

being, to make haste slowly: fracture of the neck may readily attend rough manipulation. Should such fracture occur, the desirability of making a false joint is to have consideration: if a diagnosis exhibit complete fixedness of the head of the bone by an osseous relation, then nothing better is to be attempted than the creation of such false joint, union of the parts being prevented by passive motion, and inflammation combated through antiphlogistics. Cases offer where the only possible prospect of relief exists in the production of such a false joint by operation particularly directed to that end. The author has met with success by excising from the posterior part of the body of the bone a V-shaped piece. A flap raised, the engine quickly removes the section. Saw or bur is used; the latter preferably.

In such conditions of ankylosis as depend strictly on superficial cicatrices, the propriety is always to be considered of a plastic operation, which, removing the deformed tissue, shall replace it with that which is normal, secured from some convenient part in the immediate neighborhood. If the cicatrix to be replaced be small, adjoining portions of the cheek may furnish the required material; if, on the contrary, it be large, the neck will have to be depended on, or it may seem preferable to employ the Italian method of taking a flap from the arm. The principle of the operation consists in mapping out on the part from which the flap is to be made such extent and shape of surface as shall replace that designed to be removed. The cicatrix being dissected out, and all bleeding checked, the flap as marked is raised, leaving it attached alone by its pedicle; and when hemorrhage in this also has been controlled, and the surfaces begin to glaze, it is carefully to be turned on the pedicle into its new position, and, being fixed by stitches, is to receive the attention required by wounds in general. The space left by the removal of the part is to be drawn together by stitches, adhesive strips, or other convenient means. Before undertaking a plastic operation, however, nothing is more necessary than to possess an appreciation of the reparative and nutritional powers of the patient. To operate on a person in a typhoid state, or on one the plasticity of whose blood is destroyed by the influences of syphilis, scrofulosis, scorbutus, or mercurialization, would be simply to court failure. (See *Plastic Surgery*.)

Concluding this consideration of fixedness in the jaw, a résumé of the subject exhibits as causes of the condition,—

- 1st. Spasm; the treatment being of constitutional consideration.
- 2d. Ankylosis by muscular induration; the treatment being by local medicaments, combined with the employment of the dilator.
- 3d. Osseous ankylosis; the treatment being the breaking up, by section or otherwise, if permissible, of the bony bridges.
- 4th. Cicatricial ankylosis; the treatment being by dilatation and by plastic operations.

## CHAPTER LVII.

## NEURALGIA.

THE term neuralgia is from the Greek roots *νεῦρον*, a "nerve," and *ἄλγος*, "pain." It signifies a condition, or an effect, not a cause; or, if this definition be not an absolutely correct one, the exceptions to the rule it would form are exceedingly few. For such reasons it is, as commonly employed, a meaningless term, expressing a condition about as definitely as the word suppuration conveys idea of the meaning of inflammation.

Neuralgia, as the appellation has definite application, refers to paroxysmal pains, localized or metastatic, presenting no manifestation of any lesion at the seat of pain outside of the single phenomenon.

The pains of neuralgia are mostly, although not exclusively, acute in character, are confined to the tract or to the periphery of a certain nerve, remit, or more commonly fully intermit, and are accompanied with tenderness of the part involved only when an accidental associate lesion may exist, or when an irritation is so severe or has been so long continued as to have reacted on the neighboring vascular system.

When, then, a practitioner has his attention directed to a seat of pain without apparent lesion, the matter of first importance is an appreciation of cause. To say that such a one has neuralgia, and to treat him with nervines, is to say just nothing, and certainly is to do nothing in the way of good except indeed by accident. A first duty is to search for cause, and, if discoverable, to remove it, if this be possible. Now, the causes of neuralgia are, as farther on will be shown, sometimes very evident, and very easy of removal; and it will be seen, from illustrations offered, that one, from lack of observation, may utterly fail in giving a relief very easily and naturally afforded by another.

