once in a hundred times; *d. Râles* in the trachea are but seldom heard; *e.* Instead of six or eight ounces of ether being used in a short operation, and sixteen to twenty in one lasting an hour or an hour and a half, half an ounce or less suffices for a short operation (such as "sphincter-stretching" or "iridectomy"), and two to three ounces for an operation of an hour's duration, such as colotomy or excision of a joint.

10. The administration of ether by inferior methods is still too common, and was until recently prevalent in some of our larger hospitals.

11. Even with Ormsby's or Clover's inhalers, there is an infinite variety of skill in different etherists.

12. In order to become a good etherist, the administrator must study how to give ether, must watch the patient attentively whilst giving it, and during the earlier inhalations must very carefully and studiously adjust the anæsthetic to the sensations of the patient.

13. A careful, attentive student, with tact, and not hard and unfeeling, can easily and in a short time be taught to give ether properly.

Since the adoption of Clover's inhaler, I have had singular freedom from anxiety about my anæsthetics—far greater freedom than in the previous period, when I had to depend upon chloroform.

Finally, I would say that this favourable opinion of ether is based upon my experience of its use by a series of very able administrators—some in the Leeds Infirmary, others whilst acting as my private clinical assistants. Speaking as a looker-on, rather than as an administrator, I should say that the chief points in the right administration of ether are: first, to overcome the nervous dread of the patient by applying the mouthpiece only; then to turn on the ether gently, until the glottis becomes tolerant and the patient is slightly unconscious; lastly, to complete the anæsthesia rapidly. In advising beginners, I compare the regulation of the quantity of ether to the "curve of harmonic progression".

PERCUSSION AS A THERAPEUTIC AGENT IN NERVOUS DISEASES.

By J. MORTIMER GRANVILLE, M.D.

WITH the cognisance of the leading physiologists and neurologists in England and on the Continent, I have for some years past been employing carefully graduated and precisely applied percussion as a therapeutic agent in the treatment of nervous diseases and disturbances, on a principle of which the following statement, published by me in February 1881, may be taken as a brief exposition.

"As far back as 1862-3, I was, in the course of certain clinical studies of mental and sensory phenomena, induced to believe that many forms of the sensation we call "pain" were, in fact, unnecessary, and might be interrupted by appropriate mental and physical methods and appliances. My first observations were made in connection with the paroxysmal or recurrent pains accompanying the uterine contractions in the natural process of parturition. On May 4th, 1864, Dr. Graily Hewitt was good enough to communicate the results of my experiments and to show certain apparatus, to the Obstetrical Society of London. In a paper On the Application of Extreme Cold as an Anodyne in the Pain attendant on Parturition, a short abstract of which will be found in the *Lancet* of July 9th, 1864, I contended that the sensations of pain experienced by the parturient woman were not invariably synchronous with what, for want of a better name, we term the "pains" of her labour; and from this and other premises—for example, the circumstance that the sensation is commonly "referred" to some region more or less remote from the contracting uterus, or the dilating external passages, in which the real seat of the pain might have been supposed to be located—I deduced that the pain attendant on labour is neuralgic in its character. I had constructed small boxes or chambers of such sizes and shapes as to admit of their being conveniently applied to the supposed seats of the pain. These were filled with freezing mixture, and the effect of sudden contact in some thirty cases was to arrest the sensation of pain without in the least degree lessening the force of the uterine contractions. The experiment was, of course, simply interesting as bearing on the nature of the pain, as this process was too troublesome to admit of its adoption in practice; albeit some of the persons on whom I had the opportunity of trying my method experienced such striking relief that, on subsequent occasions, I believe they asked that the measure might be repeated. Having thus far persuaded myself that this form of pain was neuralgic, and that if the nerve affected could be strongly impressed, so as to change its *state of irritation*, the pain would cease, I proceeded to try the effect of rapidly tapping the skin over the fifth

