Remarks on the epidemic yellow fever, which appeared at intervals on the south coasts of Spain, since the year 1800 / Robert Jackson.

REMARKS

ON THE

EPIDEMIC YELLOW FEVER,

WHICH HAS APPEARED AT INTERVALS

ON THE

SOUTH COASTS OF SPAIN,

SINCE THE YEAR 1800.

BY

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PREFACE.

THE epidemic, known by the name of yellow fever, which has ravaged the sea coasts of the south parts of Spain at intervals since the beginning of the present century, and which has excited alarms in other parts of Europe, had not as yet come under the writer's notice; and, as he had seen much of the disease which bears the name of yellow fever in the West-Indies, he was desirous of satisfying himself by his own observation of their difference or identity if the accidents of chance should ever put it in his power to do so. A fever of an alarming kind was reported to have made its appearance at Cadiz in the autumn of the year 1819. The author, desirous, as a physician, of knowing of what nature it was, and conceiving that it might be an object of some importance to the nation

to ascertain distinctly whether or not it was contagious, took the liberty of making an offer to the British Government, through the Director General of the medical department of the British army, to undertake the investigation of the subject, and to proceed to Cadiz for that purpose without loss of time, and without any other condition than a passage free of expense, and such form of introduction to the Spanish Authorities as would enable him to prosecute his object without interruption. The offer was made as soon as the newspapers announced the appearance of the malady; and, in five or six weeks thereafter, an answer was transmitted to the writer, who then lived in the country, that the Spanish Government was not averse, and that the Secretary of State for war and colonies, (to whose office it would appear the matter had been referred,) was not unwilling to defray the expense of the passage to the place where the disease was. The author set out for London immediately on the receipt of the information: he was not able to set out for Cadiz in less than three weeks, detained, as it appeared, by the backwardness of the Spanish ambassador to grant the necessary papers to enable him to enter Spain. It was

now the month of December; and, though it was more than probable that the epidemic had subsided, if it had not altogether ceased, he still persisted in his design; in the hopes that, though he might not have the opportunity of seeing the disease in its strength, if he should see it at all, he might still have the opportunity of obtaining more correct information respecting it than he could otherwise expect to obtain. With this expectation he embarked at Falmouth in the December packet, and arrived at Gibraltar about the end of the month. In a very few days after his arrival, and when in the act of setting out for Cadiz to commence his research, information was received by the Governor of the garrison that an insurrection had taken place among the military, which threatened a subversion of the government: the *isla de Leon* was in their possession, consequently the route to Cadiz by land was obstructed.

The author, defeated in his purpose by this accident, waited for nearly two months at Gibraltar, in daily expectation that the insurrectionary movement would be appeased, and that the route to Cadiz would be free. The detention was irksome; and finding, after a long delay, that there was no calculable time

for the removal of the impediments, it occurred to him to make an excursion to the Levant, with the intention of being at Cadiz next autumn, so that he might be on the spot, in case the yellow fever should then re-appear. He undertook the journey to the Levant on his own motive and at his own expense; partly in the desire of seeing Greece, a country in which he had lived in idea the greater part of his life, and partly in the hope of obtaining information respecting the nature of the diseases of the Mediterranean shores; particularly respecting the plague, a disease which he had never seen, and concerning the history and nature of which he could form no distinct idea from what he had read.—In prosecution of this purpose, he went from Gibraltar to Malta; from Malta to Constantinople; from Constantinople to Smyrna; and from Smyrna, passing among the islands of the Archipelago, to Athens and the Morea, embarked at Patras for Zante, where he arrived in the month of June.

The plague did not prevail in the Levant during the time of this excursion; consequently one part of the object of the journey was defeated: other parts of it were defeated from other causes. It was in the author's intention

to have visited the whole of the Ionian islands that are under protection of the British; and, after that, to have continued the route by the sea coasts of Italy, France, and Spain, to Gibraltar, for the purpose of observing the medical topography of the different parts on the coast, and of thus extending and connecting his view respecting the material cause of febrile diseases, as a subject of general science. Investigation into the nature of the yellow fever was the author's motive for leaving England; it was therefore his determination to be at Cadiz in August. The time was now short; and there were moreover so many chances of interruption on the route, so much fatigue to a person advanced in years, and in an infirm state of health, and so much expense to a man of narrow pecuniary means in travelling by land, that the idea was abandoned, and the first opportunity embraced which presented itself by water. One being soon found, he embarked at Zante, and arrived at Gibraltar in the latter end of July; and from thence, after being refreshed, and somewhat recruited by the more than common kindness of the Governor and his family, he set out for Cadiz on the 23rd and arrived on the 25th of August. It must be considered as among contingencies

in the operations of nature, whether or not the yellow fever should appear in Cadiz in the year 1820; but it so happened that it did appear; and moreover that its appearance was announced on the 25th, the day on which the author entered the city. It was epidemic at Cadiz for two months or more; but it was not epidemic to great extent. A similar disease appeared at Xerez de la Frontera much about the same time; and, by report, of an aggravated degree of virulence. The author remained at Cadiz until he had satisfied himself respecting the nature of the malady which prevailed at that place; and, as the malady which raged at Xerez was of a severer feature and of a greater proportional mortality than that at Cadiz, he went there with a view to ascertain, in so far as he could, what its real condition was. He was desirous to obtain information on the subject; and he believes he has attained some information which may be relied on. His health was infirm at the time; and, as he could not have done much by his own endeavours, he owes much gratitude to those who assisted him in doing what he has done.

General Sir George Don, Lieutenant Governor of the garrison of Gibraltar, (a person

whose attention to the health concerns of those who are placed under his jurisdiction, whether they be civil or military, has perhaps no parallel among generals and governors in the British dominions), permitted Mr. O' Halloran, assistant surgeon of the 64th regiment of foot, to accompany the writer to Cadiz. Mr. O' Halloran was known to him in the West-Indies, known moreover to be a person who had courage to look danger in the face in whatever shape it might present. He was zealous in the pursuit of professional knowledge, and of an ardency of temper which committed him wholly to the duty which he undertook. He was active in his pursuit while at Cadiz; and in the month of September he went to Xerez, where there was a great field for observation, and where he found the opportunity of making trial of his practical skill. Mr. O'Halloran opened some dead bodies both there and at Cadiz; and to these dissections, and to the experiments which he made, the author is indebted for the means of proving the truth of opinions that he could not otherwise have had the opportunity of proving in Spain. Without Mr. O'Halloran's experiments the author is ready to confess that his views of practical treatment

would have been no more than presumptive of the truth: as it is they are next to demonstrative; and he thinks that he now sees to what extent reliance may be placed on the medical art in controlling, even in arresting, the course of this formidable disease. It is not pretended that success uniformly followed the measures of cure that were adopted by Mr. O'Halloran; but it may be said with safety that the failures were comparatively few; and it is moreover reasonable to believe that they would have been still fewer, if circumstances had permitted the full execution of the view that was contemplated. But, be this as it may, the experience alluded to proves distinctly that blood-letting and other means of depletion may be employed freely, even with as great freedom in the yellow fever of Andalusia as in the fevers of other countries; for it was here distinctly seen that, where abstraction of blood was carried to extent, success was comparatively certain—the cure for the most part speedy and perfect. The endemic yellow fever of the south of Spain is in itself a disease of great danger; and, under certain conditions, it is a disease of great treachery. It is not unmanageable, or beyond the power of the medical art; but the ma-

nagement of it requires close observation of circumstances, with a prompt and efficient application of remedies, which, as things were, could not be commanded in Spain.

The author set out to investigate the nature of the yellow fever under sanction of the British Government,—even with an allowance in money to defray the expense of the passage to Cadiz. He had no instruction; and he did not conceive himself to be a person acting in mission; he notwithstanding thought it to be his duty to transmit to Government, such information respecting the nature of the disease, as, in his opinion, bore on the regulation of intercourse with infected places. This he did under the impression that it was his duty to do so. He now perceives that it was an unnecessary, and perhaps an impertinent duty which he had assumed. When he returned to England, which was in the month of December, 1820, he reported his arrival at the office of the Secretary of State for war and colonies, offering at the same time to give whatever information he might possess on the matter which had been the subject of investigation in the journey. The Secretary of State did not desire to see the writer; and did not think it worth while to require any

information from him; and, as the remarks in the papers which were transmitted from Cadiz, were pointed remarks—in his own opinion conclusive of the non-contagious nature of the yellow fever, and consequently of the inutility of quarantine in so far as respects that disease, he can scarcely avoid concluding that these papers, if they have been received, have not been read; or that the subject to which they relate, viz. the law of quarantine, is a prerogative subject not to be touched by the uncourtly pioneers of truth. The author has, for this reason, incorporated the material facts and arguments stated in the papers alluded to into the following pages; in expectation that, as the matter of fact is correct, (if medical facts are ever to be deemed such,) the public may have the opportunity of seeing it as it is, and of judging for themselves whether or not the conclusion to which it leads concerns their interests.

Such as has been stated was the motive of the present undertaking. The execution of it was attended with some difficulty; and the author is aware that it is only imperfectly executed. Ill health was an impediment to activity during the investigation; and inveterate habits and old age are now chargeable

with some of the imperfections which attach to the execution and literary composition. Much of the author's life has been spent in military hospitals, where the physician commands by authority and probably becomes imperious. Habit gives manner, and the writer is sensible that, as a writer, he is harsh and didactic. He may even seem to be sometimes presumptuous; but, if he be so, he must take leave to say that he is not so from self-opinion. He wishes to give all the information he can; and it is probable that he will be considered by some to be too minute, even perplexing by the distinctions which are made in the differing conditions of the same disease. The distinctions, he believes, are founded in truth; and though they may be obscurely defined, he trusts they are so defined as to be intelligible, if they be duly considered. Besides the imperfections alluded to, the advanced age at which the author writes will not be overlooked by the candid, if it so happen that the same thing be repeated oftener than once in the course of these pages; or if things, necessary to be said for the elucidation of the subject, be altogether forgotten. The author is ready to admit that there may be unnecessary repetition on some occasions, or

omission of things necessary on others; but he believes that what he has said is founded in truth, and he trusts that there is little of it which may not be useful, if it be rightly comprehended.

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CHAP. I.

A Sketch of the Medical Topography of Cadiz and its Environs.

THE province of Andalusia, which forms the south, and one of the richest parts of Spain, is of an irregular surface, and in many places the scenery is beautifully picturesque. The surface is intersected by various chains of mountain, some of them of considerable elevation. The plains or vallies which intervene between the chains of mountain, are of various form and dimension. Some of them are extensive and level, studded here and there by eminences, or broken irregularly by ravines and gullies. The plains, though the soil be light, often literally sand, do not appear to be infertile, if opinion may be formed by the quantity of grain which they produce with inferior culture; or the number of cattle which they maintain in good condition,

at most seasons of the year, without extraordinary care. The hilly or elevated part of the province—not mountain, is generally dry, of a light and apparently unproductive soil, and covered with heath or brush wood. The extensive level plains which furnish pasture for horses, cattle, or flocks of sheep, as not drained by art, are nearly in a state of bog in the rainy season. The soil is generally loose and light: water penetrates deep into it; and, as there is little current or outlet, and rarely a tenacious clay to form a superficial crust preventive of exhalation, the absorbed water continues to rise in vapour from an apparently dry surface during the great heats of summer. Exhalation from the earth is known to be a cause of intermitting fever. The people who live upon the plains, or on eminences near the plains, are consequently, as might be expected, much harassed by agues. The type sometimes assumes the quartan form; sometimes it appears as distinct remittent; and sometimes it sinks into obscure remittent or gastric. From gastric there is an easy transition to continued or contagious typhus; and sometimes, under epidemic influences, a form of disease not unlike that which has obtained the name of yellow fever prevails to some extent.

The province of Andalusia, as of great variety of surface, and not drained and cultivated with a view to diminish the force of the cause of the disease which belongs to the soil, does not strike those who visit it transiently as a country favour-

able to health. The tertian ague, which belongs to the soil, presses severely upon the inhabitants at particular times in most of the lower districts; and adventitious epidemics rage with violence on some occasions like a pestilence. The latter have been destructive at intervals since the beginning of the present century, at different points on or near the sea coast. Cadiz, Xerez de la Frontera, Seville, and Malaga, have suffered conspicuously,—Cadiz more frequently than the others.

The city of *Cadiz* occupies the point of a peninsula which is nearly level with the sea. The site is circumscribed—rhomboidal in form. The houses or habitations of the people are erected on shelves of rock at one place, on alluvial sand at another; of course many of them stand over a bed of water. The site of Cadiz being of small extent, and the commercial business of great compass, the dwelling houses have been raised to great height, always to four stories, sometimes to more. The streets are in straight lines, remarkably well paved, and cleaner perhaps than the streets of any town in Europe:—they are narrow from the circumscribed bounds of the locality. The houses are good, almost without exception; many of them are magnificent: the apartments are lofty; the windows of the sitting rooms descend to the level of the floor; the sitting rooms are thus well ventilated; the sleeping rooms are not always so. The apartments are narrow in proportion to the height of the roof,—an aukwardness in dimension which conveys an

idea of prison-like confinement. Most of the dwelling houses have an interior court or area, with a well of excellent water for the supply of the whole of the families who live under the same roof. Cadiz may in fact be considered as one of the finest towns in Europe: in Spain it bears the name of beautiful,—and the name is not misapplied. The nuisances of a common sea beach are covered from the view by walls and ramparts, terraced walks, and bomb-proof cellars; insomuch that this city, crowded as it is with population, rarely, if ever presents any thing that is offensive to the eye, or that can be supposed to be noxious to health.

The point where Cadiz stands, and which presents itself as a shoot from the isle of Leon, is joined to the isla and port San Fernando by a low bank of sand, which is elevated by a pavement of massive stone to a magnificent causeway. The isla itself is of considerable extent: a great part of it is swamp intersected by numerous sluice canals. The swamp, impregnated with a saline material in high proportion, is converted into a manufactory for salt; and it is one of great extent and value. The whole of the isla, as nearly on a level with the sea, is saturated with water. It is not unhealthy comparatively; and, as such conclusion would not be formed from the superficial appearance of a simple swamp, it is reasonable to believe that the comparative salubrity is owing to the strong impregnation of the moisture of the soil with saline particles.

Puerto real, which lies on the south-east side of the bay opposite to Cadiz, appears to have been once a considerable place: it suffered extremely, was in fact nearly demolished by the French during their occupation of Spain, and it is not yet rebuilt. The site is dry and somewhat elevated above high water mark: it is said to be healthy comparatively among the towns on the coast.

Puerto de Santa Maria, a considerable and rather a handsome town at the north-east side of the bay, near the mouth of the Guadelete river, is subject to the action of the causes which float in the atmosphere of the bay and its environs; and likewise to the contingencies which arise from its intimate commercial connexion with Cadiz. The site of Puerto de Santa Maria is upon the whole dry in itself: it is near the embouchure of the Guadelete river; and, as such, exposed to the exhalations which arise from the banks of that river, which are low, swampy, and often inundated.

Xerez de la Frontera, an open town, built on a ridge of height of a somewhat irregular surface and of nearly three hundred feet elevation above the bed of the Guadelete, from which it is distant about two miles, is another of the places which requires to be noticed on this occasion. Xerez contains forty thousand inhabitants or upwards. The town is not drained, and only a few of the streets are paved. The unpaved streets are miry in wet weather; and many of them are moreover offensive by accumulations of rubbish and

other nuisances in the dry season. There are some good houses in Xerez—commodious and well equipped; many are low, damp, and ill ventilated. The soil of the site is sandy, such as absorbs the rain which falls upon it. The moisture disappears from the surface in a short time after rain: it presumptively remains at a certain depth in the earth, not beyond the reach of the action of the summer's heat; consequently it is exhaled in vapour; and, if we may judge by the effect, it acts noxiously on the health of the inhabitant. The people of Xerez, particularly labourers who dwell in ground floors, or in cottages near the town, suffer much from intermittent fever of the tertian and sometimes of the quartan type.

The sketch of locality here given is only a superficial one. It is however evident from the statement, superficial as it is, that intermittent and remittent fever, more or less complicated and dangerous according to circumstances, may be expected to be the prevailing form of malady of the whole of the environs of the bay. Near the sea coast, particularly in the autumnal season, the more prevailing form is presumptively that which is not improperly termed gastric, easily convertible into yellow fever under the occurrence of one of those unappreciable epidemic influences, which arise at certain intervals, and for a time pervade and ravage, like a pestilence, certain districts of the earth.

CHAP. II.

A short History of the Introduction of the Yellow Fever into the Sea Ports of the South of Spain, with some Account of its supposed Propagation by Land, extracted from the most creditable of the Spanish Medical Writers, confirmed or refuted by the evidence of respectable Persons who observed the facts, and, to a certain extent, by the Author's observations on the spot.

THE importation of the disease called yellow fever to the West-Indies from Asia or Africa, and the exportation of it from the West-Indies to the sea ports in the south of Spain, though not proved and presumptively not capable of proof, is still credited by a considerable number of medical writers of different nations, by the mass of the people of Spain, by the official authorities who are appointed to preside over the health concerns of that kingdom,and even by the authorities of those European states which have commercial connexion with places where the disease prevails. If the opinion assumed on this occasion be not founded in truth, it is evidently injurious to the interests of the community that it should be allowed to have credit and cur-

rency; and, for this reason, it is necessary to give a statement of the grounds on which the assumption is built, and on which it still obtains credence among the health counsellors of European states. There is not perhaps one practitioner in one hundred who has resided for years in the West-Indies, who believes that the concentrated endemic of that country, usually called the yellow fever, is a disease which possesses the power of propagating itself from person to person within the tropics. Ships leave the West-Indies not unfrequently with a numerous list of persons ill of the disease called yellow fever. The number of the sick increases alarmingly on some occasions at the early part of the voyage; there is not, it is believed, one authenticated instance where the original has reached any sea port in Great Britain, or even perhaps any sea port in the south of Spain, in genuine form. If this be well founded, and it cannot be controverted by true testimony, the idea of the importation of the yellow fever from beyond the seas, cannot be maintained by any person who is not predetermined to maintain error in the face of truth. The case stated is fundamentally true if reduced to its principle; but it is proper to observe, at the same time, that it is so disguised by circumstances on some occasions as to embarras those who are satisfied with opinions drawn from superficial appearances only. It is necessary to mention what may be:—if a vessel, for instance, should happen to have a great number of persons ill of the yellow fever in its passage from

the West-Indies, it is possible and even probable that, by throwing these persons together in the mass in ill-ventilated apartments, (as the 'tween decks of a ship, even of a ship of war, must necessarily be), the contagion, which belongs to an atmosphere corrupted by accumulation of living subjects in narrow space, can scarcely fail to be generated: a contagious fever will thus be produced and carried to whatever port the vessel may be destined to go. This is within the circle of possibility; and it has probably sometimes occurred. The imported fever is contagious; but it is not the yellow fever, though the yellow fever may be the source from whence it originally springs.

The question of importation, or non-importation of the yellow fever from the West-Indies or North-America, to the southern parts of Spain, has been a subject of unpleasant and unprofitable controversy among medical writers for some time past. It is important to the community that it should be determined; and it is fortunate that the occurrences of the year 1820 bid fair to determine it, so as to set it at rest for ever. The case is not equivocal. An epidemic fever, commonly called yellow fever, made its appearance at Cadiz in the month of August, 1820. No vessel had arrived from a foreign port near that period to which its importation could be assigned; consequently those who believed in the opinion of importation from a distant country were silent. A similar disease appeared at Xerez de la Frontera somewhat earlier. Xerez is not a

sea port, and has no direct communication with the sea or with shipping. It is not known, not even conjectured, in what manner the fever was introduced into Cadiz; nor can it be distinctly proved in what manner it was brought to Xerez. The vulgar report is here stated; not that it is credible, but that the reader may have the opportunity of knowing the flimsy foundations on which opinions on this subject ordinarily rest. A young woman, who had been on a visit at Cadiz, arrived at Xerez in the early part of August, under indisposition. She was received into the house of a friend or acquaintance; and, the disease threatening to be severe, she was sent to the hospital, where she died in a few days. The physician who attended the hospital does not, according to report, acknowledge that the disease was yellow fever; but, as yellow fever first made its appearance in the house where she had lodged, suspicion attached to her as the importer. It is impossible to speak positively on the subject; but this at least is positive, that yellow fever was not acknowledged to be in Cadiz for ten days or more after the person alluded to was dead and buried. Notwithstanding what is now said, the common voice still considers her as the importer; even the physicians were credulous at first. They abandoned their opinion after a formal investigation of the circumstances: they had not courage to speak out boldly; for it is, or has been dangerous to speak unpopular truths in Spain. It is a distinct fact that the disease did appear at Cadiz

without the most distant suspicion of its being imported from a foreign country; and it is moreover true that it did appear at Xerez, without a possibility of ascertaining correctly from whence it came. The point is clear and satisfactory to every person who thinks and reasons; but it has not as yet made impression on the health counsellors of the state, and it is doubtful if it ever will. In support of this assertion, which may be deemed impertinent, but is not unimportant, it is necessary to bring under view a point or two of history, corroborative of the facility with which official authorities are deluded, deceived, and driven to act precipitately and injuriously to the general interests of the people over whom they are appointed to rule. The error is strongly exemplified in the history of the supposed introduction of the yellow fever into Cadiz in the year 1800. No medical author has, I believe, attempted to prove by distinct evidence that yellow fever was actually and positively imported into Spain at that, or any other period. The probability only is admitted; and, that being admitted, the actual importation was here attempted to be fixed on the brig Dolphin, which sailed from the Havana on the 27th of May, touched at Charleston in South-Carolina, took three sailors on board, and finally arrived in Cadiz bay on the 6th of July. The Dolphin lost three men on the passage; one of them, according to the professional report of Dr. Caro, an experienced and respectable physician who was on board, from pleurisy, one from putrid fever, the other

from venereal ulcers and gonorrhea. The log book of the ship was examined; and the death of the persons alluded to was ascribed, in the opinion of the master of the ship, to yellow fever. The opinion of the master of the ship prevailed over the opinion of Dr. Caro; and the vessel was put under quarantine regulation. The Dolphin was thus held, in common opinion, to be the source from which the disease sprung, and a number of absurd stories were invented to give it credibility. The story, when maturely examined, is contradictory of itself and of the common law of nature. Yellow fever has never been observed at Charleston, or any part of America in the month of June. It could not therefore be supposed to have been imported from that place; and, as the material of the disease would seem to be ascribed to the American sailors who died on the passage, the supposition of its existence is vague, even contradictory of the best authenticated experience of the best informed men. There are thus, exclusive of the testimony of a creditable physician against the random assertion of a mere sailor, fair grounds to acquit the Dolphin of the imputation that has been laid against her. There were other vessels in the bay at the time, to which suspicion of importation was attached; but it seemed to be sunk, in the opinion of the board of health, in the more imposing case of the Dolphin.

The Spanish authorities adhere to the opinion of importation without evidence of the fact; and it is here proper to adduce, in proof of the assertion,

some circumstances which occurred at Malaga in the year 1803, where the board of health appears to have strained the suppositions of importation beyond consistency. Two French brigs, filled with deserters and vagabonds for the reinforcement of the army of St. Domingo, cast anchor in the road of Malaga in the month of July, for the purpose of procuring refreshment and supplies for the voyage. The contagious fever of jails and hospitals prevailed among them at the time; and, permission to land being obtained, they were received into the castle of Gibralfaro, where they remained until the 7th of September, when they were re-embarked to proceed to their destination. The fact is merely stated:—the recruits are not directly charged by Arèjula with the importation of the yellow fever. A vessel arrived from Monte Video about the same time with the French brigs. She was loaded with cocoa, tallow, and hides; and as that perhaps was thought to be a suspicious cargo, she was suspected; but nothing direct is brought against her. Besides the brigs with recruits from France, and the vessel from Monte Video, a Dutch galliot from Smyrna, cast anchor in the road on the 14th or 15th of July. Smyrna is afflicted with the plague not unfrequently: it is not accused of having ever produced the yellow fever. A person of the name of Munoz, a smuggler of contraband goods, is reported to have brought some cotton stockings from the Dutch galliot as merchandize; and he is moreover reported to have taken to bed immediately on his return

home, and to have died in a few days. The house was shut up by the family, and no alarm was given to the public by the unusual manner of his death. In thirty-six days from this date, a man of the name of Verduras is stated to have brought a sick person on shore clandestinely, whether from the Dutch galliot or the vessel from Monte Video, could not be ascertained. A medical attendant was procured for him secretly. He died in a few days, and was buried at night by the sub-curate of the adjoining church, St. Pedro. From this source, the yellow fever is supposed to have been imported into Malaga in the year 1803. The yellow fever is not supposed to exist in France, at Smyrna, or Monte Video; yet the vessels which came from these countries are the only ones against which suspicion lies. The story, as here given, is vague and incongruous, —so naked that credulity itself can scarcely be satisfied with the framing of it; and it is matter of surprise that Arèjula, who is held to be the first authority in Spain, on the subject of the yellow fever, should have given it a place in a work which is supposed to be a record of facts.—It would be a waste of time to follow the subject farther.

It is so difficult to comprehend the meaning of the Spanish physicians who have written on the propagation of the yellow fever, whether in one city, or in its transmission from city to city through an extent of country, that it is a vain attempt to endeavour to make it intelligible to common readers. It is however, the duty of the author to in-

vestigate and endeavour to collect the more important points in the history of its propagation, which have been submitted to notice by the most accredited writers on the subject, adding, in confirmation or refutation, what has been obtained from sources of authenticity, as well as what has fallen under his own observation.

The Spanish physicians seem all of them to believe in the existence of contagion as the cause of this disease. They differ in their opinions as to the extent of the contagious operation. Some believe that the property is present only in the living subject, and that it passes from one living body to another living body by contact or near approach only; others, that it is communicable to clothing, or other matters that have been in contact with the infected; and that it is thus conveyed, or capable of being conveyed to distant places in different states of concentration. If the first supposition be true, the operation of contagion is brought to a comparatively narrow field—the course capable of proof or refutation by direct evidence; if the second be admitted as fact, the modes of propagating being numerous and ambiguous, the act, as liable to suppositions in all parts of its history, will still remain in uncertainty and subject to dispute. The infecting matter is not visible to the senses; and, as an infected rag, or a bundle of dirty clothes is capable of conveying it to distant places, the medium presents itself on every occasion to the imagination of the contagionist, and thus gives him invisible and

often fictitious aid in smoothing the difficulties of transmission which occur within his experience.

The epidemic or yellow fever which prevailed at Cadiz in the year 1800, whether imported from abroad or otherwise produced, commenced at the end of July and beginning of August, in the district of Santa Maria, extending to the Sopranis and Bosquete, slowly and gradually at first, rapidly and alarmingly after the celebration of a religious procession, instituted for the purpose of imploring the Divine interposition against the ravages of the malady. From this period the disease increased daily, and soon became mortal almost as a pestilence. Its ravages were great: they amounted in fact to the destruction of one-sixth part of the population of the city, in the course of little more than three months.

A similar epidemic to that which ravaged Cadiz in the year 1800, made its appearance at Medina Sidonia in the month of August, 1801. Medina Sidonia is not immediately on the sea coast, consequently has no immediate communication with ships and foreign people. It is moreover situated upon an eminence, so as not to present the appearance of any thing insalubrious in the soil. It is in fact considered as a healthy place in ordinary circumstances, and it was not touched by sickness in the year 1800, though not far distant from Cadiz, which was then the theatre of a dreadful malady. No epidemic existed in any part of Spain in the year 1801; consequently there were no grounds to

suspect the importation by land or water; and, as Medina Sidonia had never been visited by the yellow fever, there were no grounds to suppose that what is called the germ of former years was now called into activity by contingent causes. Its appearance at this place was thus unaccountable. It overturned the whole fabric of importation; and, if men had permitted themselves to think and reason, it must have shaken the faith of the believers in contagious propagation. The first notice of the appearance of an unusual and dangerous disease in the town of Medina Sidonia, was brought to Cadiz on the 22nd of August. Dr. Arèjula was then superintendent of health for the whole of the south of Spain. He repaired to his post at an early period, and appears to have been active in making exertions to stop the progress of the malady; but he laboured to little purpose. Those persons who went to the country at an early period after the commencement of the disease, remained in safety at their farms during the whole of its continuance: those who returned to the town and communicated with the sick, rarely escaped infection. It is even said that those who remained in the country and communicated with those who had visited in the town, were not secure from it. This may be true; but it is so contrary to what has been observed on other similar occasions, that it cannot be received without doubts respecting its correctness. Arèjula was on the spot, or near it, at the time, and might reasonably be expected to have examined closely into the

fact before he reported his opinion to the public; but, without disrespect to his character as a physician, he appears to be like others, more prone to believe common reports than to doubt and scrutinize into complicated facts.

The epidemic which occurred at Malaga in the year 1803, was supposed, as already observed, to have been introduced into the city in the person of a stranger, who was brought on shore clandestinely to the house of a man named Verduras. The stranger died; the physician who attended him died; the curate who buried him died; those who attended on the curate while performing the obsequies also died. The whole of the Verduras family were attacked; and from the house of Verduras, the disease is said to have extended to the different parts of the city, and to have raged with violence until the 18th of December. The story of the importation is almost absurd; and even the history of the propagation is not such as will satisfy any one, who makes use of his common sense and reason to attain a view of the truth.

An epidemic of a character similar to the preceding, made its appearance at Malaga in the year 1804. It is not pretended that this epidemic was imported from abroad. The two first subjects of the disease were observed in the month of June, in the street Pozos Dulces, in the house of Francis Melgar. In what manner it was introduced into this family, and as it were ingrafted upon it, is not explained. From Pozos Dulces, it spread slowly

at first, at last rapidly,—raged with uncommon severity, and did not cease entirely until the 28th of November.

