

WARREN (J. C.)

RECENT PROGRESS IN SURGERY.

By J. COLLINS WARREN, M. D.

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34

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The Treatment in Germany of Cleft Palate.—In a former Report¹ attention was called to a new operation for remedying this deformity, devised by Professor Simon, of Heidelberg. This operation, called staphylo-pharyngorrhaphy, was based upon the action of the upper constrictor muscle of the pharynx, which was shown to play so important a part in the act of articulation. Attention was first called to this muscle, in connection with operations or devices for the cure of the defect, by Suersen, a dentist of Berlin, whose obturator or hard-rubber plate has not attained that celebrity which its success in giving the voice a purity of tone should have earned for it.

The operations for cleft palate which are performed in this country and in England, although constantly undergoing slight modifications to facilitate the closure of the fissure, have in no case been based upon the action of the muscles with a view of remedying the more conspicuous portion of the deformity, the imperfection of speech. The great merit of Suersen's apparatus consists in its adaptation to the muscular apparatus concerned in excluding the passage of air from the throat into the nasal cavity, so that communication between the two cavities is much more effectually regulated than by any other method. The following account is taken from an abstract of a lecture delivered by Suersen at Hamburg in 1867.² He says that the separation of the cavity of the mouth from the cavity of the nose "is under normal conditions effected on the one hand by the velum palati, which strains itself (consequently by the levator and tensor palati), but on the other hand, also, by a muscle which has in connection with these operations not yet received, to my knowledge, a sufficient amount of attention. I mean the constrictor pharyngis superior. This muscle contracts itself during the utterance of every letter pronounced without a nasal sound, just as the levator palati does. The constrictor muscle contracts the cavum pharyngo-palatinum, the pharynx wall bulging out, and it is chiefly on the action of this muscle that I base the system of my artificial palates.

"These palates, which in all their parts are made of hard caoutchouc,

¹ The Boston Medical and Surgical Journal, xc. 596.

² The American Journal of Dental Science, vol. i., third series, No. 8.

consist of a teeth-plate suitably attached to existing teeth, and at the same time covering the fissure in the hard palate (if such a fissure exists). Where the fissure commences in the velum, that plate terminates in an apophysis broad enough for filling up the defect. . . . The lower surface of the apophysis, turned towards the mouth, lies on about an equal level with the velum, *if the latter is raised by the levator palati*. But when the velum hangs loosely downward, the back part of the artificial palate is lying over it. This back part accordingly fills up the cavum pharyngo-palatinum, and in such a manner as not to impede the entrance of the air into the cavity of the nose when the constrictor pharyngis superior is inactive. Thus the patients can without any impediment breathe through the nose. But as soon as the constrictor contracts the cavum pharyngo-palatinum (this happens, as I will repeat for the sake of clearness, in the utterance of every letter with the exception of *m* and *n*), the muscle already named reclines against the vertical back-surfaces of the obturator. By this operation the air-current is prevented from entering the cavity of the nose, and is compelled to take its way through the mouth, and thus the utterance loses its nasal sound."

The apophysis alluded to is somewhat triangular in shape, taking an outline of a horizontal section of this part of the pharynx; it is nearly flat on its upper and under surfaces, yet thick enough to keep the fissure well closed while the sides of the soft palate are rising and falling during articulation. The improvement of the voice after a short use of one of these obturators is very striking. They are made with great facility, and are exceedingly durable. They are now applied at the Massachusetts General Hospital, having been introduced by Dr. Algon Coolidge.

The inefficiency of the customary operation in restoring the voice lies in the fact that the tense velum produced by a closure of the fissure is too short a valve to close the communication between the two cavities. Professor Simon's operation recognizes this defect, and remedies it by a subsequent manœuvre, which consists in stitching the remains of the uvula to the posterior wall of the pharynx at a point where the superior constrictor "bulges out" during contraction. The remaining space is then easily closed by the constrictor muscle. The great advantage of this operation is that it can be applied to cases operated on in the usual way when the voice still retains a nasal tone.

