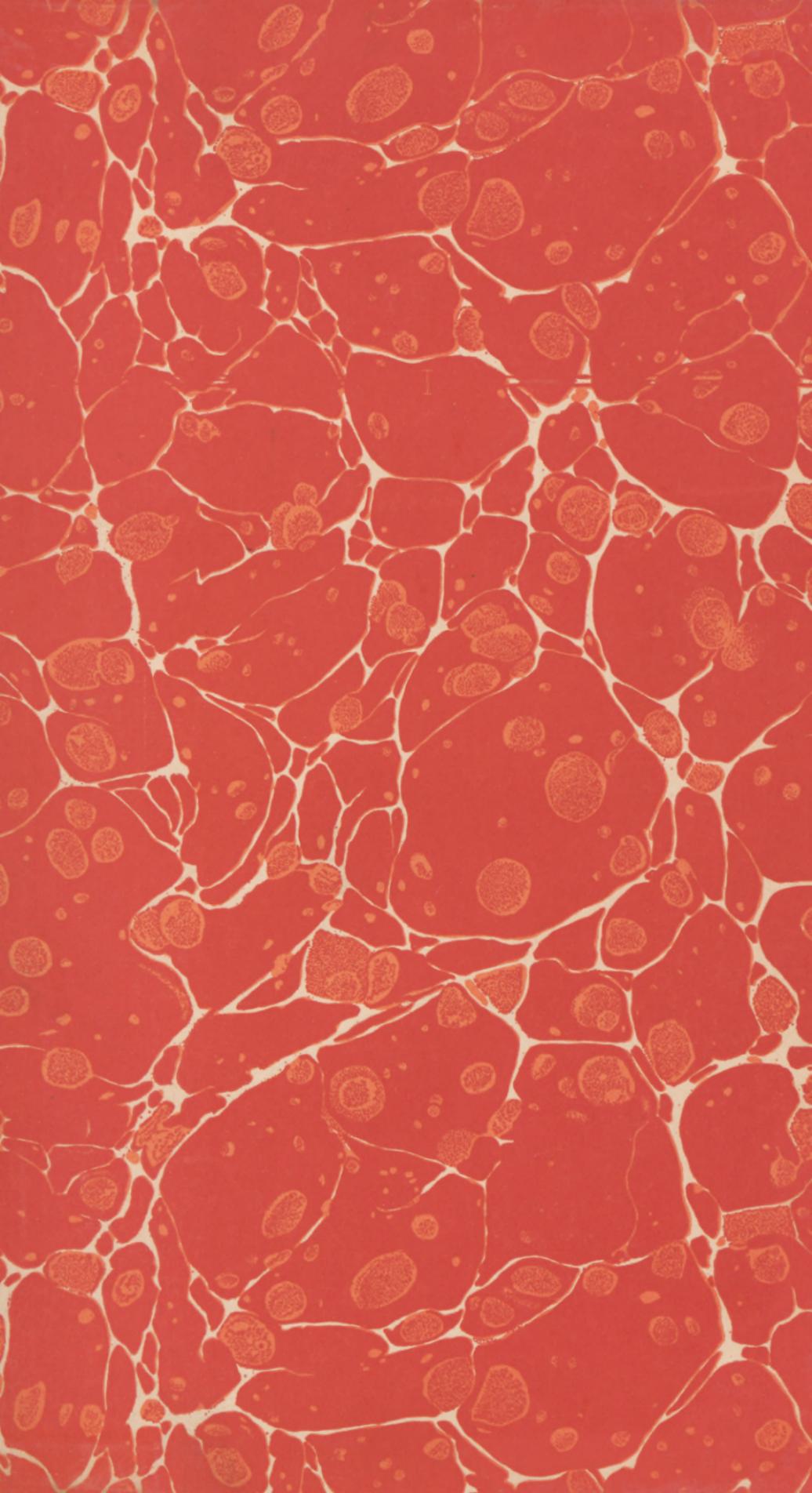


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[Extracted from the American Journal of the Medical Sciences for February, 1837.]

On the Typhus Fever, which occurred at Philadelphia in the spring and summer of 1836; illustrated by Clinical Observations at the Philadelphia Hospital; showing the distinction between this form of disease and Dothineritis or the Typhoid Fever with alteration of the follicles of the small intestine. By W. W. GERHARD, M. D., one of the Physicians to the Hospital.

During a residence of two or three years at Paris, I had studied with great care the pathology and treatment of the disease usually termed, in the French hospitals, typhoid fever or typhoid affection. There is another designation for it, founded on its anatomical characters, and therefore more directly in accordance with modern medical nomenclature; it is dothineritis. This variety of fever, which is identical with the disease termed typhus mitior or nervous fever, is frequent at Paris, and is almost the only fever which can be said to be endemic there. Intermittent and remittent fevers are rarely seen, except amongst those individuals who had already contracted some form of these diseases in the malarious districts of France. Some slight fevers, attended with a whitish or yellow tongue and gastric symptoms, occasionally occur; they scarcely assume the form of a fixed disease, and usually disappear under a very simple treatment.

These fevers were the only ones known at Paris for some years past; but in 1813-14, there occurred a severe epidemic fever, character-

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ized by extreme prostration and strongly marked cerebral symptoms. This epidemic was first noticed amongst the troops who returned from Napoleon's unsuccessful campaigns in Germany and the east of France; it afterwards spread amongst the inhabitants of Paris and other large cities, and was every where extremely fatal. No accurate description of this fever is on record, although it was witnessed by several of the most distinguished French physicians. Some of these, more especially Louis and Chomel, are inclined to consider it as identical with the prevailing dothineritis, but their opinion is probably erroneous, and the disease, as far as we know, should be classed amongst the forms of continued fever, distinguished by the terms typhus, typhus gravior, petechial or spotted fever, &c.

There are, however, complete histories of the typhoid fever or typhoid affection, or dothineritis, (all names belonging to one disease.) It is one of the most frequent and the most severe acute affections observed at Paris, and has been studied with extreme accuracy, more especially by Louis and Chomel, who have both published admirable descriptions of it. The work of Dr. Louis is especially interesting, and is a model in its kind; he has analyzed the symptoms and pathological phenomena of the fever so accurately and fully, as to surpass any other description of individual diseases. The typhoid fever was placed by this work of Dr. Louis, in the same relation to other fevers that pneumonia holds in reference to the affections of the chest. They are both so well studied, and their symptoms are so well known, that they serve as types with which other less thoroughly understood affections may be compared.

It affords us, then, great advantages in the investigation of the history of fevers, to begin with the typhoid, as the best known of these affections. Assuming this disease as the basis of our investigations, one great point is gained, and much greater certainty can be given to our ulterior researches, if we compare the symptoms of any fever which is little known and imperfectly described, with those of the typhoid fever, or dothineritis, as it is now frequently called from its anatomical lesion.

This inquiry was in accordance with a desire which I had long cherished of investigating the most common fevers in the middle states of America, where, from our geographical position, we witness the fevers observed at the northern, and occasionally those of the southern states. The commercial relations of Philadelphia are so frequent with the whole southern coast of the United States, and the passage to the north so rapid in the summer and autumnal months, that we receive into our

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hospitals a considerable number of patients taken ill on the coast of North Carolina, Virginia, and even Alabama and Louisiana. There are, therefore, few places where such a study could be pursued to more advantage than at Philadelphia. During the last three years of a constant connexion with our largest hospitals, either as resident or attending physician, I have not lost sight of this object of study, and I have already published in the American Journal for the year 1835, some cases of the dothineritis as well as of the remittent and intermitten fevers.

Dothineritis is by no means a rare disease at Philadelphia, although less common than at Paris. In the essay alluded to, I established the identity of the anatomical characters and of the symptoms of the fever, occurring at Philadelphia, with that observed at Paris. I also showed that the patients were chiefly those who had resided but a short time at Philadelphia, and that they were taken ill on ship-board, or under some other circumstances causing an abrupt change of food and habits of life. They were also young persons, but few having passed the age of twenty-five years. Both these conditions of age and change of habit are observed to be essential to the developement of typhoid fever at Paris.

Having once established the complete identity of a fever which is so common at Paris and so well described, with a similar affection, not unfrequently met with at Philadelphia, I examined the pathological phenomena of our remittent and intermitten fevers of the severe malignant character so frequently observed along the southern coast, and sometimes occurring in those malarious parts of the country which are situated within a short distance of Philadelphia. In all these fevers, the glands of Peyer as well as the other intestinal follicles, were found perfectly healthy; the large intestine was occasionally but not constantly diseased, while the stomach, and to a still greater degree the liver and spleen were invariably found in a morbid condition. If the fever proved fatal in the course of the first fortnight, the liver and spleen were softened as well as enlarged; but if the disease assumed a more chronic form, the viscera were hardened as well as hypertrophied. The latter state was the first stage of these chronic lesions which are formed in the livers of patients long affected with remittents or intermittents, and which continue throughout the course of the ascites, which is so common a consequence of these diseases. I made numerous examinations of the bodies of patients who died of the same variety of malignant remittent and intermitten during the summer of 1835, and still more frequently in the epidemic of 1836, a year in which these diseases have been un-

sually fatal throughout the southern states. The results of these late examinations have confirmed those already obtained, and showed that the follicles of the small intestine are free from lesions, and that the anatomical character of the disease is to be looked for in the spleen, liver, and stomach.

