enumerate them here. Suffice it to say that the ringing, echoing, reverberating quality of almost every one of these physical signs, when they are widespread and well developed, as they usually are in general pneumothorax or hydro-pneumothorax, is perfectly distinctive, and its evidence unimpeachable. In our case the signs were ill developed; some of the number, indeed, were absent altogether. Moreover, they were inconstant, many of them disappearing at times. Now, under these circumstances, a question might fairly arise whether we should not ascribe the existing physical signs to the presence of a considerable cavity within the lung-substance, immediately contiguous to the chest-wall; or, if pneumothorax there needs must be, whether the pneumothorax was not limited in extent, and circumscribed by surrounding adhesions. I am of opinion there was sufficient evidence to enable us with a high degree of probability to decide in favour of general pneumothorax. When the patient reclined on his back, the whole front region of the chest on the corresponding side yielded a clear ringing percussion-tone. When he sat upright a resonance of similar quality was elicited extensively over the apex of the lung; there must therefore be underneath a large air-containing cavity, and this must almost of necessity imply general or all but general pneumothorax. As a matter of fact, there were adhesions, but these rather distorted the shape than diminished the volume of the pleural cavity.

I have just told you the physical signs of pneumothorax are singularly striking, and almost unique. So also for the most part are the symptoms of pneumothorax. They consist, in one word, of sudden and insufferable dyspnoea, with acute pain, and it may be the sensation of something having given way within the chest. Now, on reviewing the past history of this man, there is not a trace to be found of any such event. Let me offer an explanation of this apparent anomaly. As a rule, in perforation from within outwards, the first occurrence is the entry of air into the pleural sac; the second—the natural result of the first—is pleurisy with effusion, or inflammatory hydrothorax, the two together constituting the compound state known as hydro-pneumothorax. It may happen, however, in a few rare examples even of centrifugal pneumothorax, that the sequence is reversed. Pleurisy, you know, is common enough where there are vomicae within the lungs; often dry pleurisy, sometimes pleurisy with effusion. Now suppose an abundant pleuritic effusion already existing in association with an unsound lung, there is no reason in the world why a pulmonary vomica in the immediate neighbourhood of the pleura should not break through that membrane, and introduce air into the pleural sac. Well, what then? You will not in this case have the sudden and insufferable dyspnoea which overpowers the patient in an ordinary case of pneumothorax, because the lung has already been undergoing compression from day to day, and the machinery of respiration has learnt to accommodate itself to its surroundings. Under these conditions, a little air finding its way into an already-loaded pleural sac will be a matter of comparatively trivial moment as far as increase of pressure and dyspnoea are concerned, and need not necessarily be signalled by any symptoms calculated to make an abiding impression upon the memory of the sufferer. Bear in mind, I say the entry of air is of no great moment in the case assumed, as far as increased pressure and dyspnoea are concerned. It is, however, most momentous in its consequences as they concern the characters of the effusion and the ulterior course of the disease; the effusion, simply serous or fibrinous in the beginning, when incessantly exposed to the damaging influence of air, becomes puriform, and the disease runs rapidly from bad to worse. These last remarks are made by way of parenthesis; the main point to which I invite your attention is that the invasion of pneumothorax, even in its centrifugal form, although usually, is not invariably accompanied by the striking subjective phenomena to which I have alluded.

A few additional points deserve to be commented upon. The bronchial respiration on the left back is abundantly explained by the discovery of vomicae in the left lung, with indurations around. The alterations in the first sound of the heart—for they were nothing more, certainly not murmurs—are equally well explained by the rudimentary valvular lesions discovered after death. The next point I shall dwell upon at greater length, for it is a matter of practical importance at the bedside. It is noted that on the 12th of

