

Asiatic cholera / by John Furse McMillan.

Contributors

McMillan, John Furst.
Royal College of Surgeons of England

Publication/Creation

London : John Bale, Sons & Danielsson, 1914.

Persistent URL

<https://wellcomecollection.org/works/zyagu22t>

Provider

Royal College of Surgeons

License and attribution

This material has been provided by This material has been provided by The Royal College of Surgeons of England. The original may be consulted at The Royal College of Surgeons of England. where the originals may be consulted. Conditions of use: it is possible this item is protected by copyright and/or related rights. You are free to use this item in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s).



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

ASIATIC CHOLERA

BY

JOHN FURSE McMILLAN,

L.R.C.P. LOND., M.R.C.S. ENG., L.S.A.,

Late Royal Army Medical Corps

[Reprinted from "The Journal of Tropical Medicine & Hygiene,"
pages 354-363, December 1, 1914]

LONDON

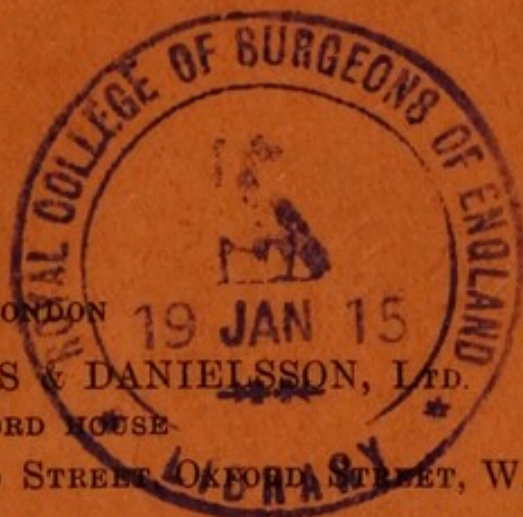
JOHN BALE, SONS & DANIELSSON, LTD.

OXFORD HOUSE

83-91, GREAT TITCHFIELD STREET, OXFORD STREET, W.

1914

PRICE 6d. NET.



With the Author's Compliments



ASIATIC CHOLERA.

By JOHN FURSE McMILLAN, L.R.C.P.Lond., M.R.C.S.Eng.,
L.S.A.

Late Royal Army Medical Corps.

ON all sides it will be granted, and indeed it would be folly otherwise, that the heads of the profession at the various hospitals of the Metropolis, and within the British Isles generally, are in a better position—from perhaps their longer course of study forced upon them in order to obtain the higher qualifications, and so a furthering of their intellect—to specialize, in some branch or another, whence an individualism or personality is produced that without demer causes any opinion from such to be received as the crux for those of more multifarious duties and calling to follow. Yet, nevertheless, from the very fact of their digging deep in a circumscribed area of ground, they may be incognizant of what transpires in a neighbouring area. This, perhaps, may not be new in any way, for both Sir William Ferguson in Surgery and Sir Thomas Watson in Medicine have left on record that they were in a measure obliged to eschew specialism, the former specifically when the question of excision of joints *versus* amputation of the limb came to the fore, and the question of diagnosis of disease occurred; and the latter generally in his lectures on the principles and practice of physic. But, at the same time, Sir Thomas Watson is so far a specialist that when he comes, or rather should come, to speak of the plague, he dismisses the matter in a word by saying that he has not seen a case. So that for one

who has had experience of Asiatic cholera, one must not look within the British Isles, or in fact in Europe or America, but to India, the home of the disease. And there the profession is divided into four classes: the Indian Medical Service, military and civil, the Royal Army Medical Corps, and civilian practitioners; and inasmuch as the former service deals mainly with natives, and the latter is stationary in one place, it stands that an officer of the Royal Army Medical Corps, located now in cantonment, then on the line of march and in camp, in medical charge of European troops, has a far better opportunity of studying Asiatic cholera than others.

The occurrence of Asiatic cholera in Galicia, Hungary, and Austria brings the matter near home, so that one need offer no apology for writing a monograph such as will be a guide to prevention, diagnosis and treatment, as concerns a disease that leaves one little leisure for either when it is actually at hand. It is a well-established fact that a horse turned out to grass returns to work with the greater ardour, and so the author trusts will be his case.

Cholera is endemic to India—hence its name Asiatic—about the low alluvial country bordering on the Ganges. By endemic is meant that there is the home of the disease, and whatever may have been its primary cause in the history of the world, the first recorded epidemic is that which occurred at Athens, known as the Pestilence, and described by Thucydides; and in a measure it is a typical account, although the great Greek historian lived in the fifth century B.C.; and it is well to remember that he suffered from the disease himself. The author has translated the portion of the History, and it reads as follows:—

“In such a way were his¹ funeral rites carried out that winter, and with his decease the first year of

¹ Pericles.

the war came to an end. At the very beginning of the first month of summer the Peloponnesians with their allies divided into two parts, and the first as it were led by Archidamus, the son of Zeuchidamus, first overran, then settled down, and ate up the country. And not many days after their presence in Athens the pestilence first made its appearance amongst the Athenians, perhaps it would be better to say broke out on all sides, both around Lemnos and in other countries. Never before does any man remember to have happened such a pestilence and consequent¹ mortality. At the commencement the physicians were unable in their ignorance to find a cure, but themselves died in great number, and so fast as they came forward, nor was other human skill of avail, so that they thronged to the temples in supplication, or sought comfort in their need from philosophies and such like; all without profit; until at last they desisted from them, conquered by the scourge.

