

1. The general integrity and clearness of the intellectual functions or their comparatively slight obscuration. In Abercromby's and Cruveilhier's cases, such statements as "intelligence perfect," "intelligence preserved," "intelligence perfect up to the last moment," are of constant occurrence.

2. Impairment of the co-ordinating, balancing, or regulating power necessary to combined action of the muscles. The individual becomes "top-heavy," turns round awkwardly, and frequently staggers or falls; in short, he presents the peculiar gait of a drunken man.

3. The periodic utterance of sudden, involuntary, automatic cries or screams, resembling those of the lower animals when the cerebellum or its peduncles is subjected to vivisection.

4. The pupils are invariably *dilated*, contrasting remarkably with their contracted state in diseases of the pons. (Dr W. T. Gairdner and Herman von Weber in *Med.-Chir. Trans.*, vol. xlv.)

5. The pain in disease of the cerebellum is felt either in the forehead, temples, or vertex, or it is general. It is rarely located to a spot in the occiput.

6. Deafness, whether partial or complete, appears invariably to depend upon involvement of one or both auditory nerves in the morbid growth. It is by no means a constant symptom.

7. The occurrence of convulsion fits and the symptoms of nausea and vomiting do not appear to be more frequently met with in cerebellar than in cerebral diseases.

8. The cutaneous sensibility of the general surface does not appear to have been either exalted or impaired in any of these cases.

9. Amaurosis and squinting are more frequently absent than present, and when met with depend upon specific disease affecting the nerves concerned.

10. These cases afford entirely negative evidence in regard to the supposed influence of the cerebellum over the sexual system as advanced by Dr Gall.

ARTICLE VI.—*On the Removal of Stumps, Decayed Teeth, etc.* By J. SMITH, M.D., F.R.C.S., Surgeon Dentist, Lecturer on Dental Surgery, Surgeons' Hall, etc.

THE aversion entertained by medical men towards tooth-extraction is more general than might be supposed, and sometimes entails serious consequences. For a medical attendant to examine, among other organs, the condition of his patient's teeth, is, it will be admitted, a somewhat exceptional proceeding, unless absolute local pain be present. This can scarcely be accounted for, except in one of two ways: either the effect produced on the general health

by dental disease is regarded as unworthy of consideration, or the removal and other treatment of stumps, decayed teeth, etc., is repulsive to, and consequently avoided by medical men. Be this as it may, however, the importance of such organs as the teeth, and the necessity of their functions being properly discharged, seem incontestable, when we consider their all but universal presence in the animal kingdom; their place in all the higher animals as the initiatory apparatus in the digestive economy; the change undergone by the whole system at the period of their first appearance during infancy, and the no less marked change accompanying their loss in old age; as well as the evil results, direct and indirect, which have again and again been traced to their disease or their destruction.

In the last number of this Journal it is inculcated [Dr Keiller on *Cancrum Oris*] that children dying from gangrenous stomatitis are in a great measure "poisoned by the deleterious gases arising from their own oral textures in a more or less complete state of putrefaction." But, while admitting the rapidly fatal effects producible by the severer and more rare affection, the same argument holds good, and effects of a similar nature are to be expected in any case where the inhalation and deglutition of similar poisons—if not equally abundant, at least equally offensive and more prolonged in their operation—go on, as in the case of various forms of dental disease. Any one who has had experience in diseases of the mouth will allow how frequently such cases occur as those, where almost every remaining tooth is loose, and seems embedded in a well of the most foetid pus, oozing out on the slightest pressure; where the gums, in presence of such teeth, are tumid, fungous, suppurating, and so tender as of course to preclude any approach to mastication; where the carious dental tissues have assumed that peculiar cheesy condition so often met with, crumbling down on the merest touch, the more superficial layers of decay being literally cleaned off by, and swallowed along with, each mouthful of food; and under such circumstances is impunity from the constant presence of these noxious matters to be expected? We know how very small a quantity of many substances inhaled or swallowed is sufficient to produce a powerful effect on the system; we know the changes produced on organic bodies by the introduction of matters undergoing putrefaction; and in the case under notice the amount of dead animal matter in a state of active decomposition arising even from a single decayed tooth, we know to be by no means inappreciable, while its presence is constant, contaminating every morsel swallowed and every inhalation made. We know, too, that various affections, digestive disorders, urticaria in many cases, and not facial neuralgia alone, but even sciatica, might be cited as disappearing along with the removal of such teeth. And, lastly, there is one question which, although perhaps somewhat more conjectural or hypothetical, is yet interesting and important as connected with the subject, and

which claims some attention, namely, how far dental caries may be contagious. The suggestion may appear somewhat untenable, but there is no reason to deny that dental caries is only a local manifestation of a constitutional disease. We cannot produce dental caries in any tooth at will. We cannot, on the other hand, prevent its attack by any known topical means, any more than we can explain its selecting one tooth more than another in those sudden accessions it is sometimes observed to make. And if other maladies, manifesting themselves in local symptoms, are capable of reproduction through the agency of matters emanating from lesions distinctive of these diseases, it appears quite possible that dental caries may possess etiological characters of a similar nature.

