

WHAT IS THE PRESENT STATUS OF THE OPERATIVE  
TREATMENT OF DEVIATION OF THE NASAL SEPTUM?  
A CRITICAL REVIEW BASED UPON LITERATURE, AND  
ESPECIALLY A PERSONAL EXPERIENCE OF 127 CASES  
OPERATED UPON BY VARIOUS METHODS.\*

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It is with considerable hesitation that I presume to present to this Association, numbering among its members many of the makers of rhinology, in the volumes of whose Transactions its history is recorded, so time-worn a theme. I must confess, however, that for some time I myself have felt uncertain and perplexed as to where we stand in the treatment of septal deviations; others too, must have felt the same doubt, for I learn that this is to be a subject for discussion at the coming meeting of the British Medical Association at Toronto.

The era of the Asch operation, as the only, or even the principal one, has passed and the submucous operation is now dominant; this is attended with all of the enthusiasm and eclat of a new procedure, and for the time being has overshadowed all others. Have we at last reached the much desired goal, and found in this a panacea for all varieties of septal deformity? Many so think. Are the older classical operations to be cast aside as superannuated and useless?

Lack of sufficient experience and an inadequate number of recorded cases were formerly the reproach cast upon these methods. Surely there are now upon record enough cases of each of them, to enable us to determine their exact value and definite indications.

There is no single method suitable for every variety of deformity, but all of them give good results in certain cases. It seems to me that the indications for the selection of each particular operation in definite types of deformity have not been sufficiently defined. The lack of detail in recorded cases would seem to indicate insufficient preliminary study. That the older methods have not met every requirement and have not proven entirely satisfactory is evident from the many operations and the constant striving after new ones. I believe that we might profitably endeavor to ascertain at this time the *causes of failure*, and the directions in which *improvement* is to be desired and is attainable.

\* Candidate's Thesis read before the 28th Annual Congress of the American Laryngological Association, Niagara Falls, May 31, June 1 and 2, 1906.

Among the most important causes of defect or failure in results may be enumerated:

1. Lack of detailed preliminary study of each individual deformity as a distinct entity, and failure to adapt to the particular variety of deformity that operation best suited to it. An exact knowledge of the anatomical and clinical peculiarities of the different forms of deformities is absolutely essential to enable us to select the right method and perform the same properly. Careful preliminary inspection under cocain is essential to accurate diagnosis, but inspection alone often yields erroneous impressions. The graduated probe is often requisite to determine the distance and extent of the deformity, the consistence of projections (tubercle of septum, etc.) and the depth of the concavity in angular deformities; at times the finger-tip may profitably replace the probe; the septometer is sometimes necessary to determine the thickness of the septum.

2. The excessive use of general anesthesia and consequent *inexact application* of the method used, is another source of faulty results. A single incision precisely applied in the right location, will accomplish more than multiple incisions or general crushing applied at random, and will avoid the risk of sloughing of the septum and of sepsis. It is then of the utmost benefit, whenever possible, to operate under visual inspection and cocain anesthesia, using adaptable instruments permitting the accurate application of incisions in whatever location they will be most effective.

*Indications:* While some degree of septal deviation is so common that it may almost be regarded as its normal condition, a deviation becomes pathological only when it interferes with normal nasal function, producing consequences that can rationally be attributed to the deformity; according to Beaman Douglas, this occurs in from 11 to 12% of cases only. Some of the most marked deformities that I have ever seen caused no detectable disturbance. We should operate therefore only for the relief of definite symptoms, and not simply because of anatomic abnormality.

The object of operation is the restoration of the nasal functions, not only the respiratory, but the aural, the vocal and the drainage functions as well. Unusual subsidiary indications may consist in the relief of pressure neuroses and as a means of diagnosis and treatment in affections of the superior regions of the nose (attic). The test of success is not absolute symmetry, but the restoration of the defective nasal functions to normal.

*Classification:* From an operative standpoint it is essential for us to know the following details as to the deformity:

1. The location; whether anterior, posterior, superior or inferior, which determines the accessibility, i. e. ease of operation.

2. Composition, i. e. the parts which take part in it, whether quadrangular cartilage, nasal spine, vomer, lamina perpendicularis, etc., determining the kind of instruments available, whether knife, saw, chisel or cutting-forceps.

3. Thickness (interstitial), also governing the selection of instruments and method.

4. Shape, whether having a plane or rigid surface, with or without an overhang; also whether of a simple or complex form; determining the selection of method.

In my experience the possible *sites* of deflection in the order of their frequency are: 1. Dislocation of the lower border ("pyramidal cartilage"). 2. Deviation or dislocation at the chondro-vomer al articulation (angular). 3. Incurvation of the face of the quadrangular cartilage itself (bowed, angular and sigmoid). 4. Deviation or luxation at the chondro-ethmoidal articulation (vertical angular). 5. Deviation at the chondro-vomero-ethmoidal articulation (ascending angular). 6. Incurvation of the face of the perpendicular plate of the ethmoid (bowed or angular), usually associated with deformity of the cartilaginous septum (sigmoid).

*Shape:* There is an innumerable variety of septal deformities, which may be classed as simple and complex. A simple deformity presents an incurvation to one side only, having a regular, smooth surface. A complex deformity consists of a combination of deflections and a variety of shapes, which may be so irregular as to defy description; or it may be associated with various complications, either septal (dislocation, synechia, thickening) or extraneous (turbinal, polypi, adenoids).

All these deformities occur with and without thickening; thickening may be superficial (crests and ledges) or interstitial (fibrosis). The term "redundant" should be reserved for excess of septum en masse with relation to the vertical and horizontal measurements of the nasal chamber, and should not be applied to superficial or interstitial thickening.

The nostril is only as wide as its narrowest portion; a linear vertical deviation ("pyramidal" cartilage, anteriorly; osseocartilaginous junction, posteriorly; hypertrophied "tubercle") may as completely block the passage of air as an extensive deformity.

The *treatment* of septal deviation is exclusively surgical. A discriminating and impartial observer, however, must admit that the operation is often unnecessarily performed, when the same results could be secured from simpler, safer and surer methods.

Conservatism and judgment in the *selection* of cases for the operation are indispensable. We have not yet attained that degree of certainty in results by any method, which warrants us in regarding this as a minor operation to be performed in doubtful cases, or for the relief of trifling symptoms. "The magnitude of operation must not exceed the importance of symptoms." (Semon.) If the cases are properly selected, I cannot understand from whence come the hundreds of cases now being reported annually.

The best treatment of deviated septum may consist in avoiding the operation by resorting to simpler operations upon the turbinals or septal thickenings. But frequently the removal of thickening alone is not sufficient to establish free respiration upon the narrower side, and the deviation must also be corrected.

The shock of septal operations may be considerable and preliminary tonic treatment of the patient and of the nasal mucous membrane is desirable.

