Fissure of the soft and hard palate / [Jonathan Mason Warren].

Contributors

Warren, Jonathan Mason, 1811-1867.

Publication/Creation

Boston : [publisher not identified], 1848?]

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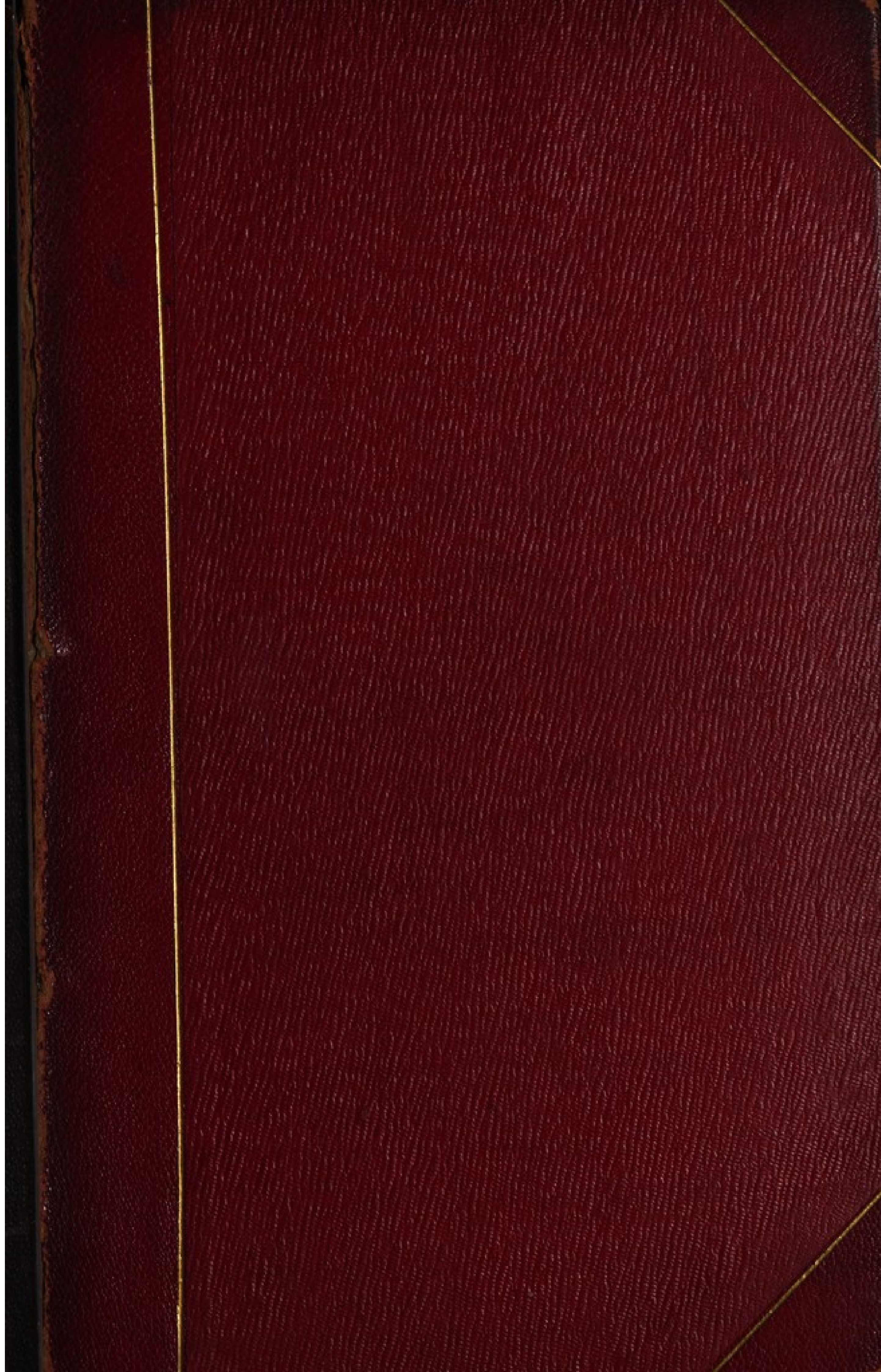

