Edmonston (A.)

A

BRIEF INQUIRY

INTO THE

NATURE AND CAUSES OF THE CHOLERA,

WHICH HAS PREVAILED, AND AT PRESENT PREVAILS,

IN THE

RUSSIAN ARMIES.

W 5 L 845

By A. EDMONSTON, M. D.

FELLOW OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ETC.

Felix qui potuit rerum cognoscere causas.—Virg.

NATIONAL LIBRARY OF MEDICINE

7th & Independence Ave., S. W.

Washington 25, D. C.

EDINBURGH:

PUBLISHED BY JOHN ANDERSON, Jun.

55, NORTH BRIDGE;

JAMES BURNET, AND GIFFORD LAURENCE, BERNARD STREET, LEITH; AND SOLD BY THE BOOKSELLERS.

1831.

Alphabet Box

As Cholera Morbus has, for several years past, excited great interest, and at the present moment engages the attention of almost every one in the nation, from the prince to the peasant, each individual appears to be called upon to contribute his mite, if he conceive it can, in any manner, add to the stock of knowledge on so all-engrossing a subject. Having transmitted, although but in a general way only, my opinion of the character of this affection to a high quarter, where it has been favourably received, I feel the less hesitation in extending its publicity.

If any inaccuracies in my statements, or any deficiency of acquaintance with the facts going forward just now, shall appear in this Sketch, the candid reader will ascribe them to the date and to the place from which this communication is dated. The peculiar opinions and reasonings from them must stand or fall by their own merits. For these, no apology need to be made, and none is offered.

Lerwick, 24th August, 1831.

INQUIRY, &c.

Much of the ambiguity and even mystery which have enveloped that modification of the disease which, *par excellence*, may be designated the *Russian* Cholera, appears to have arisen from confounding together the terms contagious, infectious, and epidemic. However closely allied they may be to each other in medical history, the discerning pathologist appreciates duly their marked distinctions.

From not paying sufficient attention to the precise meaning of words, and using them according to well-understood definitions, important errors occur daily in every branch of physical investigation. The illiterate and unreflecting practitioner conjures up to his mind a destructive and malignant contagion in every febrile affection presented to his observation; and, by putting his patients into a state approaching to quarantine, deprives them of the kind attention and assistance which they might have received from relations and benevolent-minded individuals. The philosophical votary of the healing art, on the other hand, too frequently consumes his research and ingenuity in combating opinions which have been believed in for centuries; and he denies that diseases, obviously communicable to healthy persons, from intercourse with those under disease, can exist, unless as a consequence of exposure to the action of the same exciting causes which produced it in others; while, at the same time, his doctrines and illustrations are often obscured by inaccurate phraseology.

As it thus becomes essential to the perspicuous unfolding of a subject, that the language employed be always expressive of the same ideas, it appears necessary to offer a short analytical classification of contagious and epidemic diseases.

In a medical sense, diseases are said to be *epidemic* which break out at once, indiscriminately affecting multitudes. In such cases, it is always understood that the individuals affected had been more or less predisposed to receive the impression, or that the noxious power producing it, when first applied to the body, had been sufficiently energetic to give rise to morbid action in the system, and of an idiopathic character. So long as it acts sensibly, or its influence can be supposed to operate, we say that the affection is epidemic; and we believe that to produce a similar disease in another person, it is necessary that such person be subjected to the agency of this general cause. This view of the subject may be illustrated by an example. On the European side of the Mediterranean sea, especially in Spain and Italy, as several months of the summer pass over without a drop of rain falling on the ground, the continued and uninterrupted action of the sun diminishes the density of the atmosphere, and perhaps changes the proportions of its constituent elements, thereby rendering it less wholesome for human respiration, and consequently predisposing the system to disease. The rainy season, which constitutes the chief winter in those climates, usually sets in about the end of September, and the equilibrium of the atmosphere is again restored. But if the fall of rain be protracted much beyond that period, a fever of an inflammatory character suddenly breaks out among great numbers of individuals, and very often on the same day. Something of the same kind is observed to take place in those epidemical affections, or *Influenzas*,* as they are denominat-

* The Influenza, or a power affecting every one, as its name implies, and that too, nearly at the same time, is produced, obviously, by long-continued and deranged states of the atmosphere. Such a disorder is preceded and accompanied by northerly and easterly winds, with fogs and frosts, as the predominant weather; but these are interrupted frequently by sudden changes of wind from the south and west, with heavy falls of rain, enlivened by momentary flashes of sunshine, exhibiting often specimens of every season in the same day. Winter and spring are the periods of the year in which this affection prevails most generally. The respiratory and biliary systems are the parts of the body which suffer most deeply, giving rise

ed, which have occasionally raged in every part of Great Britain and Ireland, and in the remittent fevers which prevail annually in the fenny districts of Holland and in Italy. A decided change in the state of the weather, or removal beyond the influence of the noxious exhalations which issue from the marshes, are the only checks to such morbifico-epidemic operations.

