a consequence of these two effects,—increased decay and impaired nutrition, the various destructive results of inflammation, atrophy, softening, interstitial absorption, ulceration, and mortification, are engendered.

THE

CONTAGION OF ASIATIC CHOLERA.

By E. O. SPOONER, Esq., Blandford.

It is now more than three months since the pestilential cholera has been reported among us. Has it swept over the land as an atmospheric influenza? Has it followed any definite track of the wind, or any regular direction of the compass? Has it been attended with any new or unusual atmospheric phenomena? Has it followed any geological formation, or mineralogical peculiarities? From the tertiaries of the London basin, up to the granitic series of Edinburgh, it has appeared with strict impartiality. It lurked about in the fine weather of October, in the wet month of November, and at Christmas it was reported at Belfast, in Ireland, having taken ship from Glasgow. On board one of the emigrant ships from Bremen, it has crossed the Atlantic to New York. All the western ports of our island, however, and all the Channel harbours, have been free from invasion. *They have no extensive trade with Riga, Hamburg, or any of the northern pest ports.*

More than three months ago we were told on authority that it might at any time be expected to jump out of any uncleaned cesspool, or undrained ditch; all our villagers' pigs were forthwith ordered to be killed, for pigs and pigsties were voted "nuisances." Like the fabled "wandering Jew," this swarthy Asiatic was said to be out on his travels through the land, and that he took lodgings in these appropriate localities. Ditches and cesspools are quite as common at Liverpool as at Leith; quite as numerous at Bristol as at Hull; yet, neither Liverpool nor Bristol have yet reported any cases, notwithstanding the stringency with which reports are hunted after, and although three months have elapsed since Hull received her first importation. The shipping of Liverpool and Bristol rivals that of London and Leith, but the shipping all arrive with *clean bills of health from ports not yet contaminated with cholera contagion.*

The *secondary spread of the pestilence* which is now begun will be marked by the appearance of cases at these western ports, as well as some of our inland towns, which are unfortunate enough to receive many infected tramps.

Verbal quibbles about the meaning of contagion are worse than useless. Our great lexicographer defines contagion by the term infection. The terms are synonymous, for he equally defines infection by the word contagion. Contagious matter is either liquid,

as in the small-pox vesicle, or solid, as in the dried pustule, or it may become diffusible in the aqueous vapour of the atmosphere. It then assumes the miasmatic state. The emanations from the bodies of the sick are of this atmospheric character, and consequently become the sport of the winds, or remain hovering like a mist, when the air is stagnant or loaded with moisture. When the temperature favours decomposition or putrefaction, nearly all contagious increase in virulence. Syphilitic contagion appears never to spread atmospherically, though it must decompose, of course, as do all animal poisons. The poison of scarlatina, on the contrary, is highly diffusible; *such appears to be the case with pestilential cholera.*

The contagion of this Asiatic scourge has now for many years been a fruitful topic of controversy in medical fraternities. Among the early practitioners of India who witnessed the first outbreak and successive ravages of this new plague in Hindostan, the analogies of the disease, to the more violent forms of the simple cholera, so accurately described by Sydenham, and ascribed by him to the atmospheric and epidemic conditions of the autumnal season, led them to lose sight of *the specific character of the new disease*, which was at length discovered to be so completely *sui generis*, as to deserve a more diagnostic name than that which they have given to it.

Looking upon it only as a climatorial development of the same disease, in a more aggravated form, they were content to call the one *English*, and the other *Indian*, cholera.

No doubt India had often suffered from epidemic visitations of ordinary cholera, as England and other climates had done. The abundance of the fruit season, and the excessive temperature of the Indian summer, produced the common cholera of milder climates in an endemic form, and they were accustomed, before 1817, to observe occasionally the vomiting, the purging, the cramps, the collapse, and the death of many who were seized.

But the occurrence of the new disease, *during all the seasons of the year*, taking a definite course, with a far more fearful mortality, defying the ordinary therapeutic means with which they were accustomed so successfully to combat its prototype, presenting to accurate investigation some new symptoms of a marked character, at last opened their eyes to that ever recurring enemy which, since 1817, they have had to meet, *in some quarter or other, in every season of the year.* It was as natural for them at first sight to imagine such a peculiar disease free from the principle of contagion, as it would have been, had it been an indigestion or liver complaint. There was no visible eruption of any morbid product on the surface of the body, as in small-pox, or measles, or scarlatina. Many of those who were in close communication with the sick, either entirely escaped, or suffered *but slightly*