An epidemic of a character similar to that which prevailed at Malaga in the year 1804, made its appearance at Antequera in the same year, about the beginning of August. Its introduction into that place is said to have been traced to the person of Joseph Delgado, a journeyman tailor, who in dread of the malady which had begun its ravages at Malaga, fled to his father's house at Antequera as to a place of refuge. He left Malaga on the 23rd of July, was taken ill on the 27th, and died on the 2nd of August. His mother was attacked on the 15th of the same month, and died on the 24th. One of his brothers sickened on the 17th, and died on the 21st. Two sisters were taken ill on the 18th, one died on the 22nd, the other recovered on the 25th. Another brother, a youth about fourteen years, was attacked on the 19th and recovered on the 23rd. The father of the family, aged seventy-five, was taken ill on the 28th of August, and died on the 2nd of September; and finally, the remaining brother, aged twenty-six, fell down on the 30th of August, and died on the 4th of September.—The fate of this family is striking; and, if the authenticity of the history could be depended on, it would be important to the illustration of the propagating power of the disease, even in a common atmosphere;—but on this head there are grounds for doubt. Besides the history of Joseph Delgado,

whom Arèjula seems to consider as the channel of communication to Antequera; and that of his family as the cause of the subsequent propagation in the town; a lady of the name of Mūnoz, is said to have fled from Malaga, with a view to escape from the epidemic which had begun to ravage the district where she lived. She arrived at Antequera about the end of July, was attacked by the disease on the 1st of August, and died on the 7th. The servant who attended on her, and six of the family where she lodged fell a sacrifice to it. Another lady of the name of Rosario arrived at Antequera on the 7th of August, already indisposed. She died on the 12th. The master of the house into which she was received was taken ill on the 19th of August, and died on the 25th. His wife took to bed on the 23d, and died on the 27th. According to the letter of this statement, the importation is probable, and the suspicion of propagation by communication strong, almost as strong as suspicion can be. The proof is not positive; for, though it be admitted that the people fell down in the manner stated, it is evident that the epidemic influence prevailed in Antequera from the beginning of August. If the influence prevailed, the diffusion of the disease proceeded according to the epidemic rule—not according to a rule of personal contagion:—such is the plain state of the case.

A similar epidemic to that which prevailed at Malaga in 1804, penetrated to Rambla in the same year. It was introduced, according to report, by

a person of the name of Nieto, who had been at Malaga on business, and who had passed near to, or even touched a burying cart. He felt indisposed on the road, and went to bed immediately on his arrival at home: he recovered in four days, so as to resume his ordinary occupation without detriment. A youth, who lived near to Nieto, and had frequent intercourse with him during his indisposition, was taken ill on the 9th of September, and died on the 16th. A young woman, Maria Marina Doblas, lived in a house contiguous to that of Nieto; and, as Nieto was her relative, she had more or less intercourse with him during his illness. She was attacked by the disease; and Christobal Doblas, who lived in the same house with Maria, was also seized with it, and died on the 19th of September. Garcia Luque, bridegroom of Maria Marina, was taken ill about the same time as Maria, and died on the 19th of the month. Garcia Luque lived in a distant part of the town where there was as yet no sickness: it is presumed, in the house of his mother, who was attacked at an interval of thirty-two days after the death of her son.—The introduction of the disease into Rambla, as here stated, is not satisfactorily explained according to the rules of the propagation of contagions. It is possible, even probable, that Nieto, struck with horror at the idea of having touched a burying cart, became indisposed in consequence of the impression. It is known by experience that neither burying carts nor dead bodies possess the material of contagion in a condition

to communicate infection to others. The whole has the air of a story, the blanks in which are filled up by fiction—the facility of doing which seems to be characteristic of the Spanish nation.

An epidemic, similar to that which prevailed at Malaga, made its way into Montilla, introduced into it, according to report, in the person of Padre de Molina. Padre de Molina entered Montilla from Malaga on the morning of the 11th of August, and went to bed as soon as he arrived, being then much indisposed. A physician was sent for immediately. He declared the disease of the Padre to be a tertian of a bad type: it was so in fact, for he died on the 16th. On the 15th, the day before the death of the Padre, Gomez, the person in whose house the Padre lodged, became indisposed. The fever was severe, but did not, in the opinion of the attending physician, threaten danger until the 25th, when Mrs. Gomez also became unwell; and as there was at the same time an aggravation in the symptoms of the case of Mr. Gomez, a report was made to the board of health on the subject. Mr. and Mrs. Gomez died on the 27th. From this date, the disease spread from person to person in a rapid manner, particularly in the street de Palomar.—The history of the propagation of this disease at Montilla is given with so many circumstances of detail, that, unless there be error in the record through carelesness or love of fiction,* to which the Spanish genius has a strong propensity, it would look like prejudice to deny the existence of personal contagion.

The epidemic of the year 1804, which prevailed at various points near the sea coasts of Malaga, is said to have made its way into Espejo in the following manner: John Cordoba, a muleteer, arrived from Malaga about five in the evening of the 27th of August, much indisposed. He sent for one of the physicians of the place, who finding the case to be alarming, reported the circumstances to the health authorities. Cordoba was himself impressed with the idea that he was infected with the plague or epidemic. He had brushed, in passing through the streets, one of the carts employed to carry the dead to the grave. His imagination was struck; and, conceiving that touch was sufficient to communicate the malady, he believed the touch alluded to to be the actual cause of the indisposition which he then felt. Various persons from the adjoining houses visited Cordoba in his illness, some in friendship, others to purchase things which he had brought from Malaga for sale. Many of the visitors were attacked by the malady: it is even said that some of those who only communicated with persons who had been in the house of Cordoba were seized with it.—This is the report: if correct, and if an epidemic atmosphere had not reached Espejo, as well as an epidemic disease, the existence of general contagion cannot be fairly denied.

The epidemic of the coasts adjacent to Malaga, appeared at Ronda in the year 1804. The first person whose case gave suspicion of its existence, was Maria de Rio. She was attacked on the 27th

of July, and died on the 4th of August: the disease was denominated black erysipelas by the medical attendant. She vomited something black before death; and is said to have recollected that two persons from Malaga lodged at her house sometime previous. She was ignorant of their character, or the state of their health at the time. Francisco Ruiz, another inhabitant of Ronda, was attacked by sickness on the 4th of September, and died on the 7th. He became indisposed in four or five hours after his return from Malaga: he was deeply jaundiced, and the matter which he vomited was of a black colour. Besides Ruiz, a lady arrived from Malaga, on the 19th of August, at the house of her mother; to whom, and to some others in the same street, she was supposed to have communicated the disease, for it was there that it chiefly prevailed. About fifty persons died in Ronda of the yellow fever; the symptoms of which, in so far as they have been noticed by Arèjula, resemble those of malignant tertians, or malignant bilious remittents.

The above abstract of the history of the progress of the yellow fever in the south parts of Spain, prior to the year 1805, is taken from Dr. Arèjula's printed work: it is abridged, in so far as it can be abridged, without leaving out things that are essential to the right comprehension of the subject. Arèjula's opportunities of obtaining correct information were good; for he was superintendent general of health for the province of Andalusia; and, if the statements he has given had been the result of rigid

professional scrutiny conducted by himself; or by other professional person present on the spot who was capable of discriminating between truth and the appearance of truth, it would be difficult to refuse assent to the existence of personal contagion in the epidemic alluded to. But as the case is, the histories of the introduction and propagation of the disease, as given in the work of Arèjula, are often contradictory of themselves, and palpably inconsistent with the proceedings of nature on other occasions. They are in fact no more than a record of the vague opinions of the vulgar inserted in the works of a physician; as such, they do not command respect, or obtain the assent of those who think, compare, and reason.

The epidemic of Andalusia, to which the name of yellow fever has been given, is considered by most, if not by all the Spanish medical writers, to be a contagious disease; and, as the term contagion appears to be employed rather equivocally in medical writings, it will be proper, before proceeding farther, to endeavour to define its character and to fix its limits as correctly as can be done. A contagious disease is such as multiplies itself by a peculiar process of creation, propagating its kind from person to person, through a series, by actual contact or near approach. The propagation is effected in two ways, viz. direct from the living body, or indirect through the medium of substances which have been in contact with those who are, or have been sick. In one class of contagious diseases, the contagi-

ous matter is visible to the eye, and capable of being collected on substances which envelope the body,—even of being condensed and concentrated by condensation. In another, it is not visible to the eye: it notwithstanding exists, attaches itself to intermediate substances, and is conveyed by their means in force and activity to distant places. The modes of propagation may be said to proceed under the instrumentality of touch, more or less direct. Where fever arises distinctly from the contact of substances which have enveloped, or been in contact with certain descriptions of sick persons, there can be no hesitation in pronouncing such fever to be a disease of contagious character. And again, where the power of propagating is lost, when the suspicious cause is removed and intercourse rigidly interdicted between the susceptible subject and the suspicious agent, the proof, though only negative, is a strong negative proof that actual contagion existed in the cause or body so removed. Propagation by communication, and non-propagation by cutting off intercourse with the suspected source, are thus converse in proof of the same thing.

Contagious propagation is intelligible as connected with contact, or very near approach to the infected subject: it is ambiguous where contact is not direct, or near to direct. The subject is masked occasionally and not easily comprehended. Certain inexplicable conditions in the atmosphere facilitate the propagation of contagious diseases among the community: others are indifferent, as neither di-

rectly facilitating nor opposing; and some may be considered as negative, in as much as a disease inherently contagious does not spread, or spreads only in a very limited manner, and reluctantly as it were, under the implied condition. The fact is obvious: the efficient cause is unknown: the ultimate cause is the preservation of the human race from extinction under the occurrence of a mortal contagious malady. Propagation is not ambiguous as effected by direct contact: it is doubtful where the subject and agent are distant from each other. The cause would seem to strike on some occasions, at what may be called long shot, enabled to do so perhaps by the co-operation of contingent causes—general or artificial; that is, by unappreciable epidemic influences, or extra contamination of the atmosphere in hospitals crowded with sick, or in other assemblies of men crowded to excess. The direct communication is made through the instrumentality of the sense of touch;—the extended may be supposed to be made through the instrumentality of the eye. The impression is an impression of sympathy,—the act imitative of the condition presented to the organ of sight.

The material points which relate to the importation and contagious propagation of the yellow fever, as represented in the work of Arèjula, have been brought into as narrow compass as possible. The next points in the research comprise the endeavours to collect and digest the sum of facts and opinions respecting the preservative powers of seclusion, viz.

quarantine under the direction of military force, or other mode of cutting off communication with the infected. The subject is deemed to be of great importance, and as such demands an accurate investigation. But before a correct opinion can be formed respecting it, it will be necessary to throw the eye over the Spanish coast, and to estimate the character of the Spanish peasantry, as well as the character of the persons who are appointed to execute the measures of defence and protection alluded to. Spain is upon the whole an open country, practicable at every point to a Spanish peasant. The towns and villages, with the exception of Cadiz and Puerto San Fernando, are open towns—every where accessible. A great proportion of the people are employed in contraband trade of one kind or another; consequently they are expert in eluding the vigilance of guards: and, as they have great facility in framing stories to serve purposes, and great assurance in maintaining the stories they frame, they rarely fail to penetrate where they please. The military are ill paid; and, according to the report of those who are better acquainted with their character than the author can pretend to be, they seldom refuse to open the health cordon for the bribe of a dollar if it be tendered with suitable address.—But to proceed to a detail of facts: a regiment of dragoons, quartered, according to Dr. Arèjula, in the centre of infected places in the year 1800, continued in uninterrupted good health during the whole time of the continuance of the epidemic; pre-

sumptively guarded from its dangers by the good sense and vigilance of the commanding officer, who formed a cordon from the corps itself for the protection of its own quarter. The fact, as stated in Arèjula's book, is imposing; and, if the truth of it were authenticated officially by the signature of the officer who commanded, it would go far to decide the question under discussion. As here presented, it obtains the respect only of a hearsay report, in a country where common reports, particularly on the subject of health, are seldom correct.

Besides the case of the dragoon regiment, now mentioned, it is necessary to take notice of what occurred in the village of Chippiona, which is situated in the centre of places which were ravaged by yellow fever, both in the year 1800 and 1819. Chippiona is said to have protected itself against the inroads of the disease, at both these times, by the vigilance and energy of its armed inhabitants. No strangers were permitted to enter within its precincts; and its own inhabitants were rigorously interdicted from sleeping from their own homes in the year 1819. But, though interdicted from sleeping from home, they were not prohibited from trafficking with infected places during the day; that is, from carrying the product of their farms to the markets of the towns in the neighbourhood. The fact here stated is of good authority; and, as Chippiona, and also Tubigena, another village in the vicinity, could not be said to be positively interdicted from intercourse with places where

the disease prevailed in 1819; and, as they experienced no sickness at that time, it is fair to conclude that there is some other cause, besides the fear of a bayonet, which stops the progress of epidemic yellow fever. The isle of Leon and Puerto real were open in the year 1820; they continued healthy. Puerto Santa Maria was shut in name rather than in reality: the disease appeared in it, whether among those constantly resident, or those who had been at infected places as visitors, is not distinctly known to the writer;—it did not spread to extent.

Besides the security from the inroad of the yellow fever, supposed to be obtained by the establishment of a cordon of troops, the seclusion of persons in their houses, under rigid interdiction of intercourse with the exterior, has been, and still is confidently trusted in by many as means of precluding the occurrence of the disease. It is stated by Arèjula that the prison at Malaga received no prisoners during the rage of the epidemic of the year 1803, and that no one within its walls suffered from that malady, while no other house in the town escaped. The fact is important as it here stands; but, admitting its authenticity, and giving to it all the preservative weight which it can be supposed to have, it is proper to be remarked that simple seclusion was not the sole cause of the exemption which this class of people enjoyed. Their condition was peculiar: their susceptibility to the impressions of the things of the world, and among others to the morbid causes which surrounded them

were, in all probability, much blunted by the artificial and constrained circumstances under which they were obliged to live; and it is not unfair to infer that they were thus comparatively little sensible to the epidemic influence which then prevailed and ravaged the town.

The hospicio, or poors' house at Cadiz, was said, and believed by those who take report for fact, to have been preserved from the inroad of the yellow fever in the year 1819, by the institution of a careful quarantine. The statement, though current in Cadiz, and positively believed at Gibraltar, is not correct. The poors' house was always open to the medical attendants, if not to others; and the disease was not excluded as reported. It entered on the 25th of September; and from that date, until health was declared to be restored to the people of Cadiz, ninety-three persons, including nine servants belonging to the establishment, were enrolled on the sick list: of these no more than three died. The arrangements made by the governor were excellent; such as indicate kindness and benevolence of character, as well as thought and discernment of causes and conditions. He allotted rooms of observation for the reception of persons under the first forms of indisposition, and took care that until the character of the disease declared itself when the patient was removed to the hospital, no means of relief should be neglected which were judged to be suitable to the case. The success of the treatment was unparalleled in Spain, either in hospitals or elsewhere;

and it is chiefly to be ascribed to the care and management of the governor, that it was so. The sick were separated and classed in wards according to conditions. The apartments in which they were disposed were airy—not crowded; and they were thoroughly ventilated. The locality is the most favourable for health in Cadiz: the treatment, according to the document which the governor was so obliging as to transmit to the author, was common, viz. cream of tartar, oil of almonds, sinapisms, and clysters.

The apparent effect of seclusion is sometimes imposing, even so imposing on certain occasions as to be deemed conclusive of security. An English ship, with a crew consisting of forty-four persons, was put in quarantine in Cadiz bay in the year 1819, by authority of the master. No one was permitted to go on shore, except in the master's company, whether for exercise or other necessary purpose. The ship remained in the bay during the height of the epidemic season, and no one of the crew was touched by the malady. The fact strikes strongly at first sight: it is stronger in appearance than in reality as a proof of the power of seclusion. The air in Cadiz bay is different from the air in Cadiz town; and as it was in the bay that the men chiefly lived and always slept, they were presumptively secluded from the more noxious epidemic atmosphere, as well as from intercourse with infected persons. There were other ships of the same nation here at the same time. Many of them lost men:

the crews of these entered the town at pleasure; and no preservative measures are said to have been adopted by the masters for security.

The cordons, quarantines, and seclusions here adverted to, have been applied to considerable bodies of military subjects or civil population; and materials have thus been furnished for general inference on a comparatively large scale. The common belief of the contagious nature of the yellow fever, induced multitudes of individuals to seclude themselves from intercourse with the community during the prevalence of this disease. The seclusion was of the most rigid kind in numerous instances, the provisions being supplied with similar circumspection as in the time of actual plague; yet the persons thus secluded, are said, by those who would have been willing to have said otherwise, to have sickened and died nearly in the same proportion as those who walked the streets. Seclusion thus appears to have failed, strictly considered as seclusion. If the failures had occurred only now and then, it would not have been necessary to notice them; but they have happened so often, as to prove unequivocally to the conviction of those who are not obstinately prepossessed against conviction, that the disease has another source besides that of personal contagion.

It is commonly known that the propagation of febrile diseases is accelerated in its course by the aggregation of numbers of men into limited space, whether in hospitals or elsewhere; and farther,

that mortality is proportionally great from such diseases in crowded sick apartments. The increased mortality alluded to is witnessed occasionally in every part of the world; and it is said to have been distinctly proved in the hospitals at Cadiz during the reign of the late epidemics. It there exceeded, by nearly one-half in proportion to numbers, the mortality of the disease among the dispersed inhabitants of the town. To enable the reader to comprehend the causes of a fact which is admitted to be true, it is necessary to state that some apartments are allotted to the reception of destitute sick in the church San Juan de Dios, which is thus converted into an hospital. Churches are not built for the accommodation of sick persons; and it would be unreasonable to expect that their provisions should be adequate to the purpose. The greater number of the febrile sick are disposed of in the galleries of the said church: these are narrow, and they are not well ventilated. The windows which admit the light, except in one gallery, are upwards of nine feet above the level of the floor; consequently, the persons who are admitted as inmates are not, from the time of entrance until the time of discharge, once refreshed by a breath of pure air. If the apartment be crowded or even moderately full, its atmosphere is offensive to those who enter into it. The lungs do not expand with freedom; an unpleasant sensation adheres to the tongue and palate, with a desire to spit out something that is not agreeable. The stomach is distended with flatus; the

expulsive power of the alimentary canal is impaired—often in a manner suspended; the tongue becomes white; thirst, head-ache, heat of the eyes, dreaming, and disturbed sleep, more or less annoy those who are transient visitors, and may be supposed to be felt by those who are constantly resident. These sensations which differ in force, according to the different sensibilities of the subject, mark the operation of a changed atmosphere. The air is contaminated and rendered impure; or it is deprived of a portion of the material which stimulates the healthy action of the system by emanations from the bodies of persons under sickness, whether the sickness under which they suffer be contagious in its own nature or not. Subversion of health follows exposure to the changed atmosphere. The subversion does not imply an atmosphere absolutely contaminated with contagious matter; it implies a change which may be effected by a diminution of what is salutary in the composition of the atmosphere, as well as by addition of what is noxious and contagious.

Some apartments, as now said, are allotted in the church San Juan de Dios for the reception of destitute sick at Cadiz; an extensive building is provided for the express purpose of receiving the sick of the military. The wards of the military hospital are spacious and lofty;—they are not well ventilated. The base of the windows, which admit light, is not less than nine or ten feet above the level of the floor; consequently, the sick are nearly

in the same predicament, in so far as regards ventilation, as if they were nine or ten feet under ground. Not a breath of pure air can be supposed to touch them directly; and, as there are no baths for the establishment, and apparently only a very inferior equipment of bedding and furniture, the contagion of fever, if contagion actually exist in the case, can scarcely fail to be of aggravated virulence. This, from the best information that can be obtained, is not so; and, if not so, it may be more than doubted if real personal contagion belong to the disease.

It is worthy of remark, that where the epidemic yellow fever enters into a private house, it often strikes three or four persons at one, or nearly at one time; and, after an interval of three or four days, two or three others. The invasion proceeds in this peculiar manner by starts. It pervades a great part, and sometimes the whole of the family: the proceeding is irregular—unlike the proceeding of common contagious infection.

Recapitulation.—Conclusions from the preceding Details, and other Informations obtained by the Author respecting the History of the Disease.

Some facts have been brought from Arèjula, and others have been added from sources which there is reason to believe are authentic, respecting the history and character of the disease termed yellow fever. Nothing has been admitted from current report

without such scrutiny as gives confidence to believe that it is correct. The leading points for investigation on the subject, relate to the importation of the disease from foreign countries, to personal contagion, to conditions of propagation, and to liability or non-liability to second attacks.

1. Importation from a foreign country has been, and still is credited by the authorities and mass of people in Spain, to be the cause of the occurrence of this disease. It never was proved by evidence, never even brought to reasonable probability, that it was so in fact; and the events of the year 1820 strip the assumption of every claim to credence. The disease to which the name of yellow fever has been assigned, appeared at Cadiz and Xerez de la Frontera in the autumn of 1820, much about one time. No one could then form a probable conjecture from whence it came; and, in so far as respects the genuineness of its character, it was never perhaps more destructive in proportion to the numbers attacked, than it was at Xerez during the whole period of its continuance.

2. The next point, viz. personal contagion, or propagation in consequence of connexion with those who are, or have been sick, obtains belief throughout all Spain, and even in other countries that have intercourse with Spain; but, general as the opinion is, and confidently as it is maintained by its advocates, it seems to be completely invalidated by the authentic records of history. The facts which support the opinion of non-contagion are numerous:

a few of them only are noticed in this place. The contagion of yellow fever, if contagion actually exist in the case, is not of a kind which attaches itself to clothing, or other matters that have been in contact with the bodies of those who are or have been sick. In proof of the assertion, an authority is here adduced which may be thought to be valid, because it is admitted by the persons who report it against the dictate of their prepossessions. In the year 1800, when upwards of ten thousand souls died at Xerez de la Frontera, sixty persons were employed to bury the dead. The buriers entered the houses where the dead lay, took the bodies in their arms, often it is presumed in a loathsome state, put them into the carts in heaps, and drove them to the place of interment. None of the buriers were infected. They were said to have been under the influence of liquor on most occasions; and, as such, were supposed to be comparatively less susceptible of the impressions of contagion than they otherwise could have been. The supposition is of some weight; it is not conclusive of the inference that has been drawn from it. It is known from other experience, that if strong contagion exist in the clothes or coverings of the dead, (and had it existed at all it must have been strong in the present case,) the power of wine is only a feeble protection.

An event, similar to what happened at Xerez in 1800, happened at St. Lucar in 1819. The persons who had been employed to bury the dead at

that place, committed depredations and other irregularities in the houses where the dead lay. The friars of a Franciscan convent, struck with the indecency of the proceedings of the buriers, made an offer to the Junta de Sanidad, or health police, professing their willingness to charge themselves with the office of interment which was then so flagrantly abused. The offer was accepted; and the friars, in entering on the duty which they had thus imposed upon themselves, found the majority of the houses or sick apartments deserted, the bodies of the dead lying in various postures upon beds, or on the floor. They wrapped them in sheets, or such other covering as presented itself in the apartment, carried them to the bier in their arms, and afterwards in the bier on their shoulders to the grave. No one of this meritorious band was attacked by the disease, although five of them were supposed to be susceptible of it as not having had it at a former time.—The fact is correct; at least it was communicated to the author by one of the brethren who assisted in the undertaking.

It is moreover stated, and there is reason to think from collateral circumstances that it is correctly stated, that a body of troops, under Colonel Quiroga, entered the isle of Leon in 1819, and occupied houses as quarters, where blood and other discharges from the bodies of those who had died of yellow fever, were yet upon the walls and floors of the apartments where they lodged. The troops might be supposed to be generally susceptible of yellow fever,

as not having had it at any former period. They suffered no inconvenience; presumptively because the epidemic influence was expended for the season in the place where they were quartered.

Washers, and others who handle the impure bedding and body linen of those who are ill, who have been ill, or even of those who have died of the yellow fever, are not, from the best information that can be obtained upon the subject, more liable than others to the attacks of this disease: it is known to be otherwise with those who wash or handle the clothes of persons who have diseases that are personally contagious, particularly with those who touch the clothes which have been in contact with the bodies of persons who are, or have been ill of the disease known by the name of typhus fever.

3. The facts now stated are conclusive of the important position, that the contagion of yellow fever does not attach itself to clothing, or other substance that has been in contact with the diseased subject. The disease appears suddenly and spreads rapidly as a pestilence on many occasions; but it does not spread except in epidemic atmospheres. This last is a point of high interest to the community. It is not denied by any one, at least it is asserted by many creditable witnesses, that multitudes of persons, who have removed from an infected circle, to a circle exempt from infection, either under disease or with the cause of disease so forward in preparation for explosion, that the malady, actually exploding with its genuine characteristics in a short time

after the removal, has run its regular course, and terminated fatally or otherwise after a certain duration, without communicating any thing hurtful to the most assiduous of the attendants. Examples of the fact are so frequent, both in Spain and other countries where yellow fever is known, that it is impossible to refuse assent to the inference that the disease, if actually contagious, is contagious, so as to propagate its kind in epidemic atmospheres only. The simple disease is not sufficient; and, if this be admitted, the conclusion is direct that yellow fever is not exportable, unless the atmosphere of the epidemic circle be also exported in the hold of a ship or otherwise; a position which is absurd, and which directly negatives the necessity or utility of quarantine restriction*.

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* This fact has been proved in multitudes of instances: it was proved, among others, in Spain in the year 1820. It was said, but not much regarded in Cadiz, that there was sickness of a suspicious kind in Alcala, a village among the mountains. The report was carried to Gibraltar, not merely exaggerated, but so disfigured by fiction as to alarm the garrison. It was stated, for instance, that an officer and his servant had entered Alcala from Xerez; that the officer was taken ill, then the servant, then the attendants; that the disease spread to right and left, leaving in its course no habitation untouched; that it destroyed one half of the inhabitants, and forced the remaining half to take refuge in the woods. The author heard the report; but, as he was not able to obtain any distinct information on the subject, it was his intention to have gone to Alcala for the purpose of ascertaining what was the real state of the case. The distance (not less than forty miles), the badness of the roads,

4. The yellow fever often arises after intercourse or association with the infected; it also often arises where it is not possible to trace intercourse, even to suppose the existence of the most distant intercourse with those who are sick, or with any thing that has been near them. The fact is important: the disease appeared at Cadiz and Xerez in 1820 in a manner that cannot be explained. There was no visible source; and it may be added, that not only now but at other times when it is epidemic in any given district, it not unfrequently attacks persons who seclude themselves carefully from intercourse, even some who seal themselves, as it were, hermetically from communication, not only with the actually infected, but with those who are simply supposed to be susceptible of being infected, as not having had the disease at a former period. It is ad-

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and infirm health forbade him to undertake the journey in person; but, that he might not remain ignorant of what it was important he should know, he requested Mr. O'Halloran, who was at Xerez at the time, to obtain correct information on the subject by an actual visit to Alcala, or evidence on which he could rely. According to Mr. O'Halloran's inquiry, one person who had gone from Xerez died of yellow fever at Alcala; four others died of remittent fever, which is endemic at that season of the year. The statement, it is believed, is correct; and it is important in different points of view. It adds another decided testimony to the opinion that yellow fever does not propagate unless in epidemic atmospheres; and it furnishes another proof, to the many that exist, of the facility with which wonderful stories are invented in Spain, and of the readiness with which they are credited in other places.

mitted, even by those who believe the doctrine of contagion in all its extent, that those who seclude themselves fall down nearly in the same proportion as those who walk the streets; and, as the fact is distinct and often verified in experience, it furnishes conclusive evidence that yellow fever has another cause, at least may be called into existence by another cause than the direct application of personal contagion; consequently that seclusion does not hold out a warrant of security.

The facts, now stated, appear to be sufficiently decisive in proof of the opinion that the yellow fever of Andalusia is not a disease personally contagious, and that it does not spread or extend itself in common atmospheres. It arises without proof of contact with the infected; and it does not multiply itself by a generative process within the system, as small pox, measles, and the disease known by the name of typhus fever evidently do. Propagation from person to person, by an act of the system, is not here substantiated by evidence where the case is rigidly scrutinized. But, though this be in itself an incontrovertible fact, things may notwithstanding be so brought together by the concurrence of contingent causes, as to impose upon the common observer a deceptious feature, foreign to the real nature of the disease. The case may perhaps be thus explained. The yellow fever, during the reign of epidemic influence, often strikes like a pestilence by the mere concourse of people in a close place; and, if a mass of sick persons be collected into an

hospital during the epidemic season, the common emanations from the sick bodies, whether saturated with contagious particles or not, often act offensively on those who enter the circle, and often appear to be the cause of the explosion of a disease which, without such accessory or changed condition of the medium in which man lives, would have probably remained dormant for a time, and perhaps for ever. The instances of persons who have lived in apparent good health in simple epidemic atmospheres, and who have become sick soon after they entered into the circle of a crowded assembly, or the crowded wards of an hospital of sick, are numerous, and so well marked that they stagger, on a superficial view, the opinion here contended for of the non-contagious nature of the yellow fever*.

