

splitting headache. The urine was scanty, high-coloured, and loaded with urates; chlorides slightly diminished, no sugar, no albumen. A careful microscopical examination of the blood and urine was attended with merely negative results. The patient's statements were hurried and somewhat incoherent. He kept up an occasional low moaning, and said he could not endure the pain of the boil on his head much longer. There was evidently great nervous disturbance, with some confusion of intellect; from time to time there were a few convulsive movements of the hands and fingers, with slight general shivering. In the face of these symptoms I could not but conclude that I had to deal with a case of septic poisoning. The patient was advised to seek admission to a public hospital, but would not hear of it on being told that he would no longer be under the care of his present attendant. He was then instructed to go home and retire to bed immediately, to cover himself with warm blankets, and to apply hot mustard cloths to the epigastrium; a draught containing twenty grains of chloral to be taken immediately, and to be repeated every two hours till sleep was induced; a diet of strong soup, with a tablespoonful of good whisky, was enjoined, the thirst to be allayed with an iced mixture of fresh milk and effervescing lime-water. Directions were given as to the thorough ventilation of the apartment he occupied, and a mixture containing quinine and iron was ordered thrice daily. The boil on the head to be poulticed with charcoal poultices, and the eruption on the back to be again treated with boracic ointment. Though I did not, of course, express my opinion, I must candidly own that I entertained but little hope of my patient's recovery. Nevertheless, I was agreeably disappointed. For three weeks he hung between life and death; but at the end of that time, thanks to his originally fine constitution, he began to improve. The countenance became calmer, the yellow cachectic appearance began to pass off, the peculiar pyæmic odour of the breath disappeared, the suppurating boil on the head assumed a cleaner aspect and began to discharge healthy pus; the hard lump in its vicinity, which seemed to threaten another boil, grew smaller and finally vanished. Abundance of nourishing food, with an imperial pint of good London stout, divided into three equal portions, was ordered daily; the quinine and iron were continued, and the arsenical mixture again resumed.

*Condition on March 31st, 1881.*—Still under treatment; slowly gaining strength; appearance much improved, the colour of the skin being nearly normal, and the cachectic look having almost disappeared. The boil on the head is slowly healing, and discharges only a small quantity of healthy pus; there is very little eruption on the body and head, but every two or three days several small discrete red papular elevations generally make their appearance on the chest, legs, and arms. These spots cause a slight sensation of heat, but no itching, and fade in the course of a week or less, leaving behind a slight transient brown mark. Pulse 77, regular, fairly full, but of low tension; tongue flabby, anæmic, indented at the edges, and slightly glazed from the action of the arsenic; appetite improving, bowels regular, conjunctivæ slightly congested; says he feels "a heap better," and expresses much gratitude. The arsenical mixture to be temporarily discontinued.

*Condition on Nov. 11th, 1881.*—Patient is much improved in every respect. He now only complains of weakness, want of appetite, and slight return of the eruption on the back, arms, and legs, whenever the arsenical mixture is discontinued for a longer period than a week or a fortnight at a time. Ordered tablespoonful doses of maltine with pepsine and pancreatine thrice daily; the arsenical mixture to be taken only once a day; quinine and iron mixture to be continued.

From November up to the present date the patient has continued to visit me occasionally. In January, 1882, he caught a bad cold, which was followed by a slight return of the eruption on the back. This, however, speedily succumbed to the influence of the arsenical mixture taken thrice daily, with local applications of boracic ointment. Since then his improvement has been steady, though the eruption still manifests a tendency to recur, whenever an attempt is made to discontinue the arsenic permanently. He was last seen on Friday, the 10th of March. He still takes the quinine and iron, and the maltine regularly. The arsenical mixture is also taken once a day, but discontinued every alternate fortnight. His skin is perfectly free from eruption, and save for a considerable amount of weakness and inability to undertake any prolonged exertion, he is now practically well.

About a fortnight before, he had seen a few spots of eruption on the back, which disappeared almost immediately on his resuming the arsenic.

