

Binaghi (O. A.)

OPINION

UPON THE

EPIDEMIC CHOLERA MORBUS

OBSERVED

AT WARSAW,

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TRANSLATED FROM THE ITALIAN,

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OPINION
UPON THE EPIDEMIC CHOLERA MORBUS.

UBI NATURA DEEST, ARS NULLA.

IN publishing my opinion touching this epidemical distemper, I have no other object in view than that of medicine itself, viz: to be useful.

Confining myself to this sole object, I hold it superfluous to deduce the history of this disease, or to repeat what has been so often said; and therefore, instead of offering a minute description of it, I shall only state it from such principal and leading facts which have been observed, and use no arguments beyond what may serve to excite attention and support the inferences which are drawn from positive facts; therefore without further preface I shall commence by saying, that I consider this to be a disease of the nerves (the nervous system being that primarily affected by it) and principally of the *nerveo-splanchnic* system. And in fact from the manner in which the alterations in the organic functions of life manifest themselves, as in *chylopoesis* and *hæmatopoesis*, it is clearly apparent to every medical person, that it is a disease which shows itself under the form of *dyspnœa*, vomiting, diarrhœa, alteration of the pulse, suspension of the secretions, restlessness, general uneasiness, &c. &c. And whence comes all this? Is it not that the centre of action, on which depend all the vital functions, especially the organical, is struggling to free itself from an extraneous and excessive stimulus, in its nature quite contrary to the organic system, and destructive of the ordinary equilibrium of its functions?

To the alterations in these manifestations of the organic life, are joined those of the animal system, apparent from a spasmodic state still increasing, and chiefly in the muscles of the face,

by which an experienced eye can readily discern the physiognomy of one attacked by the cholera; and among the more constant symptoms are to be remarked cramps, peculiarly in the muscles of the lower extremities: this last is one of the most pertinacious symptoms of the disease, and continues even through the paralytic period; the cause whereof may be found in that state of particular vitality, if I may so express it, which exists by itself in the extreme divisions of the nervous and vascular systems; that which is more discernible in proportion as the parts which constitute the organic mechanism are more distant from the centre of action, as appears from the local inflammations that have their course without being felt or perceived through the rest of the body.*

It is not therefore astonishing, since that cause may become so general as to make victims of almost all upon whom its influence is exercised, and produces such terrible effects, and in a manner so sudden and so rapid, that no one has been able to discover any effective means of preventing its fatal consequences.

The proof of what I have advanced is in the state of general paralysis into which the entire body falls from the moment in which the reactive powers of nature cease, which have been all expended in the impetuous conflict, and therefore Prof. Magendie has justly defined this distemper as "*Maladie qui cadavérise à l'instant même la personne qui en est atteinte.*"

This condition of perfect insusceptibility manifests itself by the cessation of the symptoms of morbid reaction, and by the apparition of those which indicate an almost total inaction, as absence of natural warmth, colour, pulsation, secretions, sensibility, and in a word, of all organic and animal movements;

* It is a fact worthy of notice, that the intellectual faculties continue in good condition even to an advanced epoch of the paralytic stage; and that their alteration, or rather cessation, takes place tranquilly: a circumstance which also confirms, that the nerveo-splanchnic system is that eminently, and I would say exclusively affected. The spasmodic condition of the irritable organic and animal system concurs in support of this opinion, because we know from experiments made, that the irritability of any one part is in the direct ratio of the abundance of the sanguineous system, which is governed by the nerveo-splanchnic nerves, and by them accompanied until its last divisions. All those facts lead also to a decision in favour of those who hold that the nerveo-splanchnic system has an existence independent of the *sublime sphaera*, with which it merely communicates.

the only remaining sign of life being an almost imperceptible respiration, which soon terminates in death.

From what has been said, this malady may with some advantage be divided into two very distinct periods, of which the first commences at the moment of the attack, and lasts until the termination of the spasmodic symptoms, which I shall call the *erethistic, spasmodical epoch*, or the *period of reaction*. The second period which, from the apparition of opposite symptoms, continues until death, and to which I will give the name of *paralytic period*, or *perod of inaction*. It is not improper here to observe, that this disease assails the patient from the first moment of its attacks with so much rapidity and vehemence, that it may be said to come unpreceded by any premonitory symptoms.

The results of dissection serve further to explain these phenomena. No alteration of structure has ever been discovered in any of the organs, which could be fairly imputed to this malady ; if such an instance of disorganization has occurred amongst the multitude of cases, it is rather to be ascribed to some preexisting organic disease ; and there has been observed in the muscles of the extremities that peculiar rigidity which is found in those who have died by *tetanus* ; some spots on the skin indicating local congestion or effusion ; injections, particularly in the cavity of the abdomen and thorax, which proves no more than that the blood, as is ordinarily the case, is amassed in the part where the reaction was the strongest ; the heart and lungs are flaccid, and filled with black and fluid blood, signs of the paralysis of those two organs. The stomach is ordinarily contracted, sometimes relaxed ; partial constrictions of the bowels take place, invagination and injection of black blood ; contraction of the gall bladder, and of the urinary bladder, which indicates a spasmodic state of the fibre. There is also found a certain quantity of mucus collected in the alimentary canal, which is considered as the effect of the spasmodic contraction of the capillary system, that excretes this humour, which, no longer finding room in the capillary reservoirs, is forced to expand itself, and overabound in that place which nature intended it to supply. The contrac-

tion of certain parts, and the relaxation of others, depends on the particular construction of each, and consequently on the different degree of their reaction.

