A CLINICAL LECTURE ON TROPICAL DIARRHŒA.

Delivered at Charing Cross Hospital.

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GENTLEMEN,—As it has been intimated to me that it would be agreeable, and perhaps useful, to you, were I, when occasion offers, to make some practical observations on the clinical aspects of certain diseases which have originated in, or are due to, the influences of a tropical climate, I have much pleasure in complying with the wish, and in placing such information and experience as I possess at your disposal. I can well imagine that clinical instruction of this character may be serviceable in a school of medicine which contributes so largely as this does to the various departments of the public service, the mercantile navy, and the civil medical establishments of our foreign possessions.

The opportunities for clinical instruction about the various, especially the acute, forms of tropical disease which would, doubtless, most interest you, are not so frequent as to give promise of a continuous or complete series of lectures; but still as, from time to time, cases occur, which illustrate some of the more important and characteristic features of tropical disease, I would gladly take advantage of them for your benefit; and I trust that I may be able to direct your attention to certain points of interest which will be of service not only to those among you who look forward to a career in the public service, or in the colonies, but also to those who contemplate professional work at home. As you all know, our rapidly extending intercommunication with India, China, the colonies, and other foreign, tropical, or subtropical countries, whilst bringing us into closer and more rapid intercourse, is also making medical men at home more familiar with, and more directly interested in, various forms, phases, and sequelæ of exotic disease, which are by no means of uncommon occurrence in many parts of our own country.

The subject I have selected for consideration to-day is one of considerable interest, and it is essentially a form of disease due to tropical influences, frequently very grave in its character, and, if not carefully and judiciously dealt with, very prejudicial to health, even to life itself. Through the kindness of Dr. Bruce I am enabled to illustrate clinically, in the case of a person recently returned from India, the symptoms of tropical diarrhœa, the complaint to which I propose to direct your attention to-day; and whilst considering this case, and directing your attention to its clinical history and peculiarities, I shall take advantage of the opportunity it gives me of describing in some detail the disease as it usually presents itself; giving you also some hints as to the method of dealing with it. I do not propose to dwell on the subject of diarrhœa generally, but on that special form of it which has received the designation of tropical, from being so frequently seen in persons who have resided in India, China, Java, Ceylon, or other tropical or subtropical countries. Chronic dysentery, with which it is often complicated, I reserve for a future occasion.

I need hardly remind you that diarrhœa is a symptom of disease rather than a disease itself, and may depend on a variety of causes.

1. On efforts to rid the intestine of peccant matters: poisons, acrid secretions, food, drink, entozoa.
2. On disease of the liver or spleen, derangement of their functions, portal congestion, or on lesions or disturbances of the mucous lining and follicles of the intestines.
3. On efforts at elimination of morbid matter in the blood; as in septicæmia, renal disease, gout, fever, etc.
4. On re-absorption into the blood of excretions and secretions, the suppression of natural discharges.
5. On malarial and climatic influences, miasmata of various kinds, especially of putrescent organic matters, intemperance, foul air and gases, sudden alternations of heat and cold, moist and dry air.
6. On mental emotions, such as fear, anticipation, anxiety.
7. As the result of degeneration and atrophy of the tissues, of the bowel in particular.
8. As a consequence of starvation or of malarial cachexia when it is wasting and chronic in its character. A severe form of diarrhœa also with dangerous and severe symptoms, is described as caused by bacteria (mycosis intestinalis) by von Recklinghausen and others, the disease and the consequent diarrhœa being caused by a form of anthrax or malignant pustule in the intestines.

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Having regard to these causes, a certain classification of the disease which answers well enough for practical purposes may be stated in the following terms.

Fæculent diarrhœa, the result of the presence of certain irritating matters in the *primæ viæ*, removed with removal of the cause.

Catarrhal or congestive or inflammatory diarrhœa, due to continuance of irritation, or catarrhal conditions thereby induced, or to constitutional causes.

Diarrhœa from checked action of the skin, or from miasmata, when the mucous surface, villi, and follicles of the intestine may be implicated.

