ORIGINAL COMMUNICATIONS.

ON THE CAUSES AND TREATMENT OF DIARRHŒA.

By THOMAS HUNT, F.R.C.S., etc.

THE frequency with which diarrhœa degenerates into malignant cholera invests the treatment of the former with an unusual interest and importance at the present time; and reflective practitioners may not feel altogether satisfied with the directions which have issued from medical or sanitary boards, or other pseudo-professional authorities. Nor can we claim more respect for the somewhat dogmatic and earnest style in which the zealous scribblers in our periodicals have urged us to adopt respectively their own favourite mode of treatment of choleraic diarrhœa, or cholera itself, in all cases. Yet these proposals for an exclusive line of practice are so numerous, and at the same time so contradictory, and often proceeding from sources so respectable, that I have thought a temperate and considerate discussion of the subject, on the part of those members of the ASSOCIATION (if such can be found) who have no *panacea* to propose, might be useful to the cause of science, and might serve to check that unhappy tendency to routine and empiricism which has of late so much damaged the profession in the eyes of the public.

Although I have nothing to propose which is absolutely new, I believe that, if I can induce my brethren, one and all, to recur to first principles, to listen to the suggestions of anatomy and physiology, and to reflect upon the general economy of the alimentary canal, instead of being carried away by the wild theories of disease which modern clamour has thrust so importunately upon us, I shall have accomplished more in reforming the treatment of diarrhœa than by anything I have myself to propound.

In the first place, it must be remembered that a periodical discharge from the bowels is natural and necessary, and that, when this discharge becomes excessive, it constitutes not a disease, but a symptom only, and not always a *symptom of disease*. In a healthy condition of the system, the alvine evacuations are proportioned, *ceteris paribus*, to the quantity of effete matter contained in the bowels. If this quantity is excessive, either from gluttony or any other cause, there is, or ought to be, as a natural consequence, a discharge proportionably excessive. If the bowels become loaded with indigestible matter, with acrid poisons, or with irritating secretions, their discharge is effected by a more energetic alvine action, by increased peristaltic contraction, and, generally, by augmented serous effusion, whereby the injurious matters are washed away; but, of all things, the most useful occurrences in these cases are the spasmodic muscular movements of the intestines, which are naturally excited, in order peremptorily to get rid of the enemy. This was well understood by Cullen; who, nevertheless, feeling it necessary to class diarrhœa amongst actual diseases, placed it in the class *neuroses*, order *spasmi*.

It is not to be denied that griping pains and diarrhœa may both exist, as idiopathic affections derived from irritation in the nervous centres, rather than in the extreme filaments; but with such cases of diarrhœa we are seldom called upon to deal—never, perhaps, as epidemic disorders; and, therefore, for the present, our attention may be confined to cases in which there is or has been manifestly, in one form or another, a *poison in the bowels*. This poison, whether it be a specific poison, or simply effete, indigestible, or acrimonious matter, is, in simple diarrhœa, always found creating the disturbance first and chiefly, if not exclusively, in the small intestines. This requires no proof. It must be plain to all who reflect on the structure and functions of the small intestines, in contrast with those of the larger bowels, that bilious or serous diarrhœa always commences in the upper portion of the canal; while dysentery, or mucous diarrhœa, affects the lower and larger portion. Moreover, it must be borne in mind that the small intestines are

much more easily excited by the presence of acrimonious matters than the large. This accounts for the sudden cessation of diarrhœa which often attends the administration of a single dose of calomel, rhubarb, or other purgative, the action of which on the liver, stomach, or duodenum, removes the *materies morbi* from the upper to the less sentient lower bowels, which then remain for hours inactive, because unexcited; the smaller intestines being meanwhile relieved from their distress. Now, if, in such a state of things, the disordered action of the bowels should be erroneously attributed to a relaxed condition of the exhalents, and the patient be treated accordingly with astringents, absorbents, opiates, and stimulants, one of two things must happen—either the disorder proceeds, in spite of these remedies, which often happens; or, the escape of the poison being prevented by the medicines employed, it is either absorbed into the blood, to damage the whole system, or it is retained in the intestines, to excite future irritation there. Without doubt, opiates and astringents are sometimes useful in diarrhœa: it is against their indiscriminate administration that I protest. Some rule should be observed as regards the remedies required, or we shall often do mischief, and always be guilty of empiricism; and the design of this paper is chiefly to propose a few rules for adoption or rejection, by which the Association shall agree to be guided in their treatment of diarrhœa, more especially in choleraic times.

