on the pillow. The second assistant kneels astride the patient's legs, and, grasping the knees with his hands, presses them downwards. Those at the sides kneel on the loose ends of the counterpane close to the patient's body, grasp the elbows with one hand, and the wrists with the other through the counterpane, and press downwards on the mattress. In this way the patient is completely controlled in a few seconds, and a prolonged struggle, causing terror and exhaustion, is impossible. The chief assistant tucks the towel under the chin to prevent the clothes being soiled.

Here a caution must be given. The assistants must on no account kneel on the patient nor grasp the bare wrists. That must be done through the counterpane or the sleeve of the coat or dress. The chief assistant who holds the head must not squeeze the ears between his knees. The need for these precautions will be evident when it is remembered how easily many of the insane are bruised.

The operator now kneels at the right hand side of the patient's head, and places the instruments and vessels on the floor at his own right hand. He oils the tube, and lays it across the patient's chest, on the towel, to be ready. The oil should not be omitted, for, as has already been said, the oesophagus is in a dry condition, the secretion of mucus being in abeyance. Then he inserts the gag between the molars, and opens the mouth widely with the screw. If the patient clenches his jaws, there are, in most cases, irregularities or gaps between the teeth that will admit the gag, or the nostrils may be pinched between the finger and thumb, when the patient will probably open his mouth for a moment to breathe, or he may be surprised into speaking by asking him a question suddenly and sharply. If these means fail, we can generally slip the gag in gradually by keeping a steady moderate pressure with it for some time. When the mouth is well opened, the operator passes the gag to the chief assistant, who holds it in position with his right hand, taking care that it does not turn round, or slip forward out of the mouth. The operator then takes the oiled tube with his left hand near the cup end, and with his right about 8 inches from the point. Introducing the point into the pharynx he guides it gently down the gullet into the stomach. The stomach is known to be reached by the feeling of resistance ceasing, and by a puff of gas that comes through the tube with a slight gurgling sound. The ear should be inclined towards the tube to catch this indication. Occasionally the point hitches against the back of the pharynx, the tube doubles forward at its weakest part, where the eyes are pierced namely, and, pressing against the larynx, causes violent dyspnoea. This is apt to happen when the head of the patient is too far extended, causing the cervical vertebrae to bulge forward. Withdraw the tube, and direct the chief assistant to flex the head. Reintroduce the tube, and, with the right forefinger in the pharynx, guide the point into the oesophagus. Sometimes there is a spasmodic action of the gullet, and the tube is grasped by it. Hold the tube against the obstruction for a few seconds, when the spasm will relax and the tube will pass down. Then, holding the tube upright with the left hand, with the right pour the food into the cup as fast as it will go down. If the flow is checked, it is because the eyes of the tube are closely applied to the gastric mucous membrane and are thus blocked, or because the tube is doubled in the stomach. Withdraw the tube for a couple of inches, and the food will flow. In some cases there is much regurgitation of food, causing troublesome, or even alarming, symptoms of suffocation. Lay down the jug, and suspend the administration of food by pinching the soft stem of the tube with the right forefinger and thumb till the regurgitation subsides, then go on again. It may be necessary to do this two or three times in the course of the operation. When all the food is given, withdraw the tube gently, keeping it, while doing so, towards the roof of the mouth to avoid tickling the epiglottis. The patient is then released. It is usual to allow him to lie for a short time to lessen the risk of vomiting, but that accident rarely occurs.

The operation now described can easily be performed, when the assistants are expert, in four and a-half minutes from the time the patient is placed standing on the mattress till the moment he is released. This is an important point in favour of the method, for, in the most favourable case, the

mind and the muscles of the patient are held in a state of painful tension, and when there is exhaustion, regurgitation of food, and alarming symptoms of choking, forcible feeding is a disagreeable and anxious operation. It is almost as much so in fact as the giving of an anæsthetic, and the more quickly it can be performed the better. It is with the view of conducting to expedition that I have gone so fully into details which, I would venture to hope, have not appeared trivial or tedious.

PARALYSIS OF THE SERRATUS MAGNUS AND DISLOCATION OF THE SCAPULA.

By J. ERNEST MOORHOUSE, M.A., B.Sc., M.B., C.M.

