

catheter to carry out my resolution, I found a fluid ounce of urine in the bladder after eight hours' suppression. By 3 P.M. the thermometer marked 96° F., and at 6 P.M., after taking 180 grains of chloral in nine hours, I noted the external temperature at 96.2° F.; the pulse was coming back, and the muscular spasms had disappeared, and she had vomited five times; her motions were of the same character as before, but less frequent, and shortly before 6 P.M. she expelled a little urine with an alvine evacuation. From 6 P.M. to 6 A.M. the following morning she had five grains of chloral every half-hour, with the exception of two hours' interval during the middle of the night, when the symptoms were observed to become more urgent and the temperature fell below 95° F. She had a teaspoonful of beef-tea, iced, every half-hour. Chloral, 100 grains.

June 22nd, 1882, 6 A.M.: Temperature 96.4°; eight stools during night, when urine was passed; during the day five grains of chloral every half hour=120 grains of chloral. 6 P.M.: Temperature 97°; pulse 120; vomited twice; ten stools; both heart sounds heard; face and extremities still cyanosed; five grains of chloral every hour through the night=sixty grains of chloral.—23rd: Temperature 97°; pulse 110; respiration laboured, and 35 a minute; thick purulent sputum brought up frequently (patient states "she usually suffers from chronic bronchitis, and that there is consumption in the family"); coughs for the first time since illness; she is very drowsy, and complains of pains in the head; bowels opened eight times through the night, and stained with bile; five grains of chloral hourly, with dilute sulphuric acid=sixty grains of chloral. 6 P.M.: Temperature 97.8°; pulse 100; respiration 24; sputum less; two grains and a half of chloral hourly, with acid=thirty grains of chloral.—24th, 6 A.M.: Temperature 97.8°; pulse 96; cyanosed appearance almost gone; bowels moved six times through the night, and of a better consistence. The patient is still very drowsy, and has to be roused for nourishment; milk and beef-tea ordered. 6 P.M.: Four stools; temperature 98°; still drowsy; ordered cold to head, and one drachm of brandy every two hours, with nourishment as before; no chloral given this day.—25th, 6 A.M.: Temperature 97.8°; purged three times; not so drowsy; no stimulants or medicine. 26th: Temperature normal; no relapse or reactionary fever.

*Remarks.*—This case has many points of interest to one who has seen much of cholera, but through want of space I will simply allude to a few. There are only six cases on record in this country with a premonitory diarrhoea of three days' duration, and this is another. Besides, it is the only case in which suppression of urine lasted only eight hours, the other shortest period being ten hours. Hydrate of chloral was given to an alarming extent—i.e., 180 grains in the first nine hours, and a total of 550 grains or one ounce and a quarter in three days. Though the freshest drug by Liebreich was used, all the usual effects of large doses were not observed, and it is questionable whether the subsequent drowsiness was due to chloral or a natural sequence of the disease. Further corroborative evidence is necessary to prove whether chloral, besides checking sweating (as in phthisis) and preventing vomiting (as in sea-sickness), has any action on the kidney secretion, similar to nitrite of amyl. Probably such toleration of larger doses of chloral is due to the loss of the inorganic blood salts by transudation of blood serum *via* intestinal canal. The early cessation of the vomiting precluded the employment of chloral hypodermically. The administration of the drug was thorough, and the case assiduously watched throughout conjointly by Mr. G. Edwards, a Calcutta colleague, and myself. Other medical men also saw the case. It would be interesting to know what quantity of chloral given hypodermically is equal to a given quantity given by mouth. The early appearance of the urinary secretion prevented my putting into practice my plan of injecting the urinary bladder with water, which originated with me, and is not generally known, and which I communicated to THE LANCET with cases some time ago. As the patient and her friends objected to my making internal thermometric observations (per vagina or rectum) I am unable to produce them.

London.

THE Royal Commission on Metropolitan Sewage Discharge met on Tuesday, at 20, Great George-street. Present—Lord Bramwell, in the chair; Sir John Coode, Prof. A. W. Williamson, Dr. De Chaumont, Dr. Thomas Stevenson, Mr. James Abernethy, and Dr. W. Pole (secretary).

## NERVE-STRETCHING FOR SUPRA-ORBITAL NEURALGIA,

WITH REMARKS ON NERVE STRETCHINGS AND THEIR BEARING ON THE MODE OF TRANSMISSION OF NERVE IMPULSES.

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ELISHA S—, aged sixty-nine, a farm labourer, was admitted to the South Devon and East Cornwall Hospital at Plymouth on March 7th, 1880, suffering from what has been termed epileptiform neuralgia affecting the frontal branches of the first division of the fifth. He had had these attacks of pain off and on for about eighteen months, and the severity had increased so that for the last three weeks he had taken to his bed.