Correctly speaking every pain is a neuralgia. It is quite proper to say rheumatic neuralgia or gouty neuralgia. The suggestion affords a lesson in diagnosis. Rheumatism is always accompanied with vascular perversion; the pain is not distinctly localized, but is diffused over a part involved; as a general thing it is a soreness rather than sharp, acute, concentrated pain. Movement aggravates this soreness, changes in temperature affect it; it is not paroxysmal, although it may be, and generally is, remitting; in short, it has a history, and this history is not difficult to read. Gout exists in heredity and in over-generous living. It is decidedly inflammatory in its local manifestations. It attacks in preference small joints. It is accompanied by œdema, by congestion, and by enlargement of the veins. If it prove metastatic, the seat

of transfer presents like vascular phenomena with the original inflammation. The cause to be removed in rheumatic neuralgia is rheumatism, in gouty neuralgia, it is the gout.

But is there not a condition—a disease—which is, or might be, termed neuralgia?—as, for example, gout is a disease with an individuality, or rheumatism is a disease. If, without being influenced by other than his own observations, the writer were to answer the question, he should say decidedly there is not; and his reasons for the denial would lie in the fact that in one way or another he has become conversant with many cases which have stubbornly resisted a long course of treatment founded on an abstract neuralgic theory, but which have rapidly and readily yielded on the discovery and removal of some lesion of which the pain proved to be simply a sympathetic connection,—as, for instance, otalgia, hemicrania, or even sciatica, from an exposed tooth-pulp, from a splinter of foreign substance, or from the pressure of an exostosis. It is certainly true that there is a class of persons who might be termed neuralgic; these do not belong strictly to what is called the nervous temperament, but are the anæmic and prostrated. A plethoric temperament disposes to inflammation, but plethora is not inflammation; it is only a predisposition; the nervous temperament is only a predisposition. It cannot be denied that cases called neuralgia, and treated without ideas of specific lesion, do very frequently get well; but has not the indication been accidentally met, just as with the Dewees' carminative a restless child is often prescribed for and cured, no definite idea of the ailment being entertained, a single medicine possessing the requirement of various conditions?

If neuralgia, then, be simply a phenomenon,—simply the expression of an immediate or distant lesion,—scientific preliminary treatment lies in search after cause. But is cause always evident? Not certainly to our present acquirements. Cause, nevertheless, exists, and, failing to discover it, a practitioner is compelled to desert principles and treat experimentally.

Are there predisposing causes of pain-radiation? Undoubtedly. These may, and always are to, receive a proper degree of attention, as, in antagonizing them, it may prove to be the case that the proper lesion is not in itself of sufficient importance to inaugurate or maintain a neuralgia. Thus, of predisposing causes, a damp, cold atmosphere is to be named, fatigue, over-excitement, excess in drinking, poor diet, the too free use of coffee or tea, loss of

\* Dr. Anstie, whose monograph on Neuralgia has attracted much attention, as well as criticism for and against, advances and defends the position that as regards both the seat of what must be the essential part of the morbid process, and the general nature of the process itself, we must possess very definite information indeed. In the beginning of his third chapter he says, "I expect to convince most readers that the essential seat of every true neuralgia is the posterior root of the spinal nerve in which the pain is felt, and that the essential condition of the tissue of that nerve-root is atrophy, which is usually non-inflammatory in origin." There can be no doubt that such condition is to be met with as an explanation of peripheral pain; but such a condition is merely one cause of the neuralgia.

sleep, costiveness, diarrhoea,—in short, anything which interferes with the easy and proper performance of functional life.

In miasmatic neighborhoods, neuralgia frequently assumes a periodic type, influenced evidently by the malaria. It is without doubt true that the exhibition of quinine will and does, not infrequently, cure such cases. Whether such cure is because the medicine controls the full and complete cause of the trouble, or only removes an exciting cause in the absence of which nature gains the mastery, need not be discussed, it being a matter of certainty that it is by no means always the case that in the destruction of periodicity pain is removed.

Syphilis is another of the exciting causes of neuralgia. Patients have sometimes great pain in diseased teeth, which can be held completely under control, although not cured, by iodide of potassium. The pain undoubtedly is from the teeth, as with a subsequent removal of these organs the trouble disappears.

To epitomize the subject is to advance that in a state of health the nervous system represents a poised balance: it is neither excited nor depressed; it works in entire harmony with its requirements. Apply a source of irritation, and this harmony is destroyed. According as the amount and extent of irritation, so the amount and extent of derangement. Life, happily says Bichat, rests upon a tripod of innervation, respiration, circulation. What affects one of these legs affects the whole body. To appreciate the phenomenon of neuralgia is to appreciate relations,—is to search over the economy until wherever a lesion exists it is exposed and comprehended.

