When these lower vitalities were dried, all motion ceased; but after an interval of some weeks, on being moistened, the germs immediately renewed their activity. There are many instances of the cholera-poison adhering to pilgrims or travellers across a dry and sandy country, and then communicating itself to the people at their homes; and there are instances when the disease appears to be contracted on the line of road, which had been contaminated by preceding affected parties. In these cases the germs may have continued active, if the place or season were moist, or they may have been dry and dormant till revived by water from the fresh arrivals. The epidemic disease has often broken out with intensity, after a fall of rain. The state of the temperature accelerated or retarded the growth of the animalcules under observation; they developed with great difficulty in a low temperature, and here is a marked analogy between them and the cholera-germ. A certain degree of moisture also appears necessary for its development, and this is always present in the human body, and in it the germ may be carried, and developed, at all seasons, and is capable of communication from it, in the hot dry winds of India as well as in the cold of a Russian winter. During the moist rainy season in India the disease spreads most readily, in Europe and America, autumn appears best suited to its propagation.

There appears to be some influence independent of, and more powerful than, moisture regulating the reproduction or diffusion of the disease. This is supposed by some theorists to consist of a peculiar epidemic state of the atmosphere; without explaining in what this peculiarity consists; but that it is very general—even extending from Ajmere to Kurrachee in one day in 1845, and more recently all over India, Europe, and America, at the same time, in the epidemic of 1865. There is no difficulty in tracing the progress of an attack through this medium, whether by land or sea, and in any direction of the wind or compass. I confess I do not understand this vast inappreciable impregnation of the atmosphere of a place, country, or quarter of the globe; the local and partial manner in which individual buildings, ships, or towns, are constantly being affected or exempted, precludes the idea of the attack being general in the atmosphere. Personal communicability is allowed to be a fact by this theorist, but only secondary to the sublime epidemic wave in the atmosphere, about which no explanation is given, and which (if it exist) is completely beyond human control. It is highly objectionable to propound theories which would lead to the neglect of practices, or precautions, which have proved efficacious in warding off attacks of this epidemic. It is more profitable to pursue investigations which may lead to the perfection of those means which experience has proved to be useful, and to render their application more practical.

The disease is found to rage with great intensity in places where conservancy is neglected, and crowding, want of ventilation, and bad food prevail. Some suppose that these alone are sufficient to cause cholera, and that their removal, by proper sanitary rules, would obviate the appearance of the disease. This fallacy is less dangerous than the theory just noticed, in so far as the removal of these defects tends considerably to diminish the virulence of the attack; but it cannot prevent its being, in many instances, very severe. Witness the severe attacks at Peshawur, Lahore, and Meerut, in 1867, and at Peshawur and Allahabad in 1869; where all practical sanitary measures have been carefully attended to and carried out at great expense, under the most intelligent medical officers in India. It is highly desirable that the most efficient sanitary rules should be carried out. I do not appreciate their advantage; but some people are inclined to over-estimate the value of conservancy.

The conclusions at which I have arrived are the following. The cholera-germ is an animalcule excessively minute, and probably invisible. It generally enters the system through the lungs, but often through the stomach, and sometimes through the skin. Whilst mixed with the blood, in the circulation, it acts on the sympathetic or ganglionic system of nerves, as a sedative, inducing, when in large quantities, paralysis of their functions, or suspension of the secretion of the organs supplied by them. This animalcule undergoes an active change in its existence in the mucous surface of the intestines, where it multiplies in excessive numbers, probably living or subsisting on the epithelium, and causing the congee-like evacuations. In its most intense form there is total paralysis of the sympathetic. There are two natural agents by which this development of the germ in the intestines is retained: one before collapse, viz., the *gastric juice*; and the other after collapse, viz., the *bile*, which had been shut up or retained in the gall-bladder. The germ passes out of the system in its earlier stage through the lungs and skin, and in its developed stage through the intestines; when outside the body, it retains its vitality, and continues to pass through its various stages, multiplying and reproducing when in a suitable medium, of which moisture is an essential, and decaying animal or vegetable matter are important elements. It may be retained in the dry or dormant

stage for days or months, out of which it may be rendered active by the addition of moisture under certain circumstances, of which season forms an influential element. The reproduction of the germ may be restrained, or its vitality destroyed, by certain chemical agents, as fermentation and putrefaction are by antiseptics. I do not say what this specific germ is; but classify it with other lower vitalities, which possess properties very much analogous, and indicate the means by which its dissemination may be restricted and guarded against and its action on the body restrained.

