resulting pale waxy hue and general torpor of mind and body, and the constant increase in the colourless corpuscles as the disease progresses.

Virchow says the spleen is a remarkably sensitive organ, which swells not only in intermittent and typhoid fevers, but also in most other processes in which noxious infectant matters have been freely taken up into the blood.

The spleen is enlarged in melanæmia. In this disease a condition exists somewhat allied with that of leukæmia; since we have in it to deal with elements which, like the colourless corpuscles in leukæmia, make their way from definite organs into the blood and circulate with it. Meckel found that in this disease the spleen was invariably enlarged and pervaded by black pigment, and he therefore ascribes the change in the blood to an absorption of coloured particles from the spleen. The pigmentary matter of this disease is believed to be developed in the spleen. The occurrence of the pigmentary matter in the blood is supposed to be always due to affections of this organ.

I have here briefly thrown together a condensed statement of my labours connected with the spleen, and have introduced only a small portion of the more important illustrations; yet enough, I trust, has been given to convey a tolerably clear idea of the subjects discussed and of the extent of the labours.

ART. II.—*Account of the Epidemic of Yellow Fever which visited Pensacola Navy Yard in the Summer and Autumn of 1863.* By B. F. GIBBS, M. D., Surgeon U. S. N.

It is not proposed in this article to write an elaborate essay upon a disease which has been known, as a malady most fatal to human life, for a hundred years. To scrutinize facts which have been exposed to the medical public in every manner best suited to determine the hidden mystery of the nature, cause, and treatment of the disease would be equally unprofitable; but it will not be amiss to offer a few facts collected on the field of pestilence, that may help to remove a prejudice or unveil a mystery.

It would be an easy matter to fill many pages with conflicting opinions regarding the origin and character of this dreadful disease. But after steadily probing the obscurities and combining the statements and facts selected from a thousand sources, all have been obliged to rest in the field of research dissatisfied with their incomplete and unsuccessful labours. Not as a theorist, but as a contributor of some observed facts, which I trust will be useful in themselves, as such, I offer the following observations:—

It is necessary to remember that the scene of this epidemic at Pensacola, Fla., was under the most complete military control. No ships entered the

harbour of Pensacola, or moved while in the harbour, neither did individuals pass from point to point without the knowledge of the military or naval authorities. For this reason the history of all those cases which might have been considered isolated was easily obtained, and also whether any connection could be traced from them to the point of infection, or whether intercourse existed between the latter and those neighbourhoods which were healthy.

Origin and Progress.—August 25, 1863, was the warmest day experienced during the period of the epidemic; the thermometer stood at 12 M. at 92° Fahr., and for some days previous to the outbreak of the disease the thermometer approached this high figure. Commodore Wm. Smith called me to go on board the U. S. Store Ship "Relief" and inquire into, and report upon the cause of an unusual amount of sickness from which the whole of this ship's company were suffering at that time. The disease had appeared very suddenly in this form (according to the statement of the assist. surgeon in charge, "in its present severity"), and a general state of alarm prevailed. The ship was recently from Ship Island, a perfectly healthy locality, where she had been used as a store ship for the previous thirteen months. No unusual amount of sickness had prevailed in the ship previously; she had passed the quarantine about two weeks before, and was reported "all well" to the health officer. About three days, however, before I visited the ship the medical officer, Asst. Surgeon Peck, asked my advice in regard to the treatment of some two or three cases of what he called obstinate intermittent fever, and complained that they did not yield to quinia. He increased the dose as I advised him, and reported afterward satisfactorily.

The onset of the disease among those I saw on the morning of the 25th, was of a severe character; reaction slow, imperfect, or entirely wanting, indicative of a low and malignant form of disease. From the condition of the hold of the ship and other circumstances, and for want of a better name, I reported the disease as typhus fever, contagious, and urged an immediate quarantine. At that time, from the symptoms, it was impossible to make the certain and correct diagnosis which I was enabled to do in a few days—the course of the disease deciding the question.