the symptom of *diarrhæa*, which they never presumed to call an *attack of cholera*, so that at first sight the conclusion was almost universal that cholera was uncontagious. Kennedy, who so graphically describes the new disease, says, even in 1818, the year after its first appearance in Jessore, "month after month, during the preceding year, fresh accounts reached us of its progress westwards, and the general alarm and horror were excited to the utmost when every hope that the disease might *terminate with each change of season was at last extinct*." The season merely influenced the virulence of the disease, as it influences other diffusible contagions. The morbid material, whatever it was, survived the winter only to break forth with renovated vigour in the warmer weather; and a population of a hundred millions, notorious for their migrations and their festivals, ever presented a sufficient number of victims to be annually sacrificed to this new enemy of the human race. They were not a drunken and dirty people, for their religion was diametrically opposed to such habits, but they are principally vegetable feeders, rice being their chief article of diet, and they live a large portion of their time in the open air.

In examining the question of the contagion of cholera, we must ever bear in mind, that even could it be put to the test of inoculation, which has not hitherto been successfully accomplished, and thus obtain for it the direct demonstration of its infectious property, as we have found in small-pox, that *many cases must arise after it has once appeared in any country which cannot be traced up to any known communication with the infected*. Dr. Gregory, who has paid so much attention to the subject of small-pox, declares that nineteen out of every twenty persons received at the Small-pox Hospital, are unable to discover the source of their infection. They imagine they breed the disease; they attribute it to a chill, or to excessive fatigue, or to getting wet, or to a hundred other very innocent causes, rather than its true one—infection—of which they are unconscious. The difficulty sometimes found in tracing an infectious disease up to its true sources, does no more invalidate the doctrine of contagion than would a hundred undetected larcenies lead us to suppose that they could be committed without the thief.

The analogy of the new disease lately introduced among the sheep of this country, may suggest to us a parity of reasoning respecting the cholera. The very Merino sheep which first brought the "*variola ovina*" into England, have been clearly detected. The disease, however, has now appeared in so many of our counties, that the links in the chain of infection become extremely difficult to trace, and it often now arises without any previous communication with infected flocks,—the atmosphere appearing to be the vehicle of the contagion. *Thus it is with cholera.*

When a small island becomes the seat of a new disease, as when Iceland, in 1707, was first seized with the small-pox; or Malta, after an absence of more than a hundred years, with the plague in 1813, or the cholera in 1837, the important question—"whence comest thou?" is put with some probability of a satisfactory answer to the new visitant. The identical ship by which it is imported becomes easy to recognize, and the earlier steps of the invader are tracked with considerable accuracy, until the multiplied secondary or tertiary sources of contagion baffle further inquiry, and the original thread becomes in "wandering mazes lost."

In continental countries it becomes more difficult to bring these inquiries within so small a compass; and in our own island, whose numerous ports are filled with the shipping of all nations, such floating arks of pestilence may, like the Cronstadt vessel lately mentioned by Dr. Simpson, infect the pilots of Newhaven, sail out of port, and baffle for a considerable time the most diligent inquiry. So numerous are the flags that daily and hourly enter our harbours and roadsteads, that supposing cholera to arise from contagious or infectious emanations, we must within the last three months of unrestricted intercourse with Hamburg, Riga, and Cronstadt, where the cholera had been raging previously, have received many of these foci of contagion; and yet, notwithstanding the "*suppressio veri*," and the "*suggestio falsi*," which have been used pretty freely, there is enough evidence for us to ground a pretty strong case against these northern vessels.

Sailors, it may be, very opportunely eat voraciously of plums and drink sour beer, or some convenient cesspool is at hand in every locality, to bear the blame. The bilge water, too, is another prolific source on ship-board, or some want of cleanliness is perhaps pointed out by some inspector who sees great negligence in the sanitary arrangements on board nearly all the coasters. As for contagion, Dr. Parkes puts on his spectacles and says he never saw it cross the lines at Moulmein or Tenasserim. Mr. Grainger says the medical men of Hamburg pooh, pooh! at such a silly idea; and that they have very diligently dissected the dead bodies for it, and cannot find it. Alas! that men should ever be employing their external senses and their powers of observation, and should so entirely omit to exercise the reasoning faculty, by which alone invisible agency is proved to exist. Gravitation is not less a property of matter, though it is essentially invisible, and is ever undistinguishable save to the eye of reason. In the hands of Newton, it solved the problems of planetary motion, and the irregularities of celestial bodies were all found, not indeed exceptions, but legitimate consequences of this general law, when deeply investigated.