The bilious and yellow fevers are probably referrible to the same class as the malignant remittents, but in yellow fever the disorganization seems to be most extensive in the stomach, whence arises the black vomit, which forms a characteristic symptom of the disease. Bilious fever, or, in other words, the remittent fever attended with unusual alteration of the liver and a disordered secretion of bile, is common with us. Yellow fever is rare, and occurs in an epidemic form at such long intervals, that I have seen but few cases of it.

The typhus fever, which is so common throughout the British dominions, especially in Ireland, is not attended with ulceration or other lesion of the glands of Peyer.* From the account of the lesions presented by most of the writers upon the subject, it would seem that there is no constant anatomical lesion, but that the lungs present traces of disease more frequently than any other organ. My own observation of this variety of fever was limited to the examination of the fever patients under the care of the late Dr. Gregory of the Edinburgh infirmary. This observation was not sufficiently long or accurate to enable me to do more than refer to those physicians who have enjoyed extended facilities for the study of this affection. The lesion of the glands of Peyer is now well known to the British physicians, but an error frequently committed by them is that they regard this affection (dothineritis) as a mere complication of their ordinary typhus, or a modified form of it. At least I do not at this moment recollect any one who has clearly stated that the two diseases are always distinct, before the publication of a note in the Dublin Journal, by Dr. Lombard of Geneva, (Sept. 1836.)

It is not possible to set this matter at rest, unless a series of accurate histories of typhus with detailed symptoms and pathological lesions should be published by British physicians. With the aid of a statement of this kind, such a comparison might be made as to set the points of difference between the ordinary British or Irish typhus and the dothineritis of France in their true light. From the information we possess, we should conjecture that the two diseases are widely and entirely different in symptoms, anatomical cha-

*I mean that this lesion, when it occurs, is merely accidental or a complication not occurring in the ordinary course of the disease.

racters, treatment, and mode of transmission. But the British typhus seems to us to be identical with the disease which forms the subject of the present memoir, and is apparently the same affection which is variously designated: typhus gravior, ship fever, jail fever, camp fever; sometimes petechial or spotted fever. The term typhus mitor of the older writers seems nearly synonymous with that of typhoid fever or dothineritis of the French physicians.

In America there have occurred several epidemics of fever more or less similar in their nature to the British typhus. Some of these were confined to the New England States, where they were often known under the name of spotted fever, and are described by North, Hale, and others. Other epidemic diseases of a similar type extended to a larger district of country and overran a considerable portion of the Middle States, causing extensive ravages both in town and country. It was of epidemics of this kind that many distinguished physicians of Philadelphia perished in different years, amongst them were the professors of the University, Rush, Wistar, and Dorsey. No distinct history of the typhus fevers which prevailed at Philadelphia at different periods between the years 1812 and 1820 is on record. I mean such an account of the disease as makes its diagnosis so clear that there can be no danger of confounding it with other analogous affections. The fever was well studied by the physicians who practiced at that time, but the habit of analyzing symptoms had not been introduced, and their experience, however valuable to themselves, was in a great degree lost for their successors. These remarks are so true, that although an eminent physician of Philadelphia pronounced the epidemic of 1836 to be the same as that of 1812 and succeeding years, another distinguished medical gentleman who was not familiar by his own experience with the former disease, considered them as distinct affections, and that the one which first occurred was a low grade of pulmonary inflammation.

That the fevers were really identical, was proven by the opinion of Dr. Parrish, one of the most experienced physicians of Philadelphia, who practiced very extensively amongst all classes of inhabitants in the winter of 1812-13, and was remarkably successful in his treatment of the prevailing fever. He saw some of the cases at the Philadelphia Hospital in 1836, before the disease had extended to the wealthier classes, and immediately recognised its true character.

For a period of at least ten years there has been no epidemic of this nature at Philadelphia. In the year 1827, a large number of Irish emigrants were ill of a typhoid fever, with ulceration of the small in-

testines, which was probably dothineritis, and during several successive years there were more or less extensive epidemics of remittent and intermittent fevers, occurring in the neighbourhood of the city, but not often extending into the central parts of the town. Occasionally, sporadic cases of fever of a comatose or typhoid character would occur, but these cases were nearly always either some form of malignant remittent, or else they occurred during the winter months, and were complicated with pneumonia. The inflammation of the lungs then appeared as the first stage in the disease, which afterwards assumed those cerebral symptoms of stupor and feebleness which have procured for it the designation of pneumonia typhoides. These cases I often witnessed while resident physician of the Almshouse infirmary during the years 1828-30.

At Boston, in the year 1833, there was an epidemic dothineritis of extreme gravity and unusually fatal. This fever was well studied by the late James Jackson, jr., and other physicians, and was proven by them to be identical in symptoms and pathological lesions with the typhoid fever of Paris. Some of the physicians of that city are inclined to regard their former epidemics as of this nature, but this opinion seems to us more than doubtful. Since the epidemic, the typhoid fever is there a common sporadic disease, rather more frequent apparently than at Philadelphia.

In the winter of 1835-6, there was an unusual number of cases of gangrene of the lungs at the Philadelphia Hospital, and but few of decided pneumonia. Several cases of dothineritis occurred in the autumn, but there were few afterwards. During the winter, a form of fever not commonly met with at the hospitals, was observed from time to time. It was characterized by pungent burning heat of the skin, dusky aspect of the countenance, subsultus, delirium, with great stupor and prostration; but there was no diarrhoea, and but few other symptoms referrible to the alimentary canal. It was the disease which afterwards appeared as an epidemic. At first it was not well understood by us, was sometimes confounded with bronchitis or pneumonia typhoides, from the complication of pulmonary disease with the symptoms of the fever. These cases recovered under the use of a mild stimulating and supporting treatment, with one exception, in which death ensued from sloughing of the sacrum and gangrene of the lungs.

In the early part of the month of March, the admissions for the fever were more numerous. They attracted the greater attention from their occurring in groups of several from the same house, and almost all coming from a particular neighbourhood. Amongst the very first admitted were seven negroes, the entire population of a

cellar in the lower part of the city. The symptoms varied but little in the seven cases, and upon an examination of two of the number who died, no lesion of sufficient importance to account for the symptoms could be detected.

As soon as these patients were admitted, I resolved to note with care the pathological lesions presented by the bodies of most of those who should die of the fever, examine its symptoms and ascertain the influence of therapeutic agents upon it. This research was commenced with a view to obtain more precise notions as to the character of an epidemic which has probably more than once appeared in America, and seems to be endemic in Great Britain and Ireland. It was especially desirable to ascertain if there was a real fundamental difference between the form of disease which prevailed this year and the dothineritis which is always to be met with in America, as a sporadic affection. My friend and colleague, Dr. Pennock, had charge of one half the medical wards of the Philadelphia Hospital; his observations were conducted at the same time with my own, but the autopsies and the examination of doubtful cases were always made in the presence of both of us. Dr. Pennock noted a large number of cases, and has given me the privilege of adding his collections to my own. They are the more valuable from the familiar knowledge which he obtained of the dothineritis in the wards of La Pitié at Paris. Our inquiries were conducted so much in concert, and our opinions as to the symptoms and treatment of the fever were so often compared together, that this memoir is in most respects the expression of the results obtained by our joint labours.

A portion of the cases were treated by Dr. Pancoast; of these I have no notes excepting such as were obtained from the registers of the wards; they were chiefly admitted towards the close of the epidemic season, when we had already procured a large mass of materials.*

Many of the observations are deficient in the history of the early symptoms, as the patients at their entrance into the hospital often did not retain intelligence enough to recollect the previous symptoms of their disease. The autopsies were always made with great care,

*These inquiries were greatly promoted by the zeal and industry of the resident physicians of the hospital, who were all much interested in the examination of the disease, and untiring in their efforts to relieve the suffering of patients, who always required much more than ordinary care. In the rotation of service the most arduous duty fell to the lot of Drs. Bush, Stillé, Patterson, Elmer, Frisby, and Johnson, of whom the two last mentioned were themselves attacked with fever.

more particularly the examination of the small intestines; but the weight of occupation and the ennui of recording results which varied so little among themselves, caused us to neglect committing some of them to paper. We have, however, noted in detail, a very large number, showing the nature of the lesions; and we always took great care to remark the diseased or healthy state of the organs. We are quite sure that nothing of importance escaped us, and, above all, that the condition of the follicles of the small intestine was carefully ascertained. Our mass of facts is so considerable, that many important questions will be solved by them in relation to the history of this form of continued fever. They will clear up many questions relative to the disease; for although few cases are as complete as we could have desired, the information which is wanting in one case may be gathered from others; none are deficient in all the particulars, or fail to give a tolerably exact statement of the symptoms at one period or other of the disease.