J. B., a miner, aged 44, was treated in July by my *locum tenens* for pain in the region of the deltoid muscle and right side of the chest. At that time he was off work for a fortnight, and the pains gradually ceased. He came to me on September 20th, complaining of the same pain, and that his "shoulder blade was growing out." This condition had been present since the beginning of August, and had gradually become worse.

On examining him I found that the pain was now localised in two places—one behind the deltoid muscle, corresponding to the position of the circumflex nerve, and the other to the inner side of the biceps. The pain was only marked when he held the forearm out between pronation and supination. He could not keep this position long, and pressure on the two points caused severe pain.

With the arms hanging at the side, the lower angle of the right scapula was half an inch nearer the spine than the left. With the arms stretched out in front, the right scapula came out like a wing to such an extent that the dorsal border was 2 inches from the chest wall. The distance between it and the spine was only $2\frac{1}{4}$ inches, as compared with 5 inches on the left side. He could stretch out the left arm $1\frac{1}{2}$ inch further than the right, and, in trying to push, the affected arm was very weak. The curious thing was that when I supplied the place of his serratus magnus and pushed the scapula forward against the chest wall he suffered no pain in any position of the arm.

The right shoulder was lower than the left, and the deltoid considerably atrophied. On examining the chest the digita-

tions of the serratus magnus were well seen and felt on the left side, but on the right could not be recognised either by sight or touch. With the arms grasping the back of a chair, the right half of the chest moved much less than the left on forced inspiration. All the movements of the arm requiring the assistance of the serratus magnus or deltoid were much interfered with.

It would seem that there was some affection of the circumflex and posterior thoracic nerves accounting for the pain in July, the paralysis of the posterior thoracic having brought about the characteristic dislocation of the scapula. The comparative rarity of the condition has induced me to write this note on the case.

As to the cause he could give no hint. He was accustomed to hard work and carrying heavy weights, but I could not trace any definite lesion or find any on examination. A tight belt round the scapula enabled him to work fairly well. In addition fly blisters were applied over the origin of the posterior thoracic nerve, and the affected muscles rubbed with a stimulating liniment.

Mr. Cotterill, who kindly saw the patient for me at the Edinburgh Royal Infirmary, recommended also the hypodermic injections of strychnine into the substance of the muscle, and the use of the interrupted current.

The patient made a complete recovery in two months.

NOTES AND QUERIES ON SMALL-POX.¹

By CHARLES PORTER, M.D., D.P.H.CAMB., M.R.C.S.,
[Medical Officer of Health for the County Borough of Stockport.]

As regards the question, Is compulsory vaccination necessary? few medical men will, I think, be found to answer it as it stands otherwise than affirmatively. A possibly more debatable point to my mind is raised by the query, At what age is compulsory vaccination most beneficial? Although the first decade of life is by no means the most favourable for contracting small-pox, the protective influence, and therefore the desirability of infantile vaccination (as shown by the enormous and universal preponderance of small-pox deaths amongst unvaccinated as compared with vaccinated children) cannot be successfully disputed. On the other hand, until revaccination be made compulsory during the third quinquennium, it seems open to doubt whether the single vaccination which is now compulsory might not be with advantage postponed until that period is reached. The protection then afforded would be effected at a more susceptible age, its duration would be more permanent, and much of the existing objection to vaccination traceable to a sentimental, but natural, dislike to inflict suffering on very young and, perhaps, weakly children would be obviated. In addition, the abandonment of infantile vaccination would render inapplicable the cogent excuse which vaccination in infancy appears at present to afford many adults for refusing revaccination after exposure to infection.

As regards the value of revaccination of families in the presence of small-pox, no one who has had to deal in a preventive capacity with this disease can have failed to have been impressed with the striking protective results of the operation, and the disastrous consequences of refusal to submit to it. In the district for which I act, several cases of this kind occurred of so convincing a nature, that the authority ordered the particulars to be circulated in handbill form in the neighbourhood in which the sufferers lived, with a fairly good temporary result as regards increase in the number of those seeking revaccination.

Under these circumstances, and also as regards all tramps, I believe that revaccination should certainly be compulsory, and that, when not performed by the medical officer of health or his special deputy, a certificate of strict compliance with Government requirements might, with great advantage, be insisted upon. An official school register of vaccination marks would undoubtedly be a step in the right direction, as at present schoolmasters appear unwilling, for fear of giving offence, to facilitate the acquisition of information by the

medical officer of health as to their scholars' condition in regard to vaccination.

