Observations on the operative measures necessary in the treatment of hare-lip / by Richard G.H. Butcher.

OBSERVATIONS

ON THE

OPERATIVE MEASURES NECESSARY IN THE TREATMENT

OF

HARE-LIP.

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OBSERVATIONS

ON

THE TREATMENT OF HARE-LIP.

NUMEROUS cases of hare-lip, from the simple fissure to the most complicated forms, having occurred in my practice during the past few years, I am enabled to speak with some confidence as to the operative measures best suited for remedying such deformities; the attested fact that the appearance and expression of the individual for life, so calamitously afflicted, depends more or less on the perfect result of an operation, has made me, in an especial manner, direct my attention to the subject. There are several malformations, as Andral points out, differing widely from each other, and apparently presenting the greatest discrepancies in their specific characters, which may, nevertheless, be traced to one common source, imperfect development. Amongst these malformations may be enumerated the accidental openings and separations of parts which, in the natural state, are united and closed. These solutions of continuity are all situated in the median line, and proceed from an arrest of development. There is, in fact, a period in the evolution of the fœtus, when almost every organ is composed of two parts, separated by an interval which subsequently diminishes and fills up, as the fœtus approaches the full term of gestation. This gradual obliteration of the intervening space proceeds from the fulfilment of a law demonstrated by M. Serres, namely, that all the parts of the body are formed from the circumference towards the centre, and not, as was

erroneously supposed, from the centre towards the circumference. Hence it follows, if the evolution of an organ be arrested at any time near the period of its first formation, the organs so arrested will in general be found composed of two parts, separated from each other by a certain interval. To this cause must be referred those cases which present a greater or less extent of deficiency in the parietes of the cranium, the spinal canal, the thorax, or the abdomen. The lips, when first formed, are, according to Beclard, Blumenbach, and Meckel, seemingly composed of as many distinct portions as there are bones in the corresponding parts of the osseous parietes of the mouth; and each of the intervals which separate these portions corresponds with the space interposed between the several bones, or at least between the several points of ossification. The upper lip then must at first be composed of four pieces, namely, two small portions in the middle corresponding to the two ossa incisiva, and two lateral portions of longer size, which correspond each to a maxillary bone. It appears that the two middle portions are very early united, as are also the ossa incisiva, and hence arises the extreme rareness of a hare-lip situated in the median line, although such a deformity may be easily conceived. On the contrary, the two lateral portions of the lip do not unite with the middle portion until a much later period; as this union does not take place at one or at both sides, the malformation called hare-lip will be either single or double. The lower lip never being composed of more than two pieces, and the earliness of the period at which these two portions are united, explain the extreme rareness of its congenital division; still further, not only may the lips be arrested in the progress of their development, and remain divided, but their evolution may even be suppressed altogether, in which case the whole interior of the cavity of the mouth is exposed to view. The mode of development of the face not only affords an explanation of the abnormal cleft palate, and the congenital cleft between the upper maxillary and the intermaxillary bones, but also serves to throw light upon those congenital fissures which pass between the intermaxillary bone and upper jaw, as far upwards as the orbital cavity. The face is originally formed of a middle portion proceeding from the forehead, Von Baer's frontal process, and of a lateral portion on each side, derived from the superior extremity of the first visceral arch. These parts are at first separate. The lateral and inferior parts, destined to form the superior and inferior maxillary apparatus, are both, according to Reichert, derived

from the first visceral arch, in which an angular bend appears; the part above this bend being converted into the superior maxillary mass, and that below it into the inferior maxillary apparatus. The superior maxillary mass, in its growth, approaches the frontal process and unites with it, a cavity being left beneath that process and between the superior maxillary masses, which becomes the nasal cavity. By the union of the superior maxillary (the superior maxilla and palate bone) of opposite sides beneath this cavity, the separation of the nose from the mouth, by the palate, is produced. Attached to the elongated frontal or nasal process of the forehead, there soon appears the substance of the superior intermaxillary bone; whilst at the lower part of the visceral arch, from which the lower jaw is formed, a partly detached portion presents itself, which Reichert calls the inferior intermaxillary bone. It is not yet known whence the rudiment of the inferior intermaxillary bone is first derived; for although the blastema of this part is first observed between the nasal processes on the part of the face derived from the forehead, yet it is very possible for it to have been derived originally from the nasal processes themselves, and from the immediately contiguous superior part of the first visceral arch; the latter view appears to Müller more accordant with comparative anatomy, since the superior maxillary apparatus in its most complete form comprehends the os intermaxillare, the vomer, the os maxillare, and the ossa palatinum et pterygoideum. There would then remain merely the middle part of the face which belongs to organs of sense, and is attached to the anterior part of the skull, and this part, in the Plagiostomatous fishes, is united with the skull, whilst the parts belonging to the upper jaw are detached from it. On the other hand, however, there are facts in comparative anatomy which favour the contrary view; for the vomer, although it arises in the middle line, yet belongs to the general category of the maxillary apparatus and dentiferous bones. In man and mammalia its development is abortive, but in fishes and Batrachian amphibia it contains both. The intermaxillary bones, therefore, may very possibly, like the vomer, differ entirely from the other parts of the upper jaw in their origin. Now in one of the complicated forms of hare-lip, in which the upper jaw bones and palate bones of opposite sides do not meet, the right and left intermaxillary bones are united, and, instead of being attached to the upper jaw bones of their respective sides, remain in the middle line; the cleft of the palate being prolonged forwards on each side, between the

maxillary and the intermaxillary bone, so as to leave the latter with the incisor teeth suspended to the vomer.

In contradistinction to the opinion of Meckel and others, expressed in the foregoing observations, I may mention, Cruveilhier, Dupuytren, and Velpeau, regard such theory erroneous, as applied to the soft parts, and consider hare-lip to be, like many other monstrosities, the result rather of some diseased action; the latter indeed denies that the lips are formed of several pieces at any period of intra-uterine life; and indeed I may here state that I have never been able to observe in the fœtal mouth, even at the youngest period which it was visible to me, any deviation from a simple oval or circular form in the aperture; fortunately, in a practical point of view, as affecting operation, it matters but little how such differences are reconciled. Louis has pointed out an inference of considerable importance, did it maintain, namely, that the defect in hare-lip, whether it be single or double, is not accompanied by any loss of substance in the lip. My observation, however, does not confirm this deduction; such an expression is, I conceive, a play upon the words: there is not only a want of development in the fissure, but I have sometimes seen the lip thin, and, as it were, fined down to the edge; while I admit, in the great majority of cases, there will be found a fleshy and rather prominent margin, a condition which, whether it be the result of a shrivelling up of the textures, or actual thickening from disease, becomes highly advantageous to the operator, by enabling him to remove a considerable portion, and still find enough left wherewithal to make a perfect lip. I contend that the most judicious way of dealing with this subject is that by detailing cases, from the most complicated form to the simplest kind, describing accurately the condition of the soft and hard parts, and conjointly the practice adopted and best fitted in each instance; next making reference to the period of life at which the operation is most likely to be followed by a favourable issue and success; and lastly, the instruments used by different operators in its performance, and the modes prescribed by the most eminent.

Case I.—*Double complicated Hare-lip; Double Fissure of the Palate; Projecting Maxillæ, &c., successfully operated on at the age of two months, and cured with scarcely any trace of deformity.*

Christopher Sullivan, aged two months, admitted into Mercer's Hospital, under my care, April 11, 1853. He was the third child of a healthy and peculiarly handsome woman. The first and second children were well formed, strong, and robust.

Words cannot convey any adequate idea of the hideous deformity in this case. I must request the reader to examine the figure No. 1, in the first Plate—a glance reveals the true condition of the parts: the mouth and nose formed one large cavity, the hard palate being doubly cleft; the fissures were widely apart, particularly in front, owing to the abnormal gum on either maxillary bone standing almost straight forward, but were united behind, simply dividing the soft palate; the septum of the nose was thin and flexible behind, yet anteriorly it was considerably thickened; while, on the osseous tubercle, more in front, the central portion of the lip, developed beyond its natural size, was nodulated, as it were rolled up into two dense, rounded processes, the superior of which hung down suspended from the nose, being connected as far forwards as its apex. The edges of the fissured lip were thin and widely apart, so far so, that in no motion of the cheeks did they even nearly approximate; the red margins were scarcely discernible, the nostrils were widely expanded and flattened, being firmly united to the distorted alveolar border,—so far outwards were they connected, that a line let fall vertically on either side came but little within the angles of the mouth. The melancholy aspect of the little creature was greatly aggravated by its apparently starved condition; it was never able to take the breast, and was, therefore, dependent on artificial sustenance; with difficulty even small quantities of fluid, conveyed far into the mouth, were swallowed, as the greater portion at each effort was ejected through the upper part of the common oral and nasal cavity. Thus the child suffered materially from want of sufficient nutriment, so essential at this tender age; indeed, it was painful to behold the tenacity with which it would grasp the nipple and struggle to empty it, while equally rapid were all its efforts to swallow milk when placed in the mouth; but both these acts were faulty,—the first totally ineffective, the latter only partially salutary. It is not necessary further to dwell upon the unfavourable results, either in sucking or in

other functions; it would only be to add to the annals of the art, descriptions repeated a thousand times since Celsus transmitted to us a methodical description of this affection. Having retained the child in hospital, and supplied nutriment as much as could be taken, on the seventh morning after his admission, the 18th April, I proceeded to operate, after the following manner. The child was rolled up in a sheet, mummy-wise, and laid in the arms of a nurse, seated upon a high chair, the head being steadily supported against her left shoulder by an assistant behind.

Standing in front of the patient, I first proceeded to deal with the central piece in the following way:—A tenaculum being struck into its inferior part, and traction made upon it, all its attachments were carefully divided from below upwards, from the osseous projection behind, with a narrow-bladed bistoury, to such a point as to permit the tip of the nose to be elevated to the position it ought to occupy; the posterior surface then of this pendant double tubercle was thinned from behind, and its sides cut directly downwards in its upper half, while half the remaining portion was reserved in a triangular shape, the apex inferiorly; thus the tenaculum with the lower bit were cut out, from the sides of the upper half, reserved to form the septum of the nose. The bleeding was smart at first, but after a few seconds it ceased to give any annoyance. The prominent little tubercle of bone was nipped off, to permit the septum to rest evenly. The next step in the operation was to rectify the vicious direction of the gums, implanted into the widely separated maxillæ; by the assistance of a wire pincers, the blades of which were flat, and covered with a couple of folds of shamois leather, I was enabled not only to turn back the dense fibrous structure, but to snap across the bone where it was attached. This proceeding was effected on both sides. I then rapidly freed the lip and ala of the nose on either side from the bone beneath, so as to permit of their being brought fully forwards. The incisions, to effect this object, were necessarily very extensive. The knife during the separation of these parts was kept very close to the bone, so as to guard against hemorrhage from injury to any of the vessels supplying the cheek. The cleft lip was next pared, a tenaculum being introduced where the red border was most prominent in either half. The instrument on the left side was let rest in the hand of an assistant, while, taking that on the right in my left hand, and making the necessary traction upon it, downwards and inwards, marking well the commencement of the eversion of the mucous membrane, I cut off the red margin from a point com-