*Remarks.*—The interest of the foregoing case lies principally in the obscure nature of the morbid condition. For six months there was nothing in the patient's symptoms to suggest the presence of anything more than ordinary non-syphilitic psoriasis. The marked control exercised upon the eruption by the arsenic served also to confirm this primary diagnosis. But at the end of this time, the occurrence of pyæmic symptoms during a temporary cessation of treatment, without exposure to any fresh source of infection, is sufficiently remarkable, and still more so when we consider the negative character of the careful microscopic examinations of the blood and urine. The pyæmic attack, the eruptions of boils, and especially the suspicious appearance of the large one on the head, which refused to heal for upwards of six months, seem, when taken in conjunction with the patient's history, to afford some warrant for the idea of septic infection. But the tardy development of septic symptoms, the absence of organisms in the blood and urine, and the remarkable benefit derived from the administration of arsenic, introduce elements of uncertainty which should not be lost sight of. Taking everything into consideration, I am disposed to think that the balance of evidence inclines in the former direction, though the whole history of the case is in many points exceptional. It is hard to explain the delay in the appearance of the pyæmic or septicæmic indications, except on the hypothesis that the virus had for a time remained semi-dormant, manifesting its presence only by cutaneous eruptions, and had then awakened to its full vitality after an incubation of nearly a whole year. This fact, if fact it be, is without parallel, at least so far as my experience extends.

Should the man continue to remain under observation, I shall endeavour to report any further interesting or exceptional circumstances in the progress of the case. Whatever the cause of the symptoms, it has not, I fear, entirely ceased to operate, as shown by the threatened return of the eruption whenever an attempt is made to dispense with the arsenic finally, though there is every reason to hope that its virulence has much abated, and that time and care may suffice to compass its complete removal.

## ON A CASE OF EXCISION OF THE TONGUE WITH A LARGE PORTION OF LOWER JAW AND FLOOR OF MOUTH FOR EPITHELIOMA;

RECOVERY, WITH REMARKS ON THE OPERATION  
AND AFTER-TREATMENT.

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IN recording this case, I wish particularly to describe a mode of operation for the removal of a larger extent of disease than is generally considered within the range of operative measures, and by which I was enabled to remove in one mass the tongue, with a large piece of the lower jaw, and the intervening tissues of the floor of the mouth.

In a recent contribution on the subject of cancer of the tongue,<sup>1</sup> Mr. Jonathan Hutchinson makes an impressive appeal for early operation, recalling our attention to the manner in which very valuable time is lost whilst the surgeon is maturing his judgment as to the true nature of the disease; but in spite of his weighty arguments, I believe that surgeons will not generally urge, nor will patients accept, any operation for the removal of a considerable portion of the tongue until the otherwise hopeless and necessarily fatal character of the disease is to their minds clearly established, and this because of the dreaded and still very fatal character of the operation to be undergone. Consequently in many cases, when the subject of an operation has at last to be faced, the surgeon has to decide the questions, Is it too late? or, Are the limits of disease such as to exclude a satisfactory operation? And these questions have to be asked of many cases in which there has been no delay in establishing a diagnosis. It is a notable circumstance that the facility or epoch of

<sup>1</sup> Clinical Lectures, London Hospital, January, 1882.

Lymphatic infection varies greatly in different cases, being influenced largely by the primary locality of the disease and the anatomical distribution of the lymphatics. It has appeared to me to occur particularly early where the under surface of the tongue is invaded, and also where the disease has originated in, or spread to, the floor of the mouth. Cancer in this latter region materially complicates the question of operation, and unless very limited in extent is often considered a bar to its performance. I believe, however, that the limits of what is justifiable or possible in this direction have been considerably extended of late.

Mr. Walter Whitehead records a case<sup>2</sup> in which he removed the tongue along with the floor of the mouth and submaxillary and sublingual glands by the use of scissors, and the same authority tells us that where the floor of the mouth is extensively diseased Billroth is accustomed to detach the gum and periosteum from the inner side of the jaw by the aid of a rasp. With what ultimate results these operations have met I do not know. It is true the gum and periosteum are more loosely adherent to the inner aspect of the jaw than to the outer, and may be detached without much difficulty down to the mylo-hyoid ridge, but in a case of extensive and close adhesion of cancerous infiltration to the bone any operation of this kind would certainly be incomplete and therefore unsatisfactory. At any rate, I do not think it can compare in efficiency with that I am about to describe.