There may be inflammation or even ulceration, and serous, mucous, or fibrinous and flaky discharges mixed with fecal matter, accompanied by pain, griping, and even blood; indeed, it is apt to pass into dysentery, perhaps is dysentery from the commencement. And though these cases are generally amenable to early treatment, they may pass into a chronic stage; and so closely resemble, if they be not identical with dysentery, that they may be called either dysentery or diarrhœa.

Then there is the bilious diarrhœa, the autumnal or summer diarrhœa, the so-called sporadic cholera, which sets in with great violence, and may so exhaust the patient by the loss of serum which accompanies or follows the expulsion of the ingesta, and bilious and other secretions, that symptoms of collapse and other conditions peculiar to true cholera, such as cramp, suppression of urine, great thirst, may occur. It may happen in this country, and often causes great debility. The conditions are indeed very like, if not identical with, those of true cholera, the appearance of which is frequently heralded by cases of this kind; and often a source of anxiety in India, when such an attack of diarrhœa makes its appearance, lest it should pass into the true cholera.

Happily, it is often readily controlled; but those who have been in cholera camps and regions, and have had to deal with outbreaks of cholera, know the vital importance of checking looseness at the outset, feeling well assured that, by so doing, they may in many cases prevent the sufferer from passing into the dangerous condition that is foreshadowed by the diarrhœa.

Doubtless, astringent and sedative remedies are sometimes given, when a dose of castor-oil or Gregory's powder would have been more to the purpose, but that is an error easily rectified; whereas the passing of diarrhœa into cholera is a very serious matter, and may prove fatal.

Lastly, there is the chronic diarrhœa depending on visceral changes due to constitutional causes and defective nutrition.

It is of diarrhœa due to tropical and malarious influences—that which results from the debility and cachexia induced by these conditions—that I am about to speak.

The chronic diarrhœa, diarrhœa alba, or white flux, is one of the most important, as it is one of the most dangerous forms of the disease. All diarrhœas may become chronic, and when they do so they induce exhaustion, anæmia, and ultimately tissue-degeneration; but it is in the peculiar form to which I now allude that the worst symptoms are manifested, and that a dangerous and protracted state of disease is often induced. It is insidious and slow in its progress, but surely wasting in its effects, and when protracted beyond a certain stage is fatal, owing to irreparable degeneration of the intestinal mucous surface and glands, and the consequent inability to absorb nourishment. Death results from slow inanition, simply because the channels for the admission of nutritive material are destroyed.

This form of diarrhœa has been described by Annesley, Twining, Martin, Goodeve, and others, especially by Mr. A. Grant in the *Indian Annals of Medical Science*. It is commonly known in India as "hill-diarrhœa," because it is apt to appear in some of the hill-stations, where atmospheric changes, and probably water, are instrumental in producing it in people who have suffered more or less from the debilitating influences of the plains, though it appears sometimes in recent arrivals in India, and in some who do not seem to have suffered previously from the effects of climate; it must be regarded, nevertheless, I think, as essentially a climatic disease, even though no obvious indications of cachexia may have preceded it. The hill-diarrhœa and the white flux of other parts of India are only modifications of the same disease, and, in their pathology and symptoms, so much alike that I regard them as identical. It is frequently seen in this country, for it is so well known that removal from the climate or site where it was contracted is necessary, that those who suffer from it are generally sent home. There is a close resemblance of this disease with some forms of chronic dysentery.

Sir R. Martin has well remarked: "Although chronic diarrhœa generally follows on previous tropical disease, I have seen it affect persons on their return to England who, during their residence in India,

had never suffered from any of the diseases of that country. The health of such patients, however, had been enfeebled, and they were thus rendered susceptible to the influence of cold or damp, or (what is always more injurious to the returned Indian) to both conjoined. The returned Indian is often seized with diarrhoea from exposure to cold on board ship, especially if exposed to the spring easterly winds. The cold of the English winter and spring proves very adverse to the cure of this disease; and I have constantly to send patients suffering from it to the sheltered places on the coast, as Hastings, Bournemouth, Ventnor. Fatigue is almost as injurious as cold."