mencing about two lines above its appearance below to one a little internal to, but below, the attachment of the ala on that side, and where the mucous membrane and skin came in contact, the incision impinged a little upon the latter; a similar proceeding was executed on the left side. While these incisions were being accomplished, the assistant who steadied the head likewise made effectual pressure on the facial arteries where passing around the lower jaw; so that, on the whole, the hemorrhage was more an oozing from the surface than the quick jet which otherwise would be thrown out from vessels approaching the magnitude of the coronary arteries. Owing to the free liberation of the anterior part of the cheek on either side, and the alæ in conjunction with them, the parts came beautifully into contact. The effect of apposition of the sides of the pared lip produced a most marked elevation of the nose, particularly at its apex. This was all that could be desired. The dissected centre piece constituted an admirable septum, while its angular termination fitted the notch created above by the juxtaposition of the lip drawn from opposite sides, but did not pass down between them. The next point was to secure the several parts in their destined place, and for this purpose very long steel needles were selected; the first was introduced about a line outside the ala, on the left side, and on a level with it, and passed towards the right, transfixing the V-shaped extremity of the septum, and pinning it in its birth, and finally appearing on the right side, exactly opposite the point of entrance. The needle lay in a direct transverse course; a thread of thick ligature silk was cast around the extremities of the needle, but before the ends were crossed the flaps were pressed together, and, indeed, they glided rapidly towards each other on the long smooth needle; after this the cord was twisted several times, as in the figure ∞ form; the second needle, similar to the first, was introduced about a line above the free edge of the lip and three lines to the outside of the vertical incision; from this very low point it was pushed slightly upward and backward, so as to appear on the cut surface somewhat higher than the point of entrance; it was pushed on through the opposite side in a similar but reversed order, and brought out there at a point in the skin precisely in a line with the point of entrance; the ligature being cast around this needle in a way similar to the first; the parts when made to touch were found to fit with the nicest exactitude, giving to the red border a straight edge below, and forming the lip into a level surface in front. The portion of the wound intervening between the needles was in the slightest degree apart; so

midway between each I introduced the finest cambric needle, and by a few turns of the twisted thread completed the perfect apposition of the cut surfaces. The projecting ends of the needles were then nipped off, and a small morsel of lint interposed between their stumps and the cheeks to prevent irritation; finally, the cheeks were well drawn forwards, and maintained so by a broad strap of adhesive plaster, narrowed, corresponding to the position of the needles, with slits cut corresponding to each, so that no pressure should be applied over them. Shortly after the operation the child fell asleep, and towards evening took the breast and some boiled milk with alacrity; on the succeeding days there was some little febrile disturbance, merely evidenced by heat of skin and restlessness, but nothing of any amount to excite alarm, or create apprehension as to the certainty of perfect union. So admirably united did the parts appear, that on the morning of the 21st I removed the needles, that is, fifty-six hours after the operation; having applied a little unguent to the ends of the needles, each was taken hold of in a close dressing-forceps, gently rotated, and then drawn out towards the left side, and in this way liberated from the coils of the twisted suture, which maintained their original position undisturbed. During this proceeding the head was steadily held and the cheeks pressed forward by an assistant, which prevented any undue traction upon the recent union during the struggles and crying of the child. In order to retain more fixedly the threads in their position, and to save them being detached by moisture, I applied a few layers of collodion over each with very excellent effect. A wide and long strap of adhesive plaster, shaped to the part, was made to take the place of the assistant's hands in holding the cheeks well forward; the child when released ceased to cry, and soon fell asleep. On the following morning the entire dressings were removed, and the union was complete. Nothing could be more beautiful than the pink line marking the bond of connexion between the parts of opposite sides; the central piece too, steadied its position to the cut osseous tubercle behind, while its inferior angle was steadily retained in the little space allotted to it, by plastic fibrine. A week after the operation, the wounded gums and parts inside seemed healed.

On the 30th of April the needle-marks were nearly filled up, and towards the latter end of the first week in May the child was dismissed from hospital, cured. He was brought back at the end of four months, and so great was the improvement in every way, that scarcely any one recognised him as the wretched, starved little creature which had been operated

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Mr. BUTCHER'S CASES OF HARE LIP

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on. At this time the drawing was made, from which the second figure in Plate I. is copied. The contrast between it and the first figure is most striking, yet not in the least degree exaggerated. The marks of the incisions were greatly obliterated, and the pink shade entirely dispersed. The lip seems a little tightened, and this is chiefly owing to the union being so perfectly completed, even to the very lowest part of its red border. Again, the effect is heightened by the state of the lower lip, which is rendered pouting, owing to the way in which the cheeks were compelled to come forward, and compensate for the loss above.

Case II.—*Single Hare-lip, complicated with widely fissured Palate; projecting Maxilla, &c.: successfully operated on at the age of ten days, and cured with little marks of deformity.*

Bridget Russell, ten days old, was admitted to Mercer's Hospital, August 9, 1854. She was a miserably diminutive, little twin child, much smaller in every respect than her sister, who was born without deformity. The mother of these children was a young, well-looking woman—her features in every way regularly formed, and these were her first offspring, after being ten months married. Though the fissure of the lip in this instance was single, yet I doubt that the frightful appearance could be exceeded. The cleft was situated on the right side, and passed into the nose; and so wide was the separation that the two cavities were uncovered and exposed. The maxilla on the left side, with its hypertrophied gum, projected almost straight forward, while on the right side the maxillary bone was scarcely developed at all, and to this receding piece the cleft portion of the lip on the right side was intimately adherent, while considerably to the outside of the projecting left maxilla the corresponding half of the upper lip was adherent. The space between the bones, which was continued the entire way back, was sufficiently wide to admit the finger, and, by measurement, more than three-quarters of an inch across. The projecting maxilla, from its vicious direction, was further implicated by adding to the deformity in dragging the septum of the nose, which was adherent to it, forwards and to the left side. Thus the ala on the right side was spread out and stretched tensely across the upper part of the fissure. (See Fig. III., Plate 1.) When the child was brought to me it was almost starved; it could not suck, and with the greatest difficulty nourishment was got into the stomach; every act at swallowing was attended with the ejection of by far the

greatest part that was placed in the mouth; and the feeding of it was so irksome, that I am convinced had an operation not been put in practice, it would have died from inanition. The more favoured child suffered from slight fits after birth, and my little patient had one or two the day before admission. I administered small doses of gray powder, warm baths, &c. There was no return of the fits, and I attributed their origin to irritation arising from a confined state of the bowels. Two days being suffered to elapse, and as much nutriment thrown in as possible, I determined on operating; and on the morning of the 11th August, twelve days after birth, proceeded in this way. The child, enveloped in the folds of a sheet, was put into the arms of a nurse, and its head steadied against her breast by an assistant. I seized the projecting piece of maxilla, with the gum attached to it, far back, with the flat forceps described for a similar purpose in the case of Sullivan, and broke the structures sufficiently to make the part stay back. When so treated, it lay across three-fourths of the space between the nose and the mouth. The right half of the lip was next seized in a tenaculum, and drawn outwards so as to allow an extensive dissection of the right ala and corresponding part of the cheek from the bone behind. Several times the part was drawn forwards with the tenaculum, to make sure that a sufficient relaxation had been effected to allow of the ala coming near to the septum; this was essential for the restoration of the nose. The red and everted border was then very freely cut away with scissors, even to within the nostril, and the left half dealt with in a like way; the mucous membrane behind and attaching it to the gum, being divided where necessary. During these incisions great care was taken to compress the facial arteries in their course upwards, and indeed not a spoonful of blood was lost. The needles were next introduced—the lower one first, and in the manner particularly pointed out in the case of Sullivan. A second needle was passed from just beneath and without the ala, on the left side, to a point strictly opposite on the right; the parts, by gentle lateral compression, glided evenly along the needle, and were kept in situ by the twisted suture; the depressed gum and maxilla formed a steady support behind. The entire wound lay in contact, so that the third needle was here dispensed with; however, I put a point of the interrupted suture on the inside of the red portion of the lip, to prevent the child's tongue from irritating and making it gape; broad straps of adhesive plaster were put on, with the object of retaining the cheeks forwards, as described in the foregoing case.

12th. Since the operation the child has frequently taken the breast and nourishment from a spoon, and has slept at intervals quietly; she does not suffer pain, and there is but little swelling of the face.

13th. The slight swelling which was present about the mouth on yesterday is nearly gone, and the child takes abundance of food, little being now rejected by the nose.

14th. Removed the needles to-day, seventy hours after the operation; the twisted threads likewise separated; the union was perfect throughout. During this proceeding the cheeks were carefully and gently held forwards; small morsels of dressing were put on the needle apertures, and broad straps of plaster applied to hold the cheeks forward, and take all stress off the new union. On the 21st the marks created by the needles were all healed, and the friends of the child scarcely recognised it, so thoroughly was the deformity removed. (See Fig. IV., Plate 1.) Even at this time there was a marked improvement in the temper and condition of the child; for days it was able to take as much nourishment as its wants desired, and the beneficial soothing effects produced by uninterrupted rest, materially contributed to the marked constitutional amendment. In this instance, soon after the birth, the projecting maxilla and gum were broken and thrust backwards, so as to take as nearly as possible the range which the alveolar arch ought to take. I have adopted the same line of treatment in more advanced life with the same fortunate results, even when the permanent teeth were fully formed. Case v. offers a good illustration of the practice.

Case III.—*Double Hare-lip, complicated with double Fissure of the Palate, and extensive centre-piece projecting forwards with the Incisor Teeth; successfully treated by a new Operation, at the age of one year and seven months, and cured with little marks of deformity.*

Sarah Byrne, aged one year and seven months, was admitted into Mercer's Hospital under my care, October 14, 1854. She was the seventh child of a healthy countrywoman: the previous children were all well formed and in robust health. The deformity in this instance was very prominently marked, particularly when the child's face was distorted by crying; even when the features were at rest the deformed chasm created between the mouth and nose allowed the tongue to hang out. The bony parts presented a very rare arrangement: the palate was doubly cleft, and the maxillary bones, far from being promi-

nent in front, receded rather, and passed inwards as if deprived of support in the mesial line, while the intermaxillary portion of the upper jaw on either side, out of which the front teeth grew, was detached from the rest of the alveolar arch widely, and projected almost directly forwards; this portion of bone was fully half an inch, if not more transversely, connected behind by a slender stalk to the vomer; in its most prominent anterior part the milk teeth were well formed, while laterally it was coated by the dense gum. Now, in accordance with this unusual distortion of the bones, were the soft parts equally astray: the nose was widely expanded, that is, its alæ were far apart and flattened, the centre of the bridge was greatly depressed, while the tip of it was thrust up by a dense oval flap, fully three-quarters of an inch across and somewhat more than half an inch in the vertical direction, and as deep, interposed between it and the deformed central portion of the maxillæ; no motions of the face could cover the projecting gum or the central piece, or close the mouth beneath, while the fissure on either side was almost sufficiently approximated to conceal the deformity; within the cleft lip was well developed in its lower half on either side; while above, the portions were thin, spread out, and widely apart, and firmly united to the maxillæ; their red prominences below could, by great traction, be made to meet, but if they did so it was far behind the projecting central piece and teeth; the lower lip, owing to the relaxed and unsupported state of parts and gap above, hung down in rather a flaccid way, and the saliva was constantly streaming from the mouth. Altogether the child, the upper part of whose face was more than ordinarily interesting and pretty, presented an appearance singularly hideous. The figures, Nos. 1 and 2, Plate II., are accurate representations of the full face and profile, from drawings taken by the faithful pencil of Connolly. I had the profile taken in this instance as being absolutely necessary to give a just idea of the relation of the nose, the projecting central portion of the maxillæ, and the superimposed central piece. It accurately shows the convex course of the fleshy portion of the fissured lip, while it equally illustrates the thinned and angular arrangement of it above, where, meeting with the ala of the nose, both lie matted to the maxillary bone. The protrusion of the tongue, and the pendant state of the lower lip, already adverted to, are faithfully designed.