All such considerations point to the removal of a cause in all probability so evil in its consequences, so productive of injurious results,—a cause, too, apparently so easy of removal, and yet so greatly overlooked in general practice.

The error, however, appears to lie not so much in these matters being called in question, as in their being neglected. The affections, both local and constitutional, resulting from dental disease are well known, and in most cases their importance is conceded by practitioners. But, apart from the instance of mere toothache, there is perhaps only one affection in which any practical effect is given to such concession, and that is where abscess has opened externally on the cheek or neighbouring parts, and where removal of the offending tooth is held as essential towards closure of the sinus existing. Here removal of the diseased or misplaced tooth causing the disorder is generally insisted on. But in nearly all other cases the evil results arising from dental disease are admitted, and no more, such admission being almost universally set at naught in practice; mouths being complacently left not only unfit for anything like mastication, but exhibiting on a small scale all stages of inflammation, suppuration, ulceration, and gangrene. Very many instances exist, it may be said, where this state of matters seems to lead to no bad effects in particular. But the probability of a contrary result seems, *à priori*, so strong, that it is scarcely justifiable to allow them to pass unheeded.

Now, one reason of this neglect, or perhaps aversion to interference in such cases, is that it is sometimes looked upon as a difficult matter to remove stumps and decayed teeth; but this is by no means the case, nor is it by any means so painful for the patient to have stumps extracted as is commonly supposed.

Sufficient time has now elapsed for testing the merits of several methods not long ago revived or projected, as capable of rendering tooth-extraction painless, without the induction of general anæsthesia. These measures have been found in some cases to be by no means generally applicable, in others altogether impracticable, and in not a few, to have had nothing to support them except misre-

presentation and credulity. The consideration of local anæsthetics may therefore be set aside.

Where general anæsthetics have, on the other hand, been employed, absolute immunity from pain during tooth-extraction can, no doubt, be procured; in some instances, however, their employment has been found to complicate the operation, and frequently to occasion failure; because where a tooth is much decayed, or difficult to be seen, or almost inaccessible, as is sometimes the case even with a patient giving all the aid he can, the difficulty to the operator becomes greater where there are superadded the contingencies and utter helplessness of general anæsthesia.¹

Where no anæsthetics, again, are employed, the operation, as has been said, seems one repugnant to the feelings of most medical men, and regarded, perhaps justly, as harsh, excessively painful, and somewhat rude in principle. In this way, it becomes repulsive not only to patients but practitioners; and any remarks which from time to time appear on such a subject may be the more admissible when they refer to those points which, without the aid of extraneous means, may render this little operation easier or simpler.

Stumps are almost always loose, and their removal is similar to, and effected in much the same manner as the removal of a splinter of wood from the finger,—the difficulty in both cases being to get hold of the foreign body at a sufficiently solid part, so that it shall not crush under the instrument. On this account stumps are best removed either by a pair of forceps, the points of which are long, slender, and very sharp at the free extremity of the blades, so that they can be easily inserted upon and pushed down along the sides of the stump; or by means of an elevator, having a short spoon-shaped point about one-third of an inch long, and bent at right angles, with the handle or shaft so as to enable the stump to be turned or rather lifted out by it. These elevators, right and left, being a common pattern, are to be had at every surgical-instrument maker's, and are more easily used than any others. The point is to be driven firmly down either in front of or behind the stump, supposing it to be a molar,—not at its sides if possible, as no proper fulcrum can be there obtained,—and by rotating the handle the root is extruded from its socket.

The removal of a tolerably firm tooth requires somewhat greater care to do it with expedition and the minimum amount of pain; and here it must be borne in mind, that in as great a measure as the forceps supersede the key in rendering extraction less painful, so will any means be an improvement again upon the application of the forceps which shall enable us with less force to remove the tooth in the direction of its long axis, or rather to follow the direc-

¹ Where chloroform is exhibited, considerable difficulty sometimes arises in opening the patient's mouth. This, however, can be easily overcome without using any artificial means, by throwing back the head on anæsthesia being complete, when the jaws will at once be separated.

tion taken by the socket or sockets in which it is implanted. Towards obtaining this end, a slight circumstance in the conformation of the teeth seems to have been somewhat overlooked; and of this circumstance an upper molar tooth will best serve for illustration.