I may add that persons who come home from India suffering from general debility, from climatic cachexia attended with hepatic derangement, and a congested portal system, are liable to be troubled with diarrhoea of an irregular character, generally most troublesome in the morning, rendering the patient unable to go out or undertake anything before eleven or twelve o'clock, or after taking food, fatigue of any kind, any indiscretion in diet or drink, or exposure to cold or damp. Such are benefited by relieving the congested portal system by the aid of saline laxatives, careful well regulated diet, attention to clothing, and, above all, by change of climate. These cases are sometimes obstinate enough in those who have been long in India, and especially if there be any hepatic or splenic complication, or any vestige of former dysentery.

They, however, are not of so grave a nature as the chronic white tropical diarrhoea, and are recovered from more quickly, betokening rather functional disorder and congestion than structural and degenerative changes in the viscera and mucous surface of the bowels. There may, of course, be some atrophic change, which will soon be evident from the character of the excreta.

Let me now say a few words on the symptomatology of this form of chronic diarrhoea. Its origin is often insidious, commencing with simple looseness of the bowels, with little or no pain, and producing rather a feeling of relief than of suffering; and not until the subject of it finds he is losing flesh, strength, and energy, does he realise the serious nature of the complaint. It is due rather to a general derangement of the hepatic, splenic, and gastro-intestinal functions, with atrophy of the mucous membrane, its villi and glands, than to the usual irritant or eliminative causes of diarrhoea. The appearance of the dejections is suggestive of deficient or altered bile; but this probably may be accounted for by the general state of anæmia rather than by any actual disease of the liver itself. It is only as the disease progresses that the pale colour of the excretions becomes so marked; for in the outset they resemble those of ordinary diarrhoea. The balance between exhalation and absorption seems to be disturbed, and much of the fluid which in the natural osmotic circulation of intestinal fluids would be reabsorbed is carried off, whilst wasting and degeneration result, as may be seen in the attenuated and exhausted frames and atrophied bowels of those who have died from the disease.

The appearance of persons suffering from this disease is characteristic. They are pale and emaciated, with loose, dry, flaccid, flabby skin, which in the later stages becomes discoloured, as by chloasma or Addison's disease. The fat disappears; the eyes are pearly; the lips and conjunctivæ are blanched; the tongue is dry and smooth, and in advanced stages it appears contracted and shrunk, its papillæ are obliterated, the surface is red, glazed, and dry, at times its edges are excoriated; and the buccal mucous membrane is the seat of aphthous spots or epithelial proliferation, and so tender and sensitive as to be intolerant of wine or any substance or fluid in the least pungent or stimulating.

The earlier phases are often characterised by some evidence of malarious poisoning, such as fever, neuralgia, or myalgia. Distension of the abdomen immediately after food; dyspepsia; irritability of the bowels, which are provoked by anything taken into the stomach to expel their contents; general languor and debility, mental and physical—all these increase, until all exertion is difficult and distasteful. As the diarrhoea gradually increases, these symptoms may to a certain extent be mitigated, and the patient may think himself better; but as it insidiously progresses the strength fails, and, sooner or later, he finds himself compelled to give up work and seek recovery in change of climate. There is, at last, extreme anæmia, albuminuria; dropsical effusions take place in the areolar tissue of the lower extremities. This chronic white diarrhoea appears to be as much the result of general degeneration of all, as a special disease of certain organs. Anæmia—the result of inanition, imperfect absorption, and waste of the nutrient material—is the most marked symptom during life. Examination of the bodies of those who have succumbed to the disease shows that the wasting which is so marked in the body generally has extended to the viscera themselves. When death has occurred at an early period, from the interference of other disease, the intestines are found contracted, with the mucous lining thickened and congested, even ulcerated; but

when death has occurred later, the coats of the bowel are found to be attenuated and diaphanous, the seat of fatty or lardaceous degeneration, frequently with ulceration in both ileum and colon, the glandular structures and the mesenteric glands atrophied and degenerated, the mesentery itself wasted. The liver is shrunken, pale, and contracted (so much so as in life to give rise to the suspicion that it is atrophied); the spleen and kidneys are often in a similar condition. There may be, in certain instances, enlargement of the liver and spleen; but, in ordinary cases of the disease, there is no such complication.