Putrefaction is ordinarily speedy, as is observed in all cases when violent death is occasioned by a rapid and powerful shock of the nervous system.

The exposition which I have made enables me to maintain, that the morbid process occasioned by the reigning malady is in its character preeminently nervous, and I should not scruple to class that malady with those fevers called *febres larvatæ*, and to entitle it *Febris perniciosa larvata cholericæ*.

It may be termed *pernicious*, from its assailing its victim suddenly and without any known cause, to the manifest danger of life. It differs from all other fevers of that kind, by its higher degree, bringing death with a single paroxysm, whereas in other fevers of that nature, it is sufficient to be aware of their pernicious character, in order to save from certain death those who are unfortunately seized with it. One may add the title of *choleric* from the vomit and diarrhœa being the earliest and principal symptoms which are observable: because the name of cholera indicates nothing more than the form of a disease, which may as well be sporadic, and produced by other causes; the epithet of *larvata* serves to indicate that the febrile symptoms are masked by the prevalence of the nervous ones in intensity and number.

The morbid reaction then of the fibre, which may be considered as the immediate effect of the general exciting cause, is ordinarily so intense, that in the first paroxysm it deprives the machine so entirely of its powers, as to leave neither time, nor means for it to collect its remaining active force, through which, assisted by art, it might be restored; I say ordinarily, because amongst the varying degrees of intensity in the morbid process, there may be some which will admit the possibility of an effectual cure; still such rare cases do not leave much hopes, because the patients are easily attacked by a second paroxysm, which is fatal, and those who survive the cholera, frequently fall victims of the typhus, (another circumstance which proves the nervous character of this malady)

which likewise needs all the succours of nature and art. It is not extraordinary that this latter distemper should complete the destructive work where all the circumstances unfavourable to a successful cure exist. No one who reflects, that in pernicious affections little or nothing can be obtained by art during a paroxysm, and whatever can be hoped, must be expected from nature, will consider as an exaggeration what has been above said.

Causes.

The direct cause of this malady is unknown in spite of the most minute observations which have been bestowed upon it; nor has any thing been discovered sufficient for the forming of an opinion or hypothesis.

Its prevalence notwithstanding has been observed in Europe in proportion to the prevalence of unseasonable and long continued cold and damp, and it has also been seen to pursue the course of water, and to remain longest in those soils which are low, flat, humid, and populous. Zimmerman has remarked, that northerly winds have been the most common in Europe for a century past, which has been taken for the cause of many convulsive affections which have been so frequently observed, and peculiarly in the southern parts, since the extraordinary prevalence of those winds. The sudden and rapid changes of temperature to which the human frame is exposed when rendered most susceptible by the natural heat of the climate, explains the cause why the cholera, when it visits the southern countries, is sometimes more fatal than in the northern. This opinion, that the long prevalence of winter weather is one of the concurrent causes of this epidemic, might be supported by the advantage derived from all those means which tend to keep up a constant and active perspiration, such as the use of flannel and tea, apropos of which it has been observed, that in those countries where the use of tea is habitual, either the disease has not appeared, as in Holland, or it has not been so fatal, as in England. The same author says also that every season has its peculiar character, which consequently changes our humours in a certain degree, as has been observed by Hippocrates. Behold the cause of diseases peculiar to each

season. If the deviations of the seasons be excessive, *epidemic* diseases, strictly so called, result.

Disposing and determining causes.

One of the essential and necessary conditions of all diseases is the predisposition towards it. The disposition towards sporadic disease, may be found in the prevalence of some one or other organical system, modified by the circumstances of age, sex, physiological epochs, habit, &c. &c.; but in the diseases proceeding from any general cause, the predisposing conditions are not discoverable; for we find attacked by the latter, individuals of all kind of physical constitutions, and under the most opposite circumstances. Thus some have been attacked who were sound, robust, and perfectly temperate; and others escape notwithstanding all the disorders which concur in constituting so many determining causes, the principal whereof I shall treat under the head *hygeian*. It is also certain that these causes may increase or originate the disposition, and more in proportion to their intensity, duration, and number.

Cure.

Here it may be proper to refer to some of the most remarkable opinions of my colleagues who were at Warsaw with the same object as myself, in explanation and corroboration of my own opinion. Some considering the blood as the natural, principal, and general *stimulus* of the organic fibre, and consequently as the principal cause and effect of all the vital movements, have attributed the morbid process to the want of oxygenation in the blood, which thereby losing its faculty of natural *stimulus*, produces, like narcotic poisons, that which is called *asphyxia* of the heart; and they therefore propose the use of oxygen as a remedy.

Whilst we cannot deny the physiological part of this reasoning, still we cannot admit as a just corollary the induction of the pathological part of it, since we know the *haematopoesis*, like all the other functions, to be the effect of a vital process differently modified; which vital process being altered,

the nature of its products, and consequently of the blood, become also changed, the diseased quality whereof is to be considered as an effect, and also it may be said as an accessory and secondary cause, which does not admit a direct cure of the principal disease. Whoever would have full assurance of this fact, *i. e.* that the alteration of the blood is secondary, has only to take an animal, a rabbit for instance, and laying bare the pneumo-gastric nerve, to cut or tie it, and then it will be seen that the respiration being thus altered, the blood will still preserve its venous quality.