May the patient changed his habitual posture from the erect or semi-erect to the recumbent. Gentlemen, you are all familiar with the fact that there are various modes of dying. One man is said to die from the lungs by apnoea; another from the brain by coma; a third from the heart by syncope or asthenia. You may not be so familiar with the fact that many men die, so to speak, a compound death—by a combination of two or more of the modes of dying enumerated. For example, it is very rare indeed for the victim of old-standing chest disease to die of apnoea alone, although at first sight that might appear to be the sole, or at least the predominant, agency at work. In these cases there are almost always two elements in action—asthenia and apnoea; the two react strongly upon each other in many ways, and conspire together to take the life of the patient. You know perfectly well what is meant by orthopnoea: when the breathing is seriously embarrassed, a man sits upright in bed to save his diaphragm and his lungs. You know what is meant by syncope, faintness, and asthenia: a man lies low in bed to save his heart and to economise its power of propulsion mechanically. For a long time, in the majority of chest complaints of old standing and great severity, orthopnoea is the rule: the patient sits upright, and can endure no other posture for a permanence; at last, it may be, he begins to lie down persistently, while yet all the signs and symptoms of carbonic-acid poisoning and malaération of the blood—with the sole exception of orthopnoea—are as prominent as ever. What does all this mean? Why this: of the two destructive agencies at work—debility and dyspnoea, or rather debility and malaération of the blood,—debility is now in the ascendant. It means, moreover, that the blood-contamination, once so strongly resented by the respiratory organs in the form of dyspnoea, is at last, amid the universal narcotism and prostration of the system, so to speak, either unfelt or disregarded. Such a state of things, you may readily imagine, is imminently perilous to life; it is, in truth, the beginning of the end.

The only remaining point is the treatment. What was done in this way is recorded in the notes; what was left undone, to the best of my belief, would have been unjustifiable. Paracentesis of the chest would only have hastened the inevitable issue in death. We were nearly certain of our diagnosis, it is true, but we were not absolutely certain; and even if we had possessed that absolute certainty, the accompanying bronchitis and the general cachexia and collapse would alone have interdicted an operation which, however useful in simple empyema, is at all times of more questionable value in hydro-pneumothorax.

REPORT OF TWO CASES OF

EXCISION OF THE SHOULDER-JOINT, FOR DISEASE;

ONE BY THE ELLIPTICAL, THE OTHER BY A MODIFICATION
OF THE SINGLE LONGITUDINAL INCISION.

By JOHN EWENS, L.R.C.P. LOND., L.R.C.S. EDIN.

PERHAPS no cases are more satisfactory in their results, or more gratifying to the mind of the surgeon, than those occurring in the practice of conservative surgery, by which many a limb is preserved to a useful purpose, even under circumstances which would formerly have been considered to necessitate amputation. The march of surgical science has been so rapid within the last few years, and excisional surgery has become so established a rule of practice, that possibly an apology may be considered necessary for my occupying the pages of THE LANCET with a report of the following cases; but inasmuch as they are somewhat peculiar—the first, in the necessity which arose for a further operation; and the second, in the modified operation which was performed with the anticipated results—I shall trespass, but as briefly as possible, upon its valuable space.

P. B—, aged eighteen years, residing in Cerne Abbas, first came under my notice in October, 1868. She stated that for more than a year she had been unable to raise the

left arm above the shoulder. This appeared to have originated in an attack of articular rheumatism of the shoulder-joint, occurring in connexion with a highly strumous constitution. She was then a domestic servant in London. After a severe attack of inflammation, attended with much pain and swelling of the joint, an abscess formed, and pointed just at the posterior border of the insertion of the deltoid muscle into the humerus. She then became an in-patient of a London hospital, whence, after a short stay, she was sent to her home in the country, in the hope that, being young, the change of air might re-establish her health, and that an operation might not be required. About six months after this I saw her, and found her weak and emaciated, with almost complete loss of power to move the arm herself; and forced movement excited great pain. In addition to the opening above mentioned, another existed a little higher up, and both communicated with a sinus leading directly up into the posterior portion of the axilla. No diseased bone could be detected with a probe; but, from the general history and the nature of the discharge, it was strongly probable that disease of the shoulder-joint existed. No organic disease of any of the viscera could be found. Circumstances prevented my contemplating any operation just then, and the girl was not in a condition to bear it. To improve her general health, she was placed under a generous diet, cod-liver oil, and iron. She improved somewhat, but did not gain flesh noticeably. The paroxysms of pain were very severe, and, as the disease advanced, became so violent as to necessitate resort to frequent hypodermic injections of morphia, which gave immediate and constant relief.