The method selected should be the simplest available in the particular case, and should be adapted to the patient with respect to age, temperament and physical condition; it should also be adapted to the character of the *deformity*, as to its location, composition, shape and thickness.

The *indications* in the correction of these deformities are: 1. To overcome the resiliency of the septum. 2. To provide for "redundancy." 3. To replace the septum in its normal position. 4. To retain it in this position until it becomes fixed.

All methods that fulfill these requirements will be successful. The wonderful resiliency of the cartilage has proven the stumbling block. To overcome this various methods have been employed: 1. Comminution or fracture with forceps: Adams, Roe, Kyle. 2. Incisions of varying number and direction: Asch, Moure, Douglass, Allen, Roe, Gleason. 3. Resection of the entire deviated area, with preservation of the fibro-mucous covering on one or both sides: Krieg, Killian, Freer, Ballenger, *et al*.

Experience has taught the utter failure of methods dependent upon crushing alone, owing to the impossibility of fracturing the uncut cartilage with forceps, as well as that of crowding a "redundant" septum into a nasal chamber too small to contain it. Most methods are based upon a combination of incision and frac-

ture. It is an essential requisite for success by any method that the incisions should include the posterior portion of the deformity.

In undertaking a critique of the various methods of operation, I wish to disclaim at the outset any intention of reflecting upon the pioneers in this line of work, or of holding them responsible for failure to foresee the improvements that have since been built upon the foundations that they laid; nor need any feel slighted at failure on my part to discuss his special variety of procedure, inasmuch as these remarks will be exclusively confined to those methods with which I have had individual experience. Having no personal method to advocate, I believe that I may be exonerated from the imputation of partiality.

*Case Analysis.* All cases utilized in this analysis were carefully selected upon rigid indications and personally performed, hence their relatively small number. None of my cases performed prior to the Asch era is included. These operations were performed, 105 at the Presbyterian Eye, Ear and Throat Hospital, 15 at the University Hospital, and at my private office, during the period from February, 1892, to May 1st, 1906, and are distributed as follows:

Asch principle.....	45	cases
Douglass principle.....	37	"
Gleason operation.....	23	"
Supralabial operation (alone).....	2	"
Submucous operation.....	15	"
Varia (Bosworth, Krieg, Roc, Mouge).....	5	"

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127. "

Anesthesia, general 60%; cocain 30%; combined 10%. Analysis of recent cases only, practically reverses this percentage.

Hemorrhage, 2 cases of secondary, having no relation to the type of operation. Results, see special operations, bearing in mind that the Asch had to bear the brunt of inexperience and lack of skill.

Analysis of my personal cases shows 40% cartilaginous, and 60% mixed (10% bony). Also the usual excess of males (70%), to my mind an argument in favor of their traumatic origin. Angular deformities exceeded the bowed (70%).

Among the 127 cases were 5 of separation of the cartilaginous plates, not including so called "pyramidal" dislocation.

Here is no fitting place for a detailed description of the various standard methods, yet I cannot advocate too strongly a consultation of original publications which contain the minutiae essential to success, rather than condensed and at times inaccurate text-book descriptions.

*The Asch operation:* The modern treatment of deviated nasal septum may be said to date from the first operation of Morris J. Asch, of New York (1882). Prior to that time, various procedures had been employed, successful in certain cases, but no systematic method existed, with detailed after treatment, such as that elaborated by him. This early received the recognition that its merit deserved, and for years has held the dominant position. First published in the Transactions of the American Laryngological Association, 1890, this method has since been republished by so many different writers and in so many different forms, that its technic should be familiar to every one. Yet the Asch operation, though one of the most extensively published, is still a most misunderstood and misapplied method.

In his final paper, Asch emphasized the most important points in connection with the operation, and the main cause of failure or complication in results. The method is applicable to the cartilaginous septum only, and the forceps are intended neither for fracture, nor for torsion, but for compression alone. Observation of numerous operators will demonstrate that these restrictions are being constantly ignored. They should be engraved upon the mind, if not the instruments, of every one employing this method.

Another essential is that the crucial incisions shall be placed over the most prominent part of the deviation. Here we find the great defect of the Asch, and similar fixed, instruments, inasmuch as in high grade, bowed or angular deformities, this is an impossibility, especially under anesthesia, even with the small sized scissors now available. The horizontal ones are particularly hard to introduce, may strip off the mucous membrane, and are intended for exceptional use only.

Since the modification in the Asch splint by Emil Mayer, there have been no alterations in the method, except that they are now boilable without change of shape. Kyle's modification of Mayer's splints, being made of block tin, are both sterilizable and malleable so that they can be adjusted *in situ*, as occasion demands, and seem to have distinct points of advantage over the original ones. A longer size for posterior deviations is now available.

The suggestion first made by C. W. Richardson of Washington, that the splints left in the nose continuously for a period of 7 to 10 days with careful supervision, and then removed permanently, has simplified the after treatment in the many cases in which it has proven applicable. Asch claimed 5 minutes as the average time of performance of the operation and 4 weeks as the average of after treatment.

While the Asch operation may be available in other varieties of deformity, it is best adapted to deviations of the cartilaginous septum without thickening, either evenly bowed or moderately angular, when there is ample room on the concave side. The deflection must be well above the nasal and vestibular floor and not too pronounced, else the Asch instruments cannot be inserted properly.

My personal experience with the genuine Asch operation has been somewhat limited, the majority of cases having been performed for purposes of demonstration to undergraduate and post-graduate students. This resulted from no prejudice against the method, but mainly from the character of my early cases, in which the noses were so narrow that the Asch instruments could not be inserted, compelling me to devise instruments of my own.

My early operations were upon the Asch principle, but the incisions were made with special knives devised by myself (1892). These originally presented a double edged triangular pointed blade, at right angles to the shaft, but are now made with a rounded point and resemble somewhat an old fashioned gum lancet (Fig. 1). The

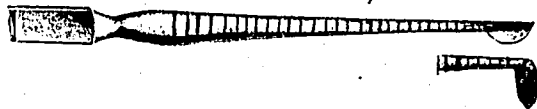


Fig. 1. Author's Septum Knife.

shaft is graduated so that the distance of the point of the maximum deflection having been previously measured, operation under anesthesia is facilitated. There are two of these knives, one cutting horizontally and one vertically, and two lengths of blade, a short one for thin and a longer one for thick septa. They are usually inserted on the narrow side, and the crucial incisions made clear through the septum at its most projecting portion. I have always regarded it as essential to cut entirely through the septum to enable me to satisfactorily fracture it with the finger, hence have seen no necessity for a guard on the blade.

In high grade deviation, it has been at times easier to operate from the wide side, and then the narrow nostril must be protected from injury by the insertion into it of a thin plate of metal or of hard rubber.