His family history was good, being the father of ten children, nine of whom were still living. There was no nervous or rheumatic history, and nothing remarkable about his general condition, except that he complained of pain across his chest and shortness of breath, accounted for by dyspepsia and the age of the tissues. The pain was confined to the right side, and was most intense over the orbit. The right pupil was widely dilated with profuse lacrymation. The skin was hyperæsthetic, so that a touch would bring on a spasm of pain, and a shade had to be worn over the eye to prevent the impression of light inducing a spasm; the pain was excruciating, rendering life a burden. He was ordered a pill of quinine and iron and a belladonna liniment, subsequently altered to aconite liniment and phosphorus pill, and the application of the continued current over the painful spot. Under this treatment he improved somewhat, the phosphorus being increased to one-fifth of a grain daily, and he relapsed when the battery had to be sent away for repair. At this time he had about forty paroxysms of pain a day. To relieve this nitrite of amyl inhalation was given with some benefit, temporary only; so that on June 23rd, at Dr. Clay's request, under whose care he was, Mr. W. Square cut down on the supra-orbital branch of the frontal nerve, and stretched it with a blunt hook, just behind its entrance to the supra-orbital notch, without much difficulty, with the immediate result of cessation of pain. The wound healed by first intention, leaving no perceptible scar, and up to July 19th, the date of his discharge, he had only a slight pricking pain at the outer angle of the eye. In the way of drugs he had lately been taking the saccharated carbonate of iron and cod-liver oil; so that here we had almost complete relief from pain following a most simple operation, after a patient trial of many remedies, in so painful a disorder that Trousseau declared he had not seen in his experience ever radically cured by any means.

For neuralgias of an epileptiform character nerve-section was the last resource up to 1869, when Nussbaum accidentally discovered the efficacy of nerve-stretching, a procedure which has been carried out some fifty or sixty times in the last few years, in the majority of cases with permanent benefit. In tetanus nerve-stretching has been employed, but I am not aware with any constant measure of success. Although in locomotor ataxy the relief by nerve-stretching as regards pain and improvement in other symptoms has been well ascertained, and was admitted on all sides at the discussion on the subject at the International Medical Congress, and Professor Morgan, of Manchester, mentioned a case of idiopathic lateral sclerosis, where stretching of the left sciatic gave considerable relief as regards pain in both limbs, and temporary disappearance of ankle clonus on the side operated on. The difficulty is to find a satisfactory explanation for the effects of the operation. How is it brought about in such cases? It is generally considered a sufficient answer in regard to neuralgias of inflammatory origin, where adhesions have taken place, that it is the breaking down of such adhesions that effects the cure; but what is the mode of action where other conditions obtain? Professor Eulenberg believed that it consisted in a deficiency of centripetal conduction being brought about. If so, it would be useful only in those nerve lesions of a local character where lesions in nerve centres were of a secondary character. The mode of transmission of nerve impulses is involved in the solution of the ques-

tion; it is not yet recognised whether it is vibratory or chemical. By the vibratory hypothesis is understood a displacement or vibration of the nerve molecules, just as atmospheric atoms undergo displacement or oscillations in the transmission of sound; and it has been suggested that sensorial impressions, transmitted to the nervous centres, may be taken and reproduced by those organs in the same manner that the diaphragm of the telephone receives and reproduces the respective motions impressed upon it. By the chemical hypothesis is understood an absolute chemical change in the particles of the nerve-substance when in a state of activity, by virtue of which change nervous impulses are propagated, just as chemical mutations occur in other animal organs during their physical activity. Professor Charles alluded to a third hypothesis, in a paper read at the Cork meeting, which Dr. Meryon called the electrical hypothesis, whom I quote, by which is understood the development of electrical action in every nerve particle by virtue of a dipolar attribute, by which every nervous molecule adds its quota to the evolution of a force closely allied to, if not identical with, electricity; although having regard to the correlation of forces, the possible transmutation of either one of these forces into another must be borne in mind. The efficacy of nerve-stretching seems to me to point rather to the truth of the vibratory hypothesis, and if we believe that pain is the result of an inordinate and disorderly set of vibrations, and that nerve-stretching, like the percussion of Dr. Mortimer Granville, sets up a new set of vibrations, which interrupt or change the morbid set by introducing discord,—this would explain the action of the electric current in arresting pain by altering the number of vibrations; for a galvanometer shows a decrease of deflection if the current be made to pass through a nerve in an opposite direction to that of the natural nerve force, this latter being just so much neutralised by the inverse galvanic current, as if their molecular motion were interchangeable. But, if this be true, we still have this difficulty of which to give an account—viz., Why should the change be permanent for good? Callender thought that the stretching is of use by numbing the nerve for a short time through breaking the transit of the abnormal impressions conveyed along the fibres of the nerve, so that in the interval thus gained the centres may have resumed their natural control. But if that were so, nerve-section would have the same effect; but it is not so. Walsham quotes Vogt in his belief that we must look for the cause of the relief obtained by nerve-stretching in some alteration in the irritability and nutrition of the nerve trunk or of its peripheral terminations, brought about by the stretching of the bloodvessels of the sheath; and that it is not due to any primary effect on the nerve centre or in the conducting power of the nerve, because the traction is not conveyed to the central organ. But though direct mechanical traction may not be transmitted to the central organ, Professor Eulenberg believes, on the other hand, it to be essentially due to centripetal impulses of a dynamic agency, of a nature as yet unknown, of a peripheral traumatic influence on the corresponding smaller or larger territories of circulation and nutrition in the central organ; and we know it must have an effect on the central organ, because it often not only has a favourable influence on the leg operated on in *tubercles dorsalis*, but also on the other. Dr. Müller gives an instance in a case where when the left crural nerve was stretched the sole reflex disappeared; yet at the same time there appeared in the other leg, which was not stretched, hyperæsthesia and hyperalgesia, a clear sign that in man the effects are the same as Brown-Séquard noted them to be in animals; and Dr. Anstie believed all neuralgias to have a central origin, not traumatic. Thus it would appear that nerve-stretching is likely to be of service in neuralgias whether of central or peripheral origin. Uspensky believed neuralgia to be dependent on the retention of acid products of metamorphosis of the nerve tissues, with subsequent weakened function of the vaso-motor nerves, atrophy of sensory nerve cells, and change in the calibre of the vessels, with loss of their tone. It seems that, as there are neuralgias dependent upon diverse causes, some associated with recognised structural changes, others only of a functional character, the action of nerve-stretching may work differently in such cases, in some cases by removing or breaking down a fibrous adhesion, as in neuralgias and epilepsies of traumatic origin, and in some cases of tetanus brought about by peripheral irritation; in some cases by simply interrupting a vicious habit of irregular molecular nerve impulses. That such effect is possible is