But if, after a general fall of rain, and such concomitant circumstances as had effectually changed the state of the atmosphere and restored it to a state of salubrity, such a fever, or other general disease, not only existed, but seemed to spread with rapidity, and in proportion as communication was maintained with the persons of those labouring under it, the disease in question should, in that case, cease to be considered merely as an epidemic, and ought, in strict propriety, to be denominated *Contagious.*

Contagions vary in their nature, in their mode of operation, and in their effects on the human body. Some of them are the same at present as they were observed to be on their first appearance, and seem incapable, as far as we can perceive, of being either produced or entirely destroyed by any known combination of circumstances. Such are small-pox, measles, and hooping-cough. These diseases, too, with a very few exceptions, are characterised by the singular and mysterious property of affecting persons only once in the course of their lives, however often exposed to their action. These may be designated *Primary Contagions.*

There is another class of contagious diseases which appear

to severe and obstinate coughs and highly disordered states of the digestive organs. such an affection, however, has none of the characteristic attributes of a contagious disease. It is the poor—the ill-clothed—the ill-fed—and the ill-lodged, who are its chief victims. Individuals who are in circumstances to live comfortably in every respect, and who have prudence and foresight to use little exertion in the open air, to guard against exposure to cold and wet, and to avoid excesses of every kind during its prevalence, commonly escape altogether, or, if attacked, it is but in a slight manner.

to be the spontaneous production of a certain combination of external circumstances—break out often in situations where they had never before been observed to appear—attack the hnman body on every successive exposure to their influence, and, although they are uniform in inducing a specific disease, not only cease spontaneously to spread, but may, by certain arrangements, be absolutely destroyed. Such, among others, are the plague of the Levant, the yellow fever, genuine typhus, jail and hospital fever, and dysentery. These may be designated *Secondary Contagions.*

The contagious principle has never yet been subjected to a close examination of the senses, nor made the subject of chemical analysis; and it is therefore only from its effects that we can judge of its existence, or of its operations. A body under the influence of this morbific power, emits a peculiar kind of exhalation, which, although not clearly distinguishable from other odours, is often perceptible by the organ of smell; and, as the human frame is liable to be affected even by slight variations of temperature, or other trivial causes, it is easy to conceive that the absorption by respiration, or the introduction, by any other channel, of any portion of such an exhalation, immediately emanating from a diseased body, might disorder the functions of a healthy one. But the functions are not simply disordered; the same train of morbid actions is reproduced with wonderful uniformity, and the disease is thus widely extended from one individual to another, long after the causes first producing it had ceased to operate. Such a similarity is what we naturally expect to meet with, although we are utterly unable to explain why it should be so. The impenetrable veil which has hitherto shaded the minute and intimate operations of organised systems of matter, precludes even an approximation to the truth. The ever-varying degrees of heat and motion to which the fluids and even the solids are every moment subjected, invalidate the force of general doctrines, and give such opposite results to the most correctly instituted experiments; for substances

do not affect the human system in proportion to the quantity of what we denominate their active qualities, but according to laws very widely different.

Diseases contracted in this way are said to be contagious, and contagion may therefore be defined—the transmission from body to body of a peculiar matter generated within the system itself, which has the power of producing the same disease in a healthy body, if brought within the sphere of its action, as existed in the one from which this matter was evolved. In contradistinction to an epidemic, which requires a certain predisposition of frame, and the presence of an extensively energetic cause, a contagious disease propagates itself by its own individual powers, which are altogether independent of the influence of external causes.

The power of affecting human bodies by means of the contagious principle is not confined merely to a near approach to the body of a person actually labouring under any particular disease, for the infection may be communicated by one coming into contact with the bed-clothes of the diseased person, the wearing apparel of his attendants, or occasional visitors—in short, by a close communication with any substance upon which this noxious matter had been deposited. This mode of communication is technically denominated, by means of *fomites;* and learned and experienced physicians consider it to be the most certain and virulent of the two. On the recognition of this fact are founded the laws regarding quarantine.

In those instances where the system is affected by a disease decidedly contagious in all its attributes, but acquired in consequence of the actual contact with morbific matter, the mode of impregnation should be designated by the word *infection*, implying the positive and sensible application of the virus. In this legitimate and limited acceptation of the term, a person may be said to have been infected with a contagious disease.

