A medical and topographical history of the cholera morbus, including the mode of prevention and treatment / By Scouttetten ... With a report read at the Royal Academy of Medicine, at Paris, Sept. 17, 1831. Translated from the French, by A. Sidney Doane.

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CHOLERA MORBUS.

A

MEDICAL AND TOPOGRAPHICAL

HISTORY OF THE

CHOLERA MORBUS,

INCLUDING THE MODE OF

PREVENTION AND TREATMENT.

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WITH A REPORT

READ AT THE ROYAL ACADEMY OF MEDICINE, AT PARIS,
SEPT. 17, 1831.

TRANSLATED FROM THE FRENCH,

BY A. SIDNEY DOANE, A.M., M.D.

BOSTON:
PUBLISHED BY CARTER AND HENDEE.
1832.

BOSTON CLASSIC PRESS:
I. R. BUTTS.

PREFACE.

AMID the afflicting events which lour upon and threaten us, a plague formidable from its ravages and progress, has attacked the north of Europe. Both princes and people are terrified, and the instinct of self-preservation, which governs all other interests, has diverted our attention from political debates, and fixed it upon the prospects of our material existence. Every day the papers present statistical statements in regard to the Cholera Morbus ; each day new facts are added to those already known : but all is vague and uncertain ; and until this moment the only thing positive to most minds is, the number of victims to the disease.

We propose in turn to speak of the Cholera Morbus, not merely to paint a frightful picture of its symptoms, but to publish to the world the consoling reflection which occurred to us long since, and

which facts constantly accumulating only confirm, viz. that the Cholera Morbus will not extend to us.

In thus thinking, we are not disposed to imitate those who close their eyes to avoid the danger: no! we yield only to conviction, and we express ourselves confidently, for it is to fulfil a duty and to oppose the progress of fear. Before bringing forward the proofs in support of our assertion, so formally opposed to general opinion, we think, that a complete but concise history of the Cholera Morbus, (which cannot be found in our medical books) will be read with pleasure. In order to trace the Cholera, and to form an idea of it collectively, we have constructed a chart of the places where it has occurred. Its course and different directions are marked by a red line.

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MEDICAL AND TOPOGRAPHICAL HISTORY

OF THE

CHOLERA MORBUS.

The term *Cholera morbus* is an incorrect expression formed from two Greek words, χολη, *bile*, and ρεω, *to flow*, and a Latin word, *morbus*, *disease*.

The cholera appears in two forms; it is *sporadic*, attacking single individuals only, or *epidemic*, affecting many individuals at the same time and in the same place. The sporadic cholera may exist in every place and at all seasons, but it rarely occurs in winter: it depends on individual causes which will be mentioned hereafter. The cholera cannot be epidemic unless these individual causes are attended by numerous local or general circumstances which are now well known and determined.

HISTORY, PROGRESS, MORTALITY.

The existence of the cholera can be referred to the highest antiquity. Hippocrates has described it; it is true, very imperfectly, but we can trace in his account of it, the principal characters of the disease. It seems to have been described even before him, by a Chinese, named *Wang-Chou-Ko*, under

the term, *Ho louân*. The Hindoo physicians assert, that the cholera has always existed in Hindostan, as one of the diseases of the country. Its former character compared with that it now assumes was mild, and at certain seasons of the year it attacked a few individuals in different parts of the country. We must descend to Cœlius Aurelianus, however, (an African physician who flourished A. D. 140, 500 years after Hippocrates,) for a satisfactory account of the cholera and its remedies. In reading his description, we are astonished by the correct and extensive observation of medical men at so early a period.

For a long succession of ages, medical science remained stationary in respect to the cholera. Physicians, in speaking of the disease, only repeated what had been mentioned already. About the end of the fifteenth century, the cholera seems to have ravaged a part of Europe and to have swept off numbers in France: at this time, 1445, it was called *trousse-galant*, from the celerity with which it destroyed young and vigorous men. The cholera has since appeared in Europe as an epidemic. Zacutus Lusitanus has described that of 1600. Sydenham has written, with much talent, the character and mode of treatment of the epidemic cholera which raged in London in 1669 and 1676. John James Schwaller of Basle, gave, in 1696, in the Ephemerides of natural curiosities, the history of an epidemic existing in Switzerland which was very analogous to the cholera. So, too, Fischer has written on the disease which attacked the inhabitants of Pegau, in Lower Saxony, at the close of 1717 and early in 1718.

In the *Memoires de l' Academie des Sciences*, we find, from the pen of the scientific Malouin, a description of the epidemic cholera which commenced actively at Paris in July, 1750: many died: the author observed that bleeding benefited most of those affected with the epidemic. In 1765, the cholera raged at Duneburg; this disease has been described by Dr Lentin. In 1766, it appeared at London; the history of this

epidemic has been given by Dr Sims. In July, 1779, it appeared in Brittany, and continued till October : the peasantry and the British prisoners confined in Fougères were principally affected by it.

In 1822, the summer being very warm, the cholera showed itself at Lyons : from the number of persons attacked by it, the term epidemic was applicable to it, but the disease was neither violent nor dangerous. In the middle of the summer of 1824, there were numerous cases of the cholera at Paris, and as they appeared after eating ices, the police took measures to ascertain whether the disease might not be caused by some poisonous substance. If this same thing should happen now, all Paris and even all France would be alarmed, and we should conclude that the miasmata productive of cholera had been introduced by some fugitive from St Petersburg or Moscow.

These instances prove that the cholera is not a new disease, and that our ancestors have frequently felt its severe attacks.

But of all the epidemics of cholera, the most formidable perhaps ever known, is that which commenced in India, and is now extending its ravages through the north of Europe.

The vast extent of territory over which it has passed, and its rapid and fatal progress, have terrified every one; we now tremblingly trace its course on the map, as we would that of a devastating army. We shall devote particular attention to this epidemic. But we would remark, 1st. That the cholera constantly exists in India, and that numerous and destructive epidemics have already been mentioned and described by celebrated physicians and travellers, particularly by Bontius in 1642, and Dillon in 1685. The histories of the epidemics of 1756, 1759, 1781, and 1782, have been given by Father Jean Baptiste, a jesuit, and by two Bengalese physicians, Messrs Wise and Corbyn. The epidemic of 1817, described by Gravier, appeared in Upper Bengal in an immense army assembled to make war on the princes of India. The cholera appeared at Calcutta when there was a dead calm, and a stifling moist

heat; the thermometer marked from 32° to 35° of Reaumur; the hygrometer of Saussure from 90° to 100°; the disease extended over all the coast of Coromandel, to Ceylon, Malabar, and Malacca. Gravier thinks, that formerly the epidemics were not so general as that of 1817, because at that time, all India did not belong to one sovereign, as at present; the communication was more limited, and the country was not traversed by large armies.

The most general opinion is, that the epidemic of 1817 commenced at Jessora, a city thirtythree leagues northeast from Calcutta; it swept off one tenth of the population, and proceeded in less than a month to Calcutta, desolating every village in its course. Before the end of August the natives were affected with it, and early in September the disease appeared among the Europeans.

From January till May, 1818, it raged very violently in Bengal from Silhet to Cuttack, and towards the interior from the mouth of the Ganges to its confluence with the Jumma, a space of 148 square leagues.

Leaving Bengal, the cholera stopped awhile on the western bank of the Ganges and the Jumma. It then broke out in all its fury at Benares, where 15,000 persons died in two months, and at Allahabadh destroying 40 or 50 per day. It soon extended into all the other places on the same banks, and with the same fatality. In the district of Goorackpoor, 30,000 persons died in one month: and it then ravaged in the same manner, Lucknow, Cawnpore, Delhi, Agra, Muttra, Mecrat, and Bareilly.

The 6th or 7th of November, the epidemic had reached the grand army concentrated at Gubbulpore, Mundellah, and Sangor, under the command of the Marquis of Hastings. It was composed of 10,000 English troops and 8000 native auxiliaries. The different divisions of this army lost by the cholera many more men than in battle; in twelve days, there were 9000 deaths.

This state of things could not continue long, for unless the disease had been immediately arrested, the whole camp would shortly be depopulated. Happily at this period the commander-in-chief resolved, as a last resource, to march to another place; this was immediately done, the army proceeded eastward, and very soon the Marquis of Hastings was fortunate enough to inform his government, that after marching fifty miles, he halted on a dry and elevated soil, where the disease rapidly diminished.

The cholera then proceeded across the Deccan, travelling from fifteen to eighteen miles per day, and stopping in several places from two to six weeks; this was the case at Hussen-Abad, where the mortality for several days was frightful: it then proceeded along the banks of the Nerbuddah to Tanah, passing by Aurungabad, Ahmednagure and Poonah. Following the direction of the coast, it reached Bombay in August, 1818, having traversed the peninsula of India in twelve months after its appearance at Calcutta.

While the disease was ravaging Hindostan, it extended along the coast of Malabar and Coromandel, and arrived at Madras the 8th of October. The possibility of transmitting the cholera by sea, was proved by its passing from Coromandel to the Isle of Ceylon; it appeared at its capital, Candia, in December, 1818, with more violence than on the continent. The 15th of September, 1819, Mauritius was also infected. The cholera did not appear there till the arrival of the English frigate Topaz, which left Ceylon while the epidemic was raging. At the time of sailing the crew were healthy, but at the commencement of the voyage, several men were taken sick, and many of them had died when the frigate anchored at Port Louis. The disease which existed on board, rapidly communicated to the inhabitants of the city, where fifty persons died per day; in six weeks 6000 individuals perished, but its ravages did not extend beyond the coast, and affected only the black population; for while in the hospitals of the city, 94 patients out of 133, died on the plantations the mortality was not more than ten or fifteen out of a hundred.

The cholera appeared in the adjacent island of Bourbon, in December, 1819; the government had taken measures to prevent all communication with Mauritius, but notwithstanding their precautions, two vessels of the different islands maintained a secret communication, and the disease was imported. Of 257 persons affected with the disease, 178 died. In the last six months of 1819, the cholera, pursuing its route towards the southeast, had attacked the China Indian peninsula; it was very fatal at Siam, and 40,000 individuals died with it at Bankok. The cholera then proceeded towards Malacca and Singapore. At the end of April it had appeared on the northern coast of Java, and during May, it raged in the interior of this island.

Cochin China and Tonquin were attacked by it in 1820; in December of the same year, the cholera entered China, and began to rage at Canton.

Notwithstanding the minute precautions of the magistrates at Pekin, this capital was invaded by the disease early in 1821, and during this year and the following, the mortality was so great, that everything for the funerals of the poor, was furnished at the public expense. Individuals when engaged in their business, frequently fell down in the middle of the street with a sudden attack of cholera, and died some hours after in horrid convulsions.

Let us now return to Bombay, and describe the epidemic to the north and west, in approaching Europe; let us then trace its recent course through Russia, which has terrified the people of the west.

In July, 1821, the merchant vessels between Bombay and Muscat (Arabia,) carried the cholera into the latter city, where 60,000 individuals died; many perished ten minutes after the attack. Thence the disease extended into all parts of the Persian gulf, to Barhem, Bushir, and Bassora. In the latter city 18,000 perished, 14,000 of whom died in fifteen days.

From the Persian gulf, the cholera extended into the interior

in two directions, following the line of commercial intercourse; on one side it reascended the Euphrates, passed through Mesopotamia, and arrived in Syria, and was carried by the Tigris from Bassora to Bagdad. On the other hand it entered Persia. The city of Chiras, with a population of 40,000, lost 16,000 in the first days only.

The disease extended from this latter city into several districts to the north and south of Persia. Ispahan was however preserved from it, as the caravans of Chiras were not allowed to enter the city. The route which they were then obliged to take, passed through the city of Yezd, which paid dearly for this forced visit, as 7000 people were swept off by the cholera. During the following winter it rested in Persia and Syria.

In the spring of 1822 the currents of miasmata, which passed through Persia and Syria, resumed all their energy, which seemed to have been suspended during the winter, and continued their course in all their primitive vigor. Mosul, Beri, Aentab, and Alep, were infected. In Persia, the disease extended during September to the north of Teheran, through all Kurdistan and Tauris.

During the spring and autumn of 1823, Diarbeck and Antioch were afflicted, and the cholera ravaged several of the cities on the Asiatic coast of the Mediterranean. It then proceeded in an opposite direction and arrived at Baku, on the borders of the Caspian sea. At the close of this year, in the month of September, it arrived in the Russian city Astracan, at the mouth of the Wolga. It appeared first in the marine hospital; from the 22d of September to the 9th of October, 144 died there, that is, about two thirds of those attacked with the disorder.

Energetic measures were taken by the authorities to stop the progress of the disease; it however continued to show itself until arrested by winter, and did not reappear the following summer. This same winter also destroyed that branch which had passed through Syria, and was proceeding toward Egypt.

The cholera reappeared in Java in 1822, and swept off 100,000 inhabitants. After visiting Ternat, Celebes, and Banda, in 1823 it attacked Amboyna for the first time. The mortality at Timor was also very great, and during several years it continued its ravages in China. After desolating several cities of Mongolia, it arrived in the end of the year 1826 on the frontiers of Siberia; but in February, 1827, it was happily arrested by a north wind, which continued to blow several months.

After the first attack, Persia was visited several times by the cholera; in October, 1829, it appeared very seriously at Teheran, at the residence of the king, but the winter arrested its progress for some time; it however reappeared in the middle of June, 1830, in the provinces of Mazanderan and Shirvan, on the southern coast of the Caspian sea. From this latter province it passed through the city of Tauris, from which it swept off 5,000 inhabitants, and arriving at the frontiers of Russia, it rapidly advanced toward the interior of this empire. In two provinces, 4,557 persons were infected, and more than a third of them died. On the 8th of August, it appeared at Tiflis, the population of which was soon reduced, by death and emigration from 30,000 to 8,000. The inhabitants wishing to stop the mortality, which rapidly increased, had recourse to processions and to religious ceremonies. This disease, however, was only extended by these assemblies.

At the same time, the cholera arrived at Astracan the 1st of July. In ten days 1229 individuals were attacked, one third of whom died.

The disease penetrated into the heart of the Russian empire and proceeded from Astracan, along the course of the river Wolga, which distributes its waters in the most populous provinces. It raged extensively among the Cossacks of the Don, and the capitals of the different districts on the route to Moscow, were successively afflicted. On the 28th September, 1830, the cholera appeared at Moscow, having passed over the country from Astracan (300 leagues) in less than three months. En-

ergetic measures were immediately taken at Moscow by the government to afford every assistance to the sick and to oppose the progress of the disease. The city was divided into forty-seven departments, which were effectually separated by barriers and guards. The 11th of October, thirteen days after the attack, 216 cases of cholera had been reported; 76 of which were fatal. When the disease had extended farther the proportional mortality was still greater. On the 10th of November, it was reported that 5507 persons had been attacked with the cholera, of whom 2908, or more than one half, perished. The disease then became less intense at Moscow, but it continued its progress, which was favored by circumstances connected with the state of the Russian Empire. In fact, while the government took measures to extinguish the flame which ravaged one of its capitals, it sent regiments from the different provinces infected with the cholera to other parts of the empire, and particularly to the ancient provinces of Poland and to the frontiers of that kingdom. The military carried with them the miasmata of the cholera. Thus the disease was communicated to the different corps of the Russian army, extended in the provinces occupied by them, and when the heroic Poles had arrested, by their efforts and bravery above all eulogy, those armed hordes with which the Autocrat deluged their soil, they had, at the same time, to contend with a new enemy.

During the winter from 1830 to 1831, the cholera rested, and after the fall of snow it extended into Poland, adding the horrors of pestilence to those of famine and war.* Most of the cities of Poland have been visited by this terrible disease

* It would seem from the documents furnished by the Polish government, that the cholera did not appear at the camp, at Warsaw, until after the battle of Ygania.

The disease was arrested and even stifled by the medical men; but the battle of Ostrolenka, on the 26th of May, having brought the two armies in contact, the cholera appeared again among the soldiers and the inhabitants of Warsaw. — *Circular of the Polish government to its agents at foreign courts*, June 1, 1831.

brought by the different military corps, and it has often been remarked that it appeared much more violently in the Polish army after a serious engagement with the Russians. But the disease, confined at first to the interior of Russia and Poland, soon arrived on the coasts of the Baltic. Up to the 12th of June, 2541 had been attacked at Riga, 1202 of whom died. The 26th of May, the cholera had arrived at Dantzic, where it did not seem to rage violently for the first few days.

Towards the south, the same scourge made rapid progress. The miasmata, carried from the neighborhood of Kiof by the army of Gen. Rudiger, passed through Ukrain, Podolin and Volhynia, extended in these three provinces and cut off many of the population, particularly the Jews, who were there very wretched. At Brody also, where most of the inhabitants are Jews, (24,000 Jews of 30,000 population) on the 9th of June there were 800 deaths, of 1700 affected. Thence it proceeded into Gallicia, particularly to Lemberg, where many perished.

The Krapach or Carpathian mountains would probably have prevented the cholera from passing from Gallicia into Hungary, but it entered this province through another channel. The cholera which had appeared in 1830 at Astracan and in several cities on the shores of the Caspian sea, passed through the countries of the Cossacks to the borders of the sea of Azof, and appeared at the end of autumn in the cities of Azof, Tcherkask, and Taganrog. Here it communicated itself to the merchant vessels, they carried it to Sebastopul, the grand maritime depôt of the Black Sea at the southern extremity of the Crimea, to Nicoolaieff, and to Kerson, situated on the mouths of the Bug and the Dnieper, and to Odessa, which is the greatest commercial port of the south of Russia.

