from this rule for a considerable period of time is most disastrous, especially in the young. This habit, quickly and easily formed, leads soon to pathological changes. The nose is so constructed that it warms to body heat, moistens to saturation, and strains from dust and bacteria all air as it passes through its chambers. It prepares the air for its reception into the delicate bronchioles, where it gives up its oxygen to the blood. The nostrils and nasal fossæ should be of the same size and the air-current passing through them should be approximately equal. The mucous membrane lining the chambers of the nose is most sensitive. Under normal conditions it is bathed with mucus constantly, but never in a large enough amount to require the use of a handkerchief, except a pathological condition be present. The fluid—one pint per day—moistens the inspired air and the mucous membrane of the nasal fossæ, col-

lects the dust and bacteria, and by an arrangement of cilia, whips foreign material back toward the entrance of the nose. The upper part of the nose is the olfactory portion, so nasal breathing is necessary for a proper perception of odors. For good smelling the olfactory passages must be clear, free from abnormal growths or perverted secretions, and the mucous membrane must also be moist.

The internal openings of the Eustachian tubes are situated at the sides of the post-nasal space, just posteriorly to the openings of the nasal chambers and on a line with the inferior turbinates. These tubes tend to open during the act of swallowing, providing they are not covered with secretion or blocked by foreign growths. Therefore, it is important that the post-nasal space should be free from obstruction in any form, whether of secretion or lymphoid tissue. It is also a fact that many eye diseases are caused by pathological pressure-changes in the nose. Besides, the quality and character of the voice depend on the shape and clearness of the nasal chambers, the post-nasal space, and the mouth. It is obvious from these statements that much depends on the nose and mouth being rightly formed, free from obstructions, and rightly used. Whenever there is persistent mouth-breathing something is wrong, and its cause should be sought for and removed, if possible, for the sake of good health, good hearing, good smelling, good eyes, good speech, good teeth, and facial expressions.

Normally, air should be both inhaled and exhaled through the nose, and with equal volume through each nostril. The mouth as an air-passage should be used only occasionally during hurried respiration for temporary need. Habitual mouth-breathing means obstruction in the nose or naso-pharynx, or *habit* if that obstruction has been removed. Anything which tends to narrow the caliber of these passages makes respiration more or less difficult and tends to increase and pervert the secretions and produce mouth-breathing, especially at night. Good ventilation and drainage at all

at night, and heavy, snoring respiration are the rule. The child is suffocated, choked up, croupy, and its sleep is broken and disturbed; it frequently talks and moans in its sleep, has night terrors, sometimes enuresis, and is apt to have a cough at night. It often has difficulty in nursing and sometimes the chest is deformed, producing what is called chicken-breast. Prolonged mouth-breathing gives the characteristic picture of the lower jaw dropped, the lips parted constantly, the upper lip foreshortened and thickened, leaving the upper incisors uncovered. The muscles of the face are pulled down so as to give an elongated and pinched appearance, with a vacant, listless expression. The nose is narrow and pinched. The upper jaw, by constant pressure of the cheek muscles and lack of lip and tongue resistance, is elongated in the antero-posterior diameter. The alveolar process is pulled down, and the arch becomes high and V-shaped, and the teeth become irregular. This condition does not occur with the deciduous dentition but with the second denture, when by the molding processes the central incisors are made to crowd each other or overlap. The breath is fetid, the patient cannot blow his nose well, and the voice is affected, becoming nasal in character. The patient has frequent colds, earache, and dulness of hearing is the rule. The teachers say the pupil is stupid or inattentive, when the whole cause is the presence of adenoids.

The most prevalent and harmful period for adenoids is between four and eight. Thorough removal at this time is essential, for then good health and the normal dome-shaped arch will be formed and proper occlusion will be secured, providing bad habits have not been formed and persisted in. Head-bands and plaster to keep the mouth closed after operation are often desirable, and regular exercises in nasal inhalation and exhalation are always advisable.

Ballenger says it is almost a universal rule that when tonsils are hypertrophied adenoids are also present. On the other hand, in patients with adenoids enlarged

we may have only 30 per cent. with enlarged tonsils.

There has been much discussion about the faucial tonsils and their functions. Normally they should be about the size of almonds, but when enlarged they are frequently of the size of horse-chestnuts. They are often the entering point of infection. Irregular and decayed teeth produce a filthy mouth, and the warmth and lodging-places favor bacterial growth. The tonsils are mesh-like, filled with little crypts—from eight to twenty—and they have therefore sometimes been called human sponges. Through these little crypts the tonsils become infected, and are therefore a source of danger to the individual. With tonsillar enlargement mouth-breathing is favored, and sore throat common. Carious teeth may be the starting-point of faucial infection. Whatever the functions of the tonsils may finally be proved to be, there is no doubt that enlarged tonsils easily become diseased and are a menace to health, and because of their position have a causative effect in mal-occlusion; therefore they should be removed. It is interesting to note that from 4 to 10 per cent. of the tonsils removed show local tubercular lesions.