If after such manner of studying diagnosis a first view be directed to the nervous system, we look for a lesion in that part which, by the expression of pain, seems most markedly implicated. The most decided cases of neuralgia are, without doubt, odontalgic. A tooth decays until the cavity containing the delicate nerve is exposed; the neuralgia has the simple, single signification of a direct irritation. Exostosis of a tooth-root presses on nerves ramifying in an alveolo-dental membrane; the signification is similar.

Let reference be made to a neuralgia occurring in a part after amputation. Is cause not most frequently found in the squeezing and pinching of a nerve caught in the cicatrix? Is it not the same history where tumors grow about and press upon some nerve-periphery? May there not be instanced neuro-matous expansions found in stumps, evidently enough sources of pain? Let a different view be considered. Are there idiopathic inflammations of nerve-substance? Do nerves in themselves degenerate and ulcerate? The subject may be looked at from a still wider stand-point. There is no doubt that a pure nervous irritation of the system at large can exist. There is certainly an individuality living in this system. It has a mode of action of its own, and this action, as remarked by Dr. Wood, is susceptible of exaltation, depression, or deprivation in itself, and from the influences of its own peculiar agents. But can or do these vicissitudes express themselves ever, or even

occasionally, in sharp neuralgic pains? Connected with the digestive function we have often nausea and vomiting; with the secretory, disorder of the liver and kidneys; with the respiratory, hurried and otherwise irregular breathing; with the circulatory, a frequent and agitated, though seldom full or energetic, pulse. As the offices of the brain, suggests Professor Wood, are various, so also must be the signs of its excessive excitation. Irritation in the brain obeys the general laws of that morbid affection. If moderate, it exalts the healthy functions without otherwise altering them; if stronger, it more or less degenerates the functions; in great excess, it entirely changes or abolishes them. Thus, sensation and perception may be rendered simply more acute, or may be deranged, producing vertigo, pain, and every variety of disorder in vision, hearing, touch, etc., from buzzing in the ears, unnatural coloring of objects, a sense of tingling, formication, etc., to complete hallucination. The intellectual faculties and the emotions may be excited into increased vigor, or may be completely perverted, as in delirium and insanity. The general overseeing faculty of the brain may be simply stimulated to increased vigilance, to a more ready and rapid response to all the intimations of its dependent functions; or it may be thrown into excessive disorder, evinced by restlessness, jactitation, obstinate sleeplessness, etc. The motor faculty may merely impart increased activity and energy to the muscles under the influence of the will; or it may throw off more or less completely subordination to that principle, and give rise to every variety of spasm and convulsion. Finally, all the functions above referred to may be overwhelmed by an excess of irritation, and more or less completely lost in stupor and coma. This is nerve-irritation, from causes or influences which reside in, or in association with, the system, and to be considered alone in connection with the system.\*

Reactions of vascular perversion on the nervous system are to be considered. Coup-de-soleil and apoplexy may be esteemed opposite conditions in such reactions. How frequently have all the phenomena of partial compression—headache, giddiness, buzzing in the ears, disordered vision, tingling, formication, numbness, drowsiness, mental confusion, spasms, convulsions, etc.—been quickly resolved and removed by the accidental rupture of a nasal vein having communication with a meningeal sinus! And how happily, when similar conditions have come on from long-continued chlorosis, has a course of iron relieved them! Every portion of the encephalic mass, every portion of its continuation in the spinal canal, every nerve-periphery, requires a certain amount and a certain character of blood to keep it in proper poise and nutrition. Too much blood, and too nutritious, and we have derangement from over-stimulation; too little, and too poor, we have it from lack of pressure, lack of nutrition, and, in many cases, from effusions.

Derangements in respiration act as predisposing causes to neuralgia. A patient who labors under an inability to aerate his blood, whatever the cause,

\* Practice of Medicine, George B. Wood, M.D.

fails to relieve that fluid of certain poisonous qualities, which, of necessity, sooner or later disturbs the nervous economy.

