upwards with prejudices lags miserably behind the age and time, and grows up stunted and deformed. Free exercise of the mental faculties is as necessary to mental power and symmetry, as freedom of the limbs to corporeal beauty. This truth all mental science teaches, and some of you cannot but know the reason why.

And now, gentlemen, as a conclusion to these humble and imperfect remarks on the academic practice of medicine, and our duties to this University, let me offer you the most cordial congratulations of the Medical Faculty on your promotion this day. You have chosen a profession which makes you free to seek after truth, and which opens the whole world of nature to your research. All success attend your labours, whether they be professional or scientific; and if pecuniary success should not be your lot, still may you find in the practice of your profession at least a modest competency, and in the search after its truths an abounding wealth of happiness.

ARTICLE II.—*On the Disinfecting Treatment of Typhus, Eruptive and Enteric.* By JOHN HJALTELIN, M.D., Inspecting Medical Officer of Iceland.

It has fallen to my lot to witness and treat one of the most dreadful epidemics of typhus that ever visited Iceland. The disease began in the northern part of this island during the winter of 1857–58, and was thence apparently communicated by contagion to the eastern, western, and southern districts of the country. During the winter of 1857 about ninety cases of this fever came under my observation, and it presented sometimes the character of exanthematous typhus, and sometimes of typhoid or “typhus abdominalis;” but although the sickness abated in the following summer, it again appeared in the autumn of 1858, and raged during the whole winter of 1859, and did not even cease in the summer months of that year, but continued its ravages through all the seasons of 1859 and 1860. In those two years no less than 900 cases came under my treatment, out of a population of about 10,000 inhabitants, although of this number there were many patients that I had no time to register. When the fever broke out in a farm or cottage, it generally attacked one person after the other, until most of the inmates of the house were infected; and it very often happened that strangers stopping in a house thus infected, contracted the disease. It was evident, therefore, that it was highly contagious.

In the beginning of 1860, the same fever was very often accompanied by malignant dysentery; and at this time also, when by far the greater number of the infected were suffering from typhoid fever, Asiatic cholera made its appearance, and was accompanied by rice-water evacuations and cramps, but happily, it was only

sporadic, and did not spread by contagion. During the last winter, 1860-61, the typhus fever was decreasing, although it still displayed its former malignity, and was attended, especially in the eastern part of this country, by great mortality. In some parishes of this part of Iceland, one-tenth of the inhabitants fell victims to the disease, a catastrophe which seems attributable to there having been an entire deficiency of medical men, and medical aid. The same phenomenon was observed in many other parts of our country, so that we have a strong argument against those who are of opinion that medical aid has very small influence on the mortality of malignant fevers.

In the last winter mentioned, about 122 cases of typhus and typhoid fever came under my treatment, and although the disease was becoming more and more sporadic, it still preserved the same characters of malignity and contagion as it had shown in former years. In the beginning of the spring, cases of malignant cholera seemed to gain ground, and were generally more common than the typhus itself, but the disease did not spread, and was limited to some fishermen's huts.

From this short review it will be seen, that, during the years 1858-61, this island was visited by three most malignant diseases,—viz., typhus and typhoid fever, dysentery, and sporadic cholera; happily, however, this last disease did not spread by contagion, although a few cases had all the symptoms of true Asiatic cholera, and in a few days terminated fatally. In respect to the probable causes of these malignant diseases during the aforesaid period, I shall now make the following remarks.

In the years 1856 and 1857, an epizootic of a special kind visited this island. This epizootic was nothing else but common sheep-scab; but, unhappily, there arose a prodigious dispute about its origin, and about what was to be done. Some, who believed that the disease was imported with some sheep from Scotland, desired to cut the matter short by killing all the infected sheep; while others (and amongst these were the veterinarians and myself) proposed that an attempt should be made to cure them, believing that the disease resulted only from the close packing of the poor animals in the winter, when generally little more than two square feet are allotted to each. But although the veterinarian or curing party were able to prove that their principles would lead to the happiest results, they were, nevertheless, compelled to succumb to their antagonists,—the slaughtering theory (having been practised in the former century when the same disease made its appearance) had, in spite of its sad result, been inherited by the people, and was destined finally to prevail. It was supported also by the governors of the island; accordingly, no less than 200,000 sheep, many of which were quite sound, fell victims to the adoption of that stupid and barbarous theory.

In the beginning of this madness—for it was really a slaughter-

ing madness—I had foretold that this proceeding would most likely lead to fearful consequences, especially on account of the great masses of meat heaped together in the small storehouses that are commonly attached to the Icelandic farm, the single apartment of which is used as a parlour, diningroom, and bedroom. I supposed—and experience showed that I was right—that my countrymen's uncleanliness, and their bad method of salting meat, would lead to the most dangerous consequences; and that so protracted a deprivation of sheepmilk, butter, and cheese, might not only be attended by a deficiency of healthy and nourishing diet, but also give rise to famine.

The sheep killed amounted in number to about one-third part of those contained in the island, and were intended to supply twelve months' nourishment to about 10,000 men. So convinced was I of the injurious consequences of this foolish enterprise that I wrote to the Board of the Sanitary College at Copenhagen, predicting what would happen if the Sheriffs of this country—who were its authors and executors—were not to be deterred from its prosecution. The Danish government upon this enjoined them to desist; the order, however, arrived too late, the slaughter having been already executed during the autumn of 1857, and the following winter.

Meantime, my predictions were realized. People coming from the country where large stores of salt provisions existed in great abundance, informed me that the odour of rotten meat was in many houses insupportable; they declared that they could neither stay nor sleep in them, and a short time afterwards I heard that typhus and typhoid fever had broken out in several parishes of the north, and both these diseases were subsequently extended by contagion to the southern districts.