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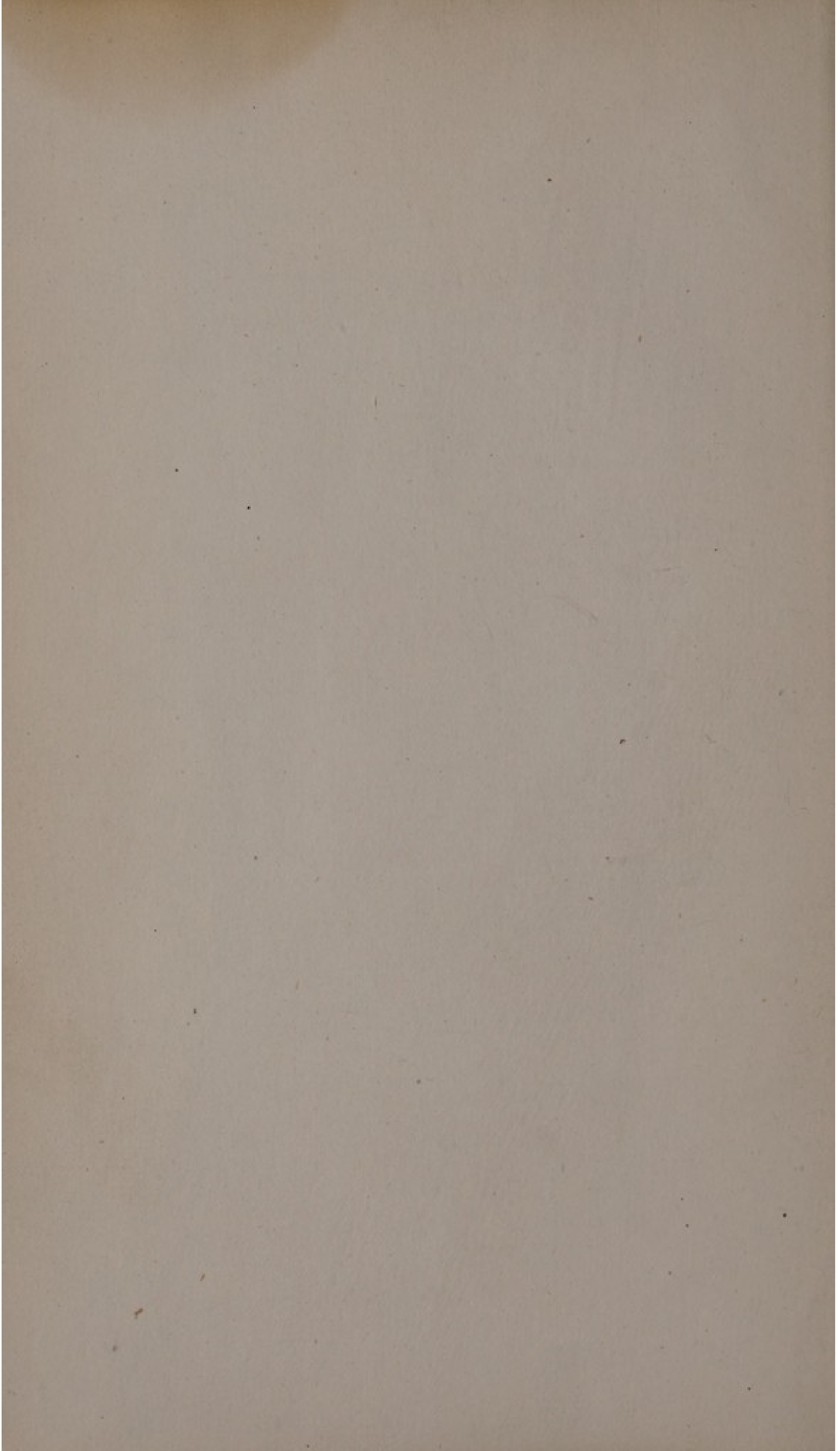

FISSURE OF THE SOFT AND HARD PALATE.

BY J. MASON WARREN, M. D.
ONE OF THE SURGEONS TO THE MASSACHUSETTS GENERAL HOSPITAL.