Though chronic diarrhoea is frequently the result of general degeneration of health from malarious cachexia, it is not always so, and other sources of enteric irritation with disease or disordered condition of the liver, spleen, or kidneys, or chronic dysentery, may give rise to it. It is the simpler, though not less serious, form of which I now speak, and for the management of which I shall presently offer a few suggestions.

Pathology and Morbid Anatomy.—The opportunities of studying the morbid changes that take place in ordinary examples of the disease are not frequent, as, in many cases where death occurs, it is under circumstances where *post mortem* examinations are not readily obtained; the invalids who succumb being frequently those who die in their own homes, when there is no opportunity of obtaining permission to make a necropsy. In some cases, however, it does happen that an examination can be made; and I will describe the pathological changes which generally may be observed.

It has long been thought that the disease is associated with chronic disease of the liver. Annesley, Twining, and others have described it. Martin, Grant, Goodeve, and others have pointed out its connection with visceral disease, wasting of tissue, and general anæmia. *Post mortem* examinations have demonstrated the attenuated, blanched, and atrophied state of the mucous membrane and follicles of the intestines. E. Goodeve gave an account of the state of the mucous membrane and glands, showing that in some cases they were in a state of amyloid degeneration, as I also pointed out in a paper written some years ago. He says that, "in children dying of the inflammatory form of diarrhoea, there may be some swelling of the follicles and Peyer's patches; but in the chronic forms there may not be much surface-change. There may be traces of redness in patches, ulceration of the glandular structures in various states of repair, greyness of portions of the mucous membrane, black or dark margins to the ulcerated tissues or healed ulcers, and puckering and contraction. In some chronic diarrhoeas, especially those with the white flux, in spite of the long duration of the disease, little or no change of the mucous surface is to be found. There is great thinning of all the coats of the small intestines, so that they are quite translucent, and there is doubtless atrophy of the glandular tissues." "When these patients have had dysenteric symptoms towards the close of life, ulceration or sloughing of portions of the colon may be found. The mesenteric glands are generally enlarged and hardened in chronic diarrhoeas, and especially in the white flux. The liver is not necessarily altered; but it has been found flaccid, anæmic, and small or of natural size, but without any decided morbid appearance. It occasionally presents patches of fatty degeneration; but this is not peculiar to diarrhoea." (Article "Diarrhoea," in Reynolds's *System of Medicine*, vol. i, pages 96, 97.)

In regard to the question of amyloid or lardaceous degeneration, Dr. McConnell of Calcutta writes: "Amyloid degeneration of the bowel, as far as my experience goes, is very rare among the natives of this country. I think I find about one in one hundred cases of amyloid degeneration of any organ or organs of the body. I really do not think it is commoner than that, and of all parts, the intestines are least frequently affected." He recognises the accuracy of the account given by Dr. D. D. Cunningham, of the morbid anatomy and structure of the intestines of the sufferers from diarrhoea and dysentery in the Indian famines, a condition probably similar to that of other chronic diarrhoeas.

Professor Aitken says, "Lardaceous disease of the intestines comes next in frequency to that of liver, spleen, and kidney, and involves the arterial capillaries of the villi, and surrounding networks of mucous and submucous tissues. It progressively involves the villi, mucous, and submucous capillaries; there are infiltration around the solitary glands, and degeneration of the vessels surrounding Peyer's glands." He has repeatedly met with it in the cases of soldiers at Netley, where it involved the whole tract from mouth to anus. Anæmia of the mucous membrane, with a peculiar glistening or shining aspect of its surface, are the most characteristic signs of the lesion, "otherwise there are no outward signs to attract attention." The application of the iodine test is necessary to detect it.

Aitken refers to Virchow's account of this condition, and says: "Virchow has known the villi to drop off, and the intestine to be bare

of the villi." Such, I believe, would not unfrequently be found the case when death has resulted from advanced stages of chronic diarrhoea. "Sometimes the villi are changed into lardaceous or albuminoid material."

