Hewitt, and Wilson Fox—agitation of the abdominal viscera, etc., play subsidiary parts. Quite young infants and very old people are generally immune, as might be expected in a functional nervous condition, such as sea-sickness is. To explain the relative immunity of babies the state of the thymus and endocrine glands has been suggested.⁷ This seems unnecessary. Further, Bédart and others affirm that deaf-mutes are not susceptible to motion-sickness. Sir T. Lauder Brunton⁸ held the view that the origin was a mixed one. He also gave the most practical detailed and helpful advice as to treatment that I have yet met with:

As a working hypothesis, then, let us take it that the vomiting centre is overstimulated by centripetal impulses, preponderatingly vestibular, but not exclusively so. Rational treatment at once becomes obvious: Diminish the activity of the vomiting centre by means of chloral and bromides, or else lessen the conductivity of the vagus by the administration of atropine.

The atropine method is at present that most in favour, but it has not been satisfactory in my experience, and is certainly not free from danger and unpleasantness. Incidentally, the use as a routine method of this potent drug, either hypodermically or by mouth, in a crowded ship, is not easy. Portier states that hyoscyamine, the left isomer of atropine, is not more toxic and has an activity twice as great. Morphine is not much in favour. On one voyage, however, before I adopted routine rectal treatment, as described later, it seemed to me to have saved the life of a young woman, who vomited from Suez to Calcutta save when under its influence.

Many years ago, crossing the Western Ocean to Canada in bad weather, it became clear to me—from painful personal experience—that chloral in the form of syrup was of the greatest value. But even so slightly unpleasant a preparation as this is impossible to a sea-sick person—just when most needed. It is speedily rejected. Brunton was right in teaching that chloral and bromide, properly used, would, practically at all events, prevent all suffering. The only difficulty is the administration and retention of the drugs. This is easily met by giving them per rectum. Last year, on the North Atlantic, the opportunity for trying this on a large scale occurred: the results were most gratifying. A solution, however, of this kind cannot be left to the unskilled steward or attendant, so I had to make a suitable suppository.

The incorporation of the drugs in the form of a suppository presented considerable difficulty, as the usual bases were quite unsuitable. Messrs. Allen and Hanburys, Ltd., have now prepared suppositories which stand the tropics perfectly. I possess some that have crossed the equator four times, and never left the cabin for the ice-chest. In the rectum they melt readily, absorption is rapid, and no irritation locally appears to follow their use. Two suppositories contain 15 grains of chloral and 30 grains of bromide. These are not large doses: 30 grains of chloral at a dose in a milk enema, two or three times daily, is spoken of as being used by Mir⁹ in the vomiting of pregnancy—in many ways related to sea-sickness; and, as a sedative in other nerve conditions 2 or even 3 grams.^{10 11} Such large doses are not within my experience. It is clear, however, that there is no risk in a frequent repetition of small doses. Subsidiary measures should not be neglected. These are recumbency (in bunk in cabin is the best), warmth, keeping the eyes shut, and the use of an abdominal belt. The ideal position for a bunk, where it is possible, would be amidships, on the main deck level—lying fore and aft in the centre of the ship, with the feet pointing to the bow. This is seldom attainable; but the opposites can be avoided. Still, with suitable dosage on the lines mentioned above, such points become of minor import.

This treatment, which I have found so valuable, possesses important advantages over oral methods of administration: (1) The therapeutic action of the drugs is certain, because no gastric disturbance can interfere with it. (2) Absorption of the drug is more certain, and the effect is prolonged. (3) It causes no gastric disturbance such as occasionally results from the use of other remedies for sea-sickness.

The best results are obtained by using the suppositories in the following manner: As a preventive, one should be inserted morning and evening for the first three days at sea. If the patient is sick when first seen a suppository should be administered at once, and repeated every two or three hours, as required, for four doses. If the sea passage is short, a suppository should be used three hours before going on board, and again before the ship starts. There is no danger whatever provided the administration is stopped when somnolence supervenes.

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CURE OF UTERINE PROLAPSE BY RE-EDUCATION OF THE MUSCLES CONSTRICTING THE VAGINA.

BY

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THE muscles which close the vagina (in common with other muscles whose physical relationships are greatly changed during pregnancy and parturition) are liable to lose their normal habit of tonic contraction after the cessation of the distension to which they have been temporarily subjected. When the "vaginal" muscles are subject to this loss of tone, prolapse of the uterus is liable to follow, and if the support normally given by the vaginal sphincter and the fibrous tissues associated with it be lost (owing to the parts being torn during parturition) the liability to uterine prolapse is greatly increased.