The child did not at all make the same exertion to swallow, neither was the food ejected from the mouth in even nearly so great a quantity as in the case of Sullivan, which I attributed

Mr BUTCHER'S CASES OF HARE LIP.

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to the peculiar way in which the maxillæ with the hypertrophied gum on either side were turned behind the lateral margins of the projecting central piece, thus offering an obstacle to the escape of nutriment when contracted upon in the act of deglutition. The appearance of the child bore evidence to the fact of a full supply of nourishment being received and appropriated to the wants of the system, but it had to be artificially supplied from birth. The limbs and body were well formed, and fat largely deposited everywhere: indeed, the child exceeded, if anything, the weight usual at her period of life.

It was obvious that the arrest of development, to which this deformity is attributable, occurred in the lateral elements of the maxillary bones, and, in all probability, may be traced to some congenital defect in the supply of blood, seeing that the upper jaw obtains the vital fluid by different sources: that portion containing the incisor teeth from the infra-orbital or long palatine, and the region of the molar and tricuspid from the dental branches of the internal maxillary on either side.

On the 18th of October I operated in the following way:—The child, being rolled in a sheet, and placed in the arms of a nurse, an assistant standing behind steadied the head against her left breast, I struck a tenaculum into the lowest part of the central piece of the lip and rapidly dissected it from the prominent bone behind; this I required to do up to the very apex of the nose, so intimately attached was the bone in this direction; this soft piece being liberated with the bistoury, I cut away its convex sides to fully two-thirds of its length, preserving between the lateral incisions a sufficiency for the proper breadth of the septum, and terminating in a triangular form. The most difficult part of the operation was in reference to the management of the prominent piece of bone; it was only attached posteriorly by a narrow stalk, yet I could not bring myself to take it away; it could not be thrust back, for the maxillary bone with distorted gums was turned in behind it, and offered an obstacle in such a direction; again, there was great danger, if the osseous stalk was broken across, that the piece would fall down towards the mouth, having nothing to sustain it. After some consideration on the matter for days before, I planned a novel method of dealing with it, which answered effectually: it was after this manner,—with a strong sharp scissors I shaped the projecting piece of bone and the dense gum attached to it into the form of the key-stone of an arch, narrower below than above, by slicing its sides, and next, with the same scissors, cut away the distorted gums and the edges of the maxillæ behind to the same form; this being ef-

fected there was no obstacle to thrusting back the bone containing the incisor teeth, and there was no objection to fracturing the stalk, for the supply through the soft part was sufficient for its nourishment, while it could not fall down owing to its wedge-shaped form. This proceeding, as I had conjectured, much facilitated the approximation of the cleft lip; yet wide and extensively the mucous membrane required to be divided, and the cheeks detached from the maxillæ, particularly where the alæ of the nose lay imbedded in them, to enable me to draw forwards all that was required to construct the lip from almost the lateral pieces only, for the central portion of the lip was appropriated to the formation of the septum; besides, I did not wish to retain much of it between the side pieces, lest the nose should be drawn down and depressed by such a connexion. The lateral pieces of the lip were each seized in the most prominent part of their red border with a tenaculum, and the scissors commenced by cutting on each side inferiorly, so far towards the corners of the mouth as to remove entirely the rounded angles, which were very prominently present in this instance, and continued the incision about two lines to the inside of the ala on each side within the nostrils. Thus the soft parts were extensively liberated, pared, and freshened for adhesion, while the mode adopted for retaining them *in situ* to permit a permanent bond of union was very nearly similar to that employed in the case of Sullivan, No. 1. The first needle was made to enter a little outside and on a level with the ala of the left nostril, and made to pass from left to right; care was taken to shove well up the piece shaped out for the septum, so that no drag should be made upon the tip of the nose; this being so arranged, the needle transfixed it at its widest part, just above the base of its commencing angular form. In piercing it I was sedulously careful that the needle should lie within a line or so of the skin covering this central piece; when so transfixed the point of the needle was again dipped deep to pierce the right half of the lip close to the mucous membrane, and to appear outside the right ala opposite to the point of entrance in the left cheek. A few turns of silk were thrown around the extremities of the needles in the way of the twisted suture, and the parts gently drawn together, at the same time that an assistant gently pressing forwards the cheeks, made them glide more equally and smoothly in the proper direction. The second needle was entered at the junction of the red border and the skin, fully half an inch external to the cut edge on the left side, and close to the mucous membrane in a direction transversely and a little upwards until its point ap-

peared in the fissure; it was then turned with the same degree of obliquity and depth through the right half of the lip from within outwards, piercing it externally opposite to and at the same distance from the margin as on the left side; while the needle was made to describe this somewhat semicircular movement, with the index finger and thumb of my left hand I gently drew down the mucous membrane, or rather everted the portions of the lip included between the point of entrance and exit of the needle; thus, the centre of the lip was rendered a little fuller than it otherwise would have been, and more relaxed, a very important feature in contributing to perfect adhesion to the very edge of the prolabium; a few turns of twisted suture fixed the needle. Owing to the manner in which the first needle traversed superficially the septum near its base, and from the semicircular course it described through it (convex forwards), a slight depression externally marked its direction, proving that a certain amount of force was drawing it backwards. Now, this had the effect of making the angular piece start forward from between the lateral portions, but, by a little management, it was got back into its place and fixed there by a fine needle passed from side to side in a similar manner to the others, but lying more superficial, the silk when passed across the needle completed the restraint. A wide, long strap of adhesive plaster adapted to the part, with apertures in it, so as not to exert any pressure on the needles, was then put on, with the intention of keeping the cheeks forward, thus lessening muscular traction on the needles, particularly during the crying and restlessness of the child. Very little blood was lost, not more than one or two jets from the coronary arteries, and a small quantity from a general oozing; on the parts being placed in apposition and the dressing completed, all weeping ceased. The child bore the operation well, but in about an hour after became very restless and cried incessantly; I therefore administered small doses of opium to procure rest, and with the best effect; after a few doses the little creature became composed and fell into quiet sleep, in which she remained for several hours; on awaking she took some boiled milk, and went off again to sleep.

20th. Doing most favourably, no undue inflammation about the wound; the child sleeps and takes food with appetite.

21st. On this morning I withdrew the needles, seventy-two hours after the operation, and the union was perfect throughout, some slight ulceration appeared at the side of the septum, just at its junction below with the thrust back central piece of bone; to this the nitrate of silver was applied, which, on the

third application, aroused a healing process that required no additional interference; wide straps of adhesive plaster shaped to the configuration of the parts were put on to restrain muscular movements of the cheeks and to support the recently bound together parts. The twisted threads upon the suture were suffered to remain, and fixed there, as in the case of Sullivan, by the application of collodion. On the 24th all the dressing came easily off, and the appearance of the lip was very satisfactory; the various divisions of the parts were united throughout, and the central bony piece was steadied in its berth by plastic fibrine. The power of swallowing was greatly improved, and no fluids flowed through the nose. On the 29th the internal parts were entirely healed, and also the wounds inflicted by the needles. On the 16th of November, a month after operation, the drawings were made, from which the figures Nos. 3 and 4, Plate II., have been carefully copied. No words can describe the improved appearance of the little creature, and even the drawing, so admirably and faithfully executed by Connolly but faintly conveys all that surgery had done for this deformed child of nature: the entire countenance expressed an animated, quick intellectuality; the nose was sufficiently prominent, and harmonized well with the contracted but expressive condition of the mouth; the profile of the child was likewise pleasing, and is graphically copied, and it also shows how well the septum was created, and how accurately it was pinned into its proper berth so as not to drag down or distort the nose. Owing to the measures put in practice, the full roundness of the lip has been preserved, and the projection of the lower is but little apparent or beyond its fellow. On the 20th of November the child was taken from the hospital.

Case IV.—*Double Hare-lip, complicated with an entire absence of the Intermaxillary portions and Palate of the Maxillæ, the Septum resting upon the Tongue, with the Maxillæ and Teeth distorted forwards and upwards, operated on at the age of six years.*

Susan Bryan, aged six years, was admitted into Mercer's hospital under my care April 17, 1854. She was the third child of a healthy mother, the two former were favourably proportioned. The unsightly appearance of the infant, and its inability to suck, made the mother desirous for an early operation, but the child was rejected by all who had seen it, so great was the deformity, until a riper age was attained. Thus passed over, week after week, month after month, and year after year, until I saw her on the above date, the mother all the time being

Mr BUTCHER'S CASES OF HARE-LIP.

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Forster & Co Lith.

led to solace herself that accumulated strength was obtained by this delay, and a more hopeful chance of recovery and success. Altogether the case was a disheartening one. (See Fig. I. Plate 3, taken from a drawing carefully made by Connolly.) The separation between the maxillæ was, by measurement, an inch and a half, and not only this, but the edges of the bones with the early teeth looked forwards and somewhat upwards. The nose was widely expanded, its apex completely depressed, and the alæ nasi dragged on the same plane to either side and fastened to the upper angles of the receding maxillæ; from the centre of the organ hung suspended the irregularly nodulated septum, which, having no attachment below, rested upon the dorsum of the tongue; the entire of the palate plates of the maxillary and palate bones being defective, the oral and nasal cavities were thrown into one irregularly formed chamber. There was a constant restlessness about the mouth not usually witnessed; the tongue, which was inordinately developed, was ever in motion; while if for an instant the attention of the child was arrested, it protruded from the mouth and blocked the apertures, save a small space above, beneath the nasal arches. During the act of mastication the motions of the tongue were very remarkable, in rolling portions of food about the cavity and absolutely restraining it from passing into the upper part of the nasal cavity, though it could not prevent lodgments between the cheek and the alveoli, which constantly had to be removed by the child sweeping the entire alveolar range with her finger; no matter how slowly mastication and deglutition were performed, this additional agent was called into requisition; the child could speak but very indistinctly, and every sound had a guttural tone. Contrasted with this hideous deformity, the upper part of the face was peculiarly beautiful, the forehead being delicately white and well developed, the eyes of deep purple, reflecting every object, and expressive of that sweetness, gentleness, and love, only to be witnessed in childhood. The operative procedure in this case was somewhat different from either of the former: as in the former instances, the child was rolled up in a sheet, the arms being well secured, and then placed in the arms of a strong assistant, with the head supported against his shoulder and maintained there by a second assistant standing behind. With the forceps already described I seized the projecting edges of the maxillæ and bent them back, fracturing the anterior layer of the bone. I next passed beneath and behind the central fleshy piece a bit of flat wood with an angular cavity cut in it; the narrow part of this space readily received the septum behind, while the nodules were

supported on the flat surface, thus a resistance was obtained sufficient to enable me to shape the part so as to fit into the angle created by the apposition of the lateral portions.

