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*Prof. Ferguson
with the high respect of
D. Mütter*

A REPORT
ON THE
OPERATIONS FOR FISSURES
OF THE
PALATINE VAULT.

BY
THOMAS D. MÜTTER, M.D.,

PROFESSOR OF SURGERY IN JEFFERSON MEDICAL COLLEGE, PHYSICIAN TO THE
INSTITUTION FOR THE DEAF AND DUMB, PHILADELPHIA; CORRESPONDING
MEMBER OF THE "NATIONAL INSTITUTE," AT WASHINGTON; COR-
RESPONDING MEMBER OF THE NEW YORK MEDICAL SOCIETY;
HONORARY MEMBER OF THE PHILADELPHIA MEDICAL
SOCIETY; FELLOW OF THE COLLEGE OF PHYSI-
CIANS, PHILADELPHIA; MEMBER OF THE
ACADEMY OF NATURAL SCIENCES,
PHILADELPHIA, &c. &c.

PHILADELPHIA:
Merrihew & Thompson, Printers,
No. 7 CARTER'S ALLEY.

1843.

A REPORT

OF THE

OPERATIONS FOR INSURANCE

OF THE

REINSURANCE COMPANY

IN

THE YEAR 1840

AND OF THE PROCEEDINGS OF THE BOARD OF DIRECTORS
IN RELATION TO THE BUSINESS OF THE COMPANY
DURING THE SAME PERIOD

AND OF THE

FINANCIAL STATEMENT OF THE COMPANY

FOR THE YEAR 1840

1841

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NOTE.

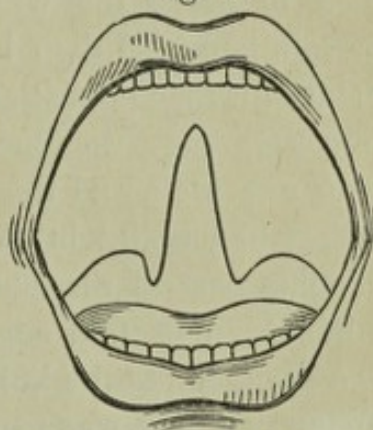
I HAVE performed, in all, twenty-one operations upon the soft and hard palate, and out of this number have failed to relieve the patient but in two cases. In one, the ligatures were removed on the second day, by the coughing and restiveness of the individual; and the operation has not been repeated, although the case is as susceptible of remedy as before. In the other, the voice, although *improved*, is still indistinct, and the relief is not as apparent as in the other cases. I have met with no dangerous symptoms in any case.

In a resumé of M. Roux's cases, to be found in the Gazette Médicale, for August, 1842, it is stated that in "simple fissure of the velum he cured *two* out of *three*. When complicated with fissure in the hard palate, the proportion of successful cases was but *one* in *three*"! Dr. Warren, of Boston, has relieved thirteen out of fourteen cases.

September 8th, 1843.

CASES OF CLEFT PALATE.

CASE I. In the spring of 1840, I was requested to attend Mr. Nathaniel L. Dickey, of Philadelphia, who was desirous of having an operation performed for a congenital division of the velum palati and posterior third of the palatine processes of the palate bones. The appearance presented by the parts involved in the deformity is shown in the annexed cut. Fig. 1.



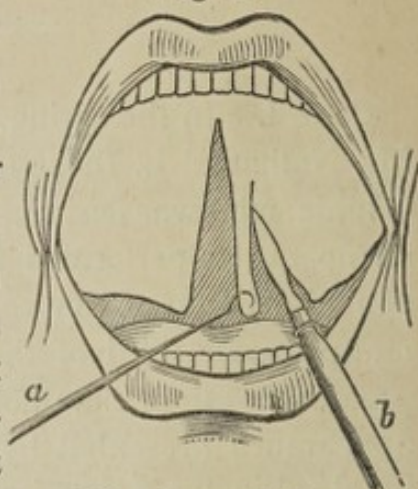
The age of the patient, 25 years, his excellent general health, the favorable season of the year, his intelligence, and, above all, his anxiety to be relieved of the distressing accompaniments of the defect, determined me to perform the operation of velosynthesis or staphyloraphy at once. He was accordingly placed upon a preparatory treatment, (that is, so far as accustoming the parts by frequent touching to the presence of foreign bodies,) and after this end was accomplished, which required some days, a mild purgative was administered, and the next morning the operation was performed, in the presence, and with the assistance of Drs. J. Randolph, Norris, and Anderson, and several of my private pupils. The patient was placed in a chair of the ordinary height, and his head firmly supported against the chest of an assistant. The upper portion of the trunk was also en-

veloped in a sheet by which his arms were secured, and his dress protected from the hemorrhage.

Placing myself in front, a little to one side of the patient, so as to offer as little obstruction to the entrance of light into the mouth as possible, and the head being thrown back to favor the same object, he was requested to open his mouth and keep it in this position as long as he was able.

The first step in the operation was then commenced by Dr. Randolph, (who stood on my left,) inserting a sharp hook

Fig. 2.



(see Fig. 2, *a*,) into the most dependent angle of the left margin of the cleft, by means of which, with a slight tractive effort, he was enabled to make the whole line of margin tense. I then inserted the point of a *thin double-edged knife*, (see Fig. 2, *b*,) (the blade of which was one inch, and the handle six inches in length,) in the most dependent part of the margin, about a line from its free edge, and cut rapidly from *below, upwards*, inclining the knife so as to reach the apex of the cleft. When the apex was reached, the knife was changed from the right hand to the left, and Dr. Randolph passing the hand which held the hook, across and a little above the face of the patient, made pretty firm traction upon the slip of mucous membrane previously separated by the first cut, and which still remained transfixed by the hook; by this means the right margin was made tense. I then completed the denudation by cutting rapidly from above, downwards. The denudation of the margins occupied about a minute, and the patient was then allowed to rest. The hemorrhage was slight and easily controlled by gargling with cold water, and after the lapse of a few minutes the second step of the operation was commenced, and it was in this the most difficult of the three, that we found the vast superiority of a simple contrivance over all the complicated "*portes*" with which I came prepared.

