dumb institute founded by Dr. Gutzmann. In this institution the children were received at the early age of five or six years. They were taught in classes of ten to fifteen in number. The deaf-mute was taught to speak by imitating the movements of the mouth and muscles of the face and neck through the sense of sight and touch, and to understand conversation by lip-reading. The teaching was at first very simple, but gradually progressive, till at length—at about the age of sixteen or seventeen—the pupil was in every way an intellectual being. As an instance of how successful this training was, he mentioned the fact that the older children could converse with and understand him, although a foreigner, and therefore not pronouncing their language properly. The percentage of permanent successes was very high. He thought oral teaching was in every way the best method, but the results depended largely on the teachers.

Dr. Atwood Thorne, in reply, said he had carefully refrained from advocating one or other system, but simply gave a description of what he found at each school. He had certainly met with many of the older children with whom he could talk quite comfortably, and he thought such children would continue to use the oral method after leaving school. The London School Board paid their teachers well, and never had more than eight children to one teacher.

ON THE OPERATIVE CURE OF LARYNGEAL PAPILLOMATA.

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I am not going to trouble you with a long paper, nor, for that matter, with anything new in method or instruments for the treatment of this troublesome affection. Yet I have one or two things to say which I think may prove serviceable, especially to my younger *confrères* in the speciality. My justification for any appearance of dogmatism that my words may assume lies in the fact that my experience has been fairly extensive, and that I have never yet had, as far as it is possible to be sure in such a matter, one case of benign growth of the larynx which I did not cure by intralaryngeal operation. This may be a common experience among us specialists or it may not; I do not know. But of this I am assured, that judging from the multiplicity of instruments invented, and of local applications advocated, for effecting such

cure, the difficulties which many find in dealing with the frequent and rapid recurrences of papillomata are common and real.

In the first place, I must be allowed a word in condemnation of thyrotomy, for two reasons. The first is that it is never necessary, while the second is that it gives no more guarantee against recurrence than intralaryngeal operation. Thus I have cured one case of multiple papillomata which had baffled the skill of one of our most expert specialists in this country, who advocated a thyrotomy as the only alternative, while in a child of four years who had already had thyrotomy performed three times by a surgeon of the first rank, the surgeon finally sending the case to me, I effected a complete cure with the forceps.

These cases are not common, and it is necessary, in order to emphasize the weight of my remarks, to state that I have operated upon over a hundred cases of benign growths of the larynx, the larger proportion of which are papillomata. I exclude from this approximate figure the singers' and teachers' nodes, which, of course, are far more frequent, and give one more opportunity for the exercise of one's operative skill. In the earlier days of my hospital experience cases of laryngeal papillomata were far commoner, partly because special hospitals were very few and the special departments of general hospitals were practically non-existent, and partly because of the lack of skill exhibited at that time by many specialists. There are so many of us now to do the work, fortunately for the public, that in the rarer cases of disease individual experience is less rich; and it is for this reason that I crave your indulgence for the few simple points I wish to put before you.

In the first place, I use but one instrument in its various sizes: this is Mackenzie's spoon-blade forceps. I have little experience of other instruments because I have found them less successful. In the second place, I have had no experience of caustics and scarcely any of the electric cautery, for the reason that the forceps do all I require. Consequently, I am willing to admit that in a certain sense my experience has been limited, although, none the less, it is fairly conclusive. On the other hand, I believe that many find the instrument imperfect, while some even assert that it is dangerous. But it appears to me, with all respect due to those who differ from me, that the imperfection lies in the method of using the forceps, while their danger is no greater than that of the knife in the hands of an unskilful surgeon.

I believe the general experience of laryngologists in this country is in strong favour of Mackenzie's forceps. Their angle is the only

one which will avoid unnecessary pressure upon the epiglottis and tongue, while their simplicity of construction and rigidity interfere less with the surgeon's sense of touch than is the case with tube-forceps. Perfect approximation of the edges, especially at the extremity, is essential to clean operating upon small growths, though this is a point to which the instrument makers pay too little attention. The only modification I have introduced is the cutting away of one or other side of the blades, so as to give more room for operating in the commissure of the cords and diminishing the risk of damaging an opposing sound cord. So much for the instruments.