Ulcers form; Peyer's patches and the solitary glands are enlarged at one time; ultimately they are destroyed by a "granulo-fatty disintegration." The whole tissues, in fact, become degenerate. A very elaborate and careful report by Dr. D. D. Cunningham,¹ on the diarrhoea and dysentery in the famine-districts, shows how the degenerative and structural changes involve the intestines and other viscera; and it is impossible, I think, not to see the bearing of those observations on the pathology and therapeutics of chronic bowel-complaint generally.

The following is an abstract of the observations. The mucous membrane of the stomach, jejunum, and duodenum was white, pulpy, soft, and bloodless; there were some traces of congestion, marks of disintegration in the jejunum; disappearances of the epithelial coat; pigmentation and atrophy of the subepithelial areolar tissue. The mucous membrane of the ileum presented more evident signs of change; it was bloodless generally, but here and there showed patches of congestion; the epithelial coat had become disorganised, or was absent, and the subepithelial tissues were affected. The solitary glands were either very few or almost entirely absent. Peyer's patches were an empty network of elevations surrounded by slightly elevated ridges; the adenoid tissue was virtually absent; the surface was smooth; the villi were almost unrecognisable; the muscular coat, covered only by a thin membranous investment, seemed to form the inner lining of the tube; it was most pronounced over the lower half or two-thirds of the ileum. Microscopic examination showed that the epithelium, where present, contained much fat, the cells including large quantities of oil-granules. In the vicinity of denuded areas, vestiges of cells and free granular matter were present. The subepithelial tissue showed evidence of similar changes; the nuclei were granular and oily. This may, to some extent, have caused the appearance of pigmentation that was observed, but there was a certain proportion of pigment-granules.

It is impossible to say whether this deposit of pigment in the mucous membrane is essentially connected with the morbid processes. It is a phenomenon of other wasting diseases, and is generally ascribed to antecedent minute extravasations of blood; but it may be due to degenerative processes. In the more advanced stages of atrophy of the mucous membrane, the nuclear elements in the villi appeared to be almost entirely absent, and the villi were represented by abortive processes containing granular matter.

The mucous membrane of the large intestine was also generally anæmic, white, but mottled pink here and there, and its texture was very soft. In some cases there was thickening. Besides the general softening there was evidence of loss of substance in some places. These patches, in certain instances, might be called ulcers, in others they seemed to be merely the result of disintegration and atrophy. In such instances, there was no evidence of congestion, and the colic lymphatic glands were pale and inconspicuous. The appearances presented by the mucous membrane were sometimes more like those of dysentery. In one case this was decidedly so. There was great thickening of the gut; the mucous membrane was broken up into hard rough masses of purple and green colour; distinct ulceration had occurred, and there was considerable congestion, whilst the lymphatic glands were turgid and of a deep purple colour.

Fatal cases of the so-called famine-dysentery may occur in which no true dysenteric processes, as ordinarily understood, are present. The essential process appears to be the same as that affecting the small intestines, but it may be complicated in various degrees by the superimposition of true dysenteric changes. Does it not show how nearly the two diseases are allied; perhaps only different manifestations of the same? The liver was small, pale, yellowish, fatty-looking; in some, the cells were healthy; in others, full of fat granules. The gall-bladder was half-full of bile; it was healthy in those where the cells were healthy; in the fatty it was pale, yellow, and very thick. The spleen was small and firm, in most cases conspicuously so. In some cases it appeared to present little save a dense contracted mass of stroma in a white shrivelled capsule. The kidneys as a rule were pale and anæmic; in some there was fatty degeneration of the epithelium. The pancreas was normal in some; in others, its substance seemed as though it were opened out, the lobules widely separated. The brain was slightly anæmic. The general result of the entire series of observations was to show that the diseased conditions were specially characterised by extreme general anæmia, and destructive processes affecting the mucous membrane of the intestinal canal.