Great convenience was also derived at this period of the operation from having small pieces of fine sponge firmly tied upon long probes, with which the fauces were readily reached; and the clotted blood mopped away.

The head being placed and firmly supported as before, and the mouth held open by the volition only of the patient, I passed a small curved needle, armed with a well waxed double silk ligature, and firmly held in the grasp of Physick's forceps, through the most dependent part of the left margin of the cleft, carrying the needle from before backwards, and inclining my hand to the left of the mouth, so as to throw the point of the needle, after it had transfixed the tissues, into the middle of the cleft, (see Fig. 3, *a*.) As soon as it was visible, Dr. Randolph seized it with a pair of long forceps, (see Fig. 3, *b*,) and the clamp of the porte being at the same time relaxed, by which the grasp upon the needle was kept up, the latter was loosened and at once withdrawn from the mouth. The same needle was immediately replaced in the porte, and the latter being held in the right hand, instead of the left, I introduced the needle on the right margin of the fissure, at a point as nearly opposite as possible the little wound in the left, passing it from behind forward, (see Fig. 4, *a*.) As soon as its point was visible, it was seized and drawn through, and thus the first ligature was passed. The patient was then allowed to rest for a few minutes, and then the second ligature was passed in the same manner; a third and a fourth were

Fig. 3.

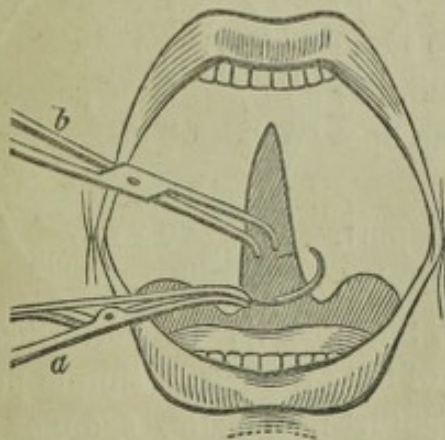
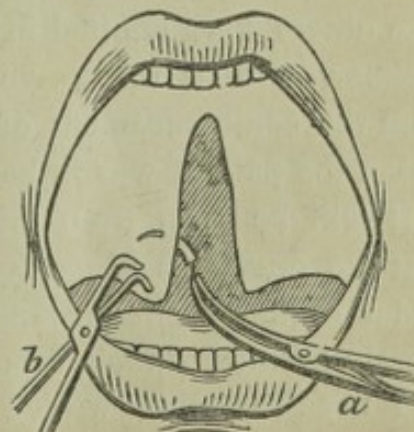
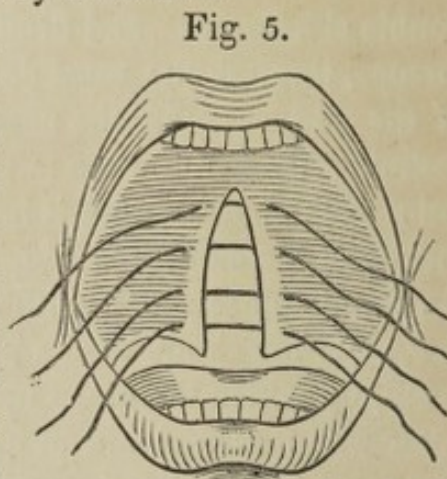


Fig. 4.



also required, and between the introduction of each there was a respite of a few minutes allowed, during which the patient gargled with cold water, took a little wine and water, and had the blood mopped away. The whole were passed in about fifteen minutes, and as the needles were detached from each, their extremities were carried out at each corner of the mouth, and held separate by assistants.

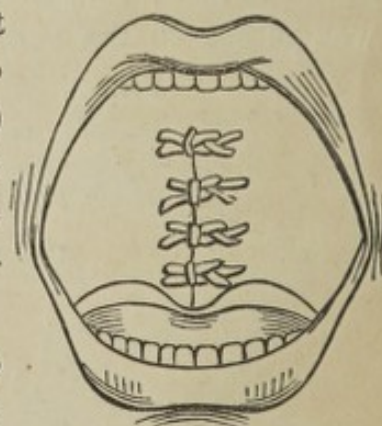
The needles were all introduced from two to three lines from the margins. (See Fig. 5.) The third and last step was then undertaken, and we commenced it by tying the ligature first introduced, or that nearest the uvula. The first knot was easily made by crossing the ends of the ligature, wrapping them



around the ends of the forefingers of each hand, and then passing the fingers as far back as possible. The edges came together beautifully, and with but little strain, by slowly carrying the fingers outward, and then the second knot was made. While the ends were crossing for this knot, Dr. Randolph grasped the first with a pair of forceps, and held it until the second was completed. Lastly,

the ends of the ligatures were cut off close, and the patient allowed to rest for a few minutes. (See Fig. 6.) The others were knotted in the same manner, and in thirty-five minutes from the commencement of the operation the patient was in bed.

Fig. 6.

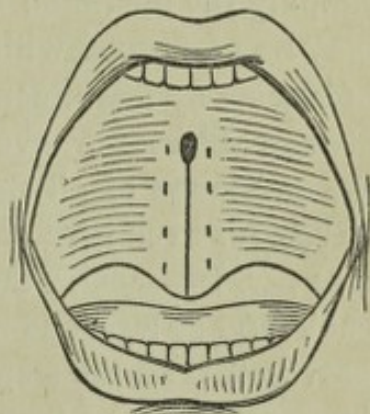


It will be seen from this report, that the operation of staphyloraphy, under ordinary circumstances, requires for its performance merely a knife, a hook, a pair of long forceps, a simple porte and needles, with waxed ligatures, scissors, sponges on

handles, wine and water, cold water, towels, and two or three assistants. Other aids are occasionally employed, some of which will be referred to directly.