If the tone of these muscles which tend to occlude the vagina be tested in a case of uterine prolapse it is usually found to be decidedly poor, and in extreme cases the laxity of the vagina may be so considerable that no form of pessary can be retained. Fortunately, however, although the habit of tonic contraction of these muscles be lost, the power of voluntary contraction is not as a rule also lost; and when during a vaginal examination the patient is told to contract, so far as she is able, the muscles of the pelvic floor, it is found that some muscular compression is exerted upon the fingers in the vagina, either by the sphincter proper or by the other muscles which have the power of constricting it. Voluntary contraction of these muscles can be as a rule brought about by asking the patient to contract the sphincter and the levator ani, by "tightening herself up" as if she were endeavouring to control a sudden attack of diarrhoea.

When any voluntary control of these muscles is present the re-establishment of full tonic contraction is only a matter of time, for (as is the case with most muscles of this type) the frequent repetition of voluntary contraction soon restores a lost habit of tonic contraction. The patient's attention is therefore drawn to the fact that the vagina is tightening upon the examining fingers when she makes this special type of effort; and she is asked to make, and then to cease making, the effort several times in succession till she has a further knowledge of what is required of her. She is then told to contract these muscles of the pelvic floor many times during every hour of the day, and to maintain the contraction as long as she conveniently can. If these rules are carried out—as they easily can be—the muscles which diminish the lumen of the vagina will in a very few weeks greatly increase in vigour; so much so that within two or three weeks they will be able to grasp a single finger with more force than they could grasp two fingers at

the first examination. In such a case the continuance of the voluntary efforts will in a very few weeks so re-establish the habit of tonic contraction that a prolapsed uterus can be retained in place without any mechanical support, provided that the patient remembers to make a special voluntary contraction of the muscles of the pelvic floor whenever an effort is made which is specially liable to cause a descent of the uterus.

In some cases the contraction of the muscles which close the vagina is so feeble that when the patient is first seen she herself is not conscious of any activity in them, although they do perceptibly tighten upon the two fingers in the vagina. If after a fortnight's exercises this same condition persists, it is advisable, when doing the exercises, that the patient should insert her own fingers into the vagina so that she may the more readily learn the type of effort she has to make.

The effectiveness of this treatment is shown by the fact that, even when there has been an amount of tearing sufficient to prevent the sphincter vaginae from taking any part in the support of the uterus, the patient may nevertheless be able to maintain her uterus in its normal position without the need for a pessary, as in the second case here referred to.

As a consulting physician I naturally do not meet with many cases of uterine prolapse, and cannot therefore give a large number of cases to illustrate this method of treatment. I will, however, report two cases which are sufficient to prove the truth of the proposition here stated.

The first was a married woman, aged between 30 and 40, the mother of several children, who came to see me as an out-patient at the Birmingham General Hospital, nearly twenty-five years ago. She was suffering from neurosthenic symptoms due largely to the fact that she had a very severe uterine prolapse, and the cervix would protrude from the vulva whenever she made a slight effort. Moreover, the vagina and its sphincter were so relaxed that she was unable to retain any form of pessary, and she told me that she was advised to have complete hysterectomy. After some difficulty I was able to re-establish voluntary control of her vaginal muscles, with the result that in a few months' time she was completely cured. Although able to retain a pessary she did not need one, and had not any further trouble from her uterus, and, *pari passu*, her general health also greatly improved.

The other patient was seen by me in April, 1924. She was suffering from colon trouble, and also from uterine prolapse due to being badly torn at her last confinement, and had to wear a ring pessary to prevent uterine prolapse. She had been advised operation, and wished for my opinion as to its desirability. On examination I found that the perineal tear prevented any effective action on the part of the sphincter vaginae, but that when the patient contracted her levator ani and sphincter ani there was a noticeable but slight contraction of the vagina upon the two examining fingers. When seen ten days later she was able to grasp a single finger when inserted into the vagina, closing up its lumen sufficiently to prevent any descent of the uterus. She was advised to continue the exercises for another week, and then have the ring removed. This was done, with satisfactory results. She was seen after having been a fortnight without a pessary, and was able to report that the cervix had not once been outside the vulva since the removal of the support. The position of the uterus was found on examination to be normal. By the exercise of care she prevented any return of the prolapse, and when seen two months after her first visit was practically cured of her prolapse.

THREE CASES OF MEDICO-LEGAL INTEREST.

