On the results of thyrotomy for the removal of growths from the larynx ... / by Morell Mackenzie.

ON THE

RESULTS OF THYROTOMY

FOR

THE REMOVAL OF GROWTHS FROM THE LARYNX.

Being a Reply to MR. DURHAM'S *Paper in the Fifty-Fifth Volume of the* TRANSACTIONS *of the Royal Medical and Chirurgical Society.*

BY

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PREFACE.

THE fifty-fifth volume of the *Medico-Chirurgical Transactions* contains a paper by Mr. Arthur Durham, "On Section of the Laryngeal Cartilages for the Removal of Morbid Growths." This article consists of seventy-three pages, and of these twenty-three are taken up with the body of the article and fifty with appendix. The greater part of the appendix consists of a translation of certain portions of Planchon's *Faits Cliniques de Laryngotomie*, to which work, and in many cases, to other sources, Mr. Durham has referred. Of the twenty-three pages of the body of the article, nearly half is occupied by five cases occurring in the practice of Mr. Durham and his colleagues, two of which cases had been previously published; and more than half the remainder consists of an elaborate attempt to show that my *Essay on Growths in the Larynx* (Churchill, 1871) contains numerous inaccuracies.

Not being a Fellow of the Royal Medical and Chirurgical Society, I endeavoured to reply to the charges at the Clinical Society; but, the members of that body regarding my contribution as controversial rather than clinical, and as an answer to an attack made at another society, it was decided to withdraw the paper. With Mr. Durham's co-operation, I then offered the article, modified to some extent both as regards matter and manner, to the Royal Medical and Chirurgical Society. The Council submitted it to a referee, who proposed to omit or seriously modify numerous passages—in fact, nearly all those matters in dispute between Mr. Durham and myself. With a view of giving the same publicity to the defence as had already been given to the attack, I should have been willing to make some alteration; but I found that the changes proposed by the referee were of so fundamental a character, that my paper would have been deprived of its most essential

features. Under these circumstances, I have been compelled to seek another channel for its publication.

It is, of course, always desirable in scientific matters to avoid personal controversy, but there are occasions in which personal explanations become necessary. The matter at issue between Mr. Durham and myself is whether a certain operation should be "earlier, more boldly, and more readily resorted to," as recommended by Mr. Durham, or whether it should be reserved for extreme cases, as advised by myself. The operation having been performed much more frequently abroad than in England, it becomes most important that the results of the operation in other countries should be accurately ascertained. In making my reports of these operations, I have been accused by Mr. Durham of numerous inaccuracies, and he has implied that I have "overstated the dangers and difficulties of the operation." On the other hand, I justify my reports, and point out the errors into which, I consider, Mr. Durham has fallen. It is thus that a scientific question has necessarily become a matter of personal controversy; and it will be seen that, whilst Mr. Durham has been allowed to make a personal attack on me, I have been prevented from replying to him at the Society where his attack was made, on the ground that my defence was personal and controversial.

The following paper is identical with that offered to the Royal Medical and Chirurgical Society; and the profession will now be in a position to form a judicial opinion, not only on the matter in dispute between Mr. Durham and myself, but also on the larger and more important question of the merits of thyrotomy for the removal of growths from the larynx.

13, *Weymouth Street, Portland Place, W.*,
May 1873.

ON THE RESULTS OF THYROTOMY FOR THE REMOVAL OF GROWTHS FROM THE LARYNX.

In an article recently published in the *Transactions* of the Royal Medical and Chirurgical Society by Mr. Durham, "On Section of the Laryngeal Cartilages for the Removal of Morbid Growths," too favourable an estimate has, in my opinion, been taken of the operation of thyrotomy, whilst the correctness of my conclusions and the accuracy of my statements have been repeatedly impugned. With a view of restoring the operation to its proper position, and of defending myself from the charges of inaccuracy, I venture to submit this paper to the consideration of the profession.

The subject of thyrotomy, in so far as it refers to the removal of morbid growths, was first brought under the notice of the profession in this country by Sir Duncan Gibb, in a paper published in the British Medical Journal, September 28th, 1865, which contained one case, under the joint care of himself and Mr. Holthouse, and a brief historical *résumé* of the subject.

In my essay on *Growths in the Larynx*, published in 1871, twenty pages were devoted to the treatment of morbid growths by "extra-laryngeal" methods, and great pains were taken to form a just estimate of the value of thyrotomy. The work contained a table (p. 92), in which nearly all the published cases of thyrotomy were placed. The indications and contra-indications of the operation, together with its results as deduced from the table, were also brought under the notice of the profession, and it was laid down "as a cardinal law that *an extra-laryngeal method ought never to be adopted* (even where laryngoscopic treatment cannot be pursued), *unless there be danger to life from suffocation or dysphagia*."

Further, I expressed my belief "that the existence of dysphonia does not justify operations which, though easy to perform, may be regarded

as capital," and that an "extra-laryngeal operation is not justifiable for the removal of a *small* growth in the larynx, unless that growth give rise to dangerous dyspnœa, and cannot be removed by a less serious method."

Six months after the publication of my work, Mr. Durham read his paper. In advocating the operation, Mr. Durham has not attempted to define the limits within which the operation should be performed. He neither confines it to cases in which there is dangerous dyspnœa or dysphagia, nor objects to its being done for the removal of small growths. He contents himself with enumerating the following propositions.

"First, that the dangers and difficulties attending it are neither so numerous nor so considerable as have been represented and commonly supposed; and

"Secondly, that the success hitherto achieved has been so marked and so indisputable, as to justify and encourage in any such case as may seem appropriate, an earlier, bolder, and more ready resort to this method than has hitherto prevailed."

In order to give the profession an opportunity of judging of the results of the operation, I have made out a fresh table of all the recorded cases of thyrotomy, and have arranged them in chronological order. In all instances where thyrotomy has been performed afresh, the original wound having completely healed up, the operation has been considered as a new case. All cases of cancer are printed in italics. [*See appended Table.*]

From an examination of this table my readers will be able to judge whether the dangers and difficulties of the operation have been overstated, and whether "an earlier, bolder, and more ready resort to this method" is to be encouraged. Instead of using the vague terms, "completely successful," "partially successful," "temporary benefit," and "negative," it will be better to consider the results of the operation,—1. In relation to life; 2. In relation to respiration; 3. In relation to voice; 4. In relation to recurrence.

In order to give an opportunity of reviewing, and, if necessary, of revising the facts on which my statements and statistics are based, in dealing with the results of the operation, I have furnished detailed lists of the cases considered under each heading.