The next step in the operation was to free the cartilages of the nose, the alæ nasi, from the firm attachment to the distorted maxillæ. This, too, was done by careful and repeated strokes of a fine bistoury. When accomplished, the mucous membrane being divided a little lower on either side, there was no obstacle to the lips being brought sufficiently forward. This being ascertained, the rounded edge of each lip was secured in the tenaculum, and nearly the entire of the everted reddened margin excised with the scissors to a point within the curve of the cartilages of the nose. Three needles were used in this instance to secure the parts. The first was made to enter outside the ala on the left side, to dip under its lower margin; and having appeared in the nostril, the septum was shoved up to its full height and transfixed; in like manner it passed beneath the right ala, when it appeared externally in a perfectly transverse course. After this needle took its place, the nose was well supported, and the uniform margin of the septum merely rested on the tongue instead of being turned upon it, as before this proceeding; a few turns of the twisted suture were made, and the parts, nicely adapted, lay together. The second needle was placed close to the red border of the lip, and made to describe the same peculiar semicircular course already alluded to; and the lower angles were everted and dealt with as in the case of Susan Byrne. The silk ligature retained the needles. A third needle, a fine cambric one, confined the inferior angle of the septum in its place, between the lateral portions; it did not descend low; the cicatrix of the lip was, therefore, a single straight line, not Y-shaped, as is customary in cases of the so-called double hare-lip. In addition to these, a stitch of the interrupted suture was put on the inside of the lip, to prevent the tongue interfering with the union. The ends of the needles were then clipped off, the cheeks being retained forwards by broad adhesive straps, after the manner already recorded. Shortly after the operation the child became restless; five drops of laudanum were administered, which had the desired effect of inducing sleep. In the latter part of the day, after awakening from sleep, she took some chicken broth and milk.

April 20th. The following is the report:—Child slept quietly all night; this morning took its milk and bread, and through the day quantities of chicken-broth; is quite lively and cool; some swelling, but no redness about the mouth;

towards the latter part of the day particularly cheerful, and indistinctly asked for bread.

21st. The child slept quietly all night, and when seen by me in the morning was lively, and appeared going on most favourably; it ate its breakfast without suffering much pain. On this day erysipelas made its appearance in the ward, and the child, during my absence, for safety was removed to the ward in connexion with the operating theatre, in which it lay before the operation. From this period the child became silent, concealing itself under the clothes, and timorous of everybody; and though stimulants were given, and warm broth freely,—the child towards evening, when I saw it, was removed from the ward,—yet prostration went on, and she died at 11 P.M., with all the quietness of going to sleep. I have no doubt whatever the child died from fright, the little creature being, as the nurse afterwards informed me, in dread of a repetition of the operation. I made a very careful examination of the body, but could find no changes or traces of inflammation to account for death; there was no swelling or œdema of the back parts of the mouth, or any alteration within or in the vicinity of the windpipe; a healthy process of inflammation had extended through all the incisions, and plastic fibrine agglutinated them together, while beyond their immediate bounds there was no transgression. On instituting this inquiry, the hypertrophied state of the tongue was truly remarkable. I have before alluded to this point, as well as the restless activity it displayed during the act of deglutition, but the full size of the organ was only strictly displayed in this after-death investigation; it nearly attained the size of that in the adult subject; no doubt, this increased volume must be ascribed to it, as taking on the part of a compensating organ. I do not think the bulk of the tongue interfered with a sufficient quantity of air being admitted to the lungs, yet the child always kept the mouth open, and it slightly protruded. I can conceive, however, such an interference with respiration possible, certainly so, if the organ was larger in proportion to the mouth than in the present instance. In the present case there was no difficult respiration, no symptom indicating a non-aerated condition of the blood, and no post-mortem evidences confirmatory of such a state. After death I took a very beautiful cast from the child's face, showing how the changes in the deformed mouth were rectified by the operation. Figure 2, Plate III., has been drawn from it by the faithful pencil of Mr. W. Foster; and surely it will be admitted that surgery, that art, has corrected and beautified nature.

CASE V.—*Single Hare-lip, complicated with widely fissured Palate; projecting Maxilla; successfully operated on at the age of thirteen years.*

W. M., a fine, healthy boy, aged thirteen years, was brought to Dublin for my opinion early in the past summer. His parents were in great distress relative to the frightful deformity with which he was allowed to grow up. The boy himself had sufficient sense to reason fairly upon the matter; and after explaining the circumstances to him, he pressed very urgently for an operation. On examining the case carefully, there could be no doubt that a well planned operation would rectify matters in a very satisfactory way. The figure, No. III., Plate 3, gives a true representation of the parts. The cleft in the lip was an inch wide, and passed into the left nostril, while the palate was deeply fissured, with the intermaxillary bone and maxilla on the right side standing prominently forwards through the gap in the soft parts; the incisor teeth were fully developed and set in this projecting bone; the left nostril was flattened and expanded, being adherent to the non-developed maxilla on the left side. The lip on this side, too, was short, and the cleft in a vertical line from about two lines within the margin of the ala downwards, while the right half of the lip was forced forwards even to a level with the tip of the nose, at the same time everted more than half a turn. On the following morning I operated upon the boy at his lodgings; much after the manner described in the case of Russell (No. II.), there being a great analogy betwen the cases in more respects than one. The projecting piece of bone was seized in the flat forceps at a considerable distance behind, and then bent forcibly back at the same time that a rotatory motion was given to the instrument, by which the bone was snapped across with an audible noise; the teeth were left undisturbed, and the gums and soft parts were uninjured by the covered blades of the forceps. After being thrust back, it remained well in its position, and I proceeded to detach the lips and clip them very freely with the scissors. Needles and sutures were put in with the exactitude already dwelt upon, and adhesive plaster applied to fulfil the intentions before insisted on. After the dressings were complete, nothing could offer more promisingly for a favourable result. The boy bore the operation with the greatest heroism, and favoured my views by observing the strictest quietude and rest. Yet, on the second day, the needle next the red border of the lip showed a disposition to cut its way out. Having the cheeks well sustained forwards, I withdrew this

needle, and inserted another close to the position, about a line above it and more to the outside about two lines. This manœuvre gave a fresh hold; and when the silk was cast around it in the figure of ∞ form, the surfaces coated with lymph lay fairly in contact; to complete the border and compel union, I put a point of the interrupted suture in it with the finest needle. In seventy-eight hours after the operation, I removed the needles, and union between the parts was accomplished. In three weeks after being cut, all marks of the needles had passed away. A short time since I had the pleasure of seeing this young gentleman, and I was greatly gratified at his appearance; a few white lines marked the course of the incisions, and the sides of the face were exceedingly regular. On examining the interior of the mouth, the bone where broken across was solidly united, and the piece with the incisor teeth kept the position into which it was forced. When the boy smiled, the teeth were seen in their regular arch; and altogether, his aspect, I can say, was prepossessing. (See Fig. IV., Plate 3.)

Case VI.—*Single Hare-lip successfully operated on at the age of two years and three months, cured with scarcely any trace of the malformation.*

James Bell, aged two years and three months, a fine healthy boy, the subject of simple hare-lip, was admitted into Mercer's Hospital, January 1, 1855. The parents were both handsome, and had four children; this little fellow was the youngest, and the only one disfigured. A wide, gaping fissure existed in the upper lip, its sides were unequal, owing to an obliquity in its course, terminating in the left nostril, and commencing to the right of the median line. On the 5th of January I operated in the following way:—The child being firmly enveloped in a sheet, and held in the arms of an assistant as in the former cases, I freed the attachment of each side of the lip from the bone, particularly where they met in an angle within the nostril; this being satisfactorily accomplished, I secured the right half of the lip by the tenaculum, and cut off the entire of the everted and reddened margin with a curved scissors, made expressly for the purpose. A similar proceeding was executed on the left side. Owing to the unequal lengths of the sides of the fissure, the right being the longest, it was first cut, in order that the exsection of the margin of the left half should be strictly the same length, otherwise they could not accurately correspond when applied evenly from the acute angle above; the longest side would not meet fairly the

red border of the other half, it would hang lower, and therefore substitute another deformity. However, from conducting the division of the parts as I have mentioned, two somewhat elliptical incisions were made, thus ⟨⟩. A needle was then introduced on the left, about three-quarters of an inch from the divided edge, and just at the union of the skin and red border of the lip, and made to travel in a semicircular course to a point opposite to that first transfixed, according to the principle already laid down in the complicated cases mentioned. A second needle was introduced transversely, fully three lines below the alæ nasi, so as to bear upon the curve of the incision, its point of entrance and exit being on the same line as those of the first needle; around each a silk cord was thrown in the figure of ∞ form, completing the twisted suture. On drawing together the parts, surface to surface, it is clear that the lower or red border of the lip was made prominent; to prevent gaping behind, a stitch of the interrupted suture was inserted. There was another expedient I put in practice here, which I believe to be original. After cutting away freely the everted borders into the nostril with a scalpel, I shaved off the gum and the mucous membrane from the lip, just at the angle of junction, favouring a union between these raw surfaces, thus diminishing the tendency to retraction of the cicatrix, as is supposed by some pathologists to take place after the lapse of years. The ends of the needles being clipped off, the cheeks were then supported forwards by wide adhesive straps, adapted and planned as in the foregoing pages recorded. On the 6th, the report was that the child slept all night, waking only to take refreshment; thus the case went on most favourably. On the morning of the 8th I withdrew the needles, seventy-two hours after the operation, and cut out the stitch behind; up to this period they were fulfilling their object in the part, without creating any annoyance; there was but little swelling occasioned by them, and no inflammatory action more than requisite for union. On being withdrawn, the adhesion was perfectly accomplished throughout, and the indentation above the red border of the lip was developed. Though the union was fairly accomplished, yet bands of adhesive plaster were reapplied to maintain the cheeks forwards, and paralyze all muscular movement of the lip. On the 23rd, the openings resulting from the needles were also healed; and on the 28th the child was dismissed, with but little disfigurement, a thin line only pointing out the interference of the surgeon.

Case VII.—*Simple Hare-lip, complicated with a very remarkable arrangement of its parts; successfully operated on at the age of six weeks, and cured without deformity.*

I select this case from amongst many, as presenting some features peculiar and different from what are usually met with. The case occurred in private practice. The child was a female, the fourth born of an exceedingly handsome lady; all the other children were well developed and robust. The little patient was not six weeks old when sent from England for my opinion during the past summer. The condition of the upper lip was very peculiar: a short but wide fissure cleft the lip through its red border and for a short distance higher, in all half an inch. Wide and gaping to a like extent was the separation, while continued upwards close to the nostril was a sulcated seam, the right side elevated above the other, more prominent, and on the whole better developed. Thus, though the absolute cleft was small, and a good deal concealed when the child laughed, yet when the features were in repose, the deformity was very conspicuous. On turning up the lip and examining it carefully, a white line shining through the mucous membrane marked its course, while the latter structure lay smooth and polished over it. It absolutely had all the appearance as if nature had repented of her error, and too late put forth every endeavour to seal the part. The ala on the left side was also drawn down or depressed. In the operation it was necessary to prolong the incisions into the nostril, excise the seam together with the margins of the cleft lip, and at the same time raise the ala from its deep attachment. Two needles were necessary for the retention of the parts, and two points of interrupted suture, one placed between the needles, the second one on the inside of the red border of the lip. The needles and points of suture were removed sixty-seven hours after the operation, the threads, in the form of the figure of ∞, being allowed to remain, and their adhesion assisted by the application of collodion. On the following morning the threads readily came away, and nothing could be more perfect than the union from the very angle above through the entire extent and depth of the lip to the mucous membrane covering in its red margin. Before and behind all was accurately united, and in a week after, the needle-holes were filled up and healed, the cicatrix being pale and not conspicuous to the observer when standing a few feet from the child.