During the winter the peasants came down from the highland districts to the fishing places near Reykjavik, and the surrounding districts. In many of these persons the malady already existed in its latent form. On arrival, they sickened and spread the fever in the fisher cabins, which were the more susceptible to its influence, as they had been overcrowded during the winter of 1858. From this time the disease advanced from hut to hut, until the majority of them were infected by its virulence; the most crowded huts were of course infected first and most severely; but by and by the better houses became infected also, towards the end of the winter of 1858. The mercury sank to 4° below zero, Fahrenheit, and continued there for several weeks. It was very remarkable to see how the typhus was for a time arrested by the severe cold, but re-excited when the temperature grew milder. This fresh outbreak continued until the end of May, at which period it ceased or abated, to reappear in autumn.

Before proceeding to my treatment of this epidemic, I will in a few words describe the ordinary symptoms exhibited in each form of the fever,—viz., in the typhus and the typhoid.

I. *Typhus*.

The symptoms of the first stage were generally,—diminished muscular strength, giddiness, aching in the back and limbs, weariness, unrefreshing sleep interrupted by unpleasant dreams, loss of appetite, constipated bowels, intercurring congestions of the head, accompanied by flushing of the face, sometimes followed by epistaxis, or, in females, by slight menorrhagia, white tongue with some flow of saliva during sleep, thirst, a certain amount of cough, and more or less oppression about the epigastric region. This stage generally lasted a week, and occasionally twelve days, although it was frequently only of from three to five days' duration.

The second stage of the disease generally commenced with a succession of mild or severe shivering fits, with more or less distinctly marked symptoms of catarrh, inducing, perhaps, the expectation of rheumatic or catarrhal fever. At the same time, cough, variable in its degree of acuteness, was also present; the respiration was hurried and often interrupted by sighs; the skin was hot and dry; the pulse very frequent, ranging from 100 to 130 in a minute; the tongue covered with yellow or white fur. The preceding symptoms were usually attended by severe cephalalgia, throbbing in the temple, suffusion of the eyes, and flushing of the face. Early in this stage the muscular strength was much weakened, the patient being unable not only to leave his bed, but even to raise himself from the pillow. When this stage had lasted for two or three days, the catarrhal symptoms, such as the cough and the oppression of the breast, became generally aggravated, and with them the fever itself. At this time there was almost constantly seen an eruption of the skin, which consisted of small roundish or irregular spots, of a dingy red colour, closely crowded together, and somewhat resembling flea-bites, but without a dark point in the centre. This eruption commonly appeared first on the chest and on the neck, but afterwards on the shoulders, forearms, and legs. When this eruption was of a bluish or dark colour, and formed large irregular spots, I was always pretty sure that the case was a malignant one; but when the spots were small and of a brownish or dingy red hue, the prognosis was far more favourable. After the outbreak of this eruption, the feverish symptoms were for a short time alleviated, the pulse was not quite so frequent, and the catarrhal symptoms, with the oppression of the chest, subsided; but this seeming alleviation was of brief continuance, as this stage in two or three days commonly passed into the third stage, or "*stadium nervosum*" of the German physicians. Some patients did not survive this stage, but succumbed to supervening phrenitis or pulmonary apoplexy. In those who survived, this stage was not unfrequently protracted to five or seven days, and during this period the amount of urea in the urine was in the majority of cases augmented.

The third stage was characterized by nervous symptoms; the

patient became debilitated, his muscular strength was quite gone, and he sank into a state of continual delirium, stupor, or coma, from which he could hardly be awakened by cold water affusion, and, even when this could be effected, he soon relapsed into stupor. The other symptoms in this stage were convulsions, hiccough, involuntary evacuations of fæces and urine, trembling of hands and legs, spasmodic and difficult deglutition, and sometimes complete stranguria, which could be removed only by the catheter. Persons who did not survive this stage died of nervous exhaustion, especially from paralysis of the respiratory nerves; dry, darkly furred tongue, weak and accelerated pulse, cold extremities and facies hippocratica, announced approaching death.

The duration of this stage was generally limited to four or perhaps seven days, and urea was found in large quantities in the urine.

The fourth, or critical stage began on the ninth, eleventh, fourteenth, or seventeenth day, and the following were the most remarkable symptoms: When the patient one or another night had seemed to be in extreme danger, a change took place. Instead of sinking into stupor or coma, the patient (sometimes after prolonged insomnia) fell into a sound and refreshing sleep of six, eight, ten, or even twelve hours; the skin, formerly dry and pale, became soft and moist; and when the patient awoke he would answer questions sensibly, although his voice was still weak and trembling. He seldom, however, recollected what had happened to him, or where he had been during his disease. After some more sound sleep and slight perspiration the patient gained in strength, his pulse beat more naturally, his appetite improved, the dark sordes on his lips and tongue disappeared, and he gradually entered the convalescent or fifth stage. His recovery, however, was often interfered with, or retarded by some fatal accidents, bedsores, parotitis, or gangrene of the lungs, which also sometimes occurred in the earlier stages of the disease. Many convalescents regained their health with a temporary loss of their hair.

From the preceding short description of our Icelandic typhus it will be seen that this disease greatly resembles the typhus exanthematicus or contagiosus of Dr Hildenbrand, which is admirably treated of in his well-known monograph, "*Ueber den ansteckenden Typhus*" (Wien, 1810), and which may still be looked upon as one of our most celebrated works on this subject.

II. *Enteric Typhus or Typhoid Fever.*

About a third part of all those affected in the aforesaid epidemic in our country suffered from enteric typhus, which also may conveniently, as is generally done by the German physicians, be divided into several stages, according to the well-marked progress of its course. The first, otherwise named the premonitory or latent stage, was well marked by the gastric symptoms. The patients

were generally first affected by dyspepsia; they had slow or deficient appetite; complained of some pain in the epigastric region, and had a heavy or dragging sensation in the hypogastrium. Sometimes, moreover, they felt pain about the liver or spleen; they were generally costive, or complained of slight mucous diarrhœa, and recurring pain below the umbilicus; their tongue was covered with a white or greenish yellow fur, and they often suffered from nausea and vomiting of a dirty green-coloured fluid. Besides this they complained of headache, especially in the forehead, pain about the back, and intermittent weariness and uneasiness in the extremities. Their muscular strength was in this stage rarely impaired, but they told me that they easily grew fatigued, and were liable to be attacked by palpitation if they laboured or walked for some hours uninterruptedly. They often looked pale and melancholy, and feared that some dangerous or malignant disease was impending. Their skin was unusually dry, and it was with great difficulty that they perspired, even when taking exercise.