G. D—, an artisan, aged forty-two, became an inmate of the Queen's Hospital on November 10th, 1881. He was suffering from an indurated fetid ulceration, which occupied the greater portion of the floor of the mouth. On the left side it reached as far back as the last molar tooth, but on the right to a less extent, about an inch outside the median line. It was closely adherent to the inner aspect of the lower jaw, and invaded the under surface and body of the tongue, so that this organ was firmly bound down, and its movements were rendered painful and difficult. There was profuse salivation, with very imperfect articulation. To his knowledge it was only of five weeks' duration, and he ascribed its origin to the use of a pipe with a dirty brass mouthpiece he had been smoking a week or two previously. Although so recent there was already a good deal of diffused induration and tenderness below the jaw, and three or four small kernels could be separately felt there. He was emaciating rapidly, and presented one of the most distressing cases of this painful affection that I have ever seen. He wished something done for his relief, and I contemplated section of the gustatory nerves until it occurred to me that the removal of the whole mass was quite practicable, and on Nov. 14th this was effected in the following way.

I selected chloroform as the agent most manageable in these prolonged operations on the mouth and air-passages, but from the outset he took it very badly, and before even the first stage of the operation was entered upon he had to be brought round by artificial respiration. I therefore abandoned that agent for ether, and had the patient brought into a half-sitting position with the head and shoulders forward. I found this posture, aided by assiduous sponging, skilfully managed by Mr. Jordan Lloyd, sufficient to direct the stream of blood, which in the early steps of the operation was most profuse, away from the larynx, and from first to last no trouble or embarrassment from the entrance of blood into the trachea was encountered. The tongue being secured by a ligature through its tip and the requisite teeth extracted, I carried an incision, as in Syme's operation, through the median line of the lower lip, under the jaw, to terminate at the hyoid bone. I then dissected back the tissues on either side as a flap, in which was included the gum and periosteum as far as possible, by the aid of a rasp. The dissection was carried backwards nearly as far as the angle of the jaw on the left side, but on the right to a less extent; and beneath the maxilla it bared the mylo-hyoid muscle and submaxillary gland. Free bleeding accompanied every touch of the scalpel, particularly from the bone, but by pressure and Spencer Wells's forceps it was arrested with some delay. A hole was then drilled on either side just outside the line of intended section of the maxilla, which latter was accomplished by a straight saw laid vertically on the outer aspect of the bone a little beyond the limits of the disease on its inner surface. When the saw had completed its work the intervening portion of bone, having its attachments to the floor of the mouth and tongue undis-

turbed, was so far loosened as to permit the easy introduction of a pair of curved scissors between the sawn surfaces in such a way that one blade was within and the other without the mouth; cutting freely, the mucous membrane and mylo-hyoid muscle were detached from the bone on the right side, and on the left a little additional space was gained in the same way. The scissors were then introduced through the mouth, and made to sever the attachment of the anterior pillar of the fauces to the tongue. The loop of a chain écraseur was now carried between the sawn surfaces and over the dorsum of the tongue nearly to its root, where it was steadied with the forefinger whilst the instrument was being secured and tightened. The loop thus included in its embrace the tongue and the tissues of the floor of the mouth, excepting the integuments which had been dissected away, and twelve or fourteen minutes were occupied in cutting through. This accomplished, the mass dropped off, and some impediment to respiration being then encountered, I secured the short stump of the tongue well forwards to the cut ends of muscles in front by a couple of silk stitches cut short.

Although no bleeding followed the écraseur I took good care to search for and secure with ligatures the stumps of the lingual arteries. I quite agree with Mr. Whitehead as to the untrustworthy nature of this instrument; it not only constantly fails to prevent free spurting from the arteries at the time of operation, but, what is worse, its use is frequently followed by recurrent bleeding of a very troublesome character, which completely prevents efficient after-treatment. I would sooner encounter any hemorrhage during the operation than be troubled with oozing of blood afterwards. I have been struck, as I daresay many others have been, with the large number of fatal cases in which more or less bleeding after the patient has returned to bed is reported as having happened; it occurred in two fatal cases I have closely observed (though not my own operations). In both the écraseur was used, and in both the patients died in the usual way of septic lung complications. Although I used the écraseur in this case I do not attach importance to it, as the parts were so fully exposed all vessels could be secured as easily as in any ordinary stump, and I should not hesitate in another similar case to complete the operation by scissors or scalpel. Indeed, from the excellent results and low mortality in his hands, I cannot but think this method of Mr. Whitehead's of removing the tongue by a cutting operation superior to all others. But, if I may judge from the experience of one case in which I adopted it a fortnight ago, I think he underrates the amount of bleeding which may be sometimes encountered. I had occasion to remove the greater portion of one lateral half of the organ in the case in question, and employed scalpel and scissors for the purpose. Though quite controllable, the bleeding was profuse.