Case VIII.—*Simple Hare-lip, successfully operated on at the age of twelve months, and cured without deformity.*

Joseph Doyle, aged twelve months, a fine healthy boy, admitted to Mercer's Hospital, May 22, 1854, with simple hare-lip. The fissure was almost perpendicular, and separated the lip nearly into the left nostril; it was a wide and gaping fissure, creating much unsightliness. On the 24th I operated on the child in the following way. He was rolled in a sheet and steadied in the arms of a nurse, the head being held by an attendant. Having freed the cleft parts by freely dividing the mucous membrane within the mouth, I transfixed with a tenaculum each side of the fissured lip nearly at the point outside which the scissors was to cut; the two instruments were then supported by assistants; taking one after the other in my left hand, and making the necessary traction, each everted portion of the lip was excised with the straight scissors. Two needles were employed for bringing the parts together; the lower one was introduced first, and made to enter just at the junction of the mucous membrane and skin, three-quarters of an inch from the cut edge on the left side, and to pierce the lip obliquely backwards and upwards so as to appear on the inside of the half transfixed, about two lines higher and three closer to the mesial line than the point of entrance. The needle was conducted through the right half in the same way reversed: thus, about half an inch of the needle lay internal to the lip at its lower part, the silk cord was thrown round it, approximating the edges, and the upper needle put in transversely about the centre of the lip, according to the rules laid down, and fastened in a similar way. When each was settled, perfect adaptation of the cut parts was insured, and the lower needle behind the red border of the lip prevented effectually the child thrusting her tongue forward, and interfering with the growth of the parts together. In fifty-eight hours after the operation the needles were removed, and after a few careful dressings the child was dismissed from hospital, with scarcely any trace of the original malformation, the lip being accurately united to its lowest margin.

I do not consider it further necessary to multiply cases. Amongst the foregoing will be found most of the complications which usually attend hare-lip; the mode of operating and conducting each to a favourable issue has been carefully entered into; yet there are some points in reference to general rules which I must more minutely dwell upon: and first with regard to the period of life at which it may be considered most fitting

and safe to undertake the operation for the cure of hare-lip. Many contend that it is better to wait until the individual is conscious of the deformity, so as to enlist his acquiescence in promoting the views of the operator. It has also been thought that at this advanced age the parts are better able to hold the needles; they are more adapted for union; and abstinence from food can be borne with better than at a tender age; and that it is very desirable the dangers of the first dentition should be passed over, together with the liability to convulsions. There are a host of great names in favour of delay. Sir A. Cooper fixes the time when dentition is completed, or the age of two years, as the most advantageous. Mr. Liston considered it advisable to delay interfering until the child had attained the age of two and a half or three years, or at all events until the greater number of the temporary teeth have come through the gums; he lays down the period from "two to four years is certainly the time to be preferred." Syme also waits until the child has at least attained the age of two years. If the first six months are passed over, Velpeau prefers waiting until the tenth or fifteenth year. Chelius writes—"Although experience has shown that the operation may be successful in very young children, it is, however, better to delay it until eight months; only when wolf's jaw is connected with hare-lip, and the child cannot suck, may the operation be undertaken within the first six months; in children of two years, operation may be delayed till they have become intelligent." Mr. South, in commenting on this passage, says—"I do not think even eight months is sufficient age for the performance of this operation. Early operation is objectionable, because sometimes the child's crying more or less tears the new adhesions, and an ugly notch remains in the lip; or, what is still more important, it produces dangerous fainting from the loss of blood, or subsequent convulsions, which are only checked by the removal of the threads and allowing the original gap to be reproduced. It should not, therefore, be lightly undertaken in very young children, as it exposes them to much danger. I would never perform it before two years old; but if the parents can be persuaded to wait till the child is six or eight, it is preferable, as the lips, being thicker and larger, and the child being capable of understanding the advantage of keeping quiet for a few hours, the operation is more successful, and a better and more even lip is formed"[a]. Dupuytren deemed it unsafe to operate on new-born children, because their flesh is so soft that the pins

[a] Chelius, by South, vol. i. p. 596, *note*.

readily cut through it, and because general mortality, independent of every particular cause, being at this age greater than at any other period of life, it would be imprudent to augment the chances of death which hang over the young being by an additional one resulting from the operation. On the whole, he infers that the best period for operating is when the infant is three months old[a].

I shall next consider these objections, and see what advantages originate from early operation. As to enlisting the acquiescence of a child to suffer pain, from the time that it is able to appreciate danger to the age of eight or ten, this may be looked on as romantic and visionary. How can a child at this age realize the hopes of benefit, from the very moment that it is hurt by an operating instrument? According to my experience, it becomes the most unmanageable of all patients. It has been urged that the flesh of the young infant is not so susceptible of healing as at a later age. I cannot agree in this; neither do I believe it to be correct, for I have seen wounds inflicted almost immediately after birth cicatrize with amazing rapidity; further, we have a striking example of the reparative powers of the fœtus in utero, as called into existence under certain circumstances. I allude to that pathological lesion, in which portions of the limbs of the fœtus are removed by a process which has been, with propriety, denominated spontaneous amputation. Chaussier[b] mentions having examined two cases in which separation of a part of the forearm had taken place before birth; and in a third case he found the separated portion of the arm and hand lying apart, *and the stump of the limb healed.* Other cases similar in result to this are published; a most interesting one by Dr. T. West[c], in which the child was still-born, with but one leg; the other limb exhibiting positive proof of having been spontaneously amputated some time before, the stump being *partially healed and nicely rounded*, about an inch and a half below the knee. I have in my collection two casts confirmatory of this matter. In the Catalogue the first is noticed thus:—"Cast No. 187, congenital deformity, and amputation of the fingers in utero by lymph bands. The child was born healthy, and otherwise well formed, if we except the condition of the fingers and the club feet. The casts were taken immediately after death, on the fifth day; on examining the hands, the right one was more expanded and flattened than natural. In the thumb, the index,

[a] Chirurgie Clinique, tom. iv. p. 90–92.
[b] Discours prononcé a l'Hospice de la Maternité, 1812.
[c] London Medical and Surgical Journal, 1832, vol. i. p. 741.

middle, and ring fingers, there was apparently an arrest of development, while the little finger on the same hand was normally formed; the index finger seemed likewise bifid, or, more properly speaking, grooved on its upper surface, but the groove did not pass deeply through its structure; the middle finger occupied a space palmar to the line of the others, and was also shorter; the arm was perfectly formed. On examining the left hand immediately after birth, a band of dense, adhesive, elastic lymph, very narrow, was twisted round the centre of the index finger, so as to entirely destroy the central phalanx, and give the finger a shortened appearance. The middle finger of the same hand had been amputated in utero, *as the cicatrix manifested plainly*; the ring finger was also encircled by it; it was deeply cut by the constricting cord, so as to produce sphacelus; this finger was abnormally formed, being much longer in the second phalanx than any of the others. The bands of lymph then passed, after strangling to death the ring finger at the junction of its first and second phalanx, to the unguinal phalanx of the little finger, which was shrunken, withered from the constricting force exerted upon it. This latter finger, like the ring finger of the same hand, was preternaturally long."

Cast No. 188 affords an illustration of the same fact. It is headed, "Congenital Talipes Varus of each Foot, and Amputation in Utero of the Toes by Lymph Bands." This cast was taken from the same subject as the previous one. "Both feet were affected with varus; the right foot had the third toe imperfectly formed, applied, and joined to the second; the fourth and fifth had been both amputated at the junction of the unguinal and second phalanges. The leg was otherwise well formed. The left foot had the great toe amputated at the metacarpo-phalangeal articulation, and the second toe imperfectly developed and united to its outer side; the third, fourth, and fifth toes amputated at the articulation of the unguinal and second phalanges. These results were quite manifest at the time of the child's birth, by *the recent cicatrices*. The leg was well formed in every other way." Other points are entered into minutely in the description in the Catalogue, but it is not necessary to advert to them here; enough has been written to show that adhesion and cicatrization will take place with rapidity in the flesh of infants, even while yet in utero. Again, from what I have seen, I believe that the healing power, instead of being more feeble, is absolutely more vigorous in the infant; and as to the flesh not being sufficiently strong and resisting to give a hold to the needles, a contradiction is afforded by the nume-

rous operations which have been most successfully executed at the tenderest age, even shortly after birth. Stress has been laid upon the abstinence from food, which can be borne in the more advanced period of childhood; but let us examine whether such an assumption holds good: the question is of some moment in a practical way. After operation the child is not inclined to take food for some hours; Nature throws a protective influence over the part, which is peculiarly remarkable where the operation has been delayed, and the little patient allowed to advance in years. I have seen a very unfavourable restlessness created absolutely by the dread of taking nourishment, for which the demand was urgent and pressing; but it is not thus with the infant operated on soon after birth: it sleeps for a short time, and upon awaking it readily takes the breast, and while in the very act is again overcome with sleep, and hushed to repose in the warm and loving embrace of its mother. In many cases I have seen all this occur, and for illustration may refer to that of Sullivan, operated on at the age of two months, and Bridget Russell, at the age of ten days (Cases I. II.) As regards the epochs of dentition and the likelihood of convulsions during such periods, there is no more danger, in my opinion, to be apprehended from the operation for hare-lip than after any other which it may be necessary to subject a child to. As to convulsions, I have never seen them arise in a single instance after the operation for hare-lip, either in my own practice or that of others.

In the second case of complicated hare-lip which I have detailed, it is mentioned that the child had slight convulsions on the morning and evening before admission to hospital, yet after gentle mercurial aperients there was no recurrence of them, and though operated on a few mornings after, they were not ushered into existence. From this instance and others which I have witnessed, I am led to the conclusion, that in many of the cases in which they are reported to have occurred after operation, a due attention was not paid to the condition of the bowels and general health. Mr. Fergusson writes thus[a]: "An erroneous impression (as I suppose) prevails that children are remarkably subject to convulsions while undergoing operations; and this is often urged as a reason for not interfering with hare-lip in early life. Doubtless, convulsions have occurred in some of these cases; but similar effects have been produced in the adult, and by less formidable means too. Sir A. Cooper has referred to several examples of this kind; but I

[a] Practical Surgery, p. 504.

imagine they must be rare indeed. I once asked the late Dr. Abercrombie of Edinburgh the results of his experience on this point, and he could not bring a single instance to his recollection where convulsions could be fairly attributed to an operation. In my own limited opportunities I have never seen a case of the kind, although I have performed much more severe operations on newly-born infants than that for hare-lip could possibly be." In reference to the fatal effects apprehended from loss of blood and the fainting consequent upon it at the tender age of infancy, I shall thus remark,—that there should be no risk from either, if the assistant be vigilant, and the operating surgeon dexterous and rapid in his movements. Mr. Lawrence thus expresses himself:—"It has sometimes been said that children are liable to convulsions at this time (speaking of the operation for hare-lip) and that a considerable loss of blood may act seriously on them, so that they may die from the mere effect of the operation; this has not occurred in any case that has come within my observation." The age for performing the operation in cases of congenital hare-lip has formed the subject of a communication to the Royal Academy of Medicine by Professor Dubois, who advocates an early operation, and has brought forward several cases in support of the proceeding; the patients were subjected to the operation at the following ages:—three on the second day after birth—one, a few days after—one, a fifth—and one on the fifteenth; four of the infants were allowed to take the breast; two were brought up by the hand: all the cases were successful. M. Dubois states, that if the child be sickly, and the hare-lip complicated with divisions of the bones, the operation ought to be deferred; but that when the child is strong and healthy, and if the fissure only affects the lip, it ought to be performed early. I shall not conceal Roux's opinion on this statement: he said it would be unfortunate if, on the authority of Professor Dubois' name, it should be concluded, that the operation ought to be performed early in every case: the facts recorded by him are relative to simple uncomplicated hare-lip; and in this respect M. Roux coincided in a great measure with him, although he is always fearful of dangerous results consecutive to operations in very young children, the more so, as he has witnessed several which terminated fatally. Mütter writes:—"Much dread of convulsions, sloughings, fevers, &c., exists in the minds of some when they refer to operations of this kind upon very young children; but I have, over and over again, succeeded without the occurrence of any untoward symptoms, in infants of three, four, and five days old."