"It came, in the first place, it is said, from Ethiopia² by Upper Egypt, and thence extended down to Egypt and Libya, and so to the country of the Great King.³ It suddenly addressed itself to the city of Athens, and in the first place fastened on to the maritime population of the Piræus,⁴ so that it was said by them that the Peloponnesians had poisoned the wells, for they were no longer sweet. Next it reached the upper city, and there died many more, rapidly. So it was concerning it that each knew, both physician and layman, what likelihood there was of its happening

¹ Bk. 2. Secs. 47 to 53 and part of 54.

² Ethiopia in the fifth century controlled one side of the Red Sea, and was in free communication for purposes of trade with India.

³ Persia.

⁴ Seaport five miles from Athens, with which it was connected by a fortified wall, open to carts.

to him, and considered, whatever the causes were of this evacuation, it to be curable, and he able to withstand it. I will speak of such as occurred, and about what one could see, when and how it seized one, especially how one having a foreboding should not ignore it. Such will I make clear as one who has been smitten, and as one who has seen others suffer. The year in which it happened, as all grant, was markedly free from other sickness, and if there was any it was quite differentiated from this. Without any apparent cause, of a sudden, whilst in good health, suffusion of the eyes, and cramp seize one. The intestines, the throat, and tongue quickly become inflamed, the breath short and ordure is discharged. Thence, as the result, sneezing and hoarseness are produced; then as the disease progresses, this is succeeded by a marked huskiness, and as soon as it settles in the stomach it turns the latter so that its contents are cleansed of bile; such as are treated by the physicians fail to recover, as also those who are not; under the great bodily suffering a fruitless retching occurs in most, abating in some at this stage, in others and the most, continuing longer. And the body of those lasting on was not very hot, nor was it yellow, but reddish, livid, carried to the point of a sore; the inside is parched up, so that altogether the walls of the gut which is like fine cloth is cast off, so that they become empty, whilst pleasantly as cold running water, they empty themselves, and many careless men run to the water tank, oppressed by the never-ending thirst, and it stands to reason that the water is polluted and depreciated for drinking purposes. And the distress of it never keeps away, but lasts throughout. And the body at such time as the malady may reach its climax does not wither away, but holds out against expectation in such misery. So that most are either unconscious about the ninth or seventh day from the fever within, still retaining

vitality, or should it escape from the passing of the disease down to the intestines, extensive ulcerations proceed from it, and the contents of the bowels running out like pure water, most sink at last through asthenia due to this. But it may pass through the whole body commencing from above, the head being the primary source of the malady, and if anyone possessed of great bodily strength happen to linger on, then the disease may attack his extremities. For it may fall like a flash on the pudenda, or the extremities of the fingers or feet, and many of those stricken lose these, whilst to others the eyes are lost; again others when convalescent suffer from loss of memory, and fail to recognize themselves, others, or even their attendants. That which we saw of the pestilence beggars all description; it was difficult to deal with and attacked without distinction all of the human race; and beyond dispute it was shown that birds and beasts such as prey upon man, many of whom remained unburied, either did not venture, or tasting perished. The disappearance of these birds proves the dictum, for they did not fly away, nor did they vanish in any other manner; the dogs also gave man to understand what was the matter when they made a meal together. Therefore often, but sometimes not, the disease presents an extraordinary nature, for instance anyone may catch it and give it to another, or at least such was the general belief; and somehow it cast its sorrow in its own way, in obedience to no custom, as to how it might come, or when it might cease. Some died without treatment, others with all medical attendance possible. As concerns it there was no remedy, so to say, that proved of any benefit, for if it works well with this man it injures that. No frame was able to struggle against it, strong or weak, all were swept away, and every diet was tried. The most terrible part of the whole malady was the

despondency, so that anyone in the way of sickening brought the disease upon himself (for when they lost hope the mind speedily became unhinged, and they made matters much worse for themselves by not fighting against it); one after another they filled themselves up with medicine,¹ and died like cattle, and it did for most of the debauchees. But still although no one aware of the danger went near others, lonely dwellers perished, and houses were wholly emptied from lack of treatment; for those attending perished, and especially those displaying valour: those affected dirtying themselves went among their friends, and so the relations of those about to die, as they were carried away, were unmanned by their lamentations, and quite subdued by this epidemic. But above all those who escaped death and overrode their trouble, knew by experience what the disorder was, and were in good heart, for the same person did not suffer from the disease twice; just as if it were killed, and they felt themselves blest above all others, and amidst this present joy nourished a light hope for the future, that they should never afterwards be attacked by any disease. The conveyance of provisions from the country to the city brought many in contact with the pestilence when it fell, and the latter did not spare the newcomers. It did not commence in private houses, but in stifling huts, at its height in the middle of summer, it is judged the murrain obeyed no order. The dead bodies were heaped one upon another, and those stricken lay rolling by the way, and around the wells in their desire for water. The temples in which they camped were full of corpses. The pestilence exceeding all bounds, and numbers dying of it, and men not knowing what to do took to blaspheming things both sacred and profane alike. Order was broken by those whose

¹ Wine entered extensively into the Greek and Roman Pharmacopœias.

business it was to keep it, in the first place about the burial places, so each dug as his strength permitted, and many had recourse to very indecent modes of interring; from the scarceness of conveniences what one goes to the thicket for remained about them, and they bungled in placing the accumulations on the artificial fires; some laying a corpse on a fire, which sat up of its own accord; whilst others threw up some of those bearing the corpse and went their way.