The subsequent treatment was such as is usually recommended in similar cases. For example, the patient was ordered not to speak, cough, sneeze, &c., and to take no nourishment except a little whey or barley water, a few drops at a time. On the fourth morning, it was found that one of the ligatures had given way, and that there was some disposition to slough. This was arrested by touching the part with solutions of argent. nit. grs. ij.; aq. font. ʒj. ; of chloridi calcis, ʒj. ; aq. font. ʒiv. ; and of kreosote, gtt. vi.; aq. font. ʒj. The other ligatures were taken away on the 5th, 6th, and 7th days, and in three weeks time the cure was complete, with the exception of a small opening at the upper part of the wound, caused by the separation of the ligature, but this opening, from the use of argent. nit., and the efforts of nature, is now not larger than the head of a pin.

Fig. 7.



Remarks.—The operation of staphyloraphy, velosynthesis, kyonoraphy, uraniskoraphy, (for all these terms have been applied to the operation in question,) has been so frequently performed in Europe and this country, (with varying success, it is true,) that the report of another successful case will be received by the profession as a matter of not much interest. When we recollect, however, that the operation is considered by all as one of the most delicate in surgery, rarely succeeding perfectly, and occasionally causing the death of the patient, every thing calculated to simplify its details or ensure success should be considered of importance and arrest the attention of the operative surgeon. Nothing proves more conclusively the delicacy and difficulty of the operation than the immense variety of instruments invented for its performance. Ever since the period when the dentist

Le Monnier first essayed to close a "congenital deficiency of the palate from the veil to the incisors," surgeons have been occupied in devising methods by which the operation might be performed with ease to the surgeon and with comparative ease to the patient, and yet it must be confessed that up to the present moment no one plan of operating can be said to accomplish these ends much better than another; and obviously because nearly every one requires for its performance instruments exceedingly complicated, and often but illy adapted to the purpose for which they were invented. We will not waste time in enumerating, much less in describing the various instruments, and refer all who wish information upon the subject to the works of Velpeau and Froriep and the American Journal of the Medical Sciences, in which nearly all of importance are described or figured. It appears to me that the first thing to be done in our attempts to simplify the operation is to show by positive results that it may be performed with more rapidity and a greater prospect of success by instruments such as I have described, which are always at hand, or even by others more simple, than with the assistance of all the special and complicated ones that have ever been invented. As a case in point I may remark that Mr. D—— was but thirty-five minutes in the operating chair, and at least one-half of this time he was resting, which proves that all the steps of the operation may be completed in from fifteen to twenty minutes. Now, I have seen the best operators from one hour and a half to two hours and a half in effecting the same thing, and the delay was chiefly to be attributed to the instruments employed. All the clamps to seize and hold the edges of the fissure, the crooked scissors to pare away the edges, the complicated "portes" for the needles, and "serre nœuds" for tightening the knots of the ligatures, corks to hold open the mouth, &c., &c., may, in most cases at least, be dispensed with, and not only this, but dispensed with to advantage.

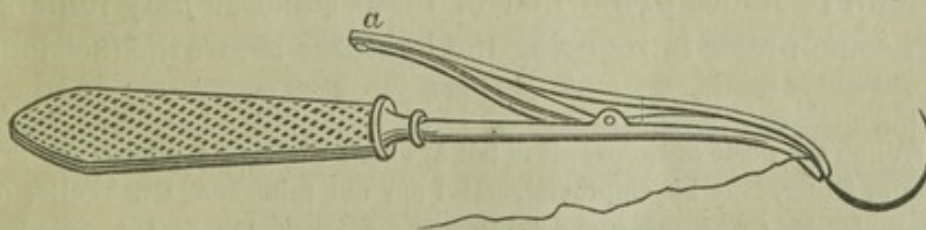
Dr. N. R. Smith, of Baltimore, has performed this operation with a long lance-shaped needle, furnished with a notch for

the reception of the ligature, a common bistoury, and a pair of forceps. The only objections to the needle in question are, first, its being mounted on a straight handle, which renders it more difficult to introduce its point at the proper places; and secondly, the difficulty of disengaging the thread, which may be drawn back along with the needle in the attempts of the surgeon to disengage the latter from the margin of the palate. Notwithstanding these objections, however, it served an excellent purpose in the hands of the skilful surgeon by whom it was invented.

In using the forceps and needle of Dr. Physick, I would suggest an alteration in the shape of the needle generally employed, which is not sufficiently curved for the operation of staphyloraphy, and presenting sharp edges is apt to turn in the forceps used to disengage it from the pair in which it is held.

The needle I now use is more curved, half an inch in length, and mounted on a cylindrical neck, a portion of which is held in the grasp of the porte, and the other part made rough is intended to be grasped by the forceps of the assistant. The cutting edge of the needle being wider than the diameter of its neck, will make an opening large enough for the easy transmission of the ligature.

The forceps too may be improved by causing them to close with a spring instead of a catch, such as they are usually furnished with. The "porte" of Schwerdt, of which the accompanying cut conveys a very good idea, and which



is figured in the large work of Froriep, answers a better purpose than Physick's forceps, (to which it bears a strong resemblance in principle at least,) in consequence of the facility with which the needle may be disengaged. By simply

depressing the branch *a*, the blades open, and the needle falls out. The spring should be strong, so that some force will be required to depress it. If too weak, the needle is held so loosely, that it will be almost impossible to make it pass promptly through the yielding edges of the velum.* The forceps to be used by the assistants, should be made with a curve, and have their blades narrow, so that the needle may be grasped by its neck with facility.