There cannot be the slightest doubt about the propriety of those sanitary improvements, which have been so strongly recommended, but to assume that

a disease is non-contagious, because cleanliness and ventilation mitigate its severity, and sometimes disarm its concentrated potency, is illogical. A disease cannot be *contingently contagious*, though it may spread or not according to certain contingencies. The theory of a disease being sometimes contagious and sometimes not, is self-contradictory and absurd. Similar kinds of matter always possess similar properties, and the specific virus of the choleric pestilence forms no exception to the general rule.

It is sometimes said that cholera is not contagious, because it is not attended with an eruption like the exanthemata. To this we would reply that all *a priori* reasoning of this kind is scarcely allowable when we have the positive facts to determine the question. Let us however, for a moment, examine the point as if no such positive evidence were within our reach;—as if no basis for inductive reasoning existed;—and as if we were thrown altogether (which is far from being the fact,) upon the mere analogies of other diseases to draw our inferences. “In cholera,” say our Sanitary Commissioners, “no vitiated secretions occur.” All epidemic diseases commonly regarded as contagious are diseases of excitement, during which inordinate actions the fluids of the body become vitiated, and the excretions often so highly offensive, that they appear to possess a septic or putrefactive tendency. “In cholera,” they state further, “there is no power to generate poison, and no activity in the excretory apparatus to throw it off.” Now, it may be true, that in some rare cases of sudden and early collapse, the secretions may appear suspended,—*collapse, however, is not cholera*, it is only one of its occasional symptoms, and it occurs now and then at the onset of other diseases, as in scarlatina and typhus, and may terminate in death or be followed by the stage of reaction and excitement. Some writers, as Dr. Billing, define cholera as a fever, of which collapse is an early and frequent symptom. Others, as Dr. Bell, call it an ague; and Dr. Dickson, with perhaps as much correctness, calls all diseases agues, because they are attended with intermissions and exacerbations. We prefer the view of Dr. Billing; and if cholera be a specific fever, what becomes of the loose statements of our Sanitary Commissioners? If we require morbid secretions, have we not in the premonitory diarrhoea and in the rice-water evacuations, quite sufficient evidence, that in the internal lining membrane of the intestinal canal, there has existed enough of “excitement,” “increased action,” and “morbid secretions,” in abundance? Our Commissioners seem to have forgotten, that the Germans long ago have discovered in the fecal evacuations the *broken-down epithelial cells* of the small intestines. The debris of these cells, cast off by a species of *internal desquamation*, afford ample evidence of violent excitement, and remind us of those external diseases denominated exanthemata,

such as scarlatina, in which the cuticle so completely desquamates, and becomes sources of contagion.

Henle, in his “Retrospect of Pathology,” published in Müller’s *Archiv.*, 1839, gives an admirable account of the pathological researches of Böhm. A translation of this analysis is published in the *Medical Gazette* of November 22nd, 1839, from which I extract a few passages, recommending those interested in the inquiry to the original document.

“In the contents of the intestines of cholera-patients, Böhm has discovered the debris of the epithelium of the mucous membrane of the digestive canal, and he hence refers the phenomena of the disease to a morbidly accelerated process of desquamation from the membrane, which he has accurately traced through its several stages. The affection of the internal membrane of the digestive canal is not equal in its several parts; the stomach suffers little, and the large intestines least of all; it is the *small intestine, which is for the most part attacked throughout its whole length.*

“After the destruction of the cuticle, and when a raw surface remains, the destruction goes on in the very substance of the mucous membrane. The villi become thinner and weaker by a kind of maceration, their swollen free extremities split up, and assume a fibrous appearance, by the increase of which they are gradually cleft to their bases. The intestines thus affected, in irregular scattered spots, look like an old hide from which the hair is in part worn off. The extremest degree of destruction is found at the end of the ileum, where the Peyerian glands perish, and the mucous membrane is converted into a cracked and broken-up surface; but the whole process is effected with such rapidity, that patients, who in the morning complained of at most an uneasy moving of the intestines, and who die at noon, already present at their *post-mortem* examination a considerable destruction of the mucous membrane. It is the fragments of the epithelium, which, mixed with the effused fluids, form the contents of the intestines. If the latter remain for a certain time at rest in a glass, their microscopic constituents will sink to the bottom. The contents of the intestines appear milky when the *quantity of secretion* is considerable in proportion to that of the elements of the epithelium, and the latter are very minutely divided. They are pus-like, or cream-like, when, on the contrary, the quantity of fluid is small in proportion to that of the solid constituents; flocculent when the epithelial cells are still connected in considerable masses; rice-water-like when similar flocculi float in smaller numbers in a turbid fluid; gruel-like when larger portions of the epithelium (some of a white and others of a greyish-green colour,) are mixed with one another, and connected by a scanty secretion into a mass of a pulpy consistence.”