Diagnosis.—A word or two on the diagnosis between dysentery and diarrhoea, which is often difficult. Diarrhoeas are generally free from mucus and straining in the early stages. In chronic dysentery there is blood and mucus more frequently than in diarrhoea; though where there is ulceration in diarrhoea there may be blood, and it is difficult to determine which to call the disease—diarrhoea or dysentery. It is, after all, not a matter of much practical importance; and, as I have already said, the conditions are so similar that they are often confounded. In the earlier stages there is no difficulty in diagnosis; in the later, the treatment of both is much the same.

A form of chronic diarrhoea known in China and Japan by the name of "sprue," appears to be the same disease as that I have been describing, or a variety of it. Manson describes it as a result of inflammation of the alimentary mucous membrane, with a œmia and general atrophy; and ascribes it to the influences of a tropical climate on the European constitution, especially after long residence in the east.

Treatment.—It is needless to occupy your time by describing the treatment of ordinary diarrhoea. But I would again refer to the importance of checking all forms of diarrhoea during cholera-seasons, or when that disease is prevalent.

The commencement of chronic diarrhoea is insidious, and the disease often gains ground before radical measures are resorted to for its removal. In the cases that come under notice at home, the most essential step towards recovery has been taken by the patient returning to Europe; but there remains much to be done to further the improvement, which may probably have advanced considerably during the sea-voyage.

The successful treatment of chronic diarrhoea depends very much on the patient's resolution and perseverance in carrying out the instructions he receives. Diet is the most important element in it, and this must be strictly regulated; all irritating or indigestible and solid food must be at first entirely prohibited, and only that which is most easily assimilated allowed. Milk, alone or in some cases diluted with about one-fourth or one-third part of lime-water, given in small quantities and at frequent intervals—say, a wineglassful or small tumblerful, every hour, or second or third hour, in some cases more frequently, will generally be found to answer, and may be continued for a long time, to the exclusion of all other food, with great advantage. Milk undiluted will not always agree (but I must say that, after considerable experience, I have very rarely found it to disagree), as may be seen by its causing irritation, and the passage of undigested casein; but it is quite sufficient for nutrition, and by the time the patient finds that he is taking three to four quarts a day, he will have realised that he obtains from it all that is needed to support health and strength. At first, he may lose weight, but soon regains and increases it. Beef-tea, raw beef-juice, or other plain animal broth free from extraneous matters, or finely minced fresh meat; a raw egg beaten up with milk, to which a teaspoonful of brandy may be added, will sometimes, but very rarely, be tolerated (though I seldom find that they agree, and have to be discontinued). Arrow-root, tapioca, or other plain farinaceous food will sometimes, but not always, answer, certainly not at first. Tea and coffee, as a general rule, disagree, and should be avoided. Stimulants, especially for those who have long been habituated to their use, may be needed; the best are a little whisky or brandy diluted with Vals or Vichy or potash-water; but these should be laid aside if they increase the action of the bowels. A little good port wine may be tried; but, as a general rule, I find all wines unsuitable. The return to ordinary diet must be very gradual and tentative. Regularity in the times of administration and in the quantity of nourishment given is most essential. The greatest care should be taken not to give too much of anything at a time, and at once to discontinue whatever appears to disagree.

It is necessary that the patient should be kept warm, and at an equable temperature day and night. The body should be covered with flannel or woollen material next the skin, and a flannel-bandage should surround the abdomen. Chills and damp are especially to be avoided, for exposure to them may seriously aggravate the mischief. During cold weather, the patient should not leave the house.

As the condition improves, the state of the tongue is the best indication of recovery; the glazed red appearance is replaced by the reappearance of papillæ. This discipline may then be relaxed, and gradually the patient may be allowed to go out and take moderate exercise; but, until considerable improvement has taken place, he should be extremely careful in this respect. It is desirable to keep much in the recumbent posture, as mechanical rest for the bowels is a most important element in the treatment. It might be well, if possible, for the patient to reside during the cold months of the year in some of the milder and more sheltered parts of the country, and, perhaps, near the seaside of the south coast. The care, attention, comforts, nursing, and good food of a home, however, are more important than any

¹ Fourteenth Annual Report of the Sanitary Commissioner with the Government of India, 1877.

benefit to be gained from such changes as may be derived from removal to different localities in the United Kingdom, where home advantages might be wanting. As the diarrhoea diminishes, the condition of the excreta improves (the dejections diminishing in number, but being copious in quantity, occurring once or twice in the day, semisolid or pulsatious, gradually increasing in consistency, and not unfrequently constipation resulting, which requires enemata or castor-oil for its removal), and strength is regained, the diet may be more varied, and out-of-door exercise more freely taken.