From the latter city, it had passed at the end of winter to Ovidiopolis and Akermann, which are situated on the two banks of the mouth of the Dniester; and in February, 1831, it had proceeded from village to village along Bessarabia, washed by the Black sea, to the mouths of the Danube, 200 leagues from

that part of the coast of the sea of Azof, where it appeared first in the October preceding. Having thus passed along the river into the interior of the country, the cholera extended along the Danube and the Theiss. In July, 1831, it reached Pesth, where the mortality was very great; thence it went to Buda, and the journals now (August 15) mention, that it is at Raab, a city thirty leagues from Vienna.

Other accounts state, that the cholera has passed from Gallicia into Hungary, on board the vessels which descend the rivers loaded with salt.

Advancing into Bessarabia, the cholera arrived at Bender, forty leagues from Odessa; then, it either reascended the Pruth, or gradually extended itself and reached Faltchi and Jassi, the capital of Moldavia, where, notwithstanding the filth of a population of 30,000, inclosed in six narrow streets, it had already become less violent in the month of July; but it seems to have penetrated into Wallachia, and at the commencement of August, it was ravaging Brailow. It is now about 100 leagues from Constantinople, and only two days' sail from this capital.

The cholera has appeared in almost every city of Poland, which has been overrun with armies and ravaged by war; in May it showed itself on the right bank of the Vistula, to the north of Warsaw, and along the Narew in the cities of Sierock, Pultusk, and Makow; then to the east of the Narew at Plonsk in the palatinate of Plock, on the left bank of the Vistula, in the city of Warka, and in Grojez and Rawa; it still exists to the east of Warsaw in Lowicz. In the month of April it appeared at Cracow, where, in the first days alone, 46 out of 68 died; but the cholera did not rage much in this city.

Notwithstanding the precautions taken at Moscow, the cholera continued its course towards Novogorod; from thence it arrived at St Petersburg and Cronstadt; then it appeared in the month of July at Koningsburg, where many perished. From the ap-

pearance of the cholera at St Petersburg, to the 22d of July, of 7,102 persons afflicted, 3,520 died.*

The *mortality* produced by the cholera is doubtless considerable, but it has been increased by exaggeration and fear. According to the researches of Moreau de Jonnès, it would seem that at Jassora, where the epidemic commenced, 10,000 persons died within the first two months. In the district of Dacca, situated between the Ganges and the Bourrampater, in sixteen months, from August, 1817, to January, 1819, of 6,354 patients, 3,757, or more than half, perished. In the city of Sylhet it appears, from reports worthy of confidence, that of 3,316 houses, containing 18,896 inhabitants, in five months 10,000 were attacked with the cholera; of these 1,197, or one in eleven, died.

The mortality was less in the other cities of Bengal. Patnah, with a population of 250,000, lost only 1,539 in three months. In Cawnpore, with a population of 80,000, there were only 500 sick, of whom 50 died. At Saharunpore, of a population of 30,000, only 250 died; but the cholera reap-

* Since the publication of the original work, the cholera has advanced rapidly. Vienna and Smyrna have been affected; — the deaths in the latter place on the 22d of October, were 250.

It has also appeared to an alarming extent in England, and is still spreading. The King's speech, at the opening of Parliament, states, 'that whether it is indigenous or has been imported from abroad, is a question involved in much uncertainty; but its progress has neither been so extensive nor so fatal as on the continent.'

The cholera showed itself first at Sunderland; where it is now on the decline. From thence it has extended to other places.

The number of cases and deaths are as follows:

DATE.	PLACE.	CASES.	DEATHS.
December 28	Sunderland,	528	197
"	Newcastle,	286	99
"	North Shields and Tynmouth,	26	9
"	South Shields and Weston,	2	
"	Gateshead,	143	55
"	Haughton-le-Spring, and Pensher,	29	14
"	Seaham,	3	1
27	Haddington,	6	4

peared there several times, and also at Agra, which suffered cruelly on its return.

Considering the epidemics of 1817 and 1818 separately from those which followed, the English physicians of Bengal say, that the mortality was less than was generally believed. They estimate that it was in proportion to the extent and density of the population afflicted, and was greater at the beginning and middle of each attack than towards the end. When it was met by medical assistance, it rarely equalled a third of those afflicted, and was often confined to a fifth; when the disease was left to itself, a half, or even two thirds of those attacked, perished.

In the army at Madras, the following is an official document of the ravages of the disease:

	EUROPEANS.			NATIVES.		
Years.	Force.	Infected.	Died.	Force.	Infected.	Died.
1818	10,659	1,087	232	58,764	3,314	664
1819	10,125	564	85	63,772	3,779	734
1820	9,416	356	69	76,870	3,322	758
1821	9,353	357	39	82,046	2,527	830
1822	10,813	774	170	74,707	548	199
Total in five years,		3,138	595		13,490	3,185
Add		526	100		2,340	550
Total		3,664	695		15,830	3,735

Thus of the mean effective European force of 10,000, more than 3000 were attacked with cholera during five years, of whom about 700, or from a fifth to a fourth of those sick, died; and of a mean effective force of 71,000 natives, 15,830, or one in four and a half, were attacked with the disease in the same period. The loss was almost one fourth of the individuals affected.

If we compare these results with those furnished by the military hospitals of France, we find that the mortality occasioned by the cholera, although considerable, is not so great as at the

first view one would be led to suppose; — thus in France, during peace, our soldiers are well dressed, well fed, and well lodged; but a twentieth of the effective force are in the hospitals, or five out of one hundred are sick, and usually the twentieth of these die. During war, the proportion is double, and sometimes treble. It follows, that during peace, of an effective force of 10,000 men, 500 are in the hospitals; in five years there would then be 2,500 sick, and 125 deaths. During war, there would be 5000 sick, and 500 deaths. It will probably be objected, that in the English army the cholera did not prevent the development of other diseases — the observation is correct; but every physician has remarked, that when an epidemic shows itself, the accidental diseases are very few.

Dr Conwell, whose information was collected principally in the presidency of Madras, states, that the mortality of each annual irruption of the cholera in the peninsula of India, may be estimated at 20 per cent on the military, and 6 per cent on the population; or in other words, one of five of the troops, and one in sixteen of the inhabitants, are attacked. The population of the British possessions in India, is estimated officially at 40,000,000, not including the conquests of the last wars: this estimate, which may be considered a minimum, would bring the annual mortality by the cholera in Hindostan, at 2,500,000; if we diminish this one half, allowing for some intermission in the disease, the ravages of this scourge during the last fourteen years, have swept off 18,000,000 of inhabitants.

The ravages of the cholera have not been as great in every country as in India. In ten cities of Syria, which were infected in 1823, but a small number were sick, and very few died.

Tripoli has 15,000 inhabitants, and of thirtyone sick, only five died. Tortosa, where the population is 600, of 123 sick, 39 died. At Lattacia, there were 511 sick, and only 63 died; the population is 6000.

In Russia, the ravages of the cholera have varied; we think that these variations may be explained, by causes dependent

upon the place where the disease has raged, which are explained in our last chapter. In general, it is true, that the mortality has not been less than in India, but fewer people have been attacked by the disease. At Odessa, with a population of 16,000 there were sixteen sick, and but eight died. At Moscow, with a population of more than 300,000, there were 8,130 sick, and 4,385 deaths. At Petersburg, with a population almost equal to that of Moscow, of 7,102 sick, 3,520 died; thus the proportion of the sick to the population of these two cities, is about as one to thirtythree — while in India this proportion is often as one to two.

The imagination is affrighted, and doubtless with reason, by the ravages now made by the cholera, but the middle age presented plagues much more formidable.

M. de Zach has mentioned some curious details of the plague, which in the 14th century, ravaged every part of Europe. — By giving them, the cholera perhaps would seem less frightful. This disease seems to have been introduced into Muscovy, by the Mongols and the Tartar hordes of Asia, who conquered and subdued Russia; in 1351 it extended through the whole country — the mortality was frightful and general; the cities and the country were depopulated. In the city of Pleskow, where the epidemic raged three times, thirty dead bodies were laid each night at the doors of the churches. In 1364, only fifteen inhabitants remained in the city of Smolensk, where the population had been immense; and in Gluchow and Balesow, not a soul. Novogorod, Kasan, Twer, Moscow, &c, were depopulated. In 1365, the sick, according to the chronicles of Plescow, were covered with tumors and biles, which had not been remarked in the preceding epidemics. A great famine attended this severe calamity, and produced new diseases.

Numerous carnivorous animals appeared in the cities and countries devastated by this disease, which raged for more than thirty years: in several cities more than half, and in others,

three fourths, of the population were swept off; in those most afflicted every inhabitant disappeared. But Russia was not the only focus of this epidemic ; it extended into Turkey, Germany, Sweden, France, England, Italy ; finally, in all parts of Europe, millions of men perished miserably. — In two years 1,200,000 died in Germany. At Bâsle, in a single year, there were more than 12,000 deaths. It was calculated that one third of the Swiss population perished. At Strasburg there were 26,000 interments in a single year. At Vienna, for six months, from 900 to 1000 were buried each day. At Lubec, from one evening to another, 1700 ; at Erfort, 2000 daily ; at Munster and Osnabruck, there were no living to inter the dead.

In 1348, this disease appeared in England, and first in the seaports: the earliest symptoms of it appeared in London the 1st of November the same year. In a single year more than 50,000 persons were interred in one cemetery. All the other cemeteries were filled, and there was now no place to bury the dead. Lord Walter Mauny bought a large field, which was blessed by the bishop of London : in 1349 more than 200 per day were interred in this new cemetery. This epidemic, in 1360, passed from England to Sweden, where, according to historians, in this year alone, 466 priests died. Haller, in a memoir on an epidemic which raged in the Canton of Berne, in 1762, speaks of this plague of Sweden in 1357, and estimates the number of inhabitants who died, at one third of the population. — France was not spared. Guy de Chauliac asserts, that one fourth of the French population were swept off. At Paris, for several weeks, the interments were more than 500 a day. The city of Marseilles was entirely deserted, and not a living soul remained.

Certainly, before such facts, the cholera seems less terrific and surprising.

CAUSES AND SYMPTOMS OF THE CHOLERA — POST-MORTEM OBSERVATIONS.

Numerous and various causes determine or favor the development of the cholera. The most active are the cold and humidity of night alternating with the burning heat of day, the abuse of alcoholic liquors and of all too stimulant substances, bad food and want of cleanliness. These causes powerfully affect the poor Indians who are always illy lodged and fed. They sleep on the ground, on damp mats and under sheds exposed to every wind, where the coldness of the night is felt very sensibly. They eat rice and millet mixed with sweetmeats, curdled milk, beans, young leaves, and drink warm water; added to this, their constitutions are lymphatic and they wear no more clothing in one season than in another.

At Warsaw the individuals affected generally belonged to the lowest class; their condition, say Messrs Brière and Legallois, is wretched; their wants are extreme and their food is very coarse brown bread, potato whiskey, salted meat and herrings, cheese of the country, and a paste made of water, which is very difficult of digestion; their habitations are very dirty and are but poorly ventilated or not at all; they are situated principally on the borders of the Vistula, and are in fact mere drains; hence it is in this part and in the low and narrow streets that sickness and death are most frequent.

The substances most to be avoided are, salt pork, warm pastry prepared with rancid oil or butter, spawn of fish particularly those of fresh water, smoked herring, iced drinks, acid or watery fruit as melons and cucumbers.

Excesses, fatigue of body, and excitement of the mental and moral powers, are no less dangerous than bad food.

A Polish officer lately entered a coffee-house at Warsaw and took nine ices in succession; the next day he had a violent attack of the cholera.

Two Englishmen, of strong constitutions, directly after disem-

barking at the isle of Amboyna in 1823, became very dissipated ; each day was spent in excesses and they slept on the grass in the delicious cool of night; after four days of this irregular life they were attacked with the cholera and died in a few hours.

It has everywhere been observed that the poor and those badly lodged and fed, were the first and often the only victims. — In India the parias live in a state of abject misery and always perish in great numbers, being cut off by the cholera as if by lightning.

Many authors think that the epidemic cholera depends on a general cause everywhere existing. M. Schnurrer, physician to the Duke of Nassau, has published a work in which he pretends to demonstrate that the actual epidemic of the cholera is owing to a cause everywhere existing — the magnetic influence of the earth, which he calls the *telluric power*. He thinks that earthquakes may be attributed to the same cause and doubtless influence the development of the cholera, which has almost everywhere been preceded by earthquakes or the eruptions of volcanoes.

M. Loder, a distinguished physician of Moscow, has recently endeavored to demonstrate that the disease is primitively nervous and depends on an *electro-magnetic* cause.

Finally, Dr Hahnemann, a distinguished physician of Germany, has advanced the most singular opinion yet conceived. He asserts that the miasmata of cholera arise from very small insects, too minute to be seen — but which attach themselves to the hair, the skin and the clothing, and exercise a very destructive influence. In pursuance of this idea, powerful doses of camphor would be an infallible specific.

All these opinions are only hypotheses, which the talents of the authors have supported, by more or less specious reasoning ; but they are refuted by the slightest examination of facts.

The true causes of cholera are those already mentioned by us, and which are pointed out by authors of every age and country. It is *epidemic* when general circumstances, as heat

and moisture, are developed over a great surface of earth. These first causes soon become active by the miasmata from the patients and foci of infection are formed in all places where individuals are infected with the disease ; it is thus that the cholera extends and tends to become epidemic.

The cholera varies in its form and intensity ; sometimes the symptoms are slight, but the disease frequently progresses with frightful rapidity.

The symptoms are as follow : — a lively heat in the region of the stomach — vomitings and dejections of bilious, greenish and grayish matters, or of a liquid resembling rice water ; sometimes this fluid is green or dark like an infusion of tea and always has an acid smell — at the same time very violent and excruciating pains in the region of the epigastrium and in the abdomen, which is tense and very painful on pressure — violent pains in the head — the pulse is small, feeble, quick, frequent, and often scarcely perceptible — depression of mind, stupor — the countenance is haggard — the eyes are first brilliant, sunken, then moist, and injected, sometimes covered with a thick serum resembling a pellicle. The surface of the tongue is red ; there is a burning thirst. With these formidable phenomena, the limbs contract — the cramps of the fingers and toes advance gradually from the extremities to the trunk, and there is frequently delirium and convulsions — the urine is scanty and turbid, and when the disease is violent it is generally suppressed.

The most violent symptoms continue to afflict the patient until his strength fails. In the latter period of the disease the vomitings and spasms cease from the complete exhaustion of the physical powers. The patient, however, often experiences great relief and may live a long time in this state ; his mind continues vigorous while all the functions of the body are suspended.

In the most severe cases and in weak and badly nourished subjects, death supervenes without any spasms and without any derangement of the menal faculties ; but the patient is astonish-

ingly indifferent in regard to himself. In vigorous subjects, on the contrary, the spasms are extremely violent — some patients have required six men to hold them.

The cholera sometimes supervenes suddenly, without any precursory symptoms. More frequently, however, it shows itself after the subject has complained for one or two days of disgust for food, bitterness in the mouth and thirst. To an experienced physician, the countenance often announces a proximate attack before the patient is sensible of any change in his appearance or feelings. His countenance appears unusually fatigued and his whole external appearance is that of anxiety. The disease most frequently commences in the night, between two and five o'clock.

The duration of the cholera is from one or more hours to one or more days. It rarely continues longer than the seventh. When the disease is arrested, the pulse improves, there is a desire for sleep, the patient becomes more calm and is completely well in a few days.

In some subjects, however, debilitated by a previous disease, the convalescence is often long and tedious.

The two following cases resume the symptoms of the cholera; the first is an instance of cholera developed in our climate, the second presents the most prominent symptoms of the epidemic cholera; we have taken the latter from the British review.

Case 1st. A young man of strong constitution, 26 years old, was fatigued with hunting after a fine autumnal day; towards evening he rested under a tree and drank several glasses of cold water; at that instant he felt chills, which left him on walking. He ate supper and went to bed. About two o'clock in the morning he was awakened by pains in the abdomen, attended by an inexpressible malaise; vomitings of the partially digested food and profuse evacuations ensued. These vomitings and evacuations succeeded with frightful rapidity; from the commencement till 7 o'clock in the morning the patient estimated them at forty. The matters vomited were at first bilious, afterwards

only a grayish water with some mucus. On my arrival I found the pulse corded, hard and very frequent; the face was anxious and the eyes seemed sunken and surrounded with a brownish circle; the belly was painful, the tongue red, and the thirst great, but vomitings ensued as soon as the patient drank.

He was immediately put into a warm bath and the belly was gently rubbed with an anodine liniment; carbonated lemonade was given by spoonfuls and shortly after an injection of starch and poppy water was administered. At 10 o'clock in the morning the vomitings had ceased; the malaise was less, but the pulse became strong and more frequent; twenty leeches were placed upon the abdomen; when they dropped off, a large cataplasm of flaxseed was applied. At 8 o'clock in the evening the vomitings and evacuations had completely ceased; the patient passed a good night, and five days after the attack he was convalescent.

Case 2d. — M. A. an European in the prime of life, had arrived at Calcutta from England a few months previous. The evening of the day preceding the attack, he was in company with some friends, and, contrary to his custom, drank freely of ardent spirits. They separated at one o'clock in the morning. Mr A. was near his house and was carried home in a palanquin; when at home, instead of retiring, he sat down in the veranda to cool himself. While thus exposed to the night air he fell asleep, and was awoke an hour afterwards by his domestic. Whether the disease had not, as yet, progressed very far, or whether the sensibility was changed, M. A. felt not the least indisposed. However, after sleeping about two hours, he suddenly awoke, complaining of mental anxiety and a feeling of uneasiness in the region of the stomach, which he attributed to unpleasant dreams and the effect of the wine — but the anxiety increased and the distress became a burning heat. In four hours, abundant evacuations of a liquid similar to rice water supervened, followed by painful cramps in the muscles of the toes. The character of the disease was now

evident even to the patient. The physician being called, found M. A. out of bed in the most violent cramps; he was, as it were, curled up in a corner of the apartment, presenting a frightful spectacle of inward agony — his body, barely covered by a night-gown, had assumed in its spasmodic contractions the form of the letter S. Assisted by two domestics, he endeavored, by supporting his flexed limbs against an angle of the wall, to conquer the action of the rebel muscles by employing all the powers which depended upon the will.