These knives have the advantage that they can be used in an extremely narrow nostril and wherever the deformity is located,

whether high up or near the floor of the nose. Having become skilled in their use and satisfied with the results, I have employed them in all of my subsequent septal work.

In early mixed cases, bony deflections were either fractured with Adams' forceps, at the time of operation, or removed with saw and chisel subsequently. Later Roe's forceps were used..

I have used successively the Asch, Mayer, the Behrens' cork and dental gutta percha and Kyle splints. Whenever possible, I have left the splints continuously in the nose for as long a period as possible (average 8 days). Number of cases by this method, 45 (bowed 19; angular 26). Number of perforations, 5 (10%). Severe hemorrhages, 0.

Results, excellent in 5%; good in 70%; fair in 15%; failure 10%. A good record considering early lack of skill and that cases were not selected with the same discrimination as at present.

A few illustrative cases are appended.

*Case I.* Miss L. J. White, female, age 14; 1900.

*Indications.* Nasal obstruction and excessive nasal and post-nasal discharge. *Type of deformity.* Markedly bowed, thickened and ridged septum obstructing right nostril; cause unknown. Compensatory hypertrophy of left inferior turbinal.

*Asch operation* under ether with horizontal scissors; Adams' forceps; Asch splints. Great force and tenaculum were required to remove the splints on third day. Replaced by McKernon splint. Left inferior turbinal cauterized. Uneventful recovery in 4 weeks with fair result. Two years later resected a septal ledge from the right side with much benefit.

This is an example of bad adaptation of operation to deformity. There was too great bowing and both superficial and interstitial thickening of the cartilage, for the best results by the Asch operation.

*Case II.* F. A. White, male, age 12; 1899.

*Indications.* Nasal obstruction. Weak eyes, very nervous. *Type of deformity.* Generally irregular and thickened septum with extreme angular deflection of the cartilage occluding right nares, caused by a baseball bat. Tip of nose turned to the right, bridge somewhat flattened. *Asch operation* with my knives under Schleich's general anesthetic. Behrens' cork splints.

*Result* a partial success, ridges remaining on both sides of the septum.

About ten months later a Douglass operation was performed with same knives, under ether, McKernon's splints. Result good as to respiration, some improvement of external deformity; nasal bone incurvated.



This case was primarily not suitable for either of these operations, being too thick and irregular. Owing to patient's extreme nervousness a general anesthetic was imperative, which would have handicapped the result by any other method (submucous).

*Case III.* F. S. White, male, age 34.

*Indications.* Headache radiating from nose to head. Asthma. Deaf in left ear. *Type of deformity.* Bowed deviation of cartilage. *Asch operation* under ethyl bromide; regular instruments. Mayer-Asch splints.

Patient ran off with the splints in his nose and did not return for one year. Stated that he had removed the splints himself after four days. Functional result good and architectural fair. No perforation.

*Case IV.* Dr. C. Egyptian, male, age 23; 1903.

*Indication.* Right nasal obstruction. *Type of deformity.* Cartilage bowed; moderate. Typical *Asch operation* under ether; genuine instruments. Splint *in situ* 10 days. Typical case and excellent result.

*Case V.* C. A. G., white, male, age 16 years; 1898.

*Indications.* Nose stopped up completely. Mouth breather. Has had numerous nasal polypi and a postnasal fibroma removed by myself (snare); also a choanal polypus. *Type of deformity.* Angular deviation of the cartilaginous septum to the right.

Typical *Asch operation* and after treatment. Good result. The following year a retro-nasal fibro-myxoma was removed. One year subsequently patient was well and married.

The principal improvement that I would suggest and have often carried out, is the performance of the operation with knives under cocain-adrenalin anesthesia in all suitable cases, under direct visual inspection. When used for compression only, the application of forceps is not very painful, and may be omitted when the septum is not very redundant, and the fracturing with the fingers is thoroughly done; if the flaps are so long as to cause a thickening upon the wide side, they may be resected at once, thus obviating a secondary operation.

*Moure's Operation.* (Revue hebdom. de Lar. No. 13, 1901.) This is due to a misunderstanding of, and failure to keep up with the improvements in the Asch operation; it is largely used in France and England. The operation is performed with a special pair of scissors resembling the Asch vertical one, having the blades set at an obtuse angle to the handle. The first cut is made as close as possible to the nasal floor and as far back as possible. The second cut is made without withdrawing the scissors, as close as possible

to the dorsum nasi. The two incisions, which must not meet, form a movable triangular flap, which is pushed with the finger into the opposite nostril. A special metallic splint is inserted, and adapted by means of a dilating forceps to the septum, and left in position for 7 or 8 days, at the end of which period the septum is generally fixed in position.

This operation avoids the crucial incision, and separates the septum from the maxillary crest. The scissors are inserted without regard to the location of the deviation. It is very rapidly performed in from  $\frac{1}{2}$  to 2 minutes, and can be done under nitrous oxide or cocain.

Moure supposes that the Asch splint is intended to be left in the nose during the entire period of after treatment, and urges that it cannot be kept clean. His splint is intended to obviate this, but has no advantage over that of Kyle. An advantage claimed for this method is that there is no risk of ulceration, as the incisions are above and below the zone covered by the splint.

A limitation to the operation is that there must be plenty of room on the concave side, as the deformity is pushed over bodily into the other nostril. A further objection is that a fissure may ensue along the maxillary crest. The horizontal incision low down near the nasal floor might cause serious hemorrhage.

*Case VI.* Miss S. O., female, white, age 25; 1904.

*Indications.* Nasal obstruction, mainly on right side. *Type of deformity.* Moderate horizontal angular deviation of septal cartilage to the right.

*Moure's operation* with Asch vertical scissors under cocain anesthesia. Simpson-Bernays splint. Result, cure in 10 days.

*The Douglas operation* (N. Y. Medical Journal, August, 1898) differs from the Asch in that it is performed with a special perforator and knife, and not only the crucial incisions, but the crossing of incisions at any point, is avoided. The incisions are made along the lines of deflection in whatever direction and as far as they may lead, in the belief that these are the seats of old fractures; these lines are determined by preliminary examination, either tactile or visual.

The next step is to force the septum over into the unobstructed side with the finger. Certain modifications of his original method have recently been advocated by the author.

Having proved both by anatomical and microscopical observation that the cartilaginous septum is never fractured by forceps, but per contra that it is torn loose from its articulations and its mucous

membrane lacerated, the author has ceased to use the forceps for this purpose. He, however, deliberately attempts to separate the triangular cartilage from the bony septum, with them.

The author lays particular stress upon the part played by the superior maxillary spine in maintaining the septum in its deviated position, and has adopted breaking it as a *routine measure*, in his operations. This may often be accomplished by crowding the forceps down to the floor of the nose and twisting them from side to side, but it is better in most cases to cut the spine with chisel and mallet, either through the nose or by the supralabial method of Harrison Allen. Since the method of cutting this spine has been adopted, it is often possible to remove the splints in five days. The author prefers to splints, Bernay's sponge, inserted in small strips.