In the operation itself certain details are of importance. The first is complete cocaine anæsthesia; the second is the intelligent and fearless co-operation of the patient, to secure which infinite patience and ungrudged time are often required; the third is good illumination; the fourth is perfect eyesight; the fifth is manipulative skill, and, if possible, ambidexterity, both of which need constant practice for their attainment. These points apply only to adult patients, in whom, of course, general anæsthesia cannot make operation easier.

In small children, if the growths do not interfere with respiration, operation is best deferred until such age is reached as will make self-control possible and the risks of cocaine minimized. But if operation is necessary chloroform is administered. If the laryngoscope is to be used, the patient is seated upright on a nurse's lap, with an assistant to pull the tongue forward with forceps, while the nurse controls the gag. In this manner success may be attained, though the laryngoscope often fails owing to the accumulation of mucus and saliva and the constant deglutition. In small children I now prefer to operate in the recumbent position, and without the laryngoscope. With a little practice—the same, indeed, as that needed for intubation—the forceps are easily inserted into the larynx, while experience in touch soon gives the sense of the soft growth in the clutch of the forceps as distinguished from any normal structure. The cardinal rule, that no force must ever be used, will keep one free of incurring risk. A preliminary tracheotomy is generally not necessary, although the instruments for it should be at hand.

But it is more especially with regard to the laryngoscopic operation for papilloma in adults that I think I have perhaps some hints to give to those in difficulty with recurrences. Generally we find that all the supraglottic growths are easily eradicated. It is the subglottic and commissural that baffle our skill. Now, I do not suppose that there is any essential difference in the liability to recur

in the different localities; the difference lies solely in the completeness of the operation. Papillomata, I think we may say, never recur if they are completely removed, and my present plea is for bold operation. If we merely nip off the prominent portion of a growth it rapidly recurs, as we say. If the forceps are thrust with some pressure into the diseased surface, so as to bite deeper, the chance of eradication is greatly increased. I would enjoin a beginner not to be content with biting the growths off, so to speak, but to dig them out, due respect always being paid to the margins of the cords, so as not to strip off healthy epithelial covering. The danger from the latter accident, however, is much less than would at first sight appear.

The real difficulty lies in attacking the undershelving surfaces of the cords. To use the forceps successfully in this situation they must be directed downwards and outwards towards the side attacked. This is an easy enough position when operating upon the right cord, but it is almost impossible to carry out on the left cord unless the forceps are held in the left hand. I generally find it best to operate upon the right cord with the right hand, and upon the left with the left hand. In this manner we find a distinct advantage in the fact that the forceps being held at an inclination, and not quite perpendicularly, the immediate point to be attacked is not obscured by the instrument.

The point most difficult of access is undoubtedly the anterior commissure and the region immediately below it. This taxes our ingenuity and patience to an extraordinary degree, and it is conceivable that some of the many modifications of forceps, such as Wolfenden's, might sometimes be necessary. Nevertheless, I have always succeeded with Mackenzie's instrument, especially with half the blade cut away on one side or the other, according to the exigencies of the case.

To sum up my advice to a beginner, I would say: (1) Use your cocaine as freely as the patient will bear, though never exhibiting much on the first attempt, but judging from experience in each individual case what dose you dare give; (2) operate boldly and cleanly, never removing anything that you cannot see perfectly or anything that resists your instrument; (3) cultivate the art of ambidexterity, though I am not prepared to say it is essential.