In a paper published in the *New England Medical and Surgical Journal*, for 1843, and republished in this Journal of the same year, I gave the result of fourteen cases of fissure of the soft and hard palate, treated by a new operation. Previous to this proposal, all those cases which presented an extensive fissure in the bones, were either rejected as irremediable, or, if an operation was attempted, the proceeding of Roux adopted. In the latter, the soft palate, the only part which had its deformity remedied, was cut away transversely from the posterior border of the ossa palati, and then stretched across the opening, still leaving a considerable aperture in the roof of the mouth, to be closed by an obturator.

Krimer has, indeed, described a single operation performed by him, for closing an aperture in the bony palate, after staphyloraphy, consisting in the dissection of two flaps of the mucous membrane, commencing at a short distance from the margin of the opening, reversing them, and having brought them together in the median line, confining them by sutures. Roux has also suggested the loosening of the mucous membrane from the bones, at the angle of the fissure, where the ossa palati are implicated, so as to allow the more easy approximation of the soft parts. But in his last published cases, reported in the *Gazette Medicale de Paris*, for July, 1842, he does not appear to have put this plan into execution.

In our own country, we find that Dr. Mettauer, of Virginia, and Drs. Mütter and Pancoast, of Philadelphia, have given great attention to this subject, and suggested some important improvements in closing apertures in the bony palate. No method, however, I believe, has been before proposed, by which both the fissure in the soft and hard palate could be relieved by a single operation.

The method of proceeding originally proposed by myself, was as follows:—First, where the bones composing the arch of the palate were divided, to dissect off the mucous membrane covering them, on each side, as far back as the alveolar processes, if necessary, stretching it across the fissure, and confining it in this situation by sutures; the flaps, it must be

understood, being made continuous with the fissured halves of the soft palate.

Second, in the above cases, and, in fact, in all where the lateral halves of the soft palate are too small to be easily brought in contact, as generally happens where the bones are involved, to cut away the posterior pillar of the palate with strong curved scissors, and continue the dissection behind the soft palate, until the latter yields, and allows itself to be drawn across the chasm, which, by the above proceeding, will be found practicable, even in those fissures which at first do not seem to offer the slightest hopes for a successful operation.

The advantages to be derived from this second proposition, namely, the division of the posterior pillar of the palate, are so important, that the steps for effecting this object will now be given. The uvula being seized with a pair of hooked forceps, and the velum made tense, with a long pair of powerful scissors, curved on the flat side, the posterior pillar is excised, when the soft parts in front will be found to yield. If necessary, a second and third cut may be made, when the portion which at first offered violent resistance, will be found to hang flaccid in the throat, and all the subsequent manœuvres of the operation can be conducted with ease.

The importance of the preceding step will be made sufficiently evident by the successful result in those cases in which it has been performed. We have already referred to the last reported cases of Professor Roux. From the same article it appears, that his success in cases where the fissure was complicated with a division of the bony palate, was one out of three, but in these no attempt seems to have been made to close the aperture in the bones. In regard to the cases performed by the writer, according to the present propositions, of the fourteen already published, thirteen proved successful, and in the ten cases now to be given, all had a favourable termination. This is the more striking, when it is considered that twenty-three out of twenty-four of them were more or less complicated with fissure in the bones, a fact which also shows the rarity of a perfectly simple fissure of the soft parts.

Since the publication of the above method for relieving these deformities, it has been repeated elsewhere, both in this country and abroad. Among others who have given much attention to this subject, is Mr. Fergusson, the distinguished Professor of Surgery at King's College, London. This gentleman has published a paper in the *Medico-Chirurgical Transactions*, for 1845, in which he calls the attention of the profession to the important influence exerted by the muscles of the palate, in the operation for

fissure, and recommends the division of the palato-pharyngeus, which forms the principal bulk of the posterior pillar of the palate, of the levator palati, and, in some cases, of the palato-glossus, in part, by a sub-mucous incision. The effect of this is to paralyze the powerful action of these muscles on the palate, and thus remove one of the most important obstacles to the success of the operation.