With the finger as a protection, under anesthesia, or guided by the eye, under cocain, there is but little risk of injury to the turbinals. I have therefore never employed the spear-knife and the probe-knife of Douglass, but have used the same vertical and horizontal knives as in the Asch operation. These can be inserted anywhere, wherever there is deviation; hence there is no need of a perforator, which is a complicating and unnecessary step. There is no central point of insertion, but incisions may be made anywhere, hence meeting or crossing of incisions is avoided. It makes no difference from which side the incision is made, as the turbinals on the narrow side may be protected. In my earlier cases under this method, the operation was done under general anesthesia; later the incisions were made under cocain and the nasal spine fractured, when necessary, with forceps, after preliminary saw incision (Kyle). I regard Douglass' proposal to deliberately "tear the triangular cartilage from its attachment to the septal plate of the ethmoid" with forceps, as a distinct retrogression. This separation can easily be accomplished, as I have often done it, by a vertical incision with the knife under cocain-adrenalin, anesthesia and visual inspection; its articulation with the vomer can be similarly severed, when it is dislocated; or when the superior maxillary spine is deflected, this may be chiseled off either through the nose, or by the supra-labial route under cocain or ether. Thus the forceps can be entirely eliminated, and the operation much simplified. It can be performed in from 5 to 15 minutes. I have used the Douglass principle exclusively in 37 cases of cartilaginous deviation and found it a scientifically conceived and successful operation in those cases to which it is applicable. I have had no serious complications nor failures by it. This method is possible in the vast majority of simple

cartilaginous deviations, but it is especially adapted to moderately angular or "ridged" deflections extending in various directions, or in markedly "angular" forms. In the "bowed" variety, a single horizontal or oblique incision is made along the greatest curvature.

This principle is also available for the removal of localized lines of deviation, during or remaining after other operations (Gleason operation).

*Case VII.* H. C. A., white, male, age 18 years; 1899.

*Indications.* Obstructed right nostril; external nose twisted to the right.

*Type of deformity.* Horizontal angular deflection of cartilaginous septum; dislocation from nasal crest and thickening at nasal floor. Deformity of nasal bones. Cause unknown.

*Douglass' operation* under ether with my knives. Separation by incision, from nasal floor. McKernon splints removed by myself every second day for a week, then by patient every day for another week. Returned to business at end of first week and had completely recovered in three weeks.

*Case VIII.* H. L. C., white, male, age 19 years; 1904.

*Indications.* Nasal obstruction on right side. Sense of smell lost. Epistaxis daily from right side.

*Type of deformity.* Bowed deviation of cartilaginous septum to the right (central). Mucous membrane hemorrhagic. External depression on left side of bridge of nose; caused by a blow while playing basket ball.

*Douglass operation.* Two parallel antero-posterior incisions with my knives, through most protuberant area, followed by compression with Adams' forceps. Dental gutta percha splint, worn continuously for ten days. Result excellent. External depression subsequently filled with paraffin.

*Case IX.* H. H. T., white, male, age 30 years; 1905.

*Indications.* Nasal obstruction on right side.

*Type of deformity.* Vertical angular deflection at chondro-ethmoidal junction; also anteriorly; joining these an oblique angular deviation in body of cartilage. Dislocation from nasal spine. Tip of nose turned to the left. Cause unknown.

*Douglass operation.* An anterior and a posterior vertical incision and an antero-posterior oblique incision along the deviated lines, with my knives, under 20% cocain solution. Nasal spine fractured with Adams' forceps under light etherization. Duration (including etherization) 20 minutes. McKernon splint for 3 days. Wry nose improved. Result excellent.

*The Gleason operation* was first presented to the Philadelphia College of Physicians in October, 1896. The technic is as follows (Laryngoscope, Aug., 1902). A U-shaped flap is cut out of the

whole thickness of the septum (bone or cartilage) by inserting a thin saw beneath the overhang and sawing at first horizontally, and then vertically upward parallel with the septum. Both crura are then extended upward as far as possible, with the saw. The incision must include the entire deviation and not pass through it; the flap is then forced over into the opposite nostril with the finger, and an effort made to fracture its neck and destroy its resiliency. Thus the pendulous flap is retained by the margins of the incisions and there is seldom necessity for splints or other support. This operation can be performed in from 3 to 5 minutes in simple cases, under cocain-adrenalin anesthesia, with a minimum of pain or reaction and when well done gives ideal results in suitably selected cases. An essential point in the success of this method is to completely free the flap, by passing the finger or a curved knife around the incisions, so that it may be subsequently efficiently fractured. It is particularly indicated in pronounced deflections with an overhang, especially the angular form, and gives the best results when the deflection involves the bony septum. We then have a redundant flap and one containing bone, which is readily fractured. This remains in situ without the use of a splint. Cartilaginous, slightly bowed deformities are probably corrected better by the Asch, Douglass, Roe or other methods.

It is not adapted to deviations without an overhang, whether bowed or angular, although in some cases with but moderate overhang, a start may be obtained by using Phillips' bevelled edge saw. It is especially effective in vertical or horizontal angular deviations involving only a limited area of the septum. In such cases it is only necessary to push the long tongue shaped flap through the septum without fracturing it. It is not adapted to very thin or excessively thick septa; the former buckle and tend to return to the deviated position; whereas it is difficult and painful to saw through very thick septa, especially when containing bone. Also in thick septa, it is sometimes difficult to fracture the neck of the flap, in which case, this may be facilitated by incompletely incising it with Kyle's saw or Fetterolf's saw file.

In deviations extending far back into the bony septum, the posterior crus of the U-shaped incision is more effectively made with the saw through the wide nostril. Deformities located in the extreme posterior regions are better corrected by other methods. This also holds true in regard to sigmoid deflections, and those near the floor of the nose.

Deformities in the body of the flap or irregularities left in the formerly obstructed nostril, may have to be removed by subsequent

operation. It is well, however, to give nature a chance to adjust these spontaneously.

Since I first became acquainted with this method in 1897, I have used it in every deformity in which it was applicable, especially in "mixed" forms (3 cartilaginous and 20 mixed cases) with the most eminently satisfactory results. Contrary to the originator's experience, I found it very satisfactory in two cases of mixed deformity in children, owing to the simple after-treatment.

*Case X.* B. S. M., white, male, age 40; 1901.

*Indications.* Nasal obstruction, repeated colds in winter, especially in the larynx. Excessive smoker and drinker. Moderate arterio-sclerosis.

*Type of deformity.* Bowed cartilage to the right, smooth surface moderate overhang at nasal floor. Cause unknown.