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* But, though yellow fever be not a disease of personal contagion in the just interpretation of the word, the author, in order to act fairly on the subject, thinks it right to furnish those who may be of a different opinion from himself, with some instances of fact which have fallen under his observation, and which may be thought to impugn the opinion to which he adheres.—An English gentleman, of the medical profession, who had been resident in Cadiz for some months, and who was desirous to look at the reigning epidemic with his own eyes, went occasionally into the hospitals where persons ill of that malady where collected. He spent more time than usual one day in examining minutely into the condition of a person who appeared to him to be extremely ill. Next morning about eight o'clock, and about sixteen hours after he had left the hospital, he was seized with symptoms of severe indisposition, such as appeared to himself to be of very unusual kind. The

It cannot be supposed that the condition of a specific epidemic influence is changed by the mere concourse of people in a given space. The con-

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indisposition in fact soon declared itself to be the prevailing epidemic; and, according to his own account, it was analogous in its symptoms to the case that had so particularly attracted his attention in the hospital. There is here a *prima facie* case of contagion: there is not, the author believes, a positive one. The person in question lived in the epidemic atmosphere of Cadiz, and traversed every part of the town without reserve, even the most suspicious. He might thus be supposed to have received the seeds of the disease from an unknown source; but there are grounds to believe that his visit to the hospital accelerated its appearance, and that the impression made by the circumstances of the patient, to whom his attention was principally directed, tended to modify the form of the morbid act when it did appear. A novice in the hospital San Juan de Dios, who attended on the febrile sick and slept in the sick ward, was attacked with the epidemic, in an obscurely remitting form at first, afterwards of a continued form and well characterized in all its circumstances. He died on the 15th or 16th day. Another novice, in the same ward, had been confined for some days with something like mumps. The swelling having subsided, he resumed his duty; and, on the day on which he resumed it, he looked into the dead room, where a person who had died of one of the worst forms of yellow fever was under dissection. The author did not observe the countenance of the novice at the time he entered and while he continued in the room, but it is pretty evident from the result that what he saw made an impression on him. He was seized with fever in the night, and requested in the morning that if he should happen to die his body might not be dissected. The disease was well marked, but of long duration; for it extended to the seventeenth day. Another of the novices, a young man who was most assiduous in his attentions to the sick, and who assisted

dition of the atmosphere is evidently changed; and it is changed, presumptively by the subtraction of something that it is necessary to support the action of animal health, as well as by the addition of something that is noxious and active to subvert it. The subtraction implied may be supposed to permit the explosion of a disease, the cause of which had been prevented from manifesting itself by the application of coercive atmospheric energy, that is, by the application of pure air. The supposition is probable: the admission of it offers grounds on which

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most unreservedly at dissections, was taken ill about the same time. He was treated in a different manner from the others; and he was convalescent on the third day. The cases now stated will, it is presumed, be considered by many as cases of morbid explosion from direct contagion: the author is disposed to believe that the explosion here alluded to was merely contingent, whether occasioned by immersion into an atmosphere less pure than the common atmosphere, or by impression through the eye on the sensibilities of a body predisposed. The dead room in the hospital San Juan de Dios, where the dissections were made, was a small room which had no ventilation except by means of the door, which was necessarily shut during *post mortem* examinations. The room was in itself dirty and loathsome in the extreme: the weather was excessively hot; and no one, while immured in this offensive place, was free from temporary fever, viz. head-ache, heat of the eyes, heat of skin, accelerated pulse, &c. The author felt it; Mr. O'Halloran, as more immediately bent over the dead bodies in the act of dissecting, felt it still more; and Padre Thomas, an Englishman, and brother of the hospital San Juan, was distinctly feverish, and so severely affected one day as to be obliged to lie down.—He was well next day.

the phenomenon may be explained. It cannot be known with certainty whether or not the epidemic influence is condensed to a higher degree of power by artificial circumstances in the wards of a crowded hospital than it is out of doors; but it may be said with safety that the atmosphere is there changed, either additionally or subtractively, by exhalations from a mass of sick; and that the effect contended for follows the change or vitiation alluded to.—The interval at which the morbid explosion takes place, after immersion into the atmosphere of crowded assemblies or crowded sick wards, is short; and the manner of proceeding is altogether different from the ordinary proceeding of common contagious diseases in common atmospheres. The infection strikes, if one may so speak, at a longer shot than ordinary: it appears in fact to act by sympathy or imitation, analogously with what occurs in imitative contagions, viz. ophthalmia, dysentery, or gangrenous ulcer.

The reasons here assigned are simple and obvious. They seem to be capable of explaining, consistently with the law of nature and truth, all the irregularities that present in the case; but, as it is important that all the points be clearly understood, it will not be deemed impertinent to endeavour to trace the history somewhat more in detail. The general atmosphere of an epidemic circle is charged with a material of unknown quality, distinctly offensive to health and animal life. The epidemic influence is general throughout a given district, more

concentrated at some points of the district than others, from causes totally unknown to us, or only partially known. The atmosphere in the apartments of the epidemic sick, particularly if these apartments be crowded and ill ventilated, may be supposed to be charged with this offensive material in a comparatively higher proportion than the common atmosphere, in as much as it has there less opportunity of being diffused. That is however only supposition: the following is fact. Persons of every habit, but more especially persons of susceptible habit, who enter into the apartments of those who are ill of the epidemic fever, rarely fail to experience unpleasant sensations at stomach, viz. distention and irksomeness, not unfrequently uneasiness in the bowels, suspension, or change in the natural functions, head-ache, heat, pain of the eyes, thirst, white tongue, disturbed sleep, and dreaming amounting to reverie. These beginnings of the morbid act are local; and, as such, they are for the most part removable by the prompt application of remedies that act locally; that is, by emetics, purgatives, or others which produce decided changes in the secreting surfaces of the alimentary canal. It is presumptively by means of these remedies that Mr. O'Halloran, the gentleman who accompanied me to Cadiz, and who in a manner domesticated with the sick at Xerez, warded off the attacks of formal fever. He was almost constantly under a greater or less degree of indisposition; and I was indisposed myself on various occasions, never in

health, though my visits to the sick were desultory and comparatively few. It is not said that the impressions, which produced indisposition on these occasions, were impressions from the cause of yellow fever: it is evident that the general atmosphere was epidemic; and it was probable that the atmosphere of the sick ward was so in a higher degree than elsewhere; or, if not so, that the diseased act was there suffered to explode with more facility, in consequence of the diminished coercive energy of the atmosphere which filled the sick apartments.

5. Besides importation and contagion, there is another point connected with the history of yellow fever, viz. non-liability to a second attack, which makes considerable impression on the public mind, and, as such, deserves to be noticed in this place. It is not possible for a person, who has not seen the epidemic of Andalusia at different periods, to determine this question by the evidence of his own senses; but if there be any faith in the observations of medical men, and any confidence in the experience of the subjects of the disease itself, the author can venture to say that he saw or heard of not fewer than twenty persons, under the epidemic of the year 1820, who had medical certificates and actually believed themselves that they had the malady at a former period. In corroboration of the truth of the opinion, a friar, now in one of the convents at Xerez, affirms that he has had the disease three different times in his own person. The report is mentioned;—the authenticity of it is matter of opinion.

The rule of exemption, as appears from this, is not absolute; but, in so far as the author's experience goes, persons who sustained one attack of the concentrated endemic or yellow fever of the West-Indies, were little liable to suffer from it again in the same degree of intensity, so long as they remained in the same place. If they removed to the mountainous districts of the country, or to other islands within the tropics, they were not exempted from the chances of its recurrence on returning to the plain, or in assuming a new habitation in a new island, particularly under the prevalence of epidemic influences:—the native born then suffered, the foreign were destroyed.

If a person, who has been sometime resident in the West-Indies, and who has experienced the disease of the country in a violent degree, migrate to Europe, or to the higher latitudes of North-America, he is liable to be attacked by the disease a second time on his return to the tropical latitude, though rarely so violently as at first. A similar rule, with that now mentioned, seems to apply to the disease in Andalusia. The Spanish physicians admit that yellow fever may appear in the same person twice; but they admit the possibility with reluctance, from a motive of policy. The belief in exemption from a second attack gives confidence to the community in times of sickness; and, as truth is sacrificed to a political purpose in all countries perhaps, but more in Spain than in others, the delusion is held by the professors of the medical art to be a warrantable delusion, in as much as it conduces to lessen the fears

of the people. The Spanish faculty, as now observed, admit that the disease may appear a second time in the same person: they maintain that it is less violent and less dangerous when it does so appear, than it is at first, and, in so far as I am able to judge, it is so.

The author has endeavoured, in the preceding pages, to trace the history of the yellow fever with care, and to bring the principal points which lead to important inferences, to a narrow compass. He went into the investigation without prepossession, and he has gone through, in so far as he has gone, without bias for or against the contending opinions which agitate the medical world. He speaks what appears to himself to be the fact; and he thinks that he is warranted to say, from what he has seen, that the disease was not imported into Spain from a foreign country in the year 1820; that it is not contagious in the proper sense of the word, that is, inherently contagious; that it does not exist, at least spread, except in epidemic atmospheres; and that one attack is not, as commonly believed, an absolute security against another.—The evidences on which these conclusions are formed seem, to the writer, decisive of the fact. If they should be thought to be otherwise, they are at least so imposing on common understandings as to be entitled to demand, from the authorities of the state, a scientific investigation of circumstances, with a view to ascertain where the truth lies: the knowledge of it is peculiarly important to the public.

CHAP. III.

Cursory Remarks on the Name, Nature, and Diagnostic of the Disease usually called Yellow Fever.

THE disease which has appeared epidemically at different intervals in Andalusia since the year 1800, bears the NAME of *typhus icterodes,* or contagious yellow fever, in the greater number of Spanish medical writers. It has been latterly denominated *exanthema internum contagiosum* by some of the faculty of Cadiz. It is almost unnecessary to notice the insufficiency, or impropriety of the names that have been given to it. Yellowness is not essential to it. It rarely in fact appears until an advanced period; and, as such, it cannot be employed with propriety to designate character, which ought to be cognisable in twenty hours at farthest after the attack. Contagion, (in as much that if it does exist, it is without specific character) is an improper adjunct to the name. The name, or definition *exanthema internum contagiosum,* is insufficient or incomprehensible. The knowledge of an internal *exanthema* can only be attained through conjecture. No part of it is supposed to be apparent: an in-

ternal contagion is moreover unintelligible: it is inconsistent with the law of nature; for the contagious process must ever be understood to be an external, not an internal product of the system.

The above are the names by which this disease has been designated by Spanish medical writers. They are improper and insufficient, as neither obvious nor discriminative of condition. This will be admitted without difficulty by those who observe and reason; but it does not supply what is wanted. It is often easy to point out impropriety or insufficiency: it is not easy, sometimes not possible, to say what is right; and among others, it is not possible to affix a proper name to a malady where there is nothing specifically distinct in character which discriminates from all others. The disease, designated by the name of yellow fever, is a formidable disease; but it cannot perhaps be said to be a new one. It has, or it may have existed in the south of Spain for ages past; for, when all circumstances are maturely considered, it is not possible to attain any other conclusion than that it is the endemic of the locality, epidemic at particular but uncertain periods and at certain seasons of the year, by the operation of causes which arise we know not how, and which disappear we know not when, and of the nature of of which we can form no precise opinion. For that reason, no attempt is here made to give it a name: it is considered merely as a common disease modified by contingency, that is, by the operation of epidemic influence, the nature of which is obscure, or altogether unknown.

The atmosphere in which we live must be held, if we permit ourselves to reflect on what we see, to be a manufacture, or product of the earth upon which we live; and as it is equal, or nearly equal in every part of the globe, in so far as respects the radical purpose of exciting and maintaining the movements of human and other life, we must necessarily suppose that it is produced by a species of organic adjustment in the body of the earth itself, and, as such, subject to laws which move in regular channels, whether chemical, electrical, or other. The atmosphere is generally salubrious, that is, favourable to the active functions of health in elevated and hilly countries where water has a brisk current on or under the surface: it is insalubrious, that is, unfavourable to health where water moves slowly in its channels; or, where it stagnates in ponds or bogs on flat surfaces, whatever be the nature of the soil. It is observed by medical men, and others who take the trouble to observe, that the diseases which afflict the human race are different in their forms according to the season of the year in which they occur. They are few and simple in some seasons; numerous and complicated in others. Where the degree of the sickness is confined within certain limits, it is supposed to be within the circle of nature's ordinary proceeding, and as such gives no alarm. It is otherwise where it is not only frequent, but where the appearances are unusual, the character pestilential, and the mortality beyond the average proportion of morta-

lity which belongs to the diseases of the place and season. The causes which occasion this difference occur at intervals, but not at regular intervals: they continue for a given time, travel in given tracts, sweep off human life without limit; and, while they do so, they rarely are accompanied by such visible changes in the conditions of the atmosphere as in any degree account for what happens. The cause which thus acts on human health, as foreign or adventitious to the locality, is distinguished in medical books by the term epidemic. It appears, as already observed, at different intervals, continues in force for a longer or shorter time, sometimes for six weeks only, often for three months; and, on some occasions for years, with various intermediate periods of remission and intensity during the term of its total duration. Where it exists in force, it gives a new feature to the character of the disease of the district where it arises, in so far as respects intensity and consequent mortality. But, though mortality be multiplied beyond what is usual on such occasion, the same outline of action, which more particularly belongs to the diseases of the locality and actual season of the year, is still cognizable; and while this is so, it is further to be observed, that the form and even the degree of the disease is more or less modified by causes that are purely contingent, particularly by dry and parching winds, vicissitudes of heat and cold, rain, or absence of rain, and various others:—it is not controlled or extinguished by any of them.

Besides epidemic yellow fever, the history of other epidemic diseases may be noticed on this occasion as illustrating the general subject of epidemic influence. The influenza, as it is usually called, is the most extensive but the least dangerous of the epidemic class. The dysentery is not unfrequently epidemic; it is sometimes very mortal, sometimes almost without danger. These are well marked; but, besides these, a particular form of pneumonia sometimes rages epidemically, particularly in the inland stations of countries of high latitude, and on some occasions with the mortality of a pestilence. Disease, of whatever kind it may be, does not, as connected with epidemic influence, imply the existence of contagion similar to that of small pox, measles, or typhus fever. But, where the influence does exist during the prevalence of contagious maladies, it acts with a preponderating force on the balance of mortality. Epidemic influence invades a given district of country—not unfrequently in the autumnal season. Where it does so, the symptoms of the disease produced, though modified and stamped as it were with a character of danger through the adventitious impression of the epidemic cause, still retain the outline aspect of the disease of the autumnal season. Bilious remittent and gastric fevers are then common; and, corresponding with a general rule, the symptoms of the epidemic are then commonly manifested on the organs of the biliary and gastric systems, as the parts that are more particularly susceptible of the action of the causes of di-

sease at that time than others. This, in so far as could be judged in a short residence, was the case in Andalusia, where the gastric character is usually dominant in autumn: it was almost always cognizable in the symptoms of the yellow fever at Cadiz and Xerez.

Epidemic influence, whatever its nature may be, often arises unexpectedly, proceeds in a given tract, sometimes in a straight line, sometimes in a winding course, strikes on particular points and destroys the life of a majority of those on whom it strikes. Its course would seem to be barred on some occasions by a stream of water, or a particular stratum of earth: it marches on others as it were by springs or long strides, pervades the country extensively, passes by or passes over particular spots, returns after a lapse of time to the spot that had seemed to have been forgotten, and often annihilates the greater part of the human species that are found in it.

The nature of the epidemic influence, which modifies the condition of the disease called yellow fever, is totally unknown; but so far is reasonable to suppose that it is the product of a temporary local derangement in the bowels of the earth, subversive of the order of movement among the materials which manufacture a healthy atmosphere. It is not pretended to say, whether it be from an excess of what stimulates, or a defect of what maintains the salutary action of the system, that the morbid act arises: the first is positive of disease; the latter is negative of health. But, though there be doubt as to the ac-

tual nature of the cause, the act, consequent to its impression, has evidently some analogy with the effect of electrical influence, both in the manner in which it strikes the subject at first, and in the manner in which the disease produced by it proceeds to its termination.—The epidemic aura is pestilential to human life: it is even said to be noxious to the life of other animals on many occasions, particularly to such as brood upon the earth, viz. rats, cats, and dogs; or to birds which live in health only in the pure air of heaven.

The detail of the various points in the history of the yellow fever, as connected with appearances of contagion or non-contagion, will be deemed tedious by some, and considered as superfluous by others. The author is unwilling to tire the reader; but he considers it necessary, as important to the interests of society, that a question which has been so much and so unprofitably litigated for years, be set at rest in one way or other; either that contagion be established in such a manner as to justify the continuance of quarantine restriction in all its rigour, or so refuted as to render restriction unnecessary in the opinion of those who are unprejudiced and disinterested. The multitude of persons who fall down suddenly during the reign of epidemic influences, and who not unfrequently fall down in the presence of one another, or soon after they have retired from the presence of each other, rarely fails to impress those who observe the fact with an idea of contagious infection. The simple occurrence of falling

down suddenly is calculated to impress the timid with panic; and, as panic extinguishes judgment, the mind is disqualified from looking calmly on the case, so as to judge its condition deliberately in the manner in which it ought to be judged. No person who is under the influence of fear is capable of discriminating between real truth and the appearance of truth; and, aware of the deceptions which arise from combination of circumstances, the author has endeavoured to divest the subject, in so far as he can, of artificial garniture, desirous to exhibit it simply and in the primitive nakedness of its character. From a view of the whole proceeding, as estimated on real grounds, he cannot think otherwise than that those who are not influenced by fear, or biassed by interested motives, will readily accede to the suggestion now made, viz. that, though there be frequent appearances of contingent infection as a result of complicating causes, there is no proof that contagion, properly so called, actually exists in yellow fever; that is, a contagion proceeding from a matter of peculiar quality, manufactured in the animal system by an act of the constitution; and which, so manufactured, adheres to substances that have been in contact with the body, and passes, by means of those intermediate substances, to other animal bodies in a condition fit to produce and multiply a material analogous to itself through a series of unlimited extent. This appears to be as nearly proved as a medical question can be proved; and, with the conviction of the truth which unprejudiced evidence

brings, the author leaves the decision to the deliberate consideration of others, solicitous only that it be examined without prejudice, and that the truth, when seen and acknowledged, be applied to the benefit of the community; which, as the case now is, apparently sustains inconvenience and great injury through the ignorance of legislators.

The yellow fever of Andalusia is, or may be, known to people of experience from the aspect of the eye and countenance at an early period, that is, generally in the act of formation. But, though the disease be thus cognizable at first view to the experienced, the traits which discriminate it are, like certain lines in original paintings, known to judges only. They are not distinctly communicable to words; and, for this reason, the author despairs of making his ideas on the subject intelligible to others. But, though this be scarcely attainable, he thinks it to be his duty to state what strikes as most characteristic among the appearances which arise in the first twelve hours. It is important that opinion be formed within that time; for, if the physician remain undecided until yellowness or black vomiting supervene, it is of little consequence whether he decide or not: he can then do little good, if any.

The *eye* of persons attacked with the yellow fever of Andalusia is peculiar. It is sometimes inflamed, muddy, and confused as if had been exposed to the smoke of green wood; it is sometimes pearly white, vacant, inanimate, or like the eye of

an idiot, sometimes irritable and intolerant of light:—it is not cheerful and brilliant as it sometimes is at the commencement of contagious fever. These marks are striking, but they are not diagnostic. The diagnostic consists in a certain indescribable glistening suffusion. The character is not communicable to words; the impression is notwithstanding strong on the mind of those who observe, and it is cognizable at the earliest period of the existence of the disease. Besides general aspect and expression, the ball of the eye undergoes more or less of change in its coats and substance at an early period; and the appearances are so peculiar, through the whole of the after progress, as to be considered with reason as the surest index of the issue. It sometimes becomes yellow as in jaundice, sometimes fixed and glassy as if the humours were artificially congealed, and the moving power in a state of balanced action; sometimes it is lurid, the expression dull, the colour of the white dusky yellow, not unlike the colour of rancid tallow:—the glistening suffusion is still observable and still characteristic.

Besides the aspect of the eye of the subjects of yellow fever, the aspect of the *countenance* makes a strong and instant impression on those who know the disease, and are acquainted with its appearances at the first hours of attack. The aspect is discriminative to the experienced; it is difficult, or impossible to pourtray its characters in words so as to be distinctive to the common reader. It is sometimes

confused and agitated, sometimes flushed and ardent, sometimes heavy and bloated, more or less livid; sometimes pallid and withered, always without the natural expression of life and animation which belongs to the individual, even different from the expression of the countenance in fevers of common character; it is such, in fact, as indicates strongly that an unknown cause of force has constricted, and in a manner enchained the usual play of animal life.

The *invasion* of the yellow fever is frequently sudden, not always; sometimes it is instant as a stroke of lightning,—it usually then acts prominently on the head. At other times, the invasion is comparatively gradual, at least the animal powers are not suddenly overpowered by the form of action which the disease assumes. The patient walks about with alacrity and with vigour during the first twelve hours, even appears on some occasions to be unusually alert, or preternaturally excited. He rarely manifests signs of the ticklish mobility which does not sustain the erect position, or change of posture without incurring a risk of fainting; and even in the after progress, when the strength is prostrated to extremity, the cause of the prostration is ascribable to torpor from the suspension of the stream of life, rather than to weakness from exhaustion, or that species of mobility which produces a ticklish balance in the organs of locomotion.

The first and most prominent act of the disease presents an appearance of general *constriction*

throughout the whole of the capillary system. The sphere of action and reaction is circumscribed. The secretions are diminished, sometimes in a manner suspended, and the whole movements of the machine are compressed, if one may so speak, into an artificial and contracted circle. The sensations are irksome, not always painful; but painful or not, they always give a sense of feeling as if the act were impeded and ineffective. This sense of general constriction, which the patient feels but cannot well describe, is a strong criterion of the existence of yellow fever. The discerning physician may see it, and the explanations of the patient may give him aid in comprehending it; but the sensation is still undefined,—not capable of being brought further than to a sense of irksomeness, giving an idea that a species of action exists, which is neither effective of purpose, nor yet permitted to remit its action, —produced presumptively by the irritation of an unknown cause of artificial force constantly present.

Besides the above, there are other points in the history of the yellow fever which help to discriminate it from others; but those mentioned (and they are only to be known by personal and accurate observation) are those on which the author places his chief reliance; and which, as such, he takes the liberty to recommend to the attentive consideration of others.

CHAP. IV.

History of the Yellow Fever of the South of Spain, more expressly as it appeared at Cadiz and Xerez in the year 1820.

THE material cause of fever produces, as applied to the human body, a disease of one general character, in as much as it is a subversion of natural movement and action throughout the whole organic system, more general or more local in different conditions according to contingent circumstances. The nature of the efficient cause, whether endemial or contagious, stamps the primary character; but the conditions of the act are often so mixed and entangled with one another, or so modified by epidemic or other influences as to occasion a difficulty, amounting in some cases to an impossibility, to separate them with accuracy, or to say correctly what belongs to each.

1. The movement which takes place in fevers which arise from causes which are, strictly speaking, endemial, has a general tendency to expand and evolve outwardly; that is, to direct its course to cutaneous excretion, increased secretion from interior surfaces that have exterior outlets, or to in-

creased vascular action, and consequent effusion or suppuration in organs that are without such provision. 2. The movement in fevers, which arise from causes of acknowledged contagion, has an inherent tendency to the outer circle in like manner as the endemic; but it differs in this, that it engenders a process in the cutaneous expansions which multiplies a material, visible or invisible, similar to itself, and transportable by various intermediate substances to a distance from its source. 3. The movement in fevers, which arise from causes that are adventitious or epidemic, or that are modified by epidemic influence, whatever be the real nature of the cause, has not in general a regular expanding evolution. The common febrile act is impeded: it is primarily and prominently constrictive of the functions of the capillary system; and it often remains constrictive throughout, assuming a withering or consuming process analogous to blight in plants, which terminates directly in death, or explodes on certain points of the system in form of gangrene, as if from sudden infliction of violence.

The above may be considered as general bases of febrile action. They are stable as bases; but they are susceptible of modifications so as to appear, on a superficial view, to be different from themselves on many occasions. The case is thus apparently perplexed: it is in reality consistent at its foundations; and, in this conviction, an endeavour is now made to detail its history with precision, in the hopes of thereby enabling the reflecting

reader to comprehend the fundamental principle upon which the variety of appearance which occurs in different cases may be thought to depend.

The concentrated continued fever of the West-Indies, which is called the seasoning fever by some, the yellow fever by others, is upon the whole a disease of great danger. It varies in form according to the condition of the subject on which it acts, according to the season of the year in which it occurs, and according to the nature of the system or series of parts to which its force is contingently directed. The cause sometimes manifests its principal action on one series only, and thus produces a disease of a comparatively simple kind; sometimes, while acting ostensibly on one general series, it also acts prominently on one particular organ, and thereby produces a form of complication which more or less embarrasses the practitioner. Besides the appearances of simplicity and complication comprehended under the modes now adverted to, the degree of the morbid act varies greatly as to force or intensity; and, while originally simple, or complicated and varying in force, the act is often transferred from one series of parts to another at different periods of the course—generally or partially, so as to exhibit a form of disease totally unlike its original self.

The fever of the West-Indies, which may be considered as indigenous to tropical climates, and which is occasionally modified and aggravated in danger by the operation of unknown influences that arise

at particular times and disappear after a given duration, is regarded by many as the parent of the fever which has been destructive in recent times on the coasts of the south of Spain. If the parent, it has not altogether the same identical aspect. The subjects of the disease, who came under the writer's notice in the West-Indies, were mostly soldiers—Europeans recently arrived in the tropical climate. Those, whom he had the opportunity of observing in Spain, were Spaniards, the majority of them natives of the province of Andalusia. General epidemic influences occurred occasionally during the author's residence in the West-Indies: local influences of an aggravated kind, produced artificially by carelessness and bad management, were frequent, and sometimes of a virulence so exalted as to produce a destructive effect tantamount to pestilence. An epidemic atmosphere was diffused over a given district of country in Spain in the year 1820; and it was so paramount in power as in a manner to absorb the influence of other morbid causes. The influence manifested itself locally, that is, in circumscribed districts only. It was not generated artificially; and, though aggravated to a high degree of virulence on some occasions, it was not aggravated to the same degree as it sometimes is in the crowded transport ships and crowded barracks occupied by British military in the West-Indies. The yellow fever is a disease of greater violence as it appears among European troops in the West-Indies, than it appeared to be among Spaniards at

Cadiz and Xerez in the year 1820; but, while more violent, it is more open in its character, and, as such, more under the command of medical treatment. It is not, unless as acted on by epidemic influence, a disease of an insidious character in the West-Indies. The dangers are great, but they are obvious. The dangers in the fever of Andalusia were for the most part masked: the symptoms were little violent comparatively; but the process which leads to destruction was rapid though silent—almost as rapid in its silence as the other is in its violence: it is endemic and destructive to strangers in the West-Indies at all times; it is only destructive in Spain when epidemic by the operation of unknown causes.

The yellow fever is a disease of a simple or complicated form according to circumstances; and it appears to the writer to be necessary, in order to a clear comprehension of its genuine history, to divide it into different classes, according to the nature of the series of parts upon which the act is principally manifested. 1. The first class acts on the *sanguine temperament;* and the process is often clearly developed. The termination is effected through vascular excitement and consequent increased secretion by the skin, or other outlet on most occasions; or, if the act, instead of being general, be prominent locally, local inflammation, and consequent local suppuration, followed by death or recovery according to circumstances, comprise the outline of its history. The

action of the cause, though that cause be actually planted on one and the same base, is often varied, as masked or shackled by excess of force producing suspension, or constriction to such extent that the act subsides silently in inability, or explodes tumultuously in local gangrene, indicative of an act of violence on one part, and want of power of resistance in another. 2. The second, which acts on the *lymphous base of temperament,* comprehends those modes of febrile action which seem to diminish the power of the absorbent system, to agglutinate contiguous surfaces, to engender, if one may so speak, artificial torpor, thereby impairing or almost suspending the current power of animal life. 3. The third, which acts on the general base of *serous temperament,* comprehends the various modes of disease which affect the series of serous capillaries, external or internal, throughout the system. The first act is constrictive: it is more intense in one part than in another; but it is generally extended to the whole of the series in different degrees of force.—Epidemic influences seem often to determine the act to strike on the serous capillaries, at least it was often so at Cadiz and Xerez in the year 1820.

SECTION I.

History of the Symptoms of Yellow Fever, as manifested in the Sanguine Temperament.

Those forms of the yellow fever, in which general vascular excitement is prominent, sometimes commence with sensations of cold and shivering of considerable intensity and comparative long duration, followed by heat and a tone of febrile action that is commonly called inflammatory. The invasion is often sudden, but not always. Headache, which is rarely absent where there is fever, is here often violent. The pain, which is chiefly in the forehead near the bottom of the eyes, is usually accompanied with a sense of stricture as from the binding of a cord. The eye is hot, muddy, and confused, painful and often impatient of light: it is more or less inflamed, characterized by a glistening suffusion not easily described, but so peculiar and so adherent to the disease, that it may be considered as diagnostic of its existence. The eye ball is more or less disturbed or impeded in its motions; it turns in its orbit with difficulty—sometimes it starts and rolls wildly. The countenance is more or less flushed, sometimes florid and comparatively bright, sometimes bloated and grim, sometimes lurid and sullen:—it is changed in a striking manner from its natural aspect. The tongue is clean for the most part at the first hours of the attack: it ordinarily becomes white and foul in a short time

thereafter, milk white—uniformly or in patches: it is sometimes rough, dry, and parched before the expiration of twelve hours. The lips are often dry, sometimes parched, pale, and shrivelled at an early period. Thirst is sometimes considerable, sometimes urgent; at other times not materially increased beyond natural. Nausea is common, vomiting not rare. The bowels are constipated, or act capriciously: cholic, or pain in the umbilical region is often intense—scarcely supportable. Pains in the loins, limbs, and all over the body are distressing, sometimes excruciating, and almost always accompanied with a sense of unavailing irksome constriction. The heat of the body is often strong, sometimes ardent, especially at the præcordia:—it is usually concentrated or deep seated, in contradistinction to diffused and superficial. The feelings of general distress are considerable, and they are of an unusual kind, imparting an idea of irritation with suppression of the act which generally follows irritation;—the whole animal operation seems in fact as if it played on a quivering balance. The pulse is often small, frequent, tumultuous, and irregular during the period of invasion: sometimes it is sluggish and obscure; it is rarely, if ever, buoyant and elastic, such as indicates a state of things which leads to issue by means of fluid perspiration. The skin is thick and in some manner compacted:—the sensibility to impression and the buoyant movement of life in its minutest channels are evidently impeded.

The symptoms of distress are of considerable pressure during the period of invasion. They increase for a given time and to a given extent: they then abate or subside; but they do not cease, nor even remit in the medical sense of the word. The abatement usually takes place in twelve hours or more from the commencement: it is not distinct; it is sometimes scarcely perceptible; its duration is short and uncertain. The heat, uneasiness, and what is denominated febrile symptoms reappear after a short abatement: they for the most part increase more or less regularly to the third day, sometimes to the fifth, or even the seventh: if the vascular movement be then free, open, and expanded, perspiration—fluid and profuse usually takes place, and the disease terminates by crisis. But, if the vascular excitement be obscure, the pulse deep and concentrated, the skin thick and compacted, perspiration and critical evacuation in consequence of increased action have no place. Commotion in the vascular system subsides; the general tumult and irritability diminish; progressive action ceases, and the retrograde course begins.

The commencement of the retrograde course is characterized by light shades of yellow in the white of the eye, at the angles of the mouth, and along the tract of the jugular veins. Uneasiness and distress, restlessness and fidgetting of an unaccountable kind, anguish at stomach, pain at the epigastrium on pressure, nausea, flatulence, ructus, and even vomiting are common symptoms from the com-

mencement, and during the early stage. Some of them disappear at this period; others continue or increase. The matter, that is ejected from the stomach by vomiting, is generally ejected without retching or straining: it is usually rendered ropy by the mixture of mucous secretions; it sometimes appears muddy by a quantity of villous flakes which float in it; it is rarely if ever bilious, and it often becomes black like muddy coffee at the commencement of the retrograde course now described. The urine is usually small in quantity and high coloured in most cases. The bowels are often obstinately constipated, so as to resist the action of the strongest purgatives; or, if they yield, they yield imperfectly: the matters discharged are watery, of a dirty colour, rarely feculent, and seldom if ever bilious.