I believe there are elements of safety in the operation I am describing, and in the older operations, such as Syme's, in which the jaw is divided, over any operation by which the whole or the greater portion of the organ is removed through the mouth. These are the easy ligature of vessels, the direction of the blood stream away from the trachea, and the perfect drainage subsequently provided. The procedure, however, is too formidable for general use.

Having secured the vessels, I next dissected out all the enlarged lymphatic glands that could be found. There were four of them, soft and pink, and not larger than peas, along the course of the facial artery. The jaws were then wired, but without traction, just sufficient to steady their ends, and the wound in the soft parts united down the median line by pins and sutures, except at the lower angle, where a full-sized drainage-tube was secured. Finally, the cut surfaces were washed with a strong carbolic solution and the patient returned to bed, but to be kept sitting upright.

The after-treatment of the case comprised special attention to the drainage, the asepticity of the injured parts, and the nutrition of the patient. It was mainly an effort, and not unsuccessfully applied, to bring to bear the principles of modern antiseptic surgery. A diminishing mortality after operations on the tongue shows that this subject has participated in the general advance in surgery of recent years. I have alluded to the excellent results of Mr. Walter Whitehead. Mr. Arthur Barker<sup>3</sup> also has done much to fix attention on the danger resulting from the entrance of blood and septic matter into the lungs, and to formulate in a methodical manner measures of prevention.

Immediately after the operation I secured under the chia

<sup>2</sup> Excision of the Tongue. By Walter Whitehead. 1881.

<sup>3</sup> THE LANCET, vol. ii., 1879, pp. 234-269.

a large antiseptic pad composed of shreds of gauze, to receive the discharges down the drainage-tube, and another of the same material was applied over the mouth, so as to compel respiration by the nares only. On the third day, finding slight fetor of the breath, I had the mouth almost continually irrigated with weak Condy's fluid. The patient effected this himself by taking between his lips the nozzle of an elastic tube leading from a reservoir above his bed, and from which he could regulate the current at pleasure as it flowed away through the tube below. At the same time I replaced the pad over the mouth by a Roberts's inhaler charged with eucalyptus oil, and renewed every two hours. This was used with excellent effect, for I speedily had the satisfaction of finding all trace of fetor disappear. Nutrition was effected wholly by the rectum for the first six days, as recommended by Whitehead. Three-ounce enemata of egg, milk, and beef-tea, digested with Benger's pancreatine, were administered every three hours, and I cannot doubt but these were largely assimilated. At any rate, he did not appear to live on his own tissues, for at the end of the week, having neither pain nor fever (the temperature throughout never rose above 99.5°), he was neither thinner nor weaker than before the operation.

On the seventh day, the mouth having been previously well washed and the drainage-tube closed temporarily, he managed to swallow a quarter of a pint of milk, but slowly and with caution. This he gradually increased up to one pint, though deglutition continued for some time a protracted and tedious process. The external wound healed by primary union except at the lower angle, where the drainage-tube was retained for nearly three weeks, being replaced by successively smaller sizes. When once granulation set in the parts inside the mouth cicatrised rapidly. During the process the ends of the bone stumps became closely approximated, causing the right portion of the jaw to lie obliquely across the floor of the mouth. This is the greatest drawback to the operation, as it is in the way of putting food into the mouth. I would certainly in any similar case remove both sides of the jaw equally and well back, rather than retain a portion, the teeth in which do not meet those in the upper jaw. On December 8th, when I exhibited him (along with the parts removed) to the members of the Midland Medical Society, and the local branch of the British Medical Association, he was convalescent and ready to leave the hospital.

It now only remains to say a few words about his present condition and prospects. In respect of the former a more satisfactory result could scarcely be desired. The interior of the mouth is soundly healed, and there is but little facial disfigurement. He can articulate with distinctness, and it is no exaggeration to say that in this respect he is better than before he lost his tongue, whilst his emancipation from pain is complete. Of course he cannot masticate solids, but any soft food is taken with facility, and his nutrition has materially improved. In respect of his future, I believe there is good ground for anticipating as long an immunity from return as is enjoyed by the majority of patients who suffer removal of the tongue for cancer. The operation employed enabled me to keep wide of all infiltrated tissue, whilst the sweeping removal of the floor of the mouth—a frequent site of reappearance—must materially diminish the prospect of local return.