The same result is produced by the method above described, and although in my first paper no stress was laid on the division of muscular fibres, yet to any one who employs it, the effect of the incision of the posterior pillar, in destroying muscular action, will be at once apparent. I have long been in the habit of calling the attention of those present and assisting me in these operations, to the facility and rapidity with which all the subsequent steps may be made, such as passing the sutures, tying the knots, &c., formerly the most embarrassing part of the whole proceeding.

The sutures may be introduced with a delicate curved needle, carried on a forceps with a movable slide, or, in cases where they are to be made through the mucous membrane of the hard palate, which, as often happens, is too much contracted to allow of the manœuvres of the needle and forceps in carrying the stitches from before backwards, I have used the crochet-aiguille of Schwerdt. This instrument consists of a double hook, pierced near its point with an eye, having a mechanism like the spring-forceps of Assalini. The needle being threaded, and passed through the edges of the wound, from behind forwards, the thread is caught by a tenaculum. One handle of the spring-forceps is now pressed upon, which opens the instrument laterally, and allows the thread to escape, and the needle to be withdrawn. The ligatures are secured with the greatest ease by means of the surgeon's knot, and from the almost entire impassibility of the parts, the knots will seldom be found to slip.

The after-treatment of the patient is at present greatly ameliorated; and experience has taught me that liquid food may be taken in the quantity required, whereby the inflammatory process which formerly followed, and was so much aggravated by the deprivation of fluids, is only sufficient for the healthy adhesive process necessary to close the wound.

In order to illustrate some important practical points in the operation and treatment, I have determined, at the risk of tediousness, to give in detail the history of ten cases of fissure of the soft palate, which have been under my care within the last two years.

Case I.—G. W., of Freeport, Maine, applied to me with a congenital fissure of both the hard and soft palate, complicated at birth with hare-

lip. The latter had been operated on at the age of six months, and the alveolar processes had since come together, but had not coalesced. There was a long fissure extending from just behind the alveolar arch backwards, through the soft and hard palate. The bones composing the roof of the mouth were, as may often be observed in these cases, shelving posteriorly, making the fissure of great width, and increasing the difficulty of dissecting off, and approximating the soft parts that cover them. The speech was rendered, by this malformation, scarcely intelligible.

The operation was performed on April 4th, 1846, with the assistance of Drs. H. J. Bigelow and Briggs, as follows:

The patient being placed in a good light, in front of the window, with a long spear-shaped knife, curved on its flat side, and cutting for half an inch on both edges, the mucous membrane was dissected from both sides of the palate, as far forwards as the anterior angle of the fissure, and backwards to where the soft palate joins the ossa palati. A pair of sharp-pointed scissors, curved like the knife on the flat side, were now carried behind the soft palate, and the attachments of the latter to the ossa palati cut away, leaving the mucous membrane in front intact, thus affording a continuous flap. The uvula was next seized on either side, and the parts being made tense, the posterior pillar of the palate was freely divided, and the dissection continued backwards, until the flap expanded, and not the least resistance was offered to any manipulations. Six sutures were rapidly introduced without difficulty.

Before tying the ligatures, it was found necessary again to loosen with the curved scissors the attachment of the soft palate to the bones. In doing this, an artery was divided, probably the palatine, which gave rise to a troublesome hemorrhage, so that the ligatures were not tied until the bleeding had ceased in the afternoon. In half an hour it again returned, and continued to the amount of half a pint. This is the only time trouble has ever arisen from this cause, within my knowledge.

After the first day, the patient was allowed gruel, or drink, every four hours. Owing to the irritation from the bleeding, and the coagula forced between the parts, the stitches at the upper end of the wound gave way. The soft palate united well. As I intended to repeat the operation on the hard palate, I advised him for the present not to have an obturator applied.

Case II.—Miss J., of Andover, applied to me in April, 1846, with a congenital fissure of the soft and hard palate of the worst form. The bones were so widely separated, and to such an extent, that I told her at once it would be impossible to close the whole aperture by any surgical operation. As she was extremely desirous that something should be done to improve her speech, I agreed to make the attempt.

The membrane was dissected from the hard palate, as far forward as was thought useful, and the operation already detailed in the account of the preceding case repeated upon the soft palate. The bleeding was trifling. Five stitches were introduced, and easily tied.