In our investigations, we availed ourselves of the opportunities we possessed to inquire into the pathological anatomy, the symptoms, the mode of communication, and the treatment of this fever, which had not been witnessed at Philadelphia for some years, even if it were the same disease as that of former epidemics. At each step of this progress, I shall compare the facts before us with those relating to the history of the typhoid fever, or dothinenteritis, and when the symptoms differ, it will be easy to draw the line of distinction between two diseases, differing in their treatment, symptoms, duration, and pathological lesions.

There is some confusion in the designations of these fevers, but it is not my intention to enter upon the discussion of their nomenclature. It is sufficient to state that in using the terms typhus, typhus fever, typhus gravior, spotted or petechial fever, I mean that disease which forms the subject of this memoir, and that by the terms typhus mitior, typhoid fever, or dothinenteritis, I mean the disease described by Louis, Chomel, &c., and attended with a lesion of the glands of Peyer.

The number of cases admitted with typhus, was 214. Of this number there were 120 men and 94 women. A few cases who were at the same time in the wards, and already under treatment for other diseases, are not included, although they were afterwards affected with the prevailing epidemic, but their names on the register present only the disease for which they had been admitted. The whole number of cases is, therefore, from 230 to 250. A large majority of the 214 patients were negroes or mulattoes, there were 147 people of colour

and 67 whites. The disease first appeared in the former class of patients, and always prevailed more extensively amongst them than the whites who were living in the same part of the town and exposed nearly to the same causes of disease.

The patients were taken with the fever in various parts of the city and neighbouring districts, but by much the greatest number came from that part of the town which extends from Lombard street to a little below Shippen, and from Fifth to Eighth streets; this small but crowded district became almost an infected suburb. Within these limits the poorest and most intemperate of the inhabitants of Philadelphia reside. It is the St. Giles or the Faubourg Saint Marcel of Philadelphia. The filthiest and most crowded alleys offered the greatest proportion of patients. Thus, Small street and St. Mary's street, with the numerous courts and alleys running from them, contained many more sick than other streets inhabited by a population nearly as poor and intemperate, but less crowded. The different streets were not infected at the same time, thus the earliest patients were taken ill in Shippen and in Small streets, while St. Mary's street, which furnished an immense number of patients, was comparatively free from infection until a month afterwards. The disease appeared very soon in the prison (now taken down) in Arch street, but as the inmates of the prison came in great part from the infected district, it is possible that the disease may have been introduced by those who were admitted while labouring under it. Towards the close of the epidemic, patients were admitted in considerable numbers from some of the streets in the Northern Liberties, and throughout its whole course there were scattering cases from different parts of the city, and a few from the country, where there were no others ill in the house from which the patient had come. But few cases, however, occurred in the central parts of the town, where the inhabitants are generally in easy circumstances, and comfortably fed and lodged.

Classes of persons affected.—The first patients were almost exclusively from the poorest and most intemperate class of people, chiefly day-labourers. Such was the case with most of the blacks, especially the men, who were almost without exception in the habit of drinking freely of ardent spirits. The women were without fixed occupations, or were servants out of place. As the disease extended to the different parts of the city, people of various occupations were affected, amongst them there was one respectable physician, who died of the fever. The extension of the disease to those in easy circumstances, was shown in the practice of several eminent physicians of Philadelphia; they had not seen a case until the fever had prevailed some

months at the hospital, although they afterwards met with it in their private practice.

Mode of propagation of the disease.—The origin of the disease is as unknown as that of most epidemics; according to the general rule, it attacked those who were sunk in poverty and intemperance, and huddled together in confined apartments. It also appeared at different and remote points, some miles distant from the focus of infection, without the possibility of tracing any direct communication between those already attacked. There was, thus, a general cause, which extended its influence throughout the vicinity of Philadelphia. But, besides the epidemic cause, from which the greater number of cases seemed to arise, the fever was evidently propagated in a considerable proportion of patients by direct contagion. Those who entered at an early period of the epidemic came in groups together, some from the prison, whole families from the same room or the same house. About that time, I made a careful inspection of the district as one of a committee of the Board of Health, and in some instances we found houses completely vacated, the tenants being either dead or at the hospitals. In other cases, the whole or a large proportion of the inhabitants of a room were ill. It was rare to meet with a severe case without seeing others in the same house.

The evidence of contagion at the Philadelphia hospital was more direct and conclusive. Three of the principal nurses, and about a dozen assistant nurses, besides a number of patients ill with various diseases were taken with the fever. The three principal nurses belonged, two to the wards for blacks, where there were the greatest number of fever patients, and the third to a ward for whites, where there were several cases. There was only one nurse of a ward in which many of the patients were collected, who escaped, but several of his assistants and patients were taken ill. Two of the resident physicians in attendance upon the same ward, where the patients were most numerous, were also severely ill with the fever. On the other hand, no nurse from the part of the hospital where there were but few or no typhus cases, suffered, and the number of patients taken ill in the surgical or lunatic wards was very small, not exceeding six in number. The wards in which fever patients were placed did not contain more than a third or a fourth of the population of the hospital, yet the number of cases originating in them after the first introduction of the disease was at least four times as great as in all the other parts of the building. The Alms-house and house of employment, which are separated from the hospital by a space of at least forty feet at the nearest points, furnished five or six cases, proba-

bly not more than the same number of poor in any other part of the neighbourhood would have done.

The proportion of attendants upon the sick who suffered was in exact relation to the number of fever patients in the ward; thus in the wards for blacks, (both men and women,) and in the men's medical, No. 1, scarcely an assistant escaped. In the other medical wards a few were taken ill, and in the surgical and lunatic wards all the nurses escaped. The matter of the contagion, be it what it may, was generally mingled with the air, but sometimes seemed to be combined with the pungent hot sweat of the patients. In some cases the contagion was evidently direct from body to body. This was established by the evidence of a nurse and an assistant, both persons of intelligence, and, from their familiarity with the disease, quite free from fear. The nurse was shaving a man, who died in a few hours after his entrance, he inhaled his breath, which had a nauseous taste, and in an hour afterwards was taken with nausea, cephalalgia, and ringing of the ears. From that *moment* the attack of fever began, and assumed a severe character. The assistant was supporting another patient who died soon afterwards, he felt the pungent sweat upon his skin, and was taken immediately with the symptoms of typhus.* The wards in which the fever patients were placed, were large and well ventilated. We were at first disinclined to believe that the disease would prove contagious, but as soon as the fact was clearly proven, measures were taken to remove the patients not yet affected from most of these wards, and, if it had continued for a longer period, an efficient local quarantine would have been adopted. Dead bodies either did not communicate the contagion or its influence was easily counteracted by favourable circumstances. Both Dr. Pennock and myself, and several of the resident physicians were engaged nearly every day during the most intense prevalence of the disease in making long and laborious anatomical investigations, without suffering from the fever.

It is very clearly proven that the typhoid fever or dothineritis, is not contagious. Dr. Louis informed me that, in the course of his long experience of the disease, he had never seen a single case originating in an hospital. I have seen but one. The contrast between the fevers, in this respect, is obvious.

Age of the patients.—After childhood, the age seemed to exercise but little influence upon the susceptibility to the disease. But children were rarely attacked by it. None of the children in the Asylum

*Two other cases of assistant nurses also originated from similar contact, but as they were persons of less intelligence, I have refrained from relating their cases as they offer less undoubted testimony.

attached to the hospital, where there were about two hundred, were taken ill. Nor in the inspection which I made as a member of the Board of Health, of the houses in the infected district, did I discover many children who seemed to be labouring under the fever. After childhood, the age of patients seemed nearly without influence. Thus, of sixty-six whites, there were thirty-five below the age of 35 years, and thirty-one beyond that age, and, on adding the number of nurses and patients taken ill in the wards, we shall increase the number of persons older than 35 years, or passed the middle of life. The blacks give a greater proportion of young persons, although there were patients amongst them who were far advanced in years. But their comparative youth is easily to be accounted for by the large number of blacks engaged as labourers and inhabiting the infected part of the town, very few of them are old or middle aged men. Another reason is the habit of the blacks to state themselves younger than they really are, partly from ignorance of the value of numbers and of the precise year of their birth. It would, therefore, give incorrect results to include them in our estimate. The age of these patients differs much from that of those affected with the typhoid fever or dothineritis, who are all younger, the disease almost never occurring above the age of 35 years, the average for Paris and Philadelphia is $22\frac{1}{2}$ and 22 years. (See Louis on Typhoid Fever and American Journal, 1835.)