The first practical question arising in every case is, Is the diarrhœa complicated with frequent vomiting? This must determine our practice in the first instance; because, in such a state of the stomach, it is almost certain that every medicine intended to check the action of the bowels will be immediately rejected; and thus, in country practice, many valuable hours will often be lost, and no arrest of the disease will have been effected. The vomiting must first be stopped. How is this to be done? Practitioners vary a good deal in their practice; but it may be laid down as an excellent rule, that, unless we are sure the vomiting is useful, it cannot be too soon arrested. If the natural contents of the stomach have been first ejected, followed by bile, first yellow, afterwards brownish green, the patient will be liable to sink from the vomiting alone, which can generally be effectually checked by a simple effervescing draught containing a small excess of alkali, and from half a drachm to a drachm of compound tincture of cardamoms, every two or three hours. If this fail, which it rarely does, a drop of creasote, mixed with twenty drops of the tincture of cardamoms, and given in about a teaspoonful of water, will have great control over the stomach, and prove a good accompaniment of calomel and opium, or any other remedy designed to reach and act upon the bowels.

The vomiting being stopped, the next inquiry will be directed to the cause of the diarrhœa. If it should prove to be bilious, the case is one of English cholera, and is liable to run on into the "spasmodic" form, without becoming either "Asiatic" or "malignant". Severe gripings and occasional cramps in the gastrocnemii and other muscles, with rapid prostration of strength, are symptoms which have always accompanied severe attacks of the old fashioned English cholera morbus; and in former times, a dose or two of magnesia and rhubarb, with copious libations of weak broth, were all that were required (with the addition sometimes of a moderate dose of laudanum), to put the patient into a state of convalescence. One does not see why the same principle of treatment should not now be adopted for bilious diarrhœa. The rhubarb and magnesia were designed to remove the offending material from the stomach and duodenum into the colon and rectum; the broth to dilute the bile and shield the mucous membrane from its acrimony, and to afford support and nourishment, when solid food cannot be taken; the laudanum (which was the least important), to moderate the cramps.

But it should be borne in mind that there are many other causes of diarrhœa, besides this excess of the hepatic secretion; and several, or all of these causes may be in operation, as well in choleraic seasons, as at other times; and nothing can be more unphilosophical or practically unwise, than to

assume that every case of diarrhoea which occurs during the prevalence of malignant cholera, is necessarily choleraic in its character, much less that it ought to be treated *specifically*. A general survey of a few only of the causes of diarrhoea in their ordinary manifestations, will show the absurdity and danger of the routine practice, especially when that practice consists of the indiscriminate exhibition of opiates and astringents, as in some degree sanctioned by the Board of Health in 1849.

Diarrhoea may arise,

1. From the presence of irritating substances in the small intestines, which may consist of or arise from,

1. Excessive quantities of their natural contents:

- a. Bile.
- b. Pancreatic juice.
- c. Intestinal secretions.

2. Deficiency of one of them, rendering the others offensive: *e. g.*, when the bile is deficient the other sections become irritating from their excess of acid.

3. Food transmitted through the pylorus in an undigested condition.

- a. From excess or indiscretion in eating or drinking.
- b. From disease or debility of the digestive organs.
- c. From sudden arrest of the digestive process, arising from mental emotion or accident.

4. Acid secretions, the result of impaired or imperfect digestion.

- a. Acid in excess.
- b. Alkali in excess.

II. From the presence of a poison in the blood, which may have been conveyed thither by the stomach, the lungs, or the skin.