I hope I have thus afforded a connected view of the action of the cholera-poison, and of the restraining influence of the *vis medicatrix nature*, which furnishes a guide to the treatment of the various stages of the disease. The uncertainty which now regulates the treatment, and the increasing and fearful mortality from the disease all over the world, shew the importance of the subject. I entreat all who now hear me—and I could not have a more experienced or intelligent audience—to aid me in elucidating this most difficult subject. The eyes of the profession in Europe are directed to India for information; and I have every confidence that our reply will be worthy of the old Indian Service, over which I have the honour to preside.

CASE OF VOLUNTARY STARVATION: DEATH ON THE TENTH DAY.

By CHARLES LINGEN, Esq.,

Surgeon-Extraordinary to the Hereford General Infirmary.

At the present moment, the facts contained in the following case appear to be of sufficient importance to warrant their publication.

I was sent for on Sunday morning, August 20th, 1854, to Mr. John Chard, aged 58, landlord of the "Ship," Hereford, who up to that time had been a stranger to me. He was a thin spare man, in fair health, and apparently little disposed to a paralytic seizure; but I learned that he had long indulged freely in spirits, and was rarely sober when he retired at night. He had risen that morning apparently well, and it was only when the family assembled at breakfast that anything remarkable about him was observed, since it was his ordinary habit to be silent and sulky in a morning. His wife and daughter remarked that he put his teacup to his mouth without even sipping any of its contents, presently repeating the act with a similar result. In vain they attempted to get the poor fellow to tell them what was the matter. To make short of it, Chard not only could not swallow, but was unable to perform the act of suction in the smallest degree; nor could he by any effort emit the feeblest sound; yet he was well, his mind was unaffected, and he clearly indicated to me, on my arrival, by signs, that he had no suffering of any kind, no headache, no giddiness, no loss of power, except in the organs affecting speech and deglutition.

Chard was ever a man remarkable in his way—taciturn, wilful, and obstinate. His relatives knew him well; and, having taken me aside, they informed me that he was rarely ailing, and had never condescended to take medicine; that it was likely he would not give his consent to the adoption of any means for his recovery on this occasion, however forcibly the subject might be pressed upon him; and such I soon found to be the case. I then returned to my patient and explained as clearly as I could the nature of his attack—that it was a rare and grave form of paralysis, and that some time and the use of certain means would be requisite before he could hope to speak or swallow again, but that his case was not a hopeless one; and that, meanwhile, he must be sustained by nourishment administered by the stomach-pump, and so forth. He listened to it all, and then, by energetic signs and angry gestures, showed unmistakably that he "would none of it"; and further proceeded to illustrate his meaning by delineating with his finger on the hearth-rug the outline of a coffin: he pointed to it with a shrug, shook his head significantly, and so gave me the *congé*. He kept his purpose, too; he never gave way to the last, spite of the cravings of nature, the entreaties day after day of his relatives, myself, and of his devoted clergyman, the late Rev. J. Hanbury. The next day (Monday) was brewing-day; he was up betimes as usual, signalled his orders, and overlooked the process with his usual care. The same occurred on the morrow; but he now began to be weak, and obliged to resort to his arm-chair by the fire. He was up dressed and in his business on Wednesday—I think on the Thursday and Friday also—when weakness compelled him to remain in bed, which he did till his death on the afternoon of Tuesday, the 29th, the tenth day.