This patient was allowed half a pint of liquid nourishment three times

a day from the time of the operation. The stitches were removed on the third or fourth day, and the union found to be perfect, so as to obliterate about two-thirds of the whole fissure. I then referred her to Dr. Tucker, who constructed an obturator which closed up the remaining aperture in the bones, and enabled her at once to articulate with much greater distinctness than ever before.

CASE III.—1846, Sept. 26th, W. E., aged 18, was operated on for a congenital fissure of the soft and hard palate, the latter being separated half an inch. The membrane was dissected from the hard palate, and the posterior pillar divided, when the two sides hung almost perfectly flaccid. A strip was next removed by the curved scissors, from the whole margin of the fissure. The edges were approximated by four sutures. There was but little bleeding, and, to prevent oozing, iced water was ordered for the rest of the day.

29th. "He has not had a bad symptom; no cough, no soreness of the throat; he has been able to sit up, and to-day is down stairs. I removed the stitches, and the union appeared to be perfect."

A small aperture, however, in a few days presented itself at the upper angle of the fissure. But this did not prevent him from returning home on Oct. 3d. The aperture was touched occasionally with the nitrate of silver, and by Nov. 17th was obliterated. His voice had greatly improved.

CASE IV.—Miss A. G., aged 22, with a congenital fissure of the soft and hard palate, extending through the ossa palati, was operated on in the usual manner, Oct. 8th, 1846, Drs. Parkman and Briggs assisting. The bleeding was rather more than usual, and required the constant use of the sponge, in order to allow of the prosecution of the different steps of the operation. She was directed to keep small bits of ice in her mouth for the remainder of the day.

"*9th.* Has had a comfortable night.

"*11th.* The wound has an appearance as if about to suppurate:" and, in fact, on the following day, the stitches seemed ready to give way. An additional suture was, therefore, immediately taken at the lower part of the fissure.

A small portion of the wound united at the upper part at once, and still more from the additional stitch. By the occasional use of caustic and scarifications, the whole fissure, with the exception of an aperture at the inferior part of the soft palate, was closed. This latter, made by the ulceration of one of the ligatures, was quite manageable.

This patient was healthy, and kept uncommonly quiet. The disposition to suppurate in the edges of the flaps seems to have arisen from the too free use of the sponge, which I discovered afterwards was of bad quality, and quite filled with sand. This serves to show how trifling a matter may defeat the best planned operation, as in this case I had expected a most perfect union by the first intention.

I have lately seen this lady, and find the new palate to be very flexible; her speech is also much improved, and she is daily increasing in her command of it.

CASE V.—Hannah H——, aged 20, had a congenital fissure of the

soft and hard palate, the bones being separated about two-thirds of an inch at their lower part, and the extent of the fissure being nearly the same. Behind this aperture, in the mucous membrane of the back part of the fauces, was a cleft about an inch in length. Speech was very imperfect.

The operation was performed in the usual manner, on Oct. 13th, 1846, the mucous membrane being dissected from the bones with much difficulty, on account of the extreme narrowness of the palatine arch. The posterior pillar of the palate was divided on each side. Five sutures were now introduced, were easily tied, and the whole fissure obliterated. The soft parts were unusually free from vascularity, and the operation entirely over in less than thirty minutes. She was allowed half a pint of liquid nourishment three times a day.

Scarcely any inflammation succeeded, and she experienced very little pain or inconvenience, being up and occupied during the cure. On the 15th, two of the sutures were removed, and the remainder on the following day.

The whole fissure appeared at first to have closed, but shortly after a small aperture appeared at the upper angle, which, from the great want of vascularity, required the application of irritating substances at intervals, for some months before it was healed.

Case VI.—Mrs. M——, of Georgetown, aged 22, having a fissure of the soft and hard palate, with a division of the bones, was operated upon in the presence of Drs. Briggs, B. Brown, and Slade, on Dec. 16th, 1846.

In this case, there was a little more bleeding than usual, when the left pillar of the palate was cut. Six stitches were introduced, and the threads easily tied. She was allowed to take oatmeal gruel.

On the evening of the second day, after eating some broth, she was seized with a severe fit of vomiting, and I feared that the adhesions would be entirely destroyed. On the following day, however, all the stitches were removed, and to my great satisfaction an almost complete union had taken place. At the end of five days, she returned home, and in the ensuing February I received a letter from her, in which she said that she was quite well, the aperture at the summit of the fissure had closed, and her voice had greatly improved.