There were some also who made much use of calomel ; with respect to which, if it was administered, with the same intention as it is advantageously employed in nervous diseases of a chronic nature, whereof the course is long and indeterminate, where I have myself administered it with much success, still every one ought to know sufficiently the effect of this medicine to see that it should not be used in the case of cholera ; this disease requiring a prompt and energetic treatment by medicines adapted to sustain and to give direction to the operation of nature : if administered, as some say, to re-excite the suppressed secretions, this is only aiming at a symptomatic cure, and losing sight of the principal disease.

Others also, considering the disease as consisting in a suspension of the secretions, propose the use of drastic, diuretic, sudorific mixtures, which can amount to nothing more than a symptomatic cure.

Some holding to the principle, "*Contrariis contraria, curantur*," administer emetics in all cases, and thus they diminish the suffering of the patient by accelerating his death.

Lastly, some assert that the essence of the disease consists in an inflammation of the alimentary canal.

Every one knows that if that were the case, it would not be possible to deceive oneself in the diagnosis ; since, for an inflammation to produce violent death, it must be of such force, and manifest itself with such abundant symptoms, as to need no professional eye to discern it ; and it will exhibit the signs of great disorganization. Topical pains will be consequently observed so great that the patient will be unable to support

the slightest weight or pressure upon the abdomen; general irritation; characteristic pulse of this kind of inflammation, viz. small, constantly hard, tense, and frequent, the tongue very red, &c. &c.; and, finally, a very high degree of inflammatory fever; and on the dissection of the body will be found gangrene of the part affected, the usual consequences of a violent inflammation.

The injections which are observed in the viscera of the cavities of the body are adduced as proofs of this opinion; but in consequence of that, I have already said, this symptom may be considered as the effect of a simple congestion; but little regard should be paid to this sign, considering the force of the disease, and the absence of the principal symptoms characteristic of the pretended inflammation. Finally, as it respects bleeding, all the physicians who have treated this disease in Warsaw, have been convinced of the dangerous consequences of it. If bleeding has not been sometimes dangerous, it is not a proof that it may be always advantageous, nor that it is constantly used as anti-phlogistic; because bleeding once, without availing of the other anti-phlogistic means, can never complete any cure of a declared inflammation. Besides, if bleeding is frequently diaphoretic, that is to say, if it favour the expansive movement, and with it the affluence of blood towards periphery, it is not necessary for that, to use in every case of this sole means for the only purpose of exciting the perspiration, and still less when the loss of any humour too interesting to animal economy is very dangerous, as in pernicious paroxystic affections; and no one could allege one case of successfully repeated bleeding. In my country, where pernicious fevers are so numerous, no physician bleeds even where it could be symptomatically indicated. Dr. Searle himself, who has observed the cholera in India, and treated it in Warsaw, has always had unsatisfactory results from bleeding.

I would not, however, be understood as meaning to exclude the possibility of an inflammation consequent upon the primary disease. That would be to show myself unacquainted with the theory of the new restorer of medicine (Tommasini), and to go against the facts exhibited by the diseases that follow

the intermittent fevers ; such as chronic inflammations, particularly of the abdominal viscera, with their various issues, as physconia of the spleen or liver, phthisis of the latter, abdominal or catholic dropsis, obstructions in the omental lymphatic system, &c. &c. ; but I can never admit as the essence of the disease, and principal cause of the death of a choleric patient, the inflammation of the digestive system.

It may be objected to me that I place this disease in the class of fevers ; but the fever is not always symptomatic. I would be understood to speak of fever which is essential, idiopathic ; of this we have no other definition than that deduced from the symptoms, which exist in the cholera ; but they are of short duration, being very soon followed and overpowered by the nervous symptoms, which mask the presence of the fever ; and it is for this reason that I have added the term *larvata*.

It will be seen from this, that I do not consider the fever as always symptomatic, or as the effect of local inflammation ; but as being in some instances, as has been already said, the cause of inflammation. I will further observe that the paroxysmic fever never assumes the inflammatory character, except when some local inflammation generated by the fever itself, makes it assume that character, and then also the type is changed from intermittent to remittent (*continua remittens*.)

I am of opinion that the essence of intermittent fevers consists in an irritation of the nervous-splanchnic system ; the *intermission* being a property which belongs to irritation, and distinguishes it from the inflammation, which admits no interruption in its course when it has once manifested itself with its true and characteristic symptoms.

Although the inflammation be the principal and most frequent consequence of the action of a morbid stimulus followed by morbid reaction, and as such, the cause more or less indirect of death, it does not therefore follow that sometimes the stimulus by its extremely heterogeneous quality or from its excessive quantity may occasion such a disorder in the vital powers as to produce immediate death. If death should happen suddenly, by the action of lightning, by a violent electric shock, by a poison such as the prussic acid, or deleterious gas, by a surfeit,

or by strong and sudden moral impressions, &c. &c., why might not the same thing be affirmed touching the epidemic cause of the cholera? If this be not the case, how otherwise explain the suddenness of the death of some choleric patients? And how could this supposed inflammation consist with the rapid and violent course of the distemper without effecting any disorganization? how consist with its easy and prompt recidivation? how with the acknowledged evil effects of the antiphlogistic treatment in all the paroxysm, and the advantages so well known of the tonico-stimulants in the second stage of the disease, and in the state of convalescence?

From what is above said, and from the support which this view of the subject receives from positive facts, I have come to the conclusion, that a reasonable method of cure might be deduced.