First. With regard to the mortality after the operation, it appears that out of forty-eight cases two terminated fatally within a few days; two died at the end of a few weeks, and five succumbed at periods varying from six

months to two years. In five of these fatal cases the disease was considered malignant.

The following is a list of the fatal cases, those of a carcinomatous character being printed in italics.

No. 10. Debrou, in 7 days, from metastatic abscesses.

No. 33. *Schrötter, in* 11 *days, from erysipelas and gangrene.*

No. 1. Brauers, in a few weeks, from hectic.

No. 8. Böckel, in 8 to 12 weeks, cause not stated.

No. 43. *Mackenzie and Wordsworth, in* 7 *months, from exhaustion.*

No. 46. *Mackenzie and Thornton, in* 7 *months, from dysphagia.*

No. 11. *Gibb and Holthouse, in* 1 *year, from exhaustion.*

No. 4. *Gurdon Buck, in* 15 *months, from suffocation.*

No. 5. Rauchfuss, in 2 years, from perforation of œsophagus.

Two other patients (Ehrmann, No. 2, and Sands, No. 7) died from disease independent of the larynx, viz., one from typhus, the other from cancer of the kidneys and suprarenal capsules. Though both these patients remained dysphonic, and in one recurrence took place within seven months of the operation, I have entered their cases as recoveries in relation to life.

Omitting all those cases which survived the operation more than a few weeks, there remain four in which death may be attributed directly to the operation or its effects—a mortality of 8.33 per cent. Mr. Durham only admits two deaths as resulting "more or less directly from the operation;" and, as far as I can understand, they are those of Schrötter and Debrou. To the former case I shall presently refer. In Debrou's case, after division of the thyroid cartilage, a tracheotomy tube was inserted, and, in accordance with the usual practice, left *in situ*. The patient died seven days after the operation from metastatic abscesses of the lungs. Debrou attributed the death to the use of the tracheal canula, and this ingenious explanation of the fatal issue has been considered reasonable by Mr. Durham. No further comment is required on this case.

The fatal cases which Mr. Durham excludes are those of Brauers and Böckel. The facts concerning these cases are as follows. Brauers' case was first published in the *Journal de Gröfe et Walther* in 1834 (vol. xxi, p. 534), and in 1850 was included by Ehrmann in his classical *Histoire des Polypes du Larynx* (p. 12). The patient's larynx was opened by Brauers on several occasions, and the growths treated with acid nitrate of mercury, actual cautery, etc. Nevertheless the growths returned; and, to use the exact words of the original report, "as the result of

successive irritations produced by repeated cauterisations, the larynx passed into a state of scirrhous induration, hectic fever supervened, which *must necessarily lead to death,** although this had not yet happened at the epoch when the physician, the reporter of this case, gave us his account at Bonn." The exact expression in French is "devait amener nécessairement la mort," that is, "must necessarily lead to death;" Mr. Durham has greatly qualified the expression by translating it, "which seemed almost certain to prove fatal." When it is borne in mind that Ehrmann was justly considered the greatest authority on diseases of the larynx, and that he was strongly in favour of thyrotomy, there cannot be the least doubt that had Brauers' patient survived, Ehrmann would have obtained knowledge of it. I have considered this as a fatal case. Mr. Durham, however, on the authority of Krishaber, stated that "the patient lived more than twenty years, and died of a disease quite foreign to the larynx."

As Dr. Krishaber produced no evidence of the survival of the patient, I wrote to him, and received the following reply.

"I read the statement in a Vienna medical journal in 1866, and signed, I believe, by Gilewski, that Brauers' patient survived the operation twenty years."†

After careful examination, I have not been able to discover any paper by Gilewski in a Vienna medical journal in 1866, but he wrote an article in the *Wiener Medizinische Wochenschrift*, June 28th and July 1st, 1865, and therein he stated that his own case and those of Ehrmann and Rauchfuss were the only three in which the operation had been performed. He was, therefore, at that date, altogether ignorant of the existence of Brauers' case. It would have been strange, indeed, if Dr. Gilewski, practising in the south of Poland, could have obtained evidence concerning the recovery of a patient who was supposed to have died thirty-three years previously in Belgium. It will be seen, therefore, that there is no evidence whatever of the survival of Brauers' patient, but that all the evidence points to his death.

In Böckel's case (No. 8) the patient left the hospital after the operation, and died a few weeks afterwards, the exact cause of her death not having been ascertained. Notwithstanding that the patient was aphonic, that she had suffered from perichondritis as a result of the opera-

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* The italics are not in the original.

† On receipt of Dr. Krishaber's letter, I wrote to Dr. Gilewski, asking if he had ever made such a statement, and, if so, on what authority; but, in consequence of Dr. Gilewski's death, the letter was returned to me through the post-office.

tion, that recurrence had already taken place—"small rosy projections" having been seen on laryngoscopic examination and cauterised—notwithstanding that, even when she left the hospital, she had a laryngeal fistula, and that she died so suddenly five or six weeks later, that the medical practitioner could not reach her before death, Mr. Durham quotes from the reporter that "it is probable that this unfortunate woman* succumbed to some intercurrent affection of her lungs, which she contracted in the rude climate of her valley," and himself adds, that "there is no reason for supposing that the death was in any way due to the operation;" but, I venture to think, it will be generally considered that the operation of thyrotomy or its results had a more immediate relation to the death of this "unfortunate woman" than "the rude climate of her valley."

Before dismissing this review of the fatal cases, I must call attention to Ehrmann's own case, my treatment of which does not appear sufficiently clear to Mr. Durham.

He states that "it is not quite clear whether Mackenzie reckons this as a fatal case of thyrotomy or not." Now, as there were ten fatal cases in my table, and I only reckoned nine deaths as resulting from thyrotomy or from disease of the larynx, it is evident that I did not include Ehrmann's as a fatal case. But, in addition to this, I expressly stated that "the case was justly considered one of recovery, and that death took place from typhus" (*Op. cit.*, note to p. 97). It would be difficult, in my opinion, to use language much more clear.

Dr. Sands's case (No. 7), which I have placed amongst those of malignant character (although it is extremely doubtful whether the growth removed from the larynx was really cancerous), was certainly a recovery as far as mortality is concerned. The patient died twenty-two months after the operation, having, however, always remained aphonic.