This stage now and then lasted for a week or more, but generally not longer than twelve days.

The second stage always commenced with a more or less violent fever, followed by painful headache, especially in the forehead, hard and frequent pulse, dry and hot skin, flushed face, and suffusion of the eyes; on pressing the hand more or less uneasiness was felt in the right ilium, and in many cases there was a painful sensation similarly complained of in the hepatic and splenic regions. Although costiveness in this stage was a common symptom, mucous diarrhœa also occurred during its entire prevalence. Most of my patients had sleepless and restless nights, or their short and unrefreshing sleep was interrupted by unpleasant dreams and hallucinations of hearing and vision. Many drunkards were in this stage seized with delirium tremens, which often terminated in death, and was, therefore, a most dangerous complication. Some young ladies of sensitive temperament fell into a continued "delirium nervosum," which in some respects resembled delirium tremens, although the cause was evidently quite different. Other patients fell into a phrenitic delirium, which was in a very few cases terminated by apoplexy.

The duration of this stage was generally between five and seven days.

The third stage (the "stadium nervosum" of the German physicians) was characterized by extreme weakness, and by nervous symptoms. The patient was quite unable to rise, and slipped from the pillow towards the foot of the bed; his voice was scarcely audible, and he swallowed with great difficulty; the tongue was dark and tremulous, and was protruded with hesitation; and the hands and limbs trembled also. Some patients, moreover, were constantly delirious, and made efforts to leave their bed, but, on attempting to do so, sank down instantly on the pillow. Most of

them were tormented by diarrhœa, the evacuations being dark green or yellow ochre, extremely foetid, and often sanguinolent. Others were affected with tympanitis and constipation, constant hiccough and convulsions; and this condition was usually associated with retention of the urine, the water constantly dripping from the urethra, and occasioning erythema and gangrenous ulcers in the parts most exposed to pressure. In this stage small rosy red spots appeared on the skin, especially on the abdomen, breast, and arms; and some few patients had sudamina, a symptom which was almost invariably indicative of a fatal termination. The pulse was very weak and frequent, and the pulsation of the heart as irregular as that preceding syncope. In a few cases softening of its muscular texture occurred previously to dissolution.

This stage often passed very gradually into the fifth, or so named "stadium criseos" of the Germans, and for the most part commenced with perspiration and sound sleep. After the latter the patient's mind was observed to be clearer, but the sense of hearing and the perceptive faculties were slow in regaining their original vigour. Convalescence was sometimes protracted for many weeks, and entire strength recovered only after the expiration of one or two months. The abdomen also was sensitive for a long time after the complete cessation of the febrile symptoms, and want of due care in diet, or premature exposure to cold, often occasioned dangerous relapses. The gangrenous ulcers that so often occurred in the typhoid or the eruptive form of the disease, were difficult to cure, and sometimes lasted two or three weeks, rendering recovery slow and doubtful.

The typhoid in its third stage sometimes terminated in gangrene of the lungs, indicated by a dingy green tenacious expectoration of an offensive odour, and associated with great prostration of strength, mucous rhoncus, and a very frequent and feeble pulse; few, however, recovered after these dangerous complications.

In the preceding abstract, I have briefly recounted the various symptoms of our epidemic fever, when it was permitted to run its entire course without being checked by the interposition of art. The period of its duration would, however, have to be lengthened by a term of from twenty to thirty-six days, or even more, if we were to take cognizance of its multifarious sequelæ.

I saw many cases in which the malady was allowed to run on through all its stages, without the adoption of any active remedial measures to arrest its progress. At the beginning of the epidemic I was obliged to ascertain whether it was safer to employ drugs, or to confide solely in the vis medicatrix, especially as the simpler method numbers so many votaries in France, Germany, and the Scandinavian north, to say nothing of England, where, in former days, physicians made so bold and free a use of medicine. During the prevalence of the epidemic, I read articles in several numbers of *The Lancet* of 1858, in which the treatment to which I have alluded seemed

highly recommended, and in which several medicines which had formerly been considered useful not only in enteric typhus, but also in eruptive typhus, were either condemned or looked upon with suspicion. This was especially the case in an otherwise well-written article by Dr Stephen Ward of London (see *The Lancet* of 27th March 1858, p. 310), where the author says, "that we should be cautious in administering even the mildest aperients." In another passage, he says, "Although valuable in the relief of symptoms, treatment did not seem to exert much influence in curtailing the duration of the disease. If not cut short by a fatal termination, the fever usually ran on to the end of the third or fourth week, and its sequences occasionally rendered convalescence very protracted." Moreover, most of the new medical works which I have seen from France and England seem to recommend only the symptomatic treatment of eruptive and enteric typhus, a treatment which I have seen extensively pursued during the prevalence of several epidemics in Norway and Sweden, and Germany. During my twenty-five years' practice it has fallen to my lot to observe many of these fevers, especially enteric typhus; and during my fifteen years' practice in Denmark, many of them fell under my treatment. I had formerly seen a considerable number of such cases in the wards of Copenhagen, Berlin, and Hamburg. The results of this so-called symptomatic treatment were, however, as far as I know, so little encouraging, that I myself felt no desire to follow it. In this country, moreover, it would have been impracticable. I preferred, therefore, to go on in my own way, and generally practised a mode of cure which I had previously tried with success.

