

the agent upon the lower animals, particularly a series in 1858 by Dr. J. J. Woodward.

The use of the calabar bean has come to be much relied on in the United States. Eighteen cases are reported by Dr. Eben Watson in which this medicine was used, yielding ten recoveries. The dose varies with the effect produced in controlling the spasms. The action seems to be that of a direct sedative to the spinal cord, patients, while under its influence, commonly taking food with ease. One grain may be commenced with as a dose, increasing the quantity as seems warranted.

The preparations hydrate of chloral and croton-chloral have in them considerable promise in this direction. A peculiar action from this latter agent is found, that at first a high degree of anæsthesia in the head is produced, while sensibility in other parts of the body remains intact. The second stage is, that the spinal cord loses its function, and reflex excitability is everywhere extinguished. During this stage, pulse and respiration remain unchanged. The third stage, which is induced by large doses, is characterized by paralysis of the medulla oblongata, and death. Animals may, however, be kept alive by artificial respiration, because the function of the heart is not interfered with; while the ultimate effect of hydrate of chloral is to paralyze the heart.

The local treatment to which recourse has been had in tetanus consists in laying open wounds, their thorough cleansing, and the application of antiseptics; division of nerves, the application of counter-irritants, the employment of sedatives, ice-bags to the spine, cold and warm shower-baths, electricity, attention to inflamed and suppurating wounds, etc.

Trismus Nascentium.—Lockjaw in New-born Children.—The frequency of this condition, and its fatality to a particular order of infantile life, make its study one of interest and importance to the practitioner. It is decidedly a disease associated with the period of the desiccation and phenomenal change occurring with the cord and umbilicus, and is found confined, therefore, to the time associated with these changes,—never happening before the second day after birth, and seldom after the fourteenth.

Tetanus, of which this is a form, has its expression and association exclusively with the nervous system of organic life,—the excito-motor. That trismus nascentium is therefore a special disease, is not an idea to be entertained for a single moment; it is simply tetanus occurring from generally evident causes in the newly-born, and is to have the consideration and treatment of the disease as found anywhere else. Wherever the nervous system of organic life exists in exquisite development, and wherever it is excited from any cause to excess of expression or action, there, also, is found the danger of trismus. Hence in infants of the negro race, and particularly those born of parents of less than average intelligence and resident in hot climates, the condition is found most widely to prevail. In the southern section of the United States, and in the West Indies, the mortality of infantile deaths from

this single cause is estimated by some observers at not less than twenty-five per cent.; while it is affirmed that in the equatorial regions of South America in some years more than half the infants born fall victims to this disease. In an epidemic form in which it is found occasionally to prevail, the mortality of certain neighborhoods has amounted to four-fifths of the births.

That trismus nascentium is not confined, however, to the hot latitudes, is to be inferred, not only from the report of many cases elsewhere, but from its oneness with tetanus proper. According to Dr. Holland, it is very prevalent on the southern coast of Iceland, also at St. Kilda, one of the western islands of the Scottish coast. In Elbing, Prussia, cases are announced as occurring frequently, thirty-seven being recorded from 1863 to 1865 in a population of twenty-seven hundred. In Dublin the disease has prevailed so alarmingly that at one time, for a limited period, nineteen-twentieths of the infantile deaths occurring in the Lying-in Hospital of that city were from this cause, the death-rate being one to every sixth child born. Being attributed to ill ventilation and the absence of proper hygienic requirements, attention was at once directed to these prophylactics, with the result of decreasing the rate to one in nineteen.

SYMPTOMS.—Like the manifestations of the disease as exhibited in the adult, the prodromous period may be deficient in signs sufficiently marked to attract ordinary observation. The child may seem restless and more excitable than usual, but this is apt to be attributed to any other than the true cause. A few hours, or perhaps days, intervene, when the infant, apparently anxious for the nipple, is found unable to take hold of it. This, together with an occasional smothered cry, as if the child were in distress, first brings it under the notice of the physician. If now the jaws be examined, more or less rigidity is found to exist, the masseter muscles seeming the ones principally affected. From these the expression may extend to any others, and does so, not unlikely, in a very few hours; or it may be that the first manifestation of muscular involvement is exhibited in spasm, the jaw being shut with a snap which has, in instances, partially amputated the tongue; or the spasm may affect some muscle of the limbs or trunk. Such commencement of the active stage of the disease is, however, infrequent.