It sometimes happens that the yellow fever, while acting on this base, commences with violent head ache and delirium amounting almost to madness; sometimes with convulsion, or fits resembling apoplexy or epilepsy. Where delirium commences in this manner at an early period, it soon abates or soon brings death. It is sometimes accompanied with a wild and agitated countenance; sometimes with a countenance bloated and heavy in expression, totally unlike the natural countenance of the subject. The tongue, in such case, soon becomes white throughout or in patches; it is sometimes moist, flabby, and swollen; sometimes dry and rough on the surface—stiff and moved with difficulty.

The forms of yellow fever which manifest strong vascular action sometimes terminate by crisis on the third day. They oftener subside without ostensible marks of external crisis at that period, and thenceforward assume the retrograde course. The retrograde course usually terminates in death; in some rare instances it terminates in recovery, through the effect of explosions on secondary organs operating relief to the general system. The commencement of the subsiding stage is marked, as already said, by a sense of general calmness and relief from the more urgent symptoms of distress. The head-ache abates or vanishes entirely: the pain, agitation, and burning heat of the eyes diminish or disappear: the whole aspect is comparatively tranquil, the mind philosophically firm—insensible of danger, or indifferent to it. The eye, while calm and placid in appearance, assumes a yellow colour; the veins of the cornea and tunica adjunctiva become turgid, even distended as if they had been artificially injected. The countenance undergoes a change in colour, analogously to what is observed in the eye. The tongue generally becomes moist at the commencement of the retrograde: the crusts by which it had been covered begin to separate at the edges, and even sometimes at the centre. The pulse, which, after the tumults of invasion are past, is rarely frequent as a febrile pulse, becomes comparatively slow, calm, and regular; and, as superficially considered, scarcely distinguishable from the pulse of health except in

deficient buoyancy and elasticity. The heat of the body which was great, deep, and concentrated during the progressive course, not only subsides at the commencement of the retrograde, but even falls, for the most part, below the common standard at the extreme surface and on the extremities; it continues above it for some time on the trunk, particularly at the epigastrium. The skin, always thick, compacted, and difficultly impressed by the stimulation of blisters, often becomes insensible as a dead hide during the stage of retrograde. It is frequently of a dingy, livid hue, sometimes marbled about the the joints—knees, wrists, and ancles: it is sometimes, but not often, dotted with petechiæ: it is oftener streaked with withered yellow lines, or covered with patches of a blue or leaden colour, especially on flaccid parts, viz. abdomen, scrotum, and penis. Anxiety and anguish at stomach, with a sense of peculiar uneasiness from pressure at the epigastrium, are usually conspicuous in the early period of the yellow fever. The sense of local uneasiness increases as the fever subsides; distention of the hypochondria is then often considerable; explosions of wind from the stomach are frequent —with occasional obscure hickupings. Vomiting is sometimes an early symptom, sometimes it is not observed until the fever begins to abate, when it becomes irrestrainable: the matter ejected is then muddy like turbid coffee, sometimes of an inky black like the juices of the cuttle-fish. The evacuations by stool, if not of a dark colour from the

beginning, often become black at the commencement of the stage of retrograde: they are liquid and copious in some; small and viscous in others. The disease often terminates in death within the fifth day. If it be protracted beyond that period, signs of imperfect crisis are discernible about the seventh. These sometimes improve into signs which indicate and eventually lead to the re-establishment of health; they oftener merely indicate a pause at the commencement of a new train of action, which terminates ultimately in death after a certain duration. In this case, blood often oozes from the gums and covers the tongue; sometimes it flows freely from the parts about the mouth and throat, and is spit out with force. The first is generally hopeless; the latter gives some promise of recovery. The pulse, which loses force in the progress of the retrograde, becomes small, frequent, irregular, and sometimes ceases entirely for sometime before death. Death takes place in some instances silently or without commotion; it is ushered in by a tumult which passes rapidly into convulsion and terminates in death in others:—hæmorrhage occurs occasionally with uncertain issue.

Dissection.

The appearances observed on dissection vary according to the duration of the disease, and the more prominent character of its symptoms during its duration. In the rapid forms, where there is

strictly speaking only one course, effusions of blood are sometimes noticed on the surface of the brain from ruptured vessels, without marks of what may be called regular inflammation; in the protracted, in which there has been abatement or obscure crisis, the membranes, and even the substance of the brain itself, appear often to have sustained more or less of inflammatory action, either as a first or secondary act. In such case, the ventricles are ordinarily filled with bloody serum, the base of the brain sometimes deluged by it. The interior surface of the stomach, particularly near the cardiac orifice, is more or less inflamed in almost all cases; it is nearly gangrened in some; the inflamed appearance is ordinarily in streaks or in patches, sometimes in points—clustered like measles. The villous coat is often abraded, the mucous membrane loose and partially separated. The liver is sometimes, perhaps generally, turgid and increased in size, with marks of vascular distention; sometimes it is gorged with blood and in a manner rotten: the spleen is frequently similar—often distended almost to rupture. The gall bladder is sometimes filled with bile—thick and black like tar or molasses; sometimes it is almost empty,—the bile comparatively thin or fluid. The interior of the small intestines resembles the interior of the stomach; the large intestines are irregularly contracted or dilated, and often gangrened in particular places without marks of preceding inflammation. The heart is generally sound in the more rapid forms of

the disease; in some of the more protracted, the pericardium is more or less distended with bloody serum. The lungs suffer little comparatively in the primary course; in the more protracted they are liable to accidents, viz. irregular determinations, inflammations, and abscesses, or effusions of purulence apparently suddenly formed.

SECTION II.

History of the Symptoms of Yellow Fever as manifested in the lymphous or phlegmatic Temperament.

The form of disease which I have now described occurred rarely at Cadiz and Xerez in the year 1820. The present, characterized by defective energy in the circulation and consequent imperfect function throughout the whole system, was common. It is a form particularly deserving of notice, in as much as it is deceptious in its movements and embarrassing to those who undertake the cure of it. The act is sometimes what may be called general throughout the system, sometimes it is manifested on one part more prominently than on another. In the first, there is a statue-like aspect of countenance; in the other, with more or less of statue-like aspect of countenance, a form of local action, principally among the abdominal organs, is often observed to simulate violent cholic or cholera of an unusual kind.—I shall endeavour to

trace its course and to describe its symptoms briefly, but with as much precision as I can; for I consider it to be important that it be recognized at an early stage, if it be possible to make it cognizable.

This form of yellow fever has, like most other forms of fever, some variety in mode of attack according to the obvious circumstances of the subject, or the influence of circumstances that are not easily appreciated. It sometimes comes on suddenly as a stroke from lightning, the patient falling down in a fit of insensibility, or exhibiting a paroxysm of delirium amounting to madness,—fierce but not of long duration. Sickness and vomiting, or oftener perhaps a desire to vomit without the power to effect it, are synchronous on many occasions with the attack upon the head. These symptoms ordinarily abate or subside within twelve hours: the disease then assumes what may be called its constitutional character. But, instead of the insensibility, delirium, and vomiting alluded to, this form of yellow fever often begins with tormina in the bowels, excruciating and severe to extremity, sometimes constant, oftener with intervals of respite, always with a sensation of constriction and want of power to effect a desired purpose. The severity of the tormina generally abates or subsides within twelve hours; the sensation of defective power of expulsion remains. The defect is real, and to such extent on many occasions that the strongest purgatives do not produce a feculent evacuation. The stools, when produced, are watery and cold, often black

like soot and water; and they bring no effective relief. The eye is generally of a pearly white with a peculiar glistening suffusion, which seems to characterize the action of the epidemic cause throughout. It is sometimes wild, agitated, and confused during the tumults of invasion; it is oftener torpid,—sluggish in its motions, and vacant in expression. The aspect is peculiar and indicates strongly to an experienced person, even at an early period, the form which the disease is likely to assume in its after progress. The countenance is sometimes agitated during the tumult of invasion, expressive of mental horrors and bodily pain; it is torpid and statue-like after the expiration of the first twelve hours in most; it is sometimes lightly flushed; it is oftener pale, heavy, and inanimate. The lips are frequently pale, dry, and shrivelled; the tongue rough and dry even at an early period; sometimes the lips are moist and of a rosy colour, the tongue such as can scarcely be said to differ from natural,—thirst is seldom great in either case. The matter thrown up from the stomach, after the common contents are discharged, is rarely any other than dirty coloured water, glutinous or ropy by admixture. Bile, either bitter, green, or yellow, is scarcely ever ejected from the stomach in this form of disease. The functions of the alimentary canal are disturbed from the commencement, perverted or annulled under a sense of indescribable irksomeness. Gripings, such as precede stools of an acrid nature, are not common; but though

griping be not common, there is a sense of constriction, a feeling of suspended power throughout the whole tract of the canal that is extremely unpleasant, greatly more distressing than even severe pain. The pulse is sometimes hurried and tumultuous during the period of invasion; it is oftener slow and regular, rarely so increased in frequency as to be deemed febrile. Alternate chills and flushings of heat mark the commencement of this as of other febrile diseases; but they are here less conspicuous than in most. The heat of the body is rarely above natural; it is sometimes below it. The skin is sometimes damp, sometimes dry: it is never animated, glowing, and buoyant with life. Uneasiness, impatience of pressure, and distress at stomach are common; distention of the hypochondria is rare: —the urinary secretion is seldom disturbed.

The tumults which belong to invasion subside for the most part within twelve hours. The disease then assumes its distinctive character, and proceeds to the end of its course, whether favourable or otherwise, in a pretty uniform tenor. The eye retains the pearly white and glistening appearance which was noticed during the period of invasion; its motions are heavy and sluggish—without expression, and without animation. The countenance is unlike the countenance in health: it is heavy and torpid, full, and somewhat bloated,—statue-like, generally pale and sometimes dingy; sometimes, but rarely, tinged with bloom. The lips ordinarily continue pale and dry throughout; on some occa-

sions, they are rosy and moist. The tongue is superficially rough, dry, and parched; sometimes it is little changed from its natural appearance. There is more or less of uneasiness at the pit of the stomach, especially on pressure. Eructation is often distressing; but vomiting, as effected without straining, does not harrass: the sensations of nausea are however irksome, and seldom altogether absent: the fidgetting and restlessness, which are so conspicuous in other forms of yellow fever, are here seldom noticed. Uneasiness, with a sense of constriction in the tract of the alimentary canal, is generally present; and the sense of constriction is strongly impressed on the mind of the patient as the chief cause of discomfort: the bowels appear in fact to be brought by it almost to a state of insensibility, for purgatives of the strongest kind either produce no effect, or produce watery evacuations only—cold, ropy, and black, as if charcoal had been mixed with water. The pulse, during the progressive stage of this form of disease, is regular and slow, scarcely ever beyond seventy strokes in a minute, sometimes not more than forty: it is seldom hard, and it is rarely such as sinks under a light pressure: it is deficient in elasticity and buoyancy, or what may be called febrile irritability; in short, a veil of torpor appears to be thrown over all animal movement, so as to mask and conceal the act of the febrile cause from the eye of the superficial observer, and thus to impose on his judgment. The heat of the body is natural for the most part,

or nearly natural as examined superficially; it is defective in genial warmth or activity of movement as closely considered, scarcely ever rising to a degree that is justly deemed febrile. It is higher at the præcordia than on the extremities; it is never ardent, or glowing on any part of the body.

The form of disease, now under consideration, exhibits no signs of that ticklish mobility which does not sustain the erect posture, or even change of posture without fainting, or manifesting a strong tendency to faint. The patient is ordinarily capable of rising up by himself, and of doing for himself what is necessary to be done; and, this being effected, he often, when not under the stimulus of necessity, falls down upon the bed—lumpish and heavy as a log of wood. When in bed, he lies on his back or side as may be—torpid and indifferent, not feeble and exhausted. There is a disposition to talkativeness in some; there is silence and apathy in the greater number—forgetfulness and indifference to the objects that are present. If a question be put to the patient it is generally comprehended distinctly, and the answer returned is generally pertinent in so far as it goes; but it is seldom finished as it ought to be. In like manner, an act is often commenced and left in the middle, as if the purpose were forgotten before the execution was completed. In short, torpor and apathy pervade the whole movements of the system; and that to such extent, that powers of strong stimulation only are adequate to the elicitation of effect; scarcely

any powers that can be applied with safety produce an effect such as is desired.

This form of disease is generally, as now observed, characterized by apathy or diminished sensibility. It is rarely accompanied, after the tumults of invasion are past, with sufferings of pain, with the exception of anguish at stomach: it is however accompanied on some occasions with a peculiar combination of irritability and torpor, that is, sensations of a constantly quivering or balanced action, viz. a desire to act, combined with want of power to effect an act. This sense of restraint or constriction sometimes ceases suddenly, generally at a critical period. The functions of health then reappear almost instantly; and, in such manner as to give an idea that the restraining power is withdrawn abruptly, without commotion in the vascular system, or crisis as the effect of commotion.

The case described is such as may be deemed a case of general movement in all the organs of the frame, constituting the base of the general febrile act. But, combined with the general act, symptoms of local intensity are so conspicuous on numerous occasions, as to produce a form of disease so striking in its circumstances as to warrant the affixing to it a discriminative name, explicative of its character. The local act, as manifested prominently on the head, produces furious delirium or deep torpor. The torpor vanishes gradually on some occasions; it oftener increases into oppression, and terminates suddenly in death. The delirium sometimes sub-

sides, sometimes passes rapidly into fatal convulsion. This *cerebral* form of fever is not uncommon; the form styled *choleric* by the writer, perhaps not correctly, is still more frequent. If choleric be applied to increased secretions and extraordinary discharges of matters of the common bilious character, the term is the reverse of what is just. The secretion of what is properly called bile may be said to be suspended in the present case; the smallest tinge of it is not to be discovered in what is ejected by the mouth or dejected by the anus.—The evacuations upwards and downwards are neither green, yellow, nor bitter; in fact, have no property that is ordinarily ascribed to bile. The vomited matters consist, for the most part, of a dirty coloured fluid, mawkish and insipid, the dejections by stool, whether natural or produced by art, of a substance without smell or appearance of feculence, often black like water into which a quantity of soot or charcoal has been thrown, occasionally interspersed with grains like grains of glazed gunpowder, or with flakes of a villous appearance, viz. abrasions from the interior coat of the intestine. The alvine evacuation has at no time, during the intensity of the course of the disease, a smell of feculence; and it possesses no sharpness or acrimony as bilious dejections usually do. It sometimes, towards the latter period, becomes of a poultaceous consistence, retaining the black colour, and occasionally emitting a sickly offensive smell, different from the smell of feculence, but so marked in its circumstances as to indicate a complete sub-

version and change in the nature of the secretions of the alimentary canal and its connections.

A change, or suspension of the biliary secretion is here noticed as a fact; and it seemed to be a very important one, at least a curious phenomenon in the history of the epidemic of Andalusia. A similar circumstance was observed on some occasions in the West-Indies; but it was rare in comparison of what happened at Cadiz and Xerez in the year 1820. It was there common; and it is moreover worthy of remark that the alvine evacuation, in many persons who were in ordinary health, was of a dark colour during the epidemic period, as if charcoal had been mixed with the food. The consistence was ordinarily tenacious and viscous; the desire of the night chair frequent; the evacuation scanty and ineffective, not hot and acrid, or surcharged with bile: it was in fact difficult to render it bilious, or to restore the feculent odour by purgatives, even by repeated doses of calomel.

The duration of the form of yellow fever now under consideration, whether the act be general or locally prominent, varies more or less in time and conditions. Where the head is the principal seat of the morbid act, the course often terminates fatally in twenty-four hours or less, apparently by a direct stroke of the morbid cause upon the organ of life and motion. Where the head is affected, but not affected in the first degree of violence, the course is protracted to the third, often to the fifth and sometimes to the seventh day, when it terminates fatally,

sometimes by convulsion and stupor, oftener by a gradual diminution of vital power indicated by sluggish circulation, and presumptively by stagnation in the larger of the spongy abdominal organs, particularly the liver and spleen :—the effect is conspicuous in these organs after death. This is the more common history of the retrograde and fatal course. The fatal changes happen at common critical periods; and, where stagnant life resumes a course which leads to health, it is always at one or other of the known critical days, viz. third, fifth, or seventh that the commencement of the favourable change occurs.

Dissection.

The appearances observed on the dissection of those who die of this form of the yellow fever, vary more or less as in others according to the duration of the disease and the circumstances of the diseased action during its duration. Where the course is rapid, that is, terminated within twenty-four hours, the condition of the brain generally indicates the force of local action, viz. turgidness of blood vessels, preternatural firmness of the substance of the encephalon itself, effusion of water into the ventricles, not unfrequently at the base of the brain and in the theca of the spinal marrow. If the course be protracted so as to extend to the fourth, fifth, sixth, seventh, day, or later, the liver and spleen are often gorged with black blood so as to be per-

fectly rotten, and patches of gangrene are often observed at different points in the intestinal canal without marks of preceding inflammation. The diameter of the intestines is sometimes preternaturally contracted, and actual *intro susceptio* is not uncommon. The cavity of the stomach and intestines ordinarily contains more or less of a black dirty fluid resembling the grounds of coffee, or the juices of the cuttle fish: the inner coat of the stomach and intestines is often loose at different parts, —separated at some and floating in the fluid. The lungs are filled with black blood on some occasions: the pericardium sometimes contains more of a watery fluid than usual; and the body rarely appears to suffer such diminution in its volume as is customary in most febrile diseases. When the fever ceases, the figure is plump and round, as if there had been a complete restriction on the organs of waste or expenditure during its continuance.

SECTION III.

History of the Symptoms of the Yellow Fever as manifested on the Base of the Serous Temperament.

The first form of yellow fever occurred only rarely at Cadiz and Xerez in the year 1820; the second was frequent; the present was dominant and formidable, in as much as it was insidious in its mode of acting. It commenced under a comparatively great

variety of aspect, and manifested a great latitude in the force and manner of its progressive act. The attack was sometimes marked by a slight degree of chilliness succeeded by flushings of heat, and finally by strong febrile heat, head-ache, excited arterial action, and other symptoms common to the paroxysms of remittent fevers. The heat and fever subsided after a short duration, and the paroxysm terminated by perspiration so as to leave the patient in a state that is usually called remission. It recurred for the most part in about twelve hours after remission, subsided again at a certain interval, generally by slight perspiration, but rarely with material relief. The malady proceeded not unfrequently under this obscurely remitting form to the third, sometimes to the fifth day; when, the distinction of paroxysm and remission ceasing to be discernible, the epidemic manifested its real character and advanced with more or less rapidity to a given termination. If the distinction of paroxysm and remission ceased to be discernible on the third, a tinge of lurid yellow, and not unfrequently the ejection from the stomach of a dirty brown or inky black fluid, interspersed with flakes of mucous membrane, made its appearance on the fifth if not sooner, continued at intervals during the sixth, sometimes ceased abruptly at that time, the disease terminating favourably in some instances, fatally in most. Instead of a favourable or fatal termination at the time stated, the mode of action was sometimes only changed: the disease proceeded with more or less

variety of aspect to a critical period, when it again changed its form, or terminated finally—sometimes favourably, sometimes fatally. The termination in health was effected by the gradual evolution of the powers of the circulating system; the termination in death by a species of consumption of the animal juices, giving an appearance of withering analogous to withering in plants from want of rain.

Besides the mode now noticed, the disease sometimes commenced as a remittent of a simple and mild kind, and retained the remitting form for many days. The periodical excitements, which had recurred regularly during a certain duration, finally ceased; the pulse returned to its natural state, even fell below the natural standard in frequency; the tongue became clean as in ordinary health; a desire for food returned; there was no increase of thirst, and no local uneasiness to which the name of pain could be given. There were indeed no marks of fever in the common sense of the word; but there were grounds to believe that the functions of health were not free from obstruction;—they were in fact restrained by the masked operations of a febrile cause. The pulse was regular, but without buoyancy in the stroke; the skin was flaccid—without elasticity; the countenance was dull—without animation. The person who stood in this predicament, instead of rising from his bed as he might be reasonably expected to do, if no impediment from the action of a morbid cause prevented him, became

gradually listless, and at last helpless in the extreme: the tongue became red as scarlet—and dry withal; the skin withered like the leaf of a tree in autumn; the eye and countenance assumed a dusky yellow hue; the current of life declined apace, and the patient sunk more or less rapidly under consumption of the animal juices, or succumbed suddenly as a consequence of congestion in the spongy interior organs. Death was the common issue of the state described; but it also sometimes happened that, when the tide of life was brought to a point of extreme depression, a cause of new movement was infused into the system, and, reanimating the subject in a manner that is not explicable, carried him from a forlorn and almost hopeless condition to his natural condition of health. Such instances were not numerous; but they did occur, particularly among the natives of Andalusia, who, in so far as could be judged from a short sojourn in the province, held faster to life than foreigners or Spaniards of northern latitudes.

The yellow fever sometimes commenced in the form of a remittent. It also commenced on many occasions as catarrh or slight febrile indisposition,—such as in ordinary times would not attract attention, and perhaps obtain little notice even from those who are easily alarmed. It often continued as catarrh or febricula for two, three, four days, or more, accompanied with feelings of listlessness, feebleness, head-ache, sleeplessness, &c.; but with no symptom calculated to give direct alarm to those

who are unacquainted with the insidious character of diseases in epidemic seasons. The countenance, though it did not indicate to the ordinary observer any thing peculiar or threatening during the first days of indisposition, often assumed an aspect on the morning of the third, fourth, or fifth day, which was no longer of ambiguous character, that is, it became flaccid, dingy, and withered. The skin became dry, the pulse regular—not unlike the pulse of health either in time or movement, only deficient of the buoyant elasticity which characterizes a progressive course of action. The marks of the arrest of the progressive course were now visible, and the marks of the commencement of the retrograde became distinct. Vomiting of a dark and dirty fluid resembling muddy coffee, and even of a deeper black resembling the juices of the cuttle fish, made its appearance at a short interval—in fact indicated the change. The remaining course was rapid, life being seldom protracted to more than twenty-four hours after the change took place, especially where the ejected fluid was of an inky black colour.

Some circumstances, which occasionally mask the operation of the cause of the third form of the yellow fever of Andalusia, having been mentioned as preliminary, the author now endeavours to bring under view the points which strike most impressively in the progress of the more regular form of the disease, in so far as he has been able to observe them. This form, modified as it were by the breath of pestilential agency, is of an uncertain course

and of a peculiarly treacherous proceeding. The pestilential cause seems to strike the subject suddenly, either when in a state of health or in an apparently simple state of malady, with a species of withering analogous to blight in plants, the aspect changing suddenly and unexpectedly, as if the vital principle were subverted in the whole series of serous surfaces by a singularly noxious impression. The mode of action is sometimes visible from the first hour of attack, especially in particular classes of subjects who live in bad air, or who succumb in relapse after a short convalescence; but, in general, the consuming process is not discernible by ordinary observers before the third, fourth, or fifth day. The accession of a new mode of acting in an existing disease marks the commencement of a new order of things, viz. an arrest of the progressive course by an unknown cause of constriction, inducing a species of blight or withering in the human system which, consuming the animal juices, terminates rapidly in death. The change is an accident in the febrile course, which, though the occurrence of it cannot be calculated with certainty, may be expected to occur at certain times more frequently than at others.

This form of the disease acts prominently on the series of serous secretions, external and internal. The primary act seems to be constrictive. Impaired, or suspended function, irritation, pain, and irksomeness result from the presence of unnatural constriction. Changed and irregular action, varied in

mode according to the circumstances of the subject at the time, follow the impulses of irritation and pain. The system of serous secretions is considered as the base on which the febrile act moves; but, though this be the ground of the operation, other systems participate, even sometimes act conspicuously in the evolution. The sentient system is universal; and as such it is implicated in all febrile movements, either by expressions of unusual activity or of unusual torpor. The complication gives variety to the form, but does not confound the order of the established law of movement: the distinctive feature of the class continues to predominate throughout.

After having given the above preliminary statements, which seem, to the writer, to be necessary to a just comprehension of the case, the detail of the history of the disease, as it appeared in Andalusia in the year 1820, may be comprized in few words. It is here to be considered under two heads, in as much as it assumes two different forms in its retrograde course, directly opposite in superficial appearance to each other.

1. The form under view does not always begin with symptoms of violence; and it is sometimes only to connoisseurs that the real character declares itself at the commencement. The attack is, for the most part, marked by alternate chills and flushings of heat. The chills are seldom strong; but they recur at intervals for a length of time. Head-ache, heat, and sensations of burning in the eyes are

common at the accession; but they are not constant so as to be ranked among essentials. The pain in the head is uncertain, sometimes severe, chiefly at the forehead—over the eyes. The eye is sometimes muddy and confused, more or less red and inflamed, watery and twinkling—oftener dazzling than dull. It glistens in a peculiar manner,—the peculiarity in the mode of glistening is, in the writer's opinion, diagnostic of the disease. The countenance is sometimes flushed; and, when flushed, it is full; it is sometimes pale and contracted; sometimes agitated and expressive of uneasy feeling;—it is strikingly changed in most instances from its natural expression. The lips are usually dry,—sometimes unusually dry and preternaturally bloodless. The secretions from the salivary glands and surfaces of the mouth and nose are in a manner suspended. The tongue is rarely foul during the period of invasion: it is often dry and rough; and thirst is more or less urgent. An irksome uneasy sensation is felt in the bowels in most cases; viz. a desire for the night chair, with a sense of inability to effect a motion. Together with the sensation of irksomeness alluded to, intense and excruciating pain,—constant or at intervals, is prominent among the symptoms of the early period. The character of the pain is somewhat peculiar, so as not to be easily defined. It resembles spasm or constriction which rises and falls at intervals, but never ceases entirely, viz. a sense of irritability, with a restricted or impeded power of function.

Nausea and vomiting occur sometimes during the tumults of invasion. If actual vomiting take place, the matter ejected, after the common contents of the stomach are thrown up, is watery, rarely if ever bilious;—it is sometimes dirty and dark coloured. If purging supervene at this time, the stools, after the first and perhaps the second, are generally watery, neither bilious nor feculent; they are sometimes of a dirty brown or black colour, not unlike the juices of the cuttle fish. The pulse is febrile, but rarely frequent as a febrile pulse,—the number of strokes in a minute seldom amount to one hundred, frequently do not exceed eighty or ninety. It is usually small or little expanded, sometimes it is tense and sharp: it is now and then irregular; but it is not peculiar, except in so far as an idea arises from the impression that such pulse does not belong to the class of distinct periodic fevers: it is sometimes, not often, preternaturally slow. The urinary discharge is more or less irregular: sometimes it is copious and clear; sometimes scanty and high coloured. The heat is higher, especially on the trunk and upper part of the body, than natural; it is sometimes lower on the inferior extremities. But, abstracted from change in quantity and distribution, the impression which it makes on the hand is defective in expression of activity and buoyancy. The sentient system, which is more or less implicated in all febrile movements, is affected in two opposite and different ways. The activity of the muscular or locomotive power is not impaired in

any material degree in some; in others, languor and feebleness are extreme. The intellect is, for the most part, clear during the period of invasion; sometimes it is disturbed as if by the influence of wine;—it is rarely transported to violence.—The above are a few of the principal points in the history of this disease as it occurs in ordinary circumstances. In some classes of subject, and particularly in those who suffer relapse, the retrograde, or directly withering process is visible from the commencement.

The tumult and agitation, connected with the invasion of this form of fever, usually subsides after a duration of twelve or fourteen hours. The disease then finds its proper base, manifests its real type and character, and proceeds, at one time, by the expansion and evolution of its circle to the condition of health, at another, by increasing constriction, to general withering, indicative of regression and tendency to death. The phenomena which occur during the continuance of the course constitute the history of the disease, the leading feature of which, after it has assumed its constitutional character, is here noted;—it was the most common form in Andalusia in the year 1820.

The appearances of the eye and countenance are the surest diagnostic of yellow fever, not only at the commencement but at all the future stages; they are even the surest prognostic of the event, taken as a general base of prognostic. The eye, after the tumults which belong to invasion are past,

sometimes appears muddy and red as if it had been exposed to the smoke of green wood; it is more or less watery, hot and painful, impatient of light, and restrained, as it were, from moving freely in its orbit. It glistens with a peculiar glare, different in expression from the eye which glistens with joy. If things take the retrograde or unfortunate course at an early period, its glances assume a peculiar malignancy of expression, resembling in some manner the glancing of the eye of a cat in a dark room; sometimes the appearance is bead-like—without animation or meaning. The white ordinarily becomes of a dusky yellow hue after the third day; it is rarely of a jaundiced yellow. The countenance exhibits, as well as the eye, considerable variety of aspect at the commencement and during the progress. It is sometimes agitated and disturbed, sometimes shrunk and contracted, changed in appearance from the natural countenance—even at an early period. As the course advances the changes become more conspicuous every hour, and more indicative of what is to be the final issue. Animation of countenance, expressing, as may be said, buoyancy of life, marks forward process and gives promise of a fortunate issue: constriction, aridity, or withering like blight in plants, mark a tendency to retrograde and indicate extreme danger.

The condition of the skin is intimately connected with the condition of the interior coats of the alimentary canal. The circumstances of these condi-

tions constitute a point of primary consideration in all forms of yellow fever, but particularly in the one now under view. The changes operated upon the skin by the action of the cause of the disease are, for the most part, conspicuous, and even prominent from the hour of the attack to the final close of the conflict, whether the event be favourable or otherwise. The skin is generally dry, often parched. If moist, the moisture is clammy and viscous, partial and insignificant in quantity:—the texture of it is in some manner changed. While dry and constricted, it is dense and compacted, little sensible to the stimulation of blisters, and palpably deficient in buoyancy and activity of life. The lips are for the most part dry, sometimes parched and shrivelled; sometimes pale—bloodless as if through force of constriction. The tongue, another of the important indexes of the febrile condition, is often dry during the period of invasion: it is rarely foul until the distinctive character be formed. It then becomes white—uniformly or in patches: it is sometimes moist, flaccid, and of diminished size; sometimes dry and rough, stiff, hard, and brown—with more or less thirst, though not always with thirst corresponding with the obvious appearances. The foulness, dryness, and hardness of the tongue sometimes continue until the third, sometimes until the fifth day or later. The dryness and hardness then, for the most part, diminish, and the foulness begins to separate, first at the edges and finally at the centre. The tongue, besides the appearance now noticed, is sometimes

red—smooth, or rough; sometimes moist and flaccid; sometimes puffy, swollen, and livid in the whole, or in part. Where the fever is protracted beyond the seventh day, (a case which happens not unfrequently where the epidemic is of a mild and simple character, or where medical treatment has been judiciously applied to the circumstances of the case), a change, or imperfect crisis is generally observed on or about the seventh, followed at a short interval by a recurrence of suffering in a new or modified form. The tongue, in such cases, becomes not unfrequently of a scarlet red, sometimes smooth, shining, and glossy, sometimes rough and dry, and in many cases deeply chapped. Blood sometimes exudes from its immediate surface, though the surface is oftener covered with blood which has exuded from the gums. As the tongue is a kind of index to the movements of the febrile process, its condition generally undergoes some change at critical periods. It thus becomes moist when the fever terminates finally; it even becomes moist where the cessation is temporary at the commencement of a new evolution of febrile movement.