The actual mortality does not, however, give an adequate idea of the danger of the operation, for among these cases there were many "hair-breadth 'scapes." Thus, in Dr. Cutter's case (No. 27), (*Boston Medical and Surgical Journal*, Feb. 18th, 1869), the patient was almost suffocated during the operation; and, to use Dr. Cutter's own words, "the return to complete sensibility was retarded by the accumulation of blood and mucus in the mouth, which ran down the trachea,

* The "unfortunate woman", on leaving the hospital, returned to the "rude climate of her native valley", Munster, in the Haut Rhin. After a short time, Dr. Dietz was summoned to attend her; but "death took place before the doctor could arrive at the patient's bed-side."—*Mémoires de la Société de Chirurgie de Paris*, tome vi, page 561.

and out of the artificial opening; it was also accompanied by profuse sweating and some flagging of the pulse." After the patient was put to bed "vomiting ensued, and a large amount of blood, mingled with mucus, was evacuated."

In one of Navratil's cases (No. 30), (*Berlin Klin. Wochenschrift*, Dec. 7th, 1868, p. 502), the hæmorrhage was alarming, and the patient nearly died under the operation, from the quantity of blood which passed down the trachea. In another of Navratil's cases (No. 32), (*Ibid.*), the patient suffered from high fever after the operation, and expectorated a quantity of blood and pus; œdema took place round the wound, and the patient was in a very critical state.

In Schrötter's case (*Medizin. Jahrbuch*, Wien, 1869, vol. xvii, 2nd Heft, p. 81), the operator observed that, after dividing the thyroid cartilage, "holding open the borders of the wound with blunt hooks gave rise to such paroxysms of coughing and caused so much fresh hæmorrhage, that the examination could only be carried out for a short time;" and, further, "that the sputa consisted of pure blood even well into the night, and on the following day the expectoration was still coloured." By a clerical error in my original thyrotomy table, it was stated that this patient died in seven hours instead of eleven days, as it should have been. I regret this error extremely; because, though originally occurring in an abbreviated tabular statement, it was subsequently accepted as a fact, and repeated in the text.

It is certainly remarkable that Mr. Durham, who has devoted nearly a page to the exposure of this clerical error of mine, and who has given up another page and a half to the description of Schrötter's case, besides referring to it on another separate occasion (*Op. cit.*, p. 29), does not once mention the prolonged and dangerous hæmorrhage which occurred, and which must have greatly prejudiced the issue of the case, even if it did not, as I believe it did, directly lead to death.

Mr. Timothy Holmes remarks with regard to his case (*Surgical Treatment of Children's Diseases*, 2nd edit., p. 311), "that the parts over the larynx were found to be peculiarly vascular." After the hæmorrhage caused by the preliminary incision had been stopped, the thyroid cartilage was divided. "The bleeding that followed was very considerable."

Again, the reporter of Mr. Davies-Colley's third operation (*British Medical Journal*, Sept. 28th, 1872) remarks, that "the boy at one time ceased to breathe, blood having apparently run down the trachea into the bronchial tubes, and the chloroform acting powerfully on the

lungs. But after artificial respiration had been carried on for several minutes the little patient recovered."

Mr. Durham even tries to qualify the only deaths he has at all admitted in the following words: "In each of these [cases] the fatal result was brought about in a manner by no means special to the operation, but, alas! of far too common occurrence in general surgical experience."

Upon this I have only to remark that when blood-poisoning ceases to follow operations, no doubt many surgical procedures will be adopted which are not at present in vogue; but that until that time arrives, septicæmia remains one of the contingent risks of all operations. On the other hand, the life of the patient is not imperilled by this danger when laryngoscopic treatment is adopted.

In referring to my observations on the mortality of thyrotomy, Mr. Durham has produced a very erroneous impression as regards my treatment of the subject. He has made it appear as if, whilst comparing the mortality of laryngoscopic treatment with that of thyrotomy, I have concealed the circumstance that the laryngoscopic cases in my essay were all benign, and that the thyrotomy table included some cases of cancer. By inference he leads his readers to suppose that I have made an unfair comparison between the two sets of cases. Mr. Durham remarks as follows:—"Considering the prospect of the operation in relation to the preservation of life, Dr. Mackenzie says, in division of the laryngeal cartilages, there is always some immediate danger to life, and nine out of the twenty-eight cases on record terminated fatally." If Mr. Durham wished to do justice to my views, it is strange that he quoted an isolated passage, and did not add the remarks on the same page (94) viz., "In six of the nine fatal cases in the thyrotomy table the disease was cancerous (or semi-malignant)."

So far from attempting to conceal the inclusion of malignant cases, I called special attention to their admission, not only in the passage referred to, but also in almost the same words when speaking of recurrence, where I not only gave prominence to the inclusion of cancer cases, but pointed to the pathological character of the growths as a cause of their great disposition to recurrence.* I also called attention to the inclusion of cancer cases at the head and foot of my thyrotomy table. It is certainly remarkable that Mr. Durham, who objects to my

* The following is the expression used by me:—"In six other cases, the patient died at the end of a few months; and in nearly all of these, recurrence had taken place. They were all, however, of malignant or semi-malignant character, and therefore the tendency to reproduction was no doubt very great."—*Op. cit.*, p. 97.

mode of dealing with the subject, has himself adopted precisely the same plan, without any of the precautions which I have taken. In the fourth volume of Holmes's *System of Surgery*, page 584, Mr. Durham has published a table showing "the general success of different methods of operating." In this table "operations through the mouth," that is, laryngoscopic methods of treatment, are compared with "operations after external incision;" but Mr. Durham has not called attention to the inclusion of cancer cases amongst the operations after external incision. It will be seen, therefore, that whilst Mr. Durham finds fault with me for a mistake which I have not made, he has himself made the very mistake that he imputes to me.

Secondly. The result of the operation, when considered in relation to respiration, is by no means encouraging, for fifteen out of the forty-eight cases operated on had to wear a tracheal tube afterwards. The following are the cases: Gurdon Buck (Nos. 3, 4, and 6); Rauchfuss (No. 5); Busch (No. 9); Debrou* (No. 10); Gibb and Holthouse (No. 11); Köberlé (No. 16); Holmes (No. 25); Navratil (No. 31); Schrötter† (No. 33); Mackenzie and Wordsworth (No. 34); Davies-Colley (No. 43); Mackenzie and Thornton (No. 45); Semple and Thornton (No. 47).

Further, there were four cases (Nos. 14, 19, 24, and 46) in which the dyspnœa became so severe that thyrotomy had to be performed afresh; and one (No. 28) in which slight persistent dyspnœa occurred after two years and a half. Excluding this last case, however, it will be seen that, out of the forty-eight cases, the operation was entirely useless, as far as respiration was concerned, in 19 cases—*i.e.*, in 39.58 per cent.

In several of the cases in which the respiration was good after the operation, there had never been any previous disturbance of the respiratory function; the actual percentage of unfavourable results is, therefore, considerably greater than appears.