I have said that the first period should be considered as a state of a morbid exaltation of the fibre. Professional men know that in the case of such affections (paroxystic), the use of internal medicines is rather shocking to nature, which must be directed and not forced, and consequently the most powerful means consist in revulsions for that purpose:

Ist. Of establishing a point of counter-irritation in some less noble part.

2d. To free by this means the central organs from the oppression caused by the great affluence of blood towards the centre, which may well be in itself an injurious secondary cause.

The means of effecting this are known: I must therefore, notwithstanding, observe, that it is absolutely necessary to employ from the beginning the most active, because the others will produce no reaction, and besides in such diseases a middle course is at least useless, and time is above all things precious. It consequently becomes necessary to have recourse to the use of the *moxa*, applied particularly to the back, breast, and abdomen; put the hands and feet in very warm lye, &c., and sometimes even hot iron must be employed, the great advantages whereof are known in the history of medicine and surgery, and of which the use can never be sufficiently recommended

in the first attack of the cholera, it being entitled to the first rank in the class of pervertents and confoundents in pernicious paroxystic affections.

Care must be taken also to keep the body of the patient warm in every manner.

The air of the chamber should be kept pure, by producing a constant change in it, which may be done by means of a strong and blazing fire.

With respect to the internal cure, the principal object will be to moderate the too violent action of the fibre, which may be effected by a well directed use of anodynes.

Among these the preparations of opium are to be perferred as most grateful to the stomach; and amongst the different preparations the laudanum liquid of Sydenham is to be preferred, not only for its liquid form, which is the most convenient, but also because in this preparation there are other ingredients which increase the activity of the opium.*

This medicine should be administered in large doses, but with some involents, to prevent the too violent action of the *narcotina*, and may be aided by the addition of some other anti-spasmodic.

Warm drinks should also be given for the purpose of introducing into the stomach the principal anodyne, and one of the first elements of life, which is warmth. Therefore small and frequent doses of warm and very weak mint tea, &c. &c. should be given. Nor should the use of warm, emollient, and sedative clysters be neglected.

The internal use of the stimulus which is hurtful in the first stage, becomes useful in the second, during which application the respiration of pure air must be continued.

* I inscribe here the recipe of the laudanum liquid of Sydenham, because in this country the simple tincture of opium is frequently given for it.

R	Opium puri minite trituro	uncias duas.
	Crocii sativi	unciam unam.
	Corticis cinnamomi ruditer contusi	drachmas duas.

Omnia simul infundantur per tres dies leni calore in
 Spiritus vini rectificati uncias tres
 Vini Hispanica libram unam.

Infusione facta filtratur liquor, et serbetur ad usum.

So also good use may be made in this period, of medicines, of which the benefit in similar cases is known, such as *sulphas chininae*, *piperina*, *strychnina*, administered also endermically and by clysters, in which the bark may be used in substance. Administration of an electric current may be also experienced.

I have already said that general bleeding is hurtful. Nor must abuse be made of the general warm bath, because the consecutive weakness is not always compensated by perspiration, which is the only object in its employment.

If the physician be so fortunate as to see his efforts crowned with good results, he will have already gained much, but he will not yet have placed his patient out of danger. He must not be deceived by appearances of convalescence however promising. It is during that period of seeming health, that nature collects all her powers to meet a relapse, which is ordinarily fatal. Sometimes recidivation of paroxysm is prevented by an inflammation, which usually attacks the nervous system, which, as we have seen, is eminently affected by the cholera.* This inflammation manifests itself under the form of typhus, a term derived from the greek word *tufos*, stupor, and which merely indicates a form of disease. That this typhus is of an inflammatory character, is proved by its course, the nature of its symptoms, the utility of the anti-phlogistic treatment, and above all, by the dissection of the body, which shows injections of the great nervous branches and thickness of the *neurilema*; in the membranes of the spinal marrow and of the brain; enlargements, and effusion of the *lymph plastica*; an abundant collection of *serum* in the ventricles of the brain, &c. all manifest signs of a morbid dynamico-organic process. This disease may be considered as dangerous as the cholera itself, and therefore physicians must be on their guard, and persist in the most active revulsive method, as by cupping, with scarification, and the application of leeches to the forehead, behind the ears, and on the back; which, besides the advantage derived from the local subtraction of the blood, serves to maintain a point of counter-irritation in the *peripheric* organs. The contem-

* Casimir Perier furnishes us with a distinct example of this: his recovery from cholera having terminated fatally in brain fever.

poraneous and prudent use of the *sulphas chinina* should not be omitted, because its action, although not understood, has proved a specific in such diseases, and will also assure the patient against a second paroxysm of the cholera. What has been said of the inflammatory typhus, may be applied with due modification in the inflammation of any other part disposed to it by particular circumstances.

Assured that the danger of any inflammation is past, abundant use of the *sulphas-chinina* should be continued, joined with a restoring diet and wine.

It is useless to say that the prophylactic means should be more religiously observed by those who escape death, after having been attacked by the cholera.

I do not propose such remedies as exclusive; I mean only to speak of the indications from which a good method of cure can be deduced, which may be effected by various means leading to the same end; but whatever may be the means employed, the prompt and diligent use of them can never be too much insisted upon.

If there are few or scarcely any advantages to be derived from medical treatment after the development of the disease, then the best way of diminishing the effects of the epidemic will be to prevent every thing that might favour its influence, and this will be obtained by a good

Hygien.

In considering the matter under the above aspect, not only may a means of cure be determined, but it will likewise be much more easy to discover the accidental causes which favour the progress of the disease, and increase the disposition towards it, and thus be enabled to establish rules which may, to a certain degree, protect us from it.