Anything and everything, in short, it is to be said, which acts as a depressant in the vital economy, whether by over-stimulation or by under-nutrition, is to be thought of, and considered, in neural derangements; overstudy, sensual excess, indigestion, hepatic and nephritic diseases, repression of the cutaneous circulation, the depressing passions, as fear, grief, melancholy; the employment of sedative poisons, as opium, tobacco, chloroform; living in an atmosphere impregnated with irrespirable gases,—any of these may assist some otherwise incapable lesion in determining an attack of neuralgia.

Definite note is to be made of the fact that poison long continued proves so great a depressant of the vital economy that, though a lesion be fully and undeniably exposed and removed, secondary relations are apt to show themselves, which prove, not infrequently, of worse offence than the first. The writer directs particular attention to the clinical fact that sooner or later, after the cure of some special, severe, and long-continued neuralgia, the general health is found to become deranged, this derangement showing itself as of common systemic import, otherwise as associated directly with some vital organ.

The most extreme case of nervous mania that has ever come under the observation of the writer, this being accompanied with general hyperæsthesia and local neuralgia, was in the person of a carter, addicted to excessive smoking. For three days this man was uncontrollable by any but physical restraint; at the end of which period, having secured a short interval of sleep and quiet, there was placed between his lips a pipe of the strongest tobacco. The patient was finally cured by making the section of a nerve, and treating him with tobacco and sedatives, just as one treats delirium tremens with whiskey and narcotics. In this case there can be no doubt that the local neuralgia was goaded to its intensity by the perverted condition of the general nervous system. Similar cases associate with the improper use of opium, and with the abuse of the sexual instincts.

In cases of persons long habituated to the use of opiates as a relief in neuralgic pain, operations which have considered and which have truly relieved the system of the lesion of offence are not apt to be followed by the immediate relief anticipated. Here is a point in which clinical observation agrees with deductions of Dr. Anstie, that "pain involves a lowering of function;" on the other hand, it is not unreasonable to suggest that the condition is one of "hyperæsthesia." Pain is of both conditions, and is to have such appreciation if it is to have cure.

The first of the propositions quoted finds demonstration, plain enough, in the exhibitions of the inebriate, who manifests the first symptoms of delirium only on the deprivation of the wonted stimulus, his aberration having the meaning of exhaustion consequent on over-stimulation, as shown in what might be termed the synthetical proof of the primary demand for stimulation.

From his own practice the author might cite many interesting cases illustrative of the difficulty of affording ease to a patient addicted to, and long dependent on, opiates, even where the original disease undoubtedly has been cured,—as, for example, in such instances as the removal of cicatrices or of foreign bodies; these cases, however, are not at all in proof of neuralgia being a disease in itself, the reverse rather: pain being the expression of exhaustion consequent on long-continued over-stimulation. No direct lesion remains in such instances to be considered. Cure lies in getting back a lost equipoise. Exactly what this lost equilibrium may be called is entirely immaterial. Let it be named vaso-motor paralysis, as designated by Dr. Anstie, and let it be said that the paralysis is a “direct extension of the original morbid process from the sensory root to the motor, affecting the original fibres in the latter, which are destined to control the calibre of the ocular and facial vessels.” Granting the premise of neuralgia being an expression of the presence of an irritant, or accepting the hypothesis of Anstie as to its being a condition of diminished vitality, it must certainly be felt that the hypodermic injection of morphia,—of obtunding agents,—so continuously practised and recommended, has in it only the virtue of covering a wound temporarily from sight and calling it well; indeed, it is much worse than this, it is exhausting more completely that which is already weak; it is making neuralgia; it is treating effect,—taking no heed of that which is the cause of effect.

It is not designed to convey an idea, however, that opiates are unjustifiably used in neuralgic conditions; pain in itself is, as has been suggested, a cause of exhaustion, and it may prove the lesser of two evils to moderate or annul pain. But opiates are to be employed as adjuncts. When a practitioner finds himself forced to rely upon such medicaments, the confession is extorted commonly that he knows solidly nothing of what he is treating.

It is to be accepted then as the proposition of this chapter that neuralgia has its existence in a lesion. As a corollary it is deduced that treatment of neuralgia is treatment of a lesion.

Lesions resulting in neuralgia are of every possible kind and situation. The illustrations appended have the meaning of propositions in diagnosis.