Normal nasal breathing is possible only with properly developed nasal chambers. Deviation of the septum is a frequent cause of mouth-breathing. Normally the septum should be straight, but we frequently, on one side or the other, find spurs, ridges, or deviations. Commonly we say the deformity is due to trauma or faulty development. The septum in front is formed by the quadrangular cartilage, which articulates with the vertical plate of the ethmoid and the upper edge of the vomer. The tip of the vomer runs forward and fits into a groove formed by the premaxillary wings, which spring upward and outward from the posterior part of the premaxillæ. Just above the latter is the lower portion of the quadrangular cartilage, and the nasal spine projects forward from the upper portion of the premaxillæ; these do not unite until the first year. In the premaxillæ are situated

times are necessary to these parts. Mouth-breathing, if not corrected early, causes the facial muscles to become drawn down. The round face of the baby develops long and narrow; there is a pinched and triangular appearance around the alæ of the nose; from lack of use the alæ collapse; the hard palate and alveolar process, instead of forming the perfect dome-shaped arch, are molded by the lateral pressure of the facial muscles into a high, irregular arch. The upper lip is drawn up so that the pressure resistance to the protrusion of the central incisors is lost, and the push of the tip of the tongue is not opposed. Pressure at the sides of the jaw is constant, always tending to a pushing forward of the teeth, so that often the central incisors crowd each other or overlap and the lateral incisors are often out of occlusion. The upper incisors decidedly overbite the lower ones, and the cutting and biting functions of these teeth are thereby impaired. We must remember that the roof of the mouth is the floor of the nose. Therefore, with a high arch the floor of the nose is raised, and drainage of secretion is interfered with, retention is favored, and a nidus for bacteriological development is produced.

One of the most frequent causes of mouth-breathing in children is the presence of adenoids and enlarged tonsils. In the nose and throat clinic of the Boston Dispensary during the years 1906 and 1907 there were treated 2663 children of fifteen years of age or under. Of these the book diagnosis shows the prominent pathological conditions to be adenoids and enlarged tonsils, one or both—64.8 per cent. had this diagnosis. The next diseases in order of frequency were acute tonsillitis 6 per cent., chronic rhinitis 5 per cent., deviation of the septum $4\frac{1}{2}$ per cent., acute rhinitis $3\frac{1}{2}$ per cent. These conditions represent about 85 per cent. of the cases examined.

Last year the department of school hygiene in the city of Boston most successfully inaugurated a system of school nursing. In the recently published report of the superintendent of schools the

nurses' work is compiled, and I find that during the school year of 1907-08 these nurses had their attention called to and investigated 11,743 cases of nose and throat diseases, and of these 7056 or over 65 per cent. were adenoids and enlarged tonsils. Next in frequency was acute tonsillitis with 1373 cases, or 11 per cent. About three-fourths of the complaints were from adenoids or some tonsil condition. These figures are significant, and should be borne in mind by the dentist as showing the prominent factor in causing mouth-breathing in children, which in turn favors malocclusion of the teeth.

Holt says: "Speaking of adenoids, it is a very common condition, and one very much neglected by the general practitioner. It is the source of more discomfort and the origin of more minor ailments than almost any other pathological condition."

Adenoids are hypertrophied lymph glands situated on the upper and posterior wall of the naso-pharynx. The glands are sometimes called the third or pharyngeal tonsil. They are less fibrous in their make-up than the faucial tonsils. The normal lymphoid tissue, by irritation, inflammation, and infection, especially during early childhood, becomes hypertrophied and so forms the adenoids. Scarlet fever, measles, and influenza are especially exciting causes. Children are very susceptible to lymphoid infection, because this tissue is soft and friable, which is not so with adults. Adenoids occur most frequently between the ages of four and fifteen, but they may be present at any period of life. While the tendency of this growth is to atrophy at puberty, it may not do so, and operation should never be delayed because of the hope that the adenoids will disappear.

The symptoms of adenoids depend (1) on obstruction of the air-current through the naso-pharynx, (2) on interference with the movements of the soft palate, and (3) on the increase in secretion from the adenoids. The smaller the naso-pharynx the greater the obstruction from adenoids. Mouth-breathing, especially

the incisor teeth. At fifteen the premaxillary wings unite with the tip of the vomer, and are sometimes called the subvomer bones. At this place in the septum spurs and deviations are very apt to be found, because of its structural weakness and as a result of traumatism, also because of the inequality of growth of cartilage and bone. Obstruction at the very entrance of the nasal chambers is sure to cause mouth-breathing.

Dr. Mosher has found that wherever there was a moderate and equal delay in the eruption of the central incisors the premaxillary wings were symmetrically enlarged at the floor of the nose on both sides, and there was no deviation of the septum. Where, however, there was marked inequality and delay in the eruption of one central incisor as compared with the other, then on the side of the backward tooth the premaxillary wing was much enlarged or displaced, and the quadrangular cartilage was tipped out of its bed along the vomer-ethmoid suture, and so deviation of the septum resulted. He also finds the root of the lateral incisors frequently mounting upward to the floor of the nose, but even if much displaced they do not affect the form of the septum.