The sero-mucous membrane of the alimentary canal appears to be a part of the system upon which the force of the disease in question primarily and principally strikes, more especially that part of it which is at the cardiac orifice of the stomach. Vomiting is sometimes the first and most prominent in the chain of symptoms. It is synchronous with head-ache, or it follows it at a short and scarcely

perceptible interval. The pain in the head often strikes suddenly as a stroke of electric aura : vomiting follows the pain of the head instantly, sometimes full vomiting, sometimes nausea, or mere turning of the stomach, accompanied for the most part with a sense of inexplicable anguish in the gastric region. Bile sometimes appears in the first ejections from the stomach ; but only in the first, and that not often. The matter thrown up at the early period is ordinarily that which has been recently drank, rendered ropy by secretions from the mucous membrane ; at the more advanced periods, it is loaded with flaky substances, apparently portions of the interior coats of the stomach. Vomiting is a frequent, not a constant symptom in the early stage : eructation and undefinable distress at the epigastrium often precede it by a day or two. The matter then ejected, when actual vomiting does take place, is of a dark brown or black colour resembling muddy coffee, sometimes more deeply black resembling the juices of the cuttle fish, more or less surcharged with flaky substance. Vomiting of this character is not accompanied with retching and straining. A quantity of fluid is ejected, and there is respite for a time. The quantity again accumulates ; and, as troublesome by bulk or weight, it is again ejected. Vomiting of black matter appears not unfrequently on the third day in the fever of Andalusia, disappears on the fourth, reappears on the fifth, sometimes continues throughout the sixth, sometimes ceases entirely, when another

form of movement arises which leads imperceptibly to the re-establishment of health, or to death through another mode of febrile action. Besides the occurrence of vomiting of black matter at certain periods in the course of the disease, gulping, or the ejection, by mouthfuls, of clots of blood enveloped in mucous membrane occurs not unfrequently. Worms—round, and often red in colour as earth worms, are ejected dead, or creep out as it were from the stomach on some occasions. Eructation is often distressing; and hickup,—for the most part an obscure or suppressed hickup, is troublesome in the latter periods of the disease; sometimes before black vomiting has commenced, sometimes after it has been suppressed. The stomach suffers anguish rather than pain from an early period, sometimes with distention, sometimes without it.—The epigastrium, distended or not distended, is preternaturally sensible and impatient of the touch.—If black vomiting make its appearance on the third day, the tongue generally becomes clean soon after its commencement; it often becomes dry and of a scarlet red where the vomiting is suppressed, and where the disease, still existing, assumes another form of action.

The function of the intestinal canal is deranged from the commencement, and continues deranged for the most part until the final termination of the disease in death or recovery. The power of expulsion is impaired, often in a manner suspended; or, if not suspended entirely, the expulsive act is

irregular and by starts. The stool is generally watery, ineffective of relief, rarely feculent; it is of a dirty colour, sometimes black like turbid coffee, or soot mixed with water; it is not hot, acrid, or bilious; and it is rarely preceded or followed by the gripings which are common in ordinary forms of purging: it is often mixed, at the more advanced periods of the course, with shreds of the villous coat of the intestine, sometimes with granulated substance not unlike grains of glazed gunpowder—hard and not easily broken by triture; it is poultaceous and greasy on some occasions; sometimes excessively fetid and offensive,—not offensive as feculence, but as a peculiar morbid product of intestinal secretion. Blood exudes, in many instances, from the surface of the alimentary canal from the mouth downwards and passes out by the anus, especially where the disease continues beyond the seventh day, and where the circulation had been considerably excited at the early period. Blood is sometimes discharged in quantity through the same channel at the termination, or soon after the termination of the disease; thereby giving grounds to believe that a deposition had taken place in some part of the mesenteric system during the progress of the disease, which now finds issue by this outlet: round worms are found in the stools on many occasions.

The urinary secretion appears to be less affected in this disease than any other: it is sometimes preternaturally copious, at other times scanty; but upon the whole rarely so changed in its conditions

as to be the object of particular attention. There is however, in some of the worst forms of yellow fever, an unavailing desire to make water without marks of the presence of water in the bladder; a condition indicating irritation on the organ without power in the organ to execute its function.

Dissection.

The appearances, on dissection of the dead body, vary more or less according to conditions, viz. duration, gradual progress to extinction, or sudden suppression of life by violence. The more characteristic external mark of this form of disease consists in an appearance of withering like blight in plants; the more striking internal character is found in the consumption of the animal juices, particularly in the consumption of the red blood, in diminution of the size of the interior spongy organs, and in absorption, if one may so speak, of the muscular fibre. The flesh is flabby and pale; the serous membrane looks withered, and appears often as if it were bleached; the heart is flaccid and diminished in size; the liver and spleen are shrunk and collapsed; the intestines are pale; the great veins are bloodless. The consumption of blood is striking, and sometimes to such extent that it would be impossible to collect two ounces from all the veins in the body. A small portion of filamentous grume is observed, on some occasions, in the interior of the great veins, the internal coat of which is then ordinarily inflamed—

red as if it had been varnished: the arteries are often of a dirty straw colour.

2. The form of yellow fever now described appears to move principally on the system of serous secretions, acting by constriction of the capillaries, absorption of the animal juices, and apparently occasioning death by a species of withering like blight in plants. Besides this there is another, considered to be the same disease as moving on the same general base; but which, instead of occasioning death by a process of exsiccation and withering, occasions it by a process of dissolution and liquescence. The variety, which terminates in this manner, commences as fevers of moderate force usually commence. It rarely shows any thing peculiar until the third or fourth day, when the countenance assumes a singular and striking appearance. The lips, contrary to what is observed in the form described above, become of a cherry red—moist and smooth; the cheeks of a Circassian bloom, sometimes circumscribed to the cheek bones, sometimes more generally diffused. The eye is peculiar—sometimes glassy and clear with a ghastly and unpleasant expression; the skin is soft, flaccid, and damp—covered on most occasions with dewy moisture; the fetor from the body is singular, sickly, and faint—not unlike the smell of a fish market: the alvine evacuations are offensive in the extreme, sometimes copious and liquid—not feculent, not even of feculent odour. The symptoms are not violent. The patient sinks gradually into the grave, but he rarely

falls into it before the seventh or eighth day.—The case occurred sometimes in Spain in 1820:—the dead body was not opened on that occasion; it has been opened by the author on others similar.

SECTION IV.

History of the Symptoms of Yellow Fever as manifested, principally, on the Base of the Sentient System.

4. Besides the forms of yellow fever described above, the disease sometimes manifests such prominent signs of agitation in the sentient system as entitle it to notice under a separate head; viz. fits, convulsion, stupor, insensibility resembling apoplexy, delirium—almost to madness, the countenance wild and furious, the pulse tumultuous, irregular, and agitated in an extreme degree. These symptoms, with pains and spasms of unusual severity in the abdominal region, a sense of agitation throughout the whole of the system as if it were constrained from acting freely, or prevented from relaxing from action by the operation of an unknown cause, constitute the leading feature in many. Mobility, or disposition to faint on change of posture is comparatively rare in yellow fever; outrageous delirium, or a calm and still torpor, listlessness and inability, apathy and indifference are common, and in some manner discriminative of the epidemic character. Where the prominent act moves on the base alluded

to, death, when it does take place, is generally ushered in by convulsion. No safe prognostic can be given of the result of this form of disease: it sometimes happens that local pains and spasms, torpor, or sensations of what may be called balanced action under forcible constriction, give way at a given time, generally at known critical periods, when the action of health reappearing, but without preceding vascular commotion, the patient is gradually restored to his pristine condition without signs of crisis by sensible evacuation or otherwise.

SECTION V.

History of the Outline Symptoms of the Yellow Fever, as manifested on the Base of Gangrenous Temperament.

The cause of fever is a violence: its first impression operates by an arrest of the actions which are essential to the functions of health. The reaction consequent to the impression, where open reaction takes place, as a reaction corresponding to its cause, is a reaction of violence, and as such unnatural and contingently destructive. It constitutes an ostensible disease which implies a series of perverted actions throughout the animal system, more prominent in one part than another according to circumstances of contingence. The act, consequent to the impression, is sometimes preternaturally excited; sometimes so suffocated or oppressed by

excess of external power acting on defect of inherent energy, as to sink below the customary pitch of force. The act, whether excited or oppressed, which indicates the changes, and which is consequent to the application of the morbid cause, is manifested in the movements of the organ of the great circulation, chiefly indicated by the motions of the heart and pulsation of the arteries. The disease known by the name of yellow fever, though generally manifesting excited action at its commencement, is notwithstanding sometimes accompanied with marks of oppression to such extent, as to imply a movement in the circulation so slow as to be little short of stagnation. The condition which disposes to this phenomenon denotes the gangrenous character; under the prevalence of which the application of the febrile cause developes a peculiar mode of action which it is not easy to explain. The disease, so produced, commences with more or less pain of the head, irksomeness of feeling, sense of feebleness, diminished power of circulation, bloated and livid countenance, heavy breathing, deep sighing, sensations of fulness and uneasiness at the epigastrium, coldness in the extremities, and general want of animation in the surface. The tongue is sometimes swollen—more or less livid, frequently covered with a cold and ropy saliva.—If the disease be left to itself, it often terminates in death at an early period by stagnation of blood in the interior spongy organs, particularly liver and spleen; it also sometimes terminates in recovery, by an unexpected evolution

of the powers of life from a cause that is not easily discovered.

Remarks on Type.

Type is a point in the history of yellow fever which cannot be explained in a satisfactory manner. It might be presumed, from the practice which the Spanish physicians have adopted of giving peruvian bark to great extent as means of cure, that the disease is considered as a disease of type; but no writer of that nation, whom the author has seen, attempts so describe the type; and from what he has himself seen, he believes it to be difficult, if possible, to trace it in the forms that are most concentrated. He however believes that it exists, and he considers it to be important that the principle, on which its movements depend, be closely studied, so as to be known in so far as regards application to practical uses. There is here rarely any recurrence of sensations of cold after the tumults of invasion are past; consequently the most distinct of the signs which mark the accession of febrile paroxysms is looked for in vain. There is, as in others of the febrile class, a rising and falling of the irritability of the system at given times; but the marks are often obscure; in fact so obscure that they cannot be appreciated, except by persons who give the minutest attention to the observation of the diseased condition in all its turnings and windings at the bed-side of the sick. The fever which

prevailed at Xerez, where the character was masked and the symptoms aggravated, proceeded, for the most part after the tumult of invasion was past, in what may be called a calm and even tenor. There were risings and fallings at certain intervals; but there were no distinct paroxysms and remissions unless where the disease was mild in itself, or where it had been rendered so by treatment. The writer is ready to confess that he cannot draw any thing of dependence, respecting the laws of periodic movement, from all that he observed in the risings and fallings of the febrile process at Cadiz or Xerez; but, had he visited the sick three or four times a day instead of once, it is probable he might have been able to speak differently. The appearances of the eye and countenance, which, as indicative of signs of animation and depression, mark the presence of pressure or relief from pressure, are materially important in aiding to determine the law of movement; but they can only be traced, so as to be available for utility, by those who domesticate with the sick. That was not compatible with the relations in which the author stood with the ordinary subjects of the yellow fever of Andalusia; he cannot therefore throw much light upon the subject from this source of information. But, though the type of the yellow fever cannot be traced and truly apprehended by a common and superficial mode of observation, he may still venture to say, whatever be the precise form of movement which characterizes the febrile course, that the third day and the

fifth are days conspicuous for changes which indicate final results. Movements of preternatural excitement are not always, perhaps rarely, observable in aggravated forms at these periods of change; but, whatever be the character of the condition that marks the accession of a paroxysm, the third day in some, and the fifth in others, manifest appearances which are regarded throughout as diagnostic of the disease, and generally as prognostic of its issue. Vomiting of black matter like grounds of coffee, sudden blight or withering, remission, or rather silent cessation of fever, relaxation of spasm or constriction, and renewal of the powers of suspended function, generally present themselves at these times, so as to indicate the power of the period of change, whatever be the nature of the result—fatal or otherwise. Black vomiting is considered as a decided characteristic of yellow fever. It is admitted to be so; but it is to be remarked at the same time that its character, and particularly its consequences are not the same precisely in the yellow fever of the West-Indies as in that of the south coasts of Spain. In the former, few recover where this symptom appears; in the latter, the recoveries are not few. From this it is concluded that black vomit is actually the consequence of local disorganization, to such extent in the first as scarcely admits of a remedy; in the second, that it arises from a change induced on the character of secretions without positive disorganization of organic structures. It thus ceases; and it again recurs after an interval as if it were

the act of a paroxysm. It sometimes ceases entirely. The disease then either assumes a new form of action and proceeds, through a given course, to an uncertain termination—favourable or fatal; or it terminates directly in the renewed action of health;—there are causes, not always visible, which influence these conditions.

Recapitulation.

The writer has given a rude outline of the history of the more common forms of the fever of Andalusia, as it appeared in the year 1820 at Cadiz and Xerez. It is fit to be known that he had not the immediate charge of sick persons at these places; and, being moreover infirm in health and feeble from old age, his visits at the bed-side were not so frequent as those of a physician (who assumes the task of recording a history of fact) ought to be. He ought not perhaps from this cause to have ventured to appear before the public; and if he had not thought that he had acquired, from long observation of the febrile process in different countries, a comparative facility in forming opinion and in embodying in their places the materials which present themselves, though only in a cursory view, he would not have done it:—he hopes he has not committed himself by overweening presumption.

The cause of yellow fever, it is unnecessary to remark, is one; the act assumes a variety of aspect according to contingent circumstances. The act is

more prominent on one series of parts, or on one organ than on another; but, as all parts in the system are moved by one spirit of life and correspond in their functions according to their relative conditions, no general movement within the circumference of the circle can be said to be exempted from the morbid pressure. The writer has described the disease, according to the prominence of its action on the different series of parts which execute functions in the animal system. These functions, as the functions of one whole, are more or less mixed with each other; consequently the description, as presented to the reader, is more or less embarrassed and perplexed by combinations. But exteriorly embarrassed as it may be, and disfigured by repetitions as is unavoidable in the history of the combined acts of a complicated instrument, it is more consistent, more intelligible, and practically more useful than any form of description can be made without the divisions here adopted; hence, affected and peculiar as it may appear to be, the author adheres to it on this occasion, and now takes leave to recapitulate the sum of what strikes most forcibly in the three principal forms described above.

1. The yellow fever of Andalusia manifested the principal force of its action on the organs of the great circulation on some occasions, but not in many comparatively. The action of the heart and arteries was here strong, even violent and tumultuous, occasionally more prominent on one part than another. Where the excited act was what may be

called general in the system, the favourable termination was effected through sweat and hypostatic urine; the unfavourable, by quiescence from struggle as an effect of inability. The termination of the prominently local act was effected by effusion or deposition of purulent secretion in the part; the final issue was favourable or unfavourable according to circumstances of contingence.

2. A form of yellow fever of restrained or bridled vascular action, impaired power of absorption, disposition to agglutination between contiguous surfaces, and stagnation of the moving fluids in particular organs, the ostensible act manifested on the system of lympho-mucous secretions, was frequent both at Cadiz and Xerez in the year 1820, but particularly at the latter during the author's sojourn at that place. The pulse, after the first tumults of invasion were past, rarely exceeded eighty strokes in a minute, sometimes not more than sixty or seventy. The strokes were equal in time as the strokes of a clock, open and free as superficially observed—not elastic and buoyant; they were such in fact as could scarcely be said to be febrile. The skin was soft, flaccid, pasty, often moist or damp. The heat was for the most part diffused generally; and it was not often much above or below the heat of health in actual measure; sometimes however the surface was cold as marble, similar to what occasionally occurs in cholera. The lips were sometimes moist and rosy, sometimes dry and pale as if from suppressed capillary circulation. The

countenance was generally pale, fixed, and statue-like; sometimes it presented circumscribed flushings on the cheek bones, but without corresponding signs of animation. The eye gave an impression of stiffness and irksomeness as it moved in the socket: it was dull and torpid, inanimate and often of a pearly white, vacant in expression, and veiled as it were by a glistening suffusion that cannot be easily, if at all, described in words. The tongue was sometimes foul and coated; sometimes rough and dry—with urgent thirst; sometimes not much changed from natural. Nausea, eructation, distention, and impatience of pressure at the epigastrium were often distressing. Nausea was an early symptom: it was sometimes accompanied by peculiar indescribable sensations at the upper orifice of the stomach, and followed in most instances by vomiting of the liquids which had been recently drank, rendered ropy by morbid secretions of a dirty colour—rarely, if ever, bitter, yellow, green, or what is called bilious. On the third day in some, in others, not until the fifth, a dirty coloured fluid, interspersed with flaky substance, was thrown up in quantity—dark and muddy like turbid coffee, sometimes more intensely black like the juices of the cuttle-fish. Head-ache was often severe during the tumults of invasion; it became moderate, or disappeared as the disease proceeded to its termination. Starts of delirium occurred sometimes: torpor of the intellectual faculty, viz. a want of power to command thought, or a species of forgetfulness, like absence, was common

to all. Pains and spasms in the bowels occurred often during the early period: obstinate constipation accompanied with a sense of constriction, and, at a later period, a purging of a watery, dirty, black fluid, sometimes intermixed with villous flakes and granulated substances like grains of glazed gunpowder, might be said in a manner to characterize this form of yellow fever. The bowels resisted the stimulation of the strongest purgative on some occasions; or, if they yielded through excess of force, a sense of constriction was still felt in the tract of the canal and no essential relief was obtained from the partial evacuation. The pulse, which could scarcely be said to be febrile after the the second day of the disease, became weak, small, frequent comparatively, and sometimes so sunk as to be scarcely perceptible at the latter periods. Death approached at a rapid pace in many—often without tumult or commotion;—it was precipitated by convulsion in some.—The history now given, is the history of the common routine of the unfortunate course; a course, which appears to be sometimes suspended, about the fifth or seventh day, by a stream of life thrown into the system at those times in a manner that cannot be explained, but that tends, by the new action produced, to avert death. The circulation, from drawling and sluggish, becomes buoyant and active; the tongue assumes a white and furred appearance; in short, a new train of febrile movement takes place, runs a given course, and terminates, after a short duration, sometimes

favourably, sometimes otherwise. Besides revival from a forlorn condition, by what may be called an extra infusion of life into the system, certain sensations of pain and constriction, which are sometimes prominent among the symptoms of yellow fever, give way suddenly on some occasions; the natural functions resume their course in a calm manner, and health is gradually restored to its pristine state without ostensible marks of commotion or crisis.

3. The third form of yellow fever was the most common form in the year 1820, both at Cadiz and Xerez; in fact more than equal in amount to both the others. The morbid act was manifested principally on the system of serous secretions—external and internal. The system of the great circulation is necessarily implicated in every febrile process; but its action was here rarely excited to excess; that is, the pulse was not strong, vigorous, and expanding, such as aims at removing impediments by force: it was often frequent, sharp, and quick, more or less irritated, but apparently repressed from developing itself freely by strong capillary constriction. The skin was dry from the beginning; and it generally continued dry throughout. The lips were dry, often arid and parched; sometimes pale and bloodless as if the capillaries were obstinately constricted. The countenance was sharp and peevish, more or less contracted—in contradistinction to placid, expanded, and serene. The eye glistened and twinkled, often sparkled like

the eye of a cat in a dark room, particularly at an advanced period. The white of the cornea usually became of a faint lemon colour, or dingy yellow after the third or fourth day. The heat of the skin was generally higher than natural; sometimes acrid and pungent in an extreme degree. The texture of the skin was closely constricted, little susceptible of the stimulation of blisters, oftener seared than vesicated by their application, or, if vesicated, the parts underneath dried and shrivelled suddenly, so as to resemble dead hide rather than the skin of a living man. The disease, as acting on the sero-mucous base, appeared to have great latitude in degree of force. The constriction of the capillaries was sometimes close, so as almost to deprive the skin of its animation; sometimes it was moderate, so that life circulated through all its parts with buoyancy. The symptoms disappeared imperceptibly on some occasions in the latter case; sometimes perceptibly by an obscure crisis on the third, fifth, or seventh day. But, though this happened sometimes, there was no sure dependence on its occurrence:—the most experienced could not calculate with certainty. The countenance and surface of the body, which were animated, and as it were buoyant with life during the first and second day, suddenly became dry, shrivelled, and withered like the blighted leaf of a plant, sometimes at the commencement of the third, sometimes of the fourth, and oftener perhaps at the commencement of the fifth day. The withering act was instant, so as to be regarded as the act, not the

effect, of the paroxysm. The stomach, which was disagreeably affected from the beginning of the disease, began at a certain point, viz. commencement of the retrograde course, to eject a flaky liquid of a dark colour, resembling muddy coffee or the juices of the cuttle fish. The evacuations by stool were of similar appearance with what was ejected by the mouth, viz. copious, cold, insipid, watery, and black. Numerous shreds of the villous coat of the intestines floated in the liquid; and grains of a hard substance and black colour were sometimes found at the bottom of the stool-pan. The intellect, which was affected occasionally in the early stage, but rarely violently or permanently affected, was more or less disturbed at the later periods.—Spasms and convulsions sometimes ushered in death.

CHAP. V.

Prognosis.

IT is difficult to form a just prognostic of event in those fevers which appear under epidemic influences; and it is particularly difficult in the yellow fever of Andalusia, if the writer may be allowed to form opinion by the experience of what he saw. The disease, at least the third form of it which was the most common at Xerez in 1820, was treacherous in the extreme.

Where yellow fever commenced suddenly with intense pain of the head, and simultaneous sickness at stomach, the danger was great. Where it commenced by fit, convulsion, stupor-like apoplexy, or outrageous delirium, the countenance being heavy and bloated, or wild and agitated according to circumstances, the eye inflamed and staring, the issue was ordinarily fatal, unless the danger was averted by strong remedial measures promptly applied. Where the tongue was dry and rough like a file; where it was of a milky-white colour throughout, or in patches; or where it was swollen, flabby, and covered with glutinous saliva, the danger to be ap-

prehended was great. A torpid, heavy, and statue-like aspect of countenance gave suspicion of danger. A flaccid countenance with a circumscribed flushing on the cheek bones, a lip of cherry-redness, a glistening, glassy, and ghastly appearance of the eye, a damp skin—inelastic and flabby, a faint and nauseous odour from the body resembling the smell of a fish market, indicate the danger to be extreme. Yellowness of the white of the eye is equivocal; turgid veins in the white, as appearing in the latter stage, is almost always decisive of a fatal issue. Torpor of the skin—to such extent as to be insensible to the stimulation of blisters or sinapisms, is ranked among dangerous signs. Flaccidity, defect of tension and elasticity, whether with dampness or dryness, indicate great danger. Constriction and aridity of the general surface, more particularly dryness and paleness of the lips, suspension of cutaneous secretion, harshness, want of unctuosity and pliability, denote dangers of the first class. Petechiæ are suspicious: streaks, or patches of a livid, green, or violet colour, are almost certain indications of approaching death. Eruptions on the lips, particularly on the upper lip, extending towards the nose—obscure like knobs or black points, rank among signs of great suspicion.

The force of the yellow fever of Andalusia manifests itself prominently on some occasions on one or other of the abdominal organs; particularly on the secreting surfaces of the alimentary canal; primarily and principally at the upper orifice of the

stomach. The act is there strong; and the indications which arise from the mode of acting are important, in so far as regards the means of forming a true opinion on prognostic. Nausea, or the desire to vomit, gives more suspicion of danger than actual vomiting, particularly where vomiting is accompanied with severe straining and retching. Vomiting of a ropy fluid, without effort or straining, may be justly considered as a suspicious sign. Vomiting of bitter bile, whether green or yellow, even with straining and severe retching, affords a sign of comparative safety. Vomiting of black matter, like the grounds of coffee, is reputed a sign of the highest danger. It was not absolutely a fatal sign in the fever of Andalusia: it is almost always so in the fever of the West-Indies, particularly where the colour is of an inky black. Sensations of anguish and distress at stomach, impatience of pressure at the epigastrium, eructations, or explosions of wind from the stomach, give cause to suspect that the foundations of an untoward event are laying, or laid. Obscure hickup marks imminent danger; on the contrary, an open, free, and strong hickup is not unfavourable. It sometimes continues for seven days, sometimes for a fortnight with short intervals of respite; and, when it ceases, it ceases sometimes suddenly, sometimes gradually, without leaving marks of permanent injury on the habit.

The condition of the alimentary canal is various in the different forms of yellow fever; and it offers, in its variety, many signs of prognostic which de-

serve to be attentively considered. A desire for the night-chair, with a sensation of inability to effect a motion, or with insensibility to the stimulation of strong purgatives stands among the suspicious or bad signs in all forms of this disease. Free feculent evacuations are favourable; even bilious evacuations are comparatively good: copious, watery, and dirty stools—muddy like turbid coffee, or black like charcoal and water, particularly as interspersed with shreds of the villous coat of the intestine, or loaded with black substances like grains of gunpowder, are of the worst prognostic. Scanty black stools, tenacious and viscous like bird-lime, are inauspicious; copious liquid stools—in colour and consistence like tar or molasses, are less unfavourable: they still indicate danger.

Suppression of urine, or rather an urgent desire to make water without evidence of water being contained in the bladder, is almost always a fatal symptom: clots of blood, discharged by the urethra enveloped in portions of the mucous membrane, indicate great danger: bloody urine is sometimes a sign of salutary crisis, especially where it is copious —and ceases soon and perfectly.

The pulse, which becomes calm, regular, full, soft, and slow at a certain point in the diseased course, unaccompanied with decided signs of favourable crisis, is uniformly a bad sign, almost a certain sign of a fatal termination. The pulse which is preternaturally slow, even the pulse which rises to eighty strokes in a minute, but which scarcely

differs from the pulse of health except by defect of buoyancy and elasticity, may be justly considered as a pulse of bad omen; on the contrary, an expression of force and energy augurs well, except where connected with local inflammation. The pulse rarely exceeds eighty strokes in a minute after the disease has assumed its constitutional character: it often does not rise to sixty in the second class, particularly in the form which is here designated by the name of choleric. Where the strokes of the pulse become frequent at an advanced period, accompanied with increased muscular mobility, as tremor, starting, &c., there is cause to fear an untoward event, but no cause to pronounce confidently on the subject. Where the pulse becomes expanded, buoyant and elastic near a day of crisis, the prognostic of a favourable termination is comparatively sure.

The circumstances of animal heat furnish grounds on which to form a reasonable prognostic of the final issue. A strong, deep, and concentrated impression of heat indicates a condition which implies many chances of danger. A sharp and pungent, or caustic heat, accompanied with an arid, parched, and constricted skin, dry and shrivelled lips, &c., stands decidedly among bad signs; it is not absolutely a mortal one. The condition is remediable by art; and it is sometimes removed unaccountably by the accidents of chance. A degree of heat near or below the standard of health, such as does not communicate a glow of warmth to the hand which touches the skin, whether accompanied

with a dry and unperspirable, or an open and damp state of the surface, furnishes ground for suspicion at all times. If the skin be preternaturally cold, that is, below the heat of the common atmosphere; and, if the coldness be connected with unusual mobility of the muscular system, so that the subject cannot be moved without danger of fainting, hopes of recovery are not precluded: if the coldness be connected with torpor and marble solidity of the limbs, the hopes are faint if not absolutely null.

The yellow fever of the West-Indies is a dangerous disease, more rapid in its course than the fever of Andalusia, much less treacherous in its character; in as much as its dangers, unless under the reign of epidemic influence, are generally visible from the hour of the attack. The danger of the fever of Andalusia is often masked, the manner of proceeding insidious. It appears as a mild remittent in some instances, as a slight febrile indisposition in many. At a certain period, sometimes on the third, oftener perhaps on the fourth or fifth day, withering or black vomiting make their appearance suddenly, and the patient generally sinks into the arms of death within twenty-four hours from the time the change is observed to take place. Several recover from the torpor and statue-like condition which has been described as characteristic of the second class of yellow fever; few rally from the withered condition here adverted to.

CHAP. VI.

A View of the Methods that are, or may be employed for the Cure of the Yellow Fever of Andalusia.

THE author would not, from the short time which he spent at Cadiz and Xerez, have presumed to offer an opinion on the history and cure of the yellow fever of that part of the world, if he were not convinced in his own mind that the disease is neither new, peculiar, nor imported; and that it is not impregnable to a judicious plan of treatment. It has a strong feature of resemblance with the yellow fever of the West-Indies, as that fever appears among native and acclimated inhabitants during the reign of epidemic influences; it has less resemblance with it as it manifests itself among newly imported Europeans; particularly among military who are acted on by a new climate, or artificial causes contingent to their condition. It is more severe in its symptoms, and more rapidly fatal among strangers in Spain than among natives, particularly the natives of the province in which it arises; and it is moreover more severe upon the robust and athletic, than among the puny, thin, and delicate. The

more concentrated forms of the yellow fever of the West-Indies generally terminate within the fifth day, often on the third or fourth, and sometimes earlier. The severer forms also terminate early in Spain; but, in general, the fifth day indicates what is to be the issue, and death actually takes place on the sixth. The retrograde course sometimes commences on the third, and life terminates on the fifth: sometimes the morbid act goes on progressively to the seventh; when a pause ensues, and a new train of morbid action arises which proceeds to a protracted period, often to the fourteenth from the commencement, the seventh from the ostensible change in the character of the symptoms. It then terminates, sometimes favourably, sometimes fatally; or, changing form and mode, it proceeds through another septenary course to an uncertain issue. This happens not unfrequently in Spain; not often in the West-Indies, unless where the force of the disease has been broken at an early period by treatment. Instances occur occasionally in the West-Indies, especially during the reign of epidemic influence, where the disease proceeds in a calm and uniform tenor to a given period, sometimes to the fifth day, sometimes to the seventh: withering and black vomiting then come on by surprise and speedily extinguish life. Such accidents are frequent in Andalusia, particularly where the epidemic cause prevails in force:—they were frequent at Xerez de la Frontera in the year 1820.