I shall next endeavour to point out the reasons directly in

favour of the superiority of infancy over a more matured age for its being made the period of this operation. It may be fairly urged, that when early put to rights the parts recover themselves afterwards better than when they are permitted to remain and grow up misshapen. And there is one circumstance which never should be lost sight of or overlooked in coming to a determination regarding time, namely, that the fissure of the palate frequently closes of itself after the lip has been operated on during infancy; and bad habits of speaking, such as nasal or guttural utterance, which, if once established, become irremediable, are averted. By the early operation the whole features are prevented holding for ever impressed upon them the characteristics of their misshapen originality; and who will not admit that by removing such disfiguration from the face before the child has become aware of its presence, it is spared the feelings of humiliation which the consciousness of such deformity necessarily imparts, and which invariably gives a tone to the after character of the individual. By the early operation the feelings of parents are greatly gratified that the deformity of their child is removed before it has gone abroad into the world[a]. We have conflicting opinions, then, by great men nearly balanced on the question. I have no hesitation myself in giving preference to the early operation. I do not think it fraught it with as much danger to the infant as to the child at a later period; and most certainly, if performed by the same hand, I consider, with a far better chance of removing the deformity; the infant is so quiet, so unconscious of danger, so easily restrained, that the hard parts, if irregular, can easily be forced back into position; the incisions can be accomplished with the greatest accuracy and rapidity. Again, when the parts are placed in apposition, and retained so, there is no disturbing forces, for the muscles of the face have not been yet brought into action, or exercised by expression; and finally, I do not think the all-powerful law of the coalescence of opposite sides has become extinct, annihilated by birth, and therefore should be made available towards furthering reparation.

In this paper I have given examples where I performed the operation at various ages, from twelve days after birth to the completion of the thirteenth year. I have watched over many with great anxiety, and am fully convinced that the safest period to the child for operation is from the termination of the first week to the end of the third month. No doubt it may be undertaken earlier, and has been with success in many instances; but I prefer waiting a few days after birth, in order,

[a] See Dr. Houston's Essay on Hare-Lip, Dublin Journal, vol. xxi., of which I have availed myself in many parts of this paper.

as it were, to allow the functions of the body to he healthily in action. During dentition some caution is requisite; but even during this process, periods free from irritation and fever will arise which may be taken advantage of for operation. As the child advances in life the deformity is greatly increased, and the operative measures, I believe, become far more formidable; besides, the parts within the mouth, when the palate is widely fissured, become so disproportionately formed, that intonation and voice become spoiled for ever after. By delay the tongue, as I have already alluded to, may become too large to permit of operation with safety.

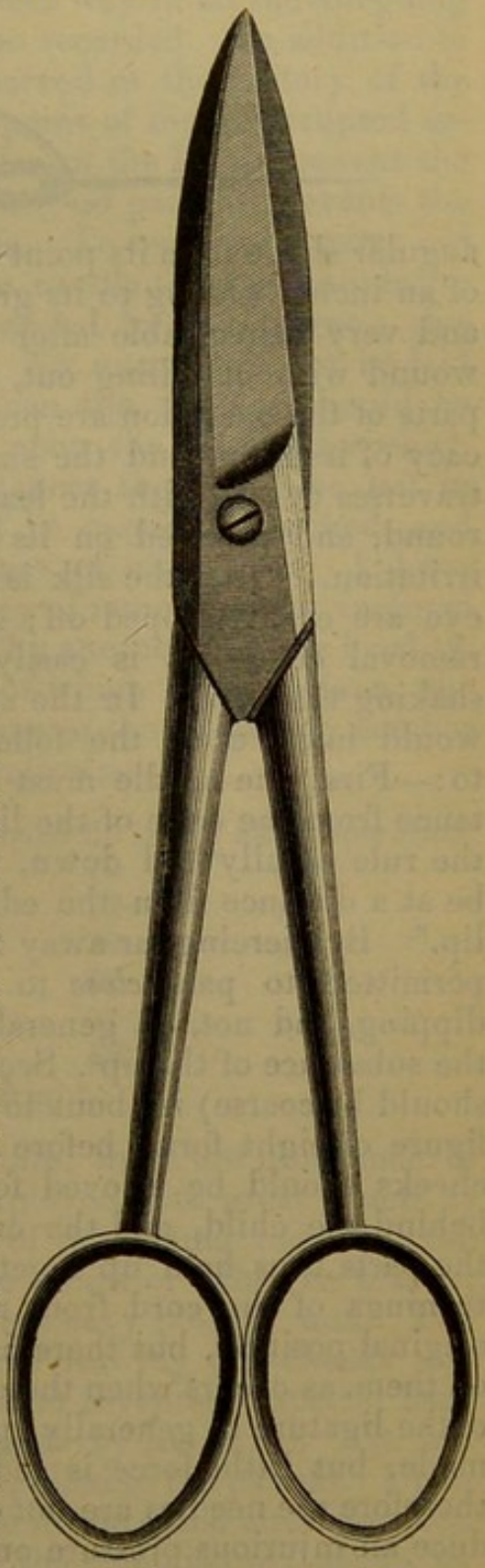
In reference to the selection of instruments for the operation of hare-lip, the comparative merits of the bistoury and scissors require consideration. Many of the older surgeons were indifferent in their choice,—Franco, Heister, and Ledran recommend either indiscriminately. However, in France the greater number adopted the scissors, until Louis, with an exaggerated importance, proclaimed their inconveniences, and the advantages of the scalpel. At length Desault, though shaken in his views by the authority of this celebrated man, by accurate investigation and diligent research, fixed his practice on the point, and used the scissors. Ever since Dubois' writings the French school are in favour of the scissors; while the most distinguished operating surgeons of the English school prefer the knife. Mr. Liston, in advocating the superiority of the bistoury, has gone beyond the limits which experience will warrant or a strict adhesion to facts support. He writes—"Paring with scissors is to be reprobated as an effectual means of preventing immediate union," while, by the employment of the knife, "bruising is avoided, and union takes place rapidly"[a]. I cannot conceive why Mr. Liston, so accurate generally in all his statements, should have penned such sentences as these; surely he must have seen instances in which the scissors-wound has healed as rapidly as that made with the sharpest knife? When the edges of the wound so made have refused union, it must be assigned to some other cause; for instance, even in Mr. Liston's own hands, though the knife be the instrument used, no union may take place in the cut edges. Mr. Fergusson, in the Medical Times and Gazette[b], mentions such an instance. He says, relative to a little girl upon whom he was about to operate:—"The case was more especially interesting, as an operation had been put in force on two previous occasions,

[a] Elements of Surgery, p. 396 [b] December 21, 1850.

and the fissure in the lip, which was a simple one, had not united on either occasion; the late Mr. Liston was one of the gentlemen who operated, and this is a sufficient guarantee that everything was done that could be for curing the deformity; but from some cause, which cannot be explained, union did not take place, and the affection still remained." Experience proves that the part cut by scissors never shows any contusion, and the neatness of the wound, whether made with the knife or scissors, will greatly depend upon the hand that uses them. Malgaigne even goes further, and believes that pressure is, in certain cases, the best means of obtaining *clean* incisions—whence the necessity of extending and stretching the skin under the bistoury—and writes, "as this pressure is by no means so strong as with the scissors, we ought, in all cases where the parts may be divided at one stroke, to prefer them—the contusion is a chimerical idea." As to the amount of pain, Bell's experiment, where he cut off one of the borders of the fissure with the knife, and the other with a scissors, proves that the patient complained more of the first than the second incision.

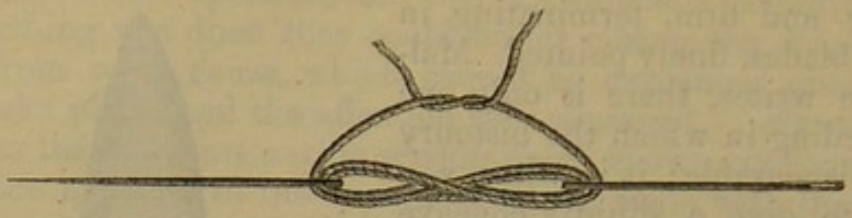
In the numerous cases which I have given, I used the scissors for paring the lip; in all and in every instance the wounds have beautifully united throughout, sufficient evidence that the division made by the scissors is susceptible of union by *first intention.* I have used both the bistoury and the scissors, and freely confess I prefer the latter. When applied to the lip in the way which I have pointed out, after a sufficient degree of traction is exerted upon it, by drawing the tenaculum downwards and towards the mesial line, I am convinced a more even and accurate section can be made than with the knife. It is no argument, because in the hands of such men as Liston and Ferguson beautiful operations are accomplished with the knife, that their method must be the best; for in skilful hands equal success often crowns both means. Fixing the lip with the tenaculum, as before explained, is not so formidable a measure as that adopted by Dupuytren and Velpeau, of drawing a silk thread through it, while from the resisting nature of the instrument greater precision is certainly obtained. Either mode is superior to that adopted by Liston and others, of holding the angle of the lip between the finger and thumb; for I have seen, when the fingers became wet with blood, the part slip away and the section made uneven, so as to require a second application of the knife, ay, and of the scissors too, to rectify the mistake.

I have here figured the scissors which I am in the habit of using. It is represented of the full size; the handles are strong and firm, terminating in knife blades, finely pointed. Malgaigne writes, there is only one proceeding in which the bistoury is indispensable; it is when you wish to give a slightly concave form to the edges, so that, when reunion has taken place, there remains a projection at the inferior part that imitates the natural prominence. This modification has not been very successful, but perhaps ought not to be altogether rejected. I have operated satisfactorily in this way, as detailed in Case vi., with curved scissors, which I had made expressly for the purpose, and which are figured further on.



