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THE PRINCIPLES OF RHINOLOGIC PRACTICE.*

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Among the textbooks which the medical student possessed a third of a century ago was William's Principles of Medicine. In latter-day medicine the principles of practice are not in evidence as an independent proposition, but are embodied in the broader field of practice itself. Notwithstanding this present-day custom, the former plan appeals to the reason as being both rational and wise. With this line of reasoning I have thought it might be instructive to give some attention to the Principles of Rhinologic Practice.

In a general way, it may be said that idealism is the goal aimed at in the practice of medicine. Surgeons, in all departments of practice, aim to get the diseased or deformed part in such condition that it will physically conform as nearly as practical to the normal. Every effort of the dentist is to get the dental arch, and each of its individual teeth, and their surroundings, to conform as nearly as possible to the ideal standard, or to the set of perfect teeth which he ever has pictured in his mind, and in order to do this he drills away decayed tissue and fills the cavity preferably with gold, so the ideal form is preserved; he straightens the teeth when irregular, and, if necessary, extracts any that are superfluous, with the object of getting the arch to conform in shape to the ideal standard; and, furthermore, when

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the gums are diseased he applies treatment thereto, with the same general object in view. Later on, when the dental loss is greater, he resorts to crown or bridge work, and eventually to artificial dentures, each and every step being with the same object in view, viz.: That the resulting work shall imitate as nearly as practical the perfect teeth of ideality.

The emmetropic eye is a perfect optical production, and as the eye is mated the pair should work in unison. Lack of balance or parallelism, known as insufficiency, or intrinsic optical defect, constitute the causes for the refractive errors which contribute so largely to the financial support of the ophthalmologist. In his work of correcting these errors, largely by the aid of lenses, his aim is to neutralize the optical defects and cause the eyes as nearly as possible to stimulate the emmetropic standards of perfection. Similar examples could be cited in other fields of medical practice.

In the same way, the writer is an advocate of idealism in rhinologic practice, and as structural deformity of some kind will be found present in the noses of all, or nearly all, who apply for relief from nasal troubles, the rhinologist will do his patients the greatest amount of good by taking such steps as will cause the nasal passages to resume the conformation and patency of the ideal standard. By this statement is not advised an invariable and wild rush to surgical steps, but there is contemplated the employment of all topical, systemic or hygienic means which will singly or jointly contribute to this end, remembering that improvement of the general health always affects favorably the conditions of local parts.

As a preliminary step, in order to follow the principle of practice outlined, it becomes essential for the rhinologist to decide the question as to what constitutes an ideal or perfect nose. It is quite evident, from the varying methods of treatment recommended by different authors, that there is not an unanimity of opinion as to this matter, or else its consideration is neglected. Until this moot matter is settled, so the perfect nose is an accepted fact, the same as is the perfect set of teeth with the dentist, or the emmetropic eye with the ophthalmologist, the rhinologist will be at sea, as the mariner without a compass. On the other hand, with this question settled, rhinologic practice will be elevated from the plane of empiricism to that of scientific exactness.

The writer has for a long while had his idea of the perfect nose, and has in a previous paper, written several years ago, outlined his understanding thereof,¹ hence liberal extracts will be made from this alluded to paper, as the observations of recent years have but

slightly modified the original proposition. In the ideal nose the septum is practically plane, and vertically divides the organ in two passages of equal calibre, which passages have jointly a sufficient capacity to at all times easily supply the requirements of nasal respiration.

While the septal wall is plane, the outer wall in either nostril carries three turbinals or scrolls, which are practically horizontal when the patient is upright, and which, by their tortuous convolutions, add materially to the area of mucous membrane lining the passages. The openings to these passages, both anterior and posterior, being less in area than is a cross-section at any intermediate point, a slight obstruction near either end will often cause more annoyance or stoppage than will even a larger growth when located elsewhere in the passage, and, more particularly when at the anterior end, owing to the mobility of the *alæ nasi*, by impeding inspiration will tend to induce alternate rarefaction and condensation of air in the post-nasal space, which is probably an etiologic factor in the production of posterior white hypertrophies of either the turbinals or upon the vomer, as well as a recognized cause of tubal congestion. In fact, aspiration has much to do with the causation of anterior turbinal intumescence. A feature of particular and vital importance possessed by a normal nose is that no two opposing surfaces therein ever touch, hence the ventilation in all parts thereof is always free. With these physical qualifications as outlined, the drainage will also at all times be perfect.