Thirdly. In regard to voice, the operation is still more unfavourable; for, on excluding the two rapidly fatal cases, and Langenbeck's case,‡

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* In this case, the patient only lived seven days; and death was attributed to the use of the canula.

† In this case, the patient lived eleven days; and, owing to the impossibility of removing the growth, the canula had to be retained.

‡ This case was operated on by Langenbeck (*British Medical Journal*, November 4th, 1871). There is no mention of the condition of the voice either before or after the operation. But as the vocal cords were normal in appearance (before the operation), and the growth was situated below them, it is probable that the vocal function was never disturbed. The patient was "cured", with the exception of a small fistulous opening, through which air passed when he coughed or otherwise exerted himself. This case is omitted in calculating the average in relation to vocalisation, and therefore the percentage is made on only forty-five cases.

in which the voice was normal before the operation, out of the remaining forty-five, eighteen were completely aphonic ; nine were dysphonic ; in five the voice was modified ; in three, though the condition of the voice is not stated, there is a strong probability of the existence of aphonia or dysphonia. In only ten cases was a previously defective voice perfectly restored by the operation. As the result of the operation, in relation to voice, then, it was destroyed or modified* in 77.77 per cent., and in only 22.22 per cent. was it restored.†

In the following cases there was aphonia : Brauers (No. 1) ; Ehrmann (No. 2) ; Gurdon Buck (Nos. 3, 4, and 6) ; Rauchfuss (No. 5) ; Böckel (No. 8) ; Gibb and Holthouse (No. 11) ; Gouley (Nos. 14 and 17) ; Köberlé (No. 16) ; Holmes (No. 25) ; Mackenzie and Evans (No. 29) ; Navratil (No. 31) ; Mackenzie and Wordsworth (No. 34) ; Davies-Colley (No. 43) ; Mackenzie and Thornton (No. 45) ; Semple and Thornton (No. 47).

The following cases remained dysphonic : Busch (No. 9) ; Gilewski (No. 13) ; Long (No. 23) ; Balassa‡ (No. 24) ; Navratil (No. 30) ; Navratil§ (No. 32) ; Cohen (No. 35) ; Gurdon Buck (No. 37) ; and Davies-Colley (No. 46).

In the following five cases the voice was modified : Sands‖ (No. 7) ; Lewin and Ulrich¶ (No. 12) ; Cutter** (No. 26) ; Durham†† (No. 39) ; and Durham‡‡ (No. 40).

In the following three cases the condition of the voice is not stated ;

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* In drawing up this percentage, I have included three cases (Nos. 19, 22, and 48), amongst those in which there was defective voice ; there being strong presumptive evidence that the vocal function was impaired.

† Out of ninety-three cases treated by me *per vias naturales*, and contained in my essay already referred to, the voice was perfectly restored in seventy-five cases ; in fifteen it was improved ; and in three the result was negative—the patients discontinuing attendance before any result had been obtained.

‡ "The voice was sonorous." It may be remarked that sonorousness affords the essentially distinguishing feature of dysphonia from aphonia, the latter word implying absence of resonance, and the former impaired resonance.

§ "Vocal cords normal, but slow in their movements ; there was an inflammatory swelling present at the anterior point of commissure. Tannin inhalations were ordered, and their continuance recommended until the inflammatory swelling referred to shoulddisappear, and the voice recovered its clearness. The patient now departed hence."

‖ "Her voice never regained its normal tone, although it acquired a very considerable degree of resonance."

¶ "Though the patient spoke plainly, it was in a somewhat bass voice."

** "Phonation coarse and clear." In this case there was recurrence.

†† "Parents were quite satisfied with the condition of his voice."

‡‡ "Left the hospital between five and six months after the operation, speaking in a clear and distinct, though rather feeble, voice."

but dysphonia, if not aphonia, probably resulted : Voss (Nos. 19 and 22) ; Davies-Colley (No. 48). In Langenbeck's case, as previously mentioned, the voice was never affected.

In only the following was a perfect voice regained ; and in some of these, recurrence taking place, the recovery of voice was but of short duration: Balassa (Nos. 15, 18, 21, 27) ; Durham (No. 20) ; Mackenzie and Couper* (No. 28) ; Krishaber (No. 36) ; Denucé (No. 38) ; Bryant (No. 41) ; Ogle and Lee (No. 44).

The most elaborate efforts have been made by operators to give favourable descriptions of the voice after the operation ; and, if admitting it to be defective, they have attributed the dysphonia to some other cause than the operation.

Thus in one case, the patient is reported as speaking "in a very loud and distinct whisper". In another, the patient's voice is "clear, but sometimes hoarse and hard". Another patient enjoyed a "phonation coarse and clear"; but immediately after the operation, he had spoken "in a loud coarse whisper, resembling that of a sea-captain in a storm". In Gilewski's case (No. 13), the hoarseness which came on was not considered to be due to the operation or recurrence of growth, but was attributed to catarrh. In Busch's case (No. 9), the voice was strong enough, but hoarse on account of slight swelling—not of the larynx, but —of the trachea ! Concerning this patient, who was dysphonic, and wore a canula, with ascending and descending branches, the author remarks that the "general condition was very satisfactory". In Mr. Durham's second case (No. 39), it is stated that the parents were "quite satisfied with the condition of his voice"—a statement which conclusively shows that the voice was not normal. In Mr. Davies-Colley's case (No. 43), it is stated that the patient "was able to speak plainly enough in a somewhat husky, loud, whispering voice". This is certainly a favourable description of an aphonic patient.

The very frequent occurrence of aphonia or dysphonia after the operation is probably to be explained by injury of the thyroid or arytenoid cartilages, or of the vocal cords themselves. Although such accidental injury is acknowledged in one instance only, it most likely occurred in many others. That the aphonia often results from injury to the vocal cords, is clearly proved by an examination of a number of cases pub-

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* In this case the voice became hoarse two and-a-half years after the operation, owing to recurrence of growth.

lished by Planchon,* in which the larynx was opened for the removal of foreign bodies. In these cases there was no disease of the larynx which could account for the dysphonia ; yet we find that, as the direct result of the operation, in three out of the eight cases that survived the voice was injured.