I am aware that the existence of swelling below the jaw at so early a period may be considered to argue a high degree of glandular infectiveness, but from that same fact I inferred that the cause might be to a great degree simple inflammatory swelling of the submaxillary gland. However this may be, both this gland and the sublingual were removed at the operation along with the original growth. The lymphatic glands I searched for and dissected out; they were four small, soft pink kernels, but whether infected or simply inflamed I do not know. The microscope, however, proved the original growth to be epithelioma.

**SOCIAL SCIENCE ASSOCIATION.**—The twenty-sixth annual congress of this Association is to be held at Nottingham in September next. The Secretary of the Association, Mr. J. L. Clifford-Smith, is preparing for the press "A Manual for the Congress with a Narrative of Past Labours and their Results." This work will be issued shortly, and will contain information as to the origin, constitution, and the proceedings of the Association during the quarter of a century that it has been in existence.

## NERVE-VIBRATION AS A THERAPEUTIC AGENT.

By J. MORTIMER-GRANVILLE, M.D.

ENLARGED experience in nerve-vibration as a means or method of treating disease has confirmed my belief in its value, and I have no longer any hesitation in recommending its adoption by the profession. I do this with a full sense of the responsibility which necessarily attaches to the propounder of any strange doctrine in medicine, such as that which the theory of nerve-vibration, undoubtedly, presupposes and implies; and in an especial sense to the introducer of a new therapeutic agent. The responsibility of strongly urging a recourse to nerve-vibration, I am now fully prepared to accept. I commenced the investigation of nervous phenomena, first in connexion with the various forms and causes of "pain," more than twenty years ago, and this method, which has been mentioned rather than recommended by me on several occasions during the last few years, is the outcome of a long and careful series of experiments. I have now employed it in a very considerable number of cases, differing widely in their nature and characteristics, and although I have had many failures—mainly, as I believe, from errors in diagnosis and mismanagement in the application of the treatment—the net result has been such as to place beyond reasonable question the fact that in precisely applied mechanical vibration of nerves and nerve-centres, we have a means of eliciting function and stimulating nutrition which surpasses for directness and rapidity of action any other system or method extant. If this should seem to be an over-statement of the facts, it must be borne in mind that it is made in a medical journal, and with the knowledge that the profession will soon be able to verify or disprove the accuracy of my assertions.

I do not propose to publish my cases immediately, because sufficient time has not yet elapsed since the occurrence of what I conceive to have been "cures" to show that they merited that description. At the same time, although as I have said, there are many obvious failures in my record of cases treated in this manner, the benefits which seem to have accrued from its adoption are so marked that I do not feel justified in longer delaying the step by which I place the means of forming a judgment on my method in the hands of the profession. Mr. Frederic Weiss, of the firm of Messrs. Weiss and Sons, has greatly aided me in producing, and will shortly be able to supply to members of the profession—I hope *exclusively*—a very satisfactory percuteur worked by electricity. I must acknowledge my indebtedness to Dr. George Balfour of Edinburgh for the recommendation to use electricity as a motive power. My deeply regretted friend the late Mr. Donald Napier advised me to employ this agent some five years ago, but I was then reluctant to do so lest it might be supposed that my process was in some way a modification of the use of electricity. It should therefore be understood that no current passes through the hammer of my instrument. The patient is not in the circuit. This force is, however, more convenient for sustained use than that obtained from the clock spring in my mechanical percuteur. Messrs. Weiss and Sons have also a clockwork apparatus which has been made under my supervision, and which renders practicable what the French instruments have not, with a few exceptions, hitherto enabled me to accomplish. I will now briefly state the principles of the treatment, and leave it in the hands of the profession to give it a trial.

In the treatment of neuralgia I believe percussion acts simply by interrupting a morbid series of vibrations and substituting for it another series which is not morbid. Its success is by no means certain; but it deserves a trial, and particularly in cases which would otherwise be treated by nerve-stretching. When a nerve is stretched, it is, for a time at least, prevented from vibrating. When it is mechanically vibrated by percussion, it is compelled to fall into a new rhythm by the physical law of harmonies and discords, as explained in my first paper on this subject in THE LANCET, Feb. 19th, 1881, p. 286. There are several modes of procedure. The percuteur may be applied over the seat of pain with varying force and speed until alleviation of