*Gleason operation,* with saw and knife. Incision begun with bevelled saw. Cocain locally. Eucain injected. Duration. 10 minutes. Kyle-Mayer metal splint to prevent anticipated hemorrhage. Secondary hemorrhage, due to edge of splint catching in wound and preventing coaptation of edges.

Result perfect as to function and appearance, can scarcely detect site of operation.

*Case XI.* Dr. W. B. C., white, male, age 29 years; 1901.

*Indications.* Nasal obstruction left side, frequent colds and catarrh.

*Type of deformity.* Marked angular deviation of cartilage and bone (chondro-vomero-ethmoidal) to left side. Cartilage very thick. Cause unknown.

*Gleason operation* with saw. Difficult on account of septal thickness and development of bone in cartilage. Cocain. Duration, 15 minutes. No splint.

Result good. Slight synechia at floor in unobstructed side, no consequence. Septum too thick for this operation.

*Roe's Operation* (Trans. Amer. Laryn. Assn. 1900), consists essentially in the use of a special fenestrated forceps, by means of which either the cartilaginous or the bony septum may be fractured. Roe's forceps for a long time constituted the only safe and successful method of fracturing the bony septum, and my personal experience is limited to their use for this purpose, mainly as an accessory to some other method. Inasmuch, as even this instrument is not free from the possibility of danger, it has been suggested to control the line of fracture by means of preliminary fissure with the trephine or saw. Another resource is to use a male blade smaller than the one intended to go with the female blade of a given size. This instrument is especially useful in limited mixed deviations at

the chondro-osseous articulations. In my opinion no rhinologist's equipment is complete without it. I have performed this operation under cocain with satisfactory results and no complications.

*Case XII.* N. J., white, male, age 49 years; 1899.

*Indications.* Obstructed right nostril, pain over right eye, purulent discharge and frontal empyema right side; nervousness.

*Type of deformity.* Bowed deviation of face of ethmoid, completely concealing the middle turbinate on right side. Defective drainage.

*Roe operation.* Perpendicular plate of ethmoid fractured under cocain and forced over, no incisions, owing to presence of pus, right middle turbinate resected. Irrigation of frontal sinus with catheter; cured in 13 months.

*Case XIII.* Miss O. Z., white, age 18 years; 1904.

*Indications.* Nasal obstruction on right side.

*Type of deformity.* Bowed deflection of cartilaginous septum to the right, with angular vertical deflection at chondro-ethmoidal junction.

*Douglass operation* combined with *Roe forceps*. Two parallel incisions through cartilage, under cocain-adrenalin anesthesia, associated with crushing of vertical ridge with Roe's forceps guarded by saw incision (Kyle). Duration, 10 minutes. Dental gutta percha splint for 4 days. Result good.

*Case XIV.* Mrs. S. B., white, age 49; 1902.

*Indications.* Epiphora, mucocoele, pain in right nostril.

A lachrymal probe has been punched through the duct into the middle meatus.

*Type of deformity.* Angular deviation and crest high up at vomero-ethmoidal junction.

*Operation.* Saw incision and crushing with Roe's forceps. Resection of right middle turbinate. Operative result excellent. Referred to eye surgeon.

*Kyle-Fetterolf operation* (Laryngoscope, Aug. 1902) is more available as an accessory to other procedures, than a distinct method, although undoubtedly successful in certain cases of irregular and thickened septa.

*Bosworth's* and *Krieg's* methods differ merely in degree, the latter being an extension of the former. In each preservation of a flap of mucous membrane upon the convex side may be attempted.

*Bosworth's* plan of "sawing a new septum out of a thick and crumpled one, just like a straight board is sawn out of a crooked log" is applicable in cases of very thick septum.

*Case XIV.* Miss S. L., white, age, 17 years; 1902.

*Indications.* Double nasal obstruction; can breathe a little through the left side. Right ear slightly hard of hearing.

*Type of deformity.* Telescoped and thickened septum, deviated slightly to the right, caused by falling against a post in childhood. Roman nose, nasal bones convex. Left one incurvated to the right side. Depression beneath each one.

*Operation.* Resection of a slab from the septum with Bosworth's saw, below on left and above on right (bone) under cocain, at two sittings. Subsequent paraffin injection into external depression at two sittings (Harmon Smith method).

Breathing capacity and external appearance of nose greatly improved. Is now being catheterized for ear trouble.

*Case XV.* Miss A. G., white, age 17; 1902.

*Indications.* Absolute occlusion of left nostril. Hears loud voice only. About one year previously an unsuccessful operation was performed.

*Type of deformity.* Hypertrophied septum, with bevelled overhang low down in floor of nose. Cause unknown. Complete synechia between inferior turbinate and septum; not even a fine probe can be passed through left naris.

*Operation.* Krieg's "fenster" resection. An extensive fibrous synechia was first sawn through, and then an ellipse sawn bodily antero-posteriorly out of the cartilaginous and bony septum; the resected mass had to be removed piece meal with bone forceps. Simpson rubber covered splint used for four consecutive days. Uneventful recovery. Considerable improvement of hearing, immediately, not materially increased by subsequent catheterization.

*The submucous operation* should be defined as the removal of larger or smaller areas of the septum in between the muco-perichondrial and periosteal layers, and should not be applied to the mere preservation of larger or smaller shreds of soft tissues upon the convex side. It has been recently so fully and ably discussed by Killian, Hajek, Menzel, Jansen, Freer, Ballenger and others, as to warrant but little further mention.

This type of operation is based upon the assumption that the septum is a mere partition and not a support of the external nose. I am not alone in believing that the last word has not yet been said as to the harmlessness of this procedure. While it may be feasible, personally I do not believe that it is indicated or justifiable, in all varieties of deformity, any more than the operations which have preceded it. At present it is being enormously abused. Final judgment cannot as yet be passed upon the method. It supplements the other methods, and constitutes an operative advance so great that the word "inoperable" may almost be removed from septal



terminology. I believe that ultimately it will be employed in these hitherto inoperable and other difficult cases, as well as in simple cases in which very limited resection is necessary. Extensive resection for the relief of minor deformities is indefensible.

My personal experience consists of 6 cases by the Killian and 9 by the Freer method. All of these were carefully selected cases of complex cartilaginous or bony deformities. All gave excellent results with the exception of a small perforation in 2 early cases. In my hands, the operation has required from 30 to 60 minutes, and both the patient and myself have felt the physical effects of the seance. I have performed two operations under general anesthesia by this method, one in a child and one in an adult. They were attended with such difficulty, that I shall hereafter resort to other methods when forced to operate under these conditions.