Seventeen of the worst cases, in above thirty affected, I sent to the small hospital in the navy yard, the few cases of casual disease being removed, fearing the spread of disease by contagion, which I conceived to be strong, from the rapid spread of disease in the ship. At the end of five or six days all these cases were convalescent but one, which terminated fatally, exhibiting all the symptoms of yellow fever, including the hemorrhage and black emesis. The treatment of these cases will be given in what follows. It is necessary to remark that these cases were seen immediately, and the active remedies administered were most satisfactory in their results. Of the cases left on board, some of them recovered with a jaundiced skin

and much debility. After the "Relief" was quarantined seven or eight cases on board immediately grew worse, and in six days seven deaths were reported in the ship, including the medical officer, Asst. Surgeon Peck, who stood heroically "in mortal conflict with the destroyer," and yielding his life a sacrifice to humanity, deserves that entire and generous praise, which can scarcely be bestowed on him who falls by the hand of his fellow man in more brutal combat. All these cases were the most decided and very malignant yellow fever.

Sept. 1. The epidemic until this time seemed to have been circumscribed to the "Relief," which was in quarantine six miles distant. The vessels lying adjacent to the yard were perfectly healthy, and we hoped to see no more new cases. Suddenly two of the officers of one of these, a merchant vessel, the "Myrover," were taken and died within three days, having been slightly indisposed two days before the onset of the fatal symptoms.

The vessels of the bomb-flotilla now became more sickly, from one to three cases occurring daily. Fearing almost any disease that was accompanied by fever, I had them all removed to the quarantine, and visited them daily in a steamer.

Although it may be said that this must have been a useless proceeding after those cases had been treated in the hospital and proved to be yellow fever, it will presently appear that the removal of the "Relief," the original point of infection, to quarantine and this flotilla also, secured those in the navy yard, a month after the outbreak, and those first cases were treated from the "Relief" in the yard hospital; showing the feeble power of the disease to reproduce itself at a distance from the point of infection within a month after its appearance. All the men of this bomb-flotilla had been the subjects of malarious poison during their service in the Mississippi River, were then suffering, and were consequently far below the standard of health in vitality. For this reason every one of the flotilla lost many men after the universal spread of the epidemic, notwithstanding our earnest efforts to localize it. It has been said that yellow fever is only an aggravated form of marsh fever, and we know one attack of the former is considered as granting future exemption, while it does not hold good in the latter, although it is a step toward acclimatization. So far as a similarity of the diseases is concerned in bestowing an exemption that would prove an identity, we have no support in the history of these bomb-vessels, for those sufferers from the Mississippi malaria were the most constant victims of yellow fever.

All of the vessels in the harbour were now in strict quarantine five miles distant, and the men belonging to them removed to the shore where they were made comfortable in tents constructed of sails.

22d. The first case appeared again in the hospital in the navy yard, which had been thoroughly cleansed and painted since the last case was treated there. The case proved fatal on the succeeding day, with decided

symptoms of the fever. The cases at the Quarantine Hospital were now less malignant, many were convalescent, and no new cases had occurred for several days.

29th. A strong wind blew from the north, which lasted three days. The thermometer fell several degrees: we were unable to visit the quarantine across the bay; the wind increased to a sweeping gale; at its close I visited the island, and found all convalescent and no new cases. I removed tents, sent those to their vessels who were well, and removed those much debilitated to a tent for convalescents in the navy yard.

In the mean time, between the 22d and 29th inst., the disease seemed to have localized itself in the navy yard, without spreading to the army encamped only one and a half mile distant. The villages adjacent to the yard contained now and then an unacclimated person who fell a victim to the destroyer. These villages were remarkably clean from the fact that a year previously they had been evacuated and partially burned. The army devoted especial attention to the police of their locality, and enforced absolute quarantine by a double picket line. Several times a week every part of their neighbourhood and encampment was thoroughly cleansed; and situated as it was on a high sand bluff, nature contributed much to secure the soldiers from an invasion of the pestilence. At the close of the epidemic two mild cases were reported. In the navy yard, the marine guard now exhibited a sick list of 25 men; four had died, a number were treated in the hospital, besides the milder cases which were treated in quarters or required no treatment at all. One of the marine officers died and two others recovered after a most critical illness, which left them in a condition wherein their constitutions were terribly broken down: one of these officers recovered after having "black vomit."