In the fully developed stage of infantile trismus, the spasms are found quite frequent. The agitation of the child is very great. The smothered scream which it emits is peculiarly painful,—itself spasmodic in character from affection of the respiratory muscles. The little sufferer foams at the mouth; the fists are tightly clinched; the feet are flexed upon the ankles, with the great toe abducted; the head is drawn back by the cervical muscles; the surface grows livid, the infant dying in the paroxysm, or, otherwise, either receiving respite in which relaxation ensues, or sinking into death through coma. The duration of the disease is commonly about two days; but cases are recorded where death has not occurred until the third week of the attack.

CAUSES.—First, there may be assumed to be a predisposition (though this

need not of necessity exist), such predisposition being impressed on the child in utero by the hot and foul air and common filthiness of habit which, from its inception, have attended it in the person of the parent who has borne it: this finding proof in the fact that as the condition of parents has been improved, so has trismus diminished, the disease seeking its habitat almost exclusively amidst the squalor and poverty of the lowest and least intelligent classes. Other predisposing causes are found in any and all relations of depressing character. Thus, hot moist days, followed by cold nights, have been sufficiently recognized to be among the most efficient of the predisposing causes, the explanation being found in the interruption of the functions of the skin. Miasma, no doubt, contributes its quota through its depressing action on the nervous system,—tetanus being associated with the period of reaction.

In papers published by Dr. J. Marion Sims, this practitioner advances the view that the cause of trismus nascentium lies in a pressure exerted on the medulla oblongata and the nerves originating from it, produced by displacement of the cranial bones, and especially the occipital, such displacement occurring in the parturitive effort, and capable of being corrected; but, that the cases observed by him were exceptional, and not common, seems clear enough by the universal denial of his premises, following observations elicited by the publication of his views.

Whatever, then, may be a predisposing cause of infantile trismus, the chief exciting one is found in association with the umbilical cord: and first this associates with the tying and excision of it. A cord cut with a dull blade is thus to be put into a condition of irritability, which, reacting on a highly predisposed system, might bring on an immediate attack of spasm. An ill-strangulated cord is to be classed as the second of the offending causes. A common habit with midwives, among the poorer classes, is to wrap the parts with packthread. This is not only an inadequate protection against hemorrhage, as in his experience the writer has several times had occasion to witness, but it is irritating even in the remote aspect of its relation with the general system, and may readily arouse the abeyant irritability.

The umbilical vessels separate from the body, physiologically speaking, as does the stem from the ripe fruit. When such is not the character of the disjunction, the conditions are to be expressed as pathological, being associated with more or less inflammation, ulceration, and local irritation. The ordinary period required for the separation of a funis is from three to six days. During this period the parts should be kept enveloped in a fold of old half-worn linen, prepared as a dressing by snipping a piece out of the centre after the manner of a Maltese cross; the cord to be passed through this hole, and thus, by its envelopment, separated from contact with the person of the child. In hot climates, such dressing, combined with oil, or antiseptics, is the more necessary, as the danger is to be guarded against of having the parts serve as a habitat for the deposit of larvæ,—a not infrequent cause in itself of tetanus.