While the septal wall of the nasal passage in an ideal nose is practically a straight line, which it will be remembered is a characteristic of a perfect highway, built in conformity with the geometric principle that a straight line is the shortest distance between two points, still, as with the highway, which is serviceable even though it possess moderate grades and gentle curves, so long as its surface is of sufficient width to meet the demands of its traffic, so with the nose, for whenever its calibre at all points is sufficient, it will meet the demands of respiration, even though the septal line be not straight, so long as the prominences are not abrupt, nor too great, and so long as opposing surfaces do not touch, and thus impair its essential features of ventilation and drainage. There is thus additionally given proper vocal resonance, for the free and unobstructed nose may be regarded as the sounding-board of the voice.

Ample "breathway" has been regarded as the chief requirement by many rhinologic writers. It is apparent that more than this is required, for excessive space at one portion of the passage does not

atone for a stenosis at another point. The essential requirement is that the circulating air can penetrate all portions of the nasal fossæ and at all times. The turbinals, through congestion, become more or less distended and require sufficient space in which to attain their maximum size, but should never at such time touch either each other or any opposing surface. The inferior turbinal, being the most erectile, requires the greatest amount of surrounding space. When most reduced in size, as when the patient is in a warm room, or in the examiner's office, there should be about it a space of from one-eighth to one-quarter inch, and, as the anterior end thereof is the most erectile, it is at this end where the greatest space is required. Between the middle turbinal and the septum, as seen by anterior rhinoscopy, there should be a space ranging from one-twentieth to one-twelfth inch, for the variation at different times in the size of this body is slight as compared with the inferior turbinal.

Under the stimulus of either cold, dust or irritating vapors, the turbinals become more or less distended, so as to diminish the lumen of the nasal passages, and thus cause the inspired air to pass through in a thinner column, whereby it is the better warmed. Simultaneous with the swelling of the turbinals, the nasal secretion is increased in quantity, so as to better humidify the air, and also attract the dust or cause its precipitation. Furthermore, the evaporation of this secretion is more rapid, owing to the increased rapidity of the air current through the diminution of the calibre of the passages from the swelling previously alluded to.¹

It has been noted that the septum should be practically plane. Any material variation therefrom produces in one nostril or the other points of prominence against which the inspired air strikes with more force than when the surface is plane. As a result, the mucous membrane at such points is chronically irritated, and often dry, and invariably shows irritation by an increased redness. The further forward, or more abrupt, these prominences are, the more annoyance produced thereby. In the normal nose, the mucous membrane should at all times have a pink color, much like the roof of the mouth, and there should be no points of excessive redness, or locations which appear dry, or seem to invite the retention of visible secretion.

Septal prominences deviate the inspired air from the course it should take, and also encroach upon the space about the turbinals so as to interfere with their physiologic congestion and thus cause respiratory insufficiency. In this way, a touching or even pressure may be produced when such congestion occurs. A septum abnormally

thick, and yet plane, may in the same way diminish the calibre of the passages, so as to cause nasal occlusion. The congenitally narrow nose is the most unsatisfactory of all to treat.

Abnormalities of the nasal septum are, in adults, the most common causes of nasal obstruction, and their correction, when feasible, is to be always preferred, instead of making destructive attacks upon the vital turbinals. Very slight prominences, when well forward, which would seem to be absolutely harmless when turbinal congestion has subsided, and when the opening to the nostril is distended by the use of a speculum, are frequently the cause of chronic irritation, as has been often proved by the beneficial results following their destruction.² Perforations of the septum are another source of annoyance, and are generally well forward in the cartilaginous portion thereof, and are not specific in character, but have been caused by picking the nose when a deflection exists. After the perforation is produced, its chief annoyance, when well forward, comes from marginal dryness or scabbing, and is principally due to a prominence upon or thickening of the septum close by, which, when destroyed, so there remains only a perforation in a plane septum, it will be found to give but slight annoyance.

Next in importance to septal deformity as a cause of nasal symptoms may be mentioned hypertrophy of the anterior end of the middle turbinal, so it impinges against the septum, causing either simple contact, or contact with pressure, and which alone, or in combination with septal prominences,^{3 4} occludes the attic of the nostril, and by impairing its ventilation induces catarrhal sinusitis, which through neglect may in time become empyemic, and which is the great cause of post-nasal catarrh. When pressure occurs in this region of the nose, various reflex symptoms may become manifest.⁵ The enlarged middle turbinal may also extend downward, and thus press against the inferior turbinal, so as to occlude the middle meatus, thereby affecting the sinuses connected therewith. Cobb⁶ has called attention to this fact, and that the under scroll of the middle turbinal may be so large as to not only press against the inferior turbinal, but also form a gutter, which conducts the discharges from the antrum of Highmore, the anterior ethmoid cells or the frontal sinus, so as to reach the naso-pharynx and appear as a post-nasal catarrh. In such case there is no discharge visible by anterior rhinoscopy.