The face of the sick man was haggard; his teeth were closely compressed; his cheeks and lips were bloodless; his limbs, from the effect of the spasms, were stiff and contracted. In a few moments a remission announced a partial degree of ease; he then made signs to us, that he would answer to questions in regard to his situation. The symptoms were those which always attend spasmodic cholera; in the moments of ease his stomach seemed to contain a furnace; his thirst was unquenchable, and the sensation of exhaustion was so perfect that he had no power over the motions of his body.

There was no reasonable hope of cure in an attack so violent and advanced; nevertheless, all the means sanctioned by experience were employed to produce a favorable change. The patient seemed to be little anxious in regard to the termination of his disease. The pains and especially the spasms occupied his whole soul. He entreated that they should allay, by energetic treatment or by death, the insupportable cramps which seemed as if they would tear him to pieces.

The time between his request and death was not long. The spasms, which extended to all the muscles of his body, finally yielded to the weakness of the organization, which arrested at the same time all natural and morbid motions. The vomiting ceased, the pulse was no longer perceptible in the extremities, the pulsations of the heart were feeble and very indistinct, the surface of the body seemed cold and moist; it would be termed a cadaver. The wrinkled skin of the hands and feet

seemed macerated, as if it had remained several days in water ; the respiration was feeble and the eyes glazed. He continued to live several hours in this state, and died without a struggle, thirteen hours after the first symptoms appeared.

As *post-mortem examinations* furnish the most important proofs in regard to the seat and nature of the disease, we necessarily have recourse to them when we wish to lay down rational rules for treating the cholera. These researches have been made by several physicians, and particularly by M. Gravier, a French physician, who resided a long time in India. Before his time, science possessed but imperfect notions on this subject, and since, the results presented by this courageous physician have only been confirmed.

Numerous *post-mortem* observations have exhibited to M. Gravier, a violent inflammation of the esophagus and of the inner membrane of the stomach. In one case it was ulcerated ; in another case all the membranes of the stomach were perforated. The duodenum always presents the same appearance as the stomach ; but the small intestines do not appear so much affected. The bladder is inflamed and destitute of urine, and often resembles a piece of scorched parchment — the liver and spleen are natural. Some physicians, however, assert, that in some cases the liver has been found gorged with a thick and viscous blood. The gall-bladder is filled with a yellow, and sometimes with a viscid bile. The brain, lungs, and heart, present no constant alteration dependent on the disease. The traces of inflammation are generally less apparent in the bodies of those who have died suddenly, and who have perished rather with pain and with convulsive spasms, than by the disorganization of the viscera. Similar alterations are seen in men who have died of the cholera in Poland, Russia, and France. Of eighteen cadavers examined by us at Toulouse and Paris, all have exhibited lesions of the same character.* It follows from these

* Many physicians, it is true, have presented facts which do not agree with those related by us. Some have endeavored to trace lesions in the

researches, and from a profound study of the symptoms of the cholera, that this disease is *a violent inflammation of the inner membrane of the stomach and intestines, attended, and often preceded by more or less evident nervous symptoms.*

MEANS OF PREVENTION AND MODE OF TREATMENT.

The nature and the seat of cholera being determined, we are rationally led to the investigation of remedies, which investigation should be confirmed by an enlightened experience.

The means of prevention are almost completely included in the observance of the laws of Hygeia. It is remarked, in fact, that the kind of life, the habitual state of the health, the age and climate, have a very great influence on the development of the cholera. It is generally observed, more particularly, in adults; males and females are equally disposed to it. In India, however, the proportion in favor of females, was as 1 to 4, which may be explained by the habits of sobriety so common to females.

Infirm and weak individuals are almost always the first attacked; so too with men who indulge in excesses of every kind. The cholera seems to be very partial to negroes, who have suffered much more than the whites; a want of cleanliness, and warm temperature, are among the most active causes.

Thus, a regular life, food of good quality, without excesses of any kind, are favorable circumstances in which the infection will be less dreaded. If we add to this, a residence in a pure and brisk air, and upon rather an elevated soil, a remoteness from infected persons, and particular pains in regard to neatness of person, and cleanliness of habitation, we have all possible chances of prevention. In a word, *every courageous man, who is weakened by no anterior cause, whose regimen is good, and*

nervous system, either in the encephalon, the spinal marrow, or the great sympathetic nerve; others have seen in the intestine only a catarrhal state of the intestinal mucous membrane. All these contradictions arise from the little experience most physicians have in post-mortem examinations, or from preconceived systems, to which they have referred everything.

who guards against variations of temperature, is almost certain of not being attacked with the cholera.

As to pretended disinfecting agents, as different perfumes, canella, &c, and a hundred other substances employed by the vulgar, they are useless and even dangerous, for they conceal the qualities of the air without changing its nature.

Chlorine, that powerful disinfecting agent, does not seem to render the services expected from it ; or at least, it is still doubtful, for opposite opinions and contrary facts balance each other.

M. Labarraque asserts that chlorine destroys the miasmata of cholera, and mentions, in favor of his opinion, that a vessel of Bordeaux remained more than four months in the port of Calcutta, surrounded by others which were decimated by the cholera morbus, while all its crew were preserved by using the chloruretted water. He also relates the experiment of M. Kartzoff, a chemist of Moscow, who, by means of chlorine, preserved his own house with 30 inhabitants, notwithstanding numerous communications with the people without.

On the other hand, Dr Jannichen, member of the council of medicine at Moscow, asserts that all the disinfecting agents, chlorine and the chlorides, have absolutely no effect on the development of the cholera.

The chlorides, he says, were used in all classes of society, in the habitation of the poor man and in the palace of the lord, and the cholera was generated everywhere in the midst of these emanations of chlorine.

Notwithstanding these contradictions, chlorine remains the most powerful disinfecting agent we possess, and it is the only one which can be used with hope of success.

To the general considerations above mentioned we add the advice, full of wisdom and science, published by the municipal authorities of Leipzic ; they are the best practical rules that can be followed :

1st. To live soberly, to avoid every excess which exhausts the strength, excites the passions, and diminishes sleep.

2d. To observe great cleanliness, to wash often in cold water, to rinse the mouth frequently with wine and water, to air the apartments carefully, especially the bed-chambers, to remove everything which exhales an infectious or too strong an odor, to ventilate the beds and bedding, and to avoid wearing dirty linen and old clothes. To take a warm bath at least once a week ; persons in delicate health will do well to consult a physician in regard to the bath. Cold river-baths are suitable only for young and robust persons, or those who have long been accustomed to them, and it would be proper for them not to neglect the common rules of health, not to take them except in good weather, when it has been warm for three or four hours, and only when the water is clear, and not earlier than four hours after sunrise, and not later than one hour after sunset, and not to remain in the water longer than five minutes. All persons who have recently been attacked with fevers, should abstain from cold baths for two months.

3d. Not to be too lightly clothed, even in a warm season. It would be advisable for aged people, or those in delicate health, especially those subject to dyspepsia, diarrhœa, to hœmorrhoids, or other irregularities of the circulation of the blood in the abdomen, to wear flannels under their common garments. Experience, in Russia, has proved that it is very dangerous to remain with bare feet, and that all coldness of the lower extremities is hurtful.

4th. To walk in the morning between seven and nine o'clock, and in the evening between five and seven; to avoid moist places, and not to sit down in the open air.

5th. To abstain from indigestible and all crude food.

6th. To avoid all excess of spirituous liquors, especially brandy ; experience has proved that those who drink brandy, almost always die of the cholera morbus — excesses in coffee and tea are also injurious.

The treatment has been attempted with boldness and impudence, by ignorance, superstition and quackery. Fear and credulity have eagerly received exaggerated or deceitful promises, which the experience of a day or a deceitful imagin-

ation have proffered with assurance. Thus, from the Indian empirics, who oppose the disease by burning with a red hot iron, that part of the heel where the skin is thickest, to the physician who advances that the best mode of preserving one from the cholera is to deny its existence, the employment of bismuth, calomel, large cataplasms of meal reaching from the head to the feet of the patient, camphor, corrosive sublimate, and twenty other more or less dangerous or ridiculous remedies have been advised. Let us lament the victims for here the error is fatal.

The following is the treatment indicated by reason and confirmed by extensive experience.

Suppose that the patient is a healthy and vigorous adult, two indications present themselves to be fulfilled; to allay the irritation and to combat the inflammatory symptoms; thus, at the commencement, a warm or even a hot bath if the extremities are cold, frictions of opiated liniments, and even the antineuropathic method of Dr Ranque* modified by circumstances, should

* ANTINEUROPATHIC METHOD. First, order the patient a warm bath, at the usual temperature, in order to render the skin more susceptible to the liniments, and to the plasters, which are to be applied.

After coming from the bath, cover the belly with the following plaster :

Mass of	Diachylon	℥ iss.
	Extract of cicuta	℥ iss.
	Theriaca	℥ ss.
	Camphor	*gr.* i.
	Flower of Sulphur,	*gr.* ss.

Melt the mass, in order to combine the ingredients properly.

Spread it on a piece of linen or leather, the size of the belly : sprinkle the surface of the plaster before it is applied, with the following powder :

Camphor,	gr. 1.
Tartrate of antimony and potash,	gr. 1.
Flowers of Sulphur,	grss.

Cover the loins, from the eleventh dorsal vertebra to the sacrum, with the same plaster, but sprinkle this with about 2 grains of camphor.

Confine the plasters with a towel. Then rub the inside of the thighs and the painful limbs, with the following liniment :

Water distilled from the wild cherry, —	grs. 2.
Sulphuric Ether	℥ j.
Extract of belladonna	ʒ ij.

(*See a Memoir on the new treatment of cholera morbus and the typhoid affections, by M. Ranque.*)

be prescribed. If inflammatory symptoms appear after these remedies are employed, bleed from the arm. 'Scarcely does the blood flow,' says Dr Gravier, 'than the face of the patient brightens; as yet, he has not been able to speak a word; he now cries out, irresistibly, *I am saved!* In fact, the tongue becomes moist, the vomitings, the dejections, the spasms and the oppression diminish and sometimes cease, the urine appears, which has always been the proof of a favorable termination; a second bleeding is generally attended with a remission of all the alarming symptoms. The patients then have a furious appetite; if this is satisfied, the symptoms return with more intensity, and all remedies are useless; death ensues with most horrid symptoms.' Leeches have also been very useful: M. Gravier having learned from an Indian doctor, named Rassendren, a very sensible man, that individuals who drank fresh water, recovered, availed himself of this knowledge. In the latter months of the Indian epidemic, in 1817, M. Gravier treated, or caused to be treated, 93 individuals; 20 of those drank cold water from the commencement, and were cured in from 24 to 26 hours; 63 presenting the most violent symptoms, leeches were applied to the epigastrium, and they recovered very soon. In the latter, the alarming symptoms disappeared as soon as the leeches dropped off. The other ten died. These facts are proved by Count Dupuy, Governor General of the establishments of India. The same treatment has been pursued at Karikal by M. Negrin, at Pondicherry by Sinnapa Ambou, and with the same success; out of 205 men attacked with the cholera, under the care of the latter, only 20 died. These active means should be followed according to circumstances, by the frequent administration, in small quantities, of pure water, gum arabic water, toast water, sugar and water, Riviere's potion, or carbonated lemonade. The evacuations should be treated with injections of mucilage, anodynes, or starch. When the vomitings have ceased, or in the intervals between them, we may administer potions of gum with laudanum, or

rather with one or several grains of the gummy extract of opium, as more soothing and less capable of irritating. When only weakness remains, barley water, light broths, and thin soups may be allowed, but the sick man must return to his common mode of living by degrees and with great circumspection; the least deviation from the regimen prescribed, will be attended with a relapse, which is quickly fatal. This treatment is sanctioned by the authority of the illustrious Sydenham, by Sauvages, by the celebrated professor Broussais and by the most distinguished physicians.

The incendiary treatment pursued by the English* and most

* That our readers may judge for themselves of the merits or demerits of the English mode of treatment, we give the following from a '*Treatise on Cholera asphyxia or Epidemic Cholera, as it appeared in Asia, and more recently in Europe*, by George Hamilton Bell:

'Mr Bell considers blood-letting the principal remedy! He recommends that it be had recourse to in the most unpromising circumstances, as he has known its employment successful in cases, where the individuals appeared almost at the point of death; and he agrees with all his predecessors who have recommended this measure, that in no case in which it has been possible to persevere in blood-letting, until the blood flows freely from the veins, and its color is recovered, and the oppressed chest is relieved, will the patient die from that attack of the disease.'

'He directs, that when the blood has once begun to flow, it is to be allowed to escape till these changes be observed. The ordinary rule for the use of venesection in acute diseases, namely, to continue till syncope comes on, is here inapplicable, as it is extremely difficult to induce fainting in patients affected with cholera. Its effects he considers to be purely mechanical: it relieves the congestion of the blood in the great veins and lungs, and partly on this account, partly by the mere diminution of the mass to be moved, enables the circulation to go on.

'At the same time the practitioner is withdrawing blood, he must resort to proper means for maintaining the temperature by external warmth, and for stimulating the system by the use of opium, ether, camphor, ammonia, brandy, calomel, or some of the other remedies which have been variously relied on for the purpose. External heat, he informs us, is best applied in the dry way, as the skin, on account of the great reduction of its temperature, cannot endure the rapid communication of heat by the warm bath. He has given simple directions for applying dry heat, for which we must refer the reader to his Treatise. Among the internal remedies, those on which he relied in his own practice, were opium, camphor, calomel, and brandy, — all of which were usually administered in the progress of each case.

Indians, has multiplied the victims beyond all belief. They employ calomel, corrosive sublimate, cinnabar, quicksilver, ginger, cantharides, ether, and brandy, in frightful doses.

Emetics and purgatives, hitherto very much employed, are also very dangerous at any period of the disease, or of the convalescence.

'He objects warmly to the practice generally adopted in India, of prescribing these articles in inordinate doses; and maintains, we believe, with great justice, that some individuals, whose cholera was checked by them, died nevertheless, in consequence of the poisonous operation of the drugs, which, by the sudden cessation of the discharges, had accumulated in too great quantity within the body. His method was, to administer so long as the vomiting was violent, three grains of calomel, two of camphor, and half a grain of opium, in the form of a pill, every half hour, — the pill being washed down with a little brandy and water. After the vomiting was a little subdued, he substituted a draught of an ounce of camphor julep, with half a drachm of ether and ten drops of laudanum, which was administered every fifteen minutes, or every half hour, according to the urgency of the case.

'These, according to our author, are the leading objects to be kept in view, in the treatment of the early stage of cholera; and they will always be found successful, if they have the effect of restoring the radial pulse, the temperature of the skin, the natural color of the face, the nails, and, in particular, the secretion of urine. But if, notwithstanding every effort, arterial action remains imperceptible, the coldness of the body continues or increases, a cold clammy perspiration breaks out, and jactitation ensues, there is little reason to hope for a favorable termination.

'The remaining indications to be fulfilled in the treatment, are to guard against local congestion, — to ward off reaction, — and to produce a healthy condition of the bowels. Congestion, after the primary stage, or stage of collapse is over, is most apt to occur in the liver and lungs, but sometimes also in the head; and moderate blood-letting is its surest remedy. Reaction he very seldom witnessed; but a state like general fever sometimes did ensue, marked especially by determination to the head; and this was combated chiefly by topical abstraction of blood. The restoration of the healthy condition of the bowels, where it did not follow the employment of the remedies used in the early stage of the disease, he found most easily accomplished by a combination of a scruple dose of calomel, with brisk purgatives administered soon afterwards. When by one or two applications of this practice, the stools have become feculent, the patient may be pronounced safe; and tonic remedies, with a generous diet and regulated exercise, must be gradually resorted to, in order to confirm his convalescence and prevent relapse. — *Edinburgh Med. and Surg. Journal for Oct.* 1831.

Notwithstanding the apparent simplicity of the treatment which we have mentioned, a thousand difficulties occur in the practice. To the sagacity and experience of the physician, must be referred the care of modifying the treatment according to the age, the constitution, and other circumstances. Unfortunate are those under the care of hardihood and empiricism.

In support of the treatment mentioned, the following are three cases witnessed by M. Gravier, in India, which prove its efficacy; one is the most simple cure possible; the second is an unexpected cure of an extremely severe case; the third is an example given at random.

Case 1st. Velly Chetty, the interpreter of the Comptroller, a powerful and robust man, was attacked in the morning very violently; vomitings, dejections, spasms, and cold sweats, appeared at the same time. Rassendren visited the patient at this time, and immediately gave him several glasses of water, which had been set away to cool; one hour after, all the symptoms had ceased, he slept quietly, and in the evening he arose, feeling only a slight lassitude, which disappeared the next day.

Case 2d. A man of property was seventeen hours insensible, and his comrades thought him dead. Rassendren was called in, and finding neither warmth nor pulse, he applied, for his own satisfaction, fifteen leeches to the epigastrium. M. Gravier was immediately sent for, and having seen him, lost all hope. He however filled his mouth with cold water, and ordered his arms and legs to be rubbed with a piece of camel's hair; the sick man having spit out the water in his mouth, they gave him more; he put his hand to his stomach, to remove the linen with which he was covered. The leeches were now filled and dropped off, the blood was permitted to flow, the body became warmer, the extremities alone remained cold, the frictions were continued, and also water in small quantities. Two hours after, the temperature of the body was uniform. Notwithstanding the frequency and the smallness of the pulse, the anxiety of the countenance and the derangement of the ideas

announced a violent irritation of the mucous membrane of the stomach. Repeated eructations were followed with vomitings and with violent nervous phenomena. Water then being insufficient, 30 leeches were applied to the epigastrium. In the night there was remission. The next day gum water was administered, the third day sweetened rice water; from this day to the sixth, chicken water. The sick man was up on the seventh day, saying that he was not very weak, and in fact, his actions proved it. He was cured.