TREATMENT.—From the constitutional stand-point, nothing more may be done than is to be inferred from the directions given in general tetanus. Anodynes, antispasmodics, anæsthetics, and alteratives may be tried *ad libitum*, but the result will amount to very little if any unappreciated or unremoved cause exists in the way of local irritation. Attention is therefore to have a first direction to the umbilical region, and such attention, if thus given in the incipient stage, will not infrequently result in aborting the attack. If an ill-incised cord be found, let a fresh and clean cut be at once made nearer the body. If the cord be indifferently strangulated, remove at once the ligature, and replace with a well-waxed silk thread, or otherwise place the new ligature nearer the body. If separation be not progressing with its usual physiological harmony, treatment will be needed as indicated. Cleanliness is to be strictly enjoined, and vascular action is to be stimulated or depressed, as required,—not as indicated by the pulse, for this in tetanus affords very little guidance, but, as implied, at the seat of local offence. Among negroes, as remarked by Dr. James S. Baily, whose opportunities for observation seem to have been extensive, “the uncleanness and unsuitableness of the umbilical dressings are by far the most common of the exciting causes of the disease. Among these people infants are found not only fetid with the ammoniacal smell of the urine with which they are wet from morning until night, but are loaded with fecal matter, so thoroughly saturating the appendage of the funis as to render its drying impossible. In consequence of the sphacelated condition of the cord, it gives off the material of death and decay, which, being deposited in direct contact with the active absorbents, must necessarily act as a fearful causation.” This gentleman, who, during a residence in Texas, was able to collect and make notes of two hundred cases, tells us that in his experience he has never observed a case of lockjaw when due regard was paid to proper instructions in reference to the management and dressing of the umbilicus. Tumefaction and redness without suppuration are always, he thinks, expressions to excite apprehension, and are to receive immediate attention. Quoting a Mrs. O., a lady living on the Brazos, in Texas, observation is directed to the value of a mush poultice applied to the navel immediately after birth, to be continued until the falling off of the cord, or while any signs of inflammation exist, the lady asserting that with such practice employed with her own servants she has never lost a case. This, however, evidently applies to the use of the poultice as a prophylactic,—a direction, indeed, in which the physician finds his advice most useful. Mixed with such a poultice an antiseptic would certainly add to its effectiveness.

TRISMUS DENTIUM.

In the chapter on Dental Anomalies we studied the process of maxillary enlargement, and understood how that process was, in part, counterbalanced by an untimely extraction of the deciduous teeth. It was further shown how certain derangements of the dental organs are a common, if not a necessary,

sequence to such abridgment of the arch; and, among other ill effects, reference was made to the impossibility of a natural and healthy evolution of the wisdom-teeth, and to conditions favoring periodontal inflammation. In this section we are to consider lockjaw as it has a signification exclusively surgico-dental.

Such dental signification, however, will, it is apprehended, outside of tetanic conditions proper, be recognized as having widest relationship to the lesion, and, indeed, if experience has not been uncommonly one-sided, it will be found to have the very closest relationship; in every twenty cases of local trismus, eighteen have, as the primary lesion, periodontitis, in some of its varied forms.

We have considered the retraction of the dental arch. We will now look at such lesions as this retraction engenders,—lesions pertaining to the subject under consideration.

The troubles of an individual afflicted with a contracted dental arch are most apt to begin at about the fifteenth or sixteenth year of age. If you look into such a mouth you find the teeth crowded into most uncomfortable-looking positions. The last molar of the lower jaw you will see, quite likely, jammed into the ramus; while the same tooth of the superior jaw is found occupying the very extreme of the tuberosity of the bone.

At this period, unless, fortunately, the teeth are possessed of uncommon resistance, they will be found breaking down from approximal caries; while, as the result of such caries, combined with the crowded condition of the fangs, the alveolo-dental membranes enter into a subinflammatory state, and become as ready to take on acute disease as is tinder to respond to a spark.

If, then, interference with the elongatory process has been such as to yield these troubles when only twenty-eight teeth have erupted, it is plain that the development of the four dentes sapientiæ must proportionally add to the difficulties. Only by appreciating the character of such trouble can we fit ourselves to abort its lesions.

These lesions are periodontitis, alveolar abscess, stomatitis, otitis, caries, necrosis, trismus.

In the chapter on Anomalies, it was remarked that all dental troubles arising from retraction and diminution of the maxillary arch are to be guarded against by a timely extraction of certain of the permanent teeth; and from this we are to infer that a lesion arising from an advancing wisdom-tooth is also to be provided for on the same principle, namely, by extracting the second molar, thus securing a required alveolus.

These pathological conditions, and the remedial and prophylactic indications so plainly written over them, it would seem impossible, because of their very simplicity, to overlook; that they are overlooked, however, is too evident, from the many secondary associate lesions which the surgeon finds himself constantly called on to treat.