But, long after recovery is apparently complete, the greatest care must be taken to avoid errors in diet, over-fatigue (rest in the recumbent posture is desirable to give rest to the intestines), or exposure to extremes of temperature, or a relapse may take place. It is desirable that the stay in Europe should be prolonged, especially after recovery from severe attacks, beyond one hot season at least, and it may be necessary to defer return to India for another year.

Drugs will do little good if strict dietetic and hygienic rules be not most carefully and continuously observed. Under the impression—derived chiefly from the appearance of the evacuations—that the liver is mainly at fault, it is sometimes deemed expedient to administer cholagogues or alteratives. This, I think, is unnecessary, as there is not sufficient ground for supposing that the liver is specially at fault. The chief indication is to restore the healthy functions of the bowel by giving it rest, to promote absorption, and to delay the expulsion of its contents. This we may hope to effect by introducing only bland, un-irritating, and nutrient fluids, by allaying irritation and checking excited action, and by administering such remedies as may tend to improve the general health.

To allay the irritable state of the bowels, the compound ipecacuanha powder, in combination with bismuth, quinine, and alkalies, may sometimes prove useful. Where the motions are fluid, copious, and frequent, tannin or gallic acid may be given in combination with Dover's powder. Sulphate of copper with opium has been recommended. Dilute nitric and hydrochloric acids, in combination with opium, have been found beneficial where other remedies have failed. Nitrate of silver is sometimes given, but I have not found it to produce any satisfactory results. *As a general rule, all drugs are useless.* Counterirritation over the abdomen by sinapisms or turpentine stupes may be useful. Opiates and small demulcent injections are often efficacious in allaying the irritability of the bowel and giving rest. Hypodermic injections of morphia may be tried if opiates do not agree; but I have not found it necessary to resort to them. Opiates are sometimes objected to on account of their interference with the secretions; but this is, I believe, a groundless objection; the colour of the evacuations need not prevent their use, and the rest and quiet that they give may be of importance. Mucilaginous decoctions or infusions, such as those prepared from the fresh bale-fruit, or from the isophgool (*Plantago Isophgoola*), the seeds of which are often given with good effect by the natives of India for the sake of the mucilaginous envelope. Solution of gum, water-arrowroot, etc., may be beneficial for their soothing and nutrient properties.

In the earlier stages of the disease, where there is hepatic and portal congestion, ipecacuanha in large doses, ten to twenty grains, may cut short the state which would have passed into diarrhoea. This, however, is quite inapplicable to the disease in its more developed stages. I have found some cases, which were aggravated by a state of portal congestion, improve rapidly after a few doses of a saline aperient.

As recovery progresses, preparations of quinine, iron, and other tonics are beneficial. A visit to some of the Continental health-resorts may be of advantage in expediting recovery, not so much for the sake of the waters, chalybeate or others, as for that important element in recovery from nearly all chronic diseases, "change," for the regulated and physiologically correct life, and the mental tone imparted by the determination to recover in a congenial place of residence.

The use of drugs will be modified by the peculiar circumstances of each case, but I think that, generally, the plan I have suggested will prove successful in cases that have not advanced too far. Where emaciation has made great progress, where the tongue is always red, smooth, and glazed, the mouth dry or aphthous, the diarrhoea constant, and the exhaustion great, one cannot but feel great anxiety and uncertainty as to the result, though it is seldom necessary to declare a case hopeless. The diarrhoea may disappear in this condition, giving a delusive appearance of improvement, which is not unfrequently the precursor of death. Happily, a number of cases of chronic diarrhoea of the character I have been describing have a favourable termination, and they are so in proportion to the care in which the patient adheres to the plan of treatment laid down for him; and I would emphatically repeat that strict adherence to simple milk for a long period, it may be

for months, will generally prove of more value than medication of any kind.