The yellow fever has destroyed a great number of persons in the south of Spain since the year 1800; and, as it does not appear that a successful mode of treating it has as yet been discovered by the Spanish physicians, the author takes the liberty of offering his opinion on the subject; but, prior to advancing any suggestions of his own, he considers it to be necessary to state, in as few words as he can, the outline of the practices that are recommended by Spanish authors of the best reputation, and that consequently have currency in the country.

SECTION I.

Remarks on the Spanish Modes of treating the Yellow Fever.

Dr. Arèjula, a physician of learning and accomplishment, and presumptively well acquainted with the history of the yellow fever, as the superintendant general of the medical department in the south of Spain during the rage of the epidemic in 1800, 1801, 1803, and 1804, stands at the head of those who have written on this disease. Arèjula appears to have visited different countries in Europe, to have studied at different universities, and to have adopted the theoretical doctrine of the late Dr. John Brown; which was, when he studied and even when he wrote, the more current doctrine of the time. Dr. Aréjula is sufficiently minute on the head of treatment. He, for instance, recommends the exhibition

of a very mild emetic at the commencement; in contradiction he admits to the general principle of his doctrine, but for a purpose of contingent utility. One grain and a half of emetic tartar, dissolved with eight grains of cream of tartar in eight ounces of distilled water, given by two spoonfuls at a time every six minutes until nausea be brought on, is the form of emetic which he employs. When nausea commences, actual vomiting is provoked according to his prescription by drinking warm water. The emetic is given as soon as the sense of coldness and shivering subsides, especially if the tongue be moist: it is not admissible after the second day. If perspiration follow the operation of the emetic, a cupful of tincture of bark is ordered to be given every two or three hours:—in consequence of this proceeding, the disease, when mild, is said to be often arrested. If prostration of strength be great at this early period, peruvian bark is given without loss of time, simply or with the addition of extract. When the operation of the emetic has ceased, a cupful of beef tea or bouillon, and a glass of the wine which the patient most relishes is ordered to be given immediately, followed, at the interval of an hour and a half, by one drachm of bark mixed in water, with a small glass of wine and occasionally half a biscuit. This lays the foundation of the curative proceeding. Bark is ordered to be given every third hour, and bouillon every third hour; so that the patient has only one hour and a half of respite at a time from swallowing medicine or nou-

rishment. Arèjula increases the quantity of bark by a scruple at a time until the dose amounts to two drachms. He is disposed to carry it to four where the stomach can be made to retain it; but, where that cannot be done, he gives two drachms every other hour. Where the stomach is irritable, syrup of poppies, or opium and æther, are added to the bark; and, where bark cannot be retained in substance, even with these aids, the tincture is substituted in its place, with the addition of vitriolic æther, and sometimes with the addition of a few drops of sulphuric acid. Arèjula employs clysters of tepid sea water, and speaks favourably of their effects. Sinapisms are applied to the soles of the feet at an early period, even to the calves of the legs, the arms and nape of the neck. If bile be thrown up at an advanced period, warm water is given with a view to facilitate the ejection of it:—the vomiting he says is not unfrequently critical. Arèjula attempts to arrest, or allay black vomiting by tincture of bark with the addition of sweet spirit of vitriol, nitre, æther, extract of opium, syrup of poppies, &c: wine, or brandy and water is recommended for drink. Blisters and sinapisms are applied to different parts of the body, and removed as soon as they excite pain and irritation. If medicine cannot be retained on the stomach, it is administered by clyster in a proportionably larger dose.—Such is the base of Arèjula's practice, and the sum of the means which he employs for the execution of his view. He asserts that his plan was successful; but he fur-

nishes us with no precise document by which we can judge whether it was so or not. The idea of debility predominated in his mind; and efforts to counteract it seemed to influence, with the exception of an occasional emetic, all the steps in his proceeding:—blood-letting is branded by him as a remedy directly destructive of life.

Dr. Flores de Moreno, the next in medical consequence to Arèjula among the physicians of the province of Andalusia, has written on the yellow fever at some length. Flores is King's physician; and, as of the highest rank, is the physician most employed at Cadiz. He was present in that city in the year 1819 when the epidemic was general and fatal; and also in the year 1820 when it was rare and comparatively not mortal. His book was published some years since, and it must be supposed to have been made up from the materials which the epidemics of 1810, 1813 and 1814 supplied. Flores appears, in his younger years, to have made some voyages to warm climates; and to have known the manner in which calomel was employed in the diseases of those climates by English or other practitioners; but he candidly confesses that it was the perusal of Dr. Rush's book on yellow fever, (a translation of which had been recently made into the Spanish language) which encouraged him to pursue the method of treatment which he recommends, in his publication, to the notice of his countrymen for the cure of the disease in question.

If Dr. Flores be called to a patient who is under the tumults that are common at the invasion of yellow fever, he endeavours to allay agitation by the administration of soothing remedies; and, when that is done, eight grains of calomel with fifteen of jalap are given as purgative, sometimes at one dose, sometimes in divided doses. The practice he observes is admissible only in the early stage of the disease; that is, not after the second day. Instead of the full dose of calomel and jalap, given in the manner and at the time stated, Flores sometimes gives two grains of calomel every two hours until stools be procured. He directs beef tea to be given at intervals as means of support, and attempts to accelerate the operation of the calomel by clysters of sea water—with some spoonfuls of olive oil. If the bowels be not moved by this proceeding, a cupful of a solution of salts and manna in tamarind water given every two or three hours; or, a spoonful of castor oil given every hour until it operate, is next prescribed. Flores never fails, according to his own account, of procuring abundant bilious evacuations by these expedients; and, with bilious stools, he usually obtains relief from the pressure of the more urgent symptoms of the disease. When the first step in the plan of cure is made, tincture of bark &c. is ordered to be given as preventive of the occurrence of untoward accidents.—The treatment here recommended is simple enough. It is said to be sufficient for the cure of the milder cases of the disease: no person

of experience and candour will pretend to say that it is equal to the control of the more aggravated.

Where symptoms of a threatening aspect, viz. heat, distress, and anguish at stomach, make their appearance on the third or fourth day, Dr. Flores directs that a strong sinapism, or blister be applied to the pit of the stomach, that injections of decoctions of mallows in sea water, or with a small quantity of purging salts be administered immediately, and repeated every three or four hours; and finally, that one or two spoonfuls of a mixture composed of balm tea, Hoffman's anodyne liquor, and tincture of opium, be given occasionally as circumstances may appear to indicate. Dr. Flores endeavours to uphold the patient's strength by means of tincture of bark, opium, and æther; sometimes by extract of bark dissolved in water—in the proportion of two drachms to a pound; and, in so far as respects aliment, by bouillon, panada, rice cream—given frequently but in small quantity at a time. If the irritability of the stomach be great, Dr. Flores withdraws every medicine, except a mixture of decoction of bark, tincture of bark, snake-root, æther, and occasional clysters of tepid sea water. He speaks confidently of success; but, if in spite of the treatment, the vomiting still continue, or eructation and hickup supervene, sinapisms and even blisters are directed to be applied to the epigastrium. These, according to his account, ordinarily remove the threatening symptoms; but if they fail, and if sudden prostration of strength threaten a

total collapse, blisters are applied to different parts of the body as stimulant; and extract of bark, dissolved in tincture of bark and sharpened by the addition of diffusible stimuli, is ordered to be given at the same time in large doses.—Where the tongue is covered with blood which has oozed from the gums and parts about the mouth, the mineral acids, bark clysters, &c., are held by Flores to be the principal remedy.

The writer has thrown together, in as few words as he can, the sum of the proceedings adopted by Dr. Flores for the cure of the yellow fever of Andalusia; such, it is presumed, as it was at Cadiz in the years 1810, 1813, and 1814. Dr. Flores has detailed some cases at length in the publication alluded to; and from these it may be collected that, though the disease was of considerable violence ostensibly, it was not precisely of the same form, nor of the same degree of treachery as it was in the year 1820, particularly at Xerez de la Frontera. The evacuations by stool are said to be bilious—yellow, green, or dark and poultaceous; and, where that is the case, we may venture to conclude that the disease, though often fatal, is not of the highest degree of virulence:—the periodic movement was frequently observable. Dr. Flores has given no distinct document to the public, by which an opinion can be formed of the degree of mortality in his practice relatively with that of others. He boasts success with some confidence; and his plan of treatment, it must be admitted, is better calculated to

attain it than that of Dr. Arèjula; but it is by no means to be regarded as an efficient plan of treatment for the cure of the more aggravated forms of the yellow fever. This opinion is not given at random: it may be thought to be proved by the events of the year 1819. Dr. Flores was then the leading physician in Cadiz. No one could boast of success in that year, and Dr. Flores not more than others: the number of persons who died under his care is reported to be enormous; they exceeded twenty in a day on some occasions.

The method of treating yellow fever in the hospital San Juan de Dios, was the common method of treatment adopted by the majority of Spanish physicians. It consisted, in so far as the writer was able to discern during a short period of daily attendance, in the early administration of cream of tartar, oil of almonds, sinapisms to the soles of the feet, and occasional clysters. Bark and snake-root were given in the advanced stages, and blisters were applied, principally to the calves of the legs, when things became desperate. Where hæmorrhage, or oozings of blood took place from the gums or other part of the body, the mineral acids were considered as the remedy of chief dependence.—The disease, as it appeared in this hospital, did not in general appear to be violent at the commencement: it was treacherous in its movements, and often proved fatal unexpectedly: the choleric and withering forms were the most common.

The writer must not, while noticing the Spanish methods of treating the yellow fever, omit to mention that blood-letting is entirely proscribed as a remedy; in fact regarded, since 1800, as a remedy of almost certain destruction. A circumstance occurred at Cadiz in the month of September 1820, which proves distinctly that the opinion formed on that subject is not well founded. An English gentleman, a medical man, resident in that city, was attacked with the epidemic in one of its worst forms. He was seen, at an early period after the attack by the writer and another English medical officer, and bled largely; that is, to between four and five pounds. Instead of being buried in two days, as some of the faculty had predicted, he appeared in the street in ten days in perfect health. He recovered and treated some persons who came under his own care in a similar manner as he had himself been treated. Not one of them died, and the most of them were fit for their duty in ten or twelve days. They were not indeed numerous; but the cases were pointed, and decisive as being of an aggravated kind. The novelty and the severity of the discipline (for blood-letting was not the only revolting part of the treatment employed) seemed to have attracted the notice of the Spanish people; but, whether or not it was the cause which induced the Spanish faculty to take the subject into their serious consideration, the writer does not pretend to know. He knows for certain, as it was publicly avowed, that bleeding and other

means of depletion, which had been formerly deprecated, were employed soon afterwards to some extent by the most eminent practitioners of the city. The results were said to be favourable, but the Spaniards are so much in the habit of going to the outside of their success on almost all subjects, that even the reports of the diary, which are held to be official records, must be taken with allowance.—The yellow fever appeared, by these reports, to be less fatal after this change in the method of treatment was adopted than the common diseases of the season. That was not perhaps the actual fact. Policy often disguises truth; and here there were causes in operation at the time, which modified the official statements in the diary to the policy of the city; which, as the disease was visibly on the decline, strained a point to obtain clean bills of health at an early date.

The mortality from the yellow fever has been prodigiously great in most of the seasons in which it has appeared in Andalusia; but the precise proportion of deaths to recoveries is not correctly known, as the official reports are not made up with exactness. It amounted to seventy in a hundred at Xerez de la Frontera in 1820 according to the official return. It was in reality much higher, for those only were included in the dead list who were buried without the town. Private burial was obtained for many,—and such were not registered, at least not correctly registered. Many, even a great many, were entered on the list of yellow fever

by connivance, that is, for the sake of the allowance granted by the municipality to that description of sick only. The diseases of those so entered were, it may be presumed, of a less mortal character than the yellow fever; consequently the real truth is disguised in such manner that the public is deceived, and the medical faculty can form no accurate conclusion:—it may be said with safety that mortality was not in reality less than one-half of those who were attacked.

The Spaniards do not appear to be inferior to any people in Europe in native powers of mind; they are inferior to most in science. The ordinary business of state may be carried on by official instruments in a mechanical routine: the business of a physician requires the exercise of thought at every step; and it moreover requires it free and uncontrolled by human authority. A correct knowledge of animal structure is primary to the exercise of the physician's office; but there does not appear to be adequate means of obtaining it in Spain. The education there is such as may be called scholastic: the name of Hippocrates, or Galen weighs more in the balance than the evidence of a man's own senses, obtained by the observation of his own eyes. The Spanish physician has information equal to most physicians; but he has not knowledge. He reads and treasures in his memory what he reads. He relies on precedent and authority, and does not exercise his own reflective faculty on what he hears or sees. It is thus that a new idea is not to be

found in all that has been written on the yellow fever from 1800 to the present time. The materials have been ample, and the Spanish genius is not unapt; but it has been shackled and benumbed by the prejudices and despotism of a bigotted government. The physician, who ranks among the sons of science, looks to the law of nature as his superior and his guide. He thus obtains independence of mind; and, as such, he becomes obnoxious to those who usurp power and dictate their individual pleasure to others. The physician is little honoured any where in Europe, for his profession gives him neither power nor riches, nor influence in ruling the people; in Spain he is degraded to the condition of a menial. Few have courage to think, and no one dares to speak what he thinks, if it be contrary to the political views and prejudices of the authorities. A physician so circumstanced is of no positive value as a physician and man of science; and, as not conscious of value in himself, he becomes indifferent to the exercise of his duty, makes a short and superficial visit for a fee of four reals, collects as many reals as he can, and leaves the concerns of the patient very much to their own course. It thus happens in Spain, as in many other countries, that the first of human sciences as estimated by its merits, is converted, by a bigotted and overbearing policy, into a mean and prostituted trade—of some convenience, but of little real utility to mankind.

SECTION II.

Details of the Author's Method of conducting the Cure of Yellow Fever:—viz. Statement of the Principle and Rule of applying Remedies to the different Forms and Conditions of the Disease.

The treatment of fever may be considered under three heads: viz. 1, as left nearly to its own course; 2, as interrupted in its course and moderated in its violence, but not arrested; and 3, as perfectly arrested, so as to leave the system open to the action of the powers which are provided by the author of nature for exciting and maintaining the customary movements of health in efficiency.

1. The first is the view of practice which obtains most commonly in Spain among Spanish physicians. Cream of tartar, oil of almonds, clysters, and sinapisms to the feet, administered cautiously as they appear to be, cannot well be supposed to act decidedly on the course of a disease of so great force as the yellow fever usually is. Bark is prescribed by some at an early period: bark and blisters are prescribed at advanced periods by most. They are sometimes auxiliary according to conditions; but they are not sovereign in any. The yellow fever of Andalusia is not distinctly periodic in its movements; it has notwithstanding a disposition to change, abate, or terminate at given times; shorter or longer according to circumstance, but still regulated by the influence of a periodic law which ad-

heres to the system in all conditions. It is observable, and deserves to be attentively considered by the physician, that if the disease abate, or relax in its course at any of the periods of change alluded to, without having disorganized parts of essential importance to life, the sensibility to common impressions, suppressed by the force of the morbid act in its activity, reappears, as liberated from artificial constraint, and the system being free, in consequence of liberation, the action of health is reproduced by the common stimulants of vital movement, and in a course of time regains its natural force and energy. This happens occasionally every where; often among the Spaniards who are mostly people of sound constitution and of a firm temper under sickness, and at the same time tenacious of life, under acute disease, beyond most people in Europe; at least, they not unfrequently recover from conditions in this disease where scarcely any hopes could be entertained of the recovery of Englishmen.

2. The second rule of practice in febrile disease, and it is the more common one, even with those who are esteemed active practitioners, cannot be considered as more than auxiliary. It is directed against symptoms, or tendencies which threaten destruction to particular organs. It mitigates violence; but it does not break the chain of the diseased movement, and thus produce decided arrest of what is wrong; and, as there is fallacy in mitigation, it is a view on which the physician cannot repose with confidence; it therefore is not recommended as a principle of

cure, and only admitted as a practice where it is impossible to do otherwise.

3. The third is decisive; as such it is the true base on which to institute a systematic plan for the treatment of fever. It is difficult of execution at all times; and it is only executed with good effect when applied with judgment and boldness at an early period of the diseased course. If so applied within six or eight hours from the commencement of indisposition, it rarely fails to arrest or suspend the ostensible febrile act; but, though it do this distinctly, the perfect restoration of health is not always the immediate consequence of the suspension:—a space of time, viz. the revolution of three, five, or seven days often intervenes, that is, is required to bring things to their usual state.

The yellow fever of Andalusia is a dangerous disease; but it is not an unmanageable one—it submits to the treatment which subdues other violent fevers in other countries. The treatment requires to be modified according to circumstances of place and subject; the base of treatment is the same in all. The first point in the execution is the arrest of the diseased act; the second is the reproduction of the action of health. The operation of cure is thus a compound process—to be effected by compound means, often by means that are of a nature different from, even opposite to each other. As the impulse of the circulating blood moves every organic act within the system, so the subtraction of the impulse necessarily brings the act to a pause, if

not to an arrest, whether it be healthy or diseased. The impulse, pressure, or other quality of the atmosphere which surrounds the earth, is the general stimulant of animal life. Pure air, especially movement through pure air, is demonstratively the cause which maintains life in activity: the impulse of the pure air, to the proper vital organ, is obviously the cause which reproduces the healthy act, thus violently disturbed by the impulse of causes of morbific quality. The free admission of pure air into the sick apartment, even the transport of the sick through open air in convenient vehicles, is therefore primary and important among the means of remedy which are to be called into use for the renewal and support of health, as soon as the diseased act is brought to a pause of rest by artificial means. The application of cold water to the surface by aspersion or affusion, as more impressive by its weight and impulse than the ordinary breezes of the atmosphere, is still more powerful in its act; but it is perhaps less safe, and its effect cannot be so long sustained without inconvenience. When the movements of health are reproduced; various means, besides the impulses of the pure air of the atmosphere and occasional ablutions of cold water, conduce to maintain them in the forward course with more or less efficiency, that is, to prevent the recurrence of the disease in its original form.

What is now stated constitutes the base of the plan of medical treatment, on which the author has acted on other occasions in diseases nearly allied

with the yellow fever of Andalusia. From what he then observed, he cannot refrain from recommending that trial be made of a similar plan of proceeding in the disease now under consideration, modified according to differing circumstances of condition. It is necessary to say in this place, prior to entering into a detail of the expedients that may be tried in cure, that the author had the opportunity of observing, for some time, the progress of the yellow fever of Andalusia in the hospital San Juan de Dios in Cadiz, where little was done to oppose its natural course; that he saw it treated and opposed vigorously at other places in Spain with good effect; and that he saw it opposed vigorously in some, but unsuccessfully, either owing to the want of necessary auxiliaries, or to hidden treachery in the character of the disease itself, which, as not easily seen, was not easily averted.—The author treated no case at his own responsibility; he attended, and advised with others in a considerable number.

The yellow fever of Andalusia, however varied, may be divided into three forms of a different base, in a similar manner as the yellow fever of the West-Indies. 1. It presents itself as existing and acting on what may be called the sanguine temperament, characterized by considerable excitement of vascular action;—the act is general in the system, or prominent locally. 2. It presents itself as existing and acting on the lympho-phlegmatic temperament, characterized by vascular torpor, impaired sensibility, and diminished powers of absorption;—

the act is general in the system, or prominent locally. And, 3. It exists and acts on the serous temperament, characterized by constriction of the cutaneous capillaries, &c., the act manifested prominently on the system of serous secretions.—Besides these, other forms are met with occasionally, produced by the common cause of the yellow fever of Andalusia, but they did not often fall within the author's observation in the epidemic of 1820.

1. *Method of Cure in the Forms of Yellow Fever which act on the Sanguine Temperament, and manifest their Symptoms on the Organs of the Great Circulation.*

This form of disease was not frequent comparatively either at Cadiz or Xerez in the year 1820. In regard to manner of treatment, the author, when the disease occurs, does not hesitate to recommend, (if the degree be violent, the heat deep and concentrated, the skin thick and dry, the head-ache severe, the aggregate of symptoms indicating a strong and excited mode of action, or a mode of action oppressed and suffocated as it were by excess of force,) that the patient be laid in a recumbent posture, and that blood be abstracted from the arm by a large orifice, or from the temporal artery in preference, if the pain of the head be urgent, sharp, and lancinating about the eyes and temples; and farther that, when the vein is opened, the stream be allowed to flow, until a change be effected in the

circulation as well as in the general feelings of the patient. When this is attained, the arm is to be bound up, the body immersed into a warm bath of moderate temperature, the surface scrubbed with soaped brushes or hair cloth, the scrubbing continued until every impurity be removed from the skin, and until its sensibility be increased to a degree of preternatural acuteness. If sensations of uneasiness still remain, notwithstanding the discipline here implied; that is, if head-ache, heat and pain of the eyes, a sense of tenderness from pressure at the pit of the stomach, tension, or deficient expansion in the pulse be observable, or urgent after the arm has been tied up, the vein is to be reopened while the body is under immersion, and the blood allowed to flow until the uneasiness vanish, or until signs of approaching syncope supervene. When the change contemplated is effected by the proceedings stated, the patient is to be raised up, the head and shoulders copiously aspersed with cold water, the lower extremities still remaining immersed in the bath.

It is presumed that the force of the disease is broken or annulled by what has been done; but, in order to ascertain the fact distinctly, it is proper that the body be laid horizontally on a bed or couch, and that its actual condition be correctly examined. If local pains, hardness, and tension of the pulse be completely removed, one or two bucketfuls of cold water, poured upon the head and shoulders, bid fair to accelerate the return of health, even to confirm its course when it does return. After the affusion has

been made in the manner stated, the patient is to be placed in bed with every requisite care; and, after a repose of ten or fifteen minutes, he is to be re-examined, with a view to investigate and determine what farther means are to be employed for preventing a recurrence of the symptoms, or for removing such as may yet remain. If the head-ache has been severe, with much heat and pain of the eyes, the hair is to be cut off and the scalp shaved; with a view to increase the power of cold applications to that part of the body, or to prepare the way for the application of blisters.

If the course of fever be completely arrested by the employment of the means now recommended, the next step in the proceeding is necessarily directed to the administration of such remedies as gently solicit the habit to resume its healthy course. If the arrest be complete, the act is easy and the result is in a manner sure; if it be not complete, the proceeding is difficult and the effect is uncertain. Every proceeding, which does not move on a sound base is unfortunate in its issue; it is therefore necessary that the arrest be ascertained to be perfect before the means which are calculated to excite the restorative act be called into use;—to this end accurate examination is indispensable. If it be found, on examination, that the effect is imperfect in consequence of the means prescribed not having been carried to sufficient extent; it is obvious that they are to be repeated with such modification in manner of application as the then circumstances

demand; or, that others be employed of a character more suitable to the condition of the subject at the time.

The function of the alimentary canal is ordinarily more or less disordered in all forms of the yellow fever, even at an early period; the skin is also generally more or less constricted at the beginning and continues so throughout. It is essential to restore the functions of these parts to the natural state, for the health of the system depends materially on their efficiency: their deficiencies indicate the presence of the morbid act in overproportion on particular organs. The bowels are frequently constipated; it is therefore a primary object to solicit their action, even to force it in the opinion of some by the exhibition of drastic purges. The utility of purgatives, as a remedy for the cure of yellow fever, cannot be denied; but the utility is not obvious, until the force of arterial action be moderated by abstraction of blood, and the constriction of the surface removed or diminished by the warm bath, or other processes which act upon the skin. When that is done, the condition is prepared; but, even then, the writer is disposed to give preference to mild rather than to drastic purges. Three grains of calomel, three of the genuine James' powder, ten of nitre, twenty of flowers of sulphur, and six of kali, made into a bolus and given every four hours, with two ounces of infusion of senna and two or three drachms of *aqua ammoniæ acetata*, has appeared, in recent experience, to be an efficient and

useful form of purgative in cases similar to that under view. It acts on the skin and bowels at the same time; and, as such, it ensures an important purpose by its extensive mode of affecting the capillary system. If strong purgatives, viz. jalap, calomel, and colocynth, be given where there is a deep and concentrated pulse, a dry and constricted skin, the purgative effect is uncertain; and stools, if they be procured, are often watery and dirty, not feculent, bilious, or mucous: injury rather than benefit has appeared to the author to result from the practice.—The means now mentioned, with the addition of blisters to the temples, to the nape of the neck, and the epigastrium, preventive of the occurrence of evil rather than remedial of evil actually existing, are, according to the writer's opinion, adequate to the cure of this form of disease if they be applied at the proper time and in the proper circumstance; but of that the physician on the spot only is competent to judge.

If a subject of the yellow fever do not come under the eye of the physician until the second day, or towards the close of the second day, when the head-ache has remitted of its intensity, and when the eye and countenance, though still unnatural and disturbed, have become comparatively calm and serene, the pulse still continuing close and concentrated, the skin thick and not perspirable, the tongue smooth, rough, and dry, or white, mealy, and moist, but no sign yet appearing that organic structure is actually violated in any of the important

internal parts; immersion into a warm bath for ten or fifteen minutes, with scrubbing of the whole of the body by means of soaped brushes or hair cloth during immersion, presents itself as the first step in the curative proceeding. When the skin is in some degree relaxed, and the circulation drawn to the surface by the discipline practised in the bath, a vein is to be opened in the arm and blood allowed to flow, under the immediate superintendance of the physician, until a change be effected in the condition of the circulation and general movements of organic life. If ease, freedom, and alacrity in movement be restored to the habit by the proceeding instituted, the patient is to be removed from the bathing vessel, wiped dry, and allowed to repose on a couch for ten or fifteen minutes, with a view to give the physician the opportunity of ascertaining correctly the actual state of things. If the disease be not completely overcome, he is to be again immersed in the bath at a somewhat higher temperature, the vein reopened and blood abstracted until the change contemplated be attained, or until signs appear which forbid its being carried farther at the time. When the operation of bathing and bleeding is finished, and the object in contemplation, viz. equalization of the circulation is attained, the subject is to be raised up with caution, the head and shoulders aspersed with cold water by means of a sponge or watering pan, wiped dry, clothed with clean clothing, and laid carefully in bed. It is proper at this time, as preparatory of what may be

necessary afterwards, to cut the hair short, even to shave the head. It may not be always absolutely necessary to apply blisters to the temples and nape of the neck; but, if there be any thing suspicious in appearances, it is advisable that it be done: it is prudent, as precautionary, to apply a blister to the pit of the stomach in almost every case. If the tongue be moist and foul, the pulse free and elastic, the skin moist and animated, an emetic of the powder of ipecacuanha, or preferably of white or blue vitriol, preceded by half a pint or more of chamomile or common tea with some grains of kali, may be expected, if inference can be drawn from experience in similar conditions of disease in other countries, to be serviceable in the present. If the tongue be rough, dry, and red; or smooth, red, and dry, especially as accompanied with thirst and sensations of distress at stomach, a solution of sugar of lead, viz. seven grains, dissolved with forty grains of crystals of tartar in one quart of water, and given to the amount of two ounces every second or third hour, is singularly useful in allaying heat, in diminishing the irritability of the interior surfaces; and of thereby enabling the stomach to retain whatever may be thrown into it. Camphorated mixture, with a portion of nitre and white vitriol administered in a similar manner, has similar good effects on most occasions. If there be signs of fulness and congestion in the mesenteric system, purgatives of brisk operation are indicated;—and they are then highly useful. But purgatives are not useful,

as formerly observed, unless the skin be warm, animated, and perspirable, or the mesenteric congestion so prepared as to be moveable by simple stimulation of the intestine.—The course of this form of fever, as submitted to treatment at the period stated, may be expected to be diverted from its natural tendency, the symptoms moderated and the dangers diminished by a careful administration of the means recommended;—it cannot be expected with any confidence to be arrested abruptly by them; and it in fact rarely terminates before one or other of the known critical days, viz. third, fifth, or seventh.

The yellow fever of Andalusia sometimes destroys the structure of the stomach and other interior organs by violence of vascular action; but rarely, it is believed, in comparison with what happens in the West-Indies. The instances of the inflammatory form of yellow fever which fell under the author's observation in Spain were few:—such as he saw subsided at the third, fifth, or seventh day. Hæmorrhage from the lungs, throat, or bowels sometimes supervened, and announced the chances of a favourable termination: oozings from the gums, surface of the tongue and throat, and presumptively from the whole tract of the alimentary canal occurred oftener, and almost certainly indicated death. —The remedies employed for the cure or mitigation of these symptoms did not, in so far as he observed, do any good. If the patient recovered, he recovered by a chance or accident upon which the physician did not calculate. Bark and mineral

acids, the chief remedies prescribed by the practitioners of Andalusia, were of little service; and the author is ready to confess that he cannot go much farther than they have gone. Something, he believes might be done; but he has rarely been able to command the means which, according to his idea, were necessary to give effect to the doing of it. If the fever subside calmly, without effecting organic destruction in an important internal part, there is hope that the powers of life may rally and eventually restore health: if it subside with injury to an organ that has a distinct outlet, hopes of recovery are not precluded; but, if it subside with injury to an organ that has no distinct outlet, the hopes of recovery are as faint as hopes can be. The venous blood moves slowly or actually stagnates in the case under view. It is consonant to reason that opening a vein, which gives an outlet to a stagnated canal, is the direct means of soliciting movement. But, while this is admitted as fact, it must also be borne in mind that the movement thus produced rarely fails to accelerate death; unless stimulation, external and internal, be applied at the same time with the utmost caution and address. The abstraction of blood is made in this case merely in the view of originating movement in canals where the tide stagnates; it is not safe, and it is not necessary to carry it to great extent. Stimulating powers are commonly relied upon. Those of most dependence are exposure to the free ventilation of a pure atmosphere; gestation in open air in convenient vehi-

cles; ablutions with cold salt water; frictions of the skin with salt and vinegar or lime juice; aspersion of the body with *eau de Cologne*, hartshorn, or other of the aromatic and spiritous tinctures; wine, brandy, champagne wine, or hock and soda water internally; in short every expedient, internal and external, which stimulates and refreshes. It is reasonable to believe that the means stated, cautiously and skilfully applied, may do something; but few medical establishments in Europe are so adjusted as to give the physician the opportunity of putting them to trial; even British military hospitals are defective on these points.