The view has been advanced that the majority of the cases of trismus will

be found to have, as the primary irritant, some periodontal trouble. Of course this is to be understood as not including trismus neonatorum, or any trismus traumaticus, the lesion of which is of different signification and self-evident. A child might get a severe burn on the cheek, and trismus be a result of the innodular tissue, which would close up the break in the continuity. Anchylosis might exist, the sequence to articular disease, as we have studied. Traumatic tetanus affecting the muscles of the jaw has, as we know, a primary cause combined with peculiar nervous disturbances, which would give the diagnosis. But it is to the numberless cases of so-called idiopathic trismus that allusion is made, and to the cases of trismus which have evidently a local signification alone; that signification not being always very evident, or otherwise being associated with so many complications as not to be readily distinguishable.

Reports of case after case of unappreciated local trismus come to our attention,—of the lesion being referred to this cause and the other cause,—the treatment being as various as the diagnoses. Many of the inferences thus presented are, without doubt, just and acceptable; but it is to be offered as a reliable experience that where, personally, the author has had the opportunity of seeing such examples as would seem to be their parallel, he has mostly been able to point out some dental disturbance, simple or obscure, constituting the primary lesion.

In the epitome of Braithwaite, vol. ii. page 191, is a case, the diagnosis and treatment of which will serve as an example. Dr. S., the practitioner who reports it, ascribes the trismus to a complication of inflammatory and nervous derangements. Now, while the inference may be wrong, yet from the history, and from the age of his patient, the writer would have expected, had he seen the case with him, to have been able to show that an ulcerated sore throat, to which Dr. S. alludes, had its primary lesion in a trouble of the alveolo-dental membrane; the reader, however, can draw his own inference. The case is compared with one from the author's practice.

DR. S.'S CASE.—*Acupuncture in Protracted Lock-jaw.*—The patient, twenty-five years of age, unmarried, had for years been subject to attacks of suppurating sore throat, in which the jaws often became nearly immovable for two or three days before the discharge of matter. In 1826 she had a severe attack, from which resulted complete lockjaw, accompanied with hysterical symptoms, which attack yielded, after six weeks of treatment, so far that she could put a teaspoon in her mouth. After nearly a year, the jaw again became completely fixed, without accompanying sore throat, and the same treatment, with galvanism, was tried without effect. Although unequivocally connected with hysteria, there was reason to think, from the inflammatory action with which the disease set in, that the affection was not purely spasmodic, but was kept up by the rigidity of the muscles closing the jaw produced by inflammation; in consequence of which the antagonistic muscles had become inadequate to the effort of opening the mouth under the mere influence of volition.

It was this view of the case which made Dr. S. think it more reasonable, in making trial of the needles, to insert them into the muscles opening the jaw, in the expectation of exciting them to such a contraction as might overcome the rigidity of their antagonists.

On each of the two following days two needles were inserted, one on each side of the mesial line between the chin and the hyoid bone, the effect being short, conclusive efforts. The teeth began to grate on each other, and the jaw was drawn from side to side, not by single alternate attractions, but by severe convulsive movements on one side, followed by a nearly equal number toward the other side, interrupted occasionally by a momentary opening of the mouth to the extent of about two fingers'-breadth.

The convulsions continued after the needles were withdrawn; ceased and became renewed again after a few minutes, and returned spontaneously in the evening on both occasions. Some increase of voluntary power over the jaw followed both applications of the remedy. After each trial of the acupuncture some improvement was observable; but, as the spontaneous convulsion was almost always followed by a slight loss of motion, the progress made was slow.

The needles were usually inserted to the depth of half an inch, and sometimes to the depth of an inch.

The acupuncture, together with leeches, was used for ten days, by which time the patient could open the mouth two fingers'-breadth and chew soft substances. She then went into the country for five weeks, by which she derived great benefit; but, being exposed to cold and wet on her return, had another severe attack, the consequence of which was the loss of much of the voluntary power over the muscles of the jaw. The needles were again resorted to, with the same effect as before; but the pain produced by the spasms was greater, and lasted longer, while the spontaneous convulsions recurred several times in the evenings after each of the first trials. As leeching did not succeed in mitigating these convulsions, the temporal artery was opened with the desired result, and with the effect at the same time of restoring, to a considerable extent, the sight of the right eye, which she almost lost with the first attack of lockjaw. A second detraction of blood from the same vessel diminished the force of the attack so much as to permit the acupuncture to be used twice a day. Nine days after the renewal of the operation, the jaw had recovered its natural extent of motion.