According to the above view of the subject, there seems to

be no necessary limitation to the production of different kinds of the secondary contagions; for whenever any peculiar combination of external agencies had generated any particular disease, if, while they tend to extend it to other individuals, circumstances concur to aid its operation, a range of disease may be produced competent to maintain and propagate itself. Hence it may be stated as a general principle, that every epidemic disease, although dangerous in the first instance, and for a considerable time afterwards, to those only who are placed within the scope of the external agents that produced it, may, under certain circumstances, become contagious, when it will affect indiscriminately every person who comes within the sphere of its action.

The *Synocha-icteroid* fevers which have existed, and occasionally ravaged Cadiz, Gibraltar, Malaga, and other places on the coast of the Mediterranean, for more than the last thirty years, appear to illustrate this double view of the same disease being gradually changed, by many concurring circumstances, from a simple casual epidemic, into a slumbering and stationary contagion. Much discussion has taken place respecting the relative agencies of local sources of morbific action and of imported contagion, to explain and reconcile these appearances, but without arriving at any satisfactory result. Similar controversies have been maintained respecting the contagious and non-contagious nature of the yellow fever, as it has been called, of North America and the West Indies; one party, whenever at a loss, having recourse to the gratuitous and ill-supported hypothesis of deriving the contagion that was supposed to have produced it from the island of Britain. Yet I have known, from experience, that the Synocha of Gibraltar and the typhus of the island of Jersey, have, in many instances, exhibited the characteristic symptoms and run the rapid race of the yellow fever of tropical climates, when the former had its origin in the prevailing state of the atmosphere, and the latter had been contracted in crowded transports. Contagion was apparent in both, but each might be said to have created itself.

It should always be borne in mind, that all those spreading diseases above alluded to, whether affecting the human body through the agency of contagion, or, epidemically, by general and acknowledged external causes, are greatly influenced in their course and character by temperature, by sudden vicissitudes of climate, by peculiarity of constitution, and by the habits and modes of life of the individuals subjected to their power.

Let us now endeavour to apply these principles, as explanatory, in some measure, of the appearance of that modification of Cholera, which at present occupies the attention, and affects the inhabitants of a considerable portion of Europe.

Cholera, as a disease occurring annually in the warm countries of Europe, and occasionally in autumn in Britain, is well known, and the method of cure correctly understood. I have never, but in a few instances, witnessed in Britain, in so violent a degree, the characteristic symptoms of pain, and a sense of heat in the regions of the stomach, accompanied by agonising spasms or cramps in the muscles of the thighs and legs, which I have observed repeatedly to mark its appearance in more southern countries, and which contribute chiefly in rendering it fatal. Even the Indian Cholera has been accurately described, and its peculiarities pointed out.

Cholera, until lately, has been recognised as a local epidemic, the joint production of many well-known existing causes of disease. They appear all to operate in such a manner, that, while they concur to excite the system generally, they have an indirect influence at the same time in accumulating irritability in the alimentary canal. Such are all sudden changes of climate, and these occurring for the most part during the warm seasons of the year—removal from a cold into a warm country, and immediately, on such a change, to expose the body equally to the heat of the sun and the cold dews of the night —to bathe in the sea while perspiring, or to drink freely of cold water while in such a state—sudden changes of aliment,

or the use of aliment which disagrees with the constitution and habits of the individual—excessive drinking, especially of such liquors as speedily induce intoxication, immediately on the back of previous temperance, and others.

The natural effects of all these conflicting powers, are to subvert that equilibrium which subsists between the exhaling vessels of the skin and the internal membrane of the intestinal canal; and, as the system had been unusually excited before, the determination of morbid action to any part of the intestinal tube will excite convulsive motions in that part, and these motions will become violent and general, according to the susceptibility of feeling existing in it, and to the general sympathy which prevails between these organs and the other functions of the body. The stomach, we know well, when once preternaturally excited, becomes the cause of universal disorder; and the langour and debility which ensue within a few hours after a smart attack of Cholera, strike the beholder with astonishment, and appear to be the proximate cause of those irregular spasms or convulsions which but too frequently terminate in death.

Still, the above-mentioned causes of Cholera are understood to have but a temporary influence, and the disease produced by them is expected to expire with the occurrences which called it into existence, or to be confined to the persons of those more immediately subjected to their action, and this I have found uniformly to be the case; for, although I have known ten or twelve new cases come under my care daily, during the months of June and July, for two successive years, yet the individuals (soldiers) had been all, more or less, predisposed in a similar manner: other persons surrounding them, and with whom they were in constant and familiar communication, escaped altogether.