Fourthly. As regards recurrence, the operation does not present encouraging results. Excluding the rapidly fatal cases, and those of a malignant character, there remain 39 benign cases.† In fourteen of these recurrence is acknowledged to have taken place, and in one there was incomplete removal. In other words, recurrence or incomplete removal took place in 38.46 per cent of *benign cases.*

The following is a list of the benign cases in which there was recurrence or incomplete removal. Ehrmann (No. 2) ; Rauchfuss (No. 5) ; Böckel (No. 8) ; Gouley (No. 14) ; Balassa‡ (No. 15) ; Voss (No. 19) ; Balassa (No. 21) ; Balassa (No. 24) ; Cutter (No. 26) ; Mackenzie and Couper§ (No. 28) ; Navratil (No. 31) ; Cohen (No. 35) ; Davies-Colley (No. 43) ; Davies-Colley (No. 46) ; Semple and Thornton (No. 47).

Mr. Durham has objected to my treatment of Dr. Cohen's case. The facts are as follows. Thyrotomy was performed on a patient and a growth removed : to use the author's own words, "in a fortnight the growth began to spring up afresh". The patient did not undergo thyrotomy a second time, but went to Europe, and submitted to treatment by which he was cured. The treatment consisted in the use of iodide of potassium and mineral waters, the employment of inhalations, and the local application of caustic solutions. The condition of the voice *resulting from thyrotomy* was not stated in Dr. Cohen's report. I accordingly remarked as follows — "Condition of voice not stated."

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* The cases in which there was dysphonia, are those of Pelletin (*Planchon's Faits Cliniques de Laryngotomie*, p. 48), Marjolin (p. 48), and Blandin (p. 59). In two other cases, the condition of the voice is not actually stated ; though, as these cases are reported as recoveries, I have considered that the voice was restored in each instance.

† The total number of cases is 48. Of these, 25 were benign, occurring in adults ; 14 were benign, occurring in children ; 7 were cancerous ; and 2 were immediately fatal.

‡ The growth in this case recurred in the linear cicatrix of the wound, and it is not distinctly stated whether it was internal or external. Mr. Durham thinks that "it was probably the latter". Had it been external, however, it is extremely unlikely that such a trivial circumstance would have been reported.

§ In this case, recurrence did not take place till two years and a half after the operation.

Mr. Durham, in criticising this statement, observes (*op. cit.*, p. 56) that "the condition of the voice is alluded to very plainly; and Mackenzie omits to state that the patient returned after a voyage to Europe with only minute traces of the various operations in his larynx". In other words, I omitted to mention that, whilst thyrotomy altogether failed, the patient was subsequently cured by internal remedies and local medications. If Mr. Durham thinks that this circumstance is favourable to the operation, he is right to proclaim it.

In my former thyrotomy table I conceded Ehrmann's case as a recovery, but a more close examination obliges me to call attention to the fact that recurrence took place. The patient, it will be remembered, always remained aphonic till her death, seven months after the operation, from typhus. At the necropsy, "some small granulations were found on the left vocal cord"; and there was "a granulation somewhat larger, and of vesicular appearance, at the point of junction of the two vocal cords" (*op. cit.*, p. 12). Had this patient lived, it is highly probable that in a short time a second operation would have been required.

In Dr. Cutter's case (No. 27) it is not stated at what period recurrence took place. The operation was performed on the 26th September, 1867, and on the 8th October the phonation was "coarse and clear". On the 17th October there was "a slight œdematous protuberance on the left vocal cord". On the 23rd, the vocal cords had their "normal pearly sheen". Without any fresh date being given, the author adds, "At the present time there is an appearance of a return of the disease on the right vocal cord." Mr. Durham has misquoted the author by omitting the words "at the present time", and has prefaced the remark as follows: "About sixteen months after the operation — *i.e*, in February 1869 — 'there is an appearance'", etc. Now, in Dr. Cutter's report, there is no mention of sixteen months, nor of February 1869; but in that month this case was published in the *Boston Medical and Surgical Journal*. There is no evidence as to when Dr. Cutter's paper was sent to the journal, nor as to the length of time it was kept before publication. In a note to my original thyrotomy table, I remarked on this case as follows: "Improvement in voice is reported; but as the growth recurred in less than a month, persistent aphonia would probably more correctly describe the condition." I have fixed the recurrence at or immediately after the last date given by the author. Mr. Durham has arbitrarily placed the recurrence at the date when the journal was published.

Mr. Durham, who deprecates any comparison as to the relative merits of thyrotomy and operations conducted through the mouth, nevertheless claims a relative superiority for thyrotomy as regards recurrence. He remarks, that "in all cases in which the nature of the growth is suspicious, greater security against recurrence may be obtained by the more complete removal that may be assured after the larynx has been opened and its interior fully exposed to view".

It will be seen that this statement contains two propositions. The first is, that "greater security against recurrence may be obtained by more complete removal". This is a harmless platitude with which all will agree. The second is, that "more complete removal may be assured after the larynx has been opened". This is a *petitio principii*, and is not borne out by facts; for, whilst out of ninety-three benign cases treated by myself with the aid of the laryngoscope, recurrence or incomplete removal only occurred in 9.6 per cent.; out of thirty-nine benign cases treated by thyrotomy, there was recurrence or incomplete removal in 38.46 per cent.

Nearly all my cases were watched for a long period after treatment had finished, and therefore there was ample time for recurrence. On the other hand, many of the cases of thyrotomy were reported within a few weeks or days of the operation, so that no time elapsed for recurrence to take place.

The history of the operation, indeed, shows that it is very difficult to effect complete removal when the thyroid cartilage is divided—far more difficult, indeed, than when the operation is conducted through the mouth. The causes of this difficulty are the following.

1. Unlike laryngoscopic treatment, where removal may be effected at repeated sittings, the external surgical treatment must be completed at a single operation.

2. The greater or less hæmorrhage which takes place necessarily renders the growths indistinct, especially after they have been themselves cut into and more or less removed.

3. The size of the opening into the laryngeal cavity, when the alæ of the thyroid cartilage are held back, is actually smaller than the upper orifice of the larynx.

The mere fact of the larynx being more immediately within reach when it is opened from without does not compensate for the disadvantages above indicated. It is difficult to understand how, in the face of these well-known circumstances, Mr. Durham could call it "a very obvious fact" that, by thyrotomy, more complete removal may be effected.

Dr. Cohen of Philadelphia, one of the most distinguished laryngoscopists whom America has produced, justly remarks (*Diseases of the Throat*; New York, 1872, p. 448), that "the mere opening of the larynx is a matter of little difficulty, but the extirpation of a tumour with extensive attachments is a matter of great labour and responsibility."

Before dismissing the subject of recurrence, it may be observed that many patients who remained aphonic, and had to wear a canula permanently, in all probability suffered from recurrence, although such recurrence has not been acknowledged. The actual percentage of recurrence is, therefore, doubtless much greater than it appears.