The nervous system being that pre-eminently affected, every thing that tends to disturb its wonted regularity, may furnish so many causes determining the predisposition.

In distinguishing the determining causes into external and internal, among the former may be classed those which act upon the principal organs of the *hæmatopoesis* (the skin and the lungs), and of the *chylopoesis*; that is to say, cutaneous

and mucus pneumo-gastric system. Nature employs these two systems to dispose over a vast surface the means of maintaining the relation of the individual body with the external world, and preserving the equilibrium of the individual and reciprocal functions; the alteration whereof may, in the time of an epidemic, exhibit itself in a peculiar form, determined by that epidemic itself. The means above spoken of as those whereby nature obtains its salutary ends, are the last divisions of the nervous and vascular system. Consequently, in relation to the system of perspiration, respiration, and also of digestion, the action of cold will be dangerous; and if humid, still more so. This latter condition of the atmosphere, exercises a particular influence over the nervous system, as is proved by that state more or less observable of physical and moral uneasiness experienced during moist weather, and the susceptibility for nervous and rheumatic pains, exacerbations, or reappearance of certain diseases, &c. &c.

As to the system of digestion, the stomach being, as one of the organs most necessary to life, nearest to the centre of action of the organical functions, the *plexus solaris*; and also in sympathetic relation with all the other organs, it is not surprising if, as has been frequently seen, disorders of this viscus, prove so many causes, above all others, determining the disposition.

Among the internal causes should be chiefly remarked the moral affections and diseases. By what has been said, it may be judged which are the pre-existing diseases, which chiefly dispose to the cholera. These are dyspepsia, a term which denotes no more than a form of disease; various affections of the nervous system, particularly the intermittent and nervous fevers; typhus, &c.; and the state of convalescence from acute disease, as I have had occasion to observe at Warsaw.

Among the moral affections, the principal is the fear of the disease. If a strong impression has been sometimes the cause of a sudden death, why may it not be a cause disposing to the cholera? poverty and want are also principal sources of depression.

It will therefore be necessary,

1st. To have no fear of the disease: to have no belief in

its contagiousness is certainly a great advantage, as it diminishes the probability of being seized by it.

2dly. To avoid exposure to sudden changes of weather : to preserve the skin constantly in a regular condition ; that is, in a gentle perspiration by known means, among which the most important is the use of flannel upon the naked skin. Above all, in summer time, the precaution must be observed of keeping the feet constantly warm ; I say in summer, because in this season the morbid reaction of the internal organs, caused by the altered equilibrium of the cutaneous functions, is chiefly excited in the gastro-epatic system, as it is demonstrated by the sudden cholics, dysentery, and jaundice produced by suspended perspiration in the feet. The night air is very dangerous, because usually both cold and damp. These precautions are chiefly necessary in maritime cities, on account of the frequent changes of the winds. Thus also the use of tea can never be sufficiently recommended.

3dly. As to the regimen of nourishment, it should be sufficient, but not excessive ; for great is the number of cases which proceed from the disorders of the table ; as too long fasting produces morbid hunger, so the too eager gratification of that craving appetite is equally scrupulously to be avoided. As to the quality of the food, it should be nourishing and easy of digestion, excluding entirely fat meat, and vegetables which contain much vegetable water, as cucumbers, melons, water-melons, gourds, pumpkins, and all raw and unripe vegetables, sallads, radishes, &c. &c. And all green sour fruits, particularly such as the climate does not suffer to ripen ; those which have undergone concoction are less hurtful, as is the case with all aliments.*

* And whether it be consistent with a due regard to health to feed upon meats so nearly raw, as those which are so much relished in Great Britain, and the countries which follow its usages, is a question which is worthy of attention.

It is an error to believe,

1st. That meat, when much cooked, loses its nutritive qualities.

2d. That when almost raw, it tends still more to fortify the stomach.

The first of these opinions is erroneous, because the nourishment is furnished by the food whereof the quality is not changed by cooking ; but on the contrary, the cooking renders it more nutritive, and advances the operation of nature, instead of obstructing it. One of the principal

Every one should avoid the use of those substances with which his stomach does not sympathize idiosyncratically.

Inasmuch as the use of good, pure and old wine at meals is good, so is that of new wine, cider, new or poor beer, and the abuse of all sorts of liquors pernicious; as is also that of very

objects of digestion is to reduce the solid substances to a certain degree of liquidity, a necessary condition to the action of the capillary extremities, destined to absorb the nutritious part, a condition which is favoured by the process of cooking; for as the harder substances which cannot be acted upon by the mechanico-chemico-dynamic action of digestion, and must be expelled from the digestive canal entire, they are therefore not only a useless but a dangerous incumbrance, by requiring too strong an effort of the stomach. From the same cause, rear meats are still more prejudicial where soup forms no part of the repasts; for besides other advantages, soup has that of containing water, which is the principal solvent employed by nature.

As to the second point, the stomach is weakened instead of being strengthened, in consequence of the stronger action which it is obliged to exercise upon the flesh so nearly raw, in order to effect what the fire would have done, and to supply the imperfect effort of mastication. Thence the necessity of medicines, drugs, and strong liquors, with the idea of exciting lost appetite, and promoting digestion; thus accumulating the causes which produce dyspepsia, toothache, consumption, &c.