Simultaneous with the appearance of the epidemic at Pensacola (August 25), a similar malady invaded the frigate "Colorado," forty miles distant on the blockade off Mobile; seven or eight of the cases died, as I have been informed, of about forty affected. They were unable to trace the disease to any other source than the probable fomites, with cryptogamia, or germs contained in stores received on board, coming from the "Relief," previous to her departure from Ship Island.

Now from the above history of the commencement of the malady there can seem little doubt that the disease was generated in the "Relief." Perhaps it is too positive to point to this locality as anything more than affording proper conditions for generating this poison, or fostering the germs in the same manner as certain protophytes only multiply when lodged on proper soil, as the germ of *Isaria felina* upon the dung of cats, *Puccinia rosæ* upon rose bushes, &c.¹ In the "Relief" we must have had, first, the germ; second, we had the subjects susceptible to its influence;

¹ Carpenter on the Microscope, p. 341.

and third, we most certainly had in the hold of the ship conditions necessary for fostering the germ. This deserves attention as an important point in naval hygiene.

Stores had remained undisturbed in the vessel over a year. During this time several hundred gallons of sperm oil had leaked from the casks into the bilge. The ship made much bilge water, which was exceedingly offensive in its odorous gases, and very black. Kegs of pickles were mouldy or in a state of decomposition; and the fresh preserved meats in cans were unsound to such an extent as to give rise to an animal odour. When I first visited the ship the hatches were all closed, as the offensive odour with them opened was most intolerable. In consequence of these nauseating odours it was impossible for me to but indifferently explore the hold of the ship, and I was glad to again shut up the fomites of the fever under close hatches, with the conditions that gave them birth. Here we had what is usually considered sufficient to generate this disease, viz: heat at over 100° Fahr.; in the hold, salt water, animal matter in a state of decomposition, and the whole stirred up in the ship on the passage from Ship Island to Pensacola. That the disease did not appear earlier in the vessel than near two weeks after reaching Pensacola, may be explained by the fact that it did not feel the influence of sufficient heat until the time stated.

To the filthy condition of the "Relief" we trace the origin and initial point of the pestilence. Whether it was reared in her without the deposit of a germ is not of so much practical importance as to fully understand the fact that the *nidus existed* in her to nourish the fatal malady.

Another fact strictly follows here, which does not disturb those theorists who believe in epidemic germs. We were forcibly impressed with this in observing that when once we had a nucleus in the "Relief," it was not necessary that we should have the same conditions of filth abroad to encourage a spread of disease in the neighbourhood. On the other hand, in the navy yard and on board a few of the vessels in the harbour, cleanliness was most thoroughly observed, and seemed a feeble barrier to the disease. I leave it to those who choose to theorize upon the subject, whether such as suffered under the latter circumstance were the victims of organic zymotic poison carried through the air from ship to ship, or whether a fomites containing the same was carried in the boat or in some manner escaping the scrutiny of the police.

But an excellent illustration of the broad epidemic character of the disease was in the death of a girl in the town of Pensacola, outside of the Union lines, six miles distant and with whom all direct communication from the positive locality of development was impossible. The case was undoubtedly one of yellow fever, as Dr. Brozenham, who has been living and practising there fifty years, gave me the information after the close of the epidemic fever. This case occurred after a more general spread of the disease.