Case 3d. The Indian domestic of M. Delarche, Captain of Cipahis, was attacked with epidemic cholera. Laudanum, ether, and an infusion of ginger were administered but they were ejected by vomiting. An Indian physician was called in and made a paste of lemon juice, alum and oxide of iron, and rubbed his eyes with it. The pain it produced vexed and enraged the sick man, and he attempted to strike those around him; the vomitings became more frequent, his attendants fled to avoid his blows; he pursued them; passing by a reservoir of water, which served for the purposes of the garden, he plunged into it and drank with avidity for several moments. They surrounded him, but he remained tranquil in the water. The enormous quantity of liquid he drank, was followed by fainting. He was then removed from the reservoir and put to bed; he slept quietly for eleven hours. When he awoke, the vomitings and dejections had ceased, but he was blind. This fact is known by all the inhabitants of Pondicherry.

Although the treatment mentioned evidently appears the best which has been proposed, and even the only one which is applicable to the nature of the disease when the patient is vigorous and healthy, we must not, however, deny that physicians of eminence profess different, and even opposite opinions. These unfortunate contradictions arise because the most rational mode of treatment being often unsuccessful, empirical means have been recommended in despair. They also have their origin in false theories, which unfortunately direct many physicians, more

learned than fit, whose instruction has not been perfected by a deep study of physiology and pathological anatomy.

Farther there is nothing absolute in the treatment of a disease, particularly one so formidable as the cholera; thus although we have admitted that it is proper to bleed, or to leech adults, if however the patient before the attack of the cholera was naturally weak or accidentally enfeebled, if there is chronic inflammation of an important organ, if he is very irritable or very aged, bleeding, in these cases, should be to a limited extent, and even completely abandoned. Experience has proved that whenever a violent acute inflammation supervenes upon a chronic inflammation, the danger is very great and death almost certain, and that if in a case of this kind extensive depletion be employed, the evil is increased. But as it is admitted, that the cholera is particularly developed in persons addicted to excesses, or in those who constantly use food of bad quality, very active and very frequent causes of chronic inflammation of the stomach, we can easily imagine that it would then be improper to bleed largely. Thus, very worthy practitioners, whose practice however has been confined to one class of patients, have rejected all the facts which were presented to them, and consulted only their imperfect experience. This is the case with the physicians who attend in the cities, particularly upon the poor; almost all have rejected bleeding, because they have only treated persons weakened by privations.

On the other hand, the military physicians being obliged to treat strong and rugged young men, where bleeding is easily borne and is even advantageous, have recommended repeated venesections and leeching.

In these difficult circumstances, the skilful physician must study well the preceding state of the patient, his present situation, the resources of his constitution, and numerous other circumstances which may influence the progress of the disease. To pretend to consult only the facts, is to expose one to a thousand errors, and a thousand irreparable faults. Experience

in medicine consists not merely in a knowledge of facts, but in appreciating them.

The use of water has also its partisans, its friends, and its opponents. Dr Schnurrer, physician to the Duke of Nassau, asserts, that it is fatal to drink cold water. M. Gravier on the contrary, advances, that it is one of the best remedies. In this dispute we must appeal to experience founded on reason. M. Gravier has a great advantage over his antagonist; he has seen the disease. M. Schnurrer may not, however, be entirely in the wrong; it is evident, in fact, that a man whose stomach is violently agitated by spasmodic contractions, and who fatigues this organ by the weight of a great mass of liquids, would excite new contractions and vomitings which were about to cease; but if cold water is drank in very small quantities, and at remote intervals, the stomach can bear it well; experiment proves this every day, and there are but few practitioners who do not use cold and ice water when they wish to combat stubborn vomitings.

Cold water has been employed not only internally: the Persians use it externally.

The following will give an idea of the mode of treatment at Baku, which contains 12,000 Persians, and 800 Russians. The treatment commenced at the moment of attack; from the first symptoms the patients were undressed even in the street, and then cold affusions were applied. The extremities, the trunk, and particularly the chest and the shoulders, were rubbed and shampooed, and the contracted limbs were extended.

These manipulations were performed for two or three hours, by a dozen persons, on the same individual, while the affusion with cold water was continued. Having come home he went to bed, and a warm tea was given to produce perspiration; if this appeared, the patient was regarded as out of danger. A strict regimen was, however, enjoined for nine days; only light soups of rice and of tender meats were allowed, and he was recommended to take moderate exercise in the open air daily.—Arrangements were made by the authorities so well, that basons

of water were placed at the corners of streets, and even on the roads; no one passed the night alone; when a person was attacked with the cholera morbus in the street, all the bystanders attended to him, every one ran to him with vessels of water in their hands, and when one was tired of rubbing, another took his place. If a person was taken sick at his house, assistance was asked, and immediately obtained.

Opium has been very much extolled for the cholera; in fact, it is very serviceable; its action is easily understood; it depresses the exalted sensibility, it tends to calm the spasmodic contraction of the stomach, and the painful cramps of the muscles of the extremities.

Sudorifics and warm baths have been much extolled by some physicians, and asserted to be the only efficacious remedies against the cholera. This opinion deserves to be examined.

Warm baths and sudorific drinks may doubtless succeed, when the patient is weakened by nervous symptoms, when there is a cold sweat, and finally, when all the vital phenomena seem to leave the surface of the body to concentrate themselves in the vital organs. But if, on the contrary, the thirst is excessive or there is extreme agitation, and very intense internal pains and a violent fever are symptoms, sudorifics and warm baths must aggravate these symptoms, for then we must calm and not excite.

These remarks apply to the mixed treatment, that is, to the sudorific and revulsive treatment, which has lately been very much extolled. This treatment, according to the report of M. Reyer, commissary of Bochnia, in Gallicia, has been employed with remarkable success by the Jews in Wiesna. Of 240 individuals attacked with the cholera in this small city, all were cured except two persons who would not submit to the treatment. M. Reyer, after having witnessed this method of treatment, applied it himself to three of his domestics, who recovered. It consists in rubbing the feet and hands of the patient with a warm mixture, composed of half a pint of strong alcohol

and a gill of vinegar, in which have been infused for twelve hours in the sun, half an ounce of camphor, half an ounce of mustard, two grains of pepper, as many of powdered cantharides and garlic. They rub the patient without relaxation, who is placed for this purpose in a warm bed and covered with blankets, until a free perspiration is established; at the same time he drinks a large tumbler of strong camomile and peppermint tea.

The patient is then left to sweat for two or three hours, but he is not allowed to sleep, and care is taken that he is entirely covered, for under these circumstances, the least exposure to the air is fatal. A part of the bed clothes are then removed and the sick man then falls into an uninterrupted slumber, which continues for six or eight hours, continuing to perspire moderately. On waking, the patient is still feeble, but he is entirely out of danger and with a little care is soon restored to health. If the sick man complains of colic and cramp in the stomach, warm and dry cataplasms of bran and ashes are applied to the belly, and even a large sinapism if necessary.

If we now examine the action of ether, alcohol, calomel, bismuth, &c, we discover that these medicines, which are all more or less stimulant, can only increase the irritation of the stomach and intestines. We can hardly conceive that physicians have dared to administer substances which, alone, are often sufficient to cause a violent inflammation of this organ.

A specific has already been and perhaps will long be an object of inquiry; its discovery is not probable. The true specific is to observe the rules of Hygeia.

We must conclude, from the reflections presented by us, that no unique and absolute mode of treatment for the cholera can be given; it should be modified by numerous circumstances, which the sagacity of a learned and an experienced physician can alone appreciate. Nevertheless, these modifications should be deduced from the general rules of treatment, laid down by us, otherwise, the patients will be exposed to a fatal termination of the disease.

PROPAGATION OF THE CHOLERA. — SANITARY MEASURES.

Physicians are divided in their opinions as to the manner in which the cholera is communicated. Some contend that it is contagious; others assert that it is transmitted by infection.

This distinction is not a verbal one; measures of the highest importance, and often opposite to each other, are the consequence of the adoption of one or the other of these opinions. Let us then carefully define what is understood by *contagion*, and what by *infection*.

We understand by contagion (from the latin word *tangere*, *to touch*,) the transmission of the disease from one to another, by direct or indirect contact.

It is manifest that this definition entirely excludes the air from the transmission of contagious diseases.

The principle of all contagion is a special cause which is transmitted unaltered, and always produces in all places and in every season the same disease. This cause is termed *virus*. The principal contagious diseases are, the small pox, the vaccine disease, the measles, the scarlet fever, syphilis, &c.

Infection is the action exercised on our systems by deleterious particles existing in the air. The causes of infection are always animal or vegetable particles. These particles are of three kinds: 1st, *effluvia*, or exhalations from marshes; 2d, *miasmata*, generated by the body of the infected person; 3d, *putrid emanations*, arising from the decomposition of animal substances; when destitute of water, these particles have no action. The principal diseases produced by these causes are destructive intermittent, typhus, yellow fevers, &c.

Thus *contagion* has virus for an agent, and *direct* or *indirect contact* for the manner in which it communicates. Infection takes place by *particles*, the medium of which is *air*, and *water* the *principle of action*. This settled, let us now undertake to resolve these two questions.

Is the cholera *contagious?*

Is it communicated by *infection?*

Let us examine facts; they are here of great weight.

The partisans of contagion bring forward in support of their position, the quickness with which the disease propagates itself, the number of victims in the same place, and the impossibility of arresting the scourge in its progress, which, like a devouring stream of lava, overcomes every obstacle. These reasons are sustained by numerous special facts, the principal of which are as follow: In 1783 the cholera desolated Hurdevar where the Ganges rises; the development of the disease was attributed to a pilgrimage which takes place every twelve years in this country. On the 15th of Sept. 1819, Mauritius was infected; the cholera appeared there after the arrival of the English frigate Topaz, which left Ceylon while the epidemic was raging. The epidemic appeared in September, 1819, at the Isle of Bourbon. Two vessels belonging to different islands, notwithstanding the strictest measures taken by the authorities, constantly maintained a secret communication and thus imported the disease. A more striking example than the preceding is that of the caravans of Chiras. The city of Ispahan refused to admit them and preserved itself from the cholera. The city of Yezd was obliged to open its gates and was soon infected by the disease, which swept off 7,000 of its inhabitants.

To prove that the cholera is transmitted by assemblies of men and even by individuals, the following facts have been mentioned.

At Punderpore in 1818, the cholera developed itself in the assembled multitude after the grand fête of Jatra and destroyed 3,000 persons in a few days. The pilgrims in returning home spread it in every direction.

In 1820, the King of Siam alarmed by its appearance in his capital, assembled the population on the borders of the sea in order to pronounce an anathema and exorcise the disease. The effect of this assemblage was terrible; 7000 persons perished on the spot and the fugitives carried the disease into all the surrounding provinces.

Dr Jukes has asserted that the cholera was imported in August, 1818, into Salsetta by a detachment of the troops of Panwell who escorted a prisoner. The disease afterwards spread from place to place. The partisans of contagion demand if all these and many other facts of the same character do not evidently prove, that the cholera is essentially contagious?

The non-contagionists answer no, and maintain that these facts demonstrate the disease to be *infectious* and not *contagious.* This is the mode of proof.

A disease to be contagious requires a virus : a single individual can transmit it; the manner in which it is extended is always direct or indirect contact and the attendant circumstances have little or no influence upon its development.

The extension of the cholera, so far from occurring in this manner, has never taken place except by the arrival of infected vessels, or caravans, or by a protracted residence in the atmosphere of a diseased individual. These facts are explained satisfactorily, by remarking that when a man is attacked with cholera, the miasmata from his body form an atmosphere, which infected by respiration enters our organs and deranges the animal machine. The air is here the conducter of the miasmata which accumulate and form a focus of infection.

If numbers of diseased men are collected, the miasmata become more active, and the focus of infection is more extensive.

These foci of infection, these miasmata accumulated in a part of the atmosphere, transmit the disease. Destroy these foci and the danger is removed. In contagious diseases the transmission is entirely different; the mere contact or the introduction of a particle of virus is sufficient, and the disease quickly shows itself. Look at the vaccine disease, syphilis, and variola; the smallest particle of virus is a germ which is soon developed.

If large assemblies of men, armies, caravans and vessels, transport and transmit the cholera, it is because the immense quantity of miasmata constantly produced, infect all the places

through which they pass: these are travelling foci which are formidable in proportion to the number of persons assembled. Thus are explained those frightful, rapid deaths which occur in an assembled multitude. One man, however, on the contrary, cannot at least, except in very rare cases, which may be determined, transmit the disease. We will explain. A man in health remains an unlimited time in a focus of infection; he leaves it, continues well and goes to live among others who have not been exposed to the miasmata of cholera. Can this man communicate the disease? In other words; can a healthy man carry with him, enough of the miasmata to communicate the disease? Observation answers in the negative. In fact there is not one well authenticated case to the contrary presented by the contagionists.

But if this man, whom we supposed to have quitted the focus of infection, left it when the disease was almost appearing in him, and if he in fact became sick, the miasmata exhaled will then form a new focus of infection which can communicate the disease. The following is an instance. An European left Madras, where the cholera existed, in Oct. 1818: he fell sick on the journey, and died at St Thomas-du-Mont, where the disease had not as yet appeared. The next day his wife died; two days afterward the landlord perished, and at the end of two days more, the landlady also was attacked with the cholera, as well as the domestics who waited upon them. This fact is one of the most remarkable which has been mentioned by the contagionists in favor of their theory, but it proves against them. To demonstrate the existence of contagion, the man must have communicated the cholera to others without being affected by it himself, as every day physicians carry vaccine virus, &c, without taking the disease. Thus we repeat it, a healthy man coming from the focus of infection, does not carry with him enough of the miasmata to reproduce the disease. This transmission does not occur except by the formation of a new focus.

We have still further proof that the cholera is not contagious

from the number of people who have been in contact with patients affected with cholera, and who have not been attacked with the disease. Very few physicians are said to have died notwithstanding their frequent visits to patients. In a hospital at Jassy, the twelve attendants escaped.

The facts opposed to the doctrine of contagion are so numerous and evident, that but few physicians who have seen the disease, are contagionists. Experience has converted most of them.

In a memoir sent to the *Academie des Sciences* by Messrs Arago and Cuvier, M. Jannichen, member of the council of medicine at Moscow, blames M. Moreau de Jonnès very strongly, for calling the cholera a *pestilential* disease, and for having terrified by this incorrect term, the Russian population. 'Minute researches, made at Moscow,' he adds, 'and with the utmost care, established most undeniably that the disease was not imported into Moscow, but that it was developed there spontaneously. Many physicians who were firm believers in contagion from reading the reports of Moreau de Jonnès, after seeing the cholera, have abandoned this opinion and the ranks of the contagionists are now almost entirely deserted. Those members of our council of medicine who are contagionists, who number only 3 out of 21, have not as yet been able to adduce a single well authenticated instance of direct contagion.

'Their belief then seems to rest, like that of M. Moreau de Jonnès, only on reports and not on experience. Thousands of authentic facts, collected in the hospitals and in private practice, prove incontestably the nullity of contagion. It is now admitted that if touching the sick, and bestowing upon them those attentions which they require do not communicate the disease, the effects of the sick and dead, merchandise, &c, cannot possibly propagate cholera morbus, and consequently, that the belief in indirect contagion is illusory.

'The dissection of the cadavers of those infected with cholera, is not all at dangerous: we agree in this respect with the French

and English physicians in India. We have opened about fifty bodies, in which we have carefully examined the four cavities, and have traced the nerves and vessels: we and our assistants, have several times wounded ourselves, without any bad consequences.'

M. Marin d'Arbal, an eminent physician of Moscow, mentions similar facts and also rejects all idea of contagion. 'The cholera appeared very unexpectedly at Moscow,' he says, 'and the idea of contagion which terrified every one, existed with it. Sanitary arrangements had not been made, and 50,000 laborers left the city, in affright. Moscow was then immediately blockaded by troops, in order that the disease might not extend. This precaution was taken a little too late, and besides it was impossible to blockade a city as large as Paris. No one of the 50,000 inhabitants however who emigrated extended the disease to any other place: further, some carried the disease with them; they were taken sick at the quarantine on the frontiers of Moscow, and died, but the cholera did not spread. The number of the sick around the hospitals was not greater than elsewhere: few of those nurses in these establishments were affected: individuals have slept with patients sick with cholera without contracting the disease. The most general opinion now is, that the cholera is not contagious, and the people have been convinced of its correctness by the numerous facts which establish it. The contrary had been adopted from reports of remote provinces, particularly by that of the council of health, in 1824: this report was drawn up 1500 leagues from where the epidemic was raging, and the facts there mentioned are arranged and interpreted in favor of the doctrine of contagion. One would think that the author of the report (M. Moreau de Jonnès) had witnessed the facts mentioned, but he has remained in Paris since 1820.'

M. Marin d'Arbal, confirmed in his belief, attempted to destroy the error at its source: and he has been seconded by experience so well, that government removed the quarantine, although the epidemic had not ceased.

The opinion of the physicians at Moscow, viz. that the cholera is not contagious, is followed by most of the Polish, English and Hungarian physicians.

Facts still more conclusive can be added to these important suffrages.

Some French physicians, whose courage and devotion merit our admiration and gratitude have tried upon themselves every experiment which might settle definitely the question of contagion.

Dr Foy, to prove that the cholera is not contagious, breathed for half a minute, the breath of a person affected with cholera, tasted the liquids vomited, and on the 4th of June, 1831, in the presence of Drs Jankowsky, Floris, and several other Polish physicians, inoculated himself with the blood of a patient who died 48 hours afterwards.

Dr Foy was not in the least indisposed.