BY

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THE three cases here recorded are all of a remarkable character. The first is that of a man who committed suicide by cutting his throat. It is well known that in such cases injuries may be inflicted of such severity and extent that a medical man is apt to put suicide out of the question and to attribute them to murder. It is advisable, therefore, that cases of self-inflicted injuries in which such doubt may arise should be put on record. The second case is that of a young woman in labour who threw herself from a window 80 feet above the ground. It is of interest on account of the peculiar injuries to mother and child, and of the fact that she was able to carry a child to term without anyone suspecting her of being pregnant. The third case, that of an infant who fell from a height

of 45 feet without injury, seems almost incredible when one recalls the injuries produced by falls of comparatively short distances, and also the terrible results of precipitation from windows of high buildings.

CASE I.—*Suicidal Cut Throat in which the Transverse Process of a Cervical Vertebra was Cut Through.*

A labourer was found dead one morning by his landlady with his throat cut. He had been a fairly healthy man and had had no serious illness up to ten weeks before his death, when he had apoplexy, his speech being affected and his right arm and leg partially paralysed. He was admitted to hospital, where he remained for ten weeks, being discharged, at his own request, two days before his death. His landlady states that she noticed that his speech was still affected. Two days after his return home he went to the parish offices to obtain relief; in this, however, he was not successful, and appeared to be worried in consequence. He retired to bed about 9.30 p.m. The next morning he was found dead in bed, lying on his back, his arms lying across his chest, a razor under his right arm, and his throat cut.

On examination the thyroid cartilage was found to have been practically hacked to pieces, there being seven distinct cuts through the cartilage. The oesophagus had been opened into on the right side, both jugular veins had been severed, the carotid artery on the left side had been opened, and the left transverse process of the fifth cervical vertebra had been cut through, the severed part lying free in the tissues of the neck. The surface of the bone was cleanly cut through and had no appearance of having been broken.

CASE II.—*Precipitation of a Woman in Labour from a Window 80 ft. from the Ground: Peculiar Injuries of Mother and Child.*

A female clerk, aged 17½ years, was found unconscious and in a dying condition at 5.45 a.m., having apparently jumped from the sixth story of a tenement house—a distance of 80 ft. A neighbour, hearing a thud and moaning, looked out, and seeing the body lying in the back yard, called the police. On their arrival it was found that she had given birth to a child, which was lying dead between her legs. No one seemed to have suspected that she was pregnant, and she had played in a hockey match five days before. About mid-day, on the day before her death, she had complained of a pain in her back and had been allowed to go home; she had severe pains during the afternoon, but about 6 o'clock a friend called to see her and they arranged to go to the theatre together that evening. She did not go, however, but retired to bed. About midnight her mother saw her and gave her something to drink, when she said that she felt better. A chair was found at the window of her bedroom, upon which she had evidently stood before throwing herself out.

A post-mortem examination was made the next day. There were no external marks of injury except just above the popliteal space on both legs, and slightly to the outer sides there was a linear, transverse wound, in each case about four and a half inches in length, passing completely through the skin and subcutaneous tissues. No other structures were involved. These wounds were apparently due to a splitting of the skin. There was no projection that could have produced them during the fall. On internal examination the uterus was found to be ruptured; the rupture was five inches in length and passed completely through the uterine wall at the fundus, and down to the right side. The os was fully dilated but was not torn; the vagina was extensively rent from the right fornix to within an inch and a half of the vaginal orifice. The perineum was ruptured. There was a fracture dislocation of the sacrum from the innominate bones, the free edge of the sacrum on the right side projecting into the pelvis. There were no other fractures and the abdominal organs were uninjured. The body of the child showed that it had reached full maturity; the placenta was still attached to it by the umbilical cord, but pieces of placenta were found in the cavity of the uterus. The scalp had been torn from half an inch above the right eye round the head, above the left ear to the mid-line at the occiput, being practically detached over the whole of the left hemisphere. The injury to the scalp showed sharply divided edges as though cut with a sharp instrument. The frontal, parietal, temporal, and occipital bones were extensively fractured and the bone lacerated.

It is interesting that a young girl of 17 was able to carry a child to full time without anyone, not even her mother and sister, suspecting that she was pregnant, and at the same time was leading a very active life, even playing in a hockey match five days before. Labour evidently commenced at mid-day when she went home from her office, and continued into the early hours of the next morning, when, in a frenzy, she precipitated herself from the window. Apparently she landed on her heels with legs extended and trunk inclined forward, the sudden hyper-extension of the legs splitting the skin and causing the two curious symmetrical wounds referred to above. The ablation of the scalp and fractures of the skull of the infant were caused by the shock of the fall, the head being thereby forced through the pelvic canal and the scalp torn by the projecting edge of the dislocated sacrum, while the rupture of the uterus was produced by the feet, at the same time, being driven through the fundus.