Too much stress cannot be laid upon the form of needle which the surgeon chooses when he purposes employing the twisted suture. I have no doubt the coarse silver pins and "hare-lip needles," as they are called, with sliding points, and points capable of being removed on and off, have over and over again defeated the objects of the surgeon. From their clumsiness and bulk, when thrust into the parts, irritation is kept up, and frequently the inflammation passes beyond the bounds necessary even for adhesion, and non-union of the wound is the result. Again, a portion may be united and another not; but even granted that the track of the wound heals favourably, openings, with loss of substance, are created from their pressure, which are never entirely filled up after. The needle which I have been in the habit of using is sold as the common darning needle; it may be obtained of various

lengths and thickness. I generally use the size represented in the woodcut. It is a long, slender needle, ground into a tri-



angular shape from its point upwards, for half to three-quarters of an inch. Owing to its great length it is easily introduced, and very manageable after transfixion. It will rest in the wound without falling out, owing to its length, until other parts of the operation are proceeded with; and from the delicacy of its form, and the sharpness of its point and edges, it traverses the lip with the least possible violence; it is so thin, round, and polished on its surface, it produces scarcely any irritation. After the silk is thrown around it, the point and eye are easily clipped off; and lastly, when the time for its removal comes, it is easily withdrawn without jerking or shaking the parts. In the application of the twisted suture, I would insist upon the following particulars being attended to:—First, the needle must be introduced a considerable distance from the edge of the lip, and not, as in accordance with the rule usually laid down, "that the point of entrance must be at a distance from the edge, equal to the thickness of the lip." By piercing far away from the cut edge, the needle is permitted to pass *close* to the mucous membrane without dipping, and not, as generally advocated, two-thirds through the substance of the lip[a]. Second, when the silken cord (which should be coarse) is about to be cast around the needle, in the figure of eight form, before any restraint is made by it, the cheeks should be shoved forwards by an assistant standing behind the child, and the cut surfaces absolutely in contact; the parts thus held up together are gently restrained by the turnings of the cord from retracting or receding into their original position, but there is no uneven constriction exerted on them, as occurs when they are forced together by the tension of the ligature as generally applied. As the result of the former mode, but little force is required to keep the parts in situ, therefore the needles are not dragged forwards, or made to produce an injurious pressure on the transfixed parts, terminating in ulceration; thus, through the entire depth of the wound adaptation of surfaces is insured with the slightest amount of

[a] Cooper's Surgical Dictionary, p. 658, Seventh Edition.

force, every portion of it being exerted in the right way. By attending to these particulars I have accomplished union with the twisted suture in the most perfect way in all the foregoing cases, and in many more not herein recorded. In addition to the twisted suture, it will be observed in the history of the foregoing cases, I generally put a point of the interrupted suture on the inside of the red border of the lip to prevent the edges gaping: the ligature acts a second part, it prevents the child's tongue separating the edges. To more fully carry out this latter object I have passed the needle through the entire thickness of the lip, as recommended by Malgaigne; this practice is enforced in Case VIII. No exact rule can be laid down for regulating the time when the needles should be withdrawn; a good deal depends upon the tension by which they are retained. In some instances they must be left in longer than in others; they must be carefully watched, and withdrawn on the first appearance of ulceration. I have given an example of the expediency of removing one, inclined to cut its way out, and replacing it by another near the locality. In the various cases, the details of which I have given, the needles were removed after the lapse of the following number of hours from the time of the operation:—

Patient,	2 months old.	—Needle removed	56	hours after operation.
,,	10 days old.	,,	70	,,
,,	19 months old.	,,	72	,,
,,	13 years old.	,,	78	,,
,,	15 months old.	,,	72	,,
,,	6 weeks old.	,,	67	,,
,,	12 months old.	,,	58	,,
,,	6 years old.	Died from fright.		

In addition to the twisted suture, there are other mechanical appliances which may be employed with great benefit as auxiliaries in holding the edges of the wound together, the simplest of which consists in wide straps of adhesive plaster, shaped and figured in the manner already pointed out. The assistance to be derived from a force drawing the cheeks forward was not lost upon Desault, who invented a special bandage for the purpose, and which goes by his name. He has figured it in his work on Surgery, applied to the patient. Upon the cheeks are placed two cushions in the space circumscribed behind by the masseter; before, by the commissure; above, by the malar eminence; below, by the sides of the lower jaw. "An assistant fixes them by pressing them against the cheek and pushing them forwards." These pads are retained in their

respective places by a bandage, which it is not necessary to describe here, and for the application of which I beg to refer to the original volume.

The great objection to this bandage rests in the fact, that the needles are pressed upon—therefore it should never be used; and on the same principle, when mentioning the application of adhesive straps as a useful accessory in keeping the cheeks forward, I have laid great stress in slitting them in a way that they cannot press upon or interfere with the needles. Mr. Fergusson makes mention of, and has figured in his Practical Surgery[a], a very useful contrivance, brought under his notice by an ingenious mechanic, Mr. Hainsby, who designed it to apply to the face of his own child, who had been already operated on twice unsuccessfully, once by the perfect hand of Mr. Liston. I have before alluded to this case when drawing a parallel between the advantages of the bistoury and scissors. The instrument consists of a spring which encircles the head from behind, and the two ends, terminating each with a pad, rest on the cheeks, which are thereby supported in the position given to them. All dragging or strain upon the sutures is thus prevented, and pressure upon the lip, whether from the bones behind or otherwise, is guarded against. Mr. Fergusson operated upon this case when failure occurred already on two occasions, and he registers his success in these words:—"I am of opinion that the cure in this instance was owing in some measure to the ingenuity of the patient's father, and I would recommend this case to your consideration; for there are instances of hare-lip in which a surgeon will not like to operate, in consequence of the great amount of tension which will be exerted upon the edges of the wound, which will, almost with certainty, burst open again"[b].

However, an instrument very similar to this was recommended more than a century ago[c]. The direction in Verduc's book is to place the spring upon the head, with the ends resting upon the cheeks; but the instrument was objected to by several eminent surgeons, when it fell into disrepute. All the objections appear to have been merely theoretical. Le Charrière considered that by means of a circle of steel, which surrounded the head, and by graduated compresses, which he placed upon the cheeks, success would be unavoidable. For the purpose of replacing his bandage it has been modified since in various ways by Quesnay, Henkel, Koennig, Strickelberger, and

[a] Page 591.
[b] Medical Times, December 21, 1850.
[c] See Verduc's Traité des Operations de Chirurgie, p. 218.

Eckhold. Enaux and Valentine devised those which bear their name. The supporting spring of Le Charrière approximates most closely of all to Hainsby's apparatus. Mr. Quain, in commenting on an interesting case of complicated hare-lip, which he has published in the Medical Times and Gazette for July, 1852, states—"Heretofore I myself, before I had seen Verduc's proposition, applied to more than one surgeon's instrument-maker to construct a spring, with a view to another difficult case; but they did not succeed in making a useful instrument."

There are two very excellent cases of hare-lip, with protrusion of the central part of the alveolar process of the upper jaw, detailed in the Edinburgh Medical and Surgical Journal for July, 1830, by Mr. Dewar, and in which he used a steel spring, very analogous to that recommended by Mr. Fergusson. "It occurred to me," says Mr. Dewar, "that as a very slight degree of pressure on the cheek, on each side, near to the corner of the mouth, relaxes the upper lip, a narrow piece of steel, having a spring, might be so adapted as effectually to answer my purpose. I had, accordingly, a spring made, nearly resembling a pair of sugar-tongs, and so padded as to press on the cheek near the mouth. It was kept in its place by a narrow tape, tied over the chin, and by three tapes which were fastened one behind, and one on each side, to a piece of leather placed on the crown of the head. This simple contrivance answered every purpose admirably: I could relax the lip by it to any degree I wished, and it could be worn without the smallest inconvenience. The strain was thus taken off the pins, and the process of healing advanced in the most favourable manner"[a]. There can be no doubt, however, that "Hainsby's apparatus" is far superior to all others, for in its adjustment no pressure whatever is exerted over the cicatrix. The great superiority of this instrument is borne ample testimony to in the following embarrassing case of cancer of the lower lip, in which I used it so far back as the year 1852, and has been published in the records of the Surgical Society:—

Extensive Cancer of the Lip; Operation; Recovery; Advantages of Hainsby's Apparatus, applied now for the first *time after the Operation for Cancer.*

T. H., aged 43 years, admitted into Mercer's Hospital, under my care, August 29, 1852. He stated that seven months

[a] Medical Times, January 25, 1851, p. 104.

prior to his admission "a small welt," which he had noticed in the lower lip for many years, became exceedingly painful, so that his attention was constantly directed to it. He was in the habit of feeling the part, and was often compelled to press it forcibly to deaden the stinging pain. After a short time a little blister formed over the tubercle; the mucous membrane was detached, and there issued a constant moisture of thin fluid from the exposed surface. The abraded part was exceedingly sensitive, so that the patient kept it constantly covered with a piece of black plaster. During the following months it increased rapidly, seizing upon and including nearly two-thirds of the lower lip, and extending a little beyond the left commissure. The entire ulcerated surface was elevated, irregular at the margins, and quite hard; it had extended on the inside of the lip, nearly as low as the point of reflexion of the mucous membrane from the lip to the maxilla, and externally on a line somewhat below this part. The tumour was uneven on the surface, elevated in some places very considerably by the deposition of new structure, and, as it were, dug out in others, forming small pits, from which the abundantly secreted sanious discharge constantly trickled over the chin. Again, the disorganized part was peculiarly sensitive to the slightest touch, and yielded blood readily on being handled. On the most careful examination I could detect only one lymphatic gland, either hardened or enlarged, about the neck, situated just near the angle of the jaw, corresponding to the lower and anterior edge of the parotid on the left side. This was not much increased beyond its normal size, and the patient assured me that it had been enlarged, and had remained so, after an attack of mumps, which he suffered from many years before his lip got bad.

The operation being decided on, it was performed in the following way:—Standing in front of the patient, an incision was commenced at the prolabium, a quarter of an inch to the right side of the tumour, and the knife carried rapidly downwards and inwards to the middle line of the chin and to its lowest margin. The tumour, though not involving the upper lip at the left commissure, incorporated itself with the lower for half an inch beyond this point. To remove effectually this portion, the second incision was complicated in the following way. The knife was carried from about two lines above the commissure horizontally, but with a slight inclination downwards, through the left cheek, for three-quarters of an inch, and then directed beneath the projecting nodule of the tumour downwards and inwards to nearly the same extent; thus a small

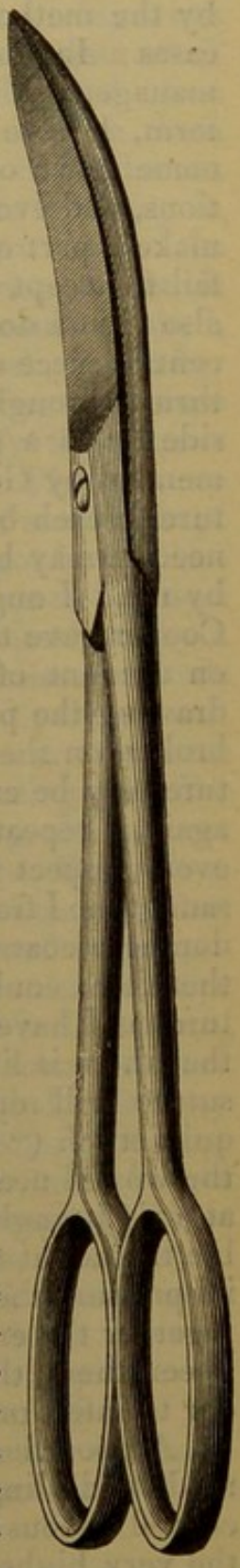
triangle was formed, the apex externally, and the base, including the projecting part of the tumour, marked by a line let fall from the commissure. The knife from this point was carried very obliquely downwards to the lowest part of the mesial line of the chin, to meet the first incision; the obliquity of this line was such that, when drawn up at the point from which it commenced the base of the small triangle, to form a commissure, the remaining portion of its extent was as long as the first incision which had been executed more vertically. Owing to the transverse width of the part to be removed at the prolabium, it was essential that the lateral incisions should be carried as far down as specified; and, still further to facilitate the approximation of the cut edges, it was imperative to detach freely, for a considerable length, the lateral flaps from their attachments to the maxilla. These points being attended to, the parts yielded to traction forwards, and the divided surfaces were readily retained in situ by one point of the interrupted and three of the twisted suture. The needles which I used in this case were remarkable for their length and slender proportions, being rounded in the shaft, with a long tapering triangular point, while at the other end was a small head well adapted for the finger of the surgeon, so as to take any amount of pressure required for the transfixion of the parts. The first needle was introduced near the inferior angle of the wound, and a few turns of thick stay-silk, well waxed, passed round its extremities in the figure of eight. The second needle was introduced a little higher up, and the silk made to describe the same figure as in the first instance; the third stitch was of the interrupted suture, and made at the base of the small triangle already described, thus completing the left commissure; the third needle was introduced about three-quarters of an inch external to the commissure, and carried through the prolabium of the opposite flap to about the same distance from its cut edge; when the ligature was turned round the extremities of this needle, the apposition of the parts was perfect. There were two particulars carried out here not to be lost sight of: first, the extreme fineness and length of the needles (four inches) rendered their application most easy, for when one flap was struck, the opposite could be pierced at any point with the greatest facility and precision,—a circumstance not readily achieved with a short instrument in so widely gaping a wound; secondly, the extent of parts embraced by each suture was far wider than surgeons usually direct.