Towards his end he seemed to be delirious; but as he was speechless it was difficult to appreciate the fact. His pulse increased in frequency as he became feebler; he appeared thirsty; and his animal heat was sustained with difficulty. I greatly regret that no examination of

the body was permitted, also that I have mislaid my notes of this remarkable case; but the leading facts cannot fail to be of interest just now, and their interest is much enhanced by the certainty we possess that nothing liquid or solid could have been received into the patient's system; also that there existed no motive for deception.

CASE OF PERITYPHLITIC ABSCESS: WITH REMARKS.

By JOHN A. CAMPBELL, M.D.,

Assistant Medical Superintendent, Cumberland and Westmorland Asylum.

J. M., a female, aged 49, was admitted on July 27th, 1867. She was stated to have been insane seven months, and to have refused her food prior to admission. She laboured under melancholia, and seldom spoke. She was of average height, dark complexion, and stood in whatever attitude she was placed.

On examination, she was found in very feeble health; but no actual bodily disease was discovered. She took her food with the greatest reluctance. On July 30th, she was improved in appearance. On August 8th, for four days she had had pneumonia in both lungs, the lower lobes being affected. She was getting large quantities of stimulants and nourishing diet, but there was great difficulty in making her take them. She had œdema of both legs up to the knees, and of that side of the face on which she happened to lie. She continued in a very weak state up to August 17th, when she coughed up several teaspoonfuls of blood, became feebler, and died next day.

Autopsy Fifty-five Hours after Death.—There was considerable discoloration from commencing putrefaction over the abdomen, and on the right side it presented two protuberant portions, which on percussion were found resonant. With the exception of the brain-substance being paler and softer than natural, there was nothing abnormal in the brain or its membranes. The right lung was attached to the wall of the chest by recent adhesions; its external lower and posterior part was gangrenous to the extent of three inches—dark, shreddy, and bathed in purulent matter. On section, the gangrene was found to extend upward in the part lying along the spine for about three inches. The rest of the lower lobe was in a state of red hepatisation, passing in some parts into grey infiltration: sections of it sank in water. The middle lobe was in a state of red hepatisation and œdematous, and the upper lobe was congested. The left lung was free in the cavity; the whole of its lower lobes was in a state of red hepatisation except some small portions where grey infiltration had taken place. The lower posterior portion of the upper lobe was also in a state of red softening. The heart-valves were competent; externally the fatty tissue of the heart was œdematous; the lining membrane of the heart and of the aorta for two inches was thickened and tinged red. On opening the abdomen, the whole of the right side of the cavity from the outer edge of the rectus muscle was cut off from the rest by peritoneal adhesions. The anterior and inferior parts of the right lobe of the liver formed the upper boundary of this cavity. The peritoneal covering of the liver in those parts was thick and rough, as also the peritoneal covering of the right kidney. The peritoneum was not acutely inflamed in any part. The cavity contained foetid air, and was lined with a coating of fecal matter, most abundant near the cæcum. On pressing the bowel, air passed into this cavity. The stomach was normal, and the intestine was so to the cæcum. In the outer side of the first part of the cæcum there was an opening about half an inch in diameter (the cæcum was adherent to the parietal walls round this opening). There was a smaller opening in the posterior part of the ascending colon about two inches from the valve; it communicated with the cavity. In both places the openings looked as if they had been punched clean through the gut, and there was no surrounding ulceration or thickening; the rest of the ascending and transverse colon was normal. The liver in structure was found normal, except under the thickened peritoneum, where its substance was almost black in colour to the extent of almost half an inch, and near the portal vein where there was a small abscess. The spleen was normal; the kidneys were both slightly fatty; the uterus was normal.