Having now, I venture to think, successfully controverted, by reliable evidence, the two propositions laid down by Mr. Durham: "First, that the dangers and difficulties attending it are neither so numerous nor so considerable as have been represented and commonly supposed; and secondly, that the success hitherto achieved has been so marked and so indisputable as to justify and encourage in any such case as may seem appropriate an earlier, bolder, and more ready resort to this method than has hitherto prevailed", I shall proceed to call attention to the fact that in those cases in which Mr. Durham thinks the operation especially indicated—viz., in cases of cancer and in young children—the results are by no means satisfactory.

Out of seven malignant cases there is only one (No. 7) in which a recovery took place, but in that case the vocal function was injured, and it is very doubtful whether the laryngeal disease was cancerous. In all other cases the patients were not only no better than if simple tracheotomy had been performed, but in at least one of them (No. 47) the unfavourable condition was greatly aggravated, the operation having given rise to dysphagia, which probably shortened the patient's life. In those cases in which benefit appears to have resulted, the benefit was entirely due to improved respiration—the result of tracheotomy and the use of a tracheal canula, not of thyrotomy.

In children, recurrence is met with in about the same percentage as in adults. Of the cases hitherto recorded of children at or under ten years of age, the growth has recurred in 35.71 per cent., whilst in adults recurrence has taken place at the rate of 36 per cent.

Out of twenty-cases of benign growth in adults, recurrence took place in nine cases (Nos. 2, 5, 8, 15, 21, 24, 26, 28, 35); whilst in fourteen children recurrence took place in five cases (Nos. 14, 19, 43, 46, 47). As Mr. Holmes's patient (No. 25), however, left the hospital aphonic, and was obliged to wear the canula, it is extremely probable that recur-

rence took place in this case,* and it is more than likely that it has happened in two other cases (Nos. 22 and 48). Should this be so, the proportion of recurrence in children would be considerably greater than it is in adults.

From an examination of the results of thyrotomy in young children, it will be seen that unfavourable results are obtained in a class of cases in which, *à priori*, good might be expected. On the other hand, Bruns has operated successfully *per vias naturales* on a child not more than five years old; and I have effected a complete removal in the same way in the cases of children aged four, six, and eight years.

One child four years of age has already had his larynx cut open no less than three times; another little boy not four years old has had thyrotomy performed twice. This case (No. 19) is very imperfectly reported by Mr. Durham, and in the heading of it he has described it as "incomplete". He remarks, however, at the conclusion of the report, that of course in the absence of further information of precise character it must be considered "complete". This is, no doubt, a clerical error of Mr. Durham's, and the last word is meant to be "incomplete". Were I, however, to adopt his method of criticism, I should at once make a grave charge against his accuracy, and remark, in his own words, that "it is obvious that in some way or other a serious mistake has been made, or else that an important oversight has occurred."

When we consider the results of the operation, the question indeed arises, Was the operation always necessary? I am sorry that I cannot answer this question affirmatively. In one case there were three ex-

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* Since the publication of this article in the *British Medical Journal*, Mr. Timothy Holmes has written a short but valuable paper in the same journal (May 10th, 1873). It appears that recurrence did not take place in the case of his patient, but that "the true vocal cord on the side operated upon is somewhat distorted, so that the glottis cannot close." Mr. Holmes suspects that "the cicatrisation which followed on the removal of the growth", gave rise to "the distortion of the cord". He also remarks that "surely the division of the whole larynx, from top to bottom, cannot be effected without risk to the integrity of the mechanism. If there is no risk that some unlucky deviation of the knife may injure the cords mechanically, is there no risk that their structure or muscular mechanism may be injured by the resulting inflammation and cicatrisation? I can hardly bring myself to believe this..... I think no one can witness the operation without admitting that it is a very serious surgical proceeding, and that it ought to be reserved for cases of proved necessity..... In another case, I would follow Dr. Mackenzie's advice—viz., to leave the tube in until a full view of the larynx can be obtained, and I would only perform thyrotomy after the failure of a properly conducted attempt at removal by the mouth. The use of a tracheal canula for a few years does not interpose any serious obstacle to the closure of the wound after its removal, and would not prevent the complete restoration of the voice, while any injury done to the vocal cord must render the latter result hopeless."

crescences—"two larger than pins' heads, the other as large as a pea". In two other cases, according to the drawings of the author, the growth was very small—in one instance about the size of a split pea, in the other the size of a tare. In a fourth case there was only "a small growth"; and in a fifth, "a minute lobal excrescence." Who can justify so serious an operation as thyrotomy for such trivial affections? In Mr. Durham's own cases it is extremely doubtful whether the operations, though successful, were justifiable. In none of the cases was there any urgent symptom calling for operation. Each patient had worn a canula for nearly four years; and, had the children been allowed to continue in the same condition a year or two longer, Mr. Durham would most likely have been able to remove the growth through the mouth, and would thus have saved the patients the risks of serious operations.

In Dr. Ogle's case, the operation was very skilfully and successfully performed by Mr. Lee, who, in practising thyrotomy, left the upper half of the cartilage intact. The patient was however five years old, and it does not appear that any attempt had been previously made to remove the growth through the mouth. In this case, also, there was no urgent dyspnœa. Mr. Durham observes that "no one would now-a-days consider it justifiable to open the larynx to facilitate the removal of any growth or growths that could be easily, safely, and completely removed through the mouth." Are we to understand that a surgeon, unskilled in the use of the laryngoscope, who could not "easily, safely, and completely remove a growth through the mouth", would be justified in cutting open the larynx?

I ask this question, because the operation has been more often recommended by those who are not known to have possessed any knowledge of the laryngoscope, than by those skilled in the use of that instrument, notwithstanding that the actual number of laryngeal polypi coming under the care of laryngoscopists must be a hundredfold greater than that of cases seen by ordinary surgeons. Mr. Durham is, indeed, the only skilled laryngoscopist who recommends the operation, except under the most limited conditions.

Not only have many surgeons, quite unpractised in the use of the laryngoscope, performed thyrotomy, but, as I have pointed out elsewhere (*Lancet*, December 2, 1871, page 797), in one instance a growth was removed by Professor Bruns, *per vias naturales*, after Professor Schinzinger had failed in his attempt to extirpate it by thyrotomy.

Mr. Durham remarks in connection with one case, where the patient left the hospital aphonic, and wearing a tracheal canula, "at any rate

the operation did no harm." In another case, he alleges "that no harm resulted from this abortive attempt." It may be observed, however, that this is not the kind of result which is usually considered as favourable to an operation.