On examining almost any well-developed upper molar, free from abnormal twisting or confluence of the fangs, it will be found that not only do these fangs present a mere general divergence from each other, but that they assume a specific direction. If an upper molar tooth be held with the two external fangs next the observer, it will be seen that, in relation to the tooth, they incline *backwards*, and on looking beyond them the internal fang will appear to incline rather *forwards* than otherwise. This being the case, extraction cannot well be effected by a force applied exclusively in any one direction, but requires the application of such force to follow the course indicated in the conformation of the fangs. In order to remove



Upper Left Molar
Tooth.

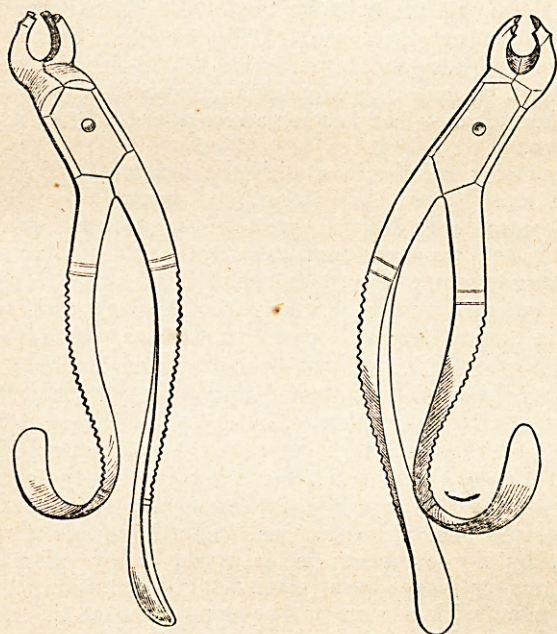
such a tooth with facility, the *external* fangs must be drawn not only downwards, but at the same time *forwards*; while the *internal* fang must be drawn downwards and *backwards*. The only way to accomplish these movements simultaneously is of necessity by making the tooth during extraction describe a slightly spiral movement, making it follow part of the turns of a screw, of which the fangs may be considered to represent the threads. In this manner the directions on either side of the head respectively in which the tooth is to be turned would be forwards and inwards at the same time that it is pulled downwards: in other words, the external side of such molar tooth would be turned slightly forwards while making the downward pull.

Generally speaking, a similar principle of construction seems to be exhibited by the other teeth, although less marked and more frequently modified than in the upper molars. I believe, however, that in this case also the sockets and fangs will be found to partake, however slightly, of the nature of a screwed tap and die,—not, however, as applying to their fangs collectively where more than one exists, but exhibited by each one individually. While, however, I should hesitate to advance any particular *tour de main* as thus indicated for their removal, I have found some advantage in close attention being directed, during this operation, to any sensation conveyed to the hand of a tendency on the part of a tooth to make a slight turn during its detachment or its emergence from the socket, and the expedience of extracting it in that direction.

In connexion with this subject, a single remark may be made regarding the construction of tooth-forceps. The beaks or blades of the more modern forms of these instruments are almost all that could be desired; but the handles would admit of being much better adapted to the natural grasp of the hand in those very different positions it has to assume according to the tooth to be extracted, and the situation in which the operator can most conveniently stand

beside the patient. In this manner, there would be not only much greater facility afforded in operating, but a very considerable amount of suffering to the patient would be avoided.

To expect one pair of forceps to answer for the extraction of every tooth is, it is needless to say, absurd. One pair may be made use of, but only on the same principle that a painting might possibly be painted throughout with one brush. Several qualities among others are essential for perfection in any tooth-forceps: first, they ought to lie clear of the teeth in the opposite jaw; they ought to be accommodated to the natural position assumed by the hand; and they ought to afford the greatest amount of force without entailing irregular or increased pressure in their grasp of the tooth; and it will be seen that pressure in grasping the tooth can only be well regulated where the hand is prevented from slipping along the handles when



Left.

Right.

employing extra force. Two forms of instrument are appended in the accompanying diagram illustrative of these points; the forceps shown being those adapted for the upper molar of the right and left sides.

Of course, in a matter of this kind, where so much depends on practice and opinion, what is here suggested applies only to general principles; any particulars of form and construction may best be left to individual judgment and discrimination. There is no doubt, however, that, by a little more attention to the construction of instruments, and where and how to use them, tooth-extraction would become less formidable in every way.