Dieffenbach, who certainly deserves more credit than any other surgeon for his success in this operation, not even excepting Græfe and Roux, its accredited originators, prefers lead to silk ligatures, and assigns some very plausible reasons for the preference; but the difficulty of obtaining good ones, the irritation which their sharp extremities keep up upon the tongue, thus exciting cough, and the success which has attended the use of the silk, all lead me to prefer the latter. Most surgeons, and all who know much about the operation in question, have laid down a series of rules, by which we are to be governed in its performance. As reports of rare and successful cases are intended more for the benefit and instruction of the very young, than for the information of the older surgeons, we will conclude this section with a résumé of the rules referred to.

First, The operation should be divided into three stages—

1. The denudation of the edges of the fissure.
2. The introduction of the ligatures.
3. The approximation of the edges, and tying the ligatures.

With reference to the first of these stages, I may remark, that some prefer introducing the ligatures before the incisions

* When the porte of Schwerdt is not at hand, Physick's forceps, or the porte of Roux, may be employed. If I am not mistaken, Dr. Wells, of Columbia, S. C., a most excellent surgeon, was the first to employ Physick's forceps in an operation upon the palate. In his case the opening was made by a reed being thrust forcibly through the roof of the mouth. The edges of the wound were brought together immediately after the reception of the injury, and reunion by the first intention readily took place.

are made, as the blood prevents to a certain degree, our ascertaining precisely the spot at which the needle enters, but in all the cases which I have seen, the slight hemorrhage which follows the section of the edges, is readily checked by causing the patient to gargle with a little cold water. Mr. Alcock attributes the partial failure in one of his cases, to the denudation of the edges before the passage of the ligatures, in consequence of which some moments elapsed between the denudation and approximation of the margins of the fissure. This short interval could not, however, exert any influence upon the tendency to re-unite, which all denuded tissues possess, when they are closely approximated. Many examples of union by the first intention, even when several minutes have elapsed before the adjustment of the separated tissues could be accomplished, might be cited, were it necessary to prove the assertion just made.

When the ligatures are introduced before the edges are denuded, there is always danger of cutting them while this is being done, and should this occur, the operation will of course be rendered more tedious, and necessarily more painful.

Again, when the edges are previously denuded, the sutures may be inserted more readily at the proper distances from the margins, and thus the liability to "cut out" be much diminished.

In freshening the edges, we should always commence at the most dependent point. By making the section from below upwards, the blood will not obscure the parts, and we are thus enabled to see the tissue through which the knife has to pass, in its natural state.

In the introduction of the sutures, we must always, for obvious reasons, commence at the inferior portion of the wound, and be very careful to cause the points of entrance on one side, and exit on the other, to correspond as nearly as possible. Attention to this will prevent a puckering of the wound, and, as a consequence, its irregular union. All the sutures must be passed before we attempt to close the fissure; and in tying them, it is unnecessary to use any instrument

for tightening the knots; the surgeon's fingers being all that is required. After the first knot is made, the surgeon passes his forefingers out towards the cheeks, and this tightens the ligature previously wrapped around each; the assistant then may seize the knot in a pair of common straight forceps, and hold it firmly until the second be tied. Both ends of the ligature are then cut off close, so as to prevent their irritating the fauces, and causing cough. Caution must be observed in this part of the operation, not to tie them too tightly, lest they produce ulceration, or "cut out."

Age.—Surgeons, with but few exceptions, have come to the conclusion, that the operation should never be attempted until the individual is old enough to appreciate its difficulties and dangers, as well as the the benefits likely to ensue from it when success attends our efforts. It is hardly safe to undertake it before the sixteenth or eighteenth year.

Health.—The state of the general health should always be taken into account before the operation is decided upon. If the patient be feverish or too much debilitated, troubled with a cough or sore throat, or enlarged tonsils, or suffering from derangement of any of the important chylopoietic viscera, nothing should be attempted until these difficulties are removed. It is supposed by some that fluor albus, chronic ulcers, and strumous inflammations, from their debilitating influence by which the adhesive process is materially interfered with, particularly contraindicate the performance of an operation the success of which so essentially depends upon the speedy union of the surfaces in apposition.

Season.—Although the operation may be performed at any season of the year, yet, when we have it in our power to select the period, we should always decide upon that least liable to atmospheric vicissitudes. *Mid-winter* or *late spring* probably answer best. When the weather is very warm the patient bears confinement badly, and there is of course more risk of inflammation. In early spring or autumn the changes are so rapid, and occasionally so severe as to cause colds and

cough, the occurrence of which in the patient would effectually prevent the success of the operation.

Preparation of the Patient.—Some surgeons lay much stress upon the preparation by medicine, diet, &c., of the patient, but unless there exist some positive indication for the employment of such measures, they are for the most part useless. If he be in good health, the administration of a purge the day before the operation is to be performed will be all that is required. Much benefit, however, will result from frequent introduction into the fauces and between the edges of the cleft—the instrument to be used, or the finger of the surgeon or of the patient himself, by which the parts become, as it were, *familiarised* to the presence of foreign bodies. Unless this be attended to, much difficulty will be experienced during the operation, from the efforts of the patient at retching, or even vomiting occasioned by the irritation of the fauces. When the parts have been daily accustomed to some similar impressions, they soon become so insensible as to bear being touched without much inconvenience.

