the tongue was slightly furred, the breath-odour more intense. I forced his mouth open for a more complete examination of the fauces and palate. The back part of the palate was of a *clear white*, exactly as if it had been cauterised with nitrate of silver. When my friend, Dr. Roberts of St. Asaph, and myself, again visited him the same day and made an examination of the throat, a piece of about the size of a half-crown, and as thick as a shilling, was peeled off the palate by my finger. The surface was as white as parchment. The right tonsil was felt filling the right half of the fauces to the uvula; the left tonsil was of natural size. A considerable quantity of sero-bloody purulent matter flowed into the mouth in making the examination; it came, I think, from the right tonsil. When the coriaceous-looking membrane was held to the light, it presented pits or depressions, the marks of the outlets of the mucous follicles. He had taken no food of any kind; the bowels had been moved; pulse 120. I ordered a mixture of quinine and chlorate of potass, and alternate injections of beef-tea and wine and eggs, should he continue to refuse to take food. The part affected was rubbed with nitrate of silver.

Nov. 27th. He was moribund, comatose, and convulsed, and died on the fourth day from the onset of the attack. During the last twenty-four hours of his consciousness, he partook liberally of wine and egg and beef-tea. The power of swallowing remained easy to the last.

POST-MORTEM EXAMINATION forty-eight hours after death. The roof of the mouth was pearly white; the tongue clean. The tongue, tonsils, pharynx, œsophagus, and trachea, down to the bifurcation, were removed together. The right tonsil was enlarged; the surface was rugged, soft, moist, and villous, bespeckled over with black spots; it appeared to be in an incipient stage of sphacelation, rather offensive. The left tonsil was healthy. The spot on the palate where the piece of membrane came off during life was equally covered with the same coriaceous layer; the pearly white appearance on the roof of the mouth could not easily be scraped or peeled off. The surface of the pharynx and the epiglottis were covered by a membrane of the same kind, of about the thickness of a sixpence, but softer, and more easily torn from the submucous tissue, which appeared granular and inflamed. The larynx was considerably inflamed, and covered with frothy mucus, but it lost the membranaceous appearance two or three rings down. The right parotid submaxillary and lymphatic glands were enlarged. The lungs were healthy, as well as the other organs of the body. The head was not examined. My colleagues, as well as myself, agreed that the pathological changes observed in the throat were not sufficient to cause death. The following were the different pathological appearances, and conclusions thereon:—

1. The thickening of the epithelial mucous layer by exudative product gave the white parchment appearance to the mucous membrane.
2. That desquamation of the exudative, hypertrophied, epithelial mucous layer may account for the membranaceous expecoration in these cases.
3. The coriaceous membrane had been evidently successively renewed, as the roof of the mouth, where it had been peeled off during life, was equally covered.
4. In some parts, as the pharynx, the submucous membrane was bare and granular, but there was no defined ulcer, in the common acceptance of the term.
5. The right tonsil was soft, and in an incipient stage of sphacelation; hence the peculiar breath-odour during life.

REMARKS. This case pursued a most curious and insidious course. There was painless deglutition, though the tonsils were inflamed and enlarged; no cough nor difficulty of breathing though the epiglottis was diseased and inflamed. What could be the reason? The most probable way of solving the question is, by taking into consideration the impaired nutrition of the parts, as well as the effect of the hypertrophied epithelial membrane covering the papillæ in physically blunting their sensibility. How far this affection, diphtheria, is a distinct kind of zymotic disease, having for its cause and origin a different kind of blood-poison from the modified malignant scarlatina, to which, I have no doubt, it is more allied than any other disease of the order exanthemata, I have had too limited experience for a satisfactory analyses. The course, symptoms, and pathological appearances were as clearly different from scarlatina as from the rest of this order.

CASE II. J. J., aged 20, dairymaid, a strong and healthy looking woman, was taken ill twenty-two days after the death of the above patient, in whose family she lived.

December 18th, 1858, I visited her. She said that, on the

10th, she was taken suddenly with headache, shivering, and considerable prostration, which disabled and obliged her to go to bed. During the following night, she was exceedingly hot and thirsty; her throat became sore, and the voice so husky, that she could not be understood when speaking. She had frequent vomiting; the bowels had not been moved after several doses of castor oil. On examining the throat, I found the right tonsil enlarged, and bespeckled over with few irregular white spots (as if caustic had been applied), varying in size from a pin's head to a small ivory button; the mucous membrane of the palate appeared milky; the external cervical glands were puffy; the pharynx looked healthy; the voice was hoarse; pulse 90. The bowels were costive; the urine scanty; the skin hot; there was no rash. She had no pain in swallowing. I ordered hot bran poultices to be applied to the neck, and repeated the castor oil till the bowels were moved; and gave a mixture of tincture of sesquichloride of iron. She had so improved by the second day, that it was thought unnecessary for me again to visit her.