It is now known that the course of the air current during respiration is largely through the upper part of the nose.^{7 8} The horizontal plane of the anterior openings to the nose, as well as the curve of the pharyngeal vault, both contribute to this end. In its passage through

the upper part of the nose, owing to the greater narrowness of the passages therein, it is forced to pass in a thinner stream, and is therefore the better warmed. Furthermore, the diminution in the volume thereof tends to increase its speed, the same as the slow current of a broad stream increases in velocity when passing through a narrow gorge. A patient with attic occlusion will often complain of a sensation of inability to breathe through the nostril, even though the lower portion thereof appears free. As the openings to the accessory sinuses are all located in what may be called the attic of the nose,⁴ and as these sinuses are each ventilated through a single opening, such ventilation is best secured by the to-and-fro motion of a more rapid air current, which is happily attained in the way previously outlined.

Another disadvantage of attic occlusion is that all the inspired air is forced through the lower portion of the nose, which thus tends, through excessive stimulation, to induce congestion, and, in time, hypertrophy of the inferior turbinal, hence the importance of correcting attic stenosis. In fact, if atrophy is to be regarded as a degenerative successor to hypertrophy, then attic occlusion may be regarded as one of the etiologic features in the production of atrophic rhinitis.

During nasal respiration, as has been previously noted, the inspired air becomes warmed, humidified and freed from impurities, and the nearer perfect the nose is, the better are these functions performed. It has been assumed, owing to its increased power to become congested, that there is thrown out from the inferior turbinals the greater part of the nasal serum which renders humid the inspired air. In its passage through the middle meatus, the air current absorbs moisture from the upper surface of the inferior turbinal. It is, furthermore, quite probable that the sinuses contribute their quota of moisture, which is evaporated by the passing air current, so as to increase its humidity.

Among the defects of the nose commonly observed, occlusion may be considered of the most importance, and varies from being complete to being so slight that the patient is not conscious thereof. Frequently "the two nares are unequal in size, one being stenosed. In such case the other is compelled to do the greater part of the work, and may thus be so overworked that it cannot properly fulfill its physiologic functions. While secreting only enough nasal fluid to properly humidify one-half of the air inspired, it is giving entrance to much more than half of the air required; hence this air is not sufficiently humidified and, as it enters in too large a column, it is likewise not so well warmed. Furthermore, the volume of air enter-

ing the more roomy nostril tends to dry the mucous membrane therein to an abnormal degree and is harmful; therefore, it is as essential that the normal nostril shall not be too roomy as that it shall have adequate patency.¹ A stenosis of one nostril will frequently cause hyperemia of the other nostril, even though it be free from structural defect, and contact in either nostril generally means contact at some point in the other nostril, hence alternating stenosis is frequently noted," as well as a periodic susceptibility to attacks of acute coryza.

One of the most important of the nasal defects is the condition wherein a partial stoppage of either one or both nostrils exists, though the same is *unrecognized by the patient*, and any or all reflex symptoms or troubles present, and due thereto, are attributed to other causes. In this condition, there is a touching of opposing surfaces at one or more points, and at the same time a compensatory increase of size elsewhere. In such case, upon inquiry, it is learned that certain reflex or secondary symptoms are complained of, which the experienced rhinologist will at once, and correctly, attribute to the defective nose.

Next in importance to occlusion, and largely secondary thereto, owing to impaired ventilation and drainage, we have excessive or abnormal nasal secretion. Nasal obstruction, particularly when contact of opposing surfaces exists, interferes with the normal evaporation of the nasal muco-serum, which is normally secreted by the nose to the amount, approximately, of one pint a day. When evaporation is interfered with, or prevented, the retained secretion becomes more or less inspissated, and, through retention, is irritating to the mucous membrane at that point, causing further secretion therefrom to be abnormal and thickened, so it cannot be easily evaporated, as is the case with the normal nasal serum. As a result of long-continued irritation, tissues in the nose, particularly of the turbinates, may become chronically relaxed and baggy, so as not to contract under cocaine, being a true hypertrophy or degeneration, and, as such, give out increased and abnormal secretion, and must, therefore, be surgically attacked. The systemic effects upon both the pulmonary and gastro-intestinal tracts from the descent of catarrhal secretions are only too well known.²