But, in order to know exactly whether my own plan was really preferable to the rational or expectant method, it was of course necessary to submit both to trial, and this I did from the very beginning of the epidemic until I could no longer entertain any doubt as to the result. The remedial agents of the expectant treatment were principally pure cool air, cleanliness, as far as possible, *eau sucrée* or acidulated beverages, and at the commencement a diet of a mild unstimulating character, subsequently rendered more and more nutritive, according to the exigencies of the patient, and his need of support. That the air might be as pure as possible, ignited charcoal was used to destroy any deleterious substances, or the floors of the rooms were sprinkled with Sir William Burnett's chloride of zinc. Anything calculated to disturb the patient was strictly prohibited, and mild enemata were employed to counteract constipation or costiveness. In order to prevent all bad and noxious exhalations, the water-closets should always contain an ounce or two of sulphate of iron. The contents should be removed as soon as possible, the bed-clothes should also be changed every day, and the surface of the body should be sponged or washed over with warm water. If there was severe headache attended by much throbbing in the temples, applications of cold water were ordered, and, in cases of tenderness of the right iliac

region, oleaginous frictions were found serviceable. If diarrhoea occurred, rice-water or decoction of salep was exhibited, and especial reliance was placed upon musk in those comparatively rare cases which were complicated by nervous derangement indicated by spasm or hiccough. If retention of urine supervened—and this was a frequent consequence—the catheter was employed. Subsequent affections, such as gangrenous ulcers, erythema, parotitis, and gangrene of the lungs were treated upon general principles, and a moderate use of wine was allowed during convalescence.

Some patients who were thus treated had sometimes before my arrival taken emetics or purgatives, or had been bled, but they were immediately cautioned against the repetition of similar indiscretions.

I must now describe my active or positive treatment, but before doing so must make some remarks on the arguments which guided my mind in its adoption. For this, however, it will be necessary to go back a little, and show how my reflections were matured.

After having read much of what had been written on eruptive and enteric typhus during the last twenty years by the best writers in England, America, France, Germany, and Scandinavia, I perceived that the widest discrepancy of opinion existed in reference to both theory and treatment. Many of our best physicians are of opinion that typhus fever originates from a specific poison, and some of them believe that this poison is of the same kind in the enteric as in the eruptive form of the disease. This opinion has in Germany been maintained by Professor Canstatt, one of the most learned medical writers on the Continent; it has, moreover, found its advocates in England, as may be seen from several articles in *The Lancet* and other medical journals of Great Britain, although there are some writers who maintain a different opinion,—among others Dr Stephen Ward (see his “Clinical Illustrations of Diseases of the Abdominal Viscera,” alluded to in *The Lancet* of 1858, pp. 310 and 359). I can scarcely think, however, that physicians who support the latter opinion have witnessed any epidemic of eruptive fever upon a large scale; had they done so, it could not have escaped their observation that at least patients attacked by the eruptive form of typhus are at the same time more or less affected with diseases of the abdominal viscera, especially the colon and ileum, and that in many cases of this nature—indeed, more frequently than is generally believed—there evidently exists an affection of the mucous membrane of the ileum near its termination in the cæcum. I still remember an extensive epidemic of eruptive typhus that broke out near Copenhagen in the year 1838, the patients of which were brought into the so-called common wards of the hospital in the town, and treated by Professor Wendt, one of the principal physicians. I was then, as a young practitioner, directing especial attention to the course of that disease, and I observed in the bodies of some of those who died considerable enlargement of Peyer’s glands. In our epidemic I found, on the contrary, that a great many patients

affected with eruptive typhus displayed preternatural sensibility in the right iliac region, although from other symptoms there could be no doubt as to the true nature of the disease. We know, moreover, that the physicians of Paris have witnessed epidemics of this disease, in which gastro-intestinal irritation exists in the majority of cases, and that they have regarded this state of the intestinal canal as the essential cause of the disease. I must here add that, in the many hundreds of cases that have fallen under my cognizance during the last years, I have found very few patients entirely exempt from congestion of the mucous membrane of the colon and the ileum.

Dr Stephen Ward says, in his very interesting "Clinical Illustrations of the Diseases of the Abdominal Viscera," "I can quite conceive the possibility of the specific exciting poisons of typhus and enteric fever co-existing in any given locality, and, as a consequence, the possibility of one or two individuals residing in such locality being affected with typhus, the other with enteric fever, or of one individual being affected with the two diseases at once." He then says, further, "that most medical men in large towns will have seen the co-existence of scarlatina and measles." This may be, but I doubt very much whether scarlatina and measles have been observed in the same patient at one time. I am, moreover, very doubtful about the distinction that this physician and many others have made between the rose-coloured and the rubeolate or mulberry eruption; and the marked difference of opinion existing at present among the physicians of the Continent apparently demonstrates that on this subject there has been nothing irrefragably established. In the typical form of the disease in which the eruption appears, the number and magnitude of the spots will be found to vary considerably. I have seen them pale, roseate, dark red, and almost black. I cannot, therefore, agree in attaching, as many learned authors do, any very high importance to the precise nature of their tint. Professor Canstatt, who has written a most accurate description of all the cutaneous eruptions of exanthematic and enteric typhus, and who has observed those fevers in all parts of Europe, confesses that the colours of the true exanthema in eruptive typhus may very often be the same as that of the petechiæ so often seen in enteric typhus. If this be conceded, the diagnosis will chiefly depend on the degree of elevation and size of the spots, and the anteriority or posteriority of their appearance; for in genuine enteric typhus the petechiæ will seldom be seen before the ninth day. Be this as it may, I think that we must rely on phenomena of a more invariable character to gain any close approximation to the truth.

Probably most physicians who have seen and treated the eruptive and the enteric typhus will agree with me in considering that the symptoms as well as the causes of both these diseases are nearly the same. Both may arise from putrid effluvia, overcrowding, imperfect ventilation, bad water, uncleanness, innutritious, ill-

dressed, or unwholesome food, or too frequent use of animal food. To these may be added an irregular life, exhaustion, or contagion. I have no doubt of its contagiousness, although I am aware that this is sometimes denied. It has, however, been clearly demonstrated in a monograph emanating from the pen of the eminent Danish physician, Dr Trier. In Iceland I have found so many proofs of this, that a complete enumeration of them would protract this paper to a tedious length. Although Dr Stephen Ward and some English physicians doubt or deny it, I am myself prepared to advance the same proposition as Professor Canstatt, namely, that the contagiousness of enteric typhus can be contested by no unprejudiced observer.¹ On the Continent, with the exception of perhaps a small minority in France, there exists almost an entire unanimity of opinion.