REMARKS. I have no doubt the above case was one of simple modified diphtheria as regards the pathological results. The two cases fully illustrate that there are varieties of degrees and intensity of the morbid influence of diphtheritic poison, or that the latter case was abated and shortened in its course and effects by tincture of sesquichloride of iron.

DIPHTHERITE; ITS NATURE AND TREATMENT.

By C. E. BERNARD, M.D., Weston-super-Mare.

As Diphtherite has held, and holds a prominent place amongst prevailing disorders, and is yet destined, no doubt, to invade districts hitherto free, possibly the following remarks thereupon will not be out of place. I would not claim for them any great amount of originality. The object is more to separate the grain from the chaff, and place it so that they who run may read. Anything new in them will, of course, discover itself.

The term Diphtheria, or Diphtherite, is itself in some degree objectionable; first, because being new it conveys to the mind of many the idea of a new disease, and a new disorder suggests a new remedy, and a resort to the last *new system* upon the principle *similia similibus*; and the advocates of the 'opathies' and 'ologies' see a favourable opportunity of advancing and recommending that heresy which may chance to be the peculiar weakness of each; and were the professors as active as the disciples, mischief might result. But fortunately the disease in question is too serious a matter for trifling. But independent of this collateral complication, the simple fact of a patient supposing that he labours under a new and hitherto unknown disease, adds materially to the constitutional prostration by which the setting in of the disease itself is characterised, just about in the same proportion as we would wish to elevate the vital power by—hope and confidence. It is useless to argue with the sick, and often more so with those about them. It is manifest, of course, that no form in which disease presents itself can be really new to the practitioner, whose diagnosis and treatment are based upon sound and recognised principles. It gets classified immediately, and is but a rare variety. Who, indeed, at the present moment can so distinctly draw the line as to separate all cases of diphtheria from diseases of almost daily occurrence at some season or other of the year? But the truth is that the disease, even under its present name, is not new.

Without going back to ancient authority, it is thirty-five years since Bretonneau published his work, "*Des Inflammations spéciales du Tissu muqueux, et en particulier de la Diphtherite*," etc., and this was several years before spasmodic cholera prevailed epidemically in this country; nevertheless, the "*new throat disease*" is an every day expression. To deprive it of its novelty would, in my opinion, take some of the venom from its sting. The term *Angina membranacea* seems scientific, and characteristic of the special nature of the malady.

The mortality arising from the disease in question is great, if we are to believe *all reports*. Wherefore, it would be safer to believe only such as are vouched by medical authority. Every practitioner knows that some of the worst cases of scarlet fever are those in which the rash comes out sparingly or not at all; and, doubtless, many such are smuggled, by the

uninformed, under a name now "familiar in our mouths as household words," and confessedly too familiar in our throats. Yet it is of great importance truly to distinguish the actual disease; and I am of opinion that, to deprive the bugbear, which is haunting the public mind under the name of diphtheria, of some of its prestige, would of itself be no small service.

Pure cynanche membranacea, or diphtheria, is not of itself a dangerous disease. It becomes so by complications, the most common of which is an extension of the false membrane into the air-passages; or, in fact, croup. Another point worthy of remark is, that *gangrene* does not occur in true diphtheritis, as is proved by the integrity of the subjacent parts after the removal of the false membrane (after death or otherwise); and this absence of gangrene is insisted upon by some French writers as the diagnostic sign betwixt this and other affections of throat. But the false membrane itself will run into a state of putrefaction, judged by the smell only, very much simulating gangrene, and this smell is of importance in other respects.

As to treatment: it seems singular, that while the very name of croup is instantly suggestive of *calomel*; yet the other affection, whose most dangerous complication is croup, does not appear to have been treated, to any great extent, with calomel, and certainly not as the leading remedy. The recorded observations of some, indeed, go to show that calomel has not, in their experience, proved useful; others declare it worse than useless. Many, nevertheless, strongly advocate its early employment; and it is difficult to understand how calomel can be so effectual on one side, and so ineffectual on the other side, of the very narrow line which divides the pharynx from the larynx,—a line so fine that, to demonstrate it, would require as much acumen as would be necessary for feeling the edge of the equator when passing over it. Still, reasoning as we do in other instances of false membrane, calomel should not be hastily abandoned. The efficacy of calomel, even in croup, was not, probably, all at once established.