As the tenor of this paper is to emphasize the fact that structural deformity is almost invariably present in diseased conditions of the upper air passages, it is an easy step to infer that the chief indication is to cause the several parts to assume as nearly as practical the contour and character of the ideal standard, which implies the re-

removal of all obstructive, redundant or pathologic tissues, the correction of deformities, and, in the nose, to secure appropriate space between all opposing surfaces. Of course, each case is a rule unto itself, and hence practicability must be the guide. When this much is done, it will be found that Nature will do the rest, in a great majority of all cases presenting themselves for treatment.

Preceding the surgical work, certain preliminary steps should be taken. The specialist should not blind himself to mal-conditions outside of his particular field, hence, if there be a call for systemic medication, it should be administered. Attention should also be given to the patient's hygienic surroundings and habits of life. As cleanliness is the keynote of modern surgical practice, the nasal toilette should be well looked after, which, in the writer's experience, is best accomplished by the hourly sniffing of a bland alkaline solution of the same specific gravity as the nasal serum, which is 1015°, and according to an exact method elsewhere described,^{10 11} which can be followed, unless marked occlusion exists. This alkaline solution is regarded simply as a cleansing agent—a suitable soap for the mucous membrane of the nasal passages—and contributes only in this way toward a cure, and its hourly employment is in line with the known efficacy of the small dose, frequently repeated. In case of atrophic rhinitis, the sniffing medicine will have to be supplemented for a while with the use of a tepid nasal douche, twice or thrice daily.

The occasional use of a suitable pocket inhaler¹² will also assist, as vapors more readily penetrate the higher and narrower recesses. The systematic use of this home treatment advised, in addition to a few office treatments with sprays and pigments, will in a week or ten days' time prepare the nose for operative steps, and will often cause the subsidence of points of intumescence, which at the time of the first examination seemed to require operative attacks. The use of the alkaline sniffing medicine is to be kept up during the entire course of treatment, and is as efficient in keeping the parts clean after operations as it is in the preliminary preparation.

A word must also be given to the question of blowing the nose, which, when correctly done, is one of the most efficient methods of cleansing. Use of the handkerchief is undeniably more esthetic, and will do as a makeshift at times, but, for thorough cleansing, the nose should be blown without the use of a handkerchief, and at first with both nostrils open, a short vigorous expulsive blow being given, and, if necessary, repeated two or three times, the patient meantime stooping forward over a wash-basin or sink, with head

thrown well back. After this the head should be inclined forward and each nostril blown alternately by closing the opposite one, in the usual manner, only much less force must be employed than when both nostrils were open. In this way there is no danger of injuring the ears if the nostrils are not too much occluded, and the great advantage lies in the fact that by this method air is made to pass so quickly by the openings of the sinuses that if there be catarrhal secretion therein, which is so often the case, it will thus be drawn out and expelled. This method of blowing the nose may be practiced two or three times a day, and will generally insure a free nose for several hours, or one which can be easily cared for by the handkerchief.

During office treatments, compressed air, either plain or in the form of a nebula, properly directed through a long, slender and slightly curved tip, particularly after a partial removal of the middle turbinal, will often prove more efficient in cleansing an empyemic sinus than will an aqueous injection. Recent experience with heated air has given promise of its great value in all cases wherein either hyperemia or excessive secretion is observed. An advantage in the practice of Politzerization, derived from the air douche, is its cleansing effect upon the nasal passages, and when, at the same time, both external auditory canals are tightly closed, a nebula may be easily driven into the sinuses, thereby giving magical relief from the oppressive headache, due to sinus occlusion, which often accompanies acute coryza.

After intranasal operations wherein the deeper structures are wounded, I have found, in addition to the home treatment, that a one per cent. hot carbolized douche, used from three to eight times daily for a few days, will allay the inflammation, and reduce the reaction to a minimum.¹³ Latterly, I have had made a long oval tip, which can be introduced far back in the nostril, whereby the efficiency of the douche is increased. This douche can even be employed after the slighter operations, and in order to insure its correct use, I give the patient a printed sheet of directions.