“When the pestilence first cropped up somewhere in the city there was no lawlessness. But the disease spreading some were brave enough to conceal the fact, and would not forgo their pleasure, until noticing the sudden change caused by the disease in other pleasure seekers, their speedy deaths, and that they were slain without any warning, immediately mended their ways; yet, nevertheless, some quickly altered and again turned towards pleasure, acting so that their affairs suited the ephemeral nature of their bodies. Indeed to continue any longer in pursuit of the Ideal no one was ready, considering that, as before such a point could be attained death would overtake them, for the present pleasure in all its surroundings to be to their profit; so this stood for both the Ideal and Material. Neither the fear of God nor the laws of man pertained, men judging it to be the fact that, whether they honoured the gods or not, from what they saw around them on all sides their destruction would be equally certain, no one expecting that judgment would be prolonged till judgment should take effect, and he receive the punishment of his offences; nay, they supposed that a far heavier judgment already denounced against them hung over their heads; and before it fell upon them they thought it right to snatch some enjoyment of life.

“Such was the misery that alighting upon the

Athenians settled upon them, men dying within the city, whilst the country outside was visited by it, all that is reasonable concerning which in all its details the Elders remember and say that they were satiated with it."¹

The author has translated the foregoing passage from Thucydides without consulting any other translation, because most of those who have attempted the matter before work on the more or less preconceived lines of a certain word meaning such and such, so that when any attempt has been made to give a closer name to the common one of pestilence, it has been that of the plague, and in more recent times typhus fever. But it should be remembered that a Greek, at all times somewhat involved in his style, would be more so when describing such, to him, a nauseating disease as cholera would be. One can picture a collection of Greeks assembled, say upon the Acropolis, suddenly assailed by most violent vomiting and purging, and the effect it would have on their white clothing, such that to æsthetics, as Thucydides says, gone was the ideal. Hence we conclude that he uses ambiguous language. The author proposes to leave any further elucidation of the question until later, and to now proceed to give a brief history of such epidemics as have been recorded since that by Thucydides.

The authority upon endemic cholera of the last century is Charles Macnamara,² who made the disease his study in the ever infected area, and it should be remembered that the investigation of epidemic Asiatic cholera is much more cosmopolitan. Sir Thomas Watson, the author is of opinion, has given the best *résumé* of the cholera epidemics which have reached Europe and America from India, so that we will take his word as concerns them. Macnamara informs us

¹ Text and notes (Bloomfields).

² "Quain's Dictionary of Medicine," 1882.

that cholera was known to the ancients, and that what he calls simple cholera was described by Hippocrates; but the first epidemic he records is that of 1817, when cholera, which was prevalent about the Ganges, rapidly spread over the whole of Bengal; extending during the following year over the greater part of Hindustan, and from thence to Ceylon, Burma, and China. The disease was carried from Bombay to the Persian Gulf, and spread over adjacent parts, but did not extend to Europe.

Now the epidemic of 1817 did not extend to Europe for a certain reason, and that is because from Central Asia it worked away east to the north of the Himalayas. But a point we must impress is the manner in which it travelled from Bombay to the Persian Gulf. This, and the word we are going to employ is not newly coined but one used at the time, was effected by means of what is known as a carrier; and it is well to bear this in mind, as the subsequent history of the investigation of the disease in a great measure turns upon this word carrier. From 1817 until 1824 the disease, so far as Europe is concerned, lay dormant, or at least so the English authorities would say, whereas Macnamara states that in 1826 the disease again burst out in Bengal, and then by way of Cabul, advanced into Europe through Russia, and thence to America. Sir Thomas Watson gives a lucid description of the arrival of this the first epidemic in England. From Russia it moved on through Germany to Hamburg, whence a carrier was the means of transferring the disease to Sunderland; it crossed the Atlantic and devastated both continents. It then crossed the Channel to France, where the first points of affection were certain ports on the northern seaboard, whence it was propagated over the whole country.

Much speculation, some almost mythical which would not have disgraced Thucydides, was displayed

as to the cause of such very great methodical movement, but all who had cause to treat cases in this country were unanimous in the opinion that the disease was either contagious or infectious, two words that have caused much confusion in the appreciation and elucidation of the cause of disease; some from observation and experience inferring that contagion applied to the so-called zymotic diseases, such as variola and typhus, rather than to cholera, and so they applied the word infectious more peculiarly to the latter disease, and as at the time the distinction between typhus and typhoid had not been clearly worked out, perhaps to Asiatic cholera the word "infectious" in its true sense was first applied. This is interesting and important, and will be found the keynote in the study of all subsequent epidemics until the present day. And in 1831 this drawing of a, at the time, crude, if not nice, distinction between contagion and infection led some of the profession, who were cognizant of the fact that the disease was infectious, not only to assume a bolder attitude themselves, but to induce the laity to appreciate the fact that there was little to be feared from contact.

In 1840 during the China War the disease was carried by native troops or followers from Bengal to China, where it became epidemic, on to Burma, thence to Thibet, and thence by way of Kasghar to Bukhara, Afghanistan and Scindh. In 1845 it passed through Persia to Russia, and traversed Europe, to appear in America in 1848.