I would only add, in conclusion, that in some cases the fresh bael, taken early in the morning in the form of sherbet, as it is given in India, will sometimes have good effect. A remedy that has often produced good results in India could hardly fail to do so here; but, of course, it, like all other mere drugs, is altogether of secondary importance to dietetic and hygienic measures.

CASE.—J. S., aged 29, enlisted in 1877. In 1880 went on foreign service to Malta and Gibraltar for one year and ten months; was then sent to Bombay, and thence to Deolalee and Benares, where he remained for nearly two years. Up to this period he had enjoyed good health, but just before leaving Benares he had an attack of looseness of the bowels which lasted a few days. He was ordered home; and arrived at Portsmouth in December 1883. Two or three days after landing in England he "caught cold," and diarrhoea came on. He took but little notice of this. On December 24th he was discharged from the service, and he came to London, where he applied to a druggist for the relief of his complaint. About the end of January, after some purgative pills, the looseness came on again, and after applying vainly for relief, he was recommended to come into hospital. He was admitted March 11th. On physical examination of the chest and abdomen, the apices of both lungs were deficient in resonance. There were signs of bronchial catarrh, no moist sounds; no signs of cavity. As far as could be ascertained, his family history was doubtful as to phthisis. The heart was normal. There was no pain or tenderness on the abdomen. Splenic dulness was slightly increased; the edge of the spleen could not be felt. Liver-dulness was normal. The urine was normal.

The evacuations were copious, frequent, clay-coloured and fluid. They gradually diminished in frequency and increased in consistency, until a condition almost of constipation ensued. He had been taking bismuth and other remedies, but with no benefit. His diet was simple.

March 19th. He was placed on milk alone, to be given in small quantities every hour. Under this, the diarrhoea diminished, and on the 28th some bread was given, but it did not agree; diarrhoea returned. The tongue had improved; the papillae were healthy, and developed less redness. His cough was troublesome; there was some expectoration. The temperature rose to 102° daily.

On April 10th, the diarrhoea was quite gone. He was now eating bread, and had three quarts of milk a day. So far, he was much better, but the daily rise of temperature and the great emaciation and debility made prognosis doubtful. The same diet was continued, and the symptoms carefully watched, in view of some possible tubercular tendency or hepatic mischief. The case, though not a typical one of tropical diarrhoea, sufficiently illustrates the advantage of milk in controlling the diarrhoea.

SANITARY ASSURANCE ASSOCIATION.—At a meeting of the Council of this Association at 5, Argyll Place, Regent Street, W., on Monday, May 12th, Sir Joseph Fayrer, F.R.S., in the chair, a discussion took place on the International Health Exhibition in connection with a letter from Mr. H. Rutherford, of the Temple; and, on the motion of the Chairman, seconded by Lieut.-General Burne, C.B., it was resolved: "That the medical officer, Dr. James Stevenson, and the sanitary surveyor, Mr. Mark H. Judge, A.R.I.B.A., be instructed to visit the various departments of the Health Exhibition connected with the drainage and water-supply of dwelling-houses, for the purpose of reporting on the same to the Council and members of the Association." The following resolution was also passed, on the motion of Mr. Barrington Kennett, seconded by Mr. Mark H. Judge: "That certificates be given to builders and plumbers who, having executed sanitary works under the direction and supervision of the Association, have completed the same to the satisfaction of the medical officer and the sanitary surveyor." At the same meeting, it was decided to inspect and certify the sanitary condition of hotels of moderate size in any part of England on the same terms as private houses.

THE Ormskirk Rural Sanitary Authority, at their last meeting, received a letter from the Local Government Board, enclosing the report of Dr. Parsons, one of their medical officers, upon the inquiry recently held by him as to the manner in which the Poor-law district medical officers had performed their duties as medical officers of health, stating that "the board were unable to avoid the conclusion that the present arrangements for the discharge of the important duties of the office of medical officers of health were unsatisfactory, and that after June 24th next, one efficient officer should be appointed for the whole district at an adequate salary." It was decided to take the letter and the report into consideration at the next meeting.