The *symptoms* of this disease have been so often described that it would seem a repetition of no value to do so again. My object in doing so is, that they may be referred to the treatment, which was practised with some success, and that one may be enabled to judge whether this was a mild or severe form of the disease. The usual symptoms of fever occurred in this disease, but they were of a low and severe character. If a novice examines a case accurately, he distinguishes at once the typhoid severity, the mental hebetude, the red or injected eyes, in bad or hospital cases, unlike ordinary fevers. The cold stage or period of invasion was or was not ushered in with alarming symptoms which required the most anxious attention, while our facilities for treating a large number of sick were limited. This stage bore no direct relation to the subsequent fatality of the disease. In this condition the patient had a cold clammy skin, dilatation of the pupils, hebetude, and semi-comatose condition of the brain, often tonic convulsions with severe pains in head and back, which in bad cases were displaced by delirium and all the symptoms of great prostration which rapidly followed. The febrile reaction which succeeded this condition was more perfect in favourable cases. In the worst cases this reaction was always imperfect and in some absolutely wanting. No medication was available unless the fever was well formed. The fever pulse was not more than eighty per minute, and easily compressed, but full. With reaction well established, the skin was hot and dry, and attended with extreme thirst, and pains in the head and back. It might be said that some cases died in the period of invasion without ever reacting; but such as these laboured before, often unconsciously, under a mild form of the disease, which lingered undeveloped until some exciting cause, as a change of temperature, reduced the vital forces, and enthroned the poison of the epidemic more decidedly, so that life yielded to its dissolving influences. The tongue in the febrile condition was coated at first with a white moist coating of a creamy colour, which inclined in a day or two to a brown or mahogany colour. In fatal cases this turned rapidly to a dry black crust, which cracked and allowed the blood to flow during the hemorrhagic tendency. The fever lasted from three to five or eight days; not continued, but intermittent at irregular periods as the powers of life and the violence of the disease varied in their relative intensity. Great determination and fortitude on the part of the patient, with faith in believing he was able to withstand the violence of the disease, was favourable toward continuing the febrile condition, and averted the collapse which was so common at any moment in the course of the disease. Fear of a fatal termination and alarm at the symptoms of adjacent patients were always disastrous, and hastened the fatal issue.

In mild cases the fever ran its course in from one to six days, always leaving a state of great debility, and the skin of an orange hue. The fatal symptoms of bad cases were usually exhibited before the fifth day; in fact

we were in the habit of saying that the patient was in fair way to recover if he survived the fifth day.

There were other symptoms which occurred in the course of the disease that were not present in every case. Among these was the *hemorrhagic tendency*, in which blood flowed from one or all the mucous passages; commonly from the nose, mouth, or eyes; sometimes from the ears and rectum, and more rarely from the penis, or vagina in women. *Black urine* was in our experience a very favourable symptom, more so than the black fluid dejections. All the cases which exhibited this symptom recovered, three of which were having *black vomit* at the time; great emaciation and debility after recovery, with a jaundiced skin for the time, effectually impaired the health to an alarming degree.

The *chemical* and *microscopical* characters of the urine and matters vomited received enough attention to verify or disprove some of the many statements given to the profession in regard to the changes so constantly exhibited. The urine in all the cases was highly albuminous and strongly acid: often the coagulation was spontaneous and the albumen fell a thick mass at the bottom of the urinal; of the true secretion there was little or none; the black vomit was always strongly acid and not infectious. One of the nurses received the whole of the matters vomited in his face, and his mouth being open some entered it, with no fatal consequences, although he suffered subsequently from the fever. The microscope reveals many curious characters in the different morbid productions, when examined in the recent state, but do not lead materially toward determining the true nature of the disease besides exhibiting destruction of tissues. It has been declared that microscopic animals have been discovered in the black vomit. I have examined over a hundred fresh specimens under an instrument magnifying 600 diameters, but have not discovered them. For the purpose of obtaining a wider field I observed many fresh specimens with a less power, and with the same negative result. The matters vomited, as well as the black urine, consist of many heterogeneous parts. Among the most prominent of these, in the above morbid products, were altered blood corpuscles, which might be occasionally distinguished by the dark ring and lighter centre; but a perfect one was seldom seen. There was no regularity among them in the field of the microscope as in the freshly-drawn blood. Large masses of tissue were constantly seen in the matters ejected from the stomach, through which the capillary bloodvessels ramified; also the epithelium of the stomach and fibrinated patches. The larger capillary bloodvessels were sometimes seen with their walls, and blood corpuscles in them, entirely detached from the disorganized tissues. The mucous tissue was exhibited in large quantities, and was readily distinguished by its pavement epithelium. Those peculiar objects observed by microscopists were well marked in the recent matters vomited, or in those specimens in which the dry "vomit" had been moistened. These were oblate-spheroidal

