out that it supplies a valuable means of studying the manner in which conduction of impulses from the cortex through the nerve roots and plexuses to the muscles takes place; and that it is capable of still wider extension, as if, instead of producing general epilepsy, less powerful stimuli be applied to the centres for different movements, as represented in the motor cortex, it will afford a means of connecting such centres, or parts of these, with the nerve roots to which fibres proceed from these cortical motor centres.

CLINICAL NOTES ON PARALYSIS OF THE DIAPHRAGM.

By C. W. SUCKLING, M.D., M.R.C.P.,

Professor of Medicine to Queen's College, Birmingham.

PARALYSIS of the diaphragm is a rare affection, but in my opinion it is frequently overlooked, though it may be easily detected if searched for. During the past year I have met with six cases. The first case, which I saw with Mr. Stanley, of Small Heath, was that of a young gentleman who had strained his neck over a horizontal bar in an athletic display. Within an hour he complained of numbness and weakness of his legs, and when I saw him these symptoms had increased. He had difficulty in swallowing, and scarcely any power of phonation. I found paralysis of the right half of the diaphragm, the left half acting but feebly. By keeping the patient absolutely at rest, and by careful feeding, with frequent application of a faradic current to the right phrenic nerve, the patient was kept alive. The diaphragm gradually recovered power, and in six or seven weeks he was quite well. The lesion in this case was probably hæmorrhage around the cord above the origin of the phrenic nerve, the pressure being greater on the right side.

The second case, which I saw with Mr. Hall-Edwards, was that of a young lady who was suffering from influenza, and I was called in on account of severe neuralgic pain in the right lower extremity. The pain was paroxysmal, and of such severity that morphine injections had to be given constantly. On my second visit I found the right half of the diaphragm paralysed. There was no dyspnoea and no alteration of the voice. We decided to apply a faradic current to the phrenic nerves, one pole being placed at the lower end of the anterior triangle in the neck, the other over the hypocondrium. The patient improved with this treatment for a day or two, and then died quite suddenly. This was in my opinion a case of acute multiple neuritis, and the paralysis of the right half of the diaphragm was due to neuritis of the right phrenic nerve, the implication of the left nerve being the probable cause of sudden death.

The next three cases were all due to diphtheria, and were all fatal. I believe that paralysis of the diaphragm is the cause of the great majority of sudden deaths after diphtheria, and that only a few can be attributed to syncope. I believe also that in many cases the diaphragmatic paralysis is not recognised. Of the three cases one was a man and the other two children. In all the cases paralysis of the legs was present, and there was no difficulty in recognising the diphtheritic origin of the mischief, though in one case the sore throat had been very slight. While at rest in bed there was no dyspnoea, but phonation was very feeble and defæcation and micturition impeded. On examination of the abdomen the diagnosis was readily made. The hypocondrium on the affected side became depressed on inspiration instead of being propelled forwards, and by placing the hand under the ribs the non-descent of the diaphragm could be easily ascertained. There was compensatory overaction of the lower intercostal muscles and great enfeeblement of the breath sounds at the base of the lung on the affected side. In each case the right half of the diaphragm was chiefly affected, but I believe this is due to the presence of the liver on this side and to the inability of the weakened muscle to push the organ down, while on the left side the muscle can descend until quite paralysed.

In all three cases the paralysis was recognised a day or two before death, and special precautions taken, but in each case death occurred quite suddenly. One little boy was brought

to my consulting room; observing the feeble cough and phonation, I had him stripped and examined the diaphragm; I found it paralysed. This enabled me to caution the parents of his grave danger, and I heard afterwards that he died suddenly the day after seeing me. If both halves of the diaphragm become paralysed, death ensues from asphyxia, and the fatality of diaphragmatic paralysis after diphtheria can easily be understood when we remember the severity of the neuritis which frequently follows diphtheria, some patients being paralysed for a year or more.

As to treatment I would recommend that every case of diphtheritic paralysis be kept in bed from the first, and that plenty of nutritious food be given. Iron and strychnine should be administered in large doses. If weakness of the diaphragm is observed the patient should be raised in bed with pillows, so that the diaphragm may act more easily. A gentle faradic current should be used three or four times a day, and blistering fluid painted over the course of the phrenic nerve in the neck. Stimulants should be given freely.

The prognosis of paralysis of the diaphragm after diphtheria is very grave, and its onset may possibly be prevented by keeping patients in bed and at rest whenever any signs of paralysis are present. The early recognition of paralysis of the diaphragm is very important from a prognostic point of view.