An accomplished English writer, Dr Charles Murchison, Assistant-Physician to the King's College Hospital, and to the London Fever Hospital, in his most interesting contributions to the etiology of continued fever, is of the same opinion; for he says, in *The Lancet* of 8th May 1858, p. 464, "Typhus is eminently contagious. Typhoid fever is also contagious, but in a more limited degree, and possibly through a different medium." This is my opinion also. Typhus usually arises from inhalation of bad air in overcrowded dwellings, but typhoid from a great amount of organic impurities in water, or an immoderate use of animal food, especially if it be of an unwholesome character, and the persons taking it have digestive organs naturally delicate. This, however, does not in any way disprove the identity of the typhus poison and the typhoid,—for we know that decaying organic matter may engender either.

If we look closely into the predominant symptoms of both diseases, we shall find these symptoms are very like, and have only to suppose that the as yet unknown organic poison acts in typhus especially upon the brain, the lungs, and the skin, while in the typhoid fever it has acted more upon the mucous membrane of the ileum and cæcum, from which there arises an hyperemic state in the Peyer's glands, many times terminating in inflammation, suppuration, and gangrene. That this is really so I have been convinced of in some cases of our typhus, where the cutaneous exanthema did not make its appearance on the fourth or fifth day. In such cases I generally found more or less pain by pressure of the hand in the right iliac region, followed by diarrhœa, or with ochre-yellow pea-soup-like dejections. In some of these cases exanthematic eruptions were seen on the breast at the end of the fifth day, but it seldom then made its appearance on the extremities.

Besides the aforesaid, one symptom convinced me of the identity of the typhus and typhoid poison, and this was the truly specific odour exhaled from the patients in both these diseases. I have

¹ Handbuch der Medicinischen Klinik verfasst von Dr C. Canstatt. Erlangen. 1847: Zweiter Band. Pag. 572.

read that this same odour has been remarked by the genial medical writer, Dr Hilario Barlow; for he says, in his "Manual of the Practice of Medicine," page 706, "Besides this, there is an odour peculiar to different fevers, as typhus, scarlatina, and small-pox." The odour of small-pox is very well known, and has even been adduced amongst the most characteristic signs of this disease by the old medical writers. I still remember that I, as a young medical student at Copenhagen, was obliged to remark, in every journal of those affected with small-pox, whether there was a "halitus variolosus" or not, in order to be able to give a right diagnosis of the fever before the eruption. The odour of small-pox is very like the odour of salted herrings; and the odours of scarlatina, the measles, and the Asiatic cholera are so specific, that we must wonder they should not already have been well described and put down in our handbooks of medicine as one of the most characteristic diagnostic symptoms of these diseases. I think Dr Hilario Barlow quite right in advising the young medical students to cultivate all their senses, and especially the sense of smell, for had this been done in an exact manner, and with due precautions, there could be little doubt about the identity of typhus and typhoid poison. I know very well that this is a more easy trial in small Icelandic cottages than in the large and lofty wards, and it is on this account that I by the circumstances in our country have been more able to do so than my medical brethren in foreign countries. The odour of the typhus poison is so decided, that it is well known even among the peasants in this country, and they have given it the name of typhus odour, or of "Sóttarlykt," which means the "fever odour." When people come to ask my visit to one who is seized with typhus, they generally say, "We wish very much you would come to see the patient, for he is very bad off, and there is a strong fever odour about him." Sometimes they said, "Our patient is not very sick, but we are afraid of him, because there is a strong fever odour about him. We wish, therefore, very much that you would come and see him, because it is most likely the typhus, and we might also be sick by the contagion." It is very natural that in the small Icelandic houses (where there generally is allotted only about one hundred cubic feet of air for each individual) the typhus odour must be very strong and penetrating, and so it really was, for it might somewhere be called insupportable. I now tried if I could make out any difference between the odour of eruptive typhus and that of the enteric typhus, but, after many repeated trials, I came to the same conclusion, namely, that I could not find out any real difference. The odour was, of course, strongest in the overcrowded dwellings; but it was strong enough to be clearly perceived where two or three patients were in the same room of the larger ones. When the rooms were well ventilated, the odour would be weaker, but it never quite ceased unless strong and effective disinfecting compounds were used: it was, therefore, very often necessary to continue them

for a longer time, day and night, before the odour was wholly destroyed. Amongst all the disinfecting compounds I tried to this end, nothing was so effective as the iodoform; but its high price often prevented my using it as a disinfecting remedy for the rooms. Chlorine gas and bromine came next, and I found Sir William Burnett's chloride of zinc solution very serviceable. In the meantime, I found out that the chlorine gas and the bromine were nevertheless to be used with great caution, in order that they should not occasion cough, or affection of the lungs, when the air in the sick-room was too strongly impregnated by them. This effect was never seen, either with Sir William Burnett's solution of chloride of zinc, or with the iodoform, and I therefore generally used one of these last-named disinfecting substances, or charcoal. It was a fact worthy of reminding, that during the highest state of the epidemic in the spring 1860, there seemed to be a specific character of the air. The air would, namely, in the dwelling-rooms, very soon be corrupted if the windows were not thrown open many times a-day; and there was, I daresay, a bad "constitutio aerica;" but whether this was originated from the calm and the high barometer pressure which prevailed at that time, or by a want of electric tension in the air itself, I cannot tell. I have once before, in epidemic cholera, observed the same phenomenon, and, as far as I can remember, it has also been observed in this country during malignant influenza epidemics. The older physicians had a strong belief in the bad effect of what they called "constitutio aeris adynamica," and they believed that many malignant diseases might only arise from that cause; but I am inclined to look upon such a bad air-constitution only as a coefficient cause to the malignant epidemics.