Dr Scip. Pinel has repeated nearly the same experiments, and with a similar result.

Dr Wayrot, who after arriving at Warsaw, carefully observed the cholera, wished to renew these experiments, taking the strictest precautions in order to give them at the same time an authenticity which could not be impeached.

He therefore, after much entreaty, persuaded the president of the committee sent by the French government to inoculate him with the blood of a person affected with cholera, in the following manner.

Saturday, July 15th, 1831, he went with M. Charles Londe, president of the committee, to the Hussar barracks, into the apartments of those patients affected with cholera. There in presence of the physicians, M. Londe received some blood on a lancet from the vein of a patient affected with the worst symptoms of cholera, and who had vomited previous to the venesection; he was inoculated in two places; the lancet was not withdrawn, until all he blood had entirely disappeared. The incisions were left on him to dry; a light bandage was

then put on to protect them from the clothing. This experiment, supported with the utmost tranquillity of mind, was attended with complete success. M. Wayrot only felt a few pains which immediately left him, and which he attributed to the electric state of the atmosphere.

The non-contagionists, supported by such facts, ask what reasonable objections can be made to their doctrines? They then regard the question as definitely settled and assert that *the cholera is not contagious.*

If direct experiments had not succeeded, a final objection might be made to the non-contagionists : viz., that the experimenter necessarily in a focus of infection, would contract the disease in this manner and not by direct contact. Dr Chervin, in his letter of July 1st, 1831, to the president of the council of the ministers, has well mentioned this important remark.

From these facts and reasonings we are led to conclude 1st, that the means of developing and propagating the cholera reside in the miasmata existing in the atmosphere.

2. That in order to produce the disease, these miasmata must be accumulated in one place and thus form a focus of infection.

3. That a man in health never carries with him enough of the miasmata to propagate the cholera.

SANITARY MEASURES.

Most governments, sensible of the responsibility attached to them, have endeavored to arrest the progress of the cholera. Councils of health, sanitary committees have been formed and strict precautions taken. But these councils, these committees present a singular anomaly in France ; the physicians are always in the minority, and most of the members are merchants, public officers, bankers, judges, generals, &c. All these have been selected by the government, not as being most capable but as most convenient.

Hitherto these commissions have only followed old errors,

that is, they have adopted the measures recommended by the contagionists; hence, fumigations, the establishment of sanitary cordons, lazarettos, quarantines.

We will give our opinion upon these and their mode of application.

These measures are generally good. It cannot be denied in fact that since the cholera can be communicated by the passage of miasmata, we should oppose those communications which would expose the population to this misfortune. Thus it is important to arrest the progress of infected caravans, of bodies of military, and to watch the arrival of vessels and prevent a sick person from travelling. But the means which we consider proper to attain the end proposed, seem to us very badly applied. What is in fact the case when a city, a village, or even a house is infected with cholera? A sanitary cordon is established around the city, village, or house. Persons are forbidden to enter or leave it, and thus the sick and the well are obliged to live in the same place, to breathe the same atmosphere. What is the consequence? People are at first terrified, which powerfully disposes, as every one knows, to develope any disease, the miasmata accumulated by the numbers of the sick, from the narrowness of the place and the want of ventilation, a focus of infection is thus formed whence germs of disease will escape, in spite of guards and bayonets. Thus we see every day that the cholera appears behind the sanitary cordons and even attacks first the troops employed to prevent its progress. An instance has recently presented itself in Austria. The regiment Banat-Allemand assisted in forming the cordon of Bruch on the Letha, and the cholera, according to a letter of Aug. 9, written by the commander of the cordon, had appeared among the soldiers. The sanitary cordons employed as at present, so far from preventing the progress of the disease, seem to us to favor it; 1st, because in collecting the sick in one place, the focus of infection becomes more active; 2d, by assembling troops in one part, and in subjecting them to severe

duty, these men are exposed to numerous diseases, as constantly happens. If the cholera then attacks the sanitary cordon, it progresses rapidly and soon passes from the troops to the inhabitants.

An opposite course then ought to be pursued. The miasmata far from being accumulated should be dissipated: the patients should be separated and placed in an atmosphere easily ventilated. Thus, let us suppose a city infected with cholera: we should first establish a sanitary cordon at some distance from the city. Those houses which are unhealthy, badly built or crowded with inhabitants, should be deserted, and the tenants obliged to dwell in the plain, in barracks or tents.

As soon as a person is taken sick, he should be removed from the city, into the part devoted to the sick. The house should be fumigated with chlorine, and all the inhabitants should leave it and encamp in the plain.

The sick should be carried to an elevated situation, into separate barracks, or at least into different apartments: the barracks should look to the northeast, and be sheltered as much as possible from the west and southwest winds. Each barrack should be properly and constantly ventilated.

The quarter of the sick should be very far from the habitation of the healthy. The barracks should be at least six feet apart.

If a person is taken sick in a barrack he should be immediately carried into the quarter of the sick. The barrack should be destroyed, the planks washed with a solution of chloride of lime, or rather they should be planed.

If the places selected are hilly, the houses should be placed on their slopes.

The gates of the city should be properly guarded to prevent the inhabitants from returning into the city. All assemblies should be strictly forbidden.

Such is a general outline of the measures proper to be adopted: the miasmata would then be dissipated as soon as

formed: by being dispersed, they would lose their activity: the healthy would not be shut up with the diseased, or inhumanly sacrificed to fear: the sanitary cordons would not be attacked by the maismata of disease: and then perhaps the cholera would become less intense and disappear.

The measures we propose would be facilitated by the season when the cholera appears: we know in fact, that it commits its ravages principally and often even exclusively during summer.

These measures also would not continue long, as it has been observed that the epidemic does not rage in Europe more than six weeks or two months in the same place. Finally, our advice is supported by one very important fact, which leads us to think that if followed, the duration and violence of the cholera would be diminished: it is, that the mortality which has everywhere been one half and often two thirds of those sick, has been only one fifth among wandering people and in places situated in the centre of steppes.

May governments immediately abandon a blind and murderous routine, and attempt, in the cause of humanity, an experiment demanded by reason, sanctioned by observation and authorized by the approbation of every enlightened physician.

The *quarantines* to which persons and things from infected places are subjected, ought also to be modified. In studying the progress of the disease we have noticed that it is rapidly and almost instantly developed, and that the precursory signs of it are very slight and almost imperceptible; thus the miasmata act instantly or shortly after they have entered: the cholera has never been known to attack a person, 10, 20, or 30 days after quitting an infected place.

The time of quarantines should then be shortened. It is not in fact terrible, that because one comes from a country the health of which is suspected, he must be kept in a lazaretto, a prison always more or less unhealthy, for 10, 20, 30, 40 or 50 days,

or even longer, provided the caprice of the inspector requires. Such a punishment is enough to make one sick. This rigor is useless and vexatious ; justice and reason require it to be abolished.

The longest quarantines in coming from a place infected with cholera should not exceed ten days, and not be more than two or three days at most, in coming from a country adjacent to that infected : and none should be imposed, if the person has travelled two or three days without any marked alteration in his health.

Quarantines upon vessels should be entirely abolished. By obliging the crew to remain on board, we expose their health, since the vessels are often the foci of infection.

Although merchandise and other inert substances do not seem capable of propagating the disease, yet careful prudence requires that we should not dispense entirely with measures now followed. Thus, porous substances, furs, woollens, silks, cottons, &c, should be purified by repeated exposure to brisk and dry air. Fumigations of chlorine also would be useful for substances which would not be injured by it. But all metals, polished bodies, and fluids should pass uninterruptedly. The interests of commerce and of the nation require that every precaution not indispensable should be abolished : for to fetter industry, is to ruin the artisan, and perhaps it as well to die by the plague as by famine.

Tearing letters, fumigating them with vinegar, or immersing them in it, &c, are ridiculous measures, adopted by our ancestors, when the sciences of chemistry and medicine were in their infancy.

OBSTACLES TO THE FUTURE PROGRESS OF THE CHOLERA.

In the ages of ignorance and superstition, a famine, a pestilence or any other scourge was a punishment from Heaven or resulted from the anger of some infernal spirit, and men died blessing the decrees of Heaven, and imploring its mercy : but now, more wise and enlightened, we seek the causes of

the misfortunes which threaten and afflict us, and we generally find them in ourselves or those around us.

Thus, in former days, the cholera would have been a deadly scourge sent upon our globe to punish the wicked for their faults and crimes. But we now regard it as resulting from the neglect of men and the unhealthiness of the climate or of the places they inhabit.

Three causes seem principally to develope and propagate the cholera. These are excessive moisture, want of cleanliness, misery or excesses.

Wherever these circumstances are combined, the cholera can and often does appear. We have had frequent cases of it in France, and in all parts of Europe.

But there is a country in Asia where these causes are permanent and general: this country is India. There the cholera is endemic, it has always existed, and perhaps will always be the scourge of this fertile country. India includes a great many rivers and forests; these generate and retain the moisture which is often excessive. In India there are only two seasons, a dry and a wet. In the dry season, a deadly languor pervades all vegetation: the heat is there insupportable, the thermometer is from 30° to 32°, and even 35° of Reaumur.

In the wet season, which commences in April and May and terminates about the end of October, the sun rarely appears through the thick vapors with which the air is loaded. The rains continue in Bengal steadily for several days.* The monthly quantity of rain is estimated at 20 or 24 inches; the rivers overflow all the country except the high grounds, or the land which is diked. If the rains do not fall at the usual period, or if they are not abundant, the harvest suffers, and a frightful famine occurs. Thus in 1793, the droughts occasioned so great a scarcity, that parents sold their children for money enough to buy a few pounds of rice. At Chandernagor, as in the rest of

* In France there falls 18 to 20 inches of water a year.

Bengal, when one wishes to build a house firmly, it must be constructed upon piles, as it is impossible to dig without finding water at 3 or 4 feet. The city of Calcutta, the capital of Bengal, containing 700,000 inhabitants, consists of a mass of ill constructed small bamboo-houses, the ground floors of which are 4 feet below the level of the river. The water there is brackish, and the air is always filled with exhalations.

These causes of unhealthiness would explain the origin of those formidable diseases which ravage India, but there are others equally powerful which depend on the kind of life and the food of the inhabitants. Thus in the province of Garrow, at the eastern extremity of Bengal, the natives live on rice, and flesh almost raw ; they eat dogs, frogs, serpents, and drink the blood of these animals.

At Malabar, the poor people sleep on the ground, on damp mats and under sheds, exposed to every wind, and to the cold night air : they live upon rice, millet, curdled milk, beans, young leaves, &c, and drink the brackish water.

Let us now add that nearly all the inhabitants of India, are fond of opium and liquors. This passion exists at Malacca, Borneo, in the Moluccas, at Java, Macassar, Sumatra, and in all the islands of this immense archipelago. These islanders smoke opium with tobacco, and when intoxicated, attack the first one they see.

All these evils are increased by the exactions and intemperate habits of the English : the Indian people also are in the lowest state of misery and abjectness. The natives have a lymphatic delicate physical constitution, and most of them present marks of chronic diseases.

Is it then astonishing that the cholera is developed in India and spreads with frightful rapidity? Certainly, never could more powerful circumstances combine, and find constitutions more favorably disposed to receive the influence of the miasmata of disease.

These facts explain why the high countries of India are very rarely exposed to the ravages of cholera why one is cured, or

preserved from the disease when it exists, by removing to a mountain : finally, why sober Europeans, who are well lodged, and have good food and robust constitutions are rarely afflicted with it : and also why the epidemic cholera appeared primitively in Bengal, the most unhealthy part of India, and why it raged at Calcutta, which is so thickly populated and so unhealthy.

Finally, if we study the route of the cholera, and the places and the men, we shall see that wherever it has raged, all the circumstances necessary for its development were combined : it has disappeared or has not raged on the contrary, in the countries where these circumstances did not exist : this explains why cities and villages on the route, which were protected by no sanitary measures, have not felt its deadly influence.

The cholera extended rapidly and violently in Hungary, Russia, and Poland, because these countries so different in every respect from India present, however, and in a great degree, all the conditions necessary to propagate the disease. A rapid examination will convince us of it.

Hungary includes two immense plains one 40 leagues long, the other 120 long by 30 broad : the last is mostly a salt and sandy desert, terminated towards the Danube and the Theiss by immense marshes. Baron Liechtenstein estimates the surface of marsh land in Hungary at 300 square leagues. Farther, as the banks of the rivers are extremely low, certain portions of the plains are covered for a long time and sometimes forever, with stagnant water. In the plains of Hungary, in summer, the heat is burning during the day ; the nights are cold and damp : thick and fetid mists often arise and the stagnant waters exhale, during powerful heats, mephitic and very unhealthy vapors.

The cities of Budin and Pesth, where the cholera has swept off many victims are situated on these plains and on the banks of the Danube.

To these local causes let us add the extreme dirtiness of the poor peasants, their coarse and scanty nourishment, their habits of excess, and we can form an idea of the ravages of

the cholera. The Hungarian peasants when travelling never go to the taverns; they pass the night amid their flocks or in their carts, exposed to the injurious effects of the air.

When at home, they often lay upon a bundle of straw or a bench covered with some skins; the pigs, upon the flesh of which they live, are placed in the same apartment, separated from them only by a railing. The shepherds of Symegh are among the most filthy; their dress is a cloth shirt and pantaloons well greased to render them more durable and to keep off vermin, these are worn till they fall off by piecemeal: the feet are wrapped up in cloth rags, and a morsel of leather kept up by leather strings supplies the place of soles. Some wear a *gouba* or cloak of wool, others a plain sheep-skin: all adorn their hats with ribands, and their hair, well smeared with grease, is tied in knots behind their ears. All these men are so perfectly ignorant that on finding the cholera raged principally among them they imagined that the nobles and physicians had agreed to poison them. This deadly thought caused them to revolt and massacre those brave men, who had faced death to save them.

In Russia, the same unhealthy causes exist. The soil is barren, cold and moist; immense marshes, and large forests cover a vast extent of territory. The winters are severely cold and the summer heat is excessive. The illustrious Euler has calculated, that at St Petersburgh, there are generally but 60 days in the year, in which it does not rain or snow.

This unhealthy city is built upon a deep marsh, or rather like Chandernagor, the buildings are founded on piles. In this rough climate, every precaution is taken against the cold of winter. The houses are built so as to intercept all the external air. There are double doors, double windows and immense furnaces which always preserve the atmosphere at a high temperature. The houses of the Russian peasants are built with pines laid across each other; the spaces are then filled with moss. A small narrow skylight illy lights a low chamber, filled almost entirely by an enormous furnace surrounded

by wooden benches placed near the partitions. The peasant, his wife and children rest on this furnace, shut out from the air, and the only light is from a burning piece of pitch-pine.

In these rooms, 15 to 20 feet long, 8 broad and 6 to 7 high, the temperature is always 20° to 30° of Reaumur. The Russian peasants are disgustingly dirty; they never shave and seldom cut their hair, and they are most generally covered with a sheepskin. Summer and winter, they go regularly with their families every Saturday into large warm stoves to 35° and 45°. Their food is coarse and difficult of digestion; it is composed principally of fish, pork, soup of sour crout, dried and salted mushrooms, pimento, pepper and fermented drinks, which they use to abuse, particularly hydrimel, and spirit distilled from grain and potatoes.

The laws of Hygeia are observed as badly in the large cities: in fact we everywhere find there opulence at the side of poverty, and nowhere perhaps is this difference better marked. We not only see cabins at the side of palaces, but misery dwells even in the palaces. Below the sumptuous apartments occupied by the princes, the counts and the barons, are numerous domestics, sometimes more than 200 persons, which are collected in a mass in the cellars, where 6 or 8 persons inhabit a corner which can hardly be called a chamber.*

Thus a bad atmosphere, moist and unhealthy vapors, want of cleanliness, intoxication and licentiousness supply millions of victims to the cholera.

The same is seen in Poland: the climate, the soil, the customs and the manners of the inhabitants are about the same as in Russia.

*In Russia a custom exists which is ruinous to the noblemen; it is not to limit the number of their domestics by their necessities. When a serf is placed in a palace, he, his children and his descendants always continue there. 'The males and females of this class,' says Segur, 'marry in the house and people it to such an extent, that we not unfrequently see a nobleman with 4 or 500 domestics of all ages, which he thinks himself bound to support although he can find nothing for them to do.'

Most of Poland is formed by a large plain covered with sand, marshes and considerable forests. The air of Poland is cold and damp; it is a mixture of impure exhalations which arise from the depths of the forests and from the surfaces of the vast marshes. Thus, although the natives enjoy health, it has always been very fatal to strangers. The cold is so severe that the thermometer often falls to 18°, and even to 25° of Reaumur; the summer heats are intense; the rains are sometimes abundant, and sometimes extremely violent.

The qualities of the air and soil have doubtless a powerful influence on the phenomena of corruption remarked several times by the Poles in the running or stagnant waters of their country. The waters of the Dniester or of the Vistula have assumed a reddish color, sometimes the lakes are covered with a greenish matter.

The peasants are perhaps more dirty and more unhappy than in any country of Europe. Their food is coarse, and they drink more brandy than any other nation.

In Poland, the *plica polonica* appears particularly; a singular and disgusting disease, where the hairs form an inextricable snarl; this arises mostly from the fact that the men cover their heads with a bonnet of greasy wool which is not moved for whole months.

These researches might be more extensive and more complete, but they are sufficient to demonstrate that in India, as in Russia, Hungary, Poland, the causes which develope or favor the development of the cholera are met with to the same extent, and that if the cholera is less frequent in the north of Europe than in India, it is because the severe cold of winter tends to diminish the influence of destructive miasmata.

Let us now compare the fine climate of France with the misty climates of India and Hungary; let us examine our habits, manners, the cleanliness of our houses and cities, our modes of living, our food and drink, and say whether we have reason to fear the same diseases and ravages of the pestilence.