1. Animal poison.

- a. Specific.
- b. Putrid animal matter.
- c. Effete human secretions or excretions whether putrid or otherwise.

2. Vegetable poisons, specific or putrid.

3. Mineral poisons, used as medicines, or otherwise conveyed into the blood.

III. From suppressed evacuations, or from congestion or irritation in some distant organ.

IV. From actual inflammation of the mucous membrane of the small intestines. (The discharge produced by inflammation of the large intestines constitutes dysentery.)

V. From atony or relaxation in the exhalents of the bowels, generally chronic, but occasionally the result of acute diarrhoea in an advanced stage.

1. Arising from senile debility.

2. ——— disease.

- a. Typhus.
- b. Phthisis, etc., etc.

The above are by no means all the causes of diarrhoea met with in practice, but they constitute its more frequent causes. Now, what is the pathology of diarrhoea? In four out of the five divisions in this simple table, it is obvious that in every case the diarrhoea is remedial and protective to the system; it is simply natural defecation regulated by the more or less pressing necessities of the case; a salutary discharge, which if prematurely checked, is liable to poison the blood, or to arrest altogether the digestive process, if not to produce organic inflammation or fatal disease. He, therefore, who would treat this disorder *indiscriminately* with acetate of lead, sulphuric acid, or any other astringent, or with confection of opium, or any other sedative, is, to say the least, a very incompetent and indiscreet practitioner, and no authority under which he can shelter himself can either bear him harmless or afford a plea to palliate his conduct. Equally censurable is the man who would treat every case with purgatives, calomel, sulphur, or any other specific; inasmuch as it is impossible that any one mode of treatment can be applicable to the many causes and conditions which may be concerned in augmenting the alvine secretions.

It is requisite to bear in mind, likewise, that there is, in different individuals, a very great variety in the frequency with which the bowels act in health. Some persons are never well unless the bowels act twice, thrice, or even oftener in the twenty-four hours; others are in excellent health although the alvine evacuation occurs only once, twice, or thrice in a week. When the latter are seized with cholera there is generally no premonitory diarrhoea; whereas those whose bowels are naturally loose are not unfrequently forewarned, or even protected from cholera by a smart attack of diarrhoea, the poison being eliminated by the bowels. I will not assert that it is *always* dangerous to check by opiates and astringents a diarrhoea, which, for any thing we can tell, may tend to dislodge an otherwise fatal poison; but current notions run so much the other way, unchallenged, that it may be as well to consider and reflect before adopting and acting upon a merely popular theory.

In considering the causes of diarrhoea as above sketched, and regarding it, as a general rule, as a salutary effort of nature, it would appear that the best practice would be to a certain extent to encourage it, or else to let it run its course. With regard to the latter alternative, in ordinary seasons it seldom happens that neglected diarrhoea in adults comes to any serious harm, but the experiment is seldom tried to any extent. When, however, diarrhoea is epidemic, and in many cases fatal, it is manifest that the expectant treatment may turn out to be little better than manslaughter. With regard to the purgative treatment of diarrhoea, with a view to dislodging more peremptorily and effectually the offensive material, when such exists, it cannot be doubted that there is much sound philosophy and good reason in the proposition; and when the cause of the disease is correctly diagnosed, and the purgative properly selected and given in a suitable dose, there is certainly no treatment which so suddenly and effectually puts a stop to the disease. And here I should be guilty of great disrespect to our intelligent and zealous associate, Mr. Conway Edwards, of Bathcoston, if I omitted to notice a short but pithy tract, *On the Purgative Treatment of Spasmodic Cholera*, published by him (at Bath) during the cholera epidemic of 1849. He uses calomel, jalap, scammony, and sulphate of magnesia, not only fearlessly, but, as he tells us, successfully. The cases which he has published would be now generally called choleraic diarrhoea, and therefore belong to the category under review. Mr. Edwards found the purgative system always effectual; but he combined with it small doses of laudanum, and other reasonable adjuvants, as the case might require. It is not consistent with my object to hold out any special plan of treatment; but if there is reason to suspect the case to be one in which the diarrhoea is excited by the presence of something irritating the small intestines, the question is, What is the most ready method of carrying the offending matter into the large intestines, where it will probably remain for a time in a quiescent state, and the bowels will be no more disturbed? There are some medicines which act on the lower bowels only, as aloes and colocynth; others, as rhubarb, calomel, and perhaps magnesia, act on the small intestines only. Rhubarb seems to have a specific action on the stomach and duodenum; and calomel, by stimulating the liver and pancreas, supplies the duodenum with a purgative dose of bile diluted by the pancreatic juice. A dose of calomel and rhubarb, therefore, consisting of about three grains of the former and five of the latter, will at once stop a diarrhoea of this kind. I have tried it in a thousand instances, in many of which stimulants, opiates, and astringents had failed; and it almost invariably stops the discharge, either immediately or in a few hours. Other practitioners use magnesia and rhubarb, castor oil, etc., and with so much success, that they are tempted to exclaim, that purgatives are the right medicines for diarrhoea; and so they are, when the cause is removable by purging, and only then. Is the *choleraic* diarrhoea of this kind? and if so, why does it yield frequently to chalk mixture, catechu, acetate of lead, sulphuric acid, opiates, etc., all of which