We have also another type of operation, performed externally, which is particularly applicable under general anesthesia; of these the simplest is that of HARRISON ALLEN. (A. A. Bliss. Trans. American Laryngological Assn. 1901.) This consists in severing the maxillary crest by means of a small chisel placed beneath the upper lip; the mobilized septum is then forced over with the finger and retained in position with a splint until it becomes fixed. The operation is usually done under light etherization, although it may be successfully performed under cocain injection. This operation is indicated in a well defined class where there is a displacement of the whole mass of the partition, so that its whole lower border rests on the floor of one or the other nostril. There is little or no curvature of the surface, but there is always more or less bending of the anterior nasal spine toward one or the other nostril, often combined with hyperostosis, so that the vestibular floor is converted into a narrow fissure. It is also very valuable as an accessory to other methods. (Asch, Douglass.)

*Case XVI.* Mrs. S. A., white, age, 28 years; 1900.

*Indications.* Nasal obstruction on right side, so that she had to hold the wing of the nose aside in order to breathe. Also external nasal deformity, consisting in a distortion of the tip to the left, a depression of the bridge to the right of the median line and a lump to the inner side of the tip, due to fracture of the upper lateral cartilage.

*Type of deformity.* Internally a translation of the septum to the right, dislocation from nasal crest with thickening at the nasal floor. Cause, a fall on the tip of the nose in childhood, and running against a door in the dark in adult life.

*Harrison Allen operation.* Ether. Uneventful recovery. Septum a little over corrected. Subsequent resection of lateral cartilage through the nose.

*Löwe's operation* is applicable in anomalies situated on the most anterior part of the septum. Under general anesthesia, best after preliminary Schleich infiltration of the septal mucous membrane, an incision is made through the mucous fold of the upper lip just above the gum, extending from the first molar of one side to that of the other, and clear to the bone. The soft parts are then separated from the bone, until the under border of the pyriform fossa is in view. The inferior and anterior borders of the cartilaginous septum are then denuded of the soft parts by means of shallow longitudinal incisions along the anterior nasal spine. The mucous membrane should not be perforated, as the whole operation should be extra-nasal. A raspator, bent on the flat, is then inserted beneath the inferior turbinated body and from thence the lateral nasal wall, the nasal floor and the septum undermined. The nasal floor must invariably be first loosened, or else the mucous tube will inevitably be torn.

After elevation of the mucous membrane, the anterior inferior parts of the quadrangular cartilage are exposed, as well as the lower half of the apertura. Alterations in the anterior segment of the septum can now be removed as exactly as if one had before him, not the living man, but the skeletized skull.

With deformities lying further back and above, resection of the septum may be accomplished after preliminary decortication of the face. (See Löwe's Atlas.)

*Case XVII.* C. L., female, age, 10; 1905.

*Indications.* Mouth breather. Has had adenoids removed twice in three years, once by myself. Slightly deaf. Has repeated attacks of acute bronchitis. Is so nervous that she can scarcely be examined.

*Type of deformity.* Congenital nasal atresia. Extensive horizontal mixed ledge at nasal floor anteriorly, on left side.

*Löwe's operation.* Ether. Resection with saw chisel and bone forceps. Mucous membrane preserved. Considerable reaction, cold compress, gauze packing, cure in three weeks.

Another form of this operation is that used by GAUDIER. The patient being anesthetized with chloroform, the operator seated upon a high stool, takes the head between his knees with the face up. One assistant administers the anesthetic in the intermissions, and another illuminates and assists in other ways. The posterior nares are tamponned before-hand, and the nasal mucous membrane, both turbinal and septal, mopped with adrenalin. The lower border of the cartilaginous septum is then separated from the cutaneous, with a single horizontal cut of bistoury or scissors. The nares are

vertical and all maneuvers are made from above downwards. The lip is now forcibly retracted and a free incision made in the sublabial furrow, extending  $1\frac{1}{4}$  inches upon either side of the frenum. Bleeding vessels are seized and ligated at once; the wound is then retracted, and we see at the bottom of the lozenge shaped wound the two nostrils wide open, with the septum in the middle. Oozing is arrested by tamponnade. At this period an assistant replaces the operator in retracting the lip, and illuminates the field with an electric light. Beginning at the cut edge of the septum, you separate the mucous membrane with an elevator (Freer's instruments available), first from the concave side and then from the convex, until the entire deformity is denuded. The septum is then resected with punch forceps, until the deviation has been completely removed. If the nasal spine takes part in the deviation, it may be removed with gouge and mallet without any trouble, and as far back as you please. The nose and lip are then replaced and sutured in position with catgut. The writer then inserts nasal splints and carries out the usual after treatment. The oral method permits general narcosis, a wide operative field and is applicable to all patients without exception. It is especially applicable to unruly children of any age. The technical difficulties of the oral method are fewer than in the submucous operation.

Every case of septal deviation is an individual one, and its correction a matter of individual study. Deformities vary from simple deflection to forms so complex as to defy description or illustration.

There are many methods of correcting these deformities, varying from a simple, single incision, to maneuvers so complicated as to deserve the name of plastic operation. The majority of operators combine the best features of each of these methods. To variable deformities must be adapted an equally variable treatment.

The simpler classical forms have already been fully described in considering the standard operations adapted to their correction.

#### COMPLICATED DEFORMITIES AND CORRESPONDING OPERATIONS.

*Case XVIII.* T. P., white, male, age 16; 1895.

*Indications.* Tip of nose turned to the left, bridge broad and left nasal bone displaced.

*Type of deformity.* Marked angular deviation of cartilaginous septum to the right; dislocation from nasal spine and projection of edge of dislocated cartilage into left nostril. Denies any injury. (Fig. 2.)

*Gleason* operation combined with resection of projecting ledges gave excellent results. In a marked case of this type, I should probably now perform a submucous operation.

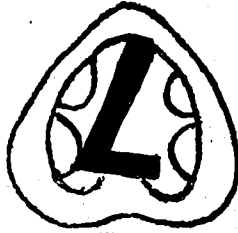


Fig. 2.

*Case XIX.* W. J., white, male, age 17; 1898.

*Indications.* Nasal catarrh. Constant nasal obstruction on the left side. Left ear dull. Sense of smell impaired on left side.

*Type of deformity.* Septum deviated to the left above (bowed) and right below (angular). (Fig. 3.)

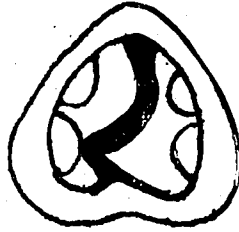


Fig. 3.

*Operation.* Roe forceps controlled by incision with a saw. This is a typical deformity for correction by the submucous method.

An unusual type of deformity is where we have a deep pocket upon the concave side, which may be either funnel or cup-shaped, and a corresponding conical or spheroidal protuberance upon the convex side, just as though the cartilage were embossed. (Fig. 4.)

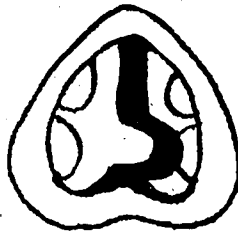


Fig. 4.