Böhm has abstained from all conjectures on the nature of the process which he has thus accurately

followed in all its phenomena. But the process by which the epithelium of the intestines is removed, has the greatest analogy to the formation of vesications; and Böhm has himself, in many places, compared the one with the other. The cause of desquamation is a mechanical and passive separation of the cuticle by the exudation, and the exudation is the essential part of the disease. This may be produced in two ways,—either by a primary general alteration of the blood, by which it becomes thinner, or by a local stagnation and change of it by a process which *we name inflammation*. The first is improbable, because the process is *limited to the intestinal canal*, although the inner surface of the lungs and other organs is not less delicately formed. For the second view, the symptoms of the disease and other morbid appearances which Böhm found after death, are all favourable: as for instance, the injection of the vessels which is constantly coincident with the desquamation,—the tinging of the whole substance of the villi with blood,—the presence of fibrinous coagula in the effused fluid,—and the exudation of plastic lymph on the outer surface of the mucous membrane, in the region of the Brunnerian and Peyerian glands. All the secondary symptoms of cholera are explained by the great loss of serum which takes place so rapidly from the walls of the intestines, from the alteration of the blood thereby produced, and from the extended affection of the nerves of the internal surfaces. These circumstances do not act differently from a *burn*, which is attended with blisters over the whole surface of the body.

We think it highly probable that these morbid cells generate the specific poison of the cholera; and the fact of a camp thus contaminating those who are within the circle of the fecal evacuations, (*not from ordinary putrefaction and decomposition which does not produce Asiatic cholera*;) re-infecting those who shortly afterwards occupy the same position, connected as it has often been with the additional fact of the cessation of the disease on frequent removals of bodies of men into new and uncontaminated districts, all seem to corroborate the inference we draw from an undisputed pathological phenomenon. We are fortified in this view, too, by the acknowledged danger of a residence near the mouths of sewers, when the disease has once made its appearance; and the great fatality and frequency of the disease in those cities where dirty privies are situated within the houses,—as in Paris, where the first, second, third, fourth, fifth, and even sixth floors has a foul nest of contagion of this character, and where the habits of the people are so devoid of cleanliness in this particular. I lived in Paris the year before the cholera broke out; it was then dangerous to walk in many of the narrow streets at night, lest something filthy coming down from an upper story should assail you. As for French privies no Englishman could use them, but willingly paid two sous for a “cabinet d’aisance a

l’Anglais.” I hope Glasgow does not offer another example of this character, but not having resided there, I am unable to state whether such facts as I witnessed in Paris may not account for the great fatality of cholera in some towns of Scotland.

The French live more upon vegetable diet than the English, and hence, probably, are more susceptible of the malignant form of cholera. Comparative anatomy teaches us that the development of the intestinal tube depends upon the nature of the nourishment. Animals which feed on vegetables require greater powers of assimilation, and have a much larger and longer digestive apparatus than those which are carnivorous. The difference in the length and diameter of the intestinal convolutions of the dog and the horse is immense. We have no doubt that the Hindoo, feeding wholly on rice and vegetables, has more amply-developed small intestines than the flesh-eating European, and hence a larger surface becomes exposed to a disease which seems to concentrate its morbid action upon this doubly-worked and highly-sensitive mucous membrane. The soup-fed and water-drinking children at Tooting, approximate in their susceptibilities to that of the Hindoos; their crowded state concentrated the contagion, and hence the mortality at which we have all shuddered.

(To be continued.)

SHORT NOTES ON THE OPINIONS AND PRACTICE OF THE LATE JOHN PEARSON, ESQ., F.R.S., ON SYPHILITIC DISEASE.*

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Dysuria Vesicalis.—This term comprises those diseases of the urinary passages, where the urine is voided with pain and difficulty, in small quantities, and with frequent desire.

1. *Strangury*.—This often arises from the use of acrid aliments and medicines, especially cantharides; and also from exposure to cold after the body has been much heated. When it proceeds from these causes, it may generally be removed by large quantities of diluting drinks,—by opium, soothing enemata, emulsions, &c. When brought on by riding on horseback, a tea-spoonful of the sweet spirit of nitre will often give relief.

It often occurs as the result of ischuria, the bladder becoming as intolerant of the stimulus of the urine as before it was insensible to it. This will generally subside without remedies. In strangury from this cause, after opening the bowels, it is customary to give camphor, the mucilage of gum-arabic, &c., but without much benefit. The best method is to give bark freely,

* Concluded from page 661 of last Volume.