bodies, with dark concentric circles, having opalescent centres or nuclei, and are supposed to be an altered condition of the gastric juice: for what reason I am unable to divine. They are visible under the microscope when dry, but not a tenth of the size of those found in the recent matter vomited. The true nature of these bodies has not been determined. They were constant, and always occurred entangled in the fibrinous matter.

The dark masses found in the vomited matters at every change of the objective field, and which gives the colouring to this matter and to the urine, resembled black wool as the latter appears to the naked eye, and was evidently some carbonized substance, which is ill-defined and its explanation equally obscure. Highly carbonized colouring matter of the bile sometimes assumes a dark colour, perhaps from an excess of purpurine which remains uneliminated by the kidneys.¹ Urine passed later in the history of some cases when the renal secretions were more active we know presented this same black pigment under the microscope, and as we have said was a favourable symptom for the relief of the stomach. Whether or not there was a mutual reaction in this black matter between the stomach and kidneys I am unable to say; but one of the strongest indications in the treatment of the disease in our experience was to re-establish the renal secretion if possible. Whatever this colouring matter may be, whether the poisonous purpurine, hæmaphæin, hæmotosine, melanourine, or a mixture of these in some way, it forms the bulk of the matters ejected from the stomach and gives it the colouring so pathognomonic of the disease.

Treatment and its Results.—If the patient was seen upon the appearance of the first symptom and was strong and previously healthy, a full dose of calomel and jalap was administered: under opposite conditions, ol. ricini was by far the best purgative. The treatment pursued in the cases first sent to the yard hospital from the "Relief," was commenced with calomel and jalap pulv. ãã gr. x. This was followed all around by quinia sulph. gr. xx. Of these cases all recovered but one, and they received no medication besides the above. Another case I will venture to record, showing the *treatment*, and which, from its long and critical character, was interesting:—

Lieut. S——, U. S. Marine Corps, was attacked with a severe pain in his head and back, and was given the mercurial purge. After this I gave him quinia sulph. gr. xxx, and watched him carefully in his nursing. His case assumed a lower and more malignant form with intense thirst. Gave him potass. chlor. ʒj, in aq. f3viij, in which was placed a piece of ice; this was taken *ad lib.* Dry heat was applied steadily by bottles of hot water in a room of an equable temperature. Delirium and the graver symptoms continued to be manifested. Applied ice to his head and continued unremittingly the dry heat. Upon the disposition which appeared to bleed from the nose and mouth he was placed upon the solution of persulphate of iron, gtt. v, every two hours; this remedy acted in this as in many other cases in a manner eminently satisfactory. Upon the discon-

¹ Bird on Urinary Deposits, p. 169.

tinuance of the latter remedy he was placed upon muriatic acid, five drops every three hours until ordered north for recovery.

Whether the quinia, given in this case, at once directed it to a favourable issue by an influence exercised upon the ganglionic centres, I cannot say. But another young officer, more robust in health than the above, surrounded by precisely the same influences, was taken about the same time; he took no quinia, and died. Many other cases might be recorded, in which circumstances prevented the early use of quinia in large doses, which rapidly succumbed to the intensity of the epidemic. We cannot say that by this use of quinia these cases might have been saved, but severe cases recovered in which it was used. That sulph. quinia is not of any use after the violence of the disease is fairly established, I am fully convinced; as an illustration of this there was the case of a citizen, not under my care, however, who took no less than sixty grains of quinia sulph., in divided doses, through the day, but the result was fatal. This patient was then in that condition when delirium had made its appearance, and the sclerotica was densely injected.