And now it is well to remember that the cholera endemic to Bengal might either be dormant, active, or recrudescent. When dormant there was no knowing when it might become active, but once active it did not readily again become dormant, but assumed the form of recrudescence, small epidemics radiating from the endemic area over the rest of Bengal; and

this is what occurred from the years 1845 to 1848, so that whilst the disease was raging with violence in America, in 1849, it passed to the Punjab, then to Bombay, whence a carrier conveyed it to Persia; thence it spread northwards to Arabia and Russia, on the one hand, and to Egypt and the south of Europe on the other. Then, on the heels of the previous epidemic, it visited the British Isles, and ended its course in America again, with great violence and virulence. This is known as the epidemic of 1853-54, at or about the time of the Crimean War. During the year 1860 the disease again became active in Bengal and the Central Provinces; it passed to Bombay, and then along the shores of the Red Sea, whence it was carried by pilgrims to Mecca: thence it gradually found its way to Europe and America for the fourth time. This is, as it were, the epidemic of Asiatic cholera of our own time, and there are many stories told of how the inhabitants of densely populated districts of the Metropolis fled in panic into the country, so acting as carriers and furthering the spread of the disease. The author remembers as a small boy being haunked from Hampstead, whilst the disease was raging in Camden Town, out of the danger zone.

Sir Thomas Watson is of opinion that the epidemic of 1840 was the most violent of any, and places the number of deaths at 70,000. And since the epidemic of 1826 little fresh light was thrown upon the ætiology of the disease; indeed some might say that there was a retrograde movement. Whatever truth there may be, and there is some as will be seen later, it was the general consensus of opinion of the profession that the disease was air-borne and depended upon atmospheric conditions in the epidemics of 1860-62. Sir Thomas Watson, however, stuck to his guns, and always held the view that the disease was "catching," and he agrees with Dr. Body that

"when it travels over great distances, as from one country or region to another, it uses the vehicle of human intercourse; but that it may be, and often is, diffused over smaller places, as from one part of a town to another, or from a tainted port to a ship anchored to leeward, by the movements of the atmosphere." And he tells the story how two pilots who obtained a tow by catching hold of a rope astern of a vessel with cholera aboard contracted the disease, and carried it home to their families. He also quotes from the *Times*, October 15 or 16, 1865, how Gibraltar and St. Roque, five miles distant, were smitten by the plague not only on the same day, but at the same moment. It is well in passing to note that Sir Thomas uses the word plague in its broader sense as pestilence, although he well knows, and indeed intends to be meant, Asiatic cholera, so that only slight clerical error would seem necessary for confusion to occur, a point worth remembering as regards Thucydides's description of the Athenian pestilence. And that reminds us that Sir Thomas tells the story, how at Constantinople on the appearance of the disease the seagulls deserted the Bosphorus, and did not return until the cessation of the epidemic. Again, he makes mention of rooks in a rookery near Sligo, within a day, or at least two, of the appearance of cholera there, dying off until the remnant flew away, to return exhausted, and evidently recovering from sickness, when the epidemic died out.¹ This tallies with Thucydides's description, but the King's College lecturer seemingly had not studied him, or he would have noticed the Grecian historian's account of the wells. But it must be said that Sir Thomas draws attention to what is known as the Soho cases, where Dr. Snow proved conclusively that a well contami-

¹ Fleming ("Animal Plagues") bears out this statement; 33,000 dead rooks were picked up on the shores of a lake, horses were stricken in Russia, and dogs in India.

nated by a sewer leakage was the cause of the appearance of the disease in all the houses in streets supplied by a certain pump. Again, he relates the case of where an artesian well sunk in the centre of an infected area caused the neighbouring streets furnished by the water to stand out like an oasis where the disease prevailed. Perhaps, however, the most striking case of the proof that whether—of course we speak as at the time—the disease be catching, contagious, infectious, air, food or water-borne—nevertheless there can be no question as to the latter cause—is the story credited to Macnamara, where some dozen natives drank in the evening water that had been exposed to the sun, in an open vessel, several of them contracting Asiatic cholera, some dying, and only a few escaping. There was much talk in India at the time of the occurrence, and although possibly desperate straits necessitated desperate means, yet, even were they criminals, the measure was considered a strenuous one.

So much so for the history and general ætiology of Asiatic cholera, until such time as the author, during the course of his service in India, came into contact—in its broadest sense—with the disease itself, and so was enabled to draw deductions, inferences, and conclusions of his own, and that was some few years after Koch had, in 1884, astonished the medical world by his reputed discovery of a bacillus which he, from its resemblance to that point likened to a comma. But in the interim between the epidemic of 1866 and his discovery, workers in India had not been idle, and it had long been deduced as the result of research and observation that the propagation of the disease beyond the endemic area of the Ganges depended upon a certain *materies morbi*, *materies peccans*, that was called the germ of the disease, and *origo*; the latter being terms culled from Celsus and Paracelsus to denote the origin of disease. So that

it was generally acknowledged that the disease depended upon a certain specific poison, which was disseminated by a carrier from the endemic area, and then either by air, food, or water, by infection, was propagated. For a time the school that viewed climate as forming the chief cause of dissemination held the field, but then as it became dogmatic it was overborne by the water infection theorists, who in their turn laughed at the idea of climate and atmosphere playing any part in the propagation of the disease. During the Burmese War the author was stationed in medical charge of a section of a field hospital at Shwebo, in Upper Burma, and one evening, whilst he and a brother officer were returning from a walk outside the stockade, they were asked by an officer of the Indian Medical Service if they would care to see something that possibly they had not seen before. They answered "Yes," when they were ushered into a large bamboo hut—raised on piles—and the sight that met their eyes was such as Thucydides describes at Athens. Some twelve or eighteen sepoys were lying prostrate on their charpoys, or doubled up upon the floor, suffering from a most violent form of Asiatic cholera, the symptoms of which will be described later. And this may seem strange, but it is true nevertheless, the author's brother officer was seized with violent retching, was placed in bed, and during the course of the night suffered from evacuation with slight cramps, but in the course of the ensuing day, being a strong man, of athletic frame, was himself again. Of course it might be said that contagion was the factor, but it is again possible that through the lungs he inhaled dry fæcal matter; or again it may be that the attack was of the nature of those that are classed as sympathetic, and which are peculiarly allied to hysteria. Perhaps we may pause for a moment to say that, as regards preparation for the meeting of the disease in the British Isles, a