There is much redundant tissue, and its correction is difficult. By sawing off the apex of the prominence, followed by knife incisions on the Asch, or Douglass' principle, the deformity can be corrected, but much judgment is required.

*Case XX.* W. P., white, male, age 12; 1903.

*Indications.* Feeling of suffocation, mouth breather, nasal speech, inattentive, adenoids.

*Type of deformity.* Spheroidal protuberance of cartilaginous septum to left; cup-shaped hollow on right side.

*Operation.* Adenoid removed. Incision with knives and replacement with finger under chloroform. McKernon splint, removed on fourth day.

Result reported to be good by patient's physician.

In the majority of cases, the submucous would be a better operation for this type of deformity.

A type of deformity that has not received the attention that its frequency warrants, is separation of the cartilaginous plates of the septum. We may have simple projection of the lower edge of the cartilage ("pyramidal" dislocation), single or double, or "flaring out" of its entire surface on one or both sides. Again there may be a protrusion of the plate on one side, bowed or angular, and a flaring on the opposite side; or both plates may be bellied out into each nostril, the intervening space remaining as a hollow cavity or becoming filled up with fibrous tissue (biconvex or spindle shaped). This variety is often seen in the noses of Hebrews, in which the septum occupies the whole nasal chamber. Multiple incisions (Kyle-Fetterolf) and compression, followed by splints, will correct moderate degrees of fibrosis. The submucous operation is not suited to this form; the Ballenger swivel knife will not straddle the redundancy, nor the Freer knives penetrate it, nor the Grünwald forceps cut through it. Probably the best procedure is to saw out the deformity en bloc, either by Bosworth's or Krieg's method (which see). We should endeavor to preserve the mucous flap if possible. The thickened form may present an even surface, or the cartilage may be telescoped and crumpled, giving it an extremely irregular surface. The term "bullous" or "vesicular" should be reserved for this curved separation of the plates, inclosing a distinct interspace or cavity.

*Case XXI.* E. G., white, male, age 13; 1906.

*Indications.* Nasal obstruction, most marked on right side. Under developed.

*Type of deformity.* Vesicular bowed deviation of cartilaginous septum to the right, separation of plates, left plate projecting into right naris below. (Fig. 5.) Caused by a fall upon the nose, four years ago.

*Operation.* Ballenger-Freer submucous resection of both plates, duration 45 minutes.

Result excellent, sent home in two weeks practically well.

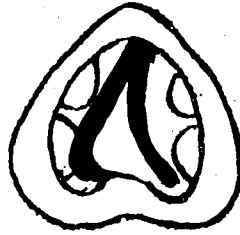


Fig. 5.

*Case XXII.* W. E., white, male, age 14; 1904.

*Indications.* Complete nasal obstruction on right side. Dullness of hearing, discharge at times, not at present.

*Type of deformity.* Vesicular bowed deflection of right septal plate completely closing right naris; (Fig. 6.) due to a fall upon the nose.

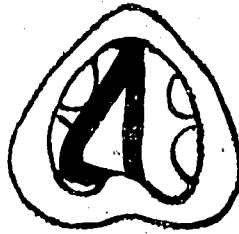


Fig. 6.

*Operation.* Freer's (old) submucous resection of right septal plate under cocain, left plate left intact. (My first submucous operation), duration 30 minutes. Adenoid removed.

Result excellent, patient sent home in one week almost well. Gained 10 pounds in weight in a few weeks subsequently.

*Case XXIII.* R. G., white, male, age 50; 1906.

*Indications.* Dull pain at root of nose. Complete nasal obstruction at all times on left side. Repeated head colds. Excessive nasal discharge.

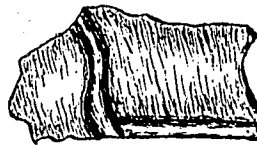


Fig. 7.

*Type of deformity.* External nose deflected to right, left nasal bone incurvated to right. Complex deviation of cartilaginous septum to left side, concave on right side. Left septal plate separated, with an anterior and posterior vertical angular dislocation and a superior and inferior horizontal angular one, terminating abruptly

above nasal floor (overhang) (Fig. 7); entire deviation can be circumscribed with a probe; caused by a fist blow in boyhood.

*Operation.* Freer (improved) submucous resection of both plates, cocain, mop and infiltration  $\frac{1}{2}\%$ . Duration 45 minutes. Recovery in three weeks. Result excellent.

Some deformities are so complex and the operations for their relief so intricate, that they deserve to be classified among the performances of plastic surgery.

*Case XXIV.* A medical man, 23 years of age; 1901.

*Indications.* As the result of a football injury some years before he presented complete nasal occlusion on the right side and consecutive postnasal and tubal catarrh.

*Type of deformity.* The septum had been fractured horizontally into the bony septum; the upper segment completely separated from the lower and carried into the opposite nostril, where it became embedded in hyperplastic material and adherent to the floor of the nose. The right surface of the triangular cartilage presented

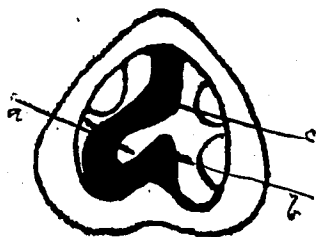


Fig. 8.

almost vertically at the right nostril. A fine probe could scarcely be inserted between the cartilage and the lateral nasal wall. A vertical ridge one-half inch in height, ran antero-posteriorly along the floor of the nose, consisting of bone with a capping of cartilage; between this ridge and the septal plate was a deep pocket on the concave side. (Fig. 8.)

A modified Gleason operation was done under local anesthesia (cocain 20% mop, eucain 5% by injection) and adrenalin, and was almost painless and bloodless; duration about 1- $\frac{1}{2}$  hours. The vertical ridge (b) was first denuded; then with a saw and knife, a modified Gleason U-shaped flap was made, (a) consisting of bone and cartilage and forced over this ledge into the opposite nostril. To lessen the resiliency of a much thickened septum, a horizontal groove was cut in the neck of the flap along its greatest convexity (c). No splints were employed, ice compresses. Considerable post-operative hemorrhage ensued, causing some worry, which yielded, however to continued cold. After two days rest, convalescence began and continued without event.

After recovery a vertical ridge was seen in the right nostril posteriorly, at the point of section, which was easily removed with cutting forceps, about one month after the first operation. There is considerable redundant cartilage in the floor of the right nostril, but as respiration is free and the ear can be satisfactorily treated, no further operation is contemplated. Previous to these operations a submucous cauterization had been done on an hypertrophied left inferior turbinate.

In this same category belongs a case of extreme displacement of the nose reported by Mayo Collier.