Dr. Dundas Grant said Dr. MacDonald had stated that removal of the growths by thyrotomy was frequently followed by recurrence, and at the same time that the one condition for the avoidance of recurrence was the completeness of removal of the growth. If this were absolutely the case, it would be a strong argument in favour

of thyrotomy, because this operation certainly promised most complete removal of the growth. Nevertheless, he supported Dr. Greville MacDonald's contention, that intralaryngeal methods should be practised rather than thyrotomy. Many years ago, before the introduction of cocaine, a little girl, aged six, was referred to him in order to have thyrotomy performed on account of multiple papillomata which had not yielded to operations by the snare; he was able, however, to remove them by means of Mackenzie's forceps (it need hardly be said that a good deal of patience and tact was required before the desired result was obtained). Within the last few weeks he had had under his care a woman, aged twenty-three, on whom tracheotomy had been performed when she was four months old on account of laryngeal obstruction, apparently of papillomatous nature; her voice was completely aphonic; there was found a very large papilloma growing from the upper surface and edge of the right vocal cord and another one from below the posterior part of the left one. He decided to operate without delay, and at one sitting he removed the upper papilloma by means of a snare, and the lower one by means of his own intralaryngeal forceps. The patient was then able to breathe freely through the larynx, and was greatly delighted when, for the first time, she experienced the sense of air being drawn. The tracheotomy tube was removed, the wound closed up by a plastic operation, and she was now speedily learning the art of producing her voice. He had recently been called upon to operate on an Italian waiter for papillomata at the anterior portion of both vocal cords, attempts made to remove these by means of a snare having failed. He was able to remove them with great completeness by means of his forceps, and the patient was now seeking health and profit by plying his vocation at Salzo-Maggiore. Still more recently he was consulted by a medical man on account of a growth on the under-surface of the right vocal cord, which had been seen by Sir Morell Mackenzie twenty years ago, but on his advice was left untreated, in view of the possibility of the thing disappearing by itself; it had completely interfered with the patient's singing, which he had previously practised to a considerable extent, and whenever he raised his voice in conversation he was at once checked on account of the growth being driven up between the vocal cords. He cocainized the larynx, and at the first introduction of his own endolaryngeal forceps was able to remove the growth in its entirety. For growths just below the edges of the vocal cords he strongly recommended his own forceps, the comparative safety with which they could be used giving an amount of

confidence which enabled the operator to effect the removal of the growths without loss of time or any great strain on his patience. He was very jealous for the credit of laryngology, and thought laryngologists were indebted to Dr. Greville MacDonald for thus insisting upon the practice of endolaryngeal operations through the natural passages.

Dr. Scanes Spicer called attention to the fact that he had repeatedly performed these intralaryngeal manipulations under combined cocaine and chloroform anæsthesia in adults in the sitting position, and in them it was just as satisfactory as in children. It was not necessary in ordinary cases, unless patients were irritable.

Dr. Herbert Tilley thought that Dr. MacDonald's experience was valuable in that it would encourage laryngologists to depend on intralaryngeal methods rather than hasten to the external operation of thyrotomy. He had found the recumbent position suitable for the removal of these growths under chloroform. He had had no success with tracheotomy performed as the sole method of dealing with papillomata.

Dr. Walker Downie, while complimenting Dr. MacDonald on the success of his operative measures, thought it impossible in the majority of cases of multiple papillomata of the larynx in the subglottic region to have them completely removed by operation through the mouth. In such cases he preferred thyrotomy, by which means the interior of the larynx was fully exposed and the growth accurately and completely removed. This could be done with as little, or even less, risk to the vocal cords as that which followed the use of forceps. He mentioned the case of a child who, after wearing a tracheotomy tube for two years and four months, was operated upon by him; by that method he removed numerous papillomatous growths with complete restoration of clear voice.

Dr. Greville MacDonald, in reply, referred briefly again to the inefficiency of thyrotomy and risk to the voice, though he was prepared to find that in cases where the growths extended below the reach of the forceps external operation would be necessary. He also again emphasized the need of infinite patience, and a resignation to the fact that cases of rapidly recurring papillomata never proved remunerative.