Having made many experiments with the aforesaid disinfecting compounds, I very soon found out that they did not only destroy the odour of the typhus poison, but would also prevent other persons, who were obliged to remain and sleep in the same room as the patients, to be infected with typhus; and it, therefore, very soon became an incontestable fact, that these disinfecting remedies would not only destroy the odour of the typhus and typhoid poison, but that they did also destroy the poison itself.

During this time I made some experiments to know whether the chlorine gas and chlorine water would destroy the vaccinia or not, and all these experiments went out in the affirmative. It is well known that one Dr Schlegel in Prussia made many trials to destroy the contagion of Asiatic cholera during the years 1831, 1832, 1838, 1848, and 1849, and that he succeeded (see *Jahresbericht ueber die Fortschritte der Heilkunde*, 1849, von Dr Canstatt and Eisenmann, p. 134); and it is, moreover said in the *London Medical Gazette* for October 1849, that Dr W. Reid made the same experiments with the best success.

The renowned Dr Eisenmann in Germany tried chlorine-water in small-pox, and succeeded very well indeed. I was during three

years the superintendent physician to the quarantine for cholera in Denmark—for the years 1848–52 inclusive—and during this time I made some experiments with chlorine gas on those that came into the quarantine from infected harbours, and seemed to be infected by the contagion, and sure it is, that cholera did never spread from that quarantine, but broke out in Copenhagen half a year after the quarantine had been abandoned by law.

I now made up my mind and resolved to try the internal use of the different disinfecting remedies. I could do this with the more hope of good success, as I had seen chlorine-water used internally against the enteric typhus in Berlin, and as I knew that Professor Schönlein, the learned physician to the late king of Prussia, had formerly, in his clinical lectures on typhus and typhoid fever, recommended this remedy.

I have never been any great admirer of the “nothing-doing” or the so-named expectant practice, and I have seen plenty of its sad results. I must frankly confess that such a behaviour as is often recommended by the expectant physicians is strongly against my feelings, where any hope may be to do something positive, and I wish sincerely that our modern expectant medical practice might as soon as possible be transformed into a real and a more positive practice; but I think that a positive practice ought always to be built upon sound and exact physiological and chemical principles.

There is now-a-days, as before mentioned, even amongst the learned physicians, a general belief that we ought to allow the typhus and the typhoid fever to run their own course undisturbed by our art, only putting some physics against its most fearful symptoms, in case of need; but, notwithstanding the great respect I owe to my learned brethren, I think this is a great mistake which ought to be abandoned as soon as possible. The most of the physicians of our times admit the existence of the typhus and typhoid poison; but, in so doing, it seems not very consequent to tolerate a poison acting upon the system without trying to destroy it, if that is thought to be possible. Should we not, for instance, find it a great mistake, if we in a poisoned patient only would have the system itself to act against the swallowed poison? Of course, we shall in every instance of poisoning observe certain phenomena of the poisoning effect, and we may always find that the system will show a reaction against the poison itself, and this may then cause a certain succession of phenomena in some way very like that which happens during the action of the typhus poison on the body, and the reaction of the system against the poison. It therefore seems to me that the effect of the typhus and typhoid poison can be compared with certain narcotics acting upon the system,—viz., the action of some stupefacientia and deliriantia on the brain and the nervous system. Now as it would not be right or advisable to do nothing in case of poisoning by strychnia, morphia, aconitina, atropina, or other vegetable poisons, so I think it not quite right to do nothing against

organic poisons, in whatsoever form we might have to deal with them. It is true that the typhus and typhoid poisons may be generated in the system itself; but even in that case, I think we ought to do something in order to prevent such a dangerous accident; this seems also to be accepted by all medical men, at least to a certain degree, and all our sanitary measures are invented and tend to that purpose. But notwithstanding this, there seem still to be several circumstances in this respect, not as yet well taken into due consideration. The cleanliness in our dwellings and rooms in every respect is certainly a "*conditio sine qua non*," if we shall hope to get rid of fevers, but I think that our body, and especially our stomach and bowels, ought also to be cleaned in case of need. I know very well that purgative medicines may be abused, and are in truth often indiscriminately administered; but this, I think, is a common fault in our days, and has nothing to do with the right use of them. Sir Henry Holland who, in his *Medical Notes and Reflections*, so eminently clearly has treated this subject, and warned against the abuse of purgatives, says, page 454, "In truth there are cases where the bold and steady persistence in this method produces effects attainable in no other way. Such is especially the fact where the head is the part affected;" and he adds afterwards "or, again, where the body is disordered by certain morbid matters collected and circulating in the blood, the removal of which can thus only be speedily and sufficiently obtained. The latter case, of which I have spoken more at large elsewhere, is one of much importance in pathology. I may describe it briefly here, as that attested in practice by the very large and long-continued discharge of dark grumous matters, usually termed bile, and understood to come from accumulation in the liver; but which, I doubt not, to be secreted in great part from the membrane or glands of the intestines, and to be a gradual separation from the blood of matters noxious to the system." These remarks of this able and learned practitioner are worthy to be remembered and brought into use in due circumstances. I remember very well when I was in Germany and Scandinavia, that the doctors of these countries said, "the man was seized with gastric fever, but this fever is now becoming a nervous one." Those so-named nervous fevers were nothing but the latter stages of an enteric typhus, which, in its premonitory and first stage, had shown predominant symptoms of what we generally term gastric state (*status gastricus*), and this, I think, is a very common accident in the most epidemics of this fever. It is remarkable to see how the names "*febris gastrica*, *febris biliosa*, *febris mucosa*," have disappeared from the newer handbooks on practical medicine, and are now substituted by the name of enteric typhus and even relapsing fever, and this seems to indicate that our names for fevers are not very much to be relied upon. It is generally believed that the enteric typhus cannot be curtailed, but how can we know that this is really so? I observed many facts in this