Difficulties.—The difficulties accompanying the performance of this operation have been, as I have already hinted, vastly magnified. But under the most favourable circumstances and with the most simple instruments, it is one not to be entered upon lightly, as presenting *no difficulty*, and requiring but little skill for its successful performance. Not the least annoying circumstance connected with its performance, is the constant disposition on the part of the patient to *close his mouth*. To obviate this, some surgeons employ bits of *wood* or *cork*, grooved above and below, so as to admit the upper and lower teeth and hold them steadily. These are placed between the last molars, and when the patient is restive serve a very good purpose; but it seems to me that, like most of the “*apparatus major*” with which the operation is burthened, they, in most cases at least, may be dispensed with, and as they occupy a considerable space

where room is much wanted, it will be well, whenever the patient is trustworthy, to discard them entirely.

Motion of the Tongue.—Another difficulty is the motion of the tongue. As it is impossible to perform the different steps of the operation unless the cleft is readily reached, and as the constant motion of the tongue, uncontrollable in some cases, by an involuntary effort of the patient, effectually prevents this, surgeons have contrived a variety of instruments for keeping it out of the way. An oval plate mounted on a handle, so curved as to avoid pressure upon the teeth, has been used by Professor Gibson, and serves a very good purpose when such a thing is required. But when the patient has been accustomed by repeated trials to keep the tongue quiet while the mouth is held open this difficulty may be considerably diminished. In the three operations upon the palate now reported, it was unnecessary to use any thing to fix the tongue, the patients having been previously prepared for the operations by the efforts already referred to.

Breaking of Needles.—When the needles employed are badly tempered it may happen that the pressure of the forceps will cause them to snap. This happened to a distinguished surgeon who recently attempted the operation upon a very unruly patient. The needles in consequence of the fracture were swallowed, and some difficulty occurred in their removal from the œsophagus, although this was ultimately accomplished.

Hæmorrhage.—Some have expressed much dread of the hæmorrhage occasioned by the freshening of the edges of the cleft, and many dwell upon the annoyance experienced during the introduction of the ligatures, from the blood covering the parts and thus preventing, to a certain degree, the proper location of the needles. So far as I have been able to judge from my own cases, and from those of some of my friends, this difficulty is one of minor importance, and the oozing of the blood may be readily checked by cold and astringent gargles.

Difficulties after the Operation.—In order that reunion

by the first intention may be accomplished, it is absolutely necessary that the edges of the wound be kept in a state of rest. This can only be effected by cautioning the patient against speaking, coughing, sneezing, clearing the throat and swallowing too frequently, but notwithstanding every precaution it sometimes happens that our efforts are frustrated by wilfulness on the part of the individual, or by accident.

For example, in the case of Mr. D——, who in every way was a most excellent patient, talking during sleep caused the detachment of one of the ligatures on the second night after the operation was performed. From the irritation of the fauces, patients are very apt to “clear the throat,” and by this effort the ligatures may be detached, and the same cause may occasion uncontrollable cough. In either case, injections of laudanum repeated until the system is fully under the influence of the anodyne, answer a better purpose than any other remedy.

Thirst.—Thirst is a very troublesome circumstance, against the indulgence of which all the philosophy of the patient must be brought to bear. Great relief, however, will be experienced from wetting the roof of the mouth with some demulcent liquid. A small piece of sponge attached to a quill or stick will be found useful for the application of the liquid employed. The patient, on no account, should be allowed to swallow a large mouthful of water or any thing else; a teaspoonful of water may be allowed occasionally to trickle down the throat.

Hunger.—Some patients are very restive under the rigid abstinence from food to which for some days they must be subjected. The best article of nourishment is thin calf’s-foot jelly, or what is known as “cold custard” or “slip.” Either of these articles may be given after the second day, but it is best to prohibit any thing until after the third.

Gripping.—From the quantity of blood usually swallowed during the operation, patients are often severely griped. For this symptom the best remedy is an enema, repeated every hour until the blood is brought away. Should it continue for

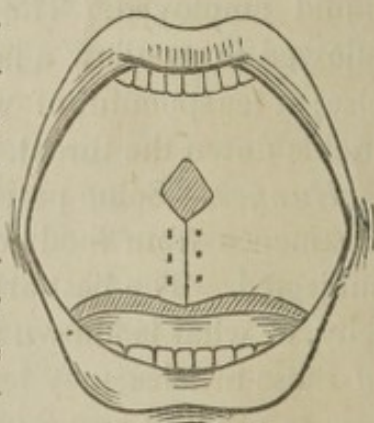
any length of time or be exceedingly severe, an anodyne injection must be employed.

Inflammation of the fauces.—It not unfrequently happens that inflammation follows the performance of this operation, and may be so severe as to cause great pain, or extending down into the lungs occasion the death of the patient, as was the case with the daughter of Lord Lyndhurst, operated upon by M. Roux in 1836. Should this unfortunate complication make its appearance it must be controlled by the most active antiphlogistic means, such as venesection, leaches to the throat, blisters to the same part, and purgative enemata.

It would not of course be proper to administer cathartics; should cough accompany the inflammation it must be kept down by opiates.

Sloughing.—When the inflammation runs high, sloughing is almost sure to take place, the ligatures cut out, and the operation almost to a certainty fails, either entirely or in part. As soon as the slough is perceived it should be vigorously attacked by all the remedies calculated to arrest this action. I know of no better agents, however, than a solution of argent. nit. grs. ij.; aq. font. ʒi. ; or a mixture of kreosote gtt. vi.; aq. font. ʒij. applied by a camel's-hair pencil three or four times a day.

Failing to Unite throughout.—From sloughing, cutting out of ligatures, or want of proper action in the edges, the fissure may be but partially closed, as is seen in the accompanying figure. When such a termination of the operation occurs, our work is but half finished, and the holes must be patched or healed by processes hereafter to be described.