Case VII.—F. G——, of Newton, N. H., 30 years of age, was operated upon for a congenital fissure of the soft and hard palate, on March 31st, 1847. The fissure in the hard palate was here about an inch in extent, but instead of terminating in an angle, it was of a circular form, the bones being widely separated. The soft parts were very thick and vascular, and some embarrassment was experienced from the flow of blood, as is apt to be the case in very powerful subjects. Five sutures were introduced, and tied without any great strain. There was some oozing of blood at the upper angle of the fissure, after the threads were tied, but by the free use of ice-water, it had ceased in the afternoon.

April 1st.—I found him down stairs partaking of a large bowl of gruel. He had passed a quiet night, and was in good spirits, having had

no pain, or soreness of the throat, and no disposition to cough. On the next day, 2d, two of the middle stitches were removed, the others on the third, and the fissure seemed to be united in its whole extent.

On the 4th, I discovered that this patient, who was somewhat heedless, had been eating hard crackers and cake, and had, in consequence, burst open the upper part of the adhesions. On the 5th, he returned home, with directions to touch the angle of the wound with lunar caustic, and to report himself to me in June.

At this latter date, I again loosened the edges of the remaining opening from the bones, and introduced a stitch, so as to approximate and obliterate the wound; about half of the opening was thus closed.

This process will require to be followed up, in order completely to close the aperture.

Case VIII.—May 31st, 1847. At the Mass. General Hospital, a fissure similar to the last was operated on. The bones were widely separated. The operation presented nothing remarkable. Four stitches were introduced, and removed at the end of four days. The soft palate entirely united. A small fissure in the bones remained.

Case IX.—July 13th, 1847, Miss L——, 17 years of age, the daughter of a distinguished physician in a neighbouring town, had a fissure in the bones, extending through nearly one-half the extent of the bony palate, which was exceedingly narrow, and shelved backwards, so that I found it almost impossible to manœuvre the instrument, while dissecting off the membrane which covered them; with patience, however, this was finally accomplished.

She was able to be up, and walking about during the treatment, took liquid nourishment from the first, and was but little troubled with that harassing cough, which is always painful, and dangerous to the success of the operation.

On the 16th, the stitches were removed, and the whole extent of the fissure appeared to be closed. On her return home, however, as is almost invariably the case, an aperture was discovered at the upper angle. This was obliterated by the use, first, of lunar caustic, and afterwards of the strong tincture of cantharides, as recommended by Dieffenbach.

Case X.—William L——, 20 years of age, was born with a double hare-lip, and a fissure both of the soft and hard palate. Some operations had been performed on the lip during infancy, but it was not until 14 years old, the hare-lip was definitively operated on, and closed. When he first consulted me, I supposed I had at length discovered a case of median hare-lip, but on a further examination, this seeming anomaly was explained. The following was the appearance of the interior of the mouth: The two canine teeth of the upper jaw were in contact; about half an inch above, in the fissure, where the maxillary bones had come together, a portion of another tooth was seen, probably an incisor. A great part of the inter-maxillary bone had been removed, when the lip was first operated on, leaving that containing the socket of one of the incisors. As is usual, after the operation on the soft parts, the alveolar processes had been dragged into contact. Directly behind the alveoli, the

fissure commenced. The palatine processes of the superior maxillary bones, and the ossa palati, seemed to be almost in a rudimentary state; and the whole arch, from the removal of the inter-maxillary bone, and the subsequent approximation of the parts, was rendered extremely narrow.

This patient was very sensitive and nervous, caused by the remembrance of the last operation on his lip, and which, from his want of firmness, lasted, as he states, six hours. In operations on the throat of this character, which require the voluntary power of the patient in keeping open the mouth, and expelling the blood, ether cannot be used, so that I almost despaired of success. I therefore stated to him beforehand, that unless he could come to the determination to submit fully, I must decline attempting anything, as no surgical operation required so completely the consent of the patient, as the present. To this he finally consented; the operation was done as usual, and he amply redeemed his promise.