REMARKS.—In this case there were no signs that called attention to the abdominal lesion. The bowels were not in any way unusually irregular; there was no peculiarity about the tongue; the pulse was always feeble; but the small quantity of food that the patient took, and her hardly having taken any for some time prior to admission, accounted for its state. The decubitus was on the side. She hardly ever spoke, and never showed any symptoms of pain in the abdomen. No doubt the state of her nervous centres may have prevented her from feeling pain,

as is commonly seen in cases of insanity. The conditions found at the *post mortem* examination—viz., 1. The thickening, adhesions, and exudations of the peritoneum, with the absence of acute inflammation; 2. The injured part being completely shut off from the rest of the abdominal contents by firm adhesions, and the perfectly healthy appearance of the peritoneum and intestines outside these adhesions; 3. The adhesions between the cæcum and parietal walls outside and round the ulcer in the cæcum, the absence of ulceration or thickening round this opening, or the one in the ascending colon—lead me to think that the ulcerations had existed for some time; that the opening in the ascending colon had been agglutinated to some adjacent structure in the same way as the opening in the cæcum; and that this adhesion from some cause had given way, and the fecal matter and flatus passing out had given rise to the abscess.

I was unable to get a history of this case; but I think it probable that the ulcers were the sequelæ of enteric fever, as ulcers in the caput cæcum and ascending colon are rare, except those caused by dysentery, tubercular deposit, or enteric fever. The appearance of the ulcers in this case was unlike those of the two former diseases; and the ulcers of the latter disease have been found to attempt to heal by agglutination, and to present healthy edges.

A PECULIAR CASE OF OVARIAN TUMOUR: OVARIOTOMY: DEATH.

By G. D. McREDDIE, Civil Surgeon, Hurdni, Oude.

THE patient, a Mussulman female about 35 years of age, a widow, who had had seven children, was admitted into the Government Charitable Dispensary at Hurdni on the 25th June, 1869, with ovarian dropsy. She stated that three years before she had felt her abdomen enlarging, but was unable to say whether or not the enlargement was at first lateral. At this time her menses stopped. On admission, she presented a greatly enlarged abdomen, as if far advanced in gestation. Her general health was very good. She was tapped on the 26th of June, and two gallons of a dark glutinous liquid were drawn off. After the tapping, a body simulating the liver by its narrow inferior edge, and to some extent by its position, if this organ were enlarged downwards, became perceptible. At the time the body was regarded either as an enlarged liver, or as the viscus retaining its usual size, but placed much below its natural site. The edge could be felt running in a curve in the right hypogastric and lumbar regions. I was inclined to the supposition that the body thus placed was the liver much enlarged; but against this the state of the general health seemed to argue. Against the supposition of displacement, there was the want of an adequate cause to account for the abnormal position. The impossibility of determining, with any precision, the superior boundaries of the body, added to the difficulty.

By the 20th August, the abdomen had regained its original size, its circumference being three feet five inches. As every circumstance seemed to warrant a favourable issue, and as it was useless to tap again, ovariectomy was determined on.

August 21st, 7.15 A.M.—Chloroform having been given, an incision was made from the umbilicus downwards, and was subsequently enlarged upwards also. The muscles having been divided, a dark mass suddenly started into the line of incision, and was cut into, though I used the knife cautiously in order to divide the peritoneum on a director, before coming on the ovarian tumour. Immediately on the occurrence of the accidental incision, a large quantity of liquid, of the same character as had been previously removed by tapping, spurted out, drenching the patient and running over the floor. The hand introduced into the cavity thus cut into and emptied, passed over a smooth surface; none of the viscera were perceptible. After some manipulation, the body previously regarded as the liver was felt; and, on examination, it proved to be the right ovary, greatly enlarged. It was eleven inches in diameter, with a thickness of two inches and a half in the centre. Its whole substance was hypertrophied; its cells were of the size of walnuts, containing glairy viscid matter. It was drawn out of the wound, and its attachment—upwards of two inches in diameter—had two ligatures put on, and then the mass was divided between the ligatures. No arteries were met with; but the ligatures slipped off, and the loose mass passed back through the wound. The intestines now came into view, through the opening made by the removal of the ovary. The walls of the sac were seen to be throughout adherent to the abdominal walls—hence nothing more could be done. The abdomen was sponged out; a few interrupted sutures were put in, skin-deep only, the deeper ones being deferred to a future time; lint soaked in carbolic acid solu-