2. *Method of Cure, in the Forms of the Yellow Fever which act on the Lymphous Temperament, and manifest their Symptoms by Torpor in the Circulating System.*

The second form of yellow fever acts, as said above, on the general base of the lymphous or phlegmatic temperament. The first step in the cure consists here, as in the other, in arresting the diseased course by certain means of force; the second, in exciting the action of health by other means of force, different in their nature from the former. The disease makes its attack after a different manner in different subjects: the means of cure, though applied under the guidance of one general principle, are consequently to be varied according to the manner and circumstances of the

attack. The invasion is sometimes, indeed frequently, sudden, the first stroke apparently on the brain, indicated by fit, convulsion, furious delirium, tremor and extreme agitation. Sensations of a horrid sickness at stomach, even actual vomiting is often synchronous with the attack upon the head.—Immersion in a warm bath of a high temperature, with frictions of the skin analogous to those practised in the baths of the East, is the first remedy: abstraction of blood while the body is under immersion, the quantity measured by the effect which arises under the act of flowing, is the second. These two, as auxiliary to each other, are one in ultimate effect. The quantity of blood, which persons in the condition described sustain at one abstraction without fainting, or tendency to faint, is sometimes incredibly great. It amounted to five or six pounds in many instances in the fevers of the West-Indies;—and the author is warranted to add that no injurious consequence followed the abstraction, enormous as it often was.

When the tumults at the period of invasion are past, the circulation equalized, and sensibility to impression restored by bathing and abstraction of blood, the affusion of cold water, particularly cold salt water on the head and shoulders, is a remedy of considerable power in exciting, and in aiding to maintain the health of the system. The head, presumptively some portion of the substance of the brain and the upper orifice of the stomach appear to receive the first and severest stroke of the morbid act; and, as these primary impressions, though

weakened, may not be totally obliterated by the means as yet applied, it is recommended that the head be shaved and blistered; and farther that the blister extend along the spine to the interval between the shoulders. The moxa, or actual cautery, applied on each side of the spine as near to the head as possible, promises benefits still greater than the benefits of blisters. The irritation, excited externally by the moxa or cautery, may be supposed to divert from the interior by a common process of revulsion; but the effect thus produced, though considerable, is not the main ground on which the hope of its doing good is founded. The infusion of warmth into the substance of the brain and spinal marrow, by the application of heat to the exterior, is calculated to excite the torpid fibre into activity, and may thus be reasonably supposed to restore the dormant action of the sensorium by direct stimulation. The author is ready to confess that he does not speak from actual experience on this subject; but he has no hesitation in saying that if he had the charge of a military hospital, where he had nothing to restrain him from doing what he desired to do, except the dictate of his own conscience, he would not fail to try it; and, reasoning by analogy, he thinks he would not try it without attaining his purpose to a certain extent.

Besides the application of blisters to the head and nape of the neck*, or the application of the moxa

* The idea of applying the actual cautery to the nape of the neck, in the form and circumstances of the yellow fever

or actual cautery at the juncture of the head and spine, the application of a blister at the pit of the stomach is a remedy that ought not to be dispensed with. If the threatenings of irritability at the stomach be urgent, an emetic, viz. four grains of blue vitriol, and the same quantity of the powder of ipecacuanha, promises relief and even permanent benefit:—similar benefit follows the exhibition of an emetic of white vitriol. The writer is aware that there is a general prejudice among practitioners against the employment of emetics in yellow fever: they are in fact rarely useful, and perhaps not always safe prior to abstraction of blood; but after the preparation of a given condition by bleeding or other means, the effect of emetics, particularly of emetics of white or blue vitriol, instead of being injurious, appeared to the writer to be eminently useful in allaying irritation, and in giving such a tone of vigour to the parts excited into action as precluded the

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under consideration, suggested itself to the writer from what he had resolved to do if he found the opportunity of treating the plague, of which he had once some expectation. From the descriptions of those who had seen that disease often, and of some who had felt it in their own persons, he was satisfied that the principal force of it struck on the head and spinal marrow; and it occurred to him, in consequence of that impression, that nothing in the list of remedies was so likely to avert its fatal tendencies, as the strong revulsion produced by actual cautery applied to the parts most contiguous to the chief seat of the disease.

chances of inflammation rising to excess. The power of the absorbent system is evidently diminished in the form of yellow fever now under consideration; and, as the action of the emetic has a tendency to increase absorption, and the action of emetics of turbith mineral a stronger tendency than others, a trial was made of it at Xerez in the year 1820,—and with signal good effect:—the person was convalescent in twenty-four hours. From this success, Mr. O'Halloran was induced to try it in others; and, from his experience, he considers it to be a remedy of great value—next in power perhaps to the lancet.

Purgative remedies are much employed in this as in other forms of yellow fever by most English practitioners; and they are useful or otherwise, according to the circumstances of the subject and the nature of the purgative adopted. The purging tincture of aloes and myrrh (often alluded to), with one drachm of æther, or an ounce of rectified oil of turpentine, preceded by five or six grains of calomel and three or four of genuine James' powder, appears to the writer, from considerable experience in a similar form of disease in the West-Indies, to be the most suitable form of purgative of any we possess for the condition now under view. The tincture produces feculent stools more efficiently than almost any other form of purgative; and, as it is slow in its own operation, the æther or oil of turpentine stimulates and gives it activity; hence the purpose desired is speedily and effectually at-

tained by the combination. As torpor and apathy, with a disposition to congestion in the interior organs, are prominent among the symptoms of this form of disease, the infusion of life into the system by means of the heat of fire, if one may so speak, constitutes an important point in a plan of treatment laid on experiment by induction from reason; it is therefore recommended, when other preliminary steps have been adjusted with care and circumspection, that the application of dry heat be made to the surface of the body by means of hot billets of wood wrapped in pieces of blanket, and applied from the outside of the ancle to the arm pit on either side; and farther, that a bag, filled with hot sand or heated bran, be spread over the abdomen from the epigastrium to the pubes. If the means now suggested be applied at an early period, that is, within six or eight hours after the first symptoms are discernible, there is reason to believe that the course of the disease will be arrested, even that movements will arise consequent to the arrest, which will finally restore the action of health to its original state.

The second form of the yellow fever sometimes begins by an exhibition of the alarming symptoms noticed above; it oftener exhibits symptoms so masked in their nature as not to be regarded, at first sight, as the actual expression of a febrile cause. Violent pains in the bowels, continual or alternate, that is, suspended and renewed at intervals, mark the attack, or rather constitute the ostensible disease on many occasions. Where the first impression is prominent

on the stomach and bowels, the impending train of action obtains the name of choleric in these pages—not correctly perhaps, for, instead of increase, there is an apparent suspension of the biliary secretion. When the matters which fill the stomach at the time of invasion have been thrown up, the subsequent ejections are watery, dirty, often of a dark colour—and in no degree acrid. The bowels are either obstinately constipated, or they are preternaturally loose. The stools are watery, dirty, dark coloured, rarely if ever bilious—rarely effective or productive of relief. The tongue is often dry and rough with urgent thirst, sometimes without thirst. The lips are dry and pale. The countenance is torpid and fixed like that of a corpse—sometimes ghastly and forbidding.—The base of treatment is here similar to what was recommended in the preceding, only as the head is not so prominently affected, the application of the actual cautery or moxa to the nape of the neck is not so imperiously demanded. The first step in the proceeding is considered to be immersion into a warm bath of high temperature, that is, of a temperature so adjusted in degree as to give pleasure to sensation. The sensations of pleasure and comfort, even the utility to be derived from immersion in the bath, may be expected to be materially augmented by adding to it some phials of *eau de Cologne,* or other volatile and stimulating ingredient, and by rubbing the skin for a long time with hand brushes or hair cloth. Besides immersion into the warm bath

prepared as stated, it is important to give a draught, composed of æther, laudanum, ammonia, or other agreeable aromatic—to continue the frictions on the skin for fifteen or twenty minutes; and, when there is evidence that the system begins to be impressed by the influence of heat and other processes of discipline—to open a vein in the arm and abstract blood with a careful attention to circumstances, the quantity measured by the effects which arise in the act of abstraction—not by divination of what may be presumed to be right. When the pulse, from contracted, irregular, and frequent; or from slow, drawling, and inelastic, becomes free, open, and expanded—with elasticity and buoyancy in the stroke, it is advisable to bind up the arm, and to allow the subject of the discipline to remain for some time longer in the bath, under friction of the skin with soft brushes or hair cloth, and supplied, according to his desire, with refreshments that are agreeable to his taste. After detention in the bath for three quarters of an hour or more under the discipline described, and with evidence of the change alluded to produced on the condition of the disease, it is recommended to remove him from the bathing vessel, to wipe him dry with coarse linen towels, and afterwards to rub him dry with flannels heated at the fire—to sprinkle him all over with *eau de Cologne* or other aromatic—to rub him with stimulating oils, viz. hot olive oil and spirits of hartshorn; and finally, to lay him in bed, with attention to every circumstance that can be supposed to contri-

bute to his comfort and enjoyment. Though it be necessary that the subject of this discipline be well covered with bed clothes, it is, at the same time, essential that the air of his apartment be pure, cool, and refreshing, and that it be preserved in a state of purity by thorough ventilation. It is farther important to the success of the medical undertaking that every description of utensil, viz. bed pan, urinal, &c., be at command so that there be no pretext for rising up on account of the common necessities of the condition. Besides the means of treatment now mentioned, it is recommended to cut the hair short, even to shave the head and to apply blisters to the scalp and nape of the neck, as precautionary rather than as exigent means of remedy. When the person under treatment has been properly disposed in bed; four or five grains of calomel, with a like quantity of genuine James' powder and half a grain of opium, given in pill or bolus, and followed, at a short interval, by repeated doses of infusion of senna, with some addition of *aqua ammoniæ acetata*, æther, tincture of rhubarb, or tincture of jalap as circumstances may indicate, is an useful form of purgative:—the purging tincture of aloes and myrrh, with oil of turpentine, is perhaps still preferable. When the purgative operates, care is to be taken that the patient do not rise up to the night chair; and, while he is obliged to make use of the bed pan on this occasion, care is to taken that he be supplied with hot, agreeable, and diffusible drinks, viz. common tea, snakeroot tea, tea of

aromatic herbs, beef tea, or chicken water—such in fact as are acceptable to his palate and suitable to the condition of his stomach. It is important that, with open bowels, the skin be rendered perspirable. The end is only attained through a combination of means, often of a different nature to each other, some of them externally applied, others given internally. If there be pain, spasm, or sense of constriction in the tract of the alimentary canal, more or less of the tincture of opium may be added with advantage to the purgative now prescribed. Opium, while it soothes the irritated feeling, does not annul or materially diminish the effect of the purgative: it often in fact renders it more efficient. Besides the occasional repetition of purgatives, combined with means that are calculated to allay irritation, and to stimulate the capillaries of the skin, the direct application of stimulation to the surface still holds its ground as auxiliary, almost as principal in maintaining the object in view. Of these, where the circulation is sluggish and drawling, the countenance heavy and statue-like, the graduated application of external heat by means of billets of half burnt wood, or bags of heated bran or sand, friction of the skin with hot and stimulating oils, frequent aspersions with *eau de Cologne*, &c. are important aids in the view of exciting and upholding the system. Where, instead of torpor and impaired sensibility, the subject is racked by a species of tensive torture, every fibre of the frame quivering as it were in balanced action, the sensations of suffering

irksome and undescribable, immersion into a tepid bath, soothing to the feelings by its temperature, and improved in its virtues by the addition of poppies, hops, and other narcotic herbs, promises relief and even permanent benefit; particularly as aided by frictions of the skin while the body is under immersion, and by frictions with olive oil and tincture of opium, when the patient is removed from the bathing vessel and disposed in bed. Opium, camphor, carbonate of ammonia, and acid of amber, given internally with as large doses of the powder of valerian as the stomach can retain, may be reasonably supposed to do good:—the author has had some experience of their value, though not in Spain. If the measures now recommended be applied in proper time and circumstance, that is, before the structure of any one of the important internal organs has sustained a material lesion, a favourable termination may be expected with some confidence. But, while a favourable tendency is expected from the first effect of the measures recommended, it is necessary that they be so continued that a moderated degree of artificial action be maintained in the system, until the more important critical periods of the febrile process, viz. third, fifth, and seventh days pass over in safety; in short, it is necessary to guard against chances of reverse, that is, not to be confident of success at the first view of benefit.

If the disease has attained an advanced period, that is, the second day, or the beginning of the third, before it be submitted to medical treatment, the

management is difficult, and the result cannot be calculated with any thing like certainty. We cannot proceed now, as at the early period, to arrest the course abruptly by remedies of direct force; and, if we should by chance arrest it by a decisive measure, we are not confident that the vital power of the system remains in a condition to produce the excitement, which brings back the action of health by the application of other means of force. The physician, instead of being sovereign as he was at the early stage, is now only auxiliary; and, even as such, his path is narrow and not distinctly defined.—The disease presents itself at this period under some variety of form, and with considerable latitude in degree of force. It is difficult, at least it far exceeds the limits of this tract, to be minute in all: the most common and most conspicuous only shall be noticed.

If a person be brought under medical notice towards the close of the second day or beginning of the third, when the symptoms of ostensible fever, as judged by the pulse and heat of the skin, are scarcely discernible, the course of medical proceeding is obscure and embarrassing even to the most experienced of the medical professors:—an outline of the history of a case of frequent occurrence is here sketched for the reader's information. The countenance is heavy, torpid, and fixed, inexpressive, or expressive of forlorn helplessness; the eye is dull, inanimate—often glistening with a pearly whiteness; the lips are generally dry, and sometimes unusually pale; the tongue is sometimes dry

and rough, but not coated; sometimes it is red and clean; sometimes moist, foul, and flabby. The intellect is not clear: there is no delirium in the usual meaning of the word; but there is a forgetfulness, or indifference which leaves a sentence half finished, or an act half executed;—in short, marks of apathy and indifference pervade all the animal acts. With these symptoms, nausea, sometimes vomiting, eructation, distress at stomach, impatience of pressure at the epigastrium, insensibility to the stimulation of purgatives, or stools, forced by irritation, without what is strictly speaking called griping, but with a sense of constriction indicative of the want of expulsive power, are more or less conspicuous. The alvine evacuation, where evacuation takes place, is usually of watery consistence and of a dark colour, not unlike soot mixed with water, or the juices of the cuttle-fish. The heat of the body is in this case scarcely ever above natural; it is often under it: the pulse rarely exceeds seventy strokes in a minute; it is often below sixty—sometimes not more than forty: the strokes are regular in time, tardy in manner—without the buoyant elasticity of the healthy pulse, even of the pulse of common fever. The skin is seldom, if ever, dry or harsh; it is usually soft, smooth, and inelastic; and it is deficient in the genial warmth which indicates activity of circulation in the extreme capillaries.

The first step, in the treatment of the condition of a disease of the character described, appears to the writer to be immersion in a warm bath of high

temperature, animated artificially by infusing into it some phials of *eau de Cologne*. The immersion in the bath ought not to be less than half an hour, and the skin ought moreover to be rubbed carefully during the time of immersion by hand brushes or hair cloth, internal cordials being given at intervals during immersion—such as the patient most desires. It is difficult to fix a precise rule for the abstraction of blood in a case like the present. It can only be attempted with safety while the body is immersed in hot water,—and the conducting of it can only be safely intrusted to the physician himself. The proposition of abstracting blood in the case under view will, the writer is aware, be revolting to the medical reader who does not minutely study the laws of movement in animal economy. It is admitted that it is precarious; but, if the principle upon which abstraction acts be rightly understood, and if proper attention be given to the manner of managing it in all its steps, the writer does not hesitate to say that it is powerful among the remedies that are employed as auxiliary for the cure of this condition of disease:—it is not sovereign, and it is dangerous if it be not carefully adjusted to conditions. It is necessary, if a vein be opened in the case described, that the finger be placed upon the artery as the blood begins to flow, and that the incipient changes in the movements of the pulse be measured with the utmost precision. If the pulse begin to expand, and at the same time to become sharp and elastic, the abstraction is to be continued; if the

pulse abate or diminish in force and energy, it is to be immediately restrained; but it is to be allowed in no case to go far without occasional suspensions, so as to give the physician the opportunity of examining at leisure and with care the condition of the subject under treatment in all his relations. It is thus that, if there be indications of a tendency to developement in the vital powers in consequence of the abstraction of blood, even if there be no indication of a tendency to depression, the compress may be removed from the vein after temporary suspension, and the blood allowed to flow to a given point, under the precautions that were used at the first abstraction.—The utility or injury of the abstraction of blood depends in this case on the judgment of the superintending physician. It is attempted as an experiment, and it must be conducted as such with the most extreme caution; for it may save, or destroy life according to the manner in which it is managed.

The stomach being for the most part irritable at this stage of the disease, it is preliminary of farther proceeding to endeavour to allay its irritability by every attainable means. Blisters applied to the epigastrium, effervescing draughts, opium alone, or joined with calomel, stand among the common prescriptions of physicians for the effecting of this purpose. They sometimes appear to do good, but they are of no certain dependence. Seidlitz powder allays irritation and the desire to vomit, more effectually perhaps than the common effervescing

draughts; and hock with soda water, while generally relished, is sometimes permanently beneficial. Milk is, of all other remedies, the most generally useful in soothing and allaying this dreaded irritability;—it is often retained when every other thing that can be thought of is rejected. In cases of nausea, with vomiting of a tenacious ropy fluid, indicating a tendency to disorganization in the mucous membrane of the stomach, an emetic of white or blue vitriol, followed by a draught of camphorated mixture, nitre, and opium, promises benefit; and powder of charcoal, finely levigated and given to the extent of twenty grains or more, singly or combined with effervescing draughts made with carbonate of ammonia instead of salt of tartar, has often excellent effects in cases similar to the present.—At a late stage of the disease where eructations, obscure hickupings, with a sense of burning at the pit of the stomach were extremely distressing, it occurred to a medical gentleman, who charged himself with the care of some sick persons at Xerez, to make trial of a dilute solution of the nitrate of silver, conveyed to the irritable surfaces at the upper orifice of the stomach by means of sponge biscuit. The attempt was made: the eructation and hickup ceased for a time, and the sense of burning diminished; but the case was in other respects desperate and the person did not recover. If the tongue be of an erythematous appearance, with a presumption that the erythema extends downwards, camphorated mixture, with nitre, white vitriol, and

a certain proportion of alum; or, a dilute solution of the sugar of lead, given frequently in small quantity as if to bathe or wash the inflamed surface, has appeared, in the writer's experience, to be of singular service, as auxiliary in allaying heat and irritation, and in enabling the stomach to retain food and medicine:—milk is the best, and generally the most acceptable nourishment in this condition of disease.

If the stomach become retentive through these or other means that are applied to its disordered condition; the next step in the plan of treatment is directed to the adjustment of the concerns of the intestinal canal, whether constipated or loose. The bowels are in many instances incapable of their office by their own power; they even sometimes obstinately refuse obedience to the stimulation of the strongest purgatives.—Calomel, jalap, and colocynth are not unfrequently given without effect, or with a partial and imperfect effect only. The power of stimulating clysters is only partial: they move the lower intestines; but they do not remove the constriction which suspends the general function of the intestinal canal. The case is difficult; and perhaps no one can promise with confidence to make it easy. The following preliminary and accompanying discipline will, it is believed, somewhat contribute towards it.—When the stomach has been so prepared and fortified by the means formerly stated that a purgative can be given with the expectation of being retained, let five or six grains

of calomel be given in conjunction with two grains of opium and four of James' powder, the lower extremities being fomented with flannels wrung out of hot water, and hot fomentations applied to the whole of the abdomen. In about an hour after this is done, (the fomentations being still continued as hot as they can be borne), let a dose of the purging tincture of aloes and myrrh, with an ounce of rectified oil of turpentine, be given internally, the fomentations being still continued to the limbs and abdomen, or frictions with hot and stimulating oils being substituted in their place, if they be found to be inconvenient. These auxiliaries may perhaps appear to be trifling, or in the opinion of some, works of supererogation. They are not not so in fact: the writer is justified in saying that the employment or neglect of them often determines the success, or failure of the remedy in which the chief trust is placed. Calomel is often given to great extent by English practitioners in the condition of yellow fever alluded to; but it rarely acts as a purgative in such condition, and it does not excite salivation until the disease cease, or subside at a customary critical period. If the obstinacy of the bowels be not overcome by the means now stated, burnt alum, given to the amount of fifteen or twenty grains in bolus and repeated at intervals of three or four hours, has sometimes been successful and otherwise useful; but it has not been often tried.

If, instead of obstinate constipation which resists purgatives, the evacuations from the bowels be fre-

quent and watery—without feculence, and without the appearance of any thing that can be called bile, the colour of the dejection being black like charcoal and water, or the juices of the cuttle fish, it is not easy to see the good that is to arise from the exhibition of remedies of the purgative class; yet purgatives are given by many to great extent in this condition;—they are given, in so far as the writer has observed, without benefit. The intestinal secretions and excretions abound; but they are here perfectly changed from what is natural; and, as that change is the very act of the disease, which is not confined merely to the functions of the intestines, it becomes the business of the reflecting physician to endeavour to effect a change in the acts of the general system where the root of the evil lies, rather than to operate merely on a part where the change cannot command a general result. In this view, opium and calomel may be considered as means of promise. Camphor, snakeroot, carbonate of ammonia, and acid of amber, made into bolus and given at suitable intervals to as great extent as can be safely ventured upon, hold out a prospect of doing something in the case, particularly as the effect may be aided by the application of fomentations to the extremities and abdomen, or by frictions of the skin with hot and stimulating oils; and, if circumstances permit, by gestation in the open air in a convenient vehicle.—There are grounds to believe that a favourable change may be brought about by the careful application of the means stated; or, that

the retrograde course may be so retarded that, a period of critical change supervening, the constrictive power of the diseased act may give way according to a general law of the system; and in consequence of that relaxation, the habit, as under the impression of the artificial stimulations adverted to, may be sometimes enticed to resume the customary action of health.

There is another point connected with the treatment of this disease at the period stated, which is of great importance to be studied and rightly understood. The head is often principally, at least prominently affected in this form of the yellow fever; and, as the head is the most important part in the animal body, the part connected with every function of the machine, the neglect of its diseased condition often compromises the life of the patient. Besides fits, convulsions, or deep stupor at the period of invasion, a certain degree of stupor—a peculiar degree of indifference and apathy, heaviness, fixity, or vacancy of the eye and countenance indicate distinctly that the substance of the brain is materially implicated in the morbid act. It is customary in such case, after bathing and bleeding, to cut off the hair, to shave the head, and to apply blisters to the scalp and nape of the neck. It is proper to do so; but it is reasonable to believe that the purpose would be attained with more certainty, if moxa or actual cautery were applied to the nape of the neck, as near as possible to the joining of the cranium with the vertebral pile. If the brain

be in a state of torpor from what may be called congestion or pressure, the powerful stimulus from the heat of the cautery or moxa may be supposed to excite it into activity: if the structure be violated, no calculation can be made of a favourable result; but the physician may have cause to be satisfied that he has gone as far to attain it as human art, or human courage allow him to go.

3. *Method of Cure of the Forms of Yellow Fever which act on the Serous Temperament, and manifest their Action by Appearances of Exsiccation and Withering, analogous to Blight in Plants.*

The cure of the third form of the yellow fever, viz. that form of it which manifests its action prominently on the system of serous secretions, is not of easy management. The disease is in itself a disease of an insidious character. It commences not unfrequently as a slight febrile indisposition; such, as examined superficially, gives no alarm, and which ought not perhaps to give alarm in any other than an epidemic season. In this state of security, a morbid process of withering, not unlike blight in plants, sets in suddenly and unexpectedly, sometimes on the third day, sometimes on the fourth, oftener on the fifth. When thus late in making its appearance, it not unfrequently consumes life in twenty-four hours after the commencement of the retrograde process is distinctly visible: the whole duration of the disease is thus limited to six days.

Instead of the insidious manner of commencement alluded to, the symptoms are sometimes severe at the beginning, the heat of the surface sharp and pungent, the pulse frequent and quick, sometimes tense, hard, and contracted, the constriction of the surface conspicuous, the lips dry and parched, sometimes shrivelled and pale, the tongue dry—often red; the alvine evacuation suspended; or, if not suspended, watery and changed in colour and character.

In regard to the plan of cure, it is advisable, as preventive of evil, whether the symptoms be severe or apparently mild, to treat all the fevers which act on this base with rigorous discipline as soon as they are brought under notice. It is admitted that many of the slighter forms terminate favourably about the third or fifth day, without the help of any remedies besides cream of tartar, oil of almonds, and clysters; but it must also be remarked that many of them assume the withering form, or retrograde course at these periods, and terminate rapidly in death. It is probable that physicians of much experience and acute powers of discernment may be able to distinguish, at an early period, those which have latent malignity in their character from those which have it not; but, as there is no certain sign within the writer's knowledge which enables him to define the condition with precision, he holds it to be better, as it is safer, to treat them all, whether severe or mild, upon a plan of rigour, so as to arrest the course by force, that is, to subvert the

base, or destroy the condition to which the latent malignity of the character of the disease may be supposed to adhere. In execution of this view, the writer recommends that the patient be immediately immersed in a warm bath of moderate temperature, the water softened by the addition of some handfuls of almond bran or oatmeal, the surface of the body rubbed with hand brushes or hair cloth for a length of time, the hair of the head cut short, or the scalp shaved, as may be judged most fit. It is advisable, after a continuance of fifteen minutes or more in the bath, to open a vein in the arm while the body is under immersion, and to allow the blood to flow until there be signs of commencing relaxation throughout the system. It is only where the constriction is strong to excess, or where the case is complicated with local congestions, that a larger quantity of blood than twenty or thirty ounces is required to effect the primary purpose of relaxation. When the signs of relaxation become manifest, the system is susceptible; and the patient, as thus prepared, is to be raised up in the bath, cold water poured upon the head and shoulders through a sponge or watering pan while the lower extremities are yet immersed. The recumbent posture is to be again resumed, the temperature of the water of the bath increased by some degrees; and a discipline, analogous to the discipline which is practised in the baths of the East, is to be applied to the subject of experiment with the most careful attention to the circumstances of his condition. When these

processes have been executed in a proper manner, the subject is to be removed from the bathing vessel, affused copiously with cold salt water, wiped dry, laid in bed, rubbed all over with hot olive oil, balm tea, or snakeroot tea, with adequate doses of the *aqua ammoniæ acetata*, being given internally, at the same time, as means of maintaining activity of action in the capillary system of the skin.

As the membranes, and perhaps the substance of the brain is more or less implicated where there exists an intensity of capillary constriction, and as the stomach, particularly its upper orifice, indicates for the most part that it sustains an over-proportion of the morbid act, blisters are to be immediately applied to the head, upper part of the spine, and epigastrium, whether the symptoms be urgent or not. If the tongue be dry, or if it had been dry and red, prior to bathing and abstraction of blood, it is advisable, as preventive of the recurrence of such condition, to administer a dilute solution of sugar of lead, or frequent doses of camphorated mixture, nitre, and white vitriol; under the idea of cooling an inflamed and irritable surface, and of thereby obviating nausea and vomiting. Purgative or other medicines are, for the most part, retained on the stomach after the passages have been washed, or bathed by the cooling lotions alluded to; and when the power of retaining what is taken down is restored to the stomach, the exhibition of purgatives constitutes an essential part of medical treatment. Laxatives, so combined with diaphoretics, as to have

a tendency to act upon the skin as well as the bowels, seem, to the writer, to be better calculated to touch the useful point than drastic purges. Four grains of calomel, four of genuine James' powder, ten of camphor, twenty of flowers of sulphur, and half a grain of opium, made into bolus and given every four or five hours, with two ounces of infusion of senna, and plentiful dilution with barley or tamarind water, answers the purpose effectually—better than any thing within the writer's knowledge. Fomentations to the extremities and abdomen, frictions of the whole of the body with olive oil, a well adjusted temperature of the sick apartment—thoroughly ventilated by pure air, are required to give it effect.—If the means stated be applied in a proper manner soon after the commencement of the disease, there is reason to believe that its course will be arrested, at least that its nature will be changed, from suspicious and dangerous, to what is simple and comparatively safe. It is presumed that gestation in the open air in a convenient vehicle would, when the change alluded to has been duly made, contribute materially to maintain it in the forward course if it were skilfully employed. Its power in forwarding recovery from fever, where no organic lesion is left by the violence of the morbid act, is proved completely in the writer's experience, and it would, he is confident, be equally proved in the experience of others, if it had a fair trial. The remedy is powerful and pleasant in operation; but it is so much out of the common rule, so simple and so void of mys-

tery that there is little expectation of its being soon admitted among the regular aids of physicians in civil life; and the means of executing it, in a proper manner, are so expensive that the limited views of state politicians will probably long withhold from the medical establishments of the military, the good which it is capable of doing in many conditions of disease.—The preceding remarks relate to the forward course:—the retrograde appears under two forms, of which it is necessary to take cursory notice.

1. If the disease pass on silently to the retrograde or withering stage, either as not opposed, or as opposed feebly, and of course unsuccessfully, the advance to death is sometimes rapid, sometimes slow comparatively. The danger is extreme in either case. The changes from the progressive to the retrograde, or what may here be more properly called the silent consumption of life, characterized by the absorption of the animal juices throughout the system, especially by the disappearance of the fluid blood, generally come suddenly; and they come, for the most part, at the commencement of the acknowledged days of periodic movement in febrile diseases; that is, the morning of the third, sometimes the morning of the fourth, and very often the morning of the fifth day. The change ordinarily takes place about the hour of the presumed accession of the periodic movement; and it is effected with so little commotion, in so far as the writer has seen, that, instead of being the sequel of a paroxysm or

febrile act, it is in reality the act of the accession—the very paroxysm itself. The process seems to be a process of absorption, effected, as it were, through a blast of pestilential miasm. It is reasonable to believe that the physician may do something towards the saving of life by anticipating the stroke of it; he cannot expect, with confidence, to do much, if any thing, after the stroke is inflicted. Impressed with this idea, the writer attempted in times past, when the care of sick persons was entirely within his own management, to excite an artificial action in the system, some hours prior to the expected return of the paroxysm where he had cause to suspect the existence of latent malignity in the case. He has reason to think that he did so successfully in many instances; and, with the conviction on his own mind of the benefit of what he then did, he cannot now abstain from impressing on the mind of the reader that, if buoyancy of life be not strongly expressed in the animal and vital functions, some hours prior to the time of the usual accession of periodic movements, viz. third, fourth, and fifth days of the disease, it is incumbent on him to endeavour to excite artificial energy by safe and effective expedients—in counteraction of what is expected to occur. Of these expedients, the application of external heat, whether by fomentations or otherwise, frictions with hot and stimulating oils, blisters to the nape of the neck, wrists, calves of the legs, or inside of the thighs, aided by draughts composed of laudanum, Hoffman's anodyne liquor, tincture of valerian,

and *aqua ammoniæ acetata,* are distinctly means of good promise. It is necessary that the laudanum be given in this case, in sufficient quantity to throw a veil of satisfactory enjoyment over the sensations, but not to produce sleep; and it is farther necessary that the effect of it be supported by a guarded exhibition of wine;—such as is most agreeable to the taste, and that is so measured in quantity as to make the first impression of exhilaration on the system, but not to go beyond it. Success in preventing the treacherous tendency of the impending act, is often assured by the means stated; scarcely any hopes of removing it offer once it is declared. If any thing can be done in such forlorn condition, it appears to the writer to depend principally on gestation in the open air in a convenient vehicle, alternate warm and cold bathing, or rather alternate aspersions with tepid and cold water, aspersion with *eau de Cologne,* champagne wine at suitable intervals, hock and soda water for drink, exposure to the dews of night, and to the freshness and fragrance of a flower garden or orchard.—If these do no good the author is not able to go farther.—The case is almost hopeless. No one can promise: it may however be remarked that here, as in other conditions of this disease, an accession of life (if one may so speak) is sometimes thrown into the system in a manner no one can tell, but with an effect which moves a new form of action in the habit, through the evolutions of which the patient eventually recovers his health.