Through the course of the disease, ice was most steadily administered, to relieve the great thirst, and with this the beverage of solution of potas. chloras. With the constant application of heat these remedies were certainly useful in the worst cases, but it was necessary to abandon them instantly when the fever abated. Sinapisms to the legs and epigastrium, and blisters to nape of the neck, when the head symptoms threatened, were constantly used. Hot mustard baths, when the apartment was of proper temperature (which could not always be obtained), were very useful. In the application of heat it is most desirable that there should not be a change of temperature of even five degrees. Upon the whole, we found that bags of hot sand and bottles of hot water placed under the blankets were best suited to external stimulation.

Any plan of treatment which does not make heat an important part will fail; even while fever exists it seems beneficial, and excites diaphoresis to the great relief of the patient. In all bad cases we assigned one nurse to each patient; women were employed because more attentive and careful. If by neglect of prescribed measures the skin was allowed to cool, this condition was quickly followed by retching and vomiting, but the renewal of the heat always corrected it, for a time at any rate. Many lives were undoubtedly saved by this plan.

Any hemorrhagic tendency was well treated during the course of the disease by the tr. chloride of iron or solution of persulphate in five drop doses, frequently repeated according to the urgency of the symptoms, and was usually well tolerated by the stomach; if not, enemas were resorted to. Clysters of ol. ricini and ol. terebinth. were used to free the lower bowels. As a stimulating diuretic, turpentine was useful either in shape of the oil internally, or turpentine plasters to back and loins.

Mercurials in this epidemic, except as purgatives, were not indicated, although given with a view of producing a decided effect. In fact, any plan of treatment which was not stimulating, almost from the beginning, was positively injurious.

Muriatic acid as a tonic measure was our chief reliance, and seemed in the whole course of milder cases to be most beneficial; almost every case during some part of its course was under this treatment, and I cannot but believe in its virtue. It was given in as high as ten drop doses every hour, and was well tolerated by the stomach.

To conclude, we have positive evidence that quinia given sufficiently early has a remarkably controlling influence, from the fact that nearly every case that became thoroughly under its influence recovered. We have negative evidence of its value in the fact that the vast majority of fatal cases were not influenced by it, in consequence of the stage of disease when they came under our notice, and very many of them died.

The result of our treatment was eminently satisfactory compared with that in other epidemics, and in consideration of the fact that all these were bad cases; for only the worst cases were sent to the hospital for treatment. We received about 260 cases; 58 deaths of this number were recorded. This is something less than 25 per cent. of deaths, and all of the cases were severe.

Preventive Measures.—Most perfect cleanliness is necessary, although at Pensacola it did not prevent the invasion of the disease when men were suitable subjects. Usual habits should not be departed from, and above all it is most necessary that clothing should be as thick as is compatible with comfort; under clothing should be worn fitting tightly to the skin. The spirit ration or regular stimulation which has become habitual should be continued in moderation. Equable temperature, and a control of all the intellectual faculties, tend to ward off the disease. A firm determination to resist, and forgetfulness of the surrounding pestilence as much as possible, increase the security. The depressing influence of the heat of the sun should be avoided, although recreation is necessary. Cleanliness of person, cool retreats, with agreeable society, add strength to the resisting powers. Negroes are more exempt; some of them were affected so far as to suffer from the head and back pains. Good food, nourishment in variety, and full command of the comforts of life, tend to preserve the health. Medication as a preventive measure is injurious. One attack gives immunity to the disease, as a rule. Quarantine is useful if far distant and absolute. Such in our experience were the measures of greatest value, and I should adhere to them as strictly as possible if called to pass through another epidemic.

Of the *exciting* or *predisposing* causes, we might mention that the measures just enumerated as affording the best chance of escape, if neglected,

act as exciting causes. But changes of temperature are first and strongest. Latent yellow fever, as is the case with miasmatic and other fevers, was influenced by increase of cold. Between Sept. 19th and 22d there was a fall of the thermometer of about 12° Fahr., and fifteen patients died. Between Oct. 6th and 16th there was a reduction of temperature of from 12° to 16° Fahr., and seventeen cases died. Between these periods of time, when the general state of the thermometer was high, an average of about 85° Fahr., there were occasional deaths; but it was only when the temperature was steadily lowered for three or four days in succession that the cases proved rapidly fatal. The epidemic, although it was checked by the fall of the mercury, was more decided and fatal among those already affected. Cases apparently convalescent, upon such changes of temperature, assumed the most violent form, in the same way as fear and anxiety by reducing the nerve force expose the individual.