**1. Tooth and Uterus.**—Miss A., unmarried, thirty-five years of age, neuralgia situated in a bicuspid tooth of lower jaw; pain of nine weeks' standing; unbearably severe.

**TREATMENT.**—Tooth being carious and of little value, removed. No benefit. Examination directed to all the teeth of the mouth showed no associate lesion in any of them. Search for cause, extended over the system at large, discovered an ulcer upon the inner face of uterine fundus. The cure of this ulcer resulted in cure of the jaw pain. Later this same patient applied to the writer for treatment of a defect in refraction; this defect being so great as to require for its correction glasses ground as follows:

R.—Right eye + 48 = c × 60 ax 35.  
Left eye + 32 = prism 4 ax 0 = c + 48 ax 145.

The lenses, constructed to order, worked so perfectly as to elicit from the patient the remark that she had never before seen the world as it is. Six months later they ceased to work at all; the lady being returned for consultation by her physician under an impression that she was going blind. Satisfied as to the correctness of the glasses, attention was at once redirected to the uterus; ordinary sponge tents being used for the exposure. The ulcer was back. Cure of it corrected the amblyopia.

**2. Tooth and Eye.**—Mr. —, thirty years of age, mydriasis and pain of two years' standing. Cause, in this case, lay in an encystment of a cuspid tooth. Cure, which was so immediate as to be almost complete before the patient left the office, was found in breaking up the cyst and taking away the enclosed organ.

**3. Tooth and Ear.**—Patient, a medical student. Otagia of five weeks' standing. No expression of local cause. Examination directed to the teeth discovered a nodule in the pulp of the most immediately neighboring dens sapientiae. Instantaneous cure resulted from extraction of the tooth.

**4. Tooth and Ear.**—Patient, a professor of otology. Pain and ringing in the ear constant. Cause found in an undecayed wisdom-tooth which nature was making an effort to throw off. Extraction was succeeded by immediate cure.

**5. Maxillary Nerves and Head.**—Mrs. B., wife of an undertaker, suffered for a long time from periodic attacks of pain about the face and head. This person, exceedingly quiet and retiring, spent most of her life in sunless rooms surrounded by the melancholy paraphernalia pertaining to the business of her husband. She was anæmic, and of poor general health and spirits. Although she had certain bad teeth, yet the pain from which she suffered had never seemed associated with them; indeed, so insensible were these organs to ordinary agents of irritation, that a diagnosis was founded alone on her general condition and surroundings, and remedies applied entirely in such direction. Tonics were administered, window-shutters unbowed, exercise and amusement, conjoined with generous living, were advised; even with this entire change the patient failed to improve, but, on the contrary, grew worse. The diagnosis thus discovered at fault, the teeth were extracted; still the condition persisted, the pain increasing. The lady was now treated for over a year, the pharmacopœia being exhausted in her case. Called in consultation, and acting on the belief of the existence of a special lesion in all such cases, the author determined, with the concurrence of the gentleman in attendance, to make a most careful exploration of her whole system. At this period the pain had assumed, and continued, the impression of an iron clamp about the head, terminating beneath the chin, which clamp seemed daily contracting itself. The terror and pain of this impression had become so great as to convert the patient almost into a lunatic. On inquiry, it was found that her internal organs had been most carefully examined, and inferred not to be in fault. Investigations, therefore, were commenced externally.

First, was there any remaining tooth or teeth implicated? The organs were examined for caries, for pulpitis, for nodules, for necrosis, for exposed cementum. The teeth were in no wise involved. Next the spinal cord was explored, and, through its expressions, the encephalic mass; organically, the trouble could not be found reflex from these points. Every articulation, the line of every artery, vein, and nerve was looked at so far as these could be followed. Every observation and fact which might throw light on the case were considered without success, as any discovery of an exciting cause was concerned. Finally the oral cavity was returned to. The teeth which had been extracted the year before were the molars and premolars of the left superior jaw. Might there not possibly have been just the smallest particle of one of these teeth left in its socket? Pressure was being made in the canine fossa, when the patient made slight complaint; it was the only point which had yielded difference in sensation. Now, what was this sensation, and what did it mean? It was not pain of which the patient complained, not discomfort; it was simply difference of sensation. It was a point, however, which had yielded expression. It was in the line of the diagnosis to infer that here existed something,—the lesion, perhaps, of which we were in search. Acting on this hint, an exploratory trephine of the antrum was made. This discovered that branches of the infra-orbital nerve running across the cavity had enlarged to the size of knitting-needles. These enlarged nerves, of which there were two, were cut away. The patient was immediately relieved, and, although ten years have passed, she has had no recurrence of her neuralgia.

