

nystagmus became much more marked and a decided intention tremor appeared on the right side only, with right-sided patellar and ankle clonus. A very brisk jaw-jerk was obtainable at this time and her speech became altered. For six weeks after this attack she was confined to bed owing to weakness of the right leg. There was a considerable amount of fluid effusion in both the right knee and ankle-joints, which were, however, painless. Incontinence of urine first commenced at this time, intermittently at first but later becoming complete. While in bed during this six weeks the temperature varied up to 102.4°F. , and on several occasions there was a difference of four degrees in 12 hours. An interesting feature at this time was the presence of an urticarial rash which extended all over the body, varying in distribution and degree from hour to hour; it lasted off and on for three months and towards the end of February clear bullæ appeared which, when broken, left clean, raw, moist surfaces. They developed chiefly on the hands and feet. The only drugs she was taking at this time were simple aperients and occasionally small doses of bromides. Whether the urticarial and bullous eruption should be attributed to these or to abnormal vasomotor changes dependent on her disease I do not know. In the following April she improved and was allowed out of bed; she gradually gained strength in the right leg until she was able to get from the bed to the chair unassisted. The speech that month became much worse and very slurring, but could hardly be described as "staccato."

At the end of April another seizure occurred, preceded by a fall of temperature. Twitching commenced in the right side of the face and the right arm and leg; speech became unintelligible and wandering and the patient gradually passed into a semi-comatose condition, with clonic spasm of the right arm and leg, which lasted for several days but gradually disappeared with return of consciousness. The pupils varied in size, continually altering from hour to hour, at one visit the right being the larger, at the next the left. Lateral nystagmus at that period was a constant feature. On the return of consciousness after this attack she was found to be suffering from complete motor aphasia. Sensory aphasia was either absent or slight and transient, for within about four days from the return of consciousness she could comprehend what was said to her, but it was some days later before she could herself speak, and then for a time she only answered "Yes" to questions put to her, but she would do anything she was told to. Her speech gradually improved and it was then found that there were hyperæsthesia of the right leg and almost complete anæsthesia and analgesia of the left which persisted for many months. Incontinence of urine was continual and in May cystitis appeared but readily yielded to treatment.

In the following September the condition had improved so much that I find a note to the effect that she was out of bed again and having her meals with her friends in the dining-room, to which she had walked with the assistance of both her nurses. Her writing was shaky but clear; she took an intelligent interest in the illustrated papers and played "Patience," of which she was very fond. At the end of October, after another attack, she became bedridden and her symptoms increased in severity. Speech became so bad as to be unintelligible; nystagmus was always present, the spasticity of the legs became worse, and contractures developed. Intention tremor was so marked that she had to be fed and the incontinence of both urine and faeces gradually became complete.

From October, 1903, to March, 1905, numerous attacks of a similar apoplectiform nature occurred, after each of which she passed into a comatose state with Cheyne-Stokes respiration for some days. In March, after an attack she became speechless, but noisy, and appeared to be in pain. After several days a large ischio-rectal abscess was discovered and opened. In April she became very lethargic and could not be made to understand anything said to her. She understood, however, to a certain extent, what was going on around her, and would, for instance, help her nurses when washing her. The next month, notwithstanding excellent nursing and a water-bed, a large bed-sore formed on the left hip, followed by an abscess of the buttock, which necessitated very extensive opening and draining with tubes. At that time, too, numerous crepitations were found at the bases of both lungs, and the respiration rate was frequently 30 per minute. The abscess slowly healed and the chest signs disappeared, but from June, 1905, onward, the girl never regained consciousness, hardly ever moving in bed.

During the last 18 months of life it was only with great difficulty and with the occasional help of a nasal tube that her food, which consisted of milk, meat juice, &c., could be given her. She simply lay in bed on her back with her hips and knees flexed and rotated to the right side, her arms flexed and pressed so tightly on her chest as to necessitate her thorax being protected with Gamgee tissue to prevent pressure ulcers. Her legs showed marked emaciation and wasting of muscles, but the rest of her body, with the exception of the hands, remained fairly nourished. In the hands atrophy appeared first in the thenar and hypothenar eminences, and then extended to the interossei; fibrillary contractions were constantly present in the forearm muscles. The tongue, too, showed signs of atrophy. The reflexes slowly disappeared, both superficial and deep, until even the corneal reflex could not be elicited. The pupils towards the end became small and equal, but they always reacted to light. The apoplectiform attacks continued and became even more severe in character, leaving the patient collapsed, pulseless at the wrist, and cyanosed; they were almost always preceded by a fall in temperature, so that the nurses were able to predict the occurrence of a fit. These attacks were followed by twitchings and spasms chiefly of the right arm and leg, so severe as to shake the bed. These would continue for hours and were accompanied at intervals by a short, sharp, piercing cry which could only be compared with the meningeal cry. They were, to a certain extent, controlled by hypodermic injections of morphine, which had to be given in increasing doses. I am inclined to think that the morphine diminished the number of the attacks. Bromides, even in large doses, had no effect.