Caustic, solid or in strong solution, is much advocated. How does it act? Some say as a stimulant,—some, an astringent. I doubt them; but I believe that, where it has a beneficial effect, it acts purely as a *caustic*, destroying some portion of the mucous membrane, and thus making, artificially, that boundary betwixt the pharyngeal and laryngeal membrane, which, in the normal state, is only arbitrary, and circumscribing spreading inflammation, as in cases of erysipelas. I believe it further acts by setting free, at any early stage, unhealthy fluid occupying the submucous tissue, and which, if not set free might, seeking a vent elsewhere, involve the case in something like oedema of the glottis. This leads to the question, whether this submucous tissue is not often the primary seat of disease, aggravated by the unyielding state of the membrane, and whether the membrane itself, partially detached, might not (altered in appearance) simulate false or adventitious membrane; or, again, whether the first patches of false membrane that appear so frequently are to be considered altogether of a morbid character, or are the first efforts of nature to replace a membrane, to her watchful eye already doomed. The excess of her efforts, and extension beyond required limits, has many a parallel, for instance, *granulation*. Ten or twelve years ago I suggested (in the *PROVINCIAL MEDICAL AND SURGICAL JOURNAL*, vol. for 1846, p. 78) the application of caustic, upon the principle to which I allude, in cases of cynanche tonsillaris, then prevailing in quite an epidemic form. But, as some cases of the present epidemic run a very rapid course, might not the knife, upon the same principle, be substituted for the caustic, and free scarification be practised. The difficulty of getting a good view of the parts involved is a common embarrassment. Hence, frequent examination of the throat, and educating the tongue to submit to depression with some familiar instrument of unsurgical appearance, give an advantage when most needed.

The careful removal, from time to time, of shreds of detached membrane, hanging into the pharynx, by curved scissors, is very advisable, as these catch and retain particles of food which run rapidly into a putrescent state.

Guaiacum in some hands seems to have acted almost as a specific, and to have maintained the credit it has enjoyed in cynanche tonsillaris heretofore, given in twenty grain doses to adults alone, or combined with chlorate of potass.

Chlorine in gargle is strongly advised, and, as a disinfectant alone, must be very serviceable. With the exception of it, perhaps, the less we use of medicated gargles the better; but very frequent ablation of the pharynx with warm or cold water will, by removing the disinfected and putrid matter, act favour-

ably. One cannot dismiss local applications, however, without allusion to *alum*, which does not appear to have been much resorted to in treatment of the epidemic at present prevailing. M. Velpeau used nitrate of silver in 1819, and *alum* about 1828 or 1829. He strongly recommends it (*Gazette Médicale*, about 1830) either in solution or in powder, applied by means of the finger moistened, or a brush or sponge, to the whole of the inflamed surface; or the powder might be blown through a tube into the throat; the application might be repeated twice or three times a day, a strong solution (a drachm to half an ounce or an ounce of water) being used as a gargle in the intervals, always gargling before the application to remove secretions, etc. This treatment is said to have been amongst the practical lessons conveyed by Bretonneau to his pupil Velpeau, who speaks of it as being employed so late as the seventh or eighth day, and marked by subsidence of pain and fever rapidly, and convalescence in three or four days, even when these are accompanied by tumefaction, and difficulty of swallowing and breathing. In milder cases, the use of the remedy one day was followed by convalescence on the next. One effect of this plan is to prevent the well-known tendency of angina to recur. Some of Velpeau's cases, at least, have distinct reference to angina with membranous exudation.

With children, the difficulty of using gargles is great; yet, as chlorine at least is of much service, its solution might be brought into contact with the pharynx by injection through a catheter passed in at the nostril.

Tincture of sesquichloride of iron and quinine are principally relied on in the epidemic of the present day. The former is used locally as well as internally. In regard to quinine, I would observe, that if cholera justifies large doses of calomel, so does diphtheritis of quinine. We can hope little from tonics, at the ordinary dose, in twenty-four hours, but much from calomel in the same time in large doses; and yet remedies from the vegetable produce ordinary effects more rapidly than those from the mineral kingdom. I am persuaded that I have often checked ague from reaching even a second paroxysm after commencing the use of quinine, by beginning with five or six grains for a dose, giving half the quantity every three or four hours after, till about the fourth or fifth dose, then smaller quantities at longer intervals; *hydrochloric acid*, applied locally, and administered internally, has found favour with some. A generous diet, with wine, is by all authorities held essential.