*Case XXV.* The dislocation of the external nose was extreme, the tip being under the right eye. The left nostril had been occluded for fourteen years, and very little air entered the right. The septum was pushed over to the left side, and literally lined the outer wall of the left nasal fossa. The right cavity was correspondingly enlarged, and a very large lower turbinal body occupied the concavity of the septum. A fine keyhole saw was forced into the lower meatus and the ridge of the maxillary and palate bones divided and removed. The vertical plate of the ethmoid bone was then fractured and pushed over to the opposite side. Some of the cartilaginous septum was removed.

The result was, so far, all that could be wished, a nearly straight nose and ample nasal respiration. No splints or supports of any kind were used.

In my judgment neither of these cases was suited to the submucous operation.

A difficult deformity to correct consists in a marked spur or ledge (chondro-exostosis) in the region of the nasal spine, associated with mixed deflection. This is in contact with the external nasal wall and almost in contact with the nasal floor.

The insertion of any instrument around the deformity is impossible and the growth is too dense for the use of forceps.

The use of mallet and chisel associated with the supra-labial operation, seems most feasible. The only case that I have had, was for special reasons treated by Löwe's operation.

#### CONCLUSIONS.

Modernization rather than abandonment of the older methods is what is needed.

The majority of cases can be satisfactorily treated by short operations under cocain-adrenalin anesthesia, and this should be employed whenever possible. The use of cocain admits of exactness in placing a limited number of incisions with adaptable instruments, under visual inspection, in the location where they will be most effective. Success depends more upon thoroughness and exactness in making these primary incisions than any other element.



One of the most valuable contributions of the submucous operators has been the demonstration of how much the patient can stand under cocain anesthesia. The general surgeon too, having learned from us the skilled use of this agent, is now showing us its great possibilities. For instance, removal under Schleich infiltration anesthesia of the hyoid bone, part of the base of the tongue and of the pharynx, as well as the larynx, recently performed upon a patient of mine.

When skillfully applied and carefully guarded by adrenalin, strychnine or alcohol, strong solutions of cocaine or even the pure powder may be safely used. By selecting our patients with discrimination in regard to their physical and nervous stamina, and employing the semirecumbent position, much of the supposed toxic effect of cocain may be avoided. I always prepare my cocain solutions fresh for each person, by dissolving tablets in warm sterile solution of adrenalin 1-2000, contained in a graduated minim flask, so that the exact quantity used can be determined.

The simple deviated septum operation is practically painless under cocain anesthesia. In difficult cases, all the preliminary incisions should be made under cocain, and the painful part (use of forceps, etc.) done under light general anesthesia. Ethyl chloride would seem an ideal anesthetic for this purpose, on account of its safety, rapidity of action, and its eschemic effect upon the nasal mucous membrane. After its use it is necessary for the nose to be plugged, for fear of secondary hemorrhage. Prolonged general anesthesia is now seldom required in these cases.

If we should pursue the standard operations with the same assiduity and pertinacity as the submucous, aiming at *improved technic* and *increased skill*, we should obtain in properly selected cases, by these less severe and exhausting methods, results in no sense inferior to those obtained by the submucous.

The trend of operative improvement should be toward simplification of technic and shortening of duration, rather than toward complexity. All obsolete and unnecessary instruments or maneuvers should be eliminated. In a large percentage of cases the use of forceps, either as a crushing or a compressing instrument, is ineffectual or unnecessary.

Fracture and replacement with the finger is efficient and painless, when the incisions are made completely through the cartilage. Therefore, this, the most painful step of the septal operation, can often be omitted. In certain cases, incision of the nasal spine with a chisel, either through the nose under cocain, or by the supra-

labial method of Harrison Allen, is an efficient substitute for their use.

The use of splints is extremely objectionable and should be abbreviated or eliminated whenever possible. When the primary fracture is thoroughly done, especially if the nasal spine is fractured or incised, splints will be required for but a short time. Having used all varieties of splints, I have latterly employed selvidge-edge, strip-gauze, or Simpson-Bernay's compressed cotton, dusted with bismuth or saturated *in situ* with camphormenthol solution in albolene, which will remain in the nose several days without becoming foul.

We now have a number of time-tested and successful operations, each one especially adapted to one or more of the infinite variety of deformities. It is a mistake to claim that every operation will correct all varieties. Operations must be selected and adapted to individual deformities, and it is often a difficult matter to decide which operation is best in a given case. I believe that success is as much dependant upon good judgment in this respect, as on marked operative ability; here the tyro fails.

If there be any excuse for specialism in nose and throat work, it is surely in the line of septal orthopedics. To successfully treat these cases, one must possess a special mechanical ingenuity and dexterity in endonasal technic, both in operating and in after-treatment, that can only be acquired by constant practice. It is a specialty within a specialty; one must not only be a specialist, but an expert in this particular line of work.

Quickness in operating develops with experience, and I am sure that as skill and facility increase, these operations can be made less formidable and more satisfactory.

There is no line of work in which the adage "practice makes perfect" is more applicable than to septal deformities; it is significant that the originators of these operations all claim better results from them than others obtain, and that all operators report their accidents or failures mostly in their early cases. We must moreover become expert in several methods, as we may have to combine one with the other (Douglass-Roe; Roe-Kyle; Douglass-Allen, etc).

I, for one, am not willing to relinquish operations by which I am able to obtain satisfactory results in suitable cases in 5 or 6 minutes actual operating time, in favor of those requiring from 6 to 10 times that long and much endurance on the part of both patient and operator. Moreover, we will find many more patients who can endure the limited strain of these short operations than the prolonged strain of the submucous.

As to which of these methods have stood the test of time and experience, and which can be discarded as superseded by better methods, each is entitled to his individual opinion. I venture to assert, however, that the Asch, Douglass, Gleason and Harrison Allen methods, and the Roe forceps and Kyle saws and splints, will continue to be used in suitable cases, as long as there are septal deviations to be corrected.

Dissatisfaction with the new method is already appearing, and I am sure that in a short time there will be a reaction in favor of the older operations, and that in some cases, a better result can be obtained by the old methods, than by the new. Although the sub-mucous operation belongs to the most difficult of nasal operations, all agree that it is indispensable, and a method that every one who aspires to the title of a modern nasal surgeon must master.

The writer is fully aware of the incompleteness, imperfection and possibly the incorrectness of these views, but this has seemed to him to be a direction toward which our attention might profitably be turned at this time.

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**Photo-Therapy in the Treatment of Otitis Sicca.** DR. MANGIOLI.

*Archiv. internat. de laryngol.*, May-June, 1905.

Light possesses in addition to its bactericidal action stimulating properties which induce acceleration of functions and organic changes and which benefit the life and energy of the organs. It is on this property of light that the application of photo-therapy in otitis sicca is founded. The author has adopted the style of lamp used by Ferreri for the larynx and the results which he has obtained seem encouraging.

SCHEPPEGRELL.