From the almost entire deficiency of the hard palate, the opening at this point could not be easily remedied, but the soft palate united after some previous inflammation. The mucous membrane covering the relics of the hard palate and alveolar processes, was much thickened by the first operation, so that in a week or two I again dissected it up, and was able to bring it quite across the fissure by sutures. Although these, from tension, gave way, yet they partially effected the object. By pursuing this course, I had no doubt the fissure could be ultimately closed.

The prolabium, or red portion of the lip, in the operation formerly done on him, had been allowed to remain, and the edges brought together in the median line, producing much deformity. The base of the opening of the nostrils was expanded, or flaring, and an aperture, an inch and a half long, existed between the jaw and lip, allowing a communication at that part. All these were remedied. The patient having complained that the tip of the nose was too broad, at his earnest request I dissected the skin forming the septum from it in a pyramidal shape, elevated the tip, brought the cut surfaces in contact, re-applied the pedicle underneath, and thus accomplished the object.

The small aperture remaining in the hard palate was closed in this, as in most of the cases where I have found it necessary, by a bit of India-rubber, as recommended by Dieffenbach. Two portions of Goodyear's patent India-rubber may be cut a little larger than the apertûre to be closed; they are stitched together in the centre; one portion is slipped into the nasal aperture, and keeps the second in the mouth in place. It can be removed, and replaced at the pleasure of the wearer.

Everything being accomplished, my patient departed to the West to seek his fortune, with a new palate, a new lip, and as good as a new nasal ornament.

In the ten cases now given, and in the fourteen before related, there never have been any severe inflammatory symptoms, or constitutional disturbance to combat; and, in fact, since the patients have been allowed to take nourishment to preserve the strength, they have been able to sit up, and in most cases go about the house as usual.

The question has been often asked, how soon the voice is improved, and the other good effects apparent. In the greater proportion of instances, I think it may be safely said, an immediate amelioration in the difficulty of swallowing takes place: there is generally more facility of speech, which, so far as it has been in my power to watch patients at a distance, is constantly improving. A young man, whose case was related in the previous paper on this subject, was present at a meeting of the Boston Society for Medical Improvement, about two years after the operation, and it was difficult to discover the least imperfection in his speech, although it had previously excluded him from society.

It will be perceived that, in these ten cases, there was more or less division of the bones, requiring in all some dissection of the hard palate. It will also be perceived that, in every one, even those which finally proved successful, a small aperture constantly remained at the superior angle. This occurrence may be explained, either by the difficulty of bringing the parts at the angle into apposition, by not removing a sufficiency of the margin of the flaps, or by the necessary folding or puckering of the wound that takes place at that part. In all these cases, where the aperture was small, it was obliterated by the persevering use of scarifications, lunar caustic, or gentle touches with sulphuric acid. When the fissure which remains is not amenable to the action of caustics, by reason of its extent and the unyielding nature of the parts, there is no question but that, by frequent scarifications and dissections, it may soon be so thickened as to admit of sufficient extension finally to close the opening. This I found to take place in the tenth case, where the mucous membrane, covering the small remains of the bony palate, from being as thin as paper, finally assumed a thick, fleshy consistence, lapped over the sides of the bones, and seemed to be gradually effecting a closure of the aperture.

Additional Cases.—Since the above article was written, the two following cases of simple fissure of the soft palate have presented themselves, and have been operated on. They are interesting both for their rare occurrence, and from the fact of union taking place in both at the upper angle of the wound by the first intention, a circumstance not observed in any of the preceding cases.

Case XI.—Miss L. H., of Lynn, Mass. This patient had a congenital fissure of the soft palate, which affected the speech quite as much as when the bony palate is implicated. The operation was deferred a week, on account of a slight cough, which troubled her, and which it was feared might interfere with the union of the wound. It was finally performed on Feb. 4th, 1848.

The posterior pillar of the palate was divided on each side, a slip of mucous membrane removed with great care around the margin of the fissure, the edges at the upper angle being a little loosened from the bone. Four stitches were next introduced, and the lips of the wound approximated without difficulty. No bleeding of consequence occurred. She was allowed to have half a pint of liquid every four hours.

5th. She has passed a quiet night.