I have remarked above, that actual gangrene does not take place. The detached mucous membrane runs into a state of decomposition, causing factor of the breath, which, in cases where mercury has been employed, might be erroneously attributed to it. Now, seeing the existence of this decomposing and fetid matter so close to the great respiratory avenue, what must be its effect upon all the air taken into the lungs, which, if charged before with malaria, must here become surcharged as from a fresh and more concentrated reservoir? Is not asphyxia, in some cases at least, a probable cause of fatal termination? If so, tracheotomy, or even laryngotomy, by admitting air through an unaffected channel, will seem to be indicated. Even in asphyxia from mechanical obstruction of the larynx by membrane, some hold that it does not extend beyond the chordæ vocales; but several *post mortem* examinations (recorded) seem to have revealed it extending as far as the bronchial tubes. There is strong evidence in favour of and against tracheotomy and laryngotomy; further trial of either seems to be necessary.

The internal administration of *chlorine* does not, so far as I have observed, seem to have been recommended in so called diphtheria; yet, whatever may be the difference in the condition of the throat, beyond doubt the form of fever (by far the most serious part of the malady) is very like that observed in suppressed scarlatina, which induces me here to repeat a formula familiar, perhaps, to many, but, like other things, not always at hand when needed:—Two drachms of chlorate of potass, dissolved in two ounces of hydrochloric acid previously mixed with two ounces of distilled water; this solution, in a stoppered bottle, to be kept in a dark place for use. Two drachms of the solution in a pint of distilled water constitute the chlorine mixture. The dose is a tablespoonful or two, according to age, frequently. For its employment we have high authority; with others, I think, Dr. Watson.

I have exceeded limits; so I will only hint at *oxygen gas* inhaled into the lungs. It is easily and cheaply obtained from chlorate of potass and peroxide of copper. The same also could be applied, endermically, with a simple vapour bath apparatus, mixed in any proportion with atmospheric air.

It is to be feared that diphtheria, like charity, is made to

cover a multitude of sins, and cloke diseases to which it has no resemblance. Let us be careful, whilst we seek to suppress quackery, we do not permit any fashionable title to be used, on *medical authority at least*, which the pretender might turn as a weapon against us, with the rebuke "tu quoque".

I would offer these remarks with much diffidence, simply adding,

"Si quid novisti rectius istis,
Candidus imperti: si non, his utere mecum."

PATHOLOGICAL CONTRIBUTIONS TO MEDICAL JURISPRUDENCE.

By WILLIAM BOYD MUSHET, M.B. Lond., late Resident Physician at St. Marylebone Infirmary.

II.—OBSCURE CEREBRAL SYMPTOMS (POSSIBILITY OF VIOLENCE OR POISON?) SATISFACTORILY INTERPRETED, ON AUTOPSY, BY NATURAL DISEASE.

F. W., aged 52, a gentleman of eminence in the scientific world, was brought to the Infirmary about 1 A.M. on October 6th, 1856, having been found insensible by the police. He was completely unconscious to external impressions; the pupils were contracted and immoveable to light; the face was pale; but the conjunctivæ were much injected. The respiration was performed at long intervals, and was of a sighing character, not stertorous. There was continual nictitation. He had no deviation of mouth, or other paralysis; no rigidity, nor convulsion. The pulse was full and laboured, but compressible; the surface was cool; the feet cold. A soft systolic murmur was heard at the heart's apex. No fracture was discoverable. There was no smell or suspicion of opium. An abrasion existed over the left malar eminence; and there was tumefaction of the upper lip, from extravasation of blood into its substance. He was ordered a drop of croton oil, sinapisms to the calves, hot bottles to the feet, and a blister to the nape; the head to be moderately raised.

I remained with him about an hour and a half, when I retired to bed, as no alteration had occurred. At half-past 8 A.M. he was breathing stertorously, which, the nurse informed me, had a short time before supervened; and there were slight convulsive twitches of the left side of the face, and mucous râles in the throat. The pulse was small and thready, and the surface cool and moist. Wine was ordered, but he could not swallow; and he died at half-past 10, nine hours and a half after admission.

The body was examined for inquiry two days after death. The weather was warm. Rigor mortis was slight in the upper limbs, more marked in the lower. The pupils were moderately dilated. The face was calm. There were marks over the left cheek and upper lip corresponding to the injury noted during life. The body was well nourished.