The foregoing case required a good deal of consideration before deciding on the exact operative interference most likely to be productive of benefit. The question was: how to remove

so large a portion of the lip, and afterwards unite the cut edges, without performing a chylo-plastic operation which so frequently fails, and which may reasonably be ascribed to the ascending course which the blood must take in the flap. I was emboldened in the measure I adopted by the cases of complicated hare-lip, at the time published by Mr. Fergusson and others, where the amount of parts, both by original deformity and increased by former unsuccessful and faulty operations, was very great; yet by the adaptation of mechanical contrivance to the intentions of the surgeon, cure was brought about most satisfactorily. On the completion of the operation, after the method which I have described, though every precaution feasible was put in practice to relieve the dragging on the needles and the strangulation of the included parts, I could not but feel apprehensive for the result; indeed, beforehand I had estimated pretty accurately how the case would stand, but was encouraged by the anticipation of a great auxiliary in the appliance of Hainsby's apparatus. So sensible was I of the advantages to be expected from this instrument, I immediately sent to London for it; but being disappointed in its arrival, I even deferred operating for some days until I could get one constructed by Mr. Read of Parliament-street. Immediately after the operation I applied this instrument, and was not disappointed in my expectations. By it the cheeks were pressed forwards, so as to take all strain off the needles. The only difference in its appliance in the present instance, and that as represented by Mr. Fergusson in hare-lip was, that the pads at the extremity of the spring lay a little lower, and were prevented from changing their position by a band of tape passed beneath the chin from one to the other. The needles were withdrawn in fifty-six hours after the operation, and the entire wound healed by first intention; a result which I mainly attribute to the spring apparatus employed. Its use was persisted in for some days after the healing of the wound, to support the recently united parts. In a month after the operation it was astonishing to see how little deformity existed: coloured casts representing the appearance of the man before and after operation are in my possession.

In addition to the modes of incising the soft parts which I have described as practically applied in the foregoing cases, there are others proposed by eminent surgeons—the object of all being to try and do away with the notch which so frequently remains at the red border of the lip after operation. I have instanced a case where I made the semilunar incisions, and certainly a very beautiful lip was the result; there was no de-

ficient point below. The curved scissors which I had made to effect this object is here represented of its full size and perfect proportions. The instrument is a solid one, with knife-blades closely fitted. It answers the purpose admirably; and when this line of incision is desired, I can confidently recommend it as most suitable for the purpose.



In other hands this modification of the operation has not been very successful; I have seen after the method the centre of the most concave part not accept of union, and the space filled up with granulations, ultimately skinned over, creating a broad, marked cicatrix. M. Malgaigne adopts the following method: instead of refreshing the edges from below upwards, he incises them from above downwards, leaving the detached slip adhering by a small pedicle below; he then unites the wound, and, bringing the two little strips over the inferior angle of each edge of the lip, he cuts and trims them to fill up the depression.

M. Coste, Chief Surgeon to the Hotel Dieu of Marseilles, has proposed the following modification in the operation for hare-lip, so as to obviate the ugly notch which often remains below. He states that the plan proposed by Malgaigne is only applicable in double hare-lip, and that in the simple deformity an unsightly prominence is left. The author in simple hare-lip (which lies generally on the left side) has succeeded in avoiding the notch altogether by cutting a horizontal flap in the red part of the lip on one side, and a kind of half mortise on the other. In paring the margins of the fissure he takes off more substance than is generally done; the flap and mortise are well secured by twisted suture and by one of the diminutive spring forceps called "serres fines;" one transverse needle is placed a little higher up, and no application whatsoever made, so that the progress may be more accurately watched. M. Coste gives the instance where he thus succeeded upon a little boy two years of age in the most satisfactory way.

It matters but little what method is followed, if the rounded

margins of the lip be not freely cut away. If they are so, and the cautions observed in passing the lower needle which I have dwelt upon, the same happy results will be obtained by the method I have practically illustrated in the foregoing cases. In addition to what I have already written about the management of the central piece of the lip in the double form, I have only to add, that when it is large enough to come down on a line with the red margins of the lateral portions, and even covered with a red border, I do not save it to make a part of the lip below. I have seen it, when preserved, fail to accept the union on one or the other side, and I have also seen a double notch occasioned by its preservation. This central piece should be accurately fixed by one or two needles thrust through the outer flaps, and traversing it from side to side; it is a practice far better than the proceeding recommended by Gensoul of applying separate points of twisted suture to each branch of the V. Dieffenbach's Karlsbad insect needles may be equally efficacious as the fine cambric ones used by me. I ought to notice here that in latter years Sir A. Cooper gave the preference to the common interrupted suture, on account of the difficulty sometimes experienced in withdrawing the pins and the liability of the new adhesions to be broken on the occasion; whereas the threads of a common suture may be cut and taken out with the greatest facility; but, again, I repeat that any proceeding of the kind is inferior in every respect to the twisted suture as employed by me; at the same time I freely admit the candour of Sir A. Cooper in abandoning a coarse, clumsy method which was not suitable, and therefore, could not possibly be successful. The twisted suture, as I have described it, so perfectly accomplishes its end, that there is little hope or fear that M. Mayor's new kind of suture will replace it; it is called by the mattress-makers the quilt stitch ("le point pique"). He pierces the left edge of the wound near its free end with a needle, which he introduces at a right angle from within outwards, drawing with it a double thread, at the end of which a ball of cotton is attached; by its pressure the edges of the wound are united, and by tying together the ends of the threads upon a ball of wool put between them, the union is supported, as he would lead the reader to infer, probably as well as in the seam suture.

A good deal of diversity of opinion prevails as to the best mode of dealing with the projecting maxilla and the detached central osseous piece in cases of complicated hare-lip. Some of the very highest authorities recommend cutting off the projecting piece. Sir A. Cooper says, "when the jaw itself pro-

jects, the common preliminary step to the operation consists in cutting away the bony prominence." Chelius likewise inculcates this precept in the following passage:—"If there be a bony growth in the cleft, it must, after the skin covering it has been raised, be removed with the nippers." And again: "If the incisive teeth project, they must be extracted if of the first set; but if of the second, it must be attempted to give them their proper direction by continued pressure, and if this be not possible, they also must be extracted"[a]. On no account, in my opinion, should the projecting maxilla be cut away. In the youngest infants I have bent it back, rupturing its elastic structure, and, in more advanced life, after Gensoul's method, breaking it with a forceps and thrusting it back, and after either experienced but little difficulty in steadying the piece in its new berth. Cases I. and II. exemplify the former position, while Case V. illustrates the latter. There is no doubt that in very young children, if pressure be steadily kept upon the part for a lengthened time, it will be got back. Desault effected this object by bandage; and in Cooper's Surgical Dictionary is a case where the author was successful "by a spring truss worn daily for several hours." But these methods become tedious and irksome both to surgeon and patient, and are not always effective. Other surgeons slice away the most convex part, or the outer laminæ of the projecting maxilla, the only object attained by this proceeding being the support afforded to the lip, but the teeth are for ever absent. So anxious am I to preserve the teeth in these cases, even when irregular, I twist them with a forceps into a more seemly and better position before I break back the bone. When a central osseous piece projects, as in Case III., containing the incisor teeth, every effort should be made to save it. In the instance cited I adopted a novel method, and succeeded, which I trust may be practised by others, where the parts are similarly circumstanced. This portion, when so very prominent, must be got back or taken away to allow the soft parts to be united; therefore many surgeons, Liston, Fergusson, and others, take it away. If the attempt be made to push it back, the stalk breaks, and, in many instances, having no support, it falls down towards the mouth, below the alveolar range. Even in this unpromising state the following measures may be tried. The edges of the central piece, almost always covered with a structure similar to the gum, being pared, as well as the anterior margins of the

[a] Vol. i. p. 595.

maxillæ, a strong needle should be thrust across (or a hole drilled for it) from one maxilla to the other, traversing the central piece; the ends should be clipped off as close as possible and a few turns of silk thread thrown around to retain it in its berth; a bit of lint should then be put round each end to save the cheek from being irritated; after a few days the needle might be withdrawn and the remaining steps of the operation proceeded with; or I would have no hesitation in putting across the three portions of bone a metallic thread, as recommended by Flaubert, of Rouen, after resection of the ends of the humerus in non-consolidated fracture of bone, and at once completing the operation.

As to the position in which the child should be placed for operation, I prefer the semi-erect posture. In this position the infant can be held, firmly rolled up in a sheet, in the arms of an assistant, and its head steadied in the most perfect way by a second. If the child be more advanced in years it should be secured in a chair by a few additional turns of a sheet. By this position the blood is prevented streaming backwards to the throat, giving rise to violent coughing and struggles for air; and the parts being more under the command of the surgeon, he can accomplish the necessary steps with the greatest possible accuracy, precision, and rapidity.

I have never availed myself of the anæsthetic agency of chloroform in this operation for hare-lip, for the following reasons:—I consider it impossible to measure the exact amount, so as to dull the sensibility of an infant, without risking the annihilation of the protective influence presiding over the glottis; thus leaving it to chance whether blood may not trickle down, and suffocation ensue. In the child more advanced in age, if the chloroform be not given in sufficient quantity to produce its full effect, an increased violence and restlessness is invariably consequent upon its use. Once for all, I repeat, the risk is too great for its adoption.

I have endeavoured to apply cold, after Arnott's method, in these cases, so as to freeze the parts and destroy their sensibility before cutting—a practice which I have found most valuable in other operations[a]; but I had a deeper object in view—that expressed and dwelt upon in the paper referred to, namely, to bring into operation "*the healthy action aroused in the part after its use.*" But in these instances I have been compelled to desist, from the great pain occasioned by the process

[a] See Dublin Quarterly Journal, May, 1855.

of congelation, after a few minutes; indeed the child's cries and struggles to get free were as vehement and forcible as during the most protracted operation. Therefore I have with some reluctance relinquished it as a means that cannot be employed.

The management of the child after operation has been precisely dwelt upon throughout the details of the various cases brought forward in this paper to elucidate the subject:—the operative measures necessary in the treatment of hare-lip.