The sixth case was that of a woman, aged 37, who was admitted for a second attack of alcoholic paralysis. The hands and feet were dropped, and the usual symptoms were present in a typical manner. The diaphragm was observed to be paralysed, and the patient died suddenly a day or two after this observation. I am not aware that paralysis of the diaphragm has been previously observed in alcoholic paralysis, or that it has been noted as a cause of sudden death, most of such deaths being attributed to cardiac paralysis. This case emphasises the great similarity that exists between alcoholic and diphtheritic paralysis, and as alcoholic paralysis is recognised as being due to multiple neuritis, the paralysis of the diaphragm being also due to neuritis of the phrenic nerves, we may reasonably infer that paralysis of the diaphragm after diphtheria is also due to neuritis of the phrenic nerves. In none of the above cases could a *post-mortem* examination be obtained.

A CASE OF RAPIDLY FATAL DIABETES MELLITUS IN A BOY AGED 10.

By WILFRED WATKINS-PITCHFORD, M.R.C.S., L.R.C.P.

J. A. C., aged 9 years and 9 months, was first seen on April 23rd. For about a fortnight the child had been complaining of dryness of the throat and mouth, of being very thirsty, troubled with cough, and of passing more water than natural. He was also, though eating heartily, growing thin. He was a thin boy, with flushed, anxious-looking face and widely dilated pupils. The skin everywhere felt dry and harsh. There was no congestion of the fauces. The tongue was clean and of a bright red raw colour. No abnormal physical signs could be detected in the thoracic or abdominal organs. The liver dulness was normal in extent. The urine, of a pale greenish tinge, was of acid reaction, specific gravity 1035, and free from albumen, but gave immediate evidence of abundance of sugar with the liquor potassæ and sulphate of copper test. The pulse was strong, 80, and the temperature normal.

Upon these symptoms a diagnosis of diabetes mellitus was founded and a correspondingly serious prognosis given.

The subsequent history of the case was as follows:—The patient was at once put on a diabetic diet, and for a day or two partook freely of milk and water, eggs, green vegetables, and diabetic biscuits. He was ordered 5 minims of the liquor morphinæ hydrochloratis every three hours. On the following day the tongue became furred down the middle with white fur; the breath was noticed to smell like that of a milking cow. During the twenty-four hours ending 6 p.m. he passed 6 quarts of urine, presenting the same characteristics as that examined on the previous day.

During the next twenty-four hours 5 quarts of urine

were voided, the patient passing it with great regularity every hour of the day and night. The tongue became thickly coated with fur, light brown down the middle and of a drab colour in the rest of its extent. The edges of the organ were of a liver colour and free of fur. The thick coat of fur was pierced in numerous places by small slit-like apertures. At 6 p.m. the pulse was 84, weak, but regular; the temperature 98.4°. During the day two or three loose offensive stools were passed; they appeared to contain neither a superabundance nor a deficiency of bile.

In the next twenty-four hours a marked change occurred. The respirations, from being normal in character, almost suddenly doubled in frequency. He coughed occasionally, but without expectoration. No physical signs of disease could be detected in any part of the lungs. The patient vomited once or twice at intervals of a few hours. At 7 p.m. the respirations numbered 48 in the minute, the pulse (hardly perceptible) 96; the temperature was so far subnormal that the index of the thermometer remained quite stationary when shaken down to the lowest point. The patient was evidently moribund; he ceased to ask for drink, and it was with great difficulty that nourishment could be administered. Three points and a half of urine were voided during this period.

On the following day the patient died. In the twenty hours preceding death 16 ounces of urine were passed; the odour of this water was quite distinct from that of previous days, being very urinous in character; its specific gravity was 1040; it had a strongly acid reaction, contained abundance of sugar, and one-sixth albumen; no casts could be detected. Although he had not strength enough to speak, the patient retained consciousness to the end. The emaciation, which steadily progressed throughout the illness, became extreme towards the end.

REMARKS.—The theory that a powerful mental emotion may act as exciting cause in diabetes mellitus receives support from this case. Eighteen days before the appearance of any decided symptoms this boy's mother died of pulmonary phthisis. (There was no other family history of tuberculous diseases nor any of diabetes.) He was said to have been much distressed by the loss of his mother.

Dr. C. W. Iliffe, of Coventry, attended the case with me. From the earliest appearance of any symptom up to the time of death twenty-one days elapsed. Six days before death the boy was playing about with his fellows. As such an acute course must be rare, we have taken special care to verify this statement of the duration of the disease. That pulmonary complications occurred the day before death cannot be asserted in face of the recorded absence of all physical signs. Whether the adoption of the diabetic régime did not hasten the fatal end is, we think, an open question. The effects of morphine on the patient were feebly marked; he slept but little, and that lightly; the pupils remained dilated, but this, the father assures us, was their natural condition. It is true that the quantity of urine secreted began to diminish from the time of commencement of treatment, but this diminution seems rather to have ushered in the fatal collapse than to have been indicative of any check to the course of the disease. In view of the somewhat exceptional nature of the case, it is to be regretted that a *post-mortem* examination of the body was refused.