Head. The scalp was pale. The dura mater was natural, but a little to the right of the longitudinal sinus, about its middle, was a small osseous body (*glandula pachioni*) of the size of a small pea, which occupied a depression in the cerebral substance. There was some opacity of the arachnoid, and some subserous effusion. The substance of the brain was a little congested, and presented unusual (ramiform) injection. The section of the brain exhibited more *puncta vasculosa* than natural, and its consistence generally was below the average. Much fluid was found in the lateral ventricles. The central portions of the brain were much softer than in health. The fornix throughout its extent was very soft, almost flaccid; as was also the hippocampus major of the right side. The thalami and corpora striata were also less consistent than normal. On careful section, a small clot, not more than a drachm of effused blood, was discovered in the right anterior lobe of the hemisphere, anterior and external to the extraventricular portion of the corpus striatum, and encroaching on the grey matter at the base of the brain. At this spot, the surrounding cerebral substance was softened and disintegrated. The vessels of the brain appeared healthy. About an ounce and a half of reddish serosity was found at the base. The cerebellum and other parts were natural in appearance. There was no fracture of the calvarium, or of the base of the skull.

Chest. The heart weighed nine ounces and a half: it was apparently quite healthy. The right side was flaccid and contained dark coagula. The left side was contracted; its cavities

were empty. There was slight atheroma of the coronary arteries. No deposit was seen on the valves; and the mitral appeared to be perfectly competent. About an ounce of serum was found in the pericardium. The lungs were remarkably congested, but crepitated well. The lining membrane of the bronchi and their divisions was dusky red; and there was much frothy mucus in the air-tubes. There was slight tubercular deposit at the left apex. No pleural adhesions were present. About three or four ounces of reddish serum were present in each side of the chest. A great amount of frothy serum escaped on section of the lungs.

Abdomen. The stomach was very large, distended with dirty looking fluid, of slight sour smell. The mucous membrane was pale, not softened. The rugæ were prominent; and there was some fulness of the veins near the *cul-de-sac*. The spleen was small, pale, soft. A gall-stone was found in the gall-bladder, of about the size of a very small marble. The liver was pale at various spots; and small whitish fibrous nodules, of very firm consistence, were scattered over its substance, chiefly affecting the surface. When the left kidney was handled, a large stone was readily discernible through its walls, imparting the sensation of a solid body in a bladder of fluid. On section, a very large irregularly shaped lithic acid calculus was exposed, which was found to branch and extend firmly into the calices, which were atrophied and absorbed, so that at points the capsule alone intervened between the concretion and the surface. The structure of the organ was very pale; it weighed six ounces after extraction of the stone. The right kidney was large and pale; it weighed five ounces and a half; it was very firm, not granular or lobulated: the capsule separated well. One or two small spots of commencing cystic condition were observed. The intestines were natural. The bladder was distended. There was no stricture of the urethra.

REMARKS. In this case, the objective phenomena pointed to cerebral lesion of some obscure kind. The depression, infrequent respiration, and diminution of temperature, were suggestive of concussion; but the laboured, though compressible character of the pulse, the immobility of the pupils, and the perfect insensibility to external impressions, led me to infer that some condition must exist *plus* the concussion (if concussion were at all a contributing agent) to account for the gravity of the symptoms; as concussion *per se*, sufficiently violent to induce so strongly marked results, would express itself by greater prostration and coldness of the surface, almost total obliteration of pulse, and sympathetic action of the stomach. The symptoms, again, were unlike those of apoplexy, poisoning, or fractured skull.

I felt, therefore, inclined to regard the case as one of softening *plus* concussion; and I think it must be admitted that the *post mortem* appearances ratified the diagnosis. Some of these appearances deserve notice. The evidences of asphyxia were very marked, more marked and characteristic than I ever observed in any case of drowning or death from pure apnoea. The clot was on the opposite side to the external injury, and occupied a very unusual position. This clot seemed almost too small and circumscribed to have determined fatally; but we must bear in mind the extensive softened condition of the brain, the clot superadded, and probably concussion, which might have caused the clot; or the clot, occurring from morbid causes, might have induced vertigo, the fall, and consequent concussion.

The mitral murmur is a point of interest. It was observed in the recumbent position only, the state of the patient forbidding the upright posture. No lesion of the heart or incompetency of the bicuspid orifice was discoverable, although attention was especially addressed to this organ. Two or three similar cases have at times come under my observation, in which a systolic murmur *at apex* has existed, in absence of any appreciable pathological change. I regard the morbid sound detected in this patient to be due either to disturbed innervation, the consequence of the coma, producing irregular contraction of the fleshy columns, or, which is more probable, to deficient lentor, or altered mobility of the blood arising from the cystic condition of the kidneys, which must have greatly interfered with their depurating function.

The sudden invasion of the fatal seizure was a remarkable feature in the case. It was elicited from the relatives at the inquest, that no fit or other indication of disease of the brain had previously manifested itself, except at times a certain alteration and peculiarity of manner.