Have we in fact to fear those frightful famines which depopulate whole regions and leave the survivors weakened by privation and the bad quality of food? Even at present a dreadful famine exists in part of Sweden and Norway; the inhabitants eat the roots which they tear from the earth, and many families have no other food than that made from the powdered bark of the pine.

Doubtless there was a time when France also presented the frightful spectacle of barbarity and misery; then the cares of preservation were neglected, and wars often increased the misfortunes of the nation, and frightful plagues swept off the population: this is the history of the middle ages, particularly of the 14th and 15th centuries.

As the cholera then advances towards the South of Europe, we shall see it progressively weakened and attacking a smaller number of people each day; we can already discern that its progress decreases. The cholera was introduced into Warsaw by the Russian prisoners; it is now subdued and almost extinct: but it will renew its vigor, if prolonged and increased by the horrors of war. Many of the physicians of that city have even asserted that it is not the India cholera, or rather that it is singularly modified and has degenerated. So too the same has occurred at Dantzic: and if the cholera really exists at Konigsburg and Berlin, as has been asserted, it will probably meet with but few victims.

Finally, by comparing the effects of the disease in these different countries, we shall see that the relative number of the sick has been less in Europe than in Asia.

In 1817 in Calcutta, of 700,000 inhabitants 35,736 were attacked with the disease. In Sylhet, with a population of 18,-896 inhabitants, there were in 5 months 10,000 sick with the cholera.

In Russia and in Poland, on the contrary, the number of sick has everywhere been very small in proportion to the popula-

tion. At Odessa, of 10,000 inhabitants there were only 16 sick. At Moscow and St Petersburg, of 300,000 population in each city, there were affected in the first 8,130, and in the second 7,102: thus the proportion of the sick to the population of these two cities is about one thirty-third, while in India it is often one half.

Most probably, the cholera will disappear when it comes into those parts of Germany where civilization is advanced and where the climate is temperate and healthy.

This prediction is also supported by one fact of the highest importance, viz. the spontaneous disappearance of the cholera in Syria. Let us examine the causes of this disappearance.

Syria is one of the finest countries in the world; it consists of a chain of mountains which proceed from one principal branch to the right and left in every direction.

The soil varies in quality according to the places: that of the mountains is generally barren; that of the plains is fertile, light and very productive.

Syria does not abound in water; and we find hardly any but rivulets. The Orontes and the Jordan, called rivers in this country, hardly deserve the name; their channel is not more than 60 paces across, and their bed is dry during a part of the summer. The obstacles to the progress of the water have formed several lakes, as those of Antioch, Alep, Dumas, Houla, Tabaria, &c; all these lakes, except lake Asphaltites, are of good soft water.

The climate of Syria is astonishingly fertile. We find all the seasons united at the same time, and to enjoy them it is sufficient to ascend from the plain to the mountain. 'It is a picturesque sight for a European, in Tripoli, to see under his windows in January, orange trees loaded with flowers and fruits, while the head of Liban is moistened with frost and snow.

'By this arrangement Syria unites under the same sky, different climates, and includes within a narrow space, delights, which nature bestows, in other parts, at different times and places.

With us, for instance, the seasons are separated by months; there they are removed only by hours. Is one annoyed at Sadi or Tripoli by the heats of July, in six hours he can go to the adjacent mountains, where the temperature is that of March. On the contrary, if a person is annoyed at Becharrai by the cold of December, in one day he can go to fields decked with the flowers of May!'

If the causes we have assigned for the development of cholera are correct and complete, one foresees that this disease cannot possibly exercise its ravages under so healthy a climate.

This is in fact proved by experience. The cholera has cut off but few victims in Syria, and soon vanished. Only ten cities were infected with it. At Tripoli, of a population of 15,000, only 31 were sick, 5 of whom died; at Lattachia, of 511 sick, 63 died.

The mortality would probably have been much less still, if the streets of most of the cities had not been narrow and muddy, and if the inhabitants had not been in wretchedness and disorder.

Certain circumstances, however, are possible, the existence of which might cause the appearance of the cholera for a time. Thus, suppose a vessel, infected with the cholera, to arrive from Riga or St Petersburg, and land in a part of France men affected with this disorder; then however the cholera would be confined to the places where it appeared, and it would disappear, from the absence of circumstances favorable to its extension.

A meeting between our army and the Russians might introduce it momentarily into France: doubtless it would then rage, favored by all the calamities incident to war; but when peace was re-established, the cholera would disappear. Thus in 1814, our armies, returning from Germany, were ravaged by the typhus fever and infected all the cities through which they passed. The war has ceased and the typhus has disappeared never to return.

All these arguments can be confirmed by a multitude of facts; we add the following remark, viz. that since the 10th

century the plague has not penetrated into the interior of Europe. Thus the plague of Marseilles in 1720 did not reach the interior of the kingdom; that of Moscow in 1770 did not affect even Poland. In 1817 the yellow fever appeared at Cadiz, in 1822 at Barcelona, and both did not extend beyond the seashore.

The opinion we have advanced will doubtless be received with incredulity and even contradicted. The authority of some great names and several facts will be brought forward which will appear to contradict us. We shall not answer the incredulous: they are men, who have no motive, but do not wish to believe; reasoning cannot convince them. To those who contradict we shall remark, that whatever respect we may have for a great name, a scientific authority is not a proof, and further, that the facts which they might cite would prove against them. Thus it has been advanced recently that the cholera had appeared at Fiume and Ancona; a few days after the papers denied this assertion.

It has been said to exist at Majorca, and that it was introduced by a vessel from the Baltic. This is also incorrect.

Numerous assertions hardly admitted a doubt that it was at Vienna, and yet they were erroneous.

At present, while every mind is agitated by the fear of cholera, it is thought to appear wherever any phenomenon unusual to the common people is seen. Every death is attributed to it; facts are disguised, exaggerated, and an unfortunate foreknowledge blinds reason, and fear alone is listened to.

Perhaps some will attempt to prove the proximate appearance of the cholera in France, by the rapidity of its progress, which seems to have trifled with every obstacle opposed by man. This progress it is true is surprising, as the cholera in less than three months passed over the 300 leagues between Astracan and Moscow. But this fact answers the argument. Observe that the cholera appeared at Moscow the 30th September, 1830; it is now more than a year, and if it had pursued its

course at the same rate, it would have advanced beyond Madrid.

If the cholera proceeded towards Moscow with a frightful and astonishing rapidity, it was because all was arranged for its development and propagation, and that merely a spark was necessary to light a flame.

We have furnished proofs to support our assertion; we think them good and present them with confidence; may we instil into the minds of our readers the same opinion; it will be one of the best guards against the cholera.

APPENDIX.

On the 4th of March, 1831, the *Royal Academy of Medicine* at Paris received from the Minister of the Interior a letter requesting the society to 'draw up instructions to direct the sanitary departments of the kingdom, in the application of means of preservation and treatment to be employed against the cholera, and to enable them to discern with the utmost certainty the earliest symptoms of this cruel disease.'

In obedience to this request, the Academy appointed a committee consisting of MM. *Keraudren*, *Chomel*, *Coutanceau*, *Boisseau*, *Desportes*, *Marc*, *Dupuytren*, *Pelletier*, *Louis*, *Desgenettes*, *Emery*, *Itard*, and *Double*.

On the 26th of July, this committee made a long and able report upon the subject; our limits do not authorize the translation of the whole. We therefore present our readers with the *Summary* and *Conclusions* of that committee.

SUMMARY—CONCLUSIONS.

After laborious researches, and a lengthy examination of documents carefully collected, and a profound study of those authors who have described the cholera in the different countries where it has appeared and a brief and critical analysis of the numerous facts collected on this subject, the Academy in order to respond to the anxieties of the public, and to the confidence of the government, hastens to publish the result of its deliberations.

The Cholera Morbus is a disease known in antiquity, studied in every period and a subject of dispute in every school.

Our classical writers have successively described it as a *sporadic disease* or appearing always insulated, affecting but one individual or at least but few at once.

As a *catastatic* disease or a slight *epidemic*, attacking several individuals at once under the influence of a determinate medical cause.

As an *endemic* disease or one produced by the influence of local causes peculiar to warm climates, as is seen in the East, in India, in Italy, &c.

As a *symptomatic* affection, one of the symptoms intimately connected with different acute diseases, as severe bilious, typhus, yellow, intermittent, remittent, and malignant fevers, &c.

In these different cases and under these different conditions the cholera has never appeared transmissible and has never ex-

tended beyond its exciting causes; it has never exceeded the limits in the sphere of which it first appeared. Hence this strict conclusion that the cholera is not primitively, naturally, essentially transmissible.

In respect to intensity, severity, rapidity, and danger, the epidemic cholera differs but slightly from the common cholera, so anciently known.

Thus, the epidemic cholera of India, is, in respect to its symptoms, the cholera morbus of the ancients. Our numerous descriptions of it, compared with that of Aretœus, prove this.

It is no less certain that the cholera observed in Russia presents the same symptoms as the Indian cholera.

Finally in Poland, the characters of the cholera do not differ.

In India as in Russia the cholera is well marked by the following symptoms and we may always easily recognise it by these: — pains in the epigastrium, anxiety, vertigo, repeated vomitings, frequent dejections; the substances thrown off composed at first of the recent ingesta, but soon appearing fluid, whitish, flaky; violent cramps, contraction of the upper and lower extremities; coldness of the body; suppression of urine; the skin of the hands and feet pale, cold, moist, and wrinkled; features discomposed, expression hippocratic; feebleness and complete disappearance of the pulse: total absence of vital reaction.

On this point, the different accounts of the symptoms of the epidemic cholera, all agree. In the East and West Indies, in Russia, in Poland, the descriptions are everywhere the same.

On the contrary, the statements in regard to the necroscopic characters of the disease vary exceedingly. The profound study of a great number of statements of post-mortem examinations now before us, lead to the following results:

1. The pathological changes found after death by cholera, both in India, and Russia and Poland, are slight, variable, different and even opposite.

2. In a stated system of organs, in the brain and nervous system, in the alimentary canal and its appendages, in the heart and the large vessels which arise from it, these lesions have no fixed seat, and still less a determinate character.

3. In a great number of cases, the most exact observers assert that no important alteration has been found.

4. Often also, the lesions described present no determinate character: they do not differ from those observed after death from some acute diseases, especially those which are noted for the rapidity of their progress and the celerity of their fatal termination.

5. It is generally stated, that the more serious the disease, that is, the more prompt the death, the less evident are the pathological changes.

6. The intensity of the various lesions found after the cholera, has often been in direct ratio with the duration of the disease.

7. One fact which is somewhat frequent in the pathological anatomy of the Indian cholera, is the white creamy matter found on the surface of the mucous membranes.

The cholera, in respect to its nature, is a complex disease. It is a complication resulting from a great alteration of the nervous system, and of a particular modification of catarrh, united in various degrees.

Both of these morbid states may prevail in a degree to attract more particularly the attention of the physician, according to the different periods of the disease, &c.

The predominance of the catarrhal over the nervous state and the severe changes principally with the periods of the disease.

In the early period, the nervous affection generally predominates; in the second, the symptoms of the catarrhal affection are more prominent.

Most generally however the two periods unite, and are blended: the phenomena of the two pathological states are also blended. The disease in this case, exists in its utmost intensity. All

the attention and all the sagacity of the enlightened observer are requisite to grasp these shades of difference.

The disease is naturally very serious ; those individuals who receive no medical assistance almost always die. The chances of *recovery* are greater, the earlier after the period of attack or invasion of the disease, the physician is called in, and the more the mode of treatment employed refers to the special forms assumed by the disease in particular cases.

In many of the places where the cholera has raged, statistical statements have been published, giving the relative number of the sick, the deaths and the recoveries, with the probable numerical chances of each of these terminations ; but the estimates on which these numerical results are founded are such, that the Academy would not even take upon itself the responsibility of quoting them.

The logic of facts and the logic of theories unite, in proving that no uniform treatment can be laid down for every case of cholera ; still less is there a specific remedy.

Those individualities which modify in a marked manner the the morbid states, require also in consequence a modification of the remedies.

The only general advice on this subject must be included in clinical indications.

To invigorate the general innervation, to increase it and render its distribution more uniform, more regular ; to excite and warm the cold surface of the skin ; to renew the strength ; these are the prominent chief indications of the epidemic cholera.

Next to attack the state of catarrh, by those means which experience has proved to be beneficial, is another indication no less important.

Finally, to treat the symptoms in proportion to their urgency, their relative predominance, this is the second eymptimatic indication ; this requires as much attention as the others.

The means of attaining this treple end vary according to the

individuals, the periods of the epidemic, &c The enlightened penetration and skill of the physician will alone apply them successfully.

The cholera which attracts our attention is curious and formidable beyond every other disease, on account of its fatal extent. From the end of August, 1817, till this day, the cholera, commencing in the delta of the Ganges, has extended from lower Bengal, its cradle, to the Mauritius and the Isle of Timor, near new Holland, in a southerly direction. Easterly it has appeared at Kussuchou, a Russian village, east of Pekin, and also at Pekin. To the north it has infected the frontiers of Siberia and Astracan to Archangel. Finally, it has proceeded westward to Moscow, St Petersburg, and along a line from Dantzic to Olmutz: and then descending a little south, it has established itself in the heart of Poland, in the train of the masses of Russians which have covered this country.

The disease has then attacked successively a prodigious extent of country, in every state of the atmosphere, in every season and in different climates.

The disease, as indicated by an immense majority of facts, extends and propagates itself as an epidemic by the action of exciting causes, the principal of which are, moisture combined sometimes with heat and sometimes with cold; frequent atmospherical changes; large assemblies of men; encampments and marches of considerable bodies of troops; excesses at table; dissipation, want of cleanliness, misery; dwelling in low and moist plaees; houses badly ventilated or crowded with men or amimals, great agitation of mind, food and drink of bad quality and difficult of digestion and easily fermented.

One may hope to escape the disease by guarding against the causes which we have mentioned.

Although the cholera, the history of which has been given, may by primitively, essentially epidemic, we however should infer from facts that in certain cases it may be extended by the migration of persons; and even if these facts only suggest doubts and

suspicions, a sacred duty would oblige us to stop there, to take measures and consequently to take precautions: thus the prudence of nations demands it.

We have seen that the cholera morbus appears particularly after large collections of troops, from the privations, fatigues, and excesses attendant upon the life of military men.

REPORT ON THE CHOLERA MORBUS,

READ AT THE ROYAL ACADEMY OF MEDICINE.

SEPTEMBER 13, 1831.

GENERAL REMARKS.

Among the most remarkable and frightful symptoms of the cholera morbus, we must doubtless place the extending character assumed by the disease. Almost all the Asiatic continent has been visited by it — part of Europe is at present threatened or directly attacked by it; in other parts, its cruel approach is very much feared.

Having studied the progress, the symptoms, the necroscopic characters, the seat, the nature, the treatment, and the termination of the frightful malady, the Royal Academy of Medicine has particularly directed its practical researches to the modes of guarding against it.

On this point the prevention of the disease, the duties and the difficulties, assume a still greater extent.

The members of the Government, the professional men, the citizens, all have duties to fulfil and precautions to take. — These precautions and these duties will necessarily vary, according as the population are proximately threatened with the disease or actually attacked by it.

The directions to be published by the Academy on this subject, will then be divided into two sections, according as

they refer to the supposition of the simple menace of the disease, or apply to a real attack of it.

This advice will be addressed successively:

1st. To all classes of Magistrates.
2d. To every order of Medical men.
3d. To every rank of Citizens.

The purpose of these directions will be to point out in detail, what each one ought to perform in the limit of his duties, his powers and his means. We, would however, premise that France happily, is placed in neither of the conditions stated by the plan of the Academy.

Its geographical position is most advantageous; the skies are mild, the climate is temperate, the soil is fertile, the territory is happily distributed, all are industrious and sufficiently well-informed, and from the fact that the state of the public health is satisfactory, the French hope to be preserved from this scourge.

Generally, also, the probability and particularly the dangers of the propagation of the cholera, beyond the limits of the territory actually attacked by it, are always diminishing. The torrent seems to form for itself a narrower channel, the farther it extends, the more enlightened, the more comfortable, and the more cleanly the population attacked by it.

But if, contrary to these predictions, the disease attacks us, we have reason to believe it will be singularly modified by the conditions of health in which we are situated.

Let us briefly state the facts in regard to the typhus fever of 1814 and 1815.

The disease had raged both in the victorious and in the vanquished army. The two banks of the Rhine had suffered from it particularly. The disease advanced, but, however, with less violence, to the banks of the Loire. Great numbers of the soldiers attacked with the disease entered our hospitals. Many officers and many of those employed, carried the

fever into different parts of the city. Morally more than physically, the French, especially the inhabitants of the capital, were impatient and irritated by the presence of the occupying armies, yet the typhus could not find a footing among us. It became extinct amid the ease and the prosperity of the inhabitants of the capital city and of the central provinces.

It is more proper to insist here upon this consideration, inasmuch as in some cases, particularly since the disease has appeared in Europe, the typhus forms, in some measure, one of the terminations of the cholera. Such facts doubtless add to our chances of preservation from it.

Still, the wide extension of the cholera morbus, as it now exists in several parts of Europe, is a fact which cannot be denied: this great fact surely recognises some causes peculiar to it and the knowledge of the causes of this phenomenon would be an immense benefit to humanity.

We dare, however, to avow that the peculiar manner in which the cholera developes itself, the essential cause of its extension, are entirely unknown to us; this is now the most essential point of research, and should be proposed to the investigations of the scientific in every country. Observation has thrown some light upon the other questions connected with the pathology of the cholera; we have some ideas and some facts peculiar to this disease; but as to its mode of transmission, if we except some simple general ideas, almost all is yet to be discovered, almost all is yet to be known.