DR. JACOB MOLESCHOTT, Professor of Physiology in the University of Rome, and member of the Italian Senate, will complete his seventieth year on August 9th, 1892. Dr. Moleschott, notwithstanding his almost life-long connection in Italy, is still claimed by his countrymen as a Dutchman *in succo et sanguine*, and a committee representative of the profession in Holland has been formed under the presidency of Professor B. J. Stokvis, of Amsterdam, to celebrate the event.

MEDICAL CONGRESS IN MEXICO.—The first Medical Congress in the Mexican Republic will be held at Mexico from December 6th to 10th, 1892. The work of the Congress will be done in fourteen sections, as follows: Anatomy, Medicine, General Surgery, Syphilography, Neuropathology and Psychological Medicine, Ophthalmology, Surgery of the Urinary Passages, Therapeutics and Pharmacology, Obstetrics and Gynaecology, Hygiene and Bacteriology, Forensic Medicine, Military Medicine, Pharmacy, and Veterinary Surgery.

MEMORANDA: MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

TREATMENT OF PLEURITIC EFFUSIONS.

In the quotation of Professor Köster's remarks on the above-named subject,¹ good effects are reported from the use of the salicylates. Rapid absorption of the effusion followed the administration of the salicylate in seventeen out of twenty-seven cases. We read also: "In most patients there was moderate fever, which declined rapidly."

From such experience as I have had with the salicylate of sodium in cases of pleuritic effusion, I believe it to be often of service. It seems to act by reducing temperature and abating fever; and when this result is brought about, especially in cases of recent effusion, absorption proceeds at once. I have often remarked at the bedside that you do not get a pleuritic effusion to absorb while any inflammation or fever is going on.

In Victoria Park Hospital it has not been an uncommon thing for a patient to be admitted with one chest full of fluid, and after several days' rest this effusion has gradually gone away. I remember how my colleague, the late Dr. Sutton, used to enjoy telling me of such cases where a pleuritic effusion vanished under treatment with tinct. cardam. co. 3ss, aquæ puræ 3j, t.d.s.

Mercury, I believe, limits inflammation in serous membranes, and so promotes absorption. When the absorption commences, the further administration of mercury may often be stopped. For years I have employed mercurials in recent pleurisy, and only once did I salivate a patient. In that case we rubbed mercurial ointment over a blistered surface, and, with some soreness of his gums, the patient recovered quickly.

I have given the tincture of the bryonia alba, a medicine that appears to be a good deal used for rheumatism, being known to all our chief chemists, and I certainly can speak favourably of it as checking inflammatory pleurisy and assisting absorption of fluid. The tincture is usually made according to the form given in the *United States Pharmacopœia*. I am told that the public use the sliced root of the bryonia for rubbing rheumatic joints. Like the salicylate, it is quite one of the antirheumatic medicines.

Before tapping a patient, it is a great advantage to be able to get the temperature down, for then the chance of another collection of fluid is not great. Draw off the fluid rapidly, while temperature is still a febrile one, go on till the patient coughs violently, show the admiring friends a big lot of fluid, and depend upon it very soon you will be again called in to repeat the operation.

Welbeck Street, W.

JOHN C. THOROWGOOD.

DIPHTHERIA AND TRUE CROUP.

AN unusual series of ten cases of diphtheria has been seen in this parish in December, 1891, and the following month; in no less than six—all children—the disease was laryngeal.

The first case, in a boy aged 10, was seen on December 18th. No throat symptoms were complained of or found; death resulted in three days, and true croup was certified as its cause. In the second case no membrane was found in the throat, but it presented signs of recent mischief, and croup ended fatally in two days. In the third case I was just in time to see a purulent pellicle hanging from the upper part of the phalanx. Tracheotomy was done on the third day with marked relief, but, after thirty-six hours, violent and incessant cough came on, producing fatal exhaustion in a few hours. The fourth case was again laryngeal, and death resulted fifty-six hours after tracheotomy, from extension of the disease downwards. In the fifth case croup had not set in when the first visit was made, but membrane covered the tonsils, and the larynx was attacked in a few days. This patient recovered under the local use of paraffin, the laryngeal symptoms being mild, and tracheotomy uncalled for. The sixth case, in an adult, ran an ordinary course and recovered

¹ EPITOME, May 7th, par. 413.