**6. Tooth and Scalp.**—Patient, a young lady, who shortened a summer and fall campaign to come to Philadelphia for advice concerning neuralgia of the face, and of the ear and scalp. She described her agony as being sometimes so great that only from chloroform could she get even a temporary relief; had been taking tonics and opiates throughout the summer; had no pain in any of her teeth, although on the upper jaw was a pulpless molar. Examining her mouth, attention was attracted to a peculiar overriding of the second bicuspid tooth of the lower jaw by the first molar; the employment of a delicate curved probe revealed caries of the first of these teeth exposing the pulp; the tooth was extracted, and the distant and apparently dissociated neuralgia instantly disappeared.

A tendency to nervous irritability which exists in this patient may very well be re-aroused by the presence of the upper dead molar; if this should prove to be the case, she is advised to have it extracted.

**7. Urine and Nervous System.**—During a late midday meeting of the class of the Oral Hospital, convened for the purpose of experimentation in analyses of human fluids, the urine of one of the students, a martyr to neuralgia, was offered for examination, the heat test of which exhibited an opalescence quickly passing to the showing of (apparently) albuminous threads startling as to quantity. The addition of nitric acid dissipated instantly both

opalescence and threads, proving the coagula to be not albumen, but lime salts, and directing attention to the immense waste going on in the nervous system as a possible, not to say probable, cause of the young gentleman's disease. As this person has had his case under examination from time of entering the school, a year and a half back, without having come either to cure or to a satisfactory understanding of his condition, he was put at once on the syrup of the hypophosphites with a view of finding correlative proof, if such existed, as to inferences arising out of the condition of his secretion. The specific gravity of the specimen was 1030.

**8. Inferior Maxillary Nerve and Face.**—Lesions of the inferior maxillary nerve, where it lies in the maxillary canal, are assuredly more common than is generally supposed. Diagnosis of such lesions lies in the fact that pain, however it may shift about, is distinctly referable to the locality, and to evidence as afforded by a certain obscure tumidity never, perhaps, entirely absent. As a rule, the origin of these lesions is to be traced to some periodontal affection, although not infrequently direct injury has been inflicted on the nerve by an unskillfully directed dental drill. It is in this connection to be mentioned that cases seem to exist where a peripheral nerve of one side of the jaw passes to the other side, and where the mylo-hyoid nerve penetrates the bone and associates with the maxillary. At the present moment of writing there is a patient in the Oral Hospital whose inferior maxillary nerve was removed a week back from mental to dental foramen; to the present moment, from the time of coming from under ether influence, the man suffers as profoundly as ever from pain in that side of the lip supplied by the nerve removed.

Reference is also to be made in this connection to a neuralgia of the lower jaw, which close examination shows to be associated strictly with the gums. Here is to be borne in mind that the part is supplied by branches accompanying the gustatory nerve, and that consequently the trouble is not—save accidentally—to be reached by a section that considers the dental nerve. The writer has in his experience verified this in cases where the dental nerve has been removed from the whole length of the canal, yet where cure has been secured only by a second section made near the oval foramen, and which included the lingual. Attention is to be particularly directed to this complication.\*

\* NEURALGIA OF GUMS AND TIP OF TONGUE.—Neuralgia, situated in the gum tissue, invites, in a search of its cause, to a consideration of the following: The gums of the lower jaw are supplied by branches of the gustatory or lingual. This is a branch of the third division of the fifth, and comes off from that nerve just above the inferior dental branch; communicating, not infrequently, with this last-named just before it enters the posterior dental foramen to be distributed to the teeth. The lingual, in its continuation, supplies the tip of the tongue, at which point it associates with filaments from the hypo-glossal. The tip of the tongue is a frequent seat of paroxysmal neuralgia of an almost unbearable type.

Experience has yielded the lesson that neuralgia situated in the substance of the lower gum is not to be cured by section of the dental nerve, unless, indeed, it happen that the