epidemic that convinced me of the contrary truth; many patients who had all the premonitory symptoms of an enteric typhus, even with some diarrhoea and painful sensation by pressure of the hand in the right iliac region, recovered after some full doses of calomel, which then never failed to produce very heavy dejections of dark or dark-green grumous matter of the most offensive odour. The same grumous matter was also seen to continue for some time in those patients where the disease was either strong or advanced too far to be cut short by proceeding thus; but I must here remark, that in all instances of our typhus and typhoid fever, purgatives produced a good effect, and even where diarrhoea was observed from the beginning of the fever. I, therefore, wholly agree with Professor Canstatt, who, with his great experience, has found that diarrhoea in the beginning of enteric typhus does not at all contraindicate the use of purgatives. Meantime, I must confess that in speaking of the good effect of purgatives in typhus and typhoid fever, I refer this chiefly to the outset or the first stage of these diseases, and I think that in doing so, I will agree with many of the experienced authorities in our century. Sir Henry Holland says in his chapter on the abuse of purgative medicines, "There can be no doubt of the fitness of using purgatives in the early stage of most fevers."

It is a well-known fact, reported in many of the better works on practice of medicine, that the most learned German physicians have strongly recommended the use of calomel in the outset of typhoid fever, and amongst those I will only mention the names of Professors Schönlein, Canstatt, Sicherer, Rösch, Scharlau, and Richter; and it is, moreover, well-known that Dr Labarraque cured 28 out of 30 patients affected with enteric typhus by his "*Liqueur de Labarraque*," which was nothing else but a saline purgative. In short, I was formerly so strongly convinced of the good effect of purgatives in malignant fevers, that I always made a bold use of them in our epidemics, and got by my experience to that point of evidence, that I at last looked upon them as quite indispensable, both in eruptive and enteric typhus. I was of course led to this by long and melancholy experience; for I always found that when purgatives had been either not used at all or insufficiently administered, I was, without exception, in the latter stages of those fevers, sure to meet with the most malignant symptoms, as meteorismus, continued foetid diarrhoea, malignant ulcers in back and on the hip-joints, the greatest nervous depression, stupor, and gangrene of the lungs.

Regarding the use of emetics I was much more cautious. I know very well that they are still used by many physicians in these diseases, and are, of late, even recommended by the very highly experienced Dr Jackson in America (see the *Association Medical Journal*, 26th January 1856, p. 69); but, nevertheless, I have very little confidence in their use in typhus and typhoid fever, except in a very few cases, when, in order to clean the stomach from impurities,

there may be rational demand for them. When I was in Copenhagen I saw them seldom do much benefit; in our epidemics it has been the same. Many physicians formerly believed that they might curtail the typhus and typhoid fever, if they were duly given in the outset of these fevers; this may sometimes have happened, but I think it in many cases rather to have been a result of their purgative effect than the emetic virtue. For our epidemics they had many times been called in use before my arrival to the sick, but I very seldom saw any good effect of them, for they generally weakened the patients and never curtailed or mitigated the fever.

After what has now been said, it will be easy to guess the indications for my disinfecting treatment of typhus and typhoid fever, which were,—

1st, To prevent overcrowding in the farm-huts and cabins as far as possible, where this in any way could be done.

2d, To have the windows thrown open as often as the season would allow it, and make holes for ventilation where this could be most effectually done for purifying the air.

3d, To destroy every offensive odour about the sick, and even the smell of the sickness itself.

4th, To introduce cleanliness in every respect.

5th, To clean the bowels of the patients as soon as possible in an effective and perfect manner.

6th, To destroy instantly the odour of evacuations from the patients.

7th, To use internally disinfecting medicines in a bold and consequent manner.

8th, To support the strength of the patients by easily digestible but nourishing foods.

The first indication could very seldom be fulfilled, but it was done whenever possible. The second indication was for the most part tolerably executed, especially when the people got afraid of the contagion, and therefore dared not shut their windows, but followed for the most my advice in opening them.

The third indication was, after the lapse of some time, when the people had seen the good effect of it, boldly executed; and the remedies applied to this purpose were the aforesaid disinfecting compounds,—viz., chlorine-gas, Sir William Burnett's chloride of zinc solution, iodoform, and charcoal.

The fourth indication met with many obstacles, and could seldom, on account of bad habits or poverty, be executed as it ought to have been, or would have been, if cleanliness were a more common virtue in this country.

The fifth indication was fulfilled by administering a full dose of calomel, sulphate of magnesia, or sulphate of soda, all in large and repeated doses, according to age and other circumstances. The calomel was generally given in a dose of ten to twenty grains every day or every second day, until the fetid odour of the dejections was

gone. As the effect of this treatment, I may mention the lessened tenderness in the right iliac region and in the whole abdomen, lowering of the pulse, diminished headache, and more clear consciousness of the mind, when from the beginning there had been stupor or coma. In some cases sulphate of magnesia was given in a dose of a half or one ounce, until I was pretty sure of the bowels being well cleaned, and all bad odour of the evacuations had disappeared.

In order to execute the sixth indication, sulphate of iron was generally put into the water-closets before they were used; but, in some cases, chloride of lime was used for the same purpose. By these disinfecting compounds no odour of the dejections could be felt, although the patients had very large and noxious-smelling evacuations. I think that every one who knows the small and dirty Icelandic huts will agree with me that this is a quite indispensable proceeding to purify the air, where many patients are crowded together in small rooms. This method seldom failed to produce a happy effect upon the patients. The seventh indication was executed in several manners. If the patients were supposed to have strong and healthy respiratory systems, they were made to inhale iodoform or chlorine gas mixed with the air. The former remedy was most frequently used, and the good effect of it (according to my experience) is undeniable. It was in some instances given internally, dissolved in ether, and seemed often to produce a well-marked relief, and especially it was observed to check coma and delirium. The chloride of lime was never used internally, but the patients were often made to inhale the vapour of a concentrated solution of chloride of lime, which was managed in this manner:—Linen strips were dipped in the solution, and hung up to dry by the bedside, which caused a continuous chlorine gas exhalation in the room. By patients with weak and irritable lungs the iodoform was always preferred to the chlorine gas.