have a tendency to lock up in the bowels the supposed source of irritation?

This is the precise question to which I would earnestly direct attention. The premonitory diarrhoea which rages in cholera-smitten districts is *not* a diarrhoea *sui generis*: it depends on various causes in different individuals; and, although it may generally be treated successfully, no treatment can be trusted, which does not proceed upon an intelligent perception of the cause existing in the individual case.

1. In a large majority of these cases, the chief cause is *panic*. Neither men nor women will confess it; but the family and friends observe it, and know it. Among the weak-headed and idle, who always abound where cholera rages, a large proportion are absolutely horror-smitten at the cholera when once it invades their dwellings or their immediate neighbourhood. And who does not know that both the bowels and the bladder are more readily excited by fear to discharge their contents, than by any other stimulus? Then, sympathy with the attacked directs the attention of those around (unconsciously, it may be) to their own abdominal movements and sensations, and thus excites over action. Anxiety and fatigue, night watching and nursing, all lend their aid to relax the bowels; and bowels so relaxed are easily quieted by taking almost any medicine whatever, which the patient expects will control the complaint; and those which, besides acting on the mind, give a sensible glow to the stomach, are still more certain. Hence, brandy, tincture of rhubarb, laudanum, chalk, cinnamon, cardamoms, *et hoc genus omne*, will often cure the "premonitory" symptoms, and thus, *as we are told*, prevent cholera in a whole neighbourhood.

2. Dyspepsia, from intemperance or other causes, may have irritated the bowels, and some offensive matter requires to be removed. In this case, astringents, opiates, and stimulants, all do harm. Here the calomel and rhubarb plan will succeed best.

3. Exposure to cold, want, or wet, may have excited mucous inflammation. Here the hot sand, salt, or flannels, the mustard cataplasms and fomentations, the warm bath, castor-oil and Dover's powder, are the remedies. And there are cases in which fear, dyspepsia, and cold, have each their share in relaxing the bowels; and these are cases which are liable to run on to cholera. The neglect of any part of this treatment may then be wrong. *In the first instance*, it is very important that any offending material should be removed; and in practice it is almost certain that a dose of calomel and rhubarb will more or less check the disease; but this should be speedily followed up by the external application of heat to the whole abdomen, spine, and extremities; by effervescing drinks mingled with aromatics, if sickness supervene; and ultimately, if the diarrhoea persist, by chalk, opiates, and astringents. Some practitioners prefer the mineral acids, which exercise an immense control over the diarrhoea, which results in mere relaxation of the vessels, or in an excessive effort of nature to expel the enemy.