The aphonia, which had come on at the same time as the affection of the eye, was completely cured by a smart shock of electricity.

The case referred to as from the author's experience occurred in the practice of a friend,—relation with it being through consultation. Its history is as follows:

For a period of several years the patient, Mary C., twenty-four years of age, had been troubled with attacks of sore mouth and throat whenever she unduly exposed herself; these attacks had always associated with them partial

loss of voice and general excitation of her whole nervous system, while her jaws were invariably stiffened to a greater or less extent, according to the severity of the attack.

On each of these occasions she had depended for relief on domestic treatment or on homœopathy. At the period, however, of her coming under the care of Dr. W., she was suffering from such severe trouble as to have decided her usual attendant into dismissing the case. The jaw had remained so firmly locked for a period of six weeks that it was with difficulty a knife-blade could be introduced between the teeth. This particular spell had come on as usual; but the patient said there was something about it which made her think that her teeth were implicated; she could not say what tooth or teeth, but thought it was one or more in the lower jaw.

Now, whatever was to be discovered as the primary lesion in the case, its surgical feature, as it presented itself to our attention, was an extra-capsular mass of coagulated lymph about the temporo-maxillary articulation, which overbalanced the influence of the depressor muscles, holding the parts, of course, in a state of false ankylosis.

We asked the patient if, when these attacks came on, her face had not always swelled more or less. She said that it had. We asked her if the cheek had not always a stiff, hard feeling in it, which wore away gradually after such attacks. It was so, she told us.

Dr. W. coinciding that the speediest way of overcoming the trismus was by mechanically breaking up the adhesions, we procured a pine stick about a foot in length, tapering, wedge-shape, from an inch and a half base. The thinnest portion of this wedge was, after much trouble, passed between and across the dental arches, and, after being forced a little farther on, the stick was turned on its axis, the adhesions yielding before the strain. Thus the mouth was opened at least an inch, and we were enabled to explore the cavity in search for the lesion on which the trouble depended.

So far this case will be seen to simulate closely that of Dr. S.'s: sore throat, aphonia, hysteria.

Now, here we found all the trouble emanating from a wisdom-tooth projecting, as it were, from the very angle of the jaw, and half covered by an operculum of gum drooping over on it from the ramus. The tooth of course we at once removed. The patient was then dismissed for the day, a sorbefacient being directed for external application.

The next afternoon, at four o'clock,—no inflammation having supervened,—we completed, by our mechanical appliance, the unlocking of the jaw. In a week the patient was dismissed well. She has since had no return of her spells, and will not have.

Parallelism between these two cases will be recognized; but should the reader disagree, study of them will not be without its profit.

One of the most severe examples of inflammation of the mouth, throat, and face, combined with a bad trismus, ever seen by the author, was in the

person of a medical student in the office of a Dr. C., of this city,—the primary lesion being such a half-erupted wisdom-tooth as has been alluded to as being found in the preceding case. This gentleman, when first seen, had been suffering for two or three weeks. The operculum of gum had been split up on two different occasions. Antiphlogistics in every form had been resorted to. The patient consulted under the anticipation that nothing was to save him from necrosis of the angle of the bone.

We gave this man one and a half pounds of ether; it seemed impossible to get him into an anæsthetic condition, his physical suffering was so great. Prying his mouth open, just sufficient to introduce the key of Garengot, the offending tooth was extracted with much difficulty. In three days the man was attending to his studies.

This peculiar lesion of a half-erupted wisdom-tooth may well claim more than a passing attention. Many a practitioner has been so deceived by the anomaly as to have been led widely astray in the study of his cases.