The case would be different if man was still in his original, simple, and robust condition: but the degeneration which the human machine has undergone through the influence of customs and social manners, which have become matters of necessity for those who have been born among, or have entered into the corruption of the age, this degeneration must have, of course, operated a change on the whole mode of being. Besides, if the use of this nearly raw flesh was so salutary as is supposed, why then has nature furnished us with teeth, and the instinct of chewing? why do those irruptions so frequently occur, and sometimes even rumination, in human beings? and why do the aged lose their teeth at that season of life which is characterized by its weakness, and why do they incline to the use of substances which are most tender, and sometimes of liquids only? may we not see in that a warning, which nature gives, that the stomach is too weak for the digestion of substances that are too solid? and in the case of children, why is it, that in their most tender ages they are without teeth, and that it is not until they have acquired more strength, that nature operates a change by presenting them with a new range more suited to their growing strength; and the instruments of mastication are most perfect at the time of life when the powers of digestion are most vigorous? why are the powers of mastication withheld or withdrawn at those extreme periods of life when such food as is not easy of mastication and digestion, is equally unsuited to the feeble state of infancy, or the used and decayed condition of old age? And again, if it was intended by nature that man, like the carnivorous beasts of the forest, should eat raw flesh, why are not their canine teeth developed to the same degree, or the digestive powers as great? And in the case of the birds of prey, in which *prima non fit in ore digestio*, let us examine the digestive system, and it will be seen how nature has supplied the absence of the teeth and salivary glands by a very strong and eminently fibrous stomach, with juices extremely solvent, and by a pancreatic gland, greatly developed, to effect the purpose of the saliva. The same

cold drinks in whatever time or circumstances, as sherbet, ice-water, &c. For common drink, I should prefer spring water corrected with wine, brandy, lemon, sulphuric acid (one drachm in twenty-four ounces of water), &c.

We should not immediately after meals engage in any serious occupations, which are better left to their appropriate hours; nor to turn night into day, nor day into night; in short it is necessary to avoid all kind of excesses and abuses, and to preserve ourselves in a moderate and natural state of excitement.

4th. Use should be made, and particularly in cases of weak and susceptible constitutions, of medicines which serve to reinforce the stomach, and give tone and vigour to the nervous system.

5th. It is important to breathe pure air, of course to change it often in the chamber, particularly of the patients, and to avoid humidity, and crowded assemblies of all sorts in close and ill situated places, particularly such as are exposed to the effluvia of stagnant waters, foul places, stables, &c. It will be very beneficial to purify the air of the habitations from time to time with chloride, of which the development will be obtained in small or ordinary private houses by a vessel containing an ounce of *chloruretum calcis*, and three pounds of water, or better with the disinfecting bottle of Guyton; and in such public buildings as are most disposed to decompositions, and putrid fermentations of organic substances, as hospitals, markets, &c. &c. where a more prompt, and abundant development

might be said of a vast variety of instances in the animal kingdom, which here we will not enumerate.

But confining ourselves to humanity, and to facts thereto exclusively referable, let us compare the different customs of different nations, and it will be seen whether in the countries where nature is consulted in regard to health, the toothache, which in most instances proceeds from an affection of the stomach, dyspepsia, piles, gout, scurvy, consumption, hypochondria, and above all, premature deaths, are so frequent as they are found to be among the English; if it be said, that all this may be the effect of climate, I answer, that the evil influence of climate will be increased by circumstances that are entirely dependent upon the will of man. And if this mode of living is in general bad, it is worse for those who lead a sedentary life. The gout is, as it were, endemical in England, and is always the accompaniment and consequence of disorders in the digestive system; and this simple circumstance might in some degree justify the abuse which is made of calomel and soda-water.

of the chloride is necessary, there should be exposed in a vessel over the fire of

Common salt	-	-	-	-	-	5 parts
Manganese	-	-	-	-	-	1 part
Sulphuric acid, diluted with 2 parts of water, 3 parts						

The chloride is disinfecting from its property of destroying miasmata by removing the hydrogen from them, which by changing it into hydro-chloric acid gas, neutralizes the ammonia which, with hydrogen, enters into the putrid animal and vegetable exhalations.

But above all, the greatest cleanliness should be observed, and every thing removed which tends to generate miasmata.

In case the authorities of the different countries shall be disposed to employ the means of public utility, the best will be :

1st. To enforce the observance of the greatest cleanliness in the cities and towns, and especially where population is most dense, and in the vicinity of stagnant water.

2d. To recommend the use of disinfecting substances (as the chloride) in private habitations, and to enforce it by the laws in public institutions where it is absolutely necessary.

3d. To show the unwholesome effects of a crowded population in a contracted space ; to provide against this evil where it is necessary with the public purse, and to assist in giving employment to the poor and industrious classes.

4th. To shut up the theatres, and to inculcate a less frequent attendance in the churches. In such exigencies the first are useless, and the second not necessary: the same thing may be said of all tippling houses, and places of debauch and dissipation.

5th. To have the dead buried far from the habitations of the living.

6th. To establish temporary hospitals (wood buildings) in suitable places, in elevated and isolated situations and where there is a free current of air, and trees.

These hospitals will serve,

1st. To administer medical aid to the poor.

2d. To establish a central point for medical observation.

3d. To administer with the greatest promptitude the means of cure: and in this view it might be well, if the wealthy classes would unite in procuring a building, furnished with all things necessary for the reception of those who would be assured of the most intelligent, skilful, and diligent attentions, which is impossible to be obtained in any private residence; this project, beside the said advantage of being taken better care of, will be preferable, since without preventing the relations from visiting the patients, it would be the means of avoiding the evils which the presence of the person affected by cholera would occasion in his family.