On the other hand, it is certain that the union, the concurrence of a certain series of circumstances, singularly favors the disastrous progress of this scourge. Such are great and frequent asmospherical changes; combinations of heat and moisture, sometimes also of cold and moisture; abundant and long continued rains; want of cleanliness; the residence of the sick in narrow and illy ventilated houses crowded with men and animals. Now is it not evident that in these well-attested facts, we must look for the rule of the sanitary measures to be adopted?

Again, it seems to be sufficiently well established, that the cholera, particularly since its appearance in Europe, has been communicated in certain cases by the aid of foci of exhalations, in which the disease was, as it were, concentrated; and for instance, after numerous assemblies of men, and by collecting the sick in unhealthy, unclean, and badly ventilated places. It is no less certain that the cholera, like all large epidemics, is most frequently diffused and increased by the influence of hidden general causes, expanded probably in the atmosphere, the deleterious action of which is still increased, favored by the concurrence of the causes mentioned above.

The following are the most certain results of physical and medical researches in regard to the extension of the cholera: the rules of action in regard to it, should be based within these limits. The nature of the precautions to be adopted as sanitary measures, evidently depends on the manner in which the disease is propagated and extended.

Quarantines are particularly useful against those diseases which have a settled period of latent existence, and have a known term of transmission, as is the case with the small pox, for instance: but no observation has shown, that the cholera has a certain period of latent existence, that there is a determinate space of time, during which the disease has the power of transmission, and beyond which this power is extinguished and destroyed. Neither have the facts attributed to it a limited sphere of action. Can we then reasonably establish preventive measures, to the same extent and in the same manner, as if we possessed the data which are deficient?

In epidemics similar to that which engrosses our attention, perhaps the disease itself is not the greatest object of dread. Its moral effect upon the population, and its fatal consequences are also to be feared. If commercial relations are too much restricted by quarantines, — if the people are crowded together by sanitary cordons, — if the sick are collected in lazarettos, we hasten the attack, we increase the misery, we multiply the

causes of the development of the disease : new foci of miasmata of cholera are created, and these measures, employed in all the good faith of ignorance, to preserve the people from the disease, would tend directly on the contrary, to generate, to propagate and to aggravate it.

In the numerous epidemics of cholera which we have studied both in Asia and Europe, the sick, if in salubrious circumstances, are visited, touched, moved, changed and dressed, and the cholera does not extend ; the physicians proceed carefully and with the most minute researches to the post-mortem examination of the bodies, and they do not contract the disease. Numerous experiments have been made to discover the manner in which the disease is transmitted : persons have been inoculated, and their veins have been injected with blood taken from the veins of people actually affected with the cholera or who were dying of the disease : persons have been inoculated also with the mucous matter thrown off by vomiting : the skin has been rubbed with the same matter : persons have laid with those affected with cholera, and in the same sheets which they had left : and some have even breathed the breath of the dying, and always without fatal consequences.

Far be from us, however, the rash thought, of proscribing useful precautions and of blaming wise measures. On the contrary we demand these useful precautions, these wise measures, and exert all our influence to obtain them ; but in our interests for commerce and society, we desire that these precautions and measures should be kept within just limits : we wish also that they should be applied with discernment. If guided by profound knowledge and particularly by the light of experience, they will be beneficial and not injurious to the people ; they will not add to the distress of individuals, and to the affliction of the disease, a universal calamity, the certain wretchedness of misery, a scourge still more formidable than the cholera.

The minister has just reason, in his triple capacity of a man

a citizen, and a magistrate, to call for the lights of science and observation, in this perilous situation.

ADVICE TO THE CIVIL AUTHORITIES IN CASE THE DISEASE THREATENS.

What course should be taken by the government, in case the disease threatens, and what measures should be adopted in ca e the disease attacks?

One course which prudence particularly recommends, is to observe in a medical point of view, and with the utmost care the countries on our frontiers, in order to know exactly and at every moment what is there passing, in respect to their state of health generally and particularly in regard to the cholera morbus.

The newspapers publish, without examination, without comment, news which is not the less alarming because the next day contradicts the statements of the day previous; they frequently magnify the reports to add to the interest of the statement.

In order to prevent such serious evils, enlightened and experienced physicians should be immediately attached to the embassies and legations of the adjacent countries already suspected or even affected. Such a measure taken immediately, would be of the greatest utility; from the daily report of these physicians the government would receive documents, and these documents would be more worthy of confidence, the more judicious the choice of such physicians. This choice ought not to be made by men not conversant with the medical profession. With a constitutional government, where the responsibility of a minister should also be a practical truth, with the elective system that governs us, the scientific societieswho possess the knowledge sufficient to judge well, ought to be consulted exclusively on this subject. Councils of health should be appointed in the departments, especially in those parts that bound infected or suspected countries. France will find in this measure a new means of observation and another source of safety.

The government should determine previously the places of observation, to establish the depôts in case of real danger. This is their duty and obligation, ours to advise it. When lazarettos or quarantines are absolutely wanted, the government ought not to be found unprepared.

Very naturally and even from the nature of things, these different precautions will be taken first on some one of our frontiers. The sanitary cordons should there be vigilant, complete and faithfully observed. But on this subject the preparations of the academy should be carried farther ; an inward conviction and a unanimity of opinion oblige us to declare that the preventive measures of sanitary cordons should be established only on the frontier limits of the states infected or even suspected ; applied to the interior these means would be useless and dangerous. We must have no connexion with those foreign nations which might introduce the cholera among us ; but if the disease shows itself among us, let us not abandon, but mutually assist each other like brothers.

If notwithstanding the measures taken on the frontiers the disease arrives among us, and it has reached us by an epidemic channel, then the means of hygeia are the only ones admissible ; all laws of non-intercourse would be superfluous.

The sanitary cordons on the frontiers will be very useful and be very easy of application, without presenting the disastrous inconveniences with which they will be attended, if they proceed towards the interior and if they separate, for instance, one department from the rest, one city from another, or even one quarter from another quarter.

Striking examples of all the fatal consequences, attendant on this useless separation of city from city, of village from village, and of families from families, have been seen at Warsaw, and in the environs.

Those affected with cholera should be located over a large extent of country and placed in lofty, dry, and well ventilated places. The government should take these precautions previously.

Each city threatened with the disease should have one or more cholera hospitals according to its population. It would be better still if the sick people were removed to barracks or tents, if the season would permit it. Whatever these establishments may be, they should be situated on lofty places, far from the exhalations of rivers or lakes, in a cultivated spot, where the air circulates freely, and in a dry country, rendered healthy also by all possible means.

And as the instances of relapse are frequent, especially when the sick remain surrounded by circumstances capable of developing the disease, it will be necessary to have establishments for the convalescent, places of refuge for those individuals who have recovered too recently to return to their families, or to enter within the cities. A certain length of time should elapse between the period when the convalescent leaves the focus of emanation in which the disease went through its stages and that when he goes into society.

Under the head of general preparation, the management of the hospitals, the interior of the prisons, large manufactories, colleges, extensive boarding-houses, and bodies of troops require unusual care. In the wards of the hospitals, the beds should be placed farther apart, and neatness should be most carefully observed. The washing of the wooden floors should be strictly forbidden as the moisture arising from them is pernicious. The incumbrances of the different prisons should be diminished and their salubrity increased ; the workmen should not be crowded in the workshops : the barracks should be inspected, and the soldiers should bathe as often as possible ; winter clothing should be given to them early ; their linen should be changed frequently ; less wine should be allowed them ; they should eat more meat and less of vegetables ; more vigilance should be used, if that is practicable, in regard to the general health of the troops which form the different cordons of observation. All these precautions will be attended with the most favorable results.

Among the different points of the public health which call

for special measures in supposing the cholera merely threatens us, we shall mention privies, sewers, wells, and in the country the ditches for manure. The sanitary police should take such precautions, that if the epidemic comes no removal of filth, no cleansing of sewers, or wells take place during the epidemic, these different labors although they cannot produce the disease, may increase and aggravate it when it exists.

The places for rotting manure in the country and in the environs of Paris will also attract the attention of the sanitary government. Considered in respect to general cleanliness and the public health, this part of our rural economy demands great amelioration. The best method of remedying their unhealthiness would be to embank almost all their circumference, so that their waters being everywhere of an equal height will never leave exposed the muddy bottoms of their edges, which are always slightly sloping and far extended.

The pools, the marshes, the rivulets, the rotting of flax, in case of an epidemic, should attract more than ever the attention of the sanitary police.

There will be more than one advantage in expending a little less in building and furnishing lazarettos, in the establishment of quarantines, and the organization of sanitary cordons, in the appointment of directors, or those employed by the public health, and expend more in ameliorating the public and private health. Moderate labor has always been a cause of health. Hence, exertions to improve the condition of the laboring classes will be a good preservative against the cholera. It will be still better if this labor adds to public salubrity. In this point of view the Academy recommends the local authorities to have works of general utility and for the public health immediately executed by the poor population.

The government ought also to see that the houses of the poor present a sufficient number of windows in order that they may be properly aired.

Of all the modes of transmission mentioned in regard to the cholera, the epidemic mode is the most common and the mos-

manifest. Consequently it is proper that some precautions should be taken in regard to this point. The communication of the cholera also by the sick gives just cause of fear. Hence sanitary measures should be applied also to them.

The extension of the disease by merchandise being the most disputed and the least certain, it is not just to direct to this point all the attention of the administration. Besides excessive laws against merchandise would inevitably present new inducements to smuggling and consequently favor and increase it. But smuggling, being naturally composed of persons and things, that is, of the individuals who smuggle and the merchandise smuggled, would necessarily become one of the most fatal means of extending the cholera.

The government will be particularly urged to form, with regard to the cholera, a new list of suspected or susceptible merchandise, as is stated in the ordinance of September, 1821. Every disease which can be communicated has special laws of transmission; each ought also to have a different series of objects which conduct it, by the aid of which it is more easily extended. Those objects which are declared suspected in regard to the plague, may not be so to the same extent, or perhaps not at all so, in regard to the cholera. Farther, the tables annexed to the ordinance of 1821, independent of all considerations in regard to the cholera, present inconsistencies and anomalies contradicted by the physical and chemical sciences, which ought to be cancelled.

It will be wise to provide for the subsistence of the nation in case of a proximate attack of the disease. It will be prudent to give pledges and security to the numerous inhabitants of the large cities in regard to this subjcet.

ADVICE TO THE CIVIL AUTHORITIES IN CASE OF AN ATTACK OF THE DISEASE.

After this advice to the Government all of which applies simply to the circumstance of the cholera threatening, let us now

mention what it will be important to do if the disease appears among us :

To provide sufficient medical assistance for the poor.

To see especially that the sick are visited and assisted early. On this depends the success of all the means which have been employed from the first periods of the attack of the disease.

To prevent the collection of several patients affected with cholera in the same chamber, or even in a narrow and badly ventilated apartment, or one crowded even with healthy persons.

To watch over with the greatest care the cleanliness of the streets, the removal of filth, dirt, and the washing of the markets, slaughter houses, and the cleansing of sewers. To procure for the poor means of bathing frequently, at least twice a month for instance, and also the means of changing their linen suitably. They however should also be cautioned in respect to the baths and frequent changes of linen, so that neither of those means should keep the body moist for a long time.

To forbid in general all numerous assemblies for any purpose whatever. Experience has proved that these numerous assemblies result in increasing and aggravating the progress of the epidemic.

To change for a time the organization and the localities of the markets, particularly to divide them, to increase their number, and to hold them more particularly at the barriers, and in those places much exposed to the air.

To evacuate all the barracks situated within the cities, and to encamp the troops in healthy positions and at suitable distances.

To modify the custom-houses and to form them into as many sanitary committees.

To purify the chambers where there have been sick persons, either with solutions of chloride of lime or with fumigations.

To regulate particularly the burials by the advice of physicians. A proper limit must be observed between a too hasty and a too protracted burial: the first would be dangerous to individuals in a disease where death supervenes so quickly, and

often with syncope, which may for a longer or shorter time imitate death; the latter may become fatal to the people, in an epidemic where experience teaches that in certain circumstances each person may become a real focus of emanations of the cholera. In such a case the rules to be laid down then vary according to the intensity, and also according to the period of the epidemic. The course pursued may differ at the attack of the epidemic, at its height, and during its decline; it may also vary in that period of relaxation which is sometimes observed in the general progress of the epidemic, independent even of the variations connected with the periods which we have mentioned above. It however will be wise to cover the bodies in the coffins with lime.

ADVICE TO PHYSICIANS IN CASE THE DISEASE THREATENS.

Epidemics are serious events in the medical history of a people. We must compile their history and perpetuate the remembrance of them in order that the sad lessons of these calamities may not be lost to succeeding generations. Farther, the science finds in their existence powerful means of progress, and physicians are presented with striking opportunities of proving the importance of their services.

The epidemic cholera, in the regions through which it has passed, has varied remarkably in respect to its duration, its severity, and in the consequences which have resulted from it. If we are condemned to suffer it, the physicians should profit, wherever it appears, by the fatal advantage they will have of studying it; in order, that like those nations who have already observed it, we may contribute in our turn to make known all the modifications of which this terrible scourge is susceptible.

The duties of the physicians towards the population threatened, will doubtless differ from those toward a population attacked with it.

In this season of anxiety, when the citizens are continually fearful of the invasion of the epidemic, the physician, always

calm, should devote himself to the study of this disease, in order that if the danger is real, he does not commence inexperienced the career opened for him by the cholera, raging with more or less fury. When the epidemic exists all is terror and disorder; all consternation; we must prepare for these agitating periods, in moments of perfect tranquillity. At all events it is useful for the observer to possess some previous ideas of the objects which will pass before him. We study with more profit those phenomena of which we have a previous idea: those which come upon us suddenly, confound and often escape us.

Among the works on the epidemic cholera, which the Academy recommend as most useful to study, is the treatise of Anneslie, that of Jameson, that of Turnbull-Christie, the treatise of Lichtenstadt, the particular cases and four decades of facts of Jachnichen and Marcus; and as these different treatises in German and in English, have not as yet been translated into our language, the Academy does not hesitate to recommend its report made on that subject in accordance with the proposal of the Government. If we except the works of Deville, Keraudren, and Larrey, and some others on the cholera, the French physicians, as yet, have published nothing complete on this subject.

Hitherto very few of the French medical men have seen the disease.

The physician who has cause to fear a proximate attack of the cholera among the population under his care, should also study profoundly the characters of the surrounding country; he should endeavor to ascertain all the statistical details of the population among whom he practises. Afterward, by the aid of these preliminary facts, he can ascertain the number of the sick compared with that of the whole population, and the number of deaths compared with that of those sick; he will determine the classes, the professions, the sexes, the ages, the constitutions, which have been spared or attacked, which have recovered or have died.

By the aid of previous statistical statements, he will not confound with the individuals really attacked with the cholera, the number of those afflicted with diseases of a different character, which during certain seasons of the year, usually appear in the country. He will also distinguish, in the bills of mortality, the deaths by the cholera, from those which in the same periods of the year and common seasons, ensue among the inhabitants of the country, from different diseases.

The physician will endeavor to carry very far, this study of medical topography and statistics. Among the useful consequences of this kind of labor, he will endeavor to mention to the municipal authorities, any assistance which the public or private health may require. He will investigate the sanitary state of all numerous assemblies; he will direct the local government in the choice of a proper place for those patients with cholera, who do not wish or who cannot be attended at their houses; he will endeavor, also, to prepare previously a house for the convalescent; he will watch particularly, the daily reports of the hospitals; he will visit more carefully the prisons the barracks, the colleges, and large manufactories.

It will also be very important to study the sanitary state of the different kinds of animals before, during, and after the epidemic. He will observe the differences presented by animals resident in the country and those which are migratory; but he will study more particularly the diseases of domestic animals, of those which share with man the labors of agriculture and which constitute most of the wealth of a farm.

ADVICE TO PHYSICIANS IN CASE OF AN ATTACK OF THE DISEASE.

The duties of the physicians assume a grave character in case of an attack of the disease. Professional men should know how to avail themselves of the just influence given them by knowledge and the importance arising from their functions, to act upon those families whose confidence they have acquired.

They ought to enlighten them in regard to the real dangers of the disease, to the nature of the precautions which it is truly useful to take, and to the means necessary to employ to cure them.

Here each physician can embrace more easily the modifications governed by the different temperaments, which he may be obliged to treat. Generally when called to study an epidemic, it would be inexcusable to neglect to collect some cases. These cases should be numerous, various, complete; they will present single instances of the disease, considered during the whole epidemic, at its commencement, its height and its end; they will also embrace the different modes in which the epidemic terminates. With the cure, they will make known the mode of treatment which has succeeded best at each period of the disease considered generally; with the fatal termination, they will give the general results of post-mortem examinations observed also at different periods of the epidemic, that is, at its attack, its height and during its decline.

When the disease appears the physician will at first endeavor to determine the period of its appearance and the precise moment of its development; he will trace it to the first individual affected with it, and he will determine the circumstances under the influence of which this individual was attacked.

He will also carefully observe the first patients affected with the epidemic; he will ascertain if the disease exists in all the neighborhood or if the epidemic appears only in certain places; he will endeavor to determine the manifest conditions of these differences.

He must follow in a measure the progress of the disease in all those who have been successively attacked by it and in the different circumstances of localities, vicinity, connexions, and communications which might serve to extend the disease. He will form in a measure a geographical chart of the epidemic; he will trace its route, its genealogy, so as to follow it, step by step, from its appearance to its termination, and from its slightest attacks to its most frightful ravages.

He will endeavor to form comparatively the medical topography of the places where the disease arose, the topography of the countries where it most easily gained a footing, the topography of the adjacent countries unaffected by the disease.

He will endeavor to ascertain the conditions and causes of these differences under the three following points of view.

1st. The countries which have been violently and repeatedly attacked.

2d. The places which have been but partially and slightly affected.