Parts too Tight.—It occasionally happens that the union may be perfect, but in consequence of the tissue in the vicinity being more firm than usual, and consequently less yielding, or owing to the large size of the fissure, which requires for

its occlusion more membrane than the adjacent parts could well supply, the new velum is so rigid and tense as scarcely to possess motion, and hence hardly participates in the various attempts of the patient at swallowing or speech. When such is the case the operation is but partially successful, and before our patient is relieved we must make an incision on each side parallel to the teeth, and half way between the latter and the cleft, by which the tension of the palate is removed and it is rendered subservient to the influence of the muscles in its vicinity. These incisions have sometimes to be made at the time the operation is performed, in order to take off the strain from the ligatures. Dieffenbach was the first to propose this, although the credit of the suggestion is claimed by several.

Too much praise cannot be given to this modification of staphyloplasty. I have resorted to it on several occasions with the most satisfactory results, and I find that Prof. Pancoast, in a case recently reported by him in the American Journal of Medical Sciences, for July, 1843, also derived great advantage from its employment.

Dangers.—This operation has been repeatedly performed by surgeons both in Europe and in this country, and so far at least the number of deaths resulting from its performance has been comparatively small.* Some, however, have certainly lost their lives, and as it is nearly always an “operation of choice,” no surgeon would be justified in performing it until he had stated fully to the patient and his friends the possibility of a fatal result.

Results of the Operation.—Those not familiar with the operation and its results are very apt to promise a too speedy relief of the defects for which it was performed. For instance, it is often stated that if the adhesions are perfect, the voice will be *immediately rendered natural*. Now, so far from this being the case, it requires weeks or even months for it to take place, and unless the patient is aware of the fact he will

* But 3 in 105 cases.—*Gaz. Med. de Paris.*

be greatly disappointed when he first "essays his voice" after it becomes safe for him to do so. The experience of surgeons all goes to prove, however, that the voice *in time* is rendered nearly if not entirely natural, and with this assurance our patient must rest satisfied. Deglutition is at once improved, although even in this respect there may be some disappointment, for if the velum be tight, as is sometimes the case, there will be more or less difficulty in swallowing, which can only be overcome by time or the performance of the lateral incisions already referred to. The distressing inconvenience of food and drink passing through the nose during the attempts at deglutition is, however, relieved from the moment adhesion is accomplished, and in this respect at least the patient is at once rendered more comfortable. The *durability* of the adhesions has also been made a question; but as far as I have been able to learn, there is no instance of their giving way after the period when inflammation and its results are to be apprehended. The velum made by the surgeon is in every sense as strong and as useful as the natural one.

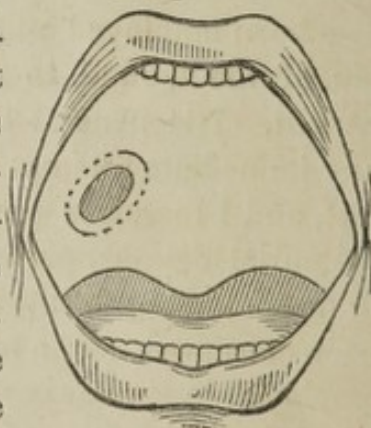
When the adhesions are imperfect and holes of different shapes and sizes are left, it may be requisite to repeat the operation, in part, or to resort to other measures for their closure. When not very large I have succeeded in some cases with the aid of the argent. nit. repeatedly applied to the edges of the opening, and a well made obturator either of gold, silver or ivory. The shape of the obturator as well as its size must of course depend upon the nature of the opening, and may be held in its place by wires passed around the teeth, or by a sponge, or it may be made to resemble a common shirt stud, one plate of which rests upon the floor of the nostril, while the other forms a part of the roof of the mouth.

From the imperfect mastication and insalivation of the food, persons labouring under the cleft palate are very apt to suffer from dyspeptic symptoms. These are of course relieved as soon as the causes producing them are removed.

CASE II. In the month of June, 1840, I was requested to attend Mr. J. W. Richards, who had suffered for a long time from chronic mercurial disease, and who in consequence of this affection had lost a considerable portion of his palate. When I saw him the ulcerative process had ceased, although there existed chronic inflammation of the mucous membrane of the mouth and fauces. In addition to this there was an oval opening, three-fourths of an inch in length by nearly half an inch in breadth, on the right side of the roof of the mouth, through which the finger might be readily passed into the nostril of the same side. The velum palati was barely involved in this opening, the ulceration having been confined almost exclusively to the hard palate. The margins of the opening were sharp and rigid, while the adjacent mucous membrane, in consequence of the previous inflammation, was more closely attached than usual to the osseous portions of the palate. His speech as well as deglutition were much impaired, and he experienced great mental distress from the observations of those by whom these defects were noticed. He had already consulted several gentlemen of the profession, one of whom had applied an obturator, from the employment of which instrument slight relief was derived. Caustics had also been employed and every effort made to cause the margin of the wound to granulate, but without the slightest benefit. His general health was such as to contraindicate any immediate attempt by surgical means to remedy the defect, and I therefore put him at once on a treatment for the mercurial disease, promising that as soon as this was cured to do something for the deformity for the relief of which I had been consulted. The remedies prescribed were those usually employed in similar cases, and after the lapse of twelve weeks I had the satisfaction of finding the disease entirely eradicated and my patient in an excellent condition for the operation. From the rigidity of the margins of the wound it was obvious that an attempt to cause them to approximate by the ordinary operation of staphyloraphy would prove utterly useless, and it became necessary for me to advise some other plan of