An observation of Professor A. Graham Bell, of this city, is interesting in this connection. He finds that certain deaf mutes when taught to speak by his method retain a nasal tone. This is caused by the inability of the soft palate to lift itself up against the posterior wall of the pharynx. But if the soft palate is held up with the handle of a spoon during articulation (which he finds can easily be done with a little practice) the nasal tone disappears. It is evident that, being thus raised, it

can act in conjunction with the constrictor muscle. Such cases might be benefited by wearing a plate to the roof of the mouth, with a projecting tongue which would keep the palate permanently raised. The same device might be adapted to cases already operated on without obliteration of the nasal tone, when Simon's operation was not thought advisable.

Dr. Schönborn lately read a paper before the fourth surgical congress at Berlin¹ in which he proposes to accomplish in one operation that which Professor Simon does in two. The edges of the cleft having been refreshed in the usual manner, a flap is taken from the posterior wall of the pharynx, the base downwards, the free end being turned over between the edges of the cleft and sewed to them. The operation was performed in a case where the cleft involved the hard palate. The wound united well; there was, however, a slight nasal tone remaining. Professor Langenbeck, who was present at the congress, claimed to have had many successful results from the old operation, that is, the one in use in this country, and thought it ought to be tried first. The success of Schönborn's operation would seem to depend greatly on the height at which the flap was taken from the pharyngeal wall. Should the base be left too low, the velum would not be lifted high enough, and insufficiency, with nasal tone, would be the result. A great advantage would seem to be that it closes the cleft without putting the velum on the stretch, and thus allows the levator and tensor palati muscles to act in conjunction with the constrictor in separating the two cavities.

The Result of Resections for Gun-Shot Wounds. — Dr. Bergmann, professor of surgery in Dorpat, and during the Franco-German war surgeon in charge of two military hospitals, gives the results of his experience in resection of joints for gun-shot wounds.² An interesting feature of this brochure is the introduction of an extensive series of albertotype plates, which permit illustration on a scale not usually attempted.

Hannover's report, which followed the Prussian-Danish war, gave an opinion much more unfavorable in regard to resection of joints than had hitherto been accepted. The discussion of this question by German surgeons has since been quite animated, the favorable opinions of Langenbeck not being upheld by many of his countrymen. The operations performed by Dr. Bergmann were in most cases secondary, and were resorted to to relieve the severe inflammation which supervened on the injury. Nine cases of resection of the elbow-joint are given, of which two were fatal and five terminated in ankylosis. In two cases the functions of the joint were completely restored. In the second of these the ends of the ulna and radius were removed, and the humerus was

¹ Wiener medizinische Wochenschrift, 1875, No. 18.

² Die Resulte der Gelenkresectionen im Kriege. Von E. Bergmann. Giessen. 1874.

left intact. Flexion, extension, and pronation were complete; supination was not quite perfect. The resection of the elbow-joint seemed to have a favorable effect upon the inflammation which followed the injury; not so, however, that of the shoulder-joint, where acute suppurative periostitis was frequently noticed after the operation, abscesses pointing in different parts of the arm, which free openings at the back of the hand, made at the time of the operation, failed to prevent. Fifteen cases of resection of the shoulder-joint are reported; of these three were fatal, one was followed by amputation, and another by a general atrophy of the muscles of the arm. In the remainder the result was generally favorable. In only one case were active movements obtained in all directions. In two cases in which the preservation of the periosteum had been complete, the arm could be abducted. In one case the soft parts on the outside and back of the shoulder had been carried away; also a portion of the acromion and spine of the scapula, exposing the fissured head of the humerus and a fractured glenoid cavity. The patient nevertheless recovered a useful arm, the muscular development, as shown in the plate accompanying the case, being quite remarkable. The author quotes in connection with this case one of Langenbeck, in which all the soft parts about the shoulder-joint, except the large vessels, the nerves, and the biceps and latissimus dorsi muscles, were torn away, and yet the patient was able eventually to return to service, to ride, and to carry the sabre with the hand of the wounded arm. These two cases encourage him to attempt conservative treatment, even in cases in which the laceration of the soft parts is very extensive. One or two plates are given of grooved wounds, or gouging out of a piece of the head of the humerus without injury to the cartilage or shaft of the bone. The absence of splintering in these cases is thought to be due to the angle at which the ball strikes the bone. This is illustrated in the case of a ball perforating a pane of glass; if the direction of the ball is at a right angle to the surface there will be a clean hole, or nearly so; otherwise, there will be extensive splintering.