It is true that, generally speaking, the cholera attacks the poorer class, in preference. But it has also been observed, that where its influence has been very strong, no class has been exempt. We do not yet know, in case the cholera should exhibit itself in North America, what may be its intensity. We know, however, that where the distemper, known by the name of influenza reigns endemically, it is experienced by every class with sufficient force.

Cholera Morbus is not contagious.

The intrinsic nature of the general morbid cause being unknown, no better epithet can be applied to the cholera morbus than that of epidemic, which serves at least to designate its principal feature observable by the senses; that is, its being general, which this word expresses by its Greek derivation, *epidemos*, upon or over the people. This best distinguishes it from *endemic*, in the people; which applies where the cause is local, and confined to a certain portion of the earth. This last indicates, that the circumstances which give rise to the development of the morbid cause, are found in the topographical condition of a country; constant and invariable (such as mountains, water, valleys, plains, prevalent winds), or accidental (such as manufactories, populousness, certain kinds of agriculture, shops, &c.), and that these circumstances assist in the study of the different morbid causes from which may be drawn useful applications, with the most luminous results, as was instanced in the immense advantages

derived from draining the Pontine marshes in Romagna, the stagnant waters in the department of Mantua, and in other provinces of Lombardy, and in plantations made upon them ; which have eradicated in those regions the malignant intermitting fevers, which have appeared in those places, where the plains have been inundated for the cultivation of rice, or the formation of artificial meadows. This could not have resulted from an epidemic, which does not furnish us with material facts, from which to deduce useful and satisfactory reasoning. How can the medical observer investigate the character of this epidemic, when up to the present time no remedy has been discovered against its effects, its nature being so imperceptible and fugitive, as to render all precautions vain, though taken in time, against the propagation ? For myself, I conclude that the cholera morbus is simply epidemical, and may be proved such by reasoning and facts. The best reasoning is that drawn from an attentive examination of material facts, relating to the properties of diseases. From an examination of the properties of those which are truly contagious it will be ascertained whether the cholera morbus belongs to them.

Those particular animal *fomites* are called contagions, which are produced in the animal organization when diseased, in a determinate form of malady ; these by coming in contact with other individuals, produce at least an analogous form of disease ; besides the material vehicle, they have also an immaterial one of an unknown nature ; these *fomites* occasion a phlogistic process in the skin or mucus, by which process they are reproduced (this is the characteristic of perfect contagions) ; they affect the organization all at once by exciting a critical fever of an inflammatory character ; they never attack the same person twice (these two last properties constitute the definitive character of perfect volatile contagions, such as *small-pox*, *scarlatina*, *morbillus*, *contagious typhuses*, &c.) The most minute observations have never discovered any trace of inflammation, or any of its effects ; such as a morbid secretion, which might be regarded as the vehicle of the immaterial principle ; as is manifestly observed in *small-pox*, *pestis bubonica*, *dysenteria castrensis*, *ophthalmia Ægyptiaca*, &c. But allowing

that the inflammation may be so slight that the nervous symptoms prevent its detection, so rapid in its course as to be unobservable by the senses, so limited as to produce only the secretion of a natural humour, which may serve as the vehicle of the contagious *fomes*, what hazards have not been encountered to ascertain whether the cholera is of a contagious nature or not? Repeated inoculations, both from the blood and the *gastro-interic* juices of living and dead sufferers have been made, both under the cutaneous surface and in the mucus, without any symptoms having been presented of the slightest morbid reaction. If these do not suffice, there are other facts in corroboration of those already mentioned. None of the physicians who engaged in the cure of those afflicted with the disease at Warsaw took it. None of the nurses, none of those who attended the patients in private houses, were attacked by it. How often have I myself personally administered professional attendance to the sick, who had been abandoned from terror by their relatives! If in any family the disease broke out in several of its members, and at periods more or less distant, a sufficient reason for it was to be found in their being all exposed to the influence of the same determining causes; among these, fatigue and distress occasioned by the war (in Poland), or by the selfish tyranny of the despot, whose last thoughts were for the happiness or health of the people. This is still more clearly proved from the known fact, that whenever any member of a family in affluent circumstances was seized with the malady, none of the others who availed themselves of the advantages of fortune without abusing them, were ever attacked.

I have stated that another property of perfect volatile contagions is, that they cannot attack the same person a second time. But the cholera does reattack the same person as readily and as dangerously as before.

If this malady be really contagious, why can there not be produced from the vast number of cases, incontestable examples of the identical malady being generated by contact in any manner whatever, as is known to be the case in small-pox, which passes from one individual to another by inoculation, or by any other kind of contact?

I have said, that the epithet of epidemic is more suited to the cholera of which I speak; if it be so, why seek for another, and more imperfect one, in that of communicable? because either the disease communicates itself by contact (which in no case happens), and then it would be better designated as contagious; or if it be intended to express by the term communicable, that the producing cause has nothing in common with what belongs to the earth, except as it exercises its influence upon it, it would then be best to call it an epidemic. If this be so, if such be the conclusion of the majority of physicians who have observed the malady, why make use of a word which comprehends in itself a meaning as intelligible as it is frightful? why compel the authorities entrusted with the public welfare to adopt strong measures unnecessarily, such as *cordons sanitaires*, quarantine regulations, &c. the inutility whereof has been plainly seen in the fact, that the cholera made its way into several German cities, in despite of the strictest *cordons*, which had been long established at all points of communication with those which had the disease?