study of the workings of small epidemics, such as occur in India, are of more value than possibly is the study of the larger epidemics that have occurred of recent years in Russia and other places ; for it is, as it were, that a seaman at some seaport, such as Sunderland, will carry the disease to his home, possibly into a neighbouring village.

Two days after the author's brother medical officer recovered from his ambiguous attack, one morning two European soldiers reported sick, were detained and diagnosed as cholera, and in the course of the day two more reported themselves. Two recovered in a couple of days under treatment, one died, whilst the third made a slow and prolonged recovery from reasons to be described hereafter, due to suppression of urine. The twelve or eighteen natives it was ascertained were from one company ; a transport follower had a week before the outbreak joined from the endemic area in the Ganges, where the disease had become active, and had extended to certain neighbouring villages ; and now amongst the natives affected was a non-commissioned officer who was on friendly terms with one of the soldiers, whilst the three other soldiers were the latter's immediate chums ; and employed by the native non-commissioned officer to do odd jobs was an Indian native, who cleaned the European soldiers' rifles, &c., for them. With the exception of the one British soldier and three natives, in ten days' time there were no signs remaining of a cholera outbreak. It should be remembered, however, that although Indians for the most part profess otherwise, yet on occasion they will drink, and it is possible that preceding the outbreak a carouse had taken place, when shamsu, the Burmese liquor, was imbibed in quantity by both them and the British soldiers.

The author will now describe an epidemic localized in India.

In 1885-86 cholera became active in the endemic area, and suddenly appeared in Cashmere; seemingly a long jump for it to make, but investigation proved that Afghan horse-dealers had returned from the infected area through the Khyber, and cases of cholera occurred in Afghanistan, whence it was carried to Cashmere, where there occurred an epidemic of short but violent duration. And, perhaps, it will be well to give a brief description of the lie of the country about the Murree Hills. The summer resort for the Rawalpindi district in 1885, Murree is situated on a plateau formed by the flattening out of a spur of the Himalayas running down to the river Jhelum, across which is the road into Cashmere, open to dak, the rough pair-pony tonga of the natives, in which, however, Europeans travelled. Between Murree, with the various hill stations situated on the spurs of the Himalayas running down to it, and the river Jhelum was situated what is known as Camp Gharial, where a European regiment was stationed under canvas for the summer. Only one or two Europeans were attacked in Srinagar, but in every dak bungalow, between that city and the Jhelum, here one and there two natives suffered, and perhaps it may not be out of place here to speak of the manner in which the native may be affected. He appears either to suffer to a terrible degree, or only in a slight measure. Once at a Cavalry camp at Akhora, near Lahore, the author was asked by a brother officer in medical charge of a battery of Horse Artillery to see a native follower. On examination there appeared little amiss with the man, and the medical officer in charge, not being over conversant with Hindustani, had a difficulty in understanding what the native was saying, there being no interpreter, as for some reason the apothecary was absent. The author, however, gathered from the natives of the Army Service Corps that the

man in question had visited some friends some eight or ten miles off, where cholera was prevalent, and they insisted that the man himself had been attacked on the road whilst returning, so—inasmuch as when a native takes the trouble to make an assertion, and has nothing to gain one way or the other, he may be trusted—there was little doubt that the man was in what will be considered later the reactionary stage of Asiatic cholera, with some slight suppression of urine; isolation, fumigation, disinfection, saved the majority from, perhaps, an infliction whilst the man himself remained under treatment. This case is interesting and instructive as showing how a carrier will wander about disseminating the poison, as long as he himself suffers from no great personal inconvenience.

Then, to return to Camp Gharial, in June, towards the end, a case pronounced to be Asiatic cholera occurred in a native near the dak bungalow by the Jhelum, and in the first week in July, without any premonitory warning, two colour-serjeants of the British regiment were brought to hospital suffering from most violent Asiatic cholera, which raged for six weeks, some fifty cases occurring, of which thirty were of a pronounced type, and some fifteen deaths, amongst which were two women on the strength.

And now the author will give a description of Asiatic cholera.