Acting under the advice of Mr. Pollock, of St. George's Hospital (to whom I am much indebted for assistance), I determined to make an exploratory incision, and act according to the state of the parts.

On May 5th, 1869 (assisted by Messrs. Fielding, Tarzwell, Young, and McEnery), chloroform having been administered, I enlarged the openings sufficiently to admit of the finger being introduced. At first nothing particular could be discovered; but on prolonged examination a small opening could be felt between the muscles, leading down to the surgical neck of the humerus, and, with care, this was enlarged sufficiently to admit the finger, which, directed upwards, soon came upon loose bone. Any doubts were at once removed, and the ordinary elliptical incision was made, the flap dissected up, and the diseased joint fully exposed. Unfortunately the posterior circumflex artery was divided; this might have been avoided by making the flap a little shorter, but it occurred owing to a desire to carry the incisions in the direction of the sinus, and perhaps not keeping close enough to the bone. However, it was speedily secured, and but little blood was lost. The head of the humerus was found in a very carious condition, and was removed, by the aid of Butcher's saw, to an extent which probably amounted to a shortening of the bone by about an inch. A small portion of the posterior part of the glenoid cavity, which was diseased, was also gouged away. The flap was readjusted, and secured by pins and twisted suture; the wound having been first sponged with carbolic oil, in proportion of one part of carbolic acid to four of olive oil. Lint saturated with the same was then carefully applied over the whole. A pad was placed in the axilla, and the elbow supported by a bandage, which also kept the arm close to the side.—10 P.M. (five hours after operation): Has been constantly sick; evidently due to prolonged administration of chloroform. No pain. Pulse 110. Ordered thirty minims of tincture of opium, which was immediately rejected; milk and brandy.

6th.—10 A.M.: Has slept occasionally during the night. Constantly sick. Pulse 120. Spirit of chloroform, twenty minims, every third hour, with half an ounce of brandy.—10 P.M.: Sickness ceased at 5 P.M. Feels better.

7th.—10 A.M.: Comfortable. Slept during the night at intervals. Pulse 130. Feels better; no pain. Bandage changed. Small quantity of sero-sanguineous discharge. Continue brandy and milk; bark, acid, and opium, every three hours.—10 P.M.: Better; pulse 108.

8th.—10 A.M.: Favourable; pulse 112.—10 P.M.: Feels better; pulse 112. Tincture of opium, thirty minims, at bedtime.

9th.—Dressings removed; smell of decomposition; pins removed; great part of wound healed by first intention; discharge small in quantity and looking healthy. Expresses

herself as feeling much better. Pulse 112.—8 P.M.: Pulse 120. To have an opiate at bedtime; and ten minims of solution of perchloride of iron three times a day. Generous diet—milk, eggs, porter, and meat.

From this date all progressed favourably until the 16th, when the patient began to feel rheumatic pains in various parts of the body, with swelling of the knees. Ordered ammonio-citrate of iron with bicarbonate of potash three times a day. Brandy instead of porter.

19th.—Rheumatism bad; skin hot and dry; pulse 120.

23rd.—Better; pulse 96; passive movement of arm without the least pain. Wound dressed with carbolic-acid lotion (one part to forty of water).

From this date she improved in health so steadily that no further notes were taken. Complete relief to pain was obtained, and she rapidly gained strength. There was very little discharge; the wound granulated and healed completely, except just at the original opening and opposite the end of the bone in front. Stimulant applications failed to induce healing, and as it was apparent that there was still some necrosed bone at the end of the shaft, a second operation, with the view of removing this, was performed on Aug. 5th. An incision was carried down to the bone in the line of the anterior portion of the original operation, by which, with some difficulty, the upper end of the bone was removed to the extent of an inch and a half. The bone cut soft, but no appearance of disease existed beyond the removed portion, which had an eroded look. It was interesting to notice that already firm ligamentous attachments existed between the scapula and the posterior portion of the new head of the humerus. Possibly it might have been sufficient to gouge away the diseased part anteriorly; yet, as the extent of the disease was not easy to discover, it was deemed advisable to remove the bone as far down as healthy structures. Very little constitutional irritation followed this operation, owing probably to the absence of joint complication, and in two or three weeks the girl was able to walk to the surgery. She recovered rapidly, without a bad symptom. The sinuses took a long time to heal, and did not completely close till fourteen months after the first operation. I ought to mention that the wound was not dressed with carbolic acid after the second operation, and that the discharge of pus was much greater than after the former one. So much for the modifying influence of carbolic acid—a fact which has been much dwelt upon by other observers.