Injury to the nasal spine or quadrangular cartilage may cause spurs and deviations by dislocating the cartilage or by splitting the wings of the premaxillæ or a part of the vomer. Enlargement of the nasal spine or the premaxillary wings may cause spurs and deviations of the septum. Delayed eruption of the incisor teeth causes enlargement of the premaxillary wings, and thereby deviation of the septum. The anterior openings of the nose may be of unequal height and size, owing to the central incisor teeth, also the shape of the posterior or choanal openings of the nasal fossæ may be affected by the upper third molars. Unequal descent of the antra results in unequal development of the halves of the palate, one side being higher than the other, whereby deviation of the septum is favored.

The mucous membrane of the nasal passages is, as I have said, very sensitive;

besides, the turbinates have erectile power. A simple so-called cold in the head produces hyperemia and hypertrophy of the mucous membrane of the nose; the turbinates swell and there is more or less increased secretion; nasal respiration is interfered with, especially at night. If these attacks are occasional and last for a short period only, no special harm is done. But there is a tendency to recurrent attacks of rhinitis, so that we have a chronic hypertrophy of the turbinates and mucous membrane resulting. Then proper nasal respiration is impaired all the time, by day as well as by night. Ventilation and drainage of the nose, which is most essential, is prevented. Later the sinuses may become involved, especially the ethmoidal cells, and with this we often have polypoid degeneration. Acute or chronic rhinitis in the earlier years, when the nasal chambers are small, favor and soon establish the mouth-breathing habit.

It must be evident after this brief study of the principal pathological conditions of the nose and throat of children that a close relationship exists between rhinology and orthodontia. It is during the period of growth and development of the face, which is mainly before the age of fifteen, that malocclusions form. It is essential that the normal air-pressure and the normal balance of forces should be maintained during this time. We should watch closely for obstructions and deforming habits, and thus prevent many malocclusions. It is never too early to correct; it may be too late, for when the mouth-breathing habit is firmly established, malocclusion fixed, and the plastic period is past, satisfactory results may never be obtained, or, if so, with a much greater expenditure of energy, time, and money.

The physician should be impressed with the importance of the early care of the nose, naso-pharynx, and teeth, and every dentist should be a practical orthodontist, always bearing in mind causal conditions in the nose and throat. Not infrequently I have seen corrective appliances on teeth where both obstructive tonsils and adenoids were present. Bet-

ter and easier results would have been obtained if these obstructions had first been removed. Recently I saw a most elaborate wire appliance in a young adult mouth where the left nasal passage was completely occluded by a septal deviation. No thought of nasal examination or previous treatment had been considered before instituting the orthodontia procedure. By the careful watching of young

children, both by the family physician and the dentist, the irregularities of the teeth which result from obstruction either of the nose, the naso-pharynx, or the fauces, and the mouth-breathing habit can be avoided. There is a certain interdependence between the two specialties and I bespeak an even closer relationship between the rhinologist and the orthodontist.

CORRESPONDENCE.

METHODS ADOPTED FOR THE CARE OF THE TEETH OF PUBLIC-SCHOOL PUPILS IN MEXICO.

TO THE EDITOR OF THE DENTAL COSMOS:

Sir,—Under the title of "Free Dental Service in the Public Schools of Mexico," an article appeared in the DENTAL COSMOS for the month of June 1908, page 604, which was signed by Mr. Johan de la Parra, and in which, speaking of the advantages of establishing a service to supervise the preservation of the teeth of the children who attend the elementary schools of the city, he enters into various considerations which would have to be taken into account had not the necessities which he desires to have attended to been for some years past foreseen, as well as the methods to be employed in attending to them.

There can be no doubt whatever that the school service in the City of Mexico, with its many details, is unknown to this writer, and only on this ground can we excuse his error when he states that nothing has been done to preserve in the best possible order the teeth of the children who attend those schools. As a matter of fact, the care of the teeth, as is well known, is a question of personal hygiene, and the public authorities have borne this fact in mind, and included in their programs of study in all the schools, viz, elementary, superior, etc., the study of this subject; and moreover, consider-

ing that this might not be sufficient, it created some time ago a corps of medical inspectors, who, in the daily discharge of their duties, give all the suggestions necessary for protecting the health of the pupils. The government also maintains an institution which is dedicated to the teaching of the courses required for the graduation of a surgeon dentist, while in the clinics of that school all sufferers from diseases of the mouth are treated free of charge. Among these, pupils from the schools receive attention by preference, apart from the expert examination which under the law is made by the professors and pupils of the last year in the courses of dental surgery, during their periodical visits to the primary schools.

The appropriation for the corps of medical inspectors and dental school clinic for the present year amounts to \$36,978, and this detail alone is an eloquent proof that, with a perfect understanding of their duties, the directors of public education have foreseen the necessities of the case and provided the resources to secure due attention to the health of the pupils in general. Rules have been carefully drawn up, and have been for a long time observed, which provide for instruction in private hygiene