The following is a brief summary of the results of thyrotomy, reduced to percentages, and placed in a tabular form. The table shows very clearly the different conclusions at which Mr. Durham and I have arrived. It should be stated that my table of forty-eight cases includes Mr. Durham's thirty-seven cases.

	Per cent. on 37 cases. Durham.	Per cent. on 48 cases. Mackenzie.
Complete success*	51.35	14.58
Partial success	18.91	22.91
Temporary benefit	10.81	—
Negative	8.10	—
Incomplete	5.40	—
Death	5.40	8.33
Severe dyspnœa requiring use of canula	—	31.25
Severe dyspnœa requiring fresh operation	—	8.33

I have also ascertained the following other results, which are based on forty-five cases, in which, the voice being affected before the operation, the patient survived more than a few days.

Aphonia	40.0 per cent.
Dysphonia	20.0 ,,
Modified voice...	11.11 ,,
Not stated, but probably defective voice	6.66 ,,
Recurrence, or incomplete removal ...	38.46 ,, (Percentage based on 39 benign cases).

As a result of my own experience, and from the investigations I have made in connection with this subject, I venture to submit the following propositions.

First. That the operation ought never to be performed for loss of voice alone.

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* Complete success is understood by me to mean recovery of perfect voice and perfect respiration, and absence of recurrence of growth; partial success to mean recovery of one function with injury to another, or temporary recovery of both functions, but subsequent recurrence of the growth. It is difficult to guess what meaning Mr. Durham attaches to the terms he has adopted; or, if he employ them in the same sense as myself, it is still more difficult to guess how he has obtained the results from his thirty-seven cases.

Secondly. That in cases of cancer the operation is useless, except where the growth is very small and distinctly circumscribed.

Thirdly. That the operation should be confined to those cases in which there is danger to life from suffocation or dysphagia, and then only be performed after an experienced laryngoscopist has pronounced it impossible to remove the growth *per vias naturales*.

[The reader's attention is directed to the appended Table opposite.]

TABLE SHOWING RESULTS OF ALL CASES OF THYROTOMY.

[All those cases printed in *Italics* are supposed to have been of a malignant or quasi-malignant character.]