State of the parts, July, 1870.—Length from point of acromion to tip of olecranon, two inches less than the other arm. Perfect use of the arm for underhanded work, and power to move it behind her and to bring it forwards on the chest. There is no power whatever to raise the arm, or abduct it any distance from the side. She is now robust and healthy, and the muscles of the arm and forearm are gaining in development.

In August, 1870, she resumed her situation in a coffee-house in London, and efficiently discharged her duties as before until laid by with an attack of rheumatism, for which she was admitted as in-patient to St. George's Hospital, under Dr. J. W. Ogle. I believe the case was there considered a satisfactory one, as also by the medical officers of the Bath Hospital, where she was admitted for three months for the benefit of the waters.

The complete loss of power of the deltoid consequent on the elliptical incision led me to consider that, in a suitable case, it might be quite possible to preserve at least a portion of that muscle; and, by a singular piece of good fortune, the very next case which presented itself entirely proved the correctness of my view.

On Jan. 19th, 1870, I was asked to see M. L.—, aged thirty-two years, just returned from a London hospital, whither she had been sent from the country to have what was considered to be a large fatty tumour under the right pectoral muscle removed; but, on cutting through the skin, it proved to be a large chronic abscess. Pyæmia supervened upon the operation, and she was dangerously ill for some weeks. Coming thus under my notice, I had the advantage of being able to profit by the mistake made by the eminent surgeon under whose care she had been, and the case was rendered all the more simple and easy. I found the patient with a sinus leading from an opening just beneath the outer part of the right mamma, behind the pectoral muscle, into the axilla; but a long probe failed to reach diseased bone,

or to find the end of the sinus. There was also considerable redness and swelling over the back of the shoulder, which had existed some weeks, and suppuration was suspected. A careful examination elicited the history of shoulder-joint disease, commencing with a blow over the front of the shoulder; swelling, pain, and inability for three years to raise the arm. These symptoms had been attributed to rheumatism until the appearance of what was considered to be the fatty tumour. Her general health was far from satisfactory; she had a weak, quick, and irritable pulse, and there were frequent rigors, with pains in the limbs, &c. Her state entirely precluded the idea of an operation then, and a course of tonic medicine, with generous diet, was prescribed. In the course of a fortnight the swelling just alluded to culminated in an abscess, which pointed over the posterior aspect of the joint. This I opened, and let out a considerable quantity of curdy pus. I endeavoured by means of this opening to reach the joint, but could not succeed with the finger or probe, notwithstanding that I dilated the opening with tents so as to enable me to get my finger some distance beneath the deltoid. Her general health improved, but several times spots of erratic erysipelas appeared on the arm, speedily subsiding under the application of a strong tincture of iodine (half a drachm to the ounce) to the part. When sufficiently recovered, an exploratory operation was decided on, further proceedings to be determined by the condition of the parts examined.