6th. There is constant cough from the accumulation of mucus in the lungs. The bowels being constipated, she was directed to take a cathartic of castor oil.

7th. All the stitches were removed, and union found to have taken place by the first intention, notwithstanding the constant movement of the part from the almost unceasing irritation of the air-passages.

Case XII.—Miss A——, of Salem, 15 years of age. The fissure was of the soft palate, and at the upper part of an oval, rather than an angular form.

Feb. 23. The operation was performed with the assistance of Dr. Dale (whose patient she was), Dr. B. Brown, and some other medical gentlemen, in the manner stated in the last case. The patient, although one of the youngest I had yet operated on for this affection, bore it with the utmost fortitude. The ligatures were removed on the 26th, and a good union had taken place. Two small apertures remained, where the sutures had been removed, which soon closed without difficulty under the application of the nitrate of silver.

Early Operation for Hare-lip.—In the paper already referred to, as published in the *New England Quarterly Journal of Medicine and Surgery*, for April, 1843, was advocated, in connection with the operation for fissure, the early performance of that for hare-lip, both as being more successful at this period, and also as a means of assisting in the difficulty so often co-existing with it. Since then, I have been in the habit of operating on children at as young an age as possible, having repeatedly performed it in twenty-four hours after birth, in one instance on the same day the child was born, and in all these cases with better success than in older children.

The favorable circumstances are, 1st, the slight resistance of the patient; 2d, the great rapidity of the healing process, thus rendering the child able to nurse almost as early as if nothing abnormal were present; and, lastly, the comfort to the friends, who are saved from the exposure of the deformity, always exceedingly painful to the feelings of parents.

In double hare-lip, complicated with a fissure in the bones, and a projecting tubercle, I have preferred to operate on one side of the lip, and allow it to heal before operating on the other. When I have attempted both at the same time, and, in fact, in almost every instance I have witnessed, a failure has been the result, the tissues being too much stretched,

and the inflammation becoming suppurative. By the preceding method one side has generally united, and, if left for a month before a second operation, the protuberant inter-maxillary bone will be found more or less to be dragged into place.

After considerable experience, I am convinced that sutures are much preferable to needles, no matter how wide the separation, and consequently great the tension required, to bring the parts into contact. They have these advantages: 1st, they are more easily introduced; 2d, they produce less irritation; and, 3d, they can generally be removed at the expiration of forty-eight, or at the most, of seventy-two hours, without danger of disturbing the tender adhesions. On the other hand, if needles are used, they must be left until they are sufficiently loosened by ulceration, otherwise there is great danger of tearing open the wound. The part of the lip also embraced by the figure of 8 over the needles, is often left red and excoriated.

When the stitches are used, the intervening parts are exposed, the process may be watched, and by the application of a small compress kept constantly wet with water, the inflammation liable to occur in very young subjects is so moderated that, on the removal of the sutures, I have frequently found the line of adhesion quite perfect, free from redness, and after a short time it could scarcely be distinguished. In fact, the tissue seems to melt into the other, without any perceptible cicatrix remaining.

It is important that the suture needles be straight, as it will be found difficult to pass crooked needles, of the small size requisite, through the edges of the wound, without their turning in the hand. The former are also sometimes better introduced by seizing them firmly with a forceps or pincers.

One of these early cases, a patient of Dr. Hale, on whom I operated when twenty-four hours old, I have lately seen. The child is now twenty-two months of age, and, to a casual observer, scarcely any traces of the operation are visible; but, on a more minute examination of the lip, a small linear scar is seen. There is no dragging up of the lip, or stretching of the prolabium. The ala of the nose is well defined, and without the flaring so generally seen, where the hare-lip is complicated, as in the present instance, with an extensive fissure of the palate. In addition to these deformities, the alveoli were separated, so that the forefinger could be readily introduced between them. They are now in perfect contact, and by means of pressure on the maxillary bone, conducted under my direction, the fissure in the bony palate is obliterated for about

half an inch. This fact demonstrates the importance of an early closure of the lip. The father of this child, who had also a congenital division of the palate and hare-lip, did not submit to an operation on the latter, until he was of adult age; consequently, the gap in the jaw remains as wide open as ever.

Boston, April, 1848.