All these remote and exciting causes of Cholera must have occurred to, and have acted upon the Russians, during their bloody and repeated campaigns against the Turks and the Poles; and soldiers, when in the field, cannot fail to be expos-

ed to them, more or less, at all seasons, although summer and autumn are those periods of the year in which their operation is most active and concentrated. They must have existed, too, in a great degree during the sanguinary wars between the Russians and the French; yet we have heard of no such universality of infection, of no such contemporaneous appearance in distant places, nor of such perpetuity of duration. Soldiers and sailors—agricultural labourers and merchants—men of temperate as well as those of dissolute habits, have been alike its victims, and it has been maintained and spread during the hottest and the coldest weather. These facts, and they cannot be denied, irresistibly force on the mind the conclusion, that this modification of Cholera has little or no affinity with any other variety of that disease formerly observed, and that it is of a nature decidedly and powerfully contagious.

The next object of inquiry should naturally be, to ascertain the character and to assign adequate causes for this medical phenomenon. And here the difficulty consists in the want of accurate data a sto the precise time and circumstances under which it first appeared, the class of persons most obnoxious to its power, and the train of symptoms, with their order of progression, which peculiarly denote its existence and stamp its individuality. In this state of uncertainty, the most plausible speculation has a chance of being founded in little better than conjecture. It can scarcely lay claim to the attributes of a medical theory, for by it is understood that, whether the true causes in any given instance be assigned or not, the principles assumed should, if granted, be competent to explain and account for the phenomena.

To make inductions from the facts already stated, we might be led to infer that, from the multiplicity, variety, and long continuance of the indisposing and exciting causes of Cholera in the Russian armies, such a range and concentration of morbific action had been generated, as was sufficient to change that affection from being a contingent and local epi-

demic, into a malignant contagion, *sui generis*, fully competent to maintain and propagate itself under various and opposing combinations of external circumstances.

Such a view of the subject, although a legitimate deduc- from the premises laid down, appears to be somewhat problematical. One can scarcely conceive how a disease, affecting chiefly the nervous system, and of it even only a part, (for the sensorial functions are not deranged until the last stage), should, in the short course which Cholera usually runs, even although it occurred in a populous district, become more malignant in its character, and more decidedly contagious than diseases, such as different kinds of fever and dysentery, involving the whole vascular as well as the nervous system, and all the apparatus concerned in secretion and excretion, have ever been observed to do. Analogy, I must confess, is at least opposed to this explanation, as a satisfactory one. Besides, Cholera has appeared periodically in India before n owand also in other tropical climates, without having had impressed upon it this power of extension and faculty of duration, under very different states, not only of temperature, but also of peculiarity of topography, modes of life and diversity of aliment, among those who fell victims to its virulence.

Such reflections as these have led me to imagine, that this peculiar change of character impressed on Cholera, may have been the result of some admixture with the contagion of the plague. The disease in question may not be the plague properly so called—I never supposed that it was—but it may be conceived that the effluvia or contagious matter which propagates and continues the plague, being received into the systems of individuals labouring under Cholera, especially when convalescent from the latter, may produce a modification, a *tertium quid* in the offspring, partaking of the qualities and attributes of each of the parents.

There is nothing novel or uncommon in such a kind of morbific combination as that now supposed. The instance of

Sibbens (syphilis insontium) is a case directly in point. Here a disease, known for centuries to be spread only by the actual contact of human bodies, (or, as happened sometimes to surgeons incautiously wounding their fingers when dressing syphilitic ulcers, to have its nature so far changed by a mysterious union with some herpetic eruption, as to be communicable from one human body to another, by the intervention of third substances on which the virus in a diluted state had been deposited, and yet preserving its original type and virulence. Every medical practitioner of the least experience knows the fatal effects which result from the pervading influence of what is technically denominated hospital gangrene. In this case, contagious effluvia, as if the joint production of every morbid exhalation from the bodies of patients in the hospital, exert a destructive power, not only on every ulcer within its walls, but also over cases of internal inflammation, as in peritonitis, in puerperal fever, rendering the treatment difficult, and the event more frequently fatal. Vaccination, on the other hand, furnishes an instance of one contagious disease modifying instead of exasperating the character of another! Although it has not been able to anticipate entirely, and thereby lead to the extirpation of small-pox, it has greatly mitigated the frequency and violence of the irruptions of that disease, and, when administered so as to affect the system constitutionally, to disarm it of its fatality. There is still an eruptive fever, but it is short and mild. Pustules appear on different parts of the body, but they are distinct and never confluent, and they disappear without leaving marks of their presence. Other instances might be mentioned wherein an amalgamation of one morbific influence with another changes and modifies the nature of one of the diseases, without destroying its apparent individuality, but I deem it unnecessary.