On April 25th, 1870 (assisted by Drs. Fielding and Young, and Messrs. Williams and Woodhouse, students of King's College and Middlesex Hospitals), I determined on making an exploratory incision, and availed myself of the wound at the back of the joint to carry out my idea of endeavouring to save a portion of the deltoid. The wound was enlarged so as to enable me to introduce my finger under the muscle, which I then cut through transversely a little below its origin from the spine and acromion process of the scapula, and thus laid open the joint posteriorly. Very little hæmorrhage followed this incision. The head of the bone was completely carious, with a large sequestrum in its centre. The posterior half of the deltoid being thus divided horizontally, a perpendicular incision, carried through its whole length down to its insertion into the humerus, fully revealed the parts to be removed. The patient was very fat, and the structures cut through to reach the joint must have been fully two inches thick; so that, in spite of careful clearing of the soft parts from the head of the bone, it was found impossible to evert it sufficiently to admit of Butcher's saw being used. It was therefore sawn through with an ordinary finger saw, and removed, the parts in front of the joint being protected by the finger. This portion, with that lost by disease, represented a shortening of the humerus amounting to about two inches. The wound was dressed with carbolic oil, and the edges brought together with six pins and twisted suture. Lint soaked in the oil was applied over the whole wound; bandages applied as in the former case.—7.30 P.M.: In a good deal of pain. To have thirty minims of tincture of opium.—9.30 P.M.: Still in great pain. Tincture of opium (twenty minims) rejected by the stomach immediately.—10.30 P.M.: Tincture of opium, twenty minims. Pulse 140 through the night.

April 26th.—8 A.M.: Sickness ceased since 5 A.M.; pulse 160.—10 A.M.: Pulse 150; in great pain; tongue dry and white; abundance of lithates in urine.—2 P.M.: Pulse 140; numbness in arm, relieved by a pillow placed under the elbow. To continue the opium; beef-tea, milk, and brandy.

27th.—Slept pretty well at intervals from 6 P.M. (26th) till 5 A.M.; since then constantly sick. To have brandy and soda-water, lime-water and milk; and a grain of opium every four hours. Pulse 120; no swelling of arm, and less pain.

28th.—Sickness still continues. Chlorodyne given without effect, also bismuth and hydrocyanic acid. Great flatulence; pulse 120; urine of a dark-green colour. To have champagne.

29th.—Sickness entirely stopped, and she feels better; urine the same.

30th.—No sickness; she feels better; wound looks healthy; pulse 112.

May 1st.—Pulse 120; gradually improving; pins removed. The whole of the perpendicular portion of the incision, except the skin, healed by first intention. An opening being left at the junction of the two incisions, so

as to admit of the finger being passed down to the bone, it was found to be covered with soft granulations; nothing hard or irregular to be felt. There were several erythematous spots over the right scapula and upper arm, with some œdema. Ordered to paint with iodine. Right mamma painful; discharge from old sinus the last two days; urine not so dark. To have an ounce of brandy every four hours.

2nd.—Pulse 112; improved. Ordered ammonia and bark.

3rd.—Urine has nearly regained its normal colour, *plus* lithates. Improving in every respect; appetite good.

From this date everything progressed rapidly to convalescence, and presented no symptoms requiring special notice. The patient's naturally robust constitution, doubtless, tended to a perhaps more than ordinary quick recovery. In exactly three months from the date of the operation the sinuses were completely healed, and the patient thoroughly recovered. Only once in the course of the case—after the first week—was there any cause for anxiety; and that occurred in consequence of the necessity which arose to open up, in a posterior direction, the sinus over the scapula—a very trifling operation, yet followed for a few days by a feverish state of system and some erysipelatous redness of the surrounding parts. I believe two or three weeks longer were required to complete the cure owing to this trivial matter than would otherwise have been the case; hence the desirability of slitting up all sinuses at the time of operation, if practicable without increased danger. The remains of pyæmic symptoms which persisted during the first two months of my attendance, and necessitated delay in the operation, completely disappeared. One peculiar circumstance was that of the presence of carbolic acid in the urine for the first week after operation. I had noticed the same thing in the case of a young child whose leg I removed some time before, and dressed the wound with carbolic oil. The mother called my attention to the peculiar colour with which the sheets &c. which came in contact with the patient's urine were stained. I was then disposed to think that the carbolic acid acted on the urine exterior to the body; but this could not have been the case with the present patient. Doubtless the carbolic acid was absorbed, and produced the peculiar appearance above noted. In a letter from Professor Lister on the subject, he says: "When I used the putty I often observed the peculiar dark urine to which you allude. And I ascertained that when it was present carbolic acid could always be shown in the urine by tests. The same thing has been observed in Leipzig and Berlin under the use of the putty. Since I have used the plaster instead of putty I have not noticed the dark urine." I do not remember to have met with it in any other cases than those alluded to; but possibly more extended observation will show it. I was particularly struck in both these cases (as indeed in many others which have occurred to me) with the remarkable results of the carbolic oil in diminishing the secretion of pus; more particularly so by comparison of the first and second operations on Case 1. Professor Lister and others have written so much on the subject of the protective power of the acid that any observations from me would be superfluous; but I am persuaded that I have seen at least one operation (amputation of the leg) under sanitary arrangements so unfavourable that nothing but imperative necessity would have justified the operation. Yet, under carbolic-acid dressing, not an unfavourable symptom appeared. Another thing I should like to mention is the freedom from pain, comparatively speaking, which I have noticed in a wound treated thus. But the main object I had in view in reporting these two cases was to show the comparative results of the two operations. It is now just two years ago that the second operation on Case 1 was performed, and thirteen months since the sinuses healed. Since that time she has been in service, and is able to perform the ordinary duties of daily life. She can carry a good-sized bucket of water, and underhanded can do anything required, but she cannot perform any of those actions for which the deltoid is absolutely necessary. I have perhaps no right to lay claim to any originality in the operation on Case 2—as Prof. Erichsen has mentioned the horizontal or transverse section of the fibres of the muscle as supplementary to the ordinary "single longitudinal incision" (p. 184, vol. ii.)—further than that this was made the primary incision in my case. Doubtless the single incision parallel with its fibres must interfere less than any other with the