Resection of the ankle-joint did not come up to the author's expectations. The results were better as a rule than those of operations in civil practice for caries. The acute suppurative inflammation which had followed the injury was generally cured, but the cases often terminated in a tedious caries of the ends of the resected bones, which delayed recovery as long as conservative treatment might have done. This latter, he thinks, has proved more successful of late years, owing to the practice at present in vogue of resorting to free incisions. The resection of the joint did not hasten recovery sufficiently to prevent a result with an unfavorable position of the foot, there being in all his cases a tendency to pes equinus or varus. The author bears testimony to the great amount of bone which is reproduced after this operation, exceed-

ing that which is formed after operation for caries. Ankylosis took place in every case but one.

Dr. Bergmann's work is to be commended for the fullness and accuracy of his description of cases, and the frankness with which he comments upon them. There is a lack of system in preparing the material, which makes reference to individual cases or plates difficult. An important omission is the absence of a tabular statement of cases.

*Transportation of Wounded Soldiers by Railway in Time of War.*¹—In March, 1873, the Russian government appointed a commission for the discussion and experimental trial of different methods for the amelioration of the condition of sick and wounded soldiers transported on railroads. The commission, after careful examination, concluded that the transportation of the sick and wounded should be carried on mainly by the use of box cars, that arrangements should be made for converting these to the purpose of transportation of the wounded at the shortest possible notice, and that appliances for the outfit of the same should be sent to points where it is anticipated that many wounded will be concentrated; as a rule, litters are to be used; but in case of extreme necessity, a deep layer of straw at the bottom of the car may be substituted. The report of this commission was shortly followed by that of Mr. Zavodovsky, of St. Petersburg, whose invention was submitted to the War Department at Washington for the purpose of criticism; this criticism has now appeared in the form of a report to the surgeon-general by Assistant-Surgeon George A. Otis.

Dr. Otis's paper contains a full and interesting description of the various devices employed for transporting the wounded by railway during our late war, as well as those which have been adopted by other countries since that time. Transportation by railway is naturally of comparatively recent date, the Italian war of 1859 being the first in which it was extensively employed. On that occasion passenger trains were used, for the most part, without alterations. In the Danish and Six Weeks' wars the Prussians used straw mattresses carried by stretcher poles and laid upon loose straw, this plan, employed during 1863-64 in the army of the Potomac, having been approved by the Prussian government.

The car designed for the Sanitary Commission by Dr. Elisha Harris was largely in use during our war. In this car the litters were suspended from upright wooden posts by stout rubber rings, which were found, however, to permit of too much motion to be comfortable. The plan of utilizing the ordinary field stretchers for railway transport, keeping the patients upon them until they reach a fixed hospital, is com-

¹ A Report on a Plan for Transporting Wounded Soldiers by Railway in Time of War; with Descriptions of various Methods employed for this Purpose on different Occasions. By George A. Otis, Assistant Surgeon, U. S. Army. Washington: War Department, Surgeon General's Office. 1875.

mended by Dr. Otis. The utility of railway transport was most conspicuous in the army of the Cumberland. Dr. Barnum was one of the most experienced of the surgeons having in charge hospital trains; during his connection with the service he supervised the transportation of twenty thousand four hundred and seventy-two patients and lost but one, "who, despite the advice of his surgeons, implored that he might be taken to die in the bosom of his family." When General Sherman's army was before Atlanta, until the lines of communication were destroyed preparatory to the march to the sea, hospital cars ran regularly from the front to base hospitals, some of which were four hundred and seventy-two miles distant. The smoke-pipes of the locomotives of these trains were painted a brilliant scarlet; the exteriors of the hood and of the tender-car were of the same color, with gilt ornamentation. At night, beneath the head-light of the locomotive three red lanterns were suspended in a row. These distinguishing signals were recognized by the Confederates, and the trains were never fired upon or molested in any way. Few published statements have appeared respecting the transportation of sick and wounded in Confederate armies. They had no regular system of hospital trains.