At all times, in intra-nasal surgery, it is the wisest plan to do but little at a time, and allow each wound to be well on the road toward recovery before the next operation is made, particularly when in close proximity to its predecessor. Aside from the demands of urgency in special cases, it is generally wisest to first operate those defects which are most accessible, as anterior septal deformities and tonsillar or post-nasal abnormalities, after which the tolerance of the patient is increased, so suitable attacks can be made, when required,

upon occlusions farther in and higher up, in order to insure the necessary freedom in attic ventilation and drainage. In correcting nasal defects, it is generally best to select the better nostril for first attention, and after it is in satisfactory condition it will serve for respiratory purposes, while the other nostril is being operated. It is, though, necessary that all obstructions be removed, for one stone left remaining in a gutter will obstruct it nearly as much as when there were several; or, again, as a further comparison, if a leaky roof be repaired in all but one spot, the leak at this point may cause nearly as much annoyance as did the several leaks before.

In the way of surgical work, the obliteration of slight prominences of the nasal septum is often as essential as is the correction of the grosser defects.² The explanation is that, in case of the latter, compensatory defects are in time created, while the slighter deformities only cause chronic irritation, which may be of many years' duration. When operating a large ridge, there is often less annoyance in removing one-half thereof at the first sitting, and the remainder two or three weeks thereafter. Thus, in some cases, after removing the lower portion of a ridge, when the mucous membrane of the remaining portion is uninjured, it holds away the opposing turbinal and helps toward quick healing. It frequently occurs that the upper margin of a ridge is soft or compressible. If so, such portion had better be first destroyed with the electro-cautery, when, after a week's delay, the remainder thereof, being bony or cartilaginous, may be removed with the saw. In fact, a slight incision with the cautery point may be made both below and above, just before using the saw, and will materially assist toward the diminution of hemorrhage.

Another time, when the operation can wisely be divided in two steps, is when removing the excessive tissue upon the convex side of a deflected septum, the concavity of which is gently curved. During the first operation the saw is held parallel with the anterior half of the concavity in the opposite nostril, while during the second operation the opening of the nose is so pulled away from the septum that the saw can be held parallel with the posterior portion of the concavity. In order to know more exactly the thickness of the parts being operated, a septometer should be used.¹⁴ By operating as suggested a simple deflection will remain which may afterward be corrected by an Asch or Gleason operation, though, when the concavity is not too pronounced it will often be found, by removing the thickened convexity, as described, that the lumen of the nostril on that side is increased to such a degree as to give comfort and permit of satisfactory respiration.

Secondary hemorrhage is liable to occur after the more extensive intra-nasal wounds, the greatest danger being within the first twenty-four hours. By the introduction of a Simpson-Bernays tampon, so it will cover the traumatic area, such complication may be averted. Before its introduction, the forward end and sides of the tampon should be smeared with vaseline, and after it is properly located by aid of sight, it may be quickly made to swell by the use of an aqueous spray. It should be removed the following day, and, if desired, can be gradually removed in sections, as its several layers can be withdrawn one after the other. Personally, I use the tampon only in special cases, wherein hemorrhage is particularly feared, and prefer generally to depend upon the hot carbolized douche, which tends to prevent bleeding.

After intra-nasal wounds involving the harder structures, as of the septum, smooth healing is materially advanced by the practice of daily massage of the wound until healed, at first gently, though later, as the soreness subsides, more force should be employed. Massage removes exuberant granulations and debris, and causes the wound to heal from the periphery toward the center, thus gradually reducing in size until healed.² Without the massage there may be reformation in soft tissue of a growth similar in form and size to the one removed. The omission of such after treatment explains the recurrence, after removal of septal ridges, as have been reported.¹⁵ My attention was first called to the value of massage by Rice,¹⁶ who advocated its use in the treatment of chronic septal ulcers, particularly in connection with atrophic rhinitis. As chronic ulcers of the septum can be best healed in this way, it seemed rational to employ massage in the treatment of intra-nasal surgical wounds.

The immediate result at the time of the operation will generally indicate what permanent result may be expected, though for several days thereafter, owing to marginal swelling, the appearance of the wound is unpromising. Occasionally, after a septal operation, there occurs a sufficient swelling of the base at the operated point, so a slight secondary operation is called for a few days thereafter, whereby such base may be more thoroughly removed. In the process of healing under massage, there are destroyed slight points of elevation, and at the same time by stimulation there is a filling up of slight depressions. Lastly, an eventual absorption of hyperplasia in adjacent prominences follows, though the maximum result may be delayed for a month or six weeks, after the healing of the wound. By this method, the resulting mucous membrane is smooth and firm, and appears in all ways like the normal.