The soldiers were either suddenly knocked out, experienced premonitory diarrhœa, or, as one soldier described his feelings, felt "gummy-headed," by which he meant that he was suffering from headache and other symptoms of malaise, with some slight symptoms of coryza, looking in a measure as if he were sickening for measles. There might or might not be vomiting. When a soldier was suddenly and violently attacked, he was generally assailed by profuse diarrhœa, with intense abdominal pain, quickly followed

by violent cramps, rapidly falling into collapse. Where there was premonitory diarrhœa the same end might be reached, but on the whole the prognosis was more favourable than in those in whom there was premonitory malaise, the latter cases usually and speedily assuming a virulent form; but practically there was no great or marked difference between these two types of cases. As the stage of collapse was reached the cramps of the limbs subsided and there ensued a most violent thirst and desire for water, following a desire and appreciation of any liquid. Whilst the cramps last the skin assumes a livid hue, gradually turning mottled, and with the reaching of the latter stage the eyes are sunken, whilst the tremulous, feeble, moving hands form the only difference between the cholera-stricken patient and a corpse. The voice, such as it is, is as though a child's squeaking toy has been pricked, respiration may be accelerated, whilst the pulse is thin and wiry. The evacuations have been compared, and aptly, to water in which rice has been boiled, hence the name commonly applied to rice-coloured evacuations. The urine is suppressed. And upon the re-working of the kidneys will depend whether the patient recovers from the algide state, or gradually passes away from syncope and asthenia. Should the tubuli uriniferi commence to fulfil their functions, then is the prognosis hopeful, and what is known as the stage of reaction is reached when the temperature, which throughout both collapse and algide stages has been below the normal, will rise, and initially would appear to depend upon the accelerated functions of digestion, assimilation and nutrition, to the normal, and then will overshoot it. In other words, Nature temporarily loses her inhibitory control over the heat-producing mechanism by the extra work thrown on the vagus nerve, through its communicating branches with the sympathetic. So that there is little untoward to be feared *per se*

from a rise of temperature. Should, however, the tubuli uriniferi fail to perform their functions involved in the rise of temperature and consequent fever due to the extra and sudden strain thrown on to them, then will partial or complete suppression, followed by uræmia, coma and death, occur. If, however, there be a rally, then may Bright's disease in one of its forms occur as a sequela. Again, reaction may be partial or become suspended, when as a sequela gangrene may occur. Under normal conditions, however, this seldom happens in Europeans, whose diet is adapted to reaction, but is not uncommon in natives. The author remembers once, when in the line of march in India, being requested by a medical officer of the Indian Medical Service to ride some ten miles out of his course to assist at the operation of the removal of a gangrenous hand from one native and a leg from another, sequelæ to cholera. Chest trouble may occur as a sequela, especially in the aged, from the impairment of the working of the bronchi and air vesicles, during the reaction, and chest trouble such as tubercle may be accentuated. But inasmuch as impaired reaction is rare in Europeans, so are these sequelæ. Bed sores, of course, may arise, be they not guarded against.

As to the treatment there has been much divergence of opinion.

The author, as the result of the study he made of the Camp Gharial epidemic, came to the following conclusions, remembering that Koch's comma bacillus was then rather speculative than proved. The disease was due to a materies peccans that was not indigenous to the body, but in some manner passed into the mouth and so found its way into the intestines, either through air, food, or water, but that in most if not all cases there was the predisposing cause of premonitory disturbance of the digestion, accompanied by diarrhœa or otherwise. The two

colour-serjeants, the evening before they were attacked, had together eaten a cured pig's cheek that had been presented to them, and which came from a native porkery; whilst engaged in this repast one remarked to the other that the face did not seem quite up to the mark, to which the other agreed, but as it was a present he replied he was going through with it. This they both did, with the result that they were admitted to hospital the next morning and died of Asiatic cholera in the night; and inasmuch as two soldiers suffering from excessive beer drinking were also admitted to hospital and died within twenty-four hours, gastric disturbance and diarrhœa, or what is known as ptomaine poisoning, cannot have been the cause, but it would appear clear that finding a suitable nidus to develop in the materies peccans throve and developed in the intestines.

And now before coming to the treatment it would be well to discuss the pathology, as the former depends in a measure upon the latter.

In the *Lancet* of September 19 and the subsequent issue, appeared the Lettsomian lectures delivered by Dr. Sandwith concerning dysentery, wherein he draws with niceness a distinction between the two divisions of the disease, one called amœbic dysentery, the other bacillic; the former tropical and dependent upon the presence of the *Amœba histolytica* in the system, less in the blood than in the mucous membrane of the intestines; and the latter, bacillary dysentery, due to the presence in the intestines of a fibrillated bacillus. Both these forms of the same disease were known in the nineties, but there was confusion between the two; however, at the same time it is well to remember that a chronic form of dysentery was recognized as a form of tropical dysentery, the acute form readily amenable to ipecacuanha and the chronic to ipecacuanha and quinine. And the author remembers an occasion whilst in medical charge of a train load of

invalids from Upper India to Deolali being held up outside Delhi by three cases of cholera occurring in men suffering from what was then called chronic dysentery, a form of the disease that was seldom if ever met without malaria as either a predecessor or concomitant. Dr. Sandwith has been so good as to inform the author that "ipecacuanha destroys the *Amœba histolytica* not only in the body but in the test-tube," so that so far as the matter in hand as regards Asiatic cholera is concerned, we will dissociate tropical dysentery with abscess of the liver from bacillary dysentery, an epidemic disease that is perhaps allied to enteric fever and Asiatic cholera. It may be well to state that the author is indebted to a manual of bacteriology by Muir and Ritchie for the association of his ideas with the most modern. The following points the three diseases possess in common: the main seat of trouble is the intestines; whilst each has been proved to be due to the presence of a specific bacillus affecting the mucous membrane; all three fibrillated and motile. Mention must now be made of the *Bacillus coli* which inhabits the soil, and is commonly found in the mucous membrane of the lower large intestines. Dr. Sandwith relates the story of a body of soldiers in Egypt who, suffering from thirst, drank from a festering pool, when most of them developed bacillary dysentery and the remainder enteric. Can it be that under certain conditions what are known as staphylococci and streptococci act upon the *Bacillus coli communis* of the soil and so are produced the *B. dysentericus* and the *B. typhismus*? For only under certain conditions do epidemics of dysentery and enteric occur. On the other hand, Asiatic cholera is always with us endemic about the Ganges, and whether or not the comma bacillus was formed from the *B. coli communis*, the conditions attached would be water contaminated by the putrefying corpses of Hindus voyaging down the