Some contagionists hold, that the malady is reproduced and propagated by means of an exhalation, *sui generis*, from the bodies of the diseased; but it is worth while to remember that what they call *exhalation*, must be the effect of a most vital process, showing itself in the cutaneous system which nature has especially intended for exhalations; that exhalations of such a kind from a living body are ordinarily produced by some of the principal pathological *conditions*, such as congestion, irritation, inflammation, circumstances necessary to any morbid secretion whatever, in order to increase in quantity, and alter it in quality. On the contrary it is observed, that one of the most remarkable symptoms of the cholera is, that the skin partakes in the highest degree of the general spasmodic condition of the fibre, which deprives it of the power of exercising its functions; it becoming, as it were, insensible, with no indication of heat (a circumstance necessary to the development of exhalation); in short, in a state of almost absolute inactivity.

They cite, in support of their opinion, the manner in which the cholera is propagated; but this may be best explained by appealing to circumstances more or less powerful, either general or peculiar to certain localities favourable to its progress, without our being bound to consider it contagious; since viewing the matter as they do, all epidemic maladies would be contagious only in consequence of their resemblance in some general circumstances. The facility with which a contagious malady may become epidemical, does not necessarily lead to the conclusion that an epidemic must be always contagious.

So also its progressive advances in a given place may depend on its gradual increase in intensity, modified by the different degree of violence, and number of general determining causes, as well as by the different degree of predisposition in individuals; circumstances which clearly explain why the epidemic easily revisits the same locality, and why its effects are repeatedly manifested in the same houses.

Nor is it extraordinary it should break out in ships, which combine together all the determining causes; such as vitiated atmosphere, humid cold, bad provisions, scarcity of them, &c. circumstances which, combined with that of a ship's coming from an infected country, may lead to the belief, that it is itself a material vehicle for transporting the malady.

Nor is it strange that this epidemic should have had, and has a predominating influence in cities situated near the water, as they are generally found to be in low, flat, foggy places, and thickly peopled; the moisture being constantly supplied by marshes, which even originate the development of the miasmata produced by the decomposition of organic bodies; miasmata which in the same manner as they become the cause of other malignant disorders, may easily be a vehicle, and even the means of reproducing the epidemic cause; this makes the use of chloride very reasonable and prudent, it being disinfecting, for the reason already cited.

Questions.

1st. Will the Cholera find its way across the ocean to North America?*

Ans. It would be more probable if the disease were a contagious one, that it should not reach this country: for the atmosphere of the sea would be an obstacle to its arrival, and sanitary measures might prevent all intercourse with the infected countries. But the cholera is simply epidemic; it has already passed over seas, and it follows the course of water and travels westward.

2d. Should it pass the sea, and reach North America, will its effects be very destructive?

Ans. Those circumstances which are most favourable to its reaching North America, are no less so in regard to its force and progress there; and the frequency of death in this region from sporadic diseases, may be a means of judging of the effects of an epidemic disease.

Principal differences between the cholera and yellow fever.

Having once happened to be present at a conversation which took place at Pavia, between a Dr. Herman (who announced himself as chief doctor of the marine of the United States in the Mediterranean—*Medicin en chef de la marine des Etats Unis dans la Mediterranée*), and Scarpa, to whom I had the honour of introducing him, and having heard the said Dr. Herman express his opinion in favour of the identity between these two diseases, I have been decided by that circumstance, to show the principal points of dissimilitude between them.

1st. The generating causes are different, as may be seen by the circumstances which accompany the two diseases, and by the effects which they produce; thus the cholera has prevailed, it is admitted, in soils, climates, and situations where the yellow fever has originated, but the yellow fever has

* This pamphlet was written about three months before the appearance of the disease upon the American continent.—*Note of the Translator.*

never reached to those latitudes and situations, nor subsisted in those degrees of cold where the cholera has exercised its most malignant and destructive energy. The yellow fever has never survived but in the season of the greatest heat; the cholera has endured longer in the winter season and in high northern latitudes; it has been very fatal also in tropical and warm climates, but chiefly so when they have been visited by unusual cold.

2d. The regimen which is fatal in the one, is in the other preservative: thus the cholera requires the use of flannel, abundant and substantial food, comprising flesh, wine, and liquors. In the yellow fever flannel is of no use, the perspiration being active, and a vegetable and cooling diet is necessary.

3d. The morbid process in the respective diseases differs: thus in the cholera it is limited to a nervous affection, whereas in the yellow fever it manifests itself in a dynamico-organic process, that is to say, inflammation of the *gastro-hepatic* system, as is proved by the course of the disease, the method of cure, and by dissection: all which show that there is a difference not only in the nature, but in the intensity of the producing cause; that which produces the cholera being so much the more intense, as it occasions death in a few hours, without intermediary process, such as inflammation with its various consequences, as is seen in the yellow fever, whereof the course at the shortest is never less than three days' duration.

4th. Dissection: in the cholera are observed signs of spasm and congestion; in the yellow fever are discovered manifest symptoms of organic changes in the *gastro-hepatic* system, &c.

Thus in a few pages I have expressed my opinion on the most interesting particulars of this epidemy. If my manner of treating it should prove satisfactory, then has my object been attained, if not, I shall be glad that any one by more correct and just reasoning should show where I have been mistaken; because it is by inter-communication and a liberal exchange of ideas, that truth is brought to life. How often has error proved the basis of truth!