nerve in ordinary facial neuralgia with a Bennett's percussion hammer, using the ivory pleximeter as a shield. The results obtained by this method were very remarkable. Still, I simply thought of arresting the morbid action by shock. Later on—it is only possible to sketch the outline of the inquiry—I was led, by the light thrown on Newton's doctrine of concords and discords by Grove's generalisation as to the correlation of forces, and, more recently, by Professor Tyndall's beautiful series of experiments with sensitive flames and musical burners, to believe that the results of the tapping were not, like the interruption with shock produced by the sudden application of cold, due to a mere arrest of the painful state of irritation into which the nerve had been thrown, but were, in fact, brought about by the extinguishment of some morbid—that is, either inordinate or disorderly—set of vibrations by the superimposition of another, incompatible or discordant, set of vibrations mechanically produced. With this notion, I set to work to devise an instrument which should give a known number of blows per second, and thus admit of this new phase of the inquiry being pushed further.....

"The sensation produced by the application of the instrument over a healthy nerve, so situated as to be readily thrown into mechanical vibration, closely resembles the effect of a weak dose of the interrupted current of electricity, and if it be prolonged the vibration will extend its area, exciting first formation or tingling, then a sensation of numbness, and finally some twitching of the superficial muscles. A nervous headache, and even migraine, may be induced by the application of the percuteur to the frontal ridges or the margins of the orbit. By the interposition of a thin plate of metal, or even stiff paper, the vibration may be readily propagated through a considerable region of the surface of the body, and in time the deeper muscles will frequently begin to act. I have even produced an involuntary movement, not unlike tendon-reflex, by applying the percuteur for some time over the ligamentum patellæ or the margin of the patella. Still more notable has been the fact that, by laying a sheet of paper over the abdomen, and moving the percuteur slowly in large circles round the umbilicus, the intestines have seemed to be excited to vermicular movement, and the bowels commenced to act. These results have not been constant, but have occurred with sufficient frequency to indicate that the experiments already made are worthy to be repeated.....

"I will take leave to say that I think these results go to support my theory that it is by the introduction of discord into the rhythm of the morbid vibrations of the painful "state" the change which brings relief in neuralgia is effected. To apply the percuteur with a high rate of blows per second will aggravate the morbid state when that is itself a series of rapid vibrations; and in the same way a low speed of percussion increases, instead of relieving, the pains of a low-pitched and slow "boring" or "grinding" sensation. Acute or sharp pain is, I believe, like a high note in music, produced by rapid vibrations, while a dull, heavy, or aching pain resembles a low note or tone, and is caused by comparatively slow vibrations. A slow rate of mechanical vibration will, therefore, interrupt the rapid nerve-vibration of acute pain, while quick mechanical vibration more readily arrests the slower. The aim—if I am right in my conjecture—should be to set up a new set of vibrations which shall interrupt or change the morbid set by introducing discord. This is the principle. Failure in the application of this principle will, I believe, be found to explain the failure to put an end to the pain; and I have, accordingly, set as much scientific value on my failures as on my successes."

My method is, it will be seen from these extracts, based upon the hypotheses (1) that all nerve action, whether normal or morbid, is vibratile; and (2) that it is possible to influence and control abnormal vibrations—in the manner above described—by mechanical vibrations propagated to the nervous structures, in particular directions and at known rates of speed. It is not my present purpose to discuss these hypotheses, or the method in detail; but I am anxious to re-state, and now affirm, certain propositions, founded on experience, which, in previous intimations of the progress and success of my experiments, I submitted tentatively. They are these.

1. I have rarely failed, in a fairly large number of cases—many of them of several years' standing—to bring the cerebro-spinal and, sometimes directly at others in secondary circuits, the sympathetic ganglia under control, by the application of my percuteur over, or in mechanical relation through the adjacent tissues with, those ganglia.

2. I have in no instance failed to produce activity of the bowels, even in cases of previously obstinate constipation; and in many instances I have succeeded, within a short period, in restoring the periodic evacuation of their contents without recourse to drugs. This success alone places the method on a footing of value in daily practice.