The *sex* seems to exert little influence on the liability to the disease. The numbers were 120 men and 94 women, which is about the relative proportion of our ordinary patients. This result differs but little from that observed in typhoid fever, where, *cæteris paribus*, men are perhaps a little more subject to it than women.

The change of life and habits from country to town was of no importance, our patients were nearly all resident for some years at Philadelphia, and some had been paupers for many years; their food and mode of living remaining unchanged during that period. The disease was not, as dothineritis, nearly confined to those persons who had recently removed from one place to another.

Use of ardent spirits.—The most perfect temperance did not prove a safe-guard when exposed to the contagion, as was shown by the cases of two of the resident physicians and of many others. Still, as a large majority of our patients were known to be intemperate, it would at first sight appear that intemperance was a powerful predisposing cause. But the habits of the day-labourers are such that but few of them abstain from using spirits more or less freely, so that the number of typhus patients who were intemperate does not greatly differ from that of those affected with other acute diseases. Most of the women were not given to intoxication.

Season of the year.—The epidemic began in March, and continued until August. There were a few scattering cases afterwards. The summer was unusually cool, and the spring and winter cold. It was remarked, that as the summer advanced, and an epidemic dysentery appeared, the fever was changed in character, and frequently offered a new symptom, that is diarrhœa, which was wanting in the earlier months.

Occupation, &c.—Our tables do not give us all the necessary information on this subject, nor would it be quite correct to receive their statements. The number of patients admitted with acute disease from the better classes of mechanics was extremely small, unless the subjects of it had been reduced to poverty by previous intemperance. Most of the blacks, like others of their race, were employed as mere day-labourers, chiefly masons' labourers, and stevedores. The poorest classes, whatever might be their occupation, were evidently more exposed to the disease than those who were richer, chiefly, perhaps, from their crowded and ill-ventilated rooms, as few of them had actually suffered from want of a sufficient supply of food.

Colour.—The proportion of deaths amongst the black men was much greater than amongst the whites, thus of the whites, one died in $4\frac{2}{3}$; amongst the blacks, one in $2\frac{1}{2}\frac{2}{8}$. Amongst the women the reverse was true; thus, one white woman died of $4\frac{3}{5}$; but only one coloured woman in $6\frac{1}{2}$ nearly. These two results would, therefore, appear contradictory, unless explained by other causes.

Age.—Twenty-two patients, eleven male and eleven female, both white and coloured, were admitted under the age of twenty, (from ten to twenty years,) of these not one died. Youth, then, was almost a safeguard against the danger of the fever, and this charmed age (from ten to twenty) was as free from the danger of petechial fever, as from most other causes of death. From the age of twenty to thirty, of women there died one in $5\frac{1}{5}$, and in men nearly one in 4. It should be recollected that the largest proportion of deaths amongst the men of the age above-mentioned, occurred in blacks, who notoriously underrate their ages, especially the men who were employed in occupations and under circumstances which rendered it difficult for them to fix their dates as accurately as the women, many of whom were domestic servants. Amongst the whites the mortality of the men between the ages of twenty and thirty was only a twelfth, but amongst the women it was as high as a fourth. Therefore, after making allowance for the causes of errors alluded to we shall have but a small difference in favour of women under the age of thirty. The deaths amongst the women above the age of thirty were one in five

nearly. The influence of treatment upon the mortality will be afterwards noticed.

Pathological Anatomy.—Dr. Pennock and myself examined a very large number of the bodies of those patients who died of the fever. Indeed, during nearly the whole epidemic scarcely a single examination was omitted, excepting in cases where it was impracticable from the removal of the body by the friends, immediately after death, or where putrefaction supervened, as it sometimes did almost immediately after dissolution. In this large number of autopsies, amounting to about fifty, there was but in one case, and that doubtful in its diagnosis, the slightest deviation from the natural appearance of the glands of Peyer. In the case alluded to, in which there had been some diarrhœa, the agglomerated glands of the small intestine were reddened and a little thickened; but there was no ulceration and no thickening or deposit of yellow puriform matter in the submucous tissue. The disease of the glands resembled that sometimes met with in small-pox, scarlet fever or measles, rather than the specific lesion of dothineritis. In all other cases, the glands of Peyer were remarkably healthy in this disease, as was the surrounding mucous membrane, which was much more free from vascular injection than it is in cases of various diseases not originally affecting the small intestine.

The mesenteric glands were always found of the normal size, varying, as in health, from the size of a small grain of maize to three or four times these dimensions. With the exception of a slightly livid tint, common to them and the rest of the tissues, they offered nothing peculiar either in consistence or colour.

The spleen was of the normal aspect, in one half the cases, in the other half it was softened, but not enlarged, and in one case out of five or six, enlarged and softened.

Thus, the triple lesion of the glands of Peyer, mesenteric glands and spleen, constituting the anatomical characteristic of the dothineritis or typhoid fever, although sought for with the greatest care, evidently did not exist in the epidemic typhus. Indeed, it was a subject of remark, that in the typhus fever the intestines were more free from lesion than in any other disease accompanied by a febrile movement. This exemption extended to the large intestine until the summer heats began, when a few scattering cases offered some symptoms of diarrhœa, during the prevalence of an epidemic dysentery; and, where they terminated fatally, softening and other signs of inflammation of the mucous coat of the colon were observed.

The fact that the morbid changes pathognomonic of dothinen-

teritis, are not met with in the typhus fever, would of itself seem conclusive that the two diseases are no more identical than pneumonia and pleurisy. Although, in some respects, the two affections are analogous, and even similar, the radical difference of anatomical lesions is at least as well marked as the distinction between the symptoms. It is, indeed, singular that there should of late be a strong tendency to confound two fevers, which were regarded as entirely distinct by some of the older physicians. The prominent symptoms and difference of treatment being particularly well pointed out by Huxham.

We will now give a series of dissections in the different stages of the disease. Some of the cases are detailed at length, the notes of others are not published, excepting that portion which relates to the pathological phenomena.

Case I. A stout mulatto entered in June, 1836, with chronic disease of the heart and rheumatic pains. A mild treatment had been directed, when the patient was taken with the prevailing epidemic, and died on the fourth day.

Autopsy—fifteen hours after death.—Exterior—very muscular; no infiltration; moderate rigidity.

Head.—Blood darker and more abundant than usual in the outer surface of the dura mater, and in the sinus; arachnoid contains one to two ounces of serum; pia mater not injected, the largest veins only filled with dark blood. Brain firm, moist, but pale; central parts pale; a drachm or two of serum in each ventricle; cerebellum and adjoining parts firm and pale.

Neck.—Pharynx pale; larynx slightly injected; trachea brightly injected throughout its whole extent.

Thorax.—Right pleura dry, brightly injected over the diaphragm, where it presents an abundant net-work of vessels; the same injection extends to the aortal and pulmonary pleura. The serous coat in these portions is covered by a thin layer of false membrane, a little thicker than common writing paper, of a yellowish tint, easily detached from the serous coat. The lower lobe of the lung is of a dull red colour, not containing air, not granulated, rather hard, not friable, more like the splenitized lung of pleurisy than pneumonia. The other lobes are of a light red colour, firm, and not infiltrated. Bronchi rosy and natural, except in the lower lobe, where they are reddish, and contain a dark serum. The left pleura is not injected; offers no serum; lung grayish and easily compressed. Bronchi natural; pericardium contains no serum. *Heart* much enlarged, one half larger than the fist of the subject. Left ventricle offers a cavity scarcely larger

than natural, but its walls are about fourteen lines thick, of a deep red colour, and very firm. Columnæ carneæ much enlarged; mitral valve thickened from cartilaginous deposits within its substance; semi-lunar valves of the aorta contracted, cartilaginous, of irregular shape, so that they neither could close nor open completely the orifice.

Stomach distended, contains a whitish mucous liquid; mucous coat nearly removed in the cardiac half, light grayish pulp only remaining; the other coats thinned and softened. In the pyloric two-thirds the coat is mammillated, thinned irregularly, of a general bluish-red colour, without bright injection.

Small intestine contains the usual liquid, lined by a coating of white mucus, not injected or softened; mesenteric glands small and firm; large intestine contains healthy fæces, pale; liver rather larger and paler than usual, a little less consistent. Spleen softened, not enlarged. Kidneys dark but firm. Bladder contracted.