The eighth indication, namely, to support the strength of the patients, was fulfilled by nourishing food and decoction of bark; and this was sometimes recurred to in the third stage of the fever, in order to prevent death from exhaustion. It seems to me that many physicians are too much afraid of using nourishing diet in typhus fever, forgetting the great loss of nitrogenous compounds which this sickness, by the large excretion of urea, produces. I have seen many typhus patients in this country, who, as soon as they were able, took very nourishing food, which would never be allowed in the hospitals of Europe, recover speedily; and, comparing this fact with the languishing and protracted recovery in the hospitals, I conclude that nourishing food in the latter stages of this fever is quite indispensable.

As to the result of my treatment, I am obliged to make some remarks, and in so doing it is necessary to mention the ravages of the typhus fever in our country during the years 1859 and 1860. In the northern part of this island, and on the western shores, a

good many patients fell victims to it; so that in some parishes the mortality was no less than 1 in 16, or even 1 in 14, of the whole population. In some parishes every tenth inhabitant died from the sickness; and in many places, where no medical aid could be obtained, the mortality of the whole population for the year 1860 was 1 in 15 or 16. At the same time the mortality for the town of Reykjavik was only 1 in 29, and for the adjacent parish 1 in 27. Being the whole time obliged to go from one hut to another, and, besides, to make many visits in the neighbouring country, it was impossible for me to calculate the number of my patients in a perfect and accurate manner. I only know this (as aforesaid), that during the years 1858-61 I have had a number of not less than 900 cases of typhus and typhoid fever under my treatment, and that out of this number I have lost no more than 30 patients from this disease. In a neighbouring parish the number of the patients was 95, and out of this number only two died. I am, therefore, inclined to believe that if my disinfecting treatment had been carried on under favourable circumstances, the result might most probably have been still more conspicuous.

It is, I think, an acknowledged fact, that the eruptive and enteric typhus are dangerous fevers; and, although some physicians believe that the eruptive typhus is less dangerous than the enteric typhus, we have in this country, during the last epidemia, proofs of its malignity, which led to the enormous mortality of 1 in 6 of the inhabitants in some places. Almost the same fatal mortality as happened here, occurred during the last epidemia in the Westmanna Islands. The physician of that place fell at the outbreak of the epidemia a victim to the typhus, and out of 400 inhabitants 40 died afterwards. In some parishes in the east part of this island it is related that the mortality sometimes rose to 1 in 3 of the affected.

Mortality of typhus is, as we know, very variable, according to the nature of the epidemic constitution and other circumstances. In Hooper's "Physician's Vademecum," fifth edition, it will be seen, page 274, that the mortality of adynamic fevers in Edinburgh and Glasgow has very often been 1 in 10, and even 1 in 6 or 7, or as great as in some parishes of this island during the last epidemical typhus. From several articles in the *Lancet* I learn, moreover, that mortality of typhus in the hospitals of London is very often found to be 1 in 10, or even 1 in 8; and, according to Dr Trier of Copenhagen, the mortality of typhus and typhoid fever in that city has generally been 1 in 8, or sometimes 1 in 6. In Germany and France it is well known that the mortality from malignant fevers in the hospitals is generally 1 in 9, and sometimes 1 in 7; but in Russia, namely, St Petersburg and Moscow, it is still less favourable, being in some epidemics 1 in 5.

It is generally accepted now-a-days, that physicians, before the determination on the adoption of a particular method of treatment,

should always first inquire what would happen in this case if no remedies whatever were employed; or, in other words, if the patients were altogether left to nature, that is, to the efforts of their own constitution. Many renowned physicians will say, "The living machine, unlike the works of human invention, has the power of repairing itself. It contains within itself its own engineer, who, for the most part, in by far the greater number of cases, requires no more than some very slight assistance of our hands," etc. This is the fashionable talk of the most celebrated physicians in our time; but I have always thought that this principle is of as little use to medicine as it is unworthy of a science which now claims the name of an "exact learning." But fashion has a strange power, and thus this "inactive treatment" is become a general rule amongst the physicians of Europe in our century. In the meantime, it seems to me that the modern medicine has by this principle involved itself in some contradictions, or why do we then cure scurvy with large doses of citric acid, inveterate syphilis with large doses of iodide of potassium, intermittent fever with bark, rheumatism by repeated doses of bicarbonate of potassa, lithic diathesis and oxaluria with large doses of carbonates and strong mineral acids? Why do we at all give remedies for poisons? And if we give remedies against mineral and vegetable poisons, why not also for organic poisons? I hope that very few physicians will now-a-days deny the origin of malignant fevers from organic poison; but, if this is accepted to be true, why should we then not try by all possible means to destroy these poisons? Pure air is, no doubt, the most common destroyer of organic matter, and it is, I think, on this account that the modern ventilation has done so much good to prevent and cure malignant fevers. We may, I hope, go still farther, and clean out the organic poison from the human body by a right use of the principles of modern chemistry; but, leaving the destruction and elimination of fever poisons from the body to nature's efforts alone, we may, I think, very often be mistaken and disappointed.

Regarding the melancholy ravages of our epidemic typhus when it was allowed to run its own course, or whenever the patients were unaided by the medical interference, I can hardly doubt that my positive disinfecting treatment has been of some value, and I should indeed feel very happy if these few remarks could induce some of my dear colleagues to give it a fair trial.

REYKJAVIK, 1862.

ARTICLE III.—*On the Age at which Menstruation begins in Siam.*

By JAMES CAMPBELL, Surgeon R.N., of H.B.M.'s Consulate, Bangkok, Siam.

(Read to the Obstetrical Society of Edinburgh, 6th August 1862.)

ON the 21st February of this year, I attended at the British Consulate in Siam, to give evidence in the case of a young girl who