No.	Date.	Operator.	Before Operation.			After Operation.			
			Age.	Sex.	Symptoms.	Mortality.	Respiration.	Voice.	Recurrence, or Incomplete Removal.
1	1833	Brauers (*Journal de Gräfe et Walther*, 1834, vol. xxi, p. 534).	40	M.	Dyspnœa	Death.	.. .. ..	Aphonic	.. ..
2	1844	Ehrmann (*Histoire des Polypes du Larynx*, 1850).	33	F.	Dyspnœa and aphonia	.. .. ..	Normal	Aphonic	In 7 months.
3	May 1851	*Gurdon Buck* (*New York Med. Journal*, May 1865).	*51*	*F.*	*Dyspnœa and aphonia*	.. .. ..	*Canula always worn*	*Aphonic ("a whispering voice")*	*Whole growth not removed.*
4	Sept. 1851	*Gurdon Buck* (*New York Med. Journal*, May 1865).	*51*	*F.*	*Dyspnœa and aphonia*	*Death in 15 months from first operation, from displacement of canula*	*Canula worn till death*	*Aphonic*	.. ..
5	1861	Rauchfuss (*St. Petersburg Medizin. Zeitsch.*, 1862, vol. v, p. 44).	Adult	F.	Dyspnœa; probably aphonia	Death in 2 years from perforation of trachea into œsophagus	Canula worn till death.	Aphonic (right vocal cord removed in operation)	Incomplete removal: "soon sprang up afresh".
6	1861	Gurdon Buck (*New York Med. Journal*, May 1865).	25	M.	Not stated	.. .. ..	Canula always worn	Aphonic (probably)	Not stated, but a "marked narrowing of the rima" resulted.
7	1863	*Sands* (*New York Medical Journal*, May 1865).	*30*	*F.*	*Slight dyspnœa and dysphonia*	.. .. ..	*Normal*	*Modified ("Resonant, but not normal")*	.. ..
8	1863	Böckel (*Extrait de la Thèse de Swobel*, Strasbourg, 1866).	24	F.	Dyspnœa and dysphonia	Death in 3 months	Normal	Aphonic	Recurrence of small rosy projections in 7 weeks.
9	1863	Busch (*Beobachtungen zur innern Klinik*, Bonn, 1864, p. 108).	43	M.	Dyspnœa and dysphonia	.. .. ..	Canula always worn	Dysphonic	.. ..
10	1864	Debrou (*Gazette des Hôpitaux*, May 2, 1863).	51	M.	Dyspnœa and dysphagia	Death in 7 days	.. .. ..	.. .. ..	.. ..
11	1864	*Gibb* and *Holthouse* (*Brit. Med. Journal*, Sept. 28th, 1865).	*29*	*F.*	*Dyspnœa and dysphonia*	*Death in one year*	*Canula worn till death*	*Clear for four months; afterwards aphonic. Constant dysphagia*	*In 4 months.*
12	1864	Lewin and Ulrich (*Deutsche Klinik*, 1865, No. 52, p. 510).	16	F.	Dyspnœa and aphonia	.. .. ..	Normal	Modified (bass voice 22 days after; no further history)	.. ..
13	1864	Gilewski (*Wiener Medizin. Wock.*, June 28, '65, p. 142).	16	F.	Dyspnœa and dysphonia	.. .. ..	Normal	Dysphonic	.. ..
14	Feb. 1865	Gouley (*New York Medical Jour.*, Sept. 1867, p. 473).	6	F.	Dyspnœa and aphonia	.. .. ..	Normal for six months	Aphonic ("whisper")	In 6 months.
15	1865	Balassa (*Wiener Medizin. Wochenschr.*, Nov. 1868).	44	F.	Dyspnœa, aphonia, and dysphagia	.. .. ..	Normal	Normal	Recurrence.
16	1865	Körbelè (*Gazette des Hôpitaux*, June 13, 1865).	57	M.	Dyspnœa, aphonia, and dysphagia	.. .. ..	Canula always worn	Aphonic	.. ..
17	Nov. 1865	Gouley (*New York Medical Jour.*, Sept. 1867, p. 473).	7	F.	Dyspnœa and aphonia	.. .. ..	Normal	Aphonic ("a loud very distinct whisper") July 1867	Some irregularity of vocal cord, but no recurrence.
18	1866	Balassa (*Wiener Med. Wock.*, 1868, No. 93).	32	M.	Dyspnœa and dysphonia	.. .. ..	Normal	Normal	Cure complete in 8 days; no history after that date.
19	1866	Voss (*Medico-Chir. Trans.*, vol. lv, p. 87).	4½	M.	Dysphonia	.. .. ..	Normal	Not stated	Recurrence in 6 months.
20	1866	Durham (*Guy's Hospital Reports*, 1866).	13	F.	Dyspnœa and aphonia	.. .. ..	Normal	Normal	.. ..
21	1867	Balassa (*Wiener Med. Wock.*, Nov. 11, 1868).	19	F.	Dyspnœa and dysphonia	.. .. ..	Normal	Normal	In 3 months.
22	1867	Voss (*Medico-Chir. Trans.*, vol. lv, p. 87).	4	M.	Dysphonia	.. .. ..	Normal	Not stated	.. ..
23	1867	Long (*Liverpool Hospital Reports*, 1867).	8	M.	Dyspnœa	.. .. ..	Normal	Dysphonic ("somewhat hoarse, especially when he gets a little cold")	.. ..
24	1867	Balassa (*Wiener Medizin. Wochenschr.*, No. 92, 1868).	21	F.	Dyspnœa and aphonia	.. .. ..	Normal for a few months	Dysphonic	Recurrence soon after operation.
25	1867	Holmes (*Surg. Treatment of Children's Diseases*, 2nd edition, p. 311).	9	F.	Dyspnœa and aphonia	.. .. ..	Canula always worn	Aphonic	No recurrence, but distortion of vocal cord operated on.
26	1867	Cutter (*Boston Medical and Surg. Jour.*, Feb. 1869).	53	M.	Dyspnœa and dysphonia	.. .. ..	Normal	Modified ("coarse and clear")	Soon after; date not stated.
27	1868	Balassa (*Wiener Med. Woch.*, No. 92, 1868).	22	F.	Dyspnœa and aphonia	.. .. ..	Normal	Normal	.. ..
28	1868	Mackenzie and Couper (*Essay on Growths in the Larynx*, Case 64).	66	F.	Dyspnœa and aphonia	.. .. ..	Normal for 2½ years, (afterwards dyspnœa)	Normal for 2½ years, (afterwards dysphonic)	In 2½ years.
29	1868	Mackenzie and Evans (*Essay on Growths in the Larynx*. Case 69).	12	F.	Dyspnœa and aphonia	.. .. ..	Normal	Aphonic	.. ..
30	1868	Navratil (*Berlin Klin. Woch.*, 1868, No. 49, p. 501).	Adult	M.	Not stated	.. .. ..	Normal	Dysphonic ("voice harsh and hollow")	.. ..
31	1868	Navratil (*Ibid.*, p. 501).	20	F.	Dyspnœa and aphonia	.. .. ..	Canula always worn	Aphonic	Growth not extirpated.
32	1868	Navratil (*Ibid.*, p. 502).	30	M.	Not stated	.. .. ..	Normal	Dysphonic	.. ..
33	1869	*Schrötter* (*Medizin. Jahrbuch*, Wien, 1869, vol. xvii, and Heft, p. 81).	*63*	*M.*	*Dyspnœa and dysphonia*	*Death in 11 days from erysipelas and gangrene*	*Canula worn till death*	.. .. ..	*Growth not extirpated.*
34	1869	*Mackenzie* and *Wordsworth* (*Essay on Growths in the Larynx*. Case 87).	*47*	*M.*	*Dyspnœa, dysphonia, and dysphagia*	*Death in 7 months*	*Canula worn till death*	*Aphonic*	*In 2 months.*
35	1869	Cohen (*New York Medical Record*, August 16, 1869).	Adult	M.	Dysphonia	.. .. ..	Normal	Dysphonic	Recurrence.
36	1869	Krishaber (*Gazette des Hôpitaux*, 1869, No. 103).	38	M.	Dyspnœa and dysphonia	.. .. ..	Normal	Normal	.. ..
37	1870	Gurdon Buck (*Trans. of New Yk. Acad. of Med.*, v. iii, pt. 10)	38	M.	Dyspnœa and dysphonia	.. .. ..	Normal	Dysphonic (rt. v. c. and aryt. cart. removed)	.. ..
38	1870	Demicè (*Bordeaux Médicale*, Feruary 15, 1872).	54	F.	Dyspnœa and dysphonia	.. .. ..	Normal	Normal	.. ..
39	1870	Durham (*Medico-Chirurg. Trans.*, vol. lv, p. 20).	7	M.	Dyspnœa and aphonia	.. .. ..	Normal	Modified ("parents quite satisfied with condition of voice")	.. ..
40	1870	Durham (*Medico-Chirurg. Trans.*, vol. lv, p. 22).	8	F.	Dyspnœa and aphonia	.. .. ..	Normal	Modified ("clear, but rather feeble")	.. ..
41	1870	Bryant (*Medico-Chirurgical Trans.*, vol. lv, p. 24.)	3	M.	Dyspnœa and aphonia	.. .. ..	Normal	Normal	.. ..
42	1871	Langenbeck (*British Medical Journal*, Nov. 4, 1872).	28	M.	Dyspnœa	.. .. ..	Normal	Normal (voice not affected prior to operation)	.. ..
43	Aug. 1871	Davies-Colley (*Medico-Chir. Trans.*, vol. lv, p. 25).	4	M.	Dyspnœa and aphonia	.. .. ..	Canula always worn	Aphonic ("a husky, loud, whispering voice")	Recurrence in a few months.
44	1871	Ogle and Lee (*Med.-Chir. Trans.*, vol. lv, p. 28).	5	M.	Aphonia	.. .. ..	Normal	Normal	.. ..
45	1872	*Mackenzie* and *Thornton* (*Read at Clinical Society*, February 14, 1872).	*24*	*M.*	*Dyspnœa and aphonia*	*Death in 7 months*	*Canula worn till death*	*Aphonic*	*In 4 months.*
46	March 1872	Davies-Colley (*Medico-Chir. Trans.*, vol. lv, p. 27).	5	M.	Dyspnœa and aphonia	.. .. ..	Dyspnœa	Dysphonia ("voice audible, but by no means natural")	Recurrence shortly after.
47	1872	Semple and Thornton (*Read at Clin. Soc.*, Feb. 14, 1872).	2½	M.	Dyspnœa and aphonia	.. .. ..	Normal for 3 months; canula reinserted in 6 months	Aphonic	Recurrence in 3 months; readmitted January 1, 1873.
48	Sept. 1872	Davies-Colley (*British Medical Journal*, Sept. 1872).	5½	M.	Dyspnœa and aphonia	.. .. ..	Canula always worn	No report	No report.