procedure. The size of the opening induced me to abandon the attempt to close it by "two flaps detached from the adjacent soft parts, inverted upon themselves and united to each other in the centre of the wound," as recommended by Krimer; and also deterred me from resorting to the plan of Velpeau and others, in which one or more flaps are made by dissecting up the mucous membrane on each side and then sliding it over the opening, uniting the flaps either at the median line or carrying (when but one is made) the free margin entirely across and stitching it to the adjacent membrane, first made *fresh* by scarification.* The operation of "sliding the flap," modified so as to embrace the operation by "granulation" of Mettauer was finally decided upon and performed in the following manner:—Placing my patient in a good light, and having the head firmly supported against the chest of an assistant, he was requested to hold his mouth open as long as possible, all artificial means for accomplishing this object being dispensed with. I then with a small thin convex edged bistoury made a crescentric incision through the mucous membrane, and down in fact to the bone, commencing the incision nearly opposite the superior extremity of the opening and continuing it until it reached a point nearly opposite its inferior. A strip of mucous membrane about three lines and a half in breadth, was thus separated except at its extremities from the adjacent parts. A similar incision was then made on the opposite side, (see dotted lines, Fig. 10.) The lips of the little wound were next detached from the subjacent bone

Fig. 10.



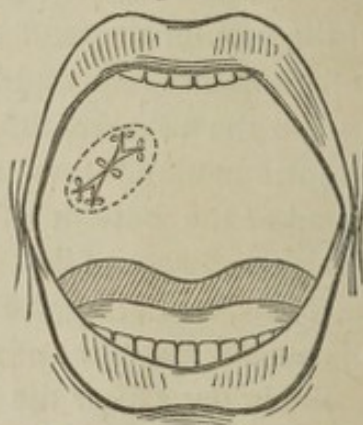
* Dr. J. M. Warren of Boston, to whom the profession is indebted for many valuable improvements in operative surgery, and whose success in the autoplasmic operations has been very great, recently succeeded in closing a deficiency in the upper part of a palatine cleft, or that portion which extended into the hard palate, by detaching the mucous membrane and sliding it from each side to the median line, uniting the flaps by two or three sutures.

to the extent of one line on each side, and then folded, as it were, upon themselves, thus leaving a gutter into which I inserted a small cylinder of soft buckskin. Making the incisions, detaching the lips of the wound, and introducing the buckskin occupied but a minute or two, giving the patient little or no pain, and causing no hemorrhage worth mentioning. The first step of the operation was thus completed and the patient ordered to keep perfectly silent. Fearing that the motion of the tongue might displace the buckskin, I had prepared a sort of flat obturator mounted upon a piece of elastic wire, the end of which I intended to wrap round a tooth, and by this means keep the plate firmly applied over the wound and thus prevent the escape of the buckskin cylinder; but I found this instrument unnecessary inasmuch as the swelling of the wound was sufficient to accomplish the object in view. Inflammation followed by suppuration speedily supervened, and on the removal of the cylinder seventy-two hours after its introduction a fine crop of healthy granulations was discovered at the bottom of the wound; these rapidly increased in size and soon filled up the space between the lips of the incisions, rendering the introduction of any foreign body for the accomplishment of this object needless.

In six days after the first operation and when the granulations were in full vigour, I performed the second series of incisions, which were carried between the extremities of the other two, and treated in precisely the same manner. (See Fig. 10.) In six days from the execution of this second operation I found the opening in the palate surrounded by a strip of granulations, and in a proper condition for the last, and by far the most difficult step in the whole attempt, the detachment and approximation of the flaps. Having provided myself with two scalpels, half an inch in length by two lines in breadth, cutting on both sides and slightly curved near the points, several very small and nearly crescentric needles, a delicate pair of Physick's forceps, two or three delicate hooks, small dressing forceps, and well waxed ligatures of silk of one thread, with sponges, &c. &c., I proceeded to the per-

formance of the operation. The head being properly placed, I commenced by detaching the mucous membrane all around, dissecting from the margins out to the granulations, which being very yielding, allowed me without difficulty to bring the flaps together, at or near the centre of the opening. To accomplish this, a pair of small forceps was employed, and while the flap was held tense by an assistant, I passed the ligature first through the flap on the left side, at its centre and about a line from its edge, and then allowing that to escape from the forceps, the opposite one was made tense and the ligature passed through it at a point directly opposite the little wound in the other; the ligature was then tied, and the flap above, or that next the anterior portion of the mouth brought into the concavity formed by the approximation of the two lateral flaps and attached by a ligature on each side. The lower was next brought to its proper position and there held by similar stitches. The opening in the palate was thus completely "covered in," and presented the appearance seen in Fig. 11.

Fig. 11.



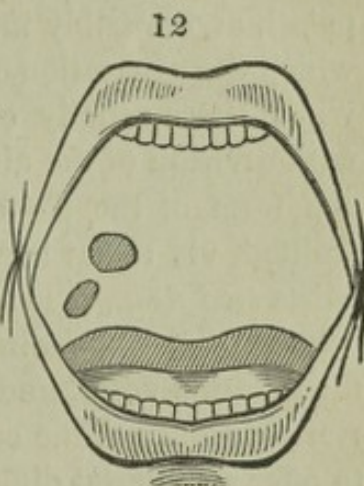
The usual after-treatment was pursued, and in three weeks from the date of the last operation my patient was perfectly relieved of every vestige of his deformity. The ligatures were cut away in the fourth, fifth and sixth day and nothing of consequence occurred during the period of confinement.

This operation, though tedious, is nevertheless a very useful modification of staphyloplasty and may be resorted to in almost all those cases in which the wound fails to unite throughout, after the usual operation of staphyloraphy; and too much credit cannot be ascribed to Dr. Mettauer for the suggestion of the operation by granulation.* I believe, however, that the case just reported is the first example of the

* Amer. Jour. Med. Sci., Feb. 1838, p. 335.

combination of the operation "*par glissement du lambeau*," and that by granulation. My reason for not making all the granulating wounds at one operation was the fear of cutting off an adequate supply of blood to the margins intended for flaps. By postponing the second operation until the first wound was filled up with granulations and the circulation between them and the adjacent flaps firmly established, I avoided all danger of sloughing from a want of blood. Time, in such cases, being a matter of minor consideration, I did not think myself warranted in running any risk of failing in the operation by an attempt to economise it.