An easy method of estimating the size of vaccination marks is desirable. I am aware that it has been suggested to mark them with an aniline-blue pencil, and take an impression therefrom on paper, but this result is not sufficiently easily expressible in accurate terms of ordinary measurement.

Before quitting the subject of vaccination I desire, with your permission, to formulate the following queries:

1. Are the effects of primary vaccination performed during the second decade of life to be regarded as permanent?

2. Can the protective influence of revaccination be annulled by severe constitutional illness? I am disposed to believe that it can, because I have successfully revaccinated two individuals who since their previous revaccination had suffered from a severe attack of typhoid fever and acute rheumatism respectively.

3. If a patient suffering from an apparently well marked attack of small-pox is successfully vaccinated whilst so suffering, are we therefore to conclude that his illness is not small-pox? In the early part of 1893 I noticed in the *BRITISH MEDICAL JOURNAL* (Feb. 11th, p. 291) a communication from Dr. Gornall, of Warrington, in which this conclusion was apparently adopted, the case in question being one in which there had been a traceable exposure to the infection of chicken-pox, but no known exposure to that of small-pox. Questioning the soundness of this apparent conclusion, I shortly afterwards vaccinated, at the time of their admission to hospital and on the fifth day of the disease, two pit sinkers suffering from well-marked small-pox and with a history of recent exposure to small-pox infection. In both cases the result was successful, and followed a fairly typical course. I have nevertheless not a shadow of doubt that the disease from which these men were suffering was true small-pox.

Adverting now to the appearance of small-pox in the scarlet fever wards of the Westhulme Hospital at Oldham, I may give the following details of a somewhat similar occurrence at Stockport, and of the causes to which it was traced:

On January 13th, A. B. was admitted to the Isolation Hospital suffering from scarlet fever. On February 15th this child presented a papular eruption, which rapidly became typically variolous. As minute precautions had been ordered and adopted to prevent communication between the scarlet fever and small-pox pavilions, a searching investigation was made into the occurrence, and it was elicited that a nurse had secretly kept a cat in the scarlet fever pavilion, and that this cat had been seen at the small-pox end. This vehicle of infection was effectually eliminated, the ward thoroughly cleansed with corrosive sublimate solution, and fumigated while damp with SO₂. On February 28th, however, a second case of small-pox occurred in the same scarlet-fever ward, from which the patients were again immediately removed, and the disinfecting process repeated. Happening at this time to go into the ward (then empty) of the small-pox pavilion, which is nearest to the scarlet fever end, a smell of sulphur was distinctly perceptible, and on examination a large aperture was found in the floor at one end of the ward, through which the hot-water pipes made their exit, a similar opening existing in the floor of the scarlet ward. By getting beneath the floor, and placing lights beneath each of the apertures referred to, the existence of a subterranean passage communicating with both pavilions was established, and on pouring oil of peppermint and boiling water through the aperture at the small-pox end, its odour soon became strongly perceptible at the scarlet fever end. Evidently the higher temperature of the scarlet fever ward which was in use had aspirated infected air from an empty ward of the small-pox pavilion, through this underground passage for the hot-water pipes, to the scarlet fever end. This structural defect having been remedied, no further cases of secondary small-pox have since occurred.

Finally, as regards our safeguards, I am unable to agree with the view that thorough disinfection of houses in which small-pox has occurred is uncalled for. Surely, if the germs of this disease can retain their virulence after a passage of hundreds of yards through the open air, they are doubly likely to do so in the close atmosphere of ill-ventilated houses, and if that be so, it certainly behoves us to leave no stone unturned to remove or purify all possible fomites.

In discussing our safeguards no reference has, I think, been made to the nightly inspection of common lodging-houses. In Stockport the disease was so repeatedly reintroduced by vagrant lodgers at these places, that a nightly inspection between the hours of 9.30 p.m. and 11 p.m. of every lodging-house in the town was organised with excellent results. My committee, at my suggestion, also authorised a young medical man to accompany the inspector for each one of the four sanitary subdistricts every fourth night, supplied him with lymph, and paid him 2s. 6d. for every vaccination he effected.

¹ Read before the N. W. Branch of the Society of Medical Officers of Health on October 13th, 1893.