Many interesting experiments were made at an international conference of the societies for the relief of wounded in war, at Paris in 1867, and a great variety of cars and litters and methods of swinging litters were shown. Although many were very ingenious and useful, and a number of improvements on the methods then shown were brought out at the time of the Vienna Exposition in 1873, Professor Billroth and others were inclined to discountenance almost any outfit of hospital cars that could not be promptly improvised. Mr. Zavodovsky's plan is based upon this view. The litters are hung on ropes depending from swinging poles, which it is proposed to cut in the forest.

This plan is not favorably commented upon by Dr. Otis, who thinks that the problem of utilizing the railway conveyances most likely to be available near the battle-field, namely, the box cars of supply trains, is not yet satisfactorily solved. Our passenger cars can easily be arranged by removing every other seat, and the movable backs of those that remain, to accommodate twelve to fourteen commodious litters; but these are not usually on hand. He says, "In the present state of our knowledge, it would appear that the simplest and best method for transforming freight cars to hospital use is by the system of Mr. Grund, as employed on some of the Prussian hospital trains, and almost uniformly on those of Bavaria and the Palatinate." This consisted in supporting three field stretchers in the front and three in the rear part of the freight cars, by means of transverse wooden bars resting on semi-elliptical plate springs. It would therefore be necessary to store in each car a few such springs and spikes, to enable it to be converted

for hospital use at any moment. A supply train thus fitted out would give each patient more air and space than were enjoyed on our hospital trains, but would not afford the same facilities of access to patients by the attendants.

Dr. Otis's report is carefully prepared and illustrated very fully and accurately, and is an interesting as well as valuable contribution to the subject. We trust it foreshadows a satisfactory exhibition of these appliances at Philadelphia next summer.

Catgut Ligatures. — K. Eliaschewitsch,¹ after experimenting with this ligature on animals, gives the following account of its fate. Ligatures were applied to the carotid and femoral arteries and to the horns of the uterus; sutures were taken in the skin and examined at intervals of from five to twenty-five days. As soon as the granulations of the wound come in contact with the ligature, a separation of the outside fibres of the catgut begins to take place. The ligature gradually grows thinner, while the fibrils break up into small particles and finally into detritus. The rapidity of this process depends upon the amount of water contained in the tissues, the degree of reaction caused by the ligature, and the manner in which it has been prepared. Fine carbolized sutures are thinned to the minimum in five or six days. On vessels and on the horns of the uterus, the ligature begins to break down in five days. In dogs killed a month after the application of the ligature, no trace of it was to be found.

The same number of the *Centralblatt* contains an abstract of an article by D. Murinoff, on the changes observed in this ligature. The author compared it with the simple ligature, and also with the chloralized catgut. To the naked eye, all kinds appeared swollen after two or three days, the swelling increasing markedly at the end of a week. Over the ligatures there was a fine transparent membrane, the knots appearing adherent to the surrounding tissue. Thinner ligatures were absorbed at the end of ten days; No. 3 Lister catgut was absorbed at the end of twenty to thirty days. The remains of knots of the former were found at the end of twenty-five days; of the latter, at the end of seventy days. Under the microscope the ordinary ligatures, as well as carbolized catgut ligatures, were found to be splitting up into fibres at the end of a few days; later, they gradually disappeared among the granulations. The manner of preparing the ligatures does not appear to influence the rapidity of their absorption. Carbolized catgut irritates slightly, chloralized catgut less so, and simple catgut not at all.

Experiments were made in reference to the frequency of hæmorrhage following the different kinds of ligatures. The vessels were cut through and both ends were tied. Lister's carbolized catgut gave ten per cent.,

¹ *Centralblatt für Chirurgie*, No. 43, 1873.

chloralized gut twenty-five per cent., and simple catgut eighty-seven per cent. of hæmorrhages. Out of forty-eight ligatures with catgut, in thirty-seven cases there was healing by first intention; out of thirty-four with chloralized gut, twenty-eight; and out of twenty-eight with simple catgut, there were eight cases of first intention.