Ganges, for it is customary for the native to rinse his mouth on all occasions when he bathes. But bacillary dysentery occurs in an epidemic form amongst lunatics, and the author, having had much experience of them, expresses the opinion that inasmuch as when a gaol and a lunatic asylum are in juxtaposition, both furnished with the same water supply, the latter cannot be the cause, and it seems clear that given it is a change in the *B. coli communis* that produces the dysentery bacillus, then must we look to the lunatic himself, that is to say, the mucous membrane of his lower intestines, for the place where the *B. coli communis* undergoes its change, and remembering the adage of the ancients that the mechanism of one organ cannot be impaired without another suffering to some degree, and that in lunatics, whether in the form of mania or dementia, the brain, spinal cord, and nervous system generally are at fault, either from hyperæsthenia or æsthenia, then may it not be likely that a certain atonicity of the mucous membrane is caused by brain and nerve waves affecting the vagus and sympathetic? So that under these conditions the *B. coli communis*, always ready to undergo a change, may develop into the bacillary dysentery, and so the disease which is in a measure endemic, like cholera on the Ganges, becomes epidemic, and doctor and nurse and attendant become affected; and a predisposing cause may be errors of diet or constipation, to both of which lunatics are prone.

It may be remarked that whereas in bacillary dysentery the lower gut is affected, in enteric the upper, in cholera the whole is involved, and such of the mucous membrane as is not shed in the way of rice-coloured stools peels off after death in flakes, or the intestines may be found full of fluid.

An unknown factor in the intestinal economy is the solitary gland of Peyer, agminated and surrounded

by Lieberkuehn's follicles. The general aspect of Peyer's patches gives us the impression of a secretor or excretor surrounded by a lubricant in the shape of the follicles ; and may it not be possible that through Peyer's patches there may be a connection between the three diseases, their affection being apparent in enteric with ulceration, but their function merely destroyed in bacillary dysentery and cholera? Do they constitute a nidus?

During the epidemic at Camp Gharial the author experimented with a view to discovering a specific for Asiatic cholera, and when he contracted the disease himself essayed the same ; but first it may be well to describe such treatment as practice and experience has proved to be, if not of the greatest value, then the less injurious.

At the time of the first epidemic that reached the British Isles in 1826, opinion was divided as to whether it were better to check any initial diarrhœa, or at least not to hinder if not to aid the latter. Charles Macnamara made it his practice to carry in his waistcoat pocket some dozen acetate of lead and opium pills (in India at a perhaps later date), whereas Sir Thomas Watson speedily came to the opinion that the materies peccans held its nidus in the intestines and was discharged with the evacuation, and that it also made its home in the blood ; therefore, strenuous and heroic as it may seem, and against all our modern ideas, the removal of a pint of blood from the arm in the premonitory or initial stage of the disease was not so much beside the mark as it would appear. The drug administered to remove the poison was calomel, laid on the tongue, and appears to have been given periodically until the algide stage was reached. Then, in the later epidemics a mixture of catechu and chalk, with opium, was employed, to give way later, in India, to chlorodyne, even before the latter drug was admitted into the Pharmacopœia. Of

course, rest in bed, with mackintosh sheet, is indicated, hot-water bottles, blankets, and fomentations as occasion may require; that is to say, so soon as reaction is imminent, then will they be in request. The thirst is best alleviated by ice to suck; and it has generally been found that when the patient has a desire for chicken broth, milk, and lime water, liquid or solid jelly, either nitrogenous or saccharine, that the stomach will retain it; but when he evinces no desire it is better not to force him with a feeding cup, but to administer the nutriment by means of a teaspoon. It may be added, however, that if the patient expresses a desire for beef tea, and there be no Liebig's available, in certain cases the stomach will retain ordinary beef tea, or mutton broth without the fat skimmed off. Mutton broth is sometimes well retained. Eau de Cologne on a handkerchief applied to the forehead is soothing, and generally appreciated, although it may not be by those in attendance. Now we come to the mainstay of the treatment, and that is brandy, and its value will depend in a very great measure upon the use or abuse that the patient has made of it in his previous life. It is his sheet anchor, and if he has so accustomed himself to its use, like the opium smoker, it may be necessary to administer the alcohol in such great quantities that when the hoped-for reaction occurs, then will the suppression of urine be accentuated. And it cannot be too emphatically expressed that, as the patient shows signs of returning animation when in the algide stage, denoted by the general signs of the recovery from shock and collapse, the stimulation of the kidneys should be encouraged by every means, such as fomentations, blister, or cantharides; and if necessary, owing to atonicity of the bladder, the urine should be removed from that organ by means of a catheter. It is surprising the length of time that may elapse before reaction is fully established,

and the practitioner should never lose heart, but whilst there is a flicker of pulse, or shadow of heart beat, persevere as he would in a case of ordinary shock with collapse. Electricity, either galvanic or faradic, when available are indicated. Should reaction not be established then coma and death ensue.