The next case which was treated by Dr. Pennock, is recorded in full, furnishing a complete account of both symptoms and pathological phenomena. In the autopsy which has already been inserted, the lesions are very slight, being limited to a partial disease and softening of the mucous coat of the great tuberosity of the stomach. The patient died four days after the supervention of the symptoms. It is the earliest case of death amongst those patients who had enjoyed a tolerable state of previous health; but more than one patient, exhausted by some chronic affection, such as consumption, were seized with symptoms of typhus, and were carried off within the first twenty-four hours. In such cases no trace of the passage of the fatal affection was left after death.

Case II. *Premonitory symptoms during four days:—Disease ushered in by chilliness, frontal cephalalgia, erratic pains, muscular soreness—Petechia on the fourth day—Type of fever remittent—Death on the twelfth day—Autopsy.**

March 17th. Margaret Walters, aged 24, has been assistant nurse in women's medical ward during the preceding month. Last summer she had intermittent complicated with severe neuralgia; her health, however, was entirely re-established; she was robust, and perfectly well until the 13th inst., when she experienced general muscular soreness, some sore throat, pain in the joints, constipation, languor, want of sleep, lancinating pain through the head and occasional tinnitus aurium, which symptoms, attended with a voracious appetite, continued during the four succeeding days, but did not oblige her to discontinue the

*Case from the note-book of Dr. Bush, resident physician.

performance of the ward duties until this morning. At the hour of the visit (10 o'clock, A. M.) she presented the following symptoms: embonpoint considerable; intelligence languid; position in bed indicative of feebleness; surface of body warm, horripilations; great pain in the head and small of the back; lower extremities feel sore; expression of countenance anxious and distressed; sighs frequently; eyes languid, light is unpleasant; capillary circulation of face, which is flushed, active; tongue moist, slightly coated with light yellow fur; offensive odour of the breath; anorexia, with nausea and bitter taste in the mouth; great thirst, desires cool acid drinks; no soreness of throat; deglutition easy; constipation; no eruption or spots on the body. Pulse irregular, 68, of medium volume and force. Respiration 40, pure and expansive over the chest. Treatment: apply dry cups, No. 6, until vesication takes place, to the nape of the neck and small of the back; sinapisms to feet; farinaceous diet; mineral water.

18th. 8, P. M., muttering delirium, but no sleep during last night; intelligence obtuse; skin was warm and dry this morning, accompanied with intense headache, it is now covered with perspiration, and the cephalalgia has diminished; face flushed; tongue moist, coated with white fur; much thirst; herpetic eruption about mouth; anorexia; some tympanitis, but no pain on pressure of abdomen. Pulse irregular, intermittent, about 68, soft, weaker than yesterday; respiration irregular—this morning it was 50, it is now 32. Dry cups, No. 15, were applied over the thorax this morning; alvine dejections were induced by mucilaginous enemata. R. Effervescent mixture ζ i. q. h., cold drinks; stimulating pediluvium. Sulph. morph. grs. $\frac{1}{8}$ q. b. h. until sleep takes place. Diet, sago.

21st. Patient has slept well for several nights, after taking small portions of the sulphate of morphia; exacerbations of fever have been observed at irregular intervals, though most marked in the afternoon. 10, A. M., expression of countenance is now idiotic; eyes half closed; mouth open; intelligence obtuse; hearing dull; disposition to sleep; cephalalgia much diminished; muscular soreness, pains in the back and articulations abated; cheeks of violet hue, with languid capillary circulation; skin warm, soft, disposed to moisture; tongue clammy, covered with a brown yellow coat, through which the papillæ are elongated; thirst, desires cold acid drinks; some appetite; no nausea; constipation; abdomen tympanitic, soreness on pressure; urine of deep red colour, without flocculi, resembling intermixture of blood and water, voided without pain or burning sensation. Pulse 72, regular, small volume, feeble. Respiration costal, 28. Percussion of thorax anteriorly resonant; the respiration is there expansive, with sonorous

and sibilant ronchi. At the back percussion is dull on inferior two-thirds, where the respiration is extremely feeble, almost suppressed, with subcrepitant rhonchus on forcible and full inspiration.

The surface of the neck, chest, abdomen, and arms presents a mottled appearance, in consequence of being covered with spots varying from one to three lines in diameter. The smaller are rose coloured, whilst the larger have a lilac hue; the first disappear upon slight pressure, the larger, on the contrary, are not so easily effaced, and reappear more slowly. Take ζ iv. of blood, by cups, from temples and back of the neck; carb. ammonia grs. xv. q. b. h. (in julep;) effervescent mixture ζ j. q. h. mineral water. Sponge with evaporating lotions, and exhibit cool mucilaginous enema, when surface is warm. At night pulv. Doveri grs. xv. Diet, essence of beef; wine whey.

22nd. 10, A. M., only ζ ij. of blood were abstracted, as patient was much exhausted; slept well during four hours; intelligence improved; but little cephalalgia; no tinnitus aurium, except when sitting up; eyes injected; tongue cleaning in centre; much thirst; soreness of throat, fauces and tonsils red and tumid; deglutition painful; no nausea; alvine evacuations natural in colour and odour; tympanitis continues; no pain on pressure of abdomen. Skin, above natural temperature; some moisture on the breast; spots are of a darker colour, and do not disappear upon pressure so readily as yesterday. Pulse 88, medium volume; respiration 20, costal. R. Carb. ammonia grs. v. q. h.; rubefacient application to the throat; sponging; ice; orange; lemonade; oysters and beef essence; wine whey. Opiate at night.

4, P. M., pulse 100, regular, good volume, yielding to moderate pressure; face much flushed, capillary circulation very active; skin hot; spots more numerous, are readily effaced, but instantly reappear; no increase of cephalalgia; tongue thickly coated in middle with white fur; no pain on pressure of abdomen. Cool enema and sponging were resorted to; stimulants were discontinued, and in the course of that evening skin became soft and perspirable.

24th. 1, P. M., slept well; no delirium. In the morning at 10 o'clock, skin was moist; pulse of moderate volume and quickness. Skin is now hot; face flushed; capillary circulation active; eyes injected; tendency to coma; dull expression of countenance; tongue dry, covered with brown fur; lips parched; sordes on teeth; much thirst; no nausea; petechial spots fading. Pulse 114, small, jerking; carotids vibratory, especially on the right side; respiration 28, costal. R. Ol. terebinth gts. xv. q. h. (in emulsion,) sulph. quinine grs. vi. q. b.

h. per enema: sulph. quinine grs. iij. q. h. during remission of fever; blisters on the ankles and abdomen until redness. Diet as before.

Very little alteration was presented in the symptoms during the three succeeding days. The patient was extremely prostrated; febrile exacerbation recurred in the afternoon, slight remission in the morning. The skin at times was slightly perspirable, though generally dry and hot. The petechial spots, which were pale on the 24th, reappeared in increased numbers on the 26th, covering every part of the surface. Intelligence very dull and confused. Countenance idiotic, eyes half closed, and mouth open. Sleep was tranquil, by exhibition of Dover's powders and paregoric; almost entire deafness existed. Pulse varied from 100 to 120, of small volume, easily extinguished, but without subsultus. Respiration 20 to 26, costal. Respiration expansive, except posteriorly; anteriorly mucous and sibilant ronchi existed and masked the vesicular respiration; cough slight, without expectoration; dejections dark yellow-brown colour, of moderate consistence; urine became more natural in colour.

The treatment previously mentioned was continued, tonics and stimulants being exhibited in the remission, discontinued during the exacerbation, and replaced by evaporating lotions, cool mucilaginous or saline enemata, and diaphoretics of the neutral salts.

On the 28th, whilst the weather was cold and damp, a portion of the chimney passing through the ward in which she was placed, was torn down, rendering it impossible to maintain a proper temperature. The noise which the hammering occasioned, caused agonizing cephalalgia, inducing delirium; the periodical exacerbation in afternoon was exceedingly violent, accompanied with convulsions. In the evening (7½ o'clock) skin was warm but moist, no pain in the head; patient rational; pulse 120, gaseous. Respiration 26, costo-abdominal. She slept soundly during two hours, after taking an opiate, (pulv. Doveri grs. xv.) Nurse reports, that towards morning she had a chill; surface of the body was cold; lips, cheeks, and extremities presenting a blue appearance, and that the reaction took place at seven o'clock.