3. I can now, in result of my more recent experiments, propagate the vibrations I produce along the trunks and into the branches of most

of the principal nerves, from their centres of origin, or call them into action, reflexly, through the afferent nerves connected with those centres. In limited paralyses, and even in circumscribed sclerosis, this power is of the highest therapeutic importance.

4. I can nearly always arouse torpid centres to action, and thus pave the way for their restoration to states of normal activity. Since it is physiologically certain that nutrition depends on exercise, and every part of the organism feeds in proportion as it works *healthily*, it is a great thing to be able to act thus directly on the nerve-centres which are the seats of energy.

5. I can subdue the exaggerated reflex irritability of revolting subordinate centres, and replace them under the control of the higher centres, even in cases of lateral sclerosis.

Applying these facts—for such they undoubtedly are—to the needs of special nervous states, the practitioner will have no difficulty in perceiving that my method has great and obvious uses. I am anxious not to overstate the results I am obtaining, but they are such as to show that the physiological process of mechanical vibration is likely to prove a potent agent in the treatment of a wide range of maladies now the most intractable. It will afford me much pleasure to show the process to any medical man who will call on me. It is impossible at present to describe its details in writing; but I will gladly aid anyone in its application. My method has nothing in common with the “muscle-beating” and shaking to which you directed attention in your last issue. It is a system which must be approved and practised by the profession exclusively. Nothing do I so much dread as its falling into unprofessional hands. I have been engaged upon it since 1862, shortly after which date some of the first results were communicated to the Obstetrical Society.

THE USE OF IODOFORM IN THE TREATMENT OF SOFT SORES.

By WALTER WHITEHEAD, F.R.C.S. Edin., Manchester.

IODOFORM appears to be one of the most efficacious drugs in the treatment of the syphilitic non-infecting soft sore, when not unduly inflamed. It has, however, the unfortunate counterbalancing disadvantage of attaching to the patient the liability of unenviable suspicion, and the significant expressions of his companions—the public having become keenly alive to its distinctive and penetrating odour, and having also acquired an appreciative knowledge of the principal purpose for which the drug is most frequently used.

The various attempts which have been made to disguise or modify this peculiar odour appear hitherto to have failed. Tonquin beans, kept in the same bottle with the iodoform, succeed to a certain extent and for a limited time. The beans, however, possess a smell which is regarded by many with equal objection to that of iodoform.

I have succeeded, I consider, in obviating this objectionable feature, without apparently sacrificing any of the therapeutic advantages of the drug, by using it after the following manner. I first very carefully cleanse and dry the sores by means of little pledgets of bibulous paper, and then, by means of a camel-hair pencil, apply freely over the surface of the sores a solution of iodoform in ether. The ether rapidly evaporates, and leaves the iodoform uniformly spread in an impalpable powder over the sores.

To ensure a free application, the latter part of the process may be repeated and allowed to dry. When perfectly dry, each sore is given a coating of collodion, which is allowed to overlap about a quarter of an inch the area of each sore. Before the collodion has had time to dry, a pinch of absorbent cotton-wool is placed on each patch as a protection against the rough contact of clothing. This dressing is allowed to remain undisturbed for twenty-four hours, when the firm film which forms may be gently removed and a fresh coating applied. This treatment is continued day by day until all the sores have quite healed. I have found, on the same principle, and with equal success, that a piece of goldbeaters' skin may be substituted for collodion after the application of the iodoform.

By this means, the patient and his associates are spared the disagreeable consciousness of the remedy being employed, whilst the full benefit of the drug is being preserved. A further advantage gained is the protection afforded by the collodion against auto-inoculation, and also against the risk of contagion from others coming in contact with the sores.