shown by the phenomenon of negative variation taking the place of the ordinary nerve current on the application of an electrical or mechanical stimulus; in others, due to imperfection of the local blood-supply, or a vice of development on the part of the tissue elements, by altering the blood-supply through the calibre of the vessels, thus inducing nutritive changes in the nerve cells and increasing their molecular stability. Nerve-stretching may act in all these ways in one case. This is, I believe, only the second time that the supra-orbital nerve has been stretched, and was no exception to the rule that after stretching a single branch pain occurs during convalescence in a different branch of the same nerve, and is another instance that when neuralgia attacks the ophthalmic division of the fifth it usually affects the supra-orbital branch.

I learn that the patient continued free from pain for nearly three months from the time of the operation, and it returned at intervals during the following winter. I take it, in this case, the mischief was centric. It may turn out that it is only those cases where the nerve storms are set up by peripheral irritation that derive permanent benefit and complete cure is effected by stretching; and that where the origin is centric, the bad habit is only interrupted for a time in most cases. But considering the simplicity of the operation, it should always be resorted to when other treatment fails in this most painful affection.

## A NEW INDICATING AXIS - TRACTION FORCEPS.

By A. DRUMMOND MACDONALD, M.B., C.M. EDIN.

THE leading points in the design of this instrument are—(1) axis-traction without the use of intra-vaginal rods; (2) indication of the grasp taken of the foetal head; (3) portability; and (4) minor deviations from the ordinary type of long forceps, partly suited to the three preceding points, partly by way of improvements. How this design is practically carried out is shown in the accompanying woodcut and following description.

Taking the parts *seriatim*: (a) The blades are 6½ in. long, 2½ in. apart at the widest, and 1 in. apart at their extremities, which are not quite so broad as usual. When applied, and traction made, they will “give” half an inch, a point to be observed in all forceps, according to the temper of the steel, and having an important bearing on the question of grasp. The total breadth is 1½ in., the fenestrum being ¾ in., leaving ⅞ in. steel, which ensures a good hold. The fenestrated portion has been made nearly straight, and the pelvic curve lies in the lower portion of the blade and upper part of the shank, for the reason that when the blades are in apposition to the head, at or entering the pelvic brim, the natural curve of the genital canal lies below the head, consequently below the blades, and so corresponds to the curve above indicated. What we want is a pair of forceps acting as straight forceps, but without their perineal inconvenience, capable of being applied with facility, and at the same time adapted to the curve of the pelvic passages. (b) The shank measures 2½ in. (with the blade 9½ in.). This should prevent any locking in the vagina. (c) The lock is a kind of hybrid between the British and Continental locks, and allows of a scissors-action of the blades for the purpose of indication mentioned below. The lower blade has, and is easily recognised by, a hooked portion of the lock, on which the upper rounded and shielded segment is slipped in locking. (d) The handles have upper movable halves attached to the lower by a hinge joint which admits of their being folded down from right angles, so as to be easier of manipulation when required, and occupy smaller space when not in use. There are holes for a transverse traction bar through their ends, between which is a space for