29th, 10 A. M. Skin natural temperature and moist; body covered with petechia and vibices, which do not disappear on pressure; capillary circulation moderately active; hearing very obtuse; no cephalalgia; slight tinnitus aurium; operation of mind, languid; constant moaning; speaks slowly, articulates with difficulty. Tongue smooth, clean and tumid at the point, covered posteriorly with a brown and loose incrustation; two alvine dejections resembling light thin jelly in the last twenty-four hours; some appetite, much thirst; abdomen

distended by flatus; urine slightly turbid, but has not the deep red hue previously mentioned. Pulse 120, small volume, regular, extinguished by slight pressure; vessels of neck undulatory, especially on right side. Respiration 28, irregular. R. port wine 1 gill, quinine solution $\frac{z}{i}$. (grs. iv.) q. h.; quinine grs. x. q. $2\frac{1}{2}$ h., with essence of beef in injection. Emul. ol. terebinth. $\frac{z}{ss}$. q. h. Diet, essence of beef. 8, P. M. Stimuli have been discontinued for last two hours in consequence of reaction. Hiccups for a short time. Nurse reports that an hour since convulsive movements took place, continued ten minutes, and was succeeded by vomiting. Alvine dejections frequent, watery; cannot retain the injections. Pulse 124, very weak, undulating, pulsations not definite. Countenance vacant, but answers when repeatedly spoken to; swallows with difficulty; respiration 40, rattling in throat; mucous rhonchus in lungs, especially the right. Surface became cold, and death took place at 11, P. M.

Autopsy 36 hours after death.

Large frame; no emaciation; a layer of fat half an inch in thickness, through which is distributed streaks of black blood covering the abdomen; spots of a purple colour, resembling purpura hæmorrhagica, cover the legs, thighs and abdomen; petechia on the arms and chest as during life; abdomen distended and resonant on percussion.

Brain.—*Falx* engorged with blood, and contains soft yellow-green coagula. The larger veins of the *dura mater* are filled with blood, and its arteries contain a small quantity of dark thin blood. *Arachnoid* and *pia mater* injected with blood of a bluish-black colour; no effusion of serum between these meninges. *Pia mater* is torn from the cortical substance without lacerating it.

Cerebrum.—Cortical substance pale, of usual consistence, medullary portions firm, of light violet hue; its horizontal sections dotted with black points at the cut orifices of its vessels. About $\frac{z}{i}$ ss. of transparent serum in each ventricle. The cerebellum of usual consistence and colour; the arachnoid is less injected here than elsewhere.

Thorax.—Old adhesions of the right lung near the base to the ribs; no effusion of serum in either thoracic cavity. Lower lobes of both lungs condensed, almost impermeable to air, congested moderately, friable, not hepatized; but resembling, when torn, the appearance of the spleen. Posteriorly the upper lobes are engorged, tissue friable; whilst anteriorly the pulmonary tissue is firm, tears with difficulty, crepitant, and but slightly congested. *Bronchi* of a livid colour, contain a small portion of sero-mucus fluid; the lining membrane, when detached, is transparent and not thickened. *Larynx* moderately injected; no tumidity of the lining membrane. *Trachea* of a deep red

colour, its mucous membrane of usual consistence. *Heart* is of the natural size, its parietes flabby, easily broken down; valves normal; right ventricle contains a soft coagulum of slight firmness. In the left ventricle was a small quantity of black blood. No coagulum in the aorta, which contained a small quantity of dark blood, having oil-like particles distributed through it. No coagula either in the vena cava ascendens or in the femoral vein; both contain a thick black blood, similar in consistence and colour to molasses, having minute fatty globules floating in it.

Abdomen.—*Stomach* distended by gas, and contains several ounces of a straw coloured fluid; patches of dark injection, in which mucous membrane is softened, are seen in those portions of the large cul-de-sac covered by the contained fluids, in all other parts the consistence and appearance of the mucous membrane are natural. Mucous membrane of duodenum stained of a dark yellow colour. The *small intestines* in the greater part of their extent are translucent, with scarcely the appearance of blood-vessels; several ecchymosed spots, however, are seen; over which, as in all its extent, the mucous membrane is healthy, yielding stripes of from six to ten lines. One of these spots, which is in the ileum, is several inches in length, and when the mucous coat is raised the ecchymosis is seen in the cellular coat. *Glands of Peyer* healthy, not developed; seen with difficulty. *Brunner's* follicles normal. The *large intestine* contains fæces of a yellowish-brown colour and of moderate consistence; the mucous membranes and follicles normal. *Liver* natural size, surface fawn coloured, mottled with purple spots of ecchymosis; structure granular, friable; blood-vessels filled with dark fluid blood, containing oily particles. *Gall bladder* contains dark grumous bile. *Spleen* twice its usual size, colour natural, softened, almost diffluent. *Kidneys* of natural size, the conoidal portions much darker than usual, but of natural consistence. *Bladder* contains no urine, coated with thick white mucus; its internal coat moderately injected. *Uterus* normal.

Remarks.—The fever in the preceding case was of a remittent type in the commencement, and evidently intermittent during the two last days of life. Death took place in the cold stage, and the depressing influence of the low temperature of the medical ward no doubt contributed to produce the fatal result. The cause of the irregularity of the pulse at the commencement, and its subsequent regularity, are not explained by the state of the heart. The ecchymosis on the liver, and the effused blood on the cellular coat of the small intestines, are strikingly analogous to the vibices on the surface of the body, and probably depend on the same cause. The presence of black blood in

the arterial system, and the friability of the lungs, are remarkable pathological features in this disease, and are very similar to the appearances presented in death from asphyxia, and would seem to prove that the blood in both diseases is unchanged in its passage through the lungs.

CASE III. *Precursory symptoms five days—disease commenced with cephalalgia, muscular and erratic pains, fever remittent, petechiæ, vibices, great prostration, death on the 14th day. Autopsy. Lungs friable, patches of Peyer healthy, black blood in arterial system.*—Susan C——, aged 21, intemperate, entered the hospital March 27th. She was discharged from prison last winter, and has suffered from intense cold and privations of every description. Health generally good, with the exception of a syphilitic affection manifested a year since. She had been sick sixteen days, and although she was much prostrated, her memory was sufficiently accurate to fix the date of the occurrence of the different symptoms of the present disease. On the 16th, after experiencing lassitude, loss of appetite, and want of sleep during five days, she was seized with sharp pains in the calves of the legs, extending to the knees, thighs, and intestines. On the 19th, soreness of throat, great thirst, but no difficulty in deglutition. On the 20th, intense pain in the temples and eye-balls, with vertigo. On the 23d acute pain was felt in the lumbar region. Constipation had existed two weeks previous to the 22nd, when several copious, fœtid, dark alvine discharges took place. The soreness of the throat disappeared spontaneously in two days, but the dizziness of the head and the local pains have continued, with but slight alteration, until the present time.

Present state, March 27th. Large frame, embonpoint considerable; dark blue eyes, chestnut hair, decubitus on either side; expression of the countenance anxious; skin of natural heat and dry; capillary circulation of the face, which is of a violet hue, languid, colour disappearing upon pressure and returning slowly. Intelligence slightly obscured; tinnitus aurium, but no pain in the head; tongue dry, thick dark coating in the centre, red on the edges; teeth covered with sordes; thirst very great, desires cold drinks. No soreness of throat, deglutition easy; abdomen distended, resonant on percussion over colon and stomach; pressure causes pain in left lumbar region; bowels opened; urine scanty, of high colour, voided without pain or heat. Pulse 150 per minute, regular, of moderate volume, bounding, gaseous and extinguished on slight pressure. Carotids and vessels of the neck visibly pulsating, especially those on the right side. Heart yields

no impulse, but its sounds are distinct over the præcordial region, with bruit de soufflet over the valves.

Thorax.—Percussion anteriorly, resonant under both clavicles; obscure on the right side below the second rib. Respiration on the right, blowing, with sibilant ronchi; on the left side, in the clavicular region, strongly sibilant, occasionally sub-crepitant; over the præcordial region it is feeble, with mucous ronchus. Percussion posteriorly yields a dull sound in the entire extent of the chest, especially in the middle *3d.* Respiration is extremely feeble, except at the root of the lung, where it is rude; the voice is there remarkably clear (argentine.) Respiration *30*, more abdominal than costal; sputa ærated somewhat viscid; slight cough, no soreness on pressure of larynx.

The body is covered with two varieties of spots; one of a brownish-red, varying in size from a pin's head to that of a ten cent piece, do not disappear on pressure, and covered with slight scales, are the result of a syphilitic eruption; these, the patient says, had entirely disappeared previous to present illness. The other spots, which are of a lilac colour, vary from a line to a quarter of an inch in diameter; they disappear on long continued pressure, reappear slowly, are not elevated or covered by scales, and are numerous, especially on the breast. Treatment: *Tr. cinchona compos.* $\zeta j.$ $\dot{q}.$ *b. h.* Solution of quinine, *grs. ij.* every hour. Effervescing mixture. Blisters to the thighs until redness is produced. *Sulph. morph.* *grs.* $\frac{1}{8}$ every hour until sleep takes place. Diet, essence of beef.