CASE III. James Williams, a young man 18 years of age, applied to me in December, 1840, for the purpose of having an operation performed for the closure of two openings, (the result of previous inflammation and sloughing,) one of which was situated entirely within the velum, and the other just above it, but located in the hard palate. Both openings were on the right side and separated from each other by a narrow strip of mucous membrane and bone, and presented each one a callous margin. That in the velum readily admitted the extremity of the forefinger and was ovoid in shape, the other was larger and nearly round. The usual accompaniments of such defects were present, and for the relief of these an operation was desired.



The common operation by interrupted suture was practised on the opening in the soft palate, which united perfectly in about two weeks, and as soon as this was accomplished and the patient had rallied from the effects of the operation I commenced the treatment of the other, the method employed being that described in the report of the case of Mr. Richards. The result was most fortunate and fully justified the confidence placed in this novel operation.

The cases reported all belong to but two varieties of the defects usually met with about the palatine plates and velum, but it is not unfrequently the case that other malformations present themselves and occasion much difficulty to the surgeon. Malgaigne declares that congenital fissures of the palate may all be referred to three heads:—1st. Those in which the division is confined to the soft palate, the osseous plates remaining perfectly sound. Here there is no loss of substance, and the cleft may involve the entire soft palate, or be confined to the uvula. 2d. Those in which the separation between the halves of the soft palate is extended into the ossa palati, and possibly into the maxillary bones. 3d. Those in which the separation of the palatine vault is complete, and in which there usually exists either simple or double hare-lip, with division of the alveolar processes. In this classification one form of the defect, very rarely met with it is true, is omitted, viz.: that in which along with double hare-lip there exists *two fissures* in the palatine plates. In these cases the central portion is entirely separated from the lateral halves of the palatine vault, and in all the cases I have seen the anterior extremity of the central piece projects so far forwards as to offer a material difficulty in the execution of an operation. Instead of *three* groups, therefore, we have evidently *four*, and each one will require a treatment peculiar to itself. A fifth group may be made of the cases *not congenital*, but depending on some cause operating subsequent to birth.

From the fact that the operations required to relieve these defects vary materially in their character, surgeons have introduced different terms by which they are characterized. For instance; where a simple fissure of the soft palate is closed, the operation is generally called *staphyloraphy*; when the fissure is very wide, or extends into the bony palate, and it becomes necessary to detach the adjacent soft parts and draw them forcibly across, the operation is designated as *staphyloplasty*; and lastly, when there is really a loss of substance in the palate, and it becomes necessary to detach a larger

flap from the parts in the vicinity, in order to fill up the deficiency, the term *uranoplasty* is applied to the operation.

In case No. 1, the operation of *staphyloraphy* was fully explained. In Nos. 2 and 3, *staphyloplasty*, in combination with the operation by *granulation*, was resorted to. I have also performed the operation of Krimer, or *uranoplasty*, in which a flap is taken from the roof of the mouth, twisted on its pedicle, and then accurately fitted to the opening, (the edges of which were previously made raw,) and attached by suture. The case resulted very well, but I vastly prefer the method resorted to in cases Nos. 2 and 3; or the more simple staphyloplastic operation of Dieffenbach.

I have also succeeded in two cases, where the cleft extended into the hard palate to within an inch of the incisor teeth, by resorting to the staphyloplastic operation performed by Dr. J. M. Warren, of Boston. It consists in first detaching the mucous membrane from the bones by means of a small bistoury curved on its flat side, and we must recollect to detach it as freely as possible. This step accomplished, we next seize the flap on one side, with a pair of forceps, stretch it forcibly, and then with a pair of curved scissors detach its base from all connection with the tonsil and posterior half arch. The anterior half arch being thus cut through, the flap expands, as it were, and is readily brought into a proper position. After completing the separation on one side, the same operation must be performed on the other. The edges of the flaps are next to be made raw, and the ligatures passed, as in the ordinary operation of staphyloraphy. The after treatment is also the same.

The management of the cases that come under the third and fourth heads of my classification, depends very much upon the *age* of the patient.

If called a few days after birth, and the child is healthy, I operate for the hare-lip as soon as possible, believing as I do that the earlier the operation is performed the better. Much needless dread of convulsions, sloughings, fevers, &c., exists in the minds of some, when they refer to operations of this

alveolar process, although some benefit may unquestionably result, and the cleft or clefts will be reduced in size. We are first of all, therefore, to make the lip in the usual way, and if necessary remove by the cutting forceps any projection of bone that interferes.' It will be useless here to apply pressure to the projection, or expect to reduce it by Gensoul's method; and besides, the objection to the operation in young persons will not obtain in the cases of adults, inasmuch as the artificial process and teeth may be adjusted as soon as the parts heal. In young persons, from the fact that the parts are constantly increasing in size, it is both difficult and very expensive to remedy the loss of substance by artificial means. The operation upon the lip being completed, we next endeavour to remedy, by some one of the usual methods, the cleft in the *soft palate*, and as much as possible of that in the hard. Usually, and indeed in almost every case of *double fissure*, very little can be accomplished by an operation, and we have to rely upon a metallic plate (either gold or platina) for the closure of the openings in the palatine vault. The treatment in such cases, therefore, may be divided into three stages. In the *first*, we close the lip; in the *second*, the velum palati and a portion of the cleft in the hard palate are attended to; and *finally*, the metallic obturator furnished by a skilful dentist, closes the opening between the nostril and mouth.