Respiration for many months was of the Cheyne-Stokes type, and, at the height of the cycle, when respirations were most active, she frequently uttered this cry, at times so loudly as to provoke complaints from the tenants in the neighbouring flats. The pulse was usually rapid and irregular and at times was imperceptible at the wrist. After the subsidence of an attack, cyanosis, coldness, weak respiration, and feeble cardiac action were so marked that death was often thought to be imminent, and when, after a series of fits lasting for 48 hours, with a gradual rise of temperature to 106° , death did occur on Sept. 5th, 1906, the patient looked no worse than she had done on previous occasions.

The sequence of the classical symptoms of this disease was remarkable, as was also the temperature, which was never what could be considered normal for longer than 24 hours, from February, 1903, to September, 1906. The apoplectiform attacks were exactly like true apoplexy, followed by right-sided hemiplegia, and, at first, speech disturbance, but the paralysis was transitory. No post-mortem examination could be obtained.

Holland Park-avenue, W.

DIPHTHERITIC MEMBRANE INVOLVING THE PHARYNX, ŒSOPHAGUS, AND RESPIRATORY PASSAGES.

BY F. E. FIELD, M.B., CH.B. EDIN.,

ASSISTANT MEDICAL OFFICER AT THE NORTH-WESTERN HOSPITAL, HAMPSTEAD.

INVASION of the œsophagus by diphtheritic membrane seldom occurs even when there is extensive involvement of the pharynx or respiratory passages. Holt reported on 109 cases of diphtheria and Lennox Browne on 1000 in which there is no mention of membrane in the œsophagus. Councilman, Mallory, and Pearce have placed on record 12 cases out of 220 examined post mortem in which the œsophagus was part of a general involvement, and Sir Morell Mackenzie mentions cases recorded by other writers and two cases coming under his own observation. The only recent cases of membrane extending to and involving the œsophagus are those recorded by Dr. E. W. Goodall,¹ Dr. E. Cautley,² and Dr. John Fawcett.³

A man, aged 37 years, was admitted to the North-Western Fever Hospital, Hampstead, on the evening of Oct. 9th, 1906, complaining of headache and sore throat. He had had

¹ Transactions of the Pathological Society of London, vol. xlvii.

² Reports of the Society for the Study of Diseases in Children, 1902-03, vol. iii.

³ Transactions of the Pathological Society of London, vol. lviii.

no previous illnesses. His surroundings both at home and at work were good—the patient occupying a good social position. A history of alcoholic excess, extending over many years, was obtained. His illness began on Oct. 5th, when he complained of headache and sore throat. His constitutional symptoms on that day were so slight that he did not think his condition warranted his having medical advice. On the following day (the 6th) the patient suffered from chilliness, and this in addition to his other symptoms necessitated his remaining indoors. On the 7th he had attacks of nausea and vomiting. His throat caused him more discomfort and constitutional disturbance was a marked feature. Two days later (the 9th) he received medical attention and was sent to hospital. His state on admission was as follows. The face and lips were cyanosed and the tongue was coated. The soft palate, uvula, tonsils, and the pillars of the fauces were much swollen. Membrane, thin, friable and fibrinous, covered the uvula, both tonsils, and the posterior pharyngeal wall. The cervical lymph glands were slightly enlarged. The temperature was 101.6°F . and the pulse was 88, small, and irregular. The urine contained a large quantity of albumin. Breathing was difficult and hurried and dulness extended over the lower lobes of both lungs. Swallowing was difficult and painful. During the night of the 9th the patient became restless and delirious. On the following morning he had an attack of vomiting and a tube of membrane was brought up. Breathing, however, was not relieved, but swallowing became less difficult. Later, he became more restless and delirious. His pulse varied from 100 to 120 and became more irregular. Respiration increased in frequency and cyanosis was a marked feature. As regards treatment, the patient was given 2000 units of antitoxin a few hours before admission. And on admission another 10,000 units were injected, followed by 12,000 units 12 hours later. Treatment was altogether useless and he died 24 hours after entering the hospital.