The totally or partially unacclimated suffered most. I have seen a debauch in several instances to so increase the susceptibilities of individuals that the next morning found them labouring under the disease, although the same persons had been daily exposed for weeks. These cases generally terminated fatally. Sexual excesses favoured an invasion of the disease; a clerk who had escaped during the height of the disease, toward the close of the epidemic became *placée* with a mulatto woman, and was shortly taken with fever and died. All those who contracted the disease in the early history of the epidemic had been within the point of infection, that is, on board the "Relief," from which, at first, the disease was supposed to be contagious. This was subsequently disproved by the broad epidemic character of the disease. For instance, those two cases which occurred in the army that was most absolutely cut off from the point of infection, and the case of the little girl in the town of Pensacola, which was within the enemy's lines six miles distant.

Great fatigue, constant watching, or exhaustive exercise are exciting causes. Physicians, amid the trials of the pestilence, should be careful to observe studied regularity of habit in body and mind; the obverse of this is an exciting cause. The exemption of medical officers during the severity of the disease can only be explained by the fact that we were too much engaged in responsible cares and the scientific interest of each new case to catch the alarm natural to those who avoided the hospital and only were cognizant of an unmitigated state of the disease, as they saw the cart filled with dead bodies in the morning.

I conclude from this experience that yellow fever may originate in a ship when we have heat continued for two weeks at 90° Fahrenheit, and the hold of the ship is filthy.

That we must have three conditions for its propagation, viz: First, subjects susceptible to its influence; second, the germ; and, third, suitable

surroundings, as the filthy hold of a ship, &c., for the germ to thrive and multiply.

That quinia, if used sufficiently early and in large doses, will direct the disease to a favourable termination in many bad cases.

That a reduction of temperature of five degrees during the critical period will destroy the patient.

ART. III.—*Hospital Gangrene, as it occurred at Patterson Park, U. S. General Hospital, Baltimore.* By W. KEMPSTER, M. D., of Syracuse, New York.

HOSPITAL gangrene made its first appearance in the early summer months of 1864, shortly after the arrival of a large number of wounded received from the Army of the Potomac, *via* Washington; the men were necessarily crowded, and there was a lack of medical assistance, consequently it was impossible to bestow that care and attention upon them required in cases of gunshot wounds, especially during hot weather.

It was while the hospital remained in this crowded condition that the disease manifested itself, continuing in a greater or less extent through the entire summer and autumn, again making its appearance in December, four severe cases occurring in that month. In the entire number treated (between forty and fifty), constitutional symptoms presented themselves, in a degree which enabled the medical officers attached to the hospital to form a *prodiagnosis*. Most surgical treatises, and in the reports contained in the *American Journal of the Medical Sciences* for 1865, the constitutional symptoms, if mentioned at all, are regarded as *secondary*, or dependent upon the severity of the local disturbance; such, also, is the idea set forth in Prof. F. H. Hamilton's late work on military surgery. So far as my observation goes, however, this is not the case, all patients presenting the appearances to be described, with variations of intensity, from twelve hours to three days before the local effects are apparent. The first symptoms were usually headache, loss of appetite, general uneasiness, and lassitude; the tongue was often covered with a dirty grayish coat, sometimes it was glazed and dry; the skin was hot, and the perspiration checked; there was also considerable febrile movement; the pulse ranged from 90 to 120; the bowels were constipated, and it was usual for the patient to ascribe his illness to this cause; hence we were sometimes warned of approaching gangrene by a wounded man asking for a dose of physic, at the same time remarking that his head ached, &c. These symptoms increased in severity, until the disease had made its appearance in the wound;