2. The form of disease, the cure of which is now cursorily noticed, is characterized by external exsiccation and internal consumption of the animal juices, particularly the red blood. Besides this, there is another form of malady which moves apparently on the same general base, but with a directly different effect. Instead of the exsiccation and withering noticed above, flaccidity of fibre and liquescence of animal substance constitute the more prominent sign of the form in question. It begins with pains, spasms, and considerable agitation on some occasions; but in general there is not any thing very particular at the beginning. The marks of retrograde are visible about the third day. The eye then glistens; the countenance becomes florid—often of a fine bloom as if it were painted; the lips are moist and of a cherry red; the skin is damp and open—flaccid and inelastic; the pulse is soft and regular—scarcely febrile, as judged by the number of pulsations in a given time:—it is without elasticity and buoyancy. A faint and sickly odour, peculiar and not easily defined, but more like the smell of a fish-market than any thing else, arises from the body in most cases. The alvine evacuation is liquid, often greasy or oily—fœtid, but not strictly speaking of feculent fœtor. The aspect is peculiar; the condition is precarious—one of the worst that occurs; and, in so far as the writer's experience goes, one that is always fatal. It would be rash to say that it is absolutely irremediable; it is decidedly so to the ordinary means of remedy that the writer has seen

applied to it. Gestation in the open air in a vehicle, where the patient may recline at ease and at the same time pass on quickly, so as to be struck by the fannings of the pure breeze in rapid succession, occasional aspersions of the naked surface with cold salt water, or with *eau de Cologne*, frictions of the skin with salt and vinegar or lime juice, exposure to the dews of night; wine, brandy, and such cordials as are agreeable to the taste and refreshing to the habit, changed and alternated according to the fancy of the patient, and given in quantity to stimulate and support the power of life, but not to excite to undue activity, promise something; not much indeed, but more than what has been obtained from what is usually done.

The writer has stated, in some detail, the principal of the means which he would be disposed to adopt for combating the various forms of the yellow fever which occasionally present themselves to notice, if he were master of his own measures. That is however what a physician can rarely expect to be, either in civil life, or in military service. The means of conducting a plan of effective treatment, for the cure of the yellow fever, were not attainable in Spain in the year 1820; they were even deficient in the British hospitals in the West-Indies, when the author had the superintendence of the medical department of the army on that station; and it is reasonably presumed that the effect was not always such as it might have been in consequence of the deficiency. The author is aware that

the methods which are recommended in this place are liable to be considered as embarrassing to the practitioner, through the multiplicity of the expedients which are suggested for the relief of the differing conditions of the disease. He is desirous, above all things, to be simple and plain; but he could not be more simple without diminishing the chances of giving explicit instruction. He is not ignorant that one or two strong remedies, judiciously applied, are often sufficient for the cure of a strong and violent fever; but he also believes that conditions are often so complicated, and morbid associations so intimately mixed with one another, that they cannot be disentangled, so as to exhibit a plain case for a simple remedy without a complicated form of practice. The febrile process consists in a chain of many links; and though it is sometimes dissolved by the disruption of the major chain, it is not so dissolved with calculable certainty in all cases. The writer has therefore been in the habit of combining remedies in various ways for a long time past: he did it with a view to prepare a given condition by one, that he might have a fair chance of attaining a final effect by another. Combination often succeeded where simplicity had failed; and, as the success appeared to be owing to the combination, he takes leave to recommend an attentive consideration of the subject to the scientific reader.

CHAP. VII.

Remarks on the Law of Quarantine.

THE law of quarantine, which was instituted some centuries since for the purpose of arresting the progress of diseases which were supposed to be contagious, has risen into an importance, and attained a magnitude probably beyond what was contemplated at its first institution. It is now an engine of great consideration in the political concerns of the states which border on the shores of the Mediterranean, or which have commercial intercourse with that part of the world. If the propagation of contagious disease can be prevented or restrained by human provisions, no person will be so hardy as to maintain that preventive measures, even the most rigorous, should not be applied to restrain it. This rigorous application is right as implying security to the community against danger; but, while this is right on one hand, it is no less right on the other, that the precise nature of the danger be correctly known, and that the necessity of measures, which trench materially on the conveniences and liberties of the people, be distinctly demonstrated before

they be admitted as a base on which to lay a general act of legislation; for, if they be not necessary, it is clear they operate to the detriment of individuals. The law of quarantine, the writer may venture to say, is constructed on an uncertain or unascertained base; and, as the base is uncertain, so the act of execution is often arbitrary, and often applied with rigour where there is no necessity for its being resorted to. If this be so, and it is evident to the most superficial observer that it is so, it becomes the duty of a humane and just legislature to examine the case in all its bearings without prejudice or prepossession, and to lay its quarantine law, which is now defective, on a basis of fact and reason, not to be changed, or modified at the caprice or discretion of a subordinate executive officer, who, as unacquainted with the principles of science, cannot be supposed to have any correct knowledge of the proper means of guarding human health from chances of danger.

The law of quarantine affects the concerns of those nations which have possessions on the shores of the Mediterranean, even of several remote ones which have commercial intercourse with different parts of the Levant. If any change or improvement is to be made in its construction, it must therefore, after a rigorous examination of history to ascertain fact, and a careful balance of the power of facts with a view to discover principle, be made by the concurrence and consent of all concerned, so that it be one and the same throughout all the states which border on the sea. The judgment resulting from

the investigation alluded to, as it is supposed to be an unprejudiced judgment, pronounced by men of science who have studied the subject, may be expected to produce a quarantine law, consistent in itself and effectual in its operation, without more restraint on those who are obliged to submit to it than what is absolutely necessary for safety. If humble men, who seek truth for the sake of truth, were permitted to draw inferences from their experience and reason, the framing of the preservative law in question would not be a work of difficulty. But the framing of laws does not fall to the lot of the humble, and it is assumed as a position, (and, the more experience one has of the world, the more reason we have to believe in the assumption) that science, reason, and truth, which belong to the humble station, do not easily insinuate themselves into the counsels of the powerful. Prejudice legislates—not knowledge and reason; and the law framed under prejudice moves in error. The existing law of quarantine does not, it may be asserted with safety, rest on a basis of knowledge: it moves under fear, is often oppressive in its operations, and often enforced with rigour without apparent cause of necessity for the employment of rigour. This is an evil. It may be difficult to say positively whence it proceeds; but two causes only present to common view, as sources to which it can be properly referred, viz. the impression of fear which deprives official men of the courage that is necessary to examine and ascertain whether there

be danger in a particular case or not; or the propensity inherent in human nature to act arbitrarily, which, enamouring the executive of the arbitrary law of quarantine, keeps it in error, in spite of all the light that can be thrown upon the subject by the unprejudiced researches of those who cultivate science. But whichsoever of these be the cause; or if they both have a share in the operation, the restrictive law, in so far as respects yellow fever, is maintained in face of the most positive evidence of its inutility.

It is again repeated, and will be readily admitted by every reasonable man, that, where a contagious property adheres to the character of any given disease, no measure, however rigorous it may be, can be justly complained of that stops or restrains it from spreading among the people. The rigour, in such case, is not unjust; on the contrary, it is humane and politic, in as much as it conduces to the preservation of human life. But while this is admitted on one hand, it is fair on the other and incumbent on legislators, prior to the adoption of measures of rigour—such as the law of quarantine sometimes implies, to examine and ascertain precisely the conditions and circumstances of the particular case; so that no unnecessary severity be applied to individuals under the pretext of encompassing a general good.

In order to attain stable grounds on which to lay a basis for judging the important question of the law of quarantine, it is expedient to take a cursory view of the origin, progress, and character, of those forms

of febrile disease which subject the sufferer to the ordeal of this arbitrary enactment. Febrile diseases are, properly speaking, comprehended in two classes, however varied in kind they may be, viz. fevers which draw the material of their existence from the soil on which the subject lives, and fevers which draw the material of their existence from the bodies of their fellow subjects. The first is a solitary, the last is a social disease. The former is more or less concentrated, acts on the animal body in a variety of ways, destroys life to great extent, but dies, as it were, in the primary act; that is, it has no legitimate progeny. The latter is various in kind, acts variously, and, in its action, produces a material of the same nature as the original; which, thus generated in the body, passes from person to person by contact or near approach, produces a similar disease and a similar material, multiplying and propagating its kind to great extent, and, through intermediate substances, to great distance. These are distinct bases of the generative causes of febrile disease. Various and disguised as the forms of fever sometimes are, the act is uniform and regular according to its rule while undisturbed by adventitious causes. One form of fever is contagious, multiplies by its own process, and propagates by communication with other subjects. Another dies, as it were, in its own act, does not propagate, and only appears in activity as connected with certain forms of locality. This last may be general and fatal according to circumstances, but it is not contagious in common atmos-

pheres: the first is contagious in common atmospheres, the contagious quality augmented by certain conditions of atmosphere, absorbed or diminished by others in a manner that is not distinctly understood. The effect, which different conditions of the atmosphere operate on febrile diseases, is a subject of important consideration, both for the speculative and the practical physician. The endemic is sometimes so far changed by this adventitious influence as to appear to be a new disease; which, from its virulence and mortality, obtains on some occasions, the name of pestilence: the contagious fever is also frequently influenced by it, and mortality in consequence increased in a prodigious degree. It is an epidemic or adventitious influence, affecting the conditions of the cause, or the conditions of the subject in a manner that has perplexed history for a long period of time, and led physicians into a field of error to which there appears to be no limit. The following, according to the author's best view of the subject, is the simple state of the fact.

1. The endemic fever belongs to all parts of the earth. It is more frequent, differently modified, and more destructive of life in some parts than in others; and it is moreover varied in form and appearance by the influence of the different seasons of the year in which it occurs. It continues for a longer or a shorter time and terminates variously; but it generates no product during its continuance, which propagates disease to others by contact or near approach. In fact it is not contagious in its own undis-

turbed nature; it however happens not unfrequently that where masses of men, labouring under certain forms of endemic disease, are heaped together in ill ventilated apartments, a new material—the product of artificial circumstances, is generated under accumulation; which, acting on animal organism, stimulates an imitative mode of action that constitutes the disease known by the name of typhus fever. The typhus, thus generated, propagates itself from person to person by contact or near approach, or by clothing and other matters that have been in contact with the infected person. It is thus artificial in its origin, often the product of ignorance or carelessness; and, as the product of ignorance or carelessness, it is extinguished by intelligence and industry in almost all cases. It has been, still is, and will continue to be destructive of the life of armies to an undefined period; that is, until physicians have the place in the councils of military commanders that is due to science:—the health history of the late wars in Europe is demonstrative in proof of the important fact that military life has been sacrificed in an enormous proportion to ignorance; that is, to the unwillingness of commanders to be advised on subjects which they could not themselves be supposed to know.

2. A numerous class of febrile diseases rank among those which are directly contagious; and which, as propagated from person to person, are controllable, and therefore direct subjects of quarantine regulation. Besides the artificially con-

tagious fevers of jails, hospitals, and contaminated air, small pox, measles, scarlet fever, and plague, properly so called, are conspicuous in the catalogue of the infectious class. The plague is a disease of all others the most dreaded. It has its origin on the coasts of Asia, and particularly on the coasts of Africa which border on the Mediterranean. It is unequivocally contagious in itself. It is sometimes epidemic, and appears to arise where communication has not been distinctly traced; sometimes it refuses to propagate where communication is direct, the cause being unaccountably absorbed, or its operation counteracted by an unknown condition in the habit which renders the morbific matter inert. The plague is a disease which has been often under observation, and concerning the nature of which many books have been written; but its history does not as yet appear to be distinctly known, at least it is not easy to analyze the phenomena, so as to comprehend the principle on which the morbid operation turns. The cause of the plague seems to be a peculiar matter, presumptively of great subtilty but of a narrow sphere of action; that is, not extended beyond contact with the infected source, or very near approach to it. The law of quarantine is laid on the presumption of a narrow sphere of action; and, as it is apparently laid with safety on that presumption, it is incumbent on those who superintend the execution of it, to make its restrictions as little inconvenient and onerous to the public as they can with safety be made; and, for this purpose, it

is necessary to make a minute and correct inquiry into the intimate nature of the disease*.

3. The latent quality in the atmosphere, which constitutes what is called the epidemic constitution, is absolutely unknown to physicians or naturalists. It acts on the endemic, or on the contagious fever by secret agency. It arises unaccountably, and proceeds for the most part without any very intimate connection with the heat or cold, moisture or dryness, lightness or gravity of the common atmosphere. It ordinarily continues in activity for a given time, influenced by obvious changes in atmospheric conditions, not controlled by them. It usually strikes on particular points in a district of town or country, sometimes extends rapidly, sometimes slowly, travels in tracts, and does not appear to be materially impeded in its march by any of the obstacles that are thrown in its way by the art of man. It produces, or modifies a disease which acts like a pestilence, destroys life to an enormous extent, but does not appear to pass from person to person, and thus to multiply itself by its own act;—in fact, it is not contagious in the proper sense of the word. But though fever, modified by epidemic influence, be not personally contagious, it is capable of being converted into contagious fever by the accumulation of its subjects in narrow and ill ventilated apartments,

* The history of the plague, in so far as respects a developement of intimate character, is still defective and perplexed. The dangers of the disease have, for many years past, kept all

in a similar manner to what often happens in the gastric fever of the autumnal season at the close of a protracted military campaign:—the epidemic mo-

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the christian powers, who are connected with the shores of the Mediterranean, in a state of dread and alarm. As such, it might have been reasonably expected that a strict and scientific investigation would have been instituted, before this time, by a joint commission of the powers whom the subject more intimately concerns, with a view to ascertain the real nature of the disease in question. The history and intimate nature of the plague is not distinctly known; and, as it is necessary to obtain a view of the truth, if it be thought that it is possible to diminish the destruction of the disease by the knowledge of it, it is primary, in the proceeding, to institute an inquiry on a scientific basis, for bringing the malady, in its various forms, and as traced through a series of years, under the observation of men of zeal and science. This can only be carried into effect by a common understanding among the christian princes who are connected with the Levant; and, as the author had often turned the subject in his mind in a short journey which he made to the East in the year 1820, he took the liberty of suggesting to the Secretary of state for war and colonies, in a letter dated Zante in the month of June, some propositions which he thought might lead to the way by which a scientific and correct view of the subject might be attained. Constantinople, where the disease is not unfrequent, and where there is a more respectable body of Christians than there is in any other country where the plague prevails, appeared to him to be the place where the attempt could be made with the best prospect of success. Under this impression, he submitted to the Secretary of state, the outline of an experiment by which he expected the purpose might be effected to a certain extent. The original paper is lost, and as he considers that that which is in the office of the Secretary of state is dead matter, he here takes the liberty of adding something

dification is a contingency to the endemic; the contagious character is a contingency to the epidemic—the result of artificial circumstances.

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from it that is still in his recollection, in the expectation that if those, whom the matter concerns, should be at any time disposed to take the subject into their consideration, the hints offered, if they can be useful, may be applied to use.

It was stated, in the project alluded to, that the whole of the Frank nations who have commercial or other establishments at Constantinople, (and, if it could be effected, the Greeks, Armenians, and Jews who reside at that place), should unite in instituting a certain form of systematic inquiry, for the attainment of a correct and intimate knowledge of the nature of the plague; in the hopes that, if attained, the dangers of the disease, as better known, would be less dreaded than they now are. In prosecution of this object, it was proposed, in the letter alluded to, that an hospital should be erected in a convenient situation on the height of Pera, suitable in extent to the reception of the sick of each separate nation. It is understood that the hospital is to be constructed in the best known form of hospital construction, furnished with baths and every necessary equipment that can be thought to aid in the cure of disease, or in the re-establishment of health; and that it be placed under the superintendence of medical officers of science, zeal, and courage. The general hospital is considered to be the centre of this federative scheme of science and humanity; but the general hospital is not the the whole of what is necessary to give the scheme a distinct executive effect. The quarters of the nations, who become party in the undertaking, are supposed to be divided into districts, and each district to be placed under the direct superintendence of a competent medical offiicer. It is moreover necessary that a house of observation be appointed for each district; and that it be furnished with baths and every other necessary equipment for the convenience and relief of persons

It is admitted that, in order to give a clear and complete view of quarantine regulation, a person ought to have visited and minutely examined all the

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who labour under certain suspicious forms of indisposition. The bases of the establishment being thus laid, the medical officer is understood to visit every house in his district twice a day, or oftener during the time of epidemic, to muster and inspect the whole of the family with care, and to send every one, whose appearance gives the least suspicion of the existence of plague or its forerunners, to the house of observation. The commencement, or earliest stage of plague, reasoning by analogy in other diseases, is the only time for acting with a prospect of doing good. The medical officer of the district is supposed to be fully aware of this truth, and of the importance of time and occasion for effecting purposes; he is therefore supposed to act, preventively, with promptitude and decision at the time when decisive action is of avail.

When the signs of plague are unequivocally declared, the patient is to be conveyed to the general hospital without loss of time, every thing having been previously done by the district officer which the existing condition required, and nothing being now neglected which can in any way be supposed to render the transport safe to the individual, or to those who are employed to transport him. When he arrives at the general hospital, the chief physician, who is previously made acquainted with all the circumstances of the history, assumes his office. It is presumed that he is competent to the execution of it, in so far as the lights of science can be supposed to carry him, and in so far as experience is capable of instructing him. The knowledge of the ravage which the morbid act commits on the organic structure of the frame, is important to the successful application of remedy; it is therefore almost indispensable that the dead body be opened for the purpose of ascertaining the fact, with a view to direct the application. The writer is aware of the dread

quarantine establishments which are found on the shores of the Mediterranean. Want of time, and other wants prevented the writer from doing so:

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which most persons are likely to experience in proceeding to open the bodies of those who have died of the plague: he is disposed to think that the dread is not well founded, at least he would not himself be deterred from doing what he recommends, after precaution had been taken to remove every article of clothing that had been near the sick, and after the skin had been perfectly washed with soap, or potash and warm water. When it is seen in what manner the disease occasions death, the intelligent physician will, it is presumed, have little difficulty, comparatively, in giving effect to measures which obviate its fatal tendencies.

The plague appears, by its history, to be different from itself at different times or in different places. 1. It arises from contagion, spreads epidemically, acts destructively, and probably extends the sphere of infection beyond actual or direct contact. 2. It arises from contact, does not spread epidemically, the cause being confined to direct communication with the diseased subject, or to matters that have been in contact with it. 3. And lastly, the disease exists, the matter of it does not strike, or but rarely strike the living subject to which it is applied. These seem to be facts in the history of plague; and, from these it is inferred, that a certain atmospheric condition evolves at one time, and conspires, in a manner unknown to the acutest observer, to spread the contagion extensively; at another, the atmospheric condition is neutral or indifferent, so as to leave the infectious matter to its own act; and in a third, the atmospheric condition seems to be counteractive; that is, absorbent of the propagating property of the disease, or communicative to the habit of a property negative of propagation: the matter, though existing, does not strike, and the disease disappears in a manner that is not explicable.

his remarks therefore apply only to what was seen, in a cursory visit, at Malta, Zante, and Gibraltar: they are thus imperfect. They may notwithstanding be thought sufficient to shew that the subject deserves a better and a more scientific consideration than it has as yet obtained.

When a vessel, as it appeared to the writer, arrived from a country which ranks among the suspicious as occasionally visited by the plague, an officer of the health department approached it on the windward, and, at a given distance from the side, made inquiry after the health of the crew. If there were no sick on board, he retired at the time, but returned at intervals to make similar inquiry until the expiration of the quarantine period. The author has not seen the quarantine proceeding to such extent and in such detail, as enables him to describe it correctly in all its forms; but he has seen and ascertained by experience this much, that, if a person arrive from a suspected country under a common indisposition, which requires the assistance of the hand, he cannot obtain it; at least, the person who gives it is secluded from intercourse for a given time. This is a palpable oversight in the quarantine regulation: it is even an injustice to society, in as much as it in a manner prohibits a medical officer from giving his professional assistance to a suffering fellow creature, under pretext, in most cases an imaginary one, of guarding the public from chances of danger. The law thus made is made at random

—in precipitation and under the impulse of fear: it is cruel and unjust in its operation.

Those actually infected with plague, and those who are justly suspected, are sent to the lazaretto and placed under treatment. Against that proceeding no one is supposed to complain; but every one may be supposed to complain that the assistances of the medical art are denied indiscriminately to persons from suspected countries, except under conditions with which common practitioners can scarcely be expected to comply.—Besides what relates to the treatment of infected or suspected persons, the purification of clothes and goods is an object, which materially occupies the attention of those who superintend the execution of the quarantine discipline. The processes of purification, in so far as the author had the opportunity of observing them in a cursory visit to the lazaretto at Malta, are slow proceedings; and there is cause to doubt, if infection actually exist, whether or not they are effectual of its destruction. The goods, deemed susceptible of plague contagion, are carried to the lazaretto, spread out on platforms, or hung upon beams or rafters; the bales are opened at different places, and handled now and then by persons appointed expressly for the purpose of handling. It is evident that, if the persons destined to that office be not susceptible of the infection of plague, the act of handling cannot be deemed a satisfactory criterion of purification. If they be susceptible, and if the goods be actually infected,

the dangers to which the handlers are exposed are great;—and they are unnecessary, for the purpose may be attained without exposing any one to risk.

The remarks now made on the law of quarantine are not perhaps the most important which belong to it; but they are of sufficient importance to draw the attention of the higher authorities of the state to a scientific consideration of the subject. The law, as it appears from a very superficial view of its history, has been formed without knowledge of principles; and it is often executed at the arbitrary discretion of those who are not acquainted with science in its rudest state. It will be deemed presumptuous to speak in this manner, or to offer suggestions of remedy, in a matter where great men have deliberated and given judgment with authority. The author is desirous to abstain from impertinent intrusion; but, as he has a license to labour in the field of humanity with other men, and a professional license to advise on the subject of health, he cannot abstain from submitting to public consideration, such suggestions of change and improvement in the constitution of the law as are consistent with the principles of science, and within the comprehension of the common sense of common men.

In the first place, as the persons suspected of importing the contagion of plague to a given place generally arrive by water, lazarettos on water are, in many respects, more convenient than lazarettos on shore; it is therefore strongly recommended that this part of the subject be duly considered, when

the construction of lazarettos engages the attention of those who direct the operations of state. It is recommended in the second place that, whatever be the extent of the lazaretto, three divisions be considered as indispensable among its provisions for the proper execution of the duty; viz. one for persons who are under suspicion, consequently who are to be placed under observation; one for persons who are under formal disease, and who require some variety of equipment and extra apparatus for the execution of medical discipline; and lastly, one for those who have escaped from the disease, and who are now convalescent. Besides the plague hospital and its appurtenances, it is necessary that an hospital be erected in a convenient situation, and at some distance from the infected hospital, for the reception of persons, who arrive from suspected countries, labouring under maladies of a common or non-infectious character. This is plain to common comprehension as a necessary provision for a quarantine establishment:—without it the community must suffer hardship, even sustain injustice and injury.

In regard to the more particular execution of the duty, it is expected that the officer charged with the superintendence of the health department, instead of approaching the suspected (not the infected) vessel on the windward side, and not approaching nearer to it than a distance of ten or twelve yards, actually present himself on its quarter-deck, muster the crew, examine minutely into the condition of health, inspect the log-book, and take his measures of pre-

caution or remedy by the information which he thus obtains—in short, that he do not act by suspicion only:—it is necessary that he actually know. If there be sick persons on board, and if these be ascertained, from the nearest safe point of approach, to be persons infected with plague, the health officer, even if he be the prescribing physician, may consider himself as exempted from entering a vessel, where he must necessarily be exposed to the contact of what is contaminated. But, though he may be excused from this random risk of danger, he must not hold himself to be acquitted of his duty, until he has seen the infected subject removed from the ship and properly accommodated in the lazaretto. When the preparation for the reception of the sick at the lazaretto is reported to be made, it is recommended that the sick person be put into a net, and so placed in a chair, or other contrivance, that he run no risk of being drowned in being dragged through the water to the hospital. When he arrives at the hospital, the condition being examined by the physician as closely as it can be examined consistently with safety, it will be advisable in most cases that he be immersed in a warm bath, and that the body be scrubbed with soap and brushes, in such manner that it be thoroughly freed from all exterior pollution, and presumptively from the adhering contagion of plague. When that is done, and when the subject in question is conveyed to the sick apartment, such a train of medical discipline is supposed to be instituted and sedulously applied to him

as best corresponds with the circumstances of his case. It would be arrogant presumption for a person, who has never once in his life seen an instance of real plague, to take upon himself to say what ought to be done for the cure of it: he may however be allowed to say that, whatever be the rank and qualifications of the medical officer, it is necessary that he have courage, and such confidence in his own judgment that he may act with decision where he sees a chance of success from the application of strong remedies. It is farther to be observed on this head that, though a vessel from an infected country present only one of its crew as a subject of genuine plague, it is notwithstanding imperious, in the proper execution of the law of quarantine, that the whole of the crew be removed to the lazaretto and placed under observation for a given time. It is stated, by those who are well acquainted with the plague in all its forms, that the explosions of the symptoms, if one may so speak, is often in a manner instantaneous after the actual application of the cause; at least, it is generally after a short interval —rarely, if ever, beyond the sixth day. If this be the fact, (and it is stated by Mr. Tully, staff surgeon in the British army, who had the opportunity of observing the disease recently in the Ionian islands), the inference is direct, that ten days of probation, under a routine of purifying processes—external and internal, may be deemed a sufficient security to the community for permitting the return of those, who were suspected of plague infection, to the

common intercourse of society:—if the security be sufficient; the gain of time is important.

The above is only a rude and imperfect outline of what may be suggested with regard to the treatment of those who are suspected, or actually infected with the plague. A few remarks are here added respecting the best means of purifying ships and the merchandise which they convey. The processes by which goods are purified, in such of the British quarantine establishments as the author has seen, are slow in their operations; and it is difficult to persuade one's self that they are effectual in their purpose. If the heat of fire, the impulse of air, or the distillation of water in form of dew, be held to be efficient means in destroying or dislodging contagion from infected goods, it is evident that these may be applied in a more forcible manner by the help of machinery, than they are now applied in the proceedings that are commonly adopted; and, if applied in a more forcible, they will presumptively be applied in a more effectual one. If this be admitted—and it is a fair inference from fact and reason, it is humbly suggested that a purifying place be prepared in the quarantine ground, with every necessary means for the application of artificial heat, artificial ventilation or winnowing, and artificial aspersions of water, imitative of drizzling rains or heavy dews. If the idea be adopted; and if the means that are suitable be assiduously and skilfully applied, more progress will be made in five days in purifying goods, than is usually made in fifty accor-

ding to the common way of proceeding: the suggestion is not visionary;—common sense is competent to the comprehension of the reason of it.

It is farther to be observed that ships, in which cargoes infected with contagious matter have been embarked, are not unfrequently sunk in the sea, with a view to wash off the adhering noxious substance. The necessity of the measure, which is troublesome as well as expensive, may, it is believed, be saved by the employment of the fire engine, the stream of water from which may be so directed as to wash away every impurity from the vessel in the most complete and perfect manner. The suggestion may perhaps be ridiculed: it is not ridiculous, for the pipe of the engine may be so turned as to throw water in quantity and with force into every corner and crevice in the vessel. As the thing may be done with little trouble and expense, and without exposing any one to risk of danger in doing it, it deserves the consideration of those who superintend and direct quarantine establishments.

The writer has taken the liberty, on this occasion, of making a few remarks on the principle and practice of the law of quarantine, drawn to a consideration of the subject by the preposterous application which, as it appears to him, has been made of its arbitrary enactments to the subjects of the epidemic, which has of recent years occasionally ravaged the south parts of Spain. The facts which are stated in the second chapter of this work are, in the

author's opinion, perfectly decisive of the inutility of quarantine in so far as respects the diffusion of yellow fever. If there be no proof of a positive personal contagion in the character of the disease, restriction of intercourse is unnecessary; and, if unnecessary on the score of safety, it is injurious on other accounts, particularly on account of waste of time and onerous exactions of money. This is obvious to common sense. It is an abuse of legislation: it is not one of small inconvenience; but experience does not encourage us to look to the abolition of it. The error is ingrafted in the dominant principle which regulates the conduct of the generality of states. Power is self-devoted: it turns its ear from facts and reasons which enlighten and lead to truth: it lends it to delusions, and it clings to deceptions which flattter vanity and augment self-importance. The law of quarantine, as applied to the epidemic which has appeared at intervals in the south of Spain since the beginning of the present century, is, it is again asserted, altogether a superfluous law. It is oppressive in its operations; and, as such, common sense pronounces that it ought to be abolished. There is evidence that it may be abolished without danger to the health of the community; but that it will be abolished, the simple only dare venture to hope. It is, among others, an engine of political power; and it is obvious to every man, who looks with his own eyes and judges with his own judgment, that propositions which suggest

subtraction from the power of the political engine, are to expect no patron in the present times: they are deadly sins—not exempt from the chances of persecution and severe punishment.

FINIS.

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