The iodoform solution I am in the habit of using has been made for me by Messrs. Standing, Son, and Co. of Manchester, by dissolving one part of iodoform in two of ether; and, in my Lock Hospital practice, where time and economy is of moment, I have the collodion and iodoform mixed together, the formula being iodoform one part, ether two

parts, collodion to ten parts. In the latter solution, the odour cannot be said to be wholly disguised, but it is sufficiently concealed for all practical purposes.

OBSTETRIC MEMORANDA.

TWO OBSTETRICAL CASES.

I was recently sent for by one of our midwives in attendance on an out-patient who was said to be “bleeding profusely in consequence of placenta prævia. On examination, I found presenting, at the brim, a fleshy mass from which there was considerable hæmorrhage. There were scarcely any labour pains, and I passed my hand into the vagina, which was capacious, and had no difficulty in making out that the mass was not a placenta, but a large hæmatoma growing from the vertex of an acephalous monster. I applied forceps, and delivered a very large fœtus.

A case of prolapsus uteri has just left my ward at the Samaritan Hospital with the following curious history. When the woman was last pregnant, the uterus came down between the third and fourth month, and could not be returned. The fœtus was carried to full term in the prolapsed uterus, “which reached down to the hamstrings”, and was not unlike a cow's udder.

Dr. Lowe of Lynn attended the patient, and saw the fœtus and placenta pass straight from the uterus, without, of course, traversing the pelvis. The labour was short, easy, and quick. The case suggests the possibility of producing artificial prolapse in certain cases as an alternative for craniotomy and the opportunity afforded of making accurate and interesting observations with regard to uterine contraction during labour.

PERCY BOULTON, M.D., M.R.C.S. Lond., Physician to Out-patients, Queen Charlotte's Lying-in Hospital.

SURGICAL MEMORANDA.

TREATMENT OF TONGUE-TIE.

VARIOUS and elaborate instruments have been adapted by different surgeons for the treatment of tongue-tie (as it is commonly called by the profession at large), by incision. I think the following method preferable and much safer. I pass my right index-finger into the mouth of the infant to be operated on, under the tongue, and press my nail against the frænum till I rupture it to a sufficient extent. So far my cases have turned out quite a success. The plan, I am sure, will recommend itself to all.

J. BRINDLEY JAMES, M.R.C.S., London.

THERAPEUTIC MEMORANDA.

THE TREATMENT OF DIPHTHERIA.

THE note by Dr. F. P. Atkinson is a valuable addition to the means at present employed for limiting the extension of false membranes in diphtheria.

The following combination of the glycerols of tannin and carbolic acid has proved itself, during a considerable experience of diphtheria and scarlet fever, a highly efficient application in my hands, viz.: R Glycerini acidi tannici ʒvij; Glycerini acidi carbol. ʒj. Misce. In the application of glycerine as an absorbent, it is of practical importance (as pointed out some time since in the *Pharmaceutical Journal*) that a small proportion of water should be added to it. In order to secure this, a sufficiency of the glycerine should be placed in a saucer, and a throat-brush dipped in water should first be stirred into the glycerine before applying it to the tonsils and fauces.

The combination above-mentioned has been found practically the most efficient proportion for securing the necessary astringent and antiseptic results, without irritation. An application twice, or at most thrice, in the twenty-four hours secures the utmost benefit the remedy affords—a matter of importance both to the patient and practitioner, as the former is not fatigued by frequent applications, and the latter can make these personally at the usual visits.

It is seldom that any additional local remedies are required, but it is wise to precede the application of the glycerols with gargling the fauces and washing out the mouth with a solution of permanganate of potass and water, and to use the sulphurous acid spray; the double advantage which follows being, that the fauces are the better prepared to benefit from the glycerine, and that the safety of the practitioner is increased in the event of the patient expectorating any false membrane during the act of swabbing. To further increase the safety of the medical attendant, a glass screen, placed between him and the patient, will afford protection without limiting the efficiency of the procedure.

H. CRIPPS LAWRENCE, L.R.C.P. Lond., etc.