structure and functions of the muscle; but this, I imagine, could only succeed with a very skilful operator, and in a very favourable case, and would be of little avail in my patient, whose soft structures over the joint were at least two inches in thickness. The result now is that the arm is as useful as ever for underhand work; she can lift as heavy a weight as before, and is now, and has been for the last ten or eleven months, managing a dairy; besides, she can raise her arm forward and upward in a manner that could only be accomplished by the action of the anterior fibres of the deltoid muscle; and with practice I fully expect much greater power to be regained. But total disuse of the muscle for more than three years must have materially tended to degeneration of its fibres, and consequent weakness and disinclination to any unusual exertion, more especially as the left arm has so long been accustomed to do the work usually performed by the right. The measurement from the point of the acromion to the olecranon, when taken about three months ago, was precisely the same in both arms. How far the absence of shortening is a benefit or will be permanent remains to be proved. It would seem that thereby the *facility* of proper joint-movement should be increased, although possibly the *power* of movement may be somewhat lessened for a time. I think time alone can settle this question. I must add that the shape of the parts is much more comely than in the other case.

Cerne Abbas, Aug. 12th, 1871.

ON THE INITIAL PATHOLOGY OF CHOLERA WITH REFERENCE TO TREATMENT.

By WILLIAM SEDGWICK, M.R.C.S., &c.

THE very large proportion of deaths from cholera during reaction, which has been observed as a result of the castor-oil treatment, tends to prove, as I stated in my communication to THE LANCET (Aug. 19th, 1871), that increased irritation of the gastro-intestinal mucous membrane serves to intensify the disease. This effect of "cathartics" in cholera is simply a practical illustration of what might, from the knowledge we now possess of the initial pathology of the disease, be theoretically expected to follow their use. For previously to the occurrence of the rice-water flux, there is diminution and partial arrest of the abdominal sympathetic nerve-influence, and consequent feeling of *malaise*, which is, strictly speaking, the premonitory stage of the disease. It would appear, from the late Dr. Prout's observations on the composition of the urine, that the standard of organic change is, as a rule, lowered during the prevalence of an epidemic of cholera, whilst it has been ascertained by the observations of myself and others that, at the same time, both the force and the frequency of the pulse are reduced. Special attention was directed to this important subject in the valuable Report of the Cholera Epidemic of 1865 in the Maltese Islands, by Messrs. Adams and Welch, who observed that there was in many cases a period in the disease anterior to the setting in of the intestinal flux, and they state that advantage was taken of it by Mr. Comyn, Surgeon, R.A., in order to get the affected under his control as early as possible; and that, out of forty-two cases carefully noted, this condition was found to exist clearly and unmistakably in twenty-seven. The state of the pulse, as might be expected from the relation subsisting between the sympathetic nervous system and the circulation of the blood, is a valuable guide in this premonitory stage of the disease; and M. Cl. Bernard,* in referring to it, informs us that "a Russian army physician, who had invented a new sphygmometer, and had applied it to the study of various diseases, stated some years ago that, during a severe epidemic of cholera, a peculiar slowness of the pulse existed several days before the explosion of the disease, in those who were marked out to be its victims." But, notwithstanding the improved aids to diagnosis which we now possess, it is still to be re-