It may be observed perhaps, by some, in opposition to this view of the matter, that the Russians have frequently before now been engaged in war against the Turks, without such event being attended or followed by any such consequences.

This is no doubt true; but then they never encountered the Turks before, at one and the same time, on so extended and varied a line of military operations. While Paskewitsch was fighting battles, besieging and taking cities, and overrunning Asiatic Turkey, Diebitsch was carrying on similiar operations on the European side of the Caspian sea, which was crowded with Russian ships of war. Diebitsch approached near to the cradle of the plague. He crossed the Balkan, a mountainous barrier which had hitherto kept the Russians in a state of quarantine, rested his army for a considerable time in Adrianople and its neighbourhood, and communicated freely with the capital. The former general might be said, in a metaphorical sense, to have put his soldiers in the way of having ingrafted on their constitutions the seeds of Oriental Cholera; while the latter commander led his followers into regions where the plague is endemic, and mingling their military masses of men, in unreserved intercourse, in Podolia, Volhynia, and other provinces, the morbific union became complete. Assuredly the Russian armies were never, at any former period, exposed simultaneously to so many and such different sources of disease; and the subject is well deserving of the careful investigation of medical philosophers, especially such of them as are so fortunate as to have an opportunity of examining matters on the spot.

Which of the two views I have presumed to advance as the *rationale* of the difficulty,—the self-generated contagion from extent of morbific action, or the amalgamation of Cholera with the contagion of the plague, or whatever other explanation shall turn out to be the true one,—the fact must be received as incontrovertible, that the disease in question is decidedly contagious and extremely fatal. Every measure of precaution, therefore, which experience has sanctioned as effectual, and which prudence may suggest as likely to be useful, should be adopted and rigidly persisted in to prevent the introduction of so afflictive a scourge into any part of the empire. The question, whether or not this contagion be trans-

missible by clothes, bedding, or merchandise of any kind, need not enter into calculation, as it can have no other effect but to lose time, and thereby weaken the operation of useful means. Indeed, a little reflection on its rapidity of transmission from place to place, its intensity of invasion, universality of attack, and from the analogy of other and, comparatively speaking, weak contagions, which are propagated through the medium of *fomites*, may be sufficient to satisfy any one that this disease must be so also.

The remaining point claiming attention in this short inquiry is, in what manner should so unusual a visitant be treated in the event of its arriving in Britain? The first object to be attended to should be the separation of the sick from the sound, and prohibiting all intercourse with the diseased, except through medical practitioners and their necessary attendants. Great care should be taken to keep the apartments clean and well-aired, and they should be fumigated daily with those gaseous productions, such as the nitric and muriatic acid gases, and the steam of vinegar raised by pouring it on heated iron, which experience has shown to be useful in decomposing and destroying the pernicious influence of morbid exhalations from the human body. In the event of recovery or death, not only should the clothes of every description be well washed and passed through heated vinegar, but the apartments should be washed thoroughly with some preparation of lime. Indeed, it would be prudent in all cases where the patients died poor, either in their own houses or in the hospitals, to burn the bedding altogether. The contagious matter of common typhus fever has been known to retain its power of infecting, after having remained inactive for several months, adhering to the walls and joists of uninhabited houses.

As to the medical treatment, it must be left to the skill and discernment of the attending practitioner. It would be the height of presumption to lay down rules for the management of a peculiar modification of a disease, of which no accurate

history had appeared. The first duty of a medical practitioner is to endeavour to ascertain the true nature of the malady committed to his care, and then to avail himself, with anxious solicitude and unremitting attention, of every opportunity which offers of promoting its cure. He is, it is true, but the minister of nature in the hands of a higher power; but, when he has done this, he has done all that can reasonably be demanded of him, and he will then experience and enjoy the truth of the professional axiom, that the satisfaction next to being instrumental in curing his patient, is the conviction that the attainment of that object was beyond the reach of his art. In proportion as his mind is embued with enlarged views of general science, and sound principles of medical practice, and according to the extent of his former experience in applying those principles in the treatment of new and uncommon varieties of disease, will naturally lie the promptitude and correctness of his decisions and the success of his labours. Happily for Great Britain, she abounds preeminently in medical characters, in the different departments of the profession, possessed of these necessary and useful qualifications.

James Burnet, Printer, Leith.