Necropsy.—The body was found to be that of a well-developed and muscular man. Rigor mortis was present in both upper and lower extremities, with well-marked general lividity. The tonsils were swollen and ulcerated, and flakes of membrane were present on both. The laryngo-pharynx was covered with dense, tough, yellowish membrane, and traces of membrane were present along the œsophagus to about three centimetres from the cardiac orifice of the stomach. These scattered areas of membrane on the œsophagus were the remains of the cast passed immediately before death, the cast measuring some three to four inches in length. The epithelium of the œsophagus was necrosed and there was congestion of the mucous surface. Membrane covered the vallecule, the lingual surface of the epiglottis, and the aryteno-epiglottidean folds. The posterior surface of the epiglottis was injected; but the probability is that the membrane there had loosened after antitoxin treatment. The false and true cords and the laryngeal sinus escaped. Beginning immediately below the true cords the membrane continued downwards, completely lined the trachea and larger bronchi, and extended even to some of the minute bronchi. The left lung weighed $33\frac{1}{2}$ ounces and the right $22\frac{1}{2}$ ounces. Areas of broncho-pneumonia of hæmorrhagic variety were scattered throughout both lobes of the left and the lower lobe of the right lung. Areas of collapse were present in both lungs. The left pleura showed traces of past inflammation. The heart weighed 16 ounces. The right chambers and the tricuspid orifice were markedly dilated. There was slight dilation of the mitral orifice, the left ventricle, and the left auricle. There was considerable loss of tone of the organ, and fatty change was marked. Patches of atheroma were present on the ascending aorta. The liver weighed 58 ounces. There were fine cirrhosis and areas of fatty change throughout the substance of the organ. As regards the spleen the Malpighian corpuscles were greatly enlarged and the pulp was somewhat diffuent. Both the kidneys were enlarged. The capsules stripped readily. The glomeruli were enlarged and the venules were dilated. The superficial and interpyramidal cortices were swollen and showed marked fatty change.

Bacteriology.—On admission a swab was taken from the throat and a culture was made on blood serum. The colonies consisted of various varieties of streptococci and staphylococci, but the Klebs-Löffler bacillus was not isolated. A second culture was made from the membrane post mortem and almost a pure growth of the specific bacillus found.

Remarks.—The importance of an early diagnosis in cases of diphtheria cannot be too strongly emphasised. In this

case the patient suffered from the disease five days before his case was diagnosed and before he received suitable treatment. 12 hours after antitoxin was given the œsophageal membrane loosened, but toxæmia was too far advanced to allow of efficacious treatment. It is probable that over-indulgence in alcohol contributed largely in lowering the vitality of the tissues and this diminished resistance, together with the delay in treatment, allowed the specific organisms full scope to work their malign influence. Another feature in this case was that even when the membrane had been observed and diphtheria diagnosed the first culture made from the throat gave a negative result. Similar results have often occurred in my experience and when one considers the importance of an early diagnosis it would seem best that in all cases in which diphtheria is suspected at least two separate swabs should be taken on first examination of the throat.

I am greatly indebted to Mr. F. N. Hume for permitting me to record the case.

Note by Mr. HUME.—A remarkable feature in this case was the persistence of phonation. In adults where the air passages are wide the loss of voice is important as an indication of the presence of membrane in the larynx and possibly below it. The absence of laryngeal obstruction without loss of voice may be misleading, but increasingly ineffective inspiration without laryngeal symptoms should be recognised as a sign of bronchial obstruction, its significance rendered more grave by the fact that in such cases of pulmonary suffocation, now of very rare occurrence, tracheotomy is useless. The vocal condition in this case is explained by the freedom, found post mortem, of the vocal cords from membrane.

North-Western Hospital.

SOME LIMITATIONS OF MEDICAL EVIDENCE.¹

BY STANLEY B. ATKINSON, M.A. CANTAB., M.B.,
B.Sc. LOND., J.P.,

BARRISTER-AT-LAW; HONORARY SECRETARY OF THE MEDICO-LEGAL
SOCIETY.

THE science, the art, and the correct estimation of the value of medical evidence is the province of forensic medicine. It is not impertinent, therefore, to inquire as to what limitations can be and are placed upon the medical man who desires to bear testimony in a court of law as to facts within his personal knowledge. Evidence is the means whereby an alleged matter of fact, the truth of which is being submitted to forensic investigation, is established or disproved. Testimony is such evidence as is given by word of mouth. Usually medical men are skilled common witnesses of fact; often they are asked for opinions inferred from such facts as they narrate. In offering such consequential testimony they must recollect that they are posing as experts; they would be wise in many cases in just stating what they actually found, without drawing a possible conclusion. In such a case John Hunter in 1781 twice told the judge: "I can give nothing definite."

Limitations of medical evidence may arise in two directions—limitations of medical knowledge and limitations imposed by the policy of the law. The former restrictions become fewer with the advance of time, research, and medical education—for men's views narrow with the progress of the sciences. Limitations imposed by rules of law are enlarged less easily; indeed, modern statutes are notorious for the strictness of their definitions—a strictness which often makes it difficult to bring home wrongdoing to a culprit's door. All definition implies limitation. In this connexion it has been said that in forensic medicine the law leads and medicine follows, whilst in State medicine medicine leads and the law follows.

Limitations of medical knowledge may be relative to the medical witness concerned (self-imposed or enforced), or they may be absolute. Thus the diligence, skill, and knowledge of medical men vary from age to age and from person to person. So variable is this range that a man is expected to treat a patient only to the best of his ability and not in the best manner possible by an authority on such matters. Recognising personal limitations, it is wise for all professionals to be on their guard and to risk no disgrace, when in