gretted that the first indications of the disease have not been more generally and more closely investigated, especially in the public service, and in large schools and other institutions to which a medical officer is attached, and who might in this way be enabled to establish a sounder system of preventive treatment.

This premonitory stage of the disease, which varies in duration from a few hours to one or two days, is, as a rule, quickly followed by increased secretion from the alimentary mucous membrane, and subsequently by a rice-water flux. Now, with reference to this rice-water flux, it is important to remember that it is not exclusively characteristic of cholera, but that it may occur also in other cases in which, as in cholera, there is a neuro-paralytic condition of the digestive canal; for it has been observed in many of those cases which have been referred to in my paper on the Analogies of Cholera, especially when irritant and corrosive poisons have been swallowed, the effect of which, as was pointed out more than a century ago by Dr. Richard Mead (vol. i., 1763, pp. 13, 14), is to "wound the nervous coat of the stomach" and to "interrupt the secretion of urine." A typical case of this kind has lately been published by Professor Virchow; and precisely the same kind of flux, both as regards its physical appearance and its chemical composition, can be experimentally produced, as Prof. Moreau has lately demonstrated, by section of the abdominal sympathetic nerves.

In consequence of the great progress which has been made of late years in experimental physiology, not only has much doubt respecting the initial pathology of a flux been removed, but it has, moreover, been satisfactorily demonstrated that when, for example, the upper portion of the alimentary canal has been deprived of its supply of nerve influence, it becomes peculiarly susceptible of local irritation, and liable to be affected by causes relatively slight, and which would otherwise fail to produce any serious disturbance. There ought to be no difficulty on this occasion in applying the knowledge derived from experimental physiology to the study of disease, and in estimating the probable facility with which, during the prevalence of an epidemic of cholera, not only "cathartics," but even food itself, if it happens to be unsound or difficult of digestion, may, especially if taken over-night, give rise to the disease. One of the first cautions which I received on proceeding to India, many years since, in medical charge of a detachment of H.M. 70th Regt., was to avoid incurring this risk; and subsequent observation has to some extent enabled me to recognise the special need of caution in this respect. It is probable that the predisposition of the alimentary mucous membrane to disease, at such a time, is less due to the influence of night than of sleep; and that Dr. Macnamara's suggestion that "this circumstance may perhaps be explained by the fact that the whole of the secretions of the alimentary tract are then alkaline," is correct. If so, it would afford an additional argument in favour of the administration of acids, and especially of the phosphoric acid; and it would increasingly justify the condemnation which has been pronounced on the "cathartic" treatment of cholera.

The progress of the disease, as nearly all the recent literature of cholera contributes to prove, is throughout opposed to any system of purgation; and a careful and scientific investigation of the stage of convalescence, especially with reference to the occurrence of temporary glycosuria, like the study of the initial pathology of the disease, will satisfy any unprejudiced observer that all the phenomena of cholera are, from first to last, opposed both to the theory and to the practice of purgation, either by means of castor oil or by any other "cathartic."

In conclusion, therefore, I would beg to express my regret at the unscientific tone which has lately characterised some of the discussion on this subject, and the injudicious zeal which has been displayed in favour of the so-called "triumphant advocate" of a theory which is now no longer tenable, and of a practice which has been very justly and very generally rejected by the medical profession both at home and abroad. The authoritative sanction of a great name necessarily fails to give support when it is unaccompanied by any conclusive facts or by any fresh evidence derived from personal observation. And I cannot but feel, in common I would fain hope with a very large majority of the readers of THE LANCET, that in the presence of so great

* Medical Times and Gazette, Feb. 4th, 1860, p. 111.