As regards medicine to be administered internally, some such draught as the following is desirable, as evolved by the author through induction :—

R	Sp. ammon. co.	..	..	..	℥xv.
	Sp. æth. chlor.	..	..	..	℥x.
	Sp. æth. nitrosi	..	..	..	℥ss.
	Tinct. hyoscyami	..	..	..	℥xv.
	Aq. ad. ℥i, as required.				

If not readily retained the sal volatile may be omitted, and perhaps sp. æth. sulph. substituted.

In the course of the epidemic at Camp Gharial the author, judging from the fact that ipecacuanha is a specific for dysentery and quinine for malaria, cast about for one for cholera, and acting on the supposition that whether a specific be discovered or not, in agreement with Sir Thomas Watson, it is well to eliminate the poison, he administered a pill of colocynth and hyoscyamus, with marked effect, but whilst he was investigating, one morning between two and three o'clock, he awakened to find himself suffering from Asiatic cholera, and he took a colocynth and hyoscyamus pill, with the result that after being assisted back to bed by his native servants he was so far recovered by 7 a.m. the next morning as to be able to mount his horse and ride to the hospital to attend a soldier who had cut his throat; and the latter incident, combined with the fact that the disease was located as far as it is possible to do so to one company, when the latter underwent isolation, prevented further investigation and the experimenting with pills of hyoscyamus and colocynth, hyoscyamus and aloes.

But the author is convinced that here lies a remedy if not a specific for the disease. And at the present moment in his cupboard are colocynth and hyoscyamus pills, Pharmacopœia strength, and others of half strength, colocynth and aloes with the full amount of hyoscyamus.

It may be mentioned that as a prophylactic measure a belt of flannel has been much advocated, but it is well to bear in mind that the object is to keep the abdomen warm and so prevent a chill, and that *per se* it possesses no specific value, such as some believe to be attached to it after the manner of some of the popular belts. As a prophylactic, in barrack room language, it is well to keep one's pecker up; that is to say, retain one's cheerfulness, and eat at or about the usual. Have no fads. Sterilization of milk—possibly lime-water affects this—and the placing of meat in fly-proof safes; the avoidance of anything in the remotest degree tainted, with the filtration and boiling of all water, of course, are indicated, but the life led should be the normal one, and probably it is better for the moderate drinker to continue his ways, the total abstainer his; but should the latter "fancy" something, then a liqueur glass of whisky, or cognac, with a small soda, is perhaps the best, as a prophylactic measure against the disease, for when those liable to be attacked by cholera are in any way suffering from neurasthenia the not obeying their instincts may produce insomnia, which prolonged may render them irresponsible for their actions, when a debauch or errors of diet may follow. All food should be well cooked, appetizing, all burnt fragments should be avoided, as also should the crust of toast—in fact, anything that is liable in any way to cause intestinal irritation in any form should be most carefully eschewed; for it would appear to be beyond dispute that anything causing the alimentary tract to become deranged will predispose towards the disease, and

this in the past has given cause for confusion, and so every case of intestinal disturbance has been classed as choleraic diarrhœa,¹ which, after all, is not such a misnomer as it may at first blush appear, as will be seen in a moment, although the name has given rise to much controversy.

It may be mentioned that Colonel Cunningham, of the Indian Medical Service, has succeeded Charles Macnamara, as far as concerns Asiatic cholera, and the views of the two coincide as to its endemic nature about the Ganges. In the epidemic amongst Europeans at Camp Gharial the author has shown how the disease reached the Jhelum, and then appeared in camp. In the autumn, whilst chikor shooting in the khud below the camp, at the side of the spur running down to the river, he interviewed several natives, and—the matter concluded, so, therefore, no detriment likely to accrue to them from disclosures—the fact was elicited that several villagers had succumbed to the disease between the last case at the Jhelum dak bungalow and its appearance in camp above, where—Gharial being isolated in accordance with the Indian regulations—the disease was confined, and no carrier advanced it further. So that isolation should be practised in all cases, both as regards those affected, and, when practicable a village in the British Isles, or even street when feasible and possible. On all sides it appears to be agreed that Koch's comma bacillus is the *materies morbi*, but as to the value of the serums that have resulted, opinions are by no means unanimous, and Muir and Ritchie tell us that it is not at all certain whether the bacillus is a toxin *per se*, or causes certain changes. In a word that either the efficacy of the serum as a prophylactic, such as Jenner's vaccination lymph, and typhoid serum, or an anti-serum such as Pasteur's

¹ Celsus describes this, if not Asiatic cholera.

hydrophobia, or anti-tetanus, is non-proven. But the fact has been determined beyond dispute that, given certain conditions such as premonitory diarrhoea, or other disturbance of the intestines, the bacilli thrive and multiply in the mucous membrane of the intestines. And we have seen the close relationship between bacillary dysentery, enteric fever, and cholera, as regards the flagellated nature of the bacilli; whilst again in enteric fever, Peyer's patches are affected, and in cholera the whole intestinal tract suffers, it would appear not unlikely that the prophylactic serum for typhoid in some manner affects the little known agminate and solitary glands of the ileum.

To conclude, the bacillus may be air-, food- or water-borne, prefers a suitable nidus in the alimentary tract to settle in, develop and multiply, is destroyed by heat over 55° C., by sulphur fumes, and by chloride of lime; is affected by cold and frost, but seemingly only suffers from impaired vitality, and may again recover motility; is better removed from the body than checked by astringents; whilst the value of cholera serums has yet to be determined, and possibly one of the components of pil. colocynth and hyoscyamus may be a specific.