But, 4. The choleraic poison itself may have taken up its abode in the blood or bowels of the patient, producing, in the first instance, a severe diarrhoea of the bilious character, and then, in a very few hours, a frightful discharge of serous fluid, without, *as yet*, any other symptoms of epidemic cholera. What will stop this "premonitory" diarrhoea? Will chalk or opium, lead or catechu, calomel or rhubarb, sulphuric acid or sulphur, brandy or salt, baths or bleeding, hot air or hot sand, or any other plans or appliances which ingenious practitioners have invented, and sanguine practitioners publicly vaunted—will any of these "prevent" the cholera, and save the patient? I doubt it much; but I would try them all, not blindly, but in obedience to the movements and dictates of nature. Supposing there is no vomiting, I would administer *first* a full dose of calomel and rhubarb; for it cannot be doubted that *here* there is a poison to be discharged, or the patient must die. Next, I would follow the instincts of the patient as to diet. Let him drink any quantity he likes of any fluid he prefers:

cold water, salt and water, and cider, are generally the drinks he looks for; and, to the application of external heat, friction should be added. When the purgative has had an hour or two to perform its work, astringents and opiates may be given. But of opiates I would be very shy; the cramps of the limbs are but efforts of nature to accelerate the venous circulation, and to hurry along the treacherous stream towards the right ventricle of the heart, where it is less likely to stagnate than in the veins; and opiates are apt to check these salutary efforts. But I am now trenching on the treatment of cholera itself, on which more has already been written than I have had time to read.

Alfred Place, Bedford Square, Oct. 8, 1853.

MADEIRA AS A RESIDENCE FOR INVALIDS:

WITH A SERIES OF METEOROLOGICAL OBSERVATIONS
MADE IN THE ISLAND.

By F. D. DYSTER, M.D.

I HAVE read with great interest the paper on the "Climate of Madeira", in the ASSOCIATION JOURNAL of September 2nd; and, if I now publish a few remarks on the same subject, it is not that either the facts are doubtful, or Dr. Lund's paper incomplete, but that I desire to add, if possible, to the weight of his testimony, and to diminish the probability of any phthisical patient, to whom this wonderful climate of Madeira is likely to prove useful, being intimidated or misled by the assertions of Dr. Burgess.

The table of meteorological observations which I append applies to the year 1844; and the observations were *all* made by me.

The means for the year, excepting the latter part of June, all July, August, September, and October, were obtained at Funchal, in a house about 250 feet above the sea level. The barometer was *within* the house, at a south window, always open; the instrument a mountain one of Bate's. The register thermometer and the hygrometer (Mason's) were placed at a north exposure, and, as nearly as can be, free from foreign influences. The tables were kept for my own amusement, little expecting that any one would ever be found hardy enough to assert that the climate of Madeira was damp and variable. I possess in perfection the tendency of John Bull to grumble at climate, and therefore all my bias was to grumble when I could. The opportunities were rare enough.

During the months of June (the latter part), July, August, September, and October, I and my meteorology removed into the mountains, about 2,500 feet above the sea; but even there Dr. Burgess would be a long time before he collected enough dew to wash his face with.

The tables speak for themselves; and the only comment I will offer is a comparison between the absolute mean dryness of England and of Madeira in 1844. The number of days on which rain fell was eighty-four: I believe five above the average. Out of these eighty-four, on twelve the rain occurred at night, and invalids ought to have had nothing to do with it. During the seven years I was in Madeira, I once, and once only, saw 42° registered on my minimum thermometer; and my lamented friend Dr. Renton told me that, in his previous experience, he had only once seen the same.

My own history tells a favourable tale as regards Madeira. In 1838, I had pneumonia, being at the time suffering from disease of the antrum, which destroyed the greater part of the upper maxillary bone. The pneumonia terminated in gangrene. The winters of that year and of 1839 were spent in two rooms. I was worse in the autumn of 1840, and resolved to go to Madeira. Some of my kind medical friends advised it; others (one especially of the most eminent in London) recommended me to stay at home. I should die in three months any where, he said; and I should debase more comfortably in England. His dia-