The electro-cautery has been extensively used in the past in the treatment of nasal occlusion, and principally by cauterization of the anterior end of the inferior turbinal. While an improvement was for a time thus secured, it was soon followed by a recurrence of the old trouble. The explanation is that the turbinal congestion or intumescence was only a symptom, and the result of irritation from some other cause, generally some deformity of the septum, and often of apparently slight importance, though still sufficient to cause and keep up irritation of the opposing turbinal. When, in place of intumescence, there is genuine hypertrophy of the soft tissues of the turbinal, so it will not contract under cocaine, then a thorough cauterization is indicated, so as to remove excessive and obstructive tissue and destroy hypertrophied glands from which the secretion is excessive and abnormal.

Should the bony framework of the turbinal be involved, then a sufficient portion thereof should be surgically removed, in order to give free breathway and drainage.^{4 6 17 18} The reason why either the ridge upon the septum or the turbinal hypertrophy should be operated is chiefly the same; viz.: To improve the ventilation and drainage of the nose, and to do away with the intermitting touching of opposing surfaces, and a nice discrimination as to where the attack should be made, when both turbinal and septum are at fault, comes from increased experience. At times, turbinal intumescence, with tendency to hypertrophy, can best be overcome by the use for a few days of a nasal bougie.¹³

In conclusion, it may be added that the ultimate results following a course of intra-nasal surgical treatment are far better than are the immediate results. It must be remembered that for a time the new tissue formed as the result of an operation is delicate, and may, therefore, be compared with an infant's skin, but which, as time passes by, will become toughened and inured to climatic changes, so as not to suffer thereby, and thus a progressive improvement may be expected for a year, or even longer, after the treatment has been discontinued, though such improvement may be intermitting instead of constant, being influenced by climatic conditions and the exposures which the patient may from time to time sustain.

The improvement at first obtained is sometimes not fully appreciated by the patient, as it is only compared with the condition existing before the treatment was begun, though it may be said that at that time the patient was at a Y in the road, and drifting away from the proper course, while through the treatment the direction has been changed to the right course, so in future years the proper comparison to make will be the conditions as they are, not only with what they were, but with what they might have become.

CONCLUSIONS.

1. In the normal nose the nostrils should be of equal calibre and should jointly have a sufficient capacity to at all times supply the requirements of easy nasal respiration.

2. In the ideal nose the walls of the septum are practically plane, and are at no time or place touched by the tissues of the outer wall, in either passage, and, furthermore, no points of contact exist elsewhere therein, so as to interfere with either ventilation or drainage, or prevent the normal evaporation of nasal moisture.

3. While in an ideal nose the septum is vertical and nearly plane, a moderate irregularity thereof will not impair the nasal respiratory functions, providing there are no points of contact or abrupt elevations therein, and the lumen at all points is sufficient.

4. Abnormal redness of the nasal mucous membrane is an un-failing sign of irritation, the cause of which is generally of a structural nature, and, therefore, amenable to surgical treatment.

5. The indications for operative interference depend upon both the subjective and objective symptoms. A noticeable inadequacy of either nasal passage, the presence of excessive or retained secretions, or an abnormal redness of the mucous membrane at any point, are all evidences of abnormality, which, if coupled with inconvenience to the patient, invite corrective attention.

6. In the treatment of chronic hypertrophic nasal troubles, the indication is to remove all obstructive, redundant or pathologic tissues, and at all times the chief indication is to cause the defective nose to conform as nearly as practical to the contour and character of the ideal standard.

Columbus Memorial Building.

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DISCUSSION.

Dr. Barnhill, *Indianapolis, Ind.*:—Most of the principles laid down by the doctor I would be quite willing to accept. I rise to ask a question as to what method Dr. Pynchon has used in determining the distance of the middle turbinate from the septum. I do not believe that I have personally seen a case in which I could determine this accurately, and it has seemed to me that there must be at times a normal condition in which the septum does lie in slight contact with the middle turbinate. In the New York Rhinological Society there was a discussion as to this, and at that time some of the best men of this society believed that there was some normal contact between these two parts.

Dr. Pynchon (closing discussion):—In reply to Dr. Barnhill, I would say that of course it is very difficult to decide accurately about this matter of the middle turbinal, but I have frequently noticed in patients who come to me that there is a lack of proper space and when I have secured this by surgical means so I can pass a small cotton pledget through with ease from front to rear, it allays the symptoms complained of to a marked degree.

While I have talked about the perfect set of teeth and the emmetropic eye, I suppose they are not often found. It is the same with the nose. In hay fever there is a great weakness for the middle turbinal being too close to the septum.