28th. Had disturbed sleep last night, after taking $\frac{2}{8}$ of *gr.* of morphia; first sleep, the patient says, since the *21st.* No delirium during the night; two slimy alvine dejections since yesterday, of a yellow colour, without odour. Exacerbation of fever at three o'clock this morning, subsided at eight, and was followed by some moisture of the skin, but no decided perspiration. *11 o'clock, A. M.,* skin warm, soft; countenance flushed, capillary circulation of cheeks active, redness reappears immediately after pressure; eyes watery, conjunctiva congested; dimness of vision, which is increased by rising in bed; hearing very dull; no pain in the head, but noise in the ears, compared by the patient to blacksmiths hammering in the head; tongue less furred, edges cleaner than yesterday, violet colour. Pulse still vibratory, but firmer, *138* per minute. Respiration *20*, costo-abdominal; some cough, expectoration as yesterday. Continue treatment; dry cups to the chest, blister *4* by *6* to the back of the neck.

29th. Fever yesterday commenced at *12 M.,* continued four hours, skin was exceedingly hot, thirst intense, desiring ice; mind excited but not delirious, no perspiration was observable after subsidence.

Fever recurred at 11, P. M., but less violent than in the afternoon. Delirium throughout the night; blister drew well. This morning the skin is warm, soft, but without moisture; spots on the body and extremities are more numerous; arms and hands present a mottled appearance of white and deep rose colour, which disappears on pressure and reappears slowly. Spots are not elevated; they vary in size from a pin's head to half an inch in diameter. Hearing very obtuse; eyes congested, pupils small, contracted, insensible to light; countenance flushed, capillary circulation rapid; tongue moist, violet colour, some yellowish fur in the centre; no swelling of the tonsils; tickling in the throat, no pain in swallowing. Pulse 142, gaseous; respiration 30. Treatment:—Solution of acetate of ammonia, $\frac{z}{3}$ ss. q. h.; dress blistered surface with quinine; blister calves of legs to redness. Discontinue the quinine while the skin is hot. Diet, essence of beef, with eggs and wine.

30th. Some fever yesterday afternoon, slight fever through the night, no sleep, constant moaning, but no marked delirium; had two alvine evacuations of a yellow colour, good consistence, no odour. This morning, at 10½, A. M., skin of nearly natural temperature, capillary circulation extremely languid. The spots which were yesterday of a lilac are now dark violet; do not disappear on pressure. Tongue is dry, coated with brown fur; deafness more marked. Intelligence languid; answers questions slowly, but correctly. Pulse 120, regular, small volume, extremely feeble. Respiration 15; carotid strongly vibratory. Treatment:—Rub the limbs with a liniment of equal parts of turpentine and tinct. of cantharides; turpentine emulsion; small portions of brandy toddy. Diet as before. Death took place at 5, P. M.

Autopsy eighteen hours after death.

No emaciation, great cadaveric rigidity; abdomen much distended, resonant on percussion. Body and extremities covered with petechiæ and vibices as in life; those of the upper extremities and legs are of a deep purple colour, especially those on the lower extremities, where they are numerous, and of half an inch in diameter.

Brain.—A small quantity of black blood is found in the vessels of the dura mater; falx filled with soft coagulum, of yellowish-green colour; no thickening or opacity of the tunica arachnoides; pia mater transparent, its vessels congested with black blood; no effusion of serum between arachnoid and pia mater. Cortical substance pale, medullary of usual consistence, of violet colour; each ventricle contains about a drachm of serum. Cerebellum normal.

Thorax.—Adeps considerable over the thorax and abdomen.

Larynx.—Lining membrane reddened, transparent, its consistence natural. Mucous membrane of the fauces tumid, of violet colour; amygdala contain numerous cicatrices filled with calcareous deposit. *Left lung* contracted, not crepitant upon pressure, extremely friable. *Right lung* congested, especially in the middle lobe, infiltrated with bloody serum, its structure not granulated, friable upon pressure, mucous membrane of the bronchi red but normal in consistence; each thoracic cavity contains about four ounces of red serum. No adhesion of lungs to pleura costalis.

Heart small, parietes of usual thickness and muscular, consistence good, valves healthy; coagula in the right ventricles thin and easily broken; a few drops of black blood in the left ventricle. Aorta contains black blood with some coagula.

Abdomen.—The omentum charged with fat. Stomach and small intestines distended by gas; the mucous coat of the stomach in its large curvature stellated with red points of blood, its consistence, however, is normal throughout, excepting in the great cul-de-sac, where it is softer than natural. Small intestines contain some green fæces; mucous coat normal, yields by traction strips from six to eight lines in length. *Peyer's glands* healthy. *Brunner's follicles* not developed. *Cæcum* and *colon* healthy. *Liver* natural size, structure normal. *Bile* thick, ropy, and of very dark colour. *Spleen* twice the natural size, six by four inches, structure much softened, (diffluent.) *Kidneys* natural in consistence and size. *Bladder* not distended, contains a small portion of light coloured mucus. *Pancreas* usual size, violet hue. *Uterus* natural.

Remarks.—The fever in this, as in the case of Walters, was remittent; the presence of black blood in the arterial system was also observed; the lungs were much more friable and more impermeable to air. The brain exhibited a state of passive congestion of some of its larger vessels; meninges unchanged in structure.

Case IV. *Precursory symptoms, anorexia, lassitude, constipation—Disease commenced with nausea, vomiting, frontal cephalalgia, sore throat—Delirium, extreme prostration, petechia on the gums and lips—Death on twenty-ninth day—Lungs friable, black blood in the arterial system—Patches of Peyer healthy.*—Bush, negress, washerwoman, aged 20, entered March 6th, 1836. During the last winter, she, with four negroes, occupied a small, damp, confined cellar in south Water street, near the Delaware, and suffered greatly from want of food and intense cold. Has been sick three weeks; at the commencement experienced lassitude, general debility, loss of appetite, followed on the succeeding day by nausea and vomiting. On the

morning of the third day, whilst washing, was suddenly seized by violent pain in the forehead; in the evening the throat became sore, and continued so, with difficult deglutition, three or four days, when it disappeared spontaneously. Cephalalgia with tinnitus aurium, some deafness, and much thirst had been constantly present. Patient says she has slept very little, and that constipation has been constant. Ordered stimulating enema of ol. terebinth. sulph. morph. grs. $\frac{1}{8}$, every hour until sleep takes place. Bowels were opened by the enema, and patient slept after the exhibition of $\frac{3}{8}$ gr. of morphia.

Present state.—March 7th. Decubitus dorsal; skin warm and dry; dark spots, not elevated, from two to four lines in diameter, cover the breast and abdomen; expression of the countenance anxious; intelligence confused, answers slowly but correctly, when her attention has been strongly directed to the question; constant moaning; conjunctiva injected; pupil contracted to a point and uninfluenced by light; pain in eye balls; feeling of soreness rather than of pain in frontal region; no tinnitus aurium; deafness in the left ear; tongue moist, covered with light fur, edges red, papillæ much enlarged; gums of a rose red colour, mottled with dark purple spots which do not disappear upon pressure; teeth covered with sordes; great thirst; some soreness of the throat; amygdala not enlarged; deglutition not easy; anorexia; abdomen hard, slightly tumid, resonant on percussion over the cœcum; some epigastric tenderness; liver (tested by percussion) not enlarged. Pulse 150, weak, jerking, thread-like, extinguished by the slightest pressure, constant spasmodic twitching of fingers, and subsultus of tendons of the arms. Respiration costal, short, contracted, irregular, 66 per minute, (counted after interrogating the patient.) Percussion of the chest, anteriorly; under both clavicles, normal; slightly obscure in the lower two-thirds of the right side, where the respiration is vesicular, but extremely feeble; on the left, respiration is expansive, with sonorous ronchus. On the back, percussion yields a dull sound, especially on the left side. Respiration very feeble, with occasional sibilant ronchi on the left. Voice transmitted near the root of the lung remarkably clear, not resonant (argentine.) Soreness on pressure of left breast prevented percussion of præcordial region. The heart gives no impulse; second sound predominates; bruit-de-soufflet over the valves.

Treatment.—Dry cups to the anterior parietes of the chest; blister 4 × 6 between the shoulders; evaporating lotions to the head. Pulv. camph. grs. v. ol. terebinth. gtt. xv., in emulsion, every hour. Diet, essence of beef and wine whey. Sulph. of morphia, to be given at night, and quinine grs. ij. every hour, should the skin become cool.

8th. Took grs. xx. of quinine, yesterday. Camphor and opium suspended in the afternoon. Blister to the back partly vesicated. Disturbed sleep, with delirium, hiccup and jactitation through the night. This morning (10 o'clock) expression of countenance wild and anxious; moaning, but no marked delirium. Hearing very obtuse; constant movement of head from side to side; cannot protrude the tongue beyond the teeth; tongue moist, rose coloured at the point, coated posteriorly, dark incrustation, papillæ enlarged; skin dry, temperature natural; pulse 144, less jerking, subsultus diminished; respiration 30, costal, no dilatation of nostrils upon inspiration; urine scanty, high red colour, resembling blood. Last evening had one alvine evacuation of natural colour and consistence. R. Sulph. quinine grs. ij. every hour. Camphor julap and turpentine every third hour. Enema of essence of beef; wine. Diet, essence of beef; morphia at night. In the afternoon vomiting frequently took place, but was checked by exhibition of kreosote $\text{m} \frac{1}{8}$ q. h.