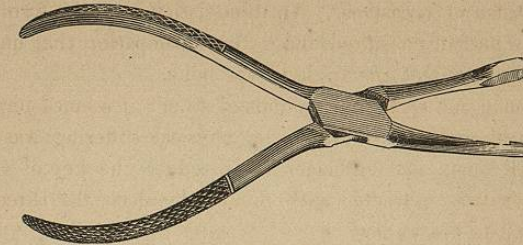
Where the condition exists, it is to be noticed, on looking into the mouth, that only the anterior face of the tooth has fairly erupted, the other two-thirds being overlaid by the integuments of the ramus. You infer that the development is not yet perfected, and consequently it does not even occur to you to associate disease with the parts; but this tooth, only a single cusp of which is through the gum, may have caries extending into its pulp-cavity, or may be the seat of the most aggravated periodontitis. It is the common impression that wisdom-teeth decay early; that they are not a substantial class of teeth. The fact is that four-fifths of these organs which decay so soon have been destroyed by this operculum of gum. The explanation is very evident. The decomposing epithelial scales, and other débris of the mouth, combine in the acidity engendered of their disintegration to corrode the structure of the tooth, thus quickly destroying its integrity. The writer is sure that he has seen more than a thousand cases illustrative of this fact; and if any practitioner will take the trouble to dissect off this fleshy lid—the proper treatment by the way—and examine with a delicate probe the sulci of such teeth, in nine cases out of twelve he will find caries.*

Such a lesion will at once be recognized to have important secondary relations. For example, the writer has been consulted time and again by persons who have been sufferers for a considerable period from what has been pronounced and treated as neuralgia. Their teeth had not escaped observation,

* FORCEPS FOR INCISING OPERCULUM OVERLYING WISDOM-TOOTH.—The lesion of an operculum wholly or partially covering a half-erupted wisdom-tooth is one presenting very frequently to practitioners. The indication in every one of these cases is removal of the fleshy projection. To accomplish this a punch forceps furnished by Ash, of London, and introduced into this country by Dr. Sheppard, of Boston, offers itself as better adapted to the purpose than any other means familiar to the writer. This forceps consists of a blade the shape and size of the operculum, which blade is slipped between the flesh and the grinding face of the tooth. Closure of the handles catches the flesh in a fenestra, fully and cleanly and instantaneously excising it. (See Fig. 535.)

but had been examined and pronounced sound. There has been found in such mouths not infrequently this operculum of gum overlying the wisdom-tooth.

FIG. 535.



Operculum excising forceps. (See foot-note on opposite page.)

This has been dissected off, exposing compound caries. Such teeth have been extracted and the patients have been instantly relieved of their odonto-neuralgia.

Again; these fleshy cups, catching, and holding in contact with the soft parts, insoluble particles, as often found mixed with the food, will provoke periostitis, or even ostitis of the angle and ramus of the jaw. The writer has seen most alarming inflammatory attacks thus aroused. The tooth in these cases, as is somewhere else remarked, will always be found responsive to the stroke of an instrument. Its periodontium being inflamed, common sense would direct that the organ be at once extracted. Such extraction, however, is occasionally among the almost impossible things. A tooth so affected will not infrequently have but a point erupted not larger than the head of a pin. In these cases the best thing to be done is to take out the adjoining molar; this relieves the pressure on the ramus of the jaw, and gives room for the posterior tooth. It commonly yields a cure.

Trismus, depending on such lesions, is not infrequently the only external evidence yielded of the existence of the condition. The jaw stiffens and relaxes, as an odontalgia comes and goes. In such ephemeral cases it is not at all unlikely that the locking is exclusively a nervous action, or reflected irritation,—slight and ephemeral local inflammatory action being the irritant.

Wisdom-teeth erupt from the seventeenth to the thirty-fifth year; commonly, however, at about the eighteenth year.

Some years ago the author treated a case of trismus, the history of which is to be given as a very common one:

The patient, David B., a farmer, after doing a hard day's work, and being much overheated, threw himself down at early evening, in a cool outhouse, to rest. Here he fell asleep, not waking until near midnight. The next day he felt a soreness in the left superior alveolar arch, which soreness increased for two or three days; after which it deserted the teeth and passed to the antrum. Then commenced a swelling in the integuments of the face, which