3d. The countries which have been completely preserved from it, either accidentally, or from the effect of some sanitary measures.

The points which require to be enlightened by new facts are the following :

What happens when one is placed far from the centre of action of disease, away from the active sphere of the causes which produce it ?

Can an individual affected with cholera, and carried to a distance communicate the disease to other persons in conditions otherwise generally salubrious ?

In case the affirmative be true, what are the circumstances which favor this transmission? What on the contrary are those which retard or prevent it ? Can an individual in health, on travelling, carry the malady with him merely because he has lived among those affected with it ? What are the known conditions which increase or diminish this power of transporting it ? Can persons who only pass through the country where the cholera exists and who have not been attacked with it, become loaded with the miasmata of the disease and thus carry it into other countries. If an individual attacked with cholera is carried far from the focus where the disease originated, does he gain for himself more chances of recovery than if he had remained in the place where he was first attacked ?

Can a family, a body of troops or any assembly of persons among whom the cholera exists, recover more quickly from the disease by removing from the place where the malady attacked them? Do different objects which have been used by patients affected with cholera, such as bed-quilts, matresses, linen, clothing and other things carried away from the focus of the disease, possess for a greater or less length of time the power of transmitting the cholera to those persons who use those objects, or who have occasion to handle them?

Can other portable objects which have been used and kept by sick people, as furniture, books, papers and jewels, carry the disease far from its focus of action and independent of the circumstances capable of giving rise to a new focus? Can animal, vegetable, and mineral substances, articles of food and others which have remained in the country where the disease exists, although they have not been touched by the sick, transmit the disease to a distance?

Can domestic animals which have lived in the country where the cholera exists, in changing their situation, carry with them the power of transmitting the disease?

We grant that the solution of most of these questions is arduous and that attempts to resolve them will be dangerous.

Hence we must be content on this subject to collect and use those accidental circumstances which, arising during the course of the existing disease, either from generous devotion or from hazardous adventure, may form precious documents in regard to it.

There are other serious questions which can be solved more easily, and without any danger.

We can investigate whether those large assemblies of men, which have existed although prohibited by law, have favored the extension of the disease: we can examine what in this case has been the course of the disease towards the inhabitants of different communities, after a fair, a market, a public festival.

At what period did the cholera appear in the country and

how long has it existed? After entirely quitting a country, has it sometimes reappeared; and what have been the peculiarities presented on its second appearance? What was the general state of the atmosphere some time before the disease appeared, during its existence, and also at the period of its cessation? The summary of barometrical, thermometrical and hygrometrical observations during these intervals; and electrometrical observations, also, if they can be obtained, will be important.

What direction did the cholera seem disposed to follow in passing through the country?

When the cholera prevailed, has it ever been remarked that some classes of people were more subject to its attacks than others, and then, what were the circumstances of locality, profession, habits, age, sex, fortune, which assisted or resisted the attack of the disease?

Is there a particular period of the disease, is there a period of the epidemic generally, when it extends more easily and more promptly? Does this power of extension seem to be in direct ratio with the violence of the general disease?

Is there any reason for deciding if the disease has always extended epidemically, or if it is propagated by miasmata from sick people, by the migration of persons or the transportation of merchandise?

Has it ever been remarked that the cholera exercised any influence upon the common diseases of the country and what is this influence? What are the estimates of the number of the sick in respect to the population, and of the proportion of the recoveries and deaths in respect to the whole number of persons affected?

What mode of treatment has been attended with most success?

What modifications in the treatment are necessary in different periods of the epidemic, at its attack, its height, and its decline: and also at those periods when the epidemic cholera independent of the periods mentioned above, presents appearances of increase or diminution which disconcert the most attentive observers?

What has been the difference between those affected who have received medical assistance and those left to the simple exertions of nature, in the proportion and number of deaths and of the recoveries, and also the difference in the quickness and permanence of the recoveries?

Has it been possible to form a positive opinion of the general effects of opium, calomel, sulphate of quinine, subnitrate of bismuth, musk, oil of cajeput, ammonial and some other medicines?

Has bleeding generally produced good effects? and among the individuals where bleeding has been recommended are there many from whom the blood would not flow? Under the influence of what causes has this phenomenon been observed? Has any new remedy been successfully employed by physicians or the people?

What have been the most usual consequences of the disease as to its consecutive effects on different constitutions in severe cases, when the disease did not terminate in death?

Are there instances of relapse or of a second attack after a positive recovery?

Is it possible to determine if the disease by its general influence, seems to leave on the constitution of the individual some important modification?

What are the general results of post-mortem examination, made at different periods of the disease in detail and in general, and also in different periods of the intensity of the epidemic?

When a case of the epidemic cholera presents itself to a medical man, he must immediately inform the proper authorities, and ask at the same time a consultation with some of his professional brethren. This measure, demanded by science and humanity, will be executed quietly; but let not the physician, stimulated by an excess of zeal, declare the existence of the epidemic cholera too soon; let him be strictly on his guard against every mistake. Violent colics and diarrhœas, gastro-intestinal irritations, which often exist in the autumn, and

which although presenting some analogies with the cholera, are not however this disease, may easily lead into error. We know very well that pains in the epigastrium, vomitings, diarrahœa, and even contractions of the extremities, attend, although in a slight degree, the diseases above-mentioned.

Nor must we confound the epidemic cholera with the sporadic or indigenous cholera, if we may be allowed the expression. The latter which is observed in every place and at the same time as the diseases of summer and autumn is less acute, less serious, and less fatal ; farther, it never extends beyond a certain extent of country and never attacks but a few persons at once.

The picture of the symptoms of the cholera of which we are speaking, may be thus resumed : the physicians will easily recognise it, by these appearances :

Pains and anxiety in the epigastrium ; repeated vomitings ; frequent dejections ; the matters thrown off are composed first of the recent ingesta, but soon become fluid, whitish and flocculent ; violent cramps in the upper and lower extremities, coldness of the belly ; suppression of urine ; the skin of the extremities and particularly of the feet, pale, moist and wrinkled ; tongue soft, moist and cold ; peculiar expression of the face ; discomposure of the features; countenance hippocratic ; respiration scarcely perceptible ; pulse feeble and imperceptible.

In regard to the treatment, we must say in general, that in the early periods of the disease, which are marked by coldness of the surface of the body and by the concentration of the vitality internally, dry or compound frictions should be advised ; heat should be solicited to the surface in every manner ; warm bedclothes, vapor baths, different stimulants of the skin, cupping glasses, sinapisms and blisters should be employed.

In order to restore the circulation to the surface, bleeding has been successfully employed in young and vigorous subjects, as near the commencement of the disease as possible.

At the same period, under the head of internal remedies, very warm aromatic infusions are beneficial ; those diffusible tonics

which can be borne by the stomach ; the aromatic oils combined with alcohol and administered with laudanum, ether, ammonia, James' powder, Dover powder, &c.

The peculiar alteration of the gastro-intestinal mucous membranes has been treated with calomel, rhubarb, aloes, magnesia, either separately or in combination, and in doses indicated by the circumstances.

The nervous stage, the typhoid tendency, and even the change of the cholera into typhus fever has been treated with cinchona, musk, valerian, bismuth, camphor, oil of Cajeput, and all the remedies with which typhus fever is generally combated.

The prevailing symptoms of the disease have been attacked separately. Physicians have given :

For the vomitings, Riviere's potion,* opium, cold drinks, ice ;

For the frequent dejections, enemata of laudanum, aromatic frictions of the abdomen and blisters ;

For the pains and contractions of the muscles, friction with oil of turpentine, oil of Cajeput ; and these means have seemed much more efficacious, as they tend both to warm, to invigorate the cold surfaces of the skin, and to remedy the change of the innervation so remarkable in this disease.

Finally, for a farther description and also for more ample details of the treatment of the cholera, the Academy refers the reader to what has been published on this subject in the first part of its report.

The Academy will still insist on the necessity of pressing the employment of therapeutical agents at the first appearance of the disease. In this respect the Physicians will understand each other, and also have an understanding with the government, in order to increase their numbers in every part, so that the sick may always easily find the assistance they require.

To assist the poor more promptly, it will be highly advan-

* RIVIERE'S POTION. — Supersaturated Carbonate of Potash, ℥ ss.
Tartaric sirup, ℥ j.
Water, ℥ iij.
Lemon juice, ℥ ss.

tageous to increase the number of physicians and surgeons attached to the dispensaries. It would be well if this measure was put into execution immediately.

It would be desirable that every physician should attempt to ascertain exactly the nature of the disease which caused the death of the patient, when this fatal event occurs. This is the true mode of ascertaining, in the course of the epidemic, the real number of its victims.

In such pressing circumstances, and when the lives of the patients depend upon prompt and timely medical assistance, the physicians will discharge a religious duty by unusual diligence in the exercise of their professional skill.

They should be always ready, night and day, whether the patient be far or near. They are not to dispute with death for a single victim : but entire populations must be snatched from him at once. The physicians, sensible of the mission confided to them, will put forth new energies. Each one must find in himself courage necessary for his situation, and the courage of the physician prompts him to brave the dangers of disease when epidemics rage, as that of the soldier leads him to face death in battle.

ADVICE TO CITIZENS IN CASE THE DISEASE THREATENS.

The duties of the government, and the functions of the physicians, both when the disease threatens and when it invades, are, as may be seen, difficult and arduous.

In this state of things the first obligation of the citizens is, to endeavor eagerly to second the government and the physicians in the arduous task imposed upon them. It does not require a great exertion of reason to arrive at the conclusion, that in such circumstances the safety of the public is the supreme law, and that in order to save a whole population each one should devote a portion of his time, his fortune, and even his liberty. This unanimity, which may always be easily excited among the French, will exist particularly in these, if it be necessary.

Experience has proved more than once, that in epidemics; disorder and tumult add to the dangers. The disease attacks a greater number of individuals; the symptoms are more severe; it is more difficult to render assistance, and this assistance is less efficacious; and the mortality is fatally increased. Let the citizens then combine with the administrative authorities to avoid new afflictions. Public order and general tranquillity are at all times necessary to prosperity and happiness: when an epidemic exists, order and tranquillity are powerful means of preservation and of safety.

So long as we are only menaced by the disease, it would hardly be necessary in France, where the public health is generally good, to vary from the common mode of living. In fact, it is of advantage not to change the general habits, particularly for those persons who are in perfect health, and who are accustomed to live in a regular and healthy manner.

ADVICE TO CITIZENS IN CASE OF ATTACK.

But if the disease appears, unusual cleanliness, both of the body of the individuals and of their houses, will naturally present itself as of the greatest necessity at this period.

The constant employment of dry or aromatic frictions, the use of slightly stimulant baths, sufficient exercise, but not great fatigue, which are all capable of preserving the functions of the skin in a proper state, will be very useful.

All checks to perspiration, chills, exposure to moisture, rain, and the changes of the atmosphere, particularly to the night air, should be carefully avoided. The body, and especially the kidneys, the abdomen and the loins should be habitually covered with flannel worn next to the skin; the feet should be guarded, by all necessary means, from cold and moisture; cold and moisture of the feet are one of the most frequent causes of derangement of the functions of the alimentary canal.

They should always endeavor to preserve the digestive functions in a favorable state. They should seek by the nature of

food and perhaps also by choosing some accessory medical substances, as slight tonics, stimulants, diffusible in degrees proportioned to the wants of the different individuals.

A diet of almost entirely animal food, will have a salutary effect as a preservative. Beef, mutton, game, eggs, wheat-bread, fresh beans, and wine and water in small quantities, this is the foundation of all healthy nourishment. Smoked meats, salted meats, salt fish, pastry, watery vegetables, unripe fruits, and crude substances should be avoided.

Of all drinks, wine and water is the most proper. It is preferable however, to have the wine diluted with three parts of the carbonated water of Bussang, of St Pardoux, of St Gondon, of Seltz. Weak bitter infusions of quassia, hops, melissa, vervain, &c, may be used instead of the carbonated water.

It is especially necessary to avoid spirituous liquors and all excesses in eating; even a slight indigestion, during the reign of the cholera, is almost certain to produce the disease.

The abuse of wine, brandy, and spirituous liquors, almost inevitably causes the cholera; we cannot repeat this too often to those who sometimes indulge in these excesses.

It has been observed, in the different countries where this disease has existed, that the constitutions of all the individuals placed in its sphere of activity were modified, so that there was constantly a more or less manifest diminution of the functions of the skin and of the digestive organs. It will then be essential, in case the disease threatens, to prevent this general effect, and impede its development.

All persons living in the active sphere of the focus of the epidemic, who escape the cholera, nevertheless experience its pernicious influence, although in different degrees. This influence shows itself in populations attacked by it, by a general feeling of indisposition, frequent vertigos, fainting, pains in the stomach, constipation, borborygmus, anorexia, want of appetite, slight diarrhœa, in a word, by a universal derangement

of the functions of the alimentary canal. When this influence exists in a greater degree, it is manifested also by those spontaneous lassitudes, that exhaustion of the muscular strength, which so frequently mark the imminence of severe diseases, particularly those which belong to nervous fevers rather than to inflammatory diseases. In such a state of the public health, those individuals affected even with a slight indisposition, should hasten to ask advice of a medical man. In medicine as in morals it is easier to prevent an evil than to remedy it; and here the assistance of medicine is particularly efficacious against this state, which is neither one of health nor that of disease.

As soon as the first symptoms of the disease appear and while expecting the arrival of the physician, attempts should be made to restore the weakened vitality — to warm the cold surfaces of the body, by every possible means; aromatic and even spirituous baths, taking the precaution to dry and warm the body after bathing; radiating caloric upon different parts of the skin by passing a hot iron over, but at some distance from the surface; sinapisms repeated frequently, and other analogous means will fulfil the first object.

As internal remedies a warm aromatic infusion may be taken; a few drops of ether on sugar; a mixture of two drops of essence of mint and one drop of Rousseau's tincture in a spoonful of sweetened water; four to five drops of Cajeput oil in half a spoonful of mint water; a spoonful of syrup of ether. Some glasses of cool lemonade, or pieces of ice held in the mouth, may allay the vomitings. All these remedies will allow time to wait for and to follow the prescriptions of the medical attendant.

Friction with alcohol and the spirits of turpentine with Cajeput oil — and with the camphorated spirits of wine, — will relieve for a time the pains in the extremities.

Our remarks in other places on the treatment of this disease either in the report, or in our instructions may serve as a further guide to persons intelligent enough to profit by them.

Those individuals who are not lodged in a place healthy enough for such a state of disease, or who are not sure of securing the necessary assistance at home should immediately enter the establishments provided by the government. Calculations have been made in Russia of those individuals of the poorer class treated at home, and those of this same class who entered the hospitals ; the advantage has been immensely in favor of the latter. The duration of the disease was less, the pains were less, the symptoms were not so intense, and the recoveries were more numerous, and quicker. For the cure of this disease simple or compound baths, aromatic vapor baths are often necessary ; and such conveniences are not easily found in private houses.

The epidemic cholera does not affect all individuals without exception who are exposed to its influence and in order to be attacked by it a peculiar habit of body, a determined aptness for contracting it, is necessary. This disposition, this aptness is caused particularly by fear, want of cleanliness, excesses in eating or of any other kind, the abuse of wine, brandy, and liquors, coldness and moisture ; in avoiding these general causes, we guard against the cholera. This special predisposition — this susceptibility of the causes we have mentioned — is deficient in many individuals. It diminishes still more every day, as the disease advances to more enlightened, more prosperous, and more cleanly population.

Every day we see in the political journals new preservatives from the cholera, and new specifics for this disease. The public should be on their guard against these ostentatious promises of preservation and cure — their least inconvenience is to give a false security and to distract attention from remedies which are truly useful. If experience makes known remedies more generally powerful than those we now possess, if any certain preservative is discovered, the Academy will immediately inform the public of it officially.

Under the head of prevention, in addition to what we have already said in regard to cleanliness, we should recommend frequent ablutions of the hands with a weak solution of chloride of lime, one part of the chloride mixed with 100 parts of water. All the disinfecting chlorides may be employed; frequent or even constant fumigations with the vapors of chlorine, procured from different articles in commerce, or even by disengaging chlorine directly from the chorides by means of vinegar, may be used.

The chlorides however must be employed with moderation and with skill; they may prove injurious if used too liberally.

After the epidemic has ceased, we must be careful not to suspend the preventive measures entirely; numerous cases prove that the disease reappears a second time in the same place and often with more intensity and severity than at its first attack. We must also institute in the countries which have been affected with cholera, a convalescence of greater or less length, and a regimen more or less strict. The duration of all the other conditions of this convalescence of places, if we may be allowed the expression, should be regulated by the physicians, who should themselves be governed by circumstances actually dependent on the epidemic.

To purify the houses and the apartments after the epidemic, to cleanse the walls with lime-water, to wash the drapery and to expose the furniture to the air, will undoubtedly be useful.

After the epidemic, we often remark in those individuals who have been affected with it, and sometimes in those who have been exposed only to the simple influence of the epidemic mentioned above, a feebleness, a considerable change in the gastro-intestinal functions; marked derangements in digestion, diarrhœa, dysentery, obstinate constipation, prove the great ravages caused in the economy by the epidemic cholera; such states of health require great care.

It is by the aid of the fertile instructions of observation, collected at the most certain sources; it is by the great power, the collected experience of the most authentic facts, that we have embraced the different periods of the epidemic, its simple menace, its real attack, its decline and its disappearance.

Sensible of the sacred character of its mission, the Academy has neglected no means of rising to the height of its duties. Each member has rivalled the others in zeal, even when the danger hardly threatens at a distance, and has shown what information can be brought into action, if we are obliged to confront it.

Sept. 13, 1831. (Signed) KERAUDREN, President; MARC, CHOMEL, DESGENETTES, DUPUYTREN, LOUIS, EMERY, BOISSEAU, DESPORTES, PELLETIER, ITARD, DOUBLE.