9th. Slept well last night after ten o'clock, without either delirium or moaning. (Took $\frac{3}{8}$ gr. sulph. morph.) 9 $\frac{1}{2}$ o'clock, A. M., decubitus dorsal with legs drawn up on the thighs; abandoned; deafness increased; constant moving of head from side to side; twitching of lips; eyes much congested, half closed, balls constantly rolling in the orbit; speechless, cannot articulate; tongue cannot be seen, as the teeth are firmly closed and covered with sordes; lips are dry, covered with dark fur externally, internal membrane mottled. Pulse 132, thread-like, regular, extinguished by slight pressure. Respiration 36, more costal than abdominal; on the right side, anteriorly, rude; pure on the left. Posteriorly rude in the interscapular space. Subsultus diminished. Both arms swollen, slightest movement causing pain. R. Dress blister between the shoulders with quinine. Enema of essence of beef, with camphor, grs. x. Other treatment continued. Patient became gradually weaker, and was insensible to external impressions at 8 o'clock, P. M. Convulsions took place, and, at 10 o'clock, death.

Autopsy, thirty-six hours after death.—No emaciation; no infiltration of serum. Body covered with vibices varying in size from two lines to half an inch in diameter, particularly on the abdomen and thighs. Percussion of thorax same as during life.

Brain.—The vessels of dura mater contain globules of black blood, separated by air, the falx contains dark dissolved blood, with some soft yellow green coagula. A large portion of bone was found in the anterior portion of the brain between the dura and pia mater. The large vessels of the pia mater are congested with black blood, the

smaller are empty: no effusion of serum between the pia mater and arachnoid. Arachnoid transparent, the membranes do not adhere to the cortical substance, which is of a pale ash colour, and of natural consistence. The medullary substance of usual consistence, and of a very slight violet tinge; its horizontal sections present numerous black points at the orifice of the vessels; ventricles each contain a drachm of limpid serum; corpora striata and thalami, normal, *cerebellum* and central portions of the brain also normal; tunica arachnoidea somewhat opaque at the base of the brain.

Thorax.—No adhesion of lungs to the ribs; on each side the pleura contains a small portion (one ounce) of bloody fluid (resembling blood.) *The right side.* Lung compressed, permeable in the upper lobe, impermeable in the lower lobes, excepting the middle anterior portions; lower lobe is friable, not hepatized, contains some bloody serum; the bronchial tubes are of a red colour, their lining membrane transparent and of good consistence; the *left lung* is condensed in its inferior portions, which are impermeable to air, friable, but not hepatized; upper lobe natural anteriorly; posteriorly, impermeable, congested and friable. On the surface of the lungs beneath the pleura are seen eight or ten ecchymosed spots of blood.

Heart enlarged, twice its usual size; no adhesions between the heart and pericardium, which contains one ounce of effused blood; the muscular parietes of the heart are of the usual thickness but softened; the valves natural; soft coagula in both cavities, those in the left ventricle surrounded by black blood; black blood, with coagula, is found in the aorta; the blood in the vena cava ascendens is thick, black, and oleaginous.

Abdomen.—Stomach and intestines distended by gas; mucous coat of the stomach presents a dark slate colour, with the exception of a space an inch square in the cardiac (cul-de-sac) extremity, in which the mucous coat is somewhat softened; this membrane is mammillated and thickened near the pyloric orifice, and yields strips of eighteen lines in length. *Small intestines* natural throughout the whole extent except the middle portion, where are presented numerous purple spots from the blood effused into the cellular coat at the capillary extremities of the blood-vessels; mucous coat throughout natural. *Glands of Peyer* and *Brunner* healthy. *Spleen* natural size and normal. *Liver* not enlarged, fawn coloured externally, softened.

The last three cases were noted by Dr. Pennock with extreme care, and are given as illustrations of the pathological terms, as well as of the symptoms in the fatal cases. As the subject is one of importance,

I shall give two more cases, in which the symptoms are related in a condensed manner.

CASE V. *Death in the fourth week—Great stupor, abundant eruption of petechiæ—Dark blood in the brain and lungs, and ecchymosis of the intestines—Glands of Peyer natural—Softening of the great tuberosity of the stomach and enlargement of the spleen.*—Jacob, a German, aged 38, is a chemist by trade, has been in America four years, and has lived in Philadelphia during the whole time. There was no other person ill in the house with him; remembers scarcely any thing of his disease, except that he had chills and vomiting, and has been ill nearly three weeks.

On the 8th of April, the day after his entrance, I found him in the following state: He is very stout and muscular; lies on his back in a state of constant stupor; eyes injected, pupils small, not contracted; face dull, livid; intelligence very obtuse, answers slow and hesitating; memory impaired; slight cephalalgia; sight confused; tinnitus constant; hearing dull. Sleep sound during a part of the night; subsultus in the tendons of the wrists and legs. The surface of the whole body is covered with an eruption resembling measles in colour, not irregular and not elevated; on pressure it does not disappear entirely. Sweating since six or seven this morning; hot, harsh and dry skin previously; tongue dry and harsh; abdomen tender, containing little gas; one stool of a dark yellow colour after the injection; appetite not much impaired; thirst great. Pulse 140, feeble; a slight pressure completely arrests it. Respiration a little stertorous; sonorous and mucous ronchus abundant throughout the chest, but percussion sonorous.

Blister 7 by 5 inches between shoulders, for five hours; weak sinapism to legs and wrists. Milk punch. Huxham's tincture of bark ζ ss. q. secunda h. in a cup of water. Camphor gr. v. q. sex. h. Essence of two pounds of beef.

In the evening of the 7th he took five grains of camphor every two hours, the effervescing draught, and a camphor enema, with both.

8th, at 3, P. M. The blister had vesicated the neck. The patient was more intelligent.

9th. He had slept but little. Petechiæ paler; teeth fuliginous; some twitching of the face and subsultus; cephalalgia, no delirium; intelligence clearer, but the senses are in the same state as yesterday. Pulse fuller and stronger, 140; no chills, some sweating during the night; no vomiting or dejection; thirst great, appetite apparently good.

Brandy ζ vij. in milk; wine ζ vij. in gruel; tincture of bark less frequently given; camphor as before; essence of beef. Sponging

with vinegar and water. In the evening the coma increased; face livid and swollen. Sinapisms, &c. Death the 10th, at 7, A. M.

Autopsy on the 11th—twenty-seven hours after death:

Exterior.—Very corpulent subject. Petechiæ livid, but much paler and fewer in number than before death. Skin of the posterior parts of the body of a dull livid colour. Rigidity of limbs.

Head.—A large quantity of black blood on the external surface of the dura mater. Curdled dark blood in all the sinus of the brain. Large veins full of blood; smaller vessels rather more than usually injected; arachnoid moist. Ventricles contain about two drachms of serum; substance of brain of good consistence, but more moist than usual. The medullary portion is of a marbled violet colour, with thin dark blood oozing from the cut surface. Cerebellum and pons varolii firm, not injected, but of a bluish tint.

Neck.—Pharynx of a slight violet hue. Larynx less livid than the pharynx.

Thorax.—Pericardium contains several ounces of bloody serum. The heart is large, pale, and very flaccid, a slight pressure being sufficient to tear it. The internal surface is of a dark red colour, which extends to the valves, and is deepest at the most depending part, but there is no trace of false membrane or thickening. The aorta, carotid, and iliac arteries contain a dark fluid blood, and their internal coat is of a dark red colour.

There is a little reddish serum in the pleuræ; the lungs are of a livid red colour in their lower lobes, which are engorged with liquid blood, but are not friable. Bronchi not thickened, but tinged of the same colour as the subjacent pulmonary tissue.

Abdomen.—Peritoneum pale; stomach distended, containing in its cardiac third a whitish mucus; at this part all the coats are so soft that the finger passes through them on slight pressure, they have a pearly aspect, and the mucous coat in some spots is entirely removed. In the rest of its extent this coat is of a dull slate colour, mammillated, thickened, and very firm. The capillary vessels are very slightly injected. The small intestine is not distended, and contains a greenish-yellow mucus. The mucous coat is throughout pale, except in the fourth nearest the valve, which offers a general dark red tint, (ecchymosis.) The glands of Peyer are of the same colour as the rest of the intestine, not more prominent than usual, and of perfectly normal aspect. Isolated follicles not visible. Large intestine contains a little fæces. The mucous coat is not injected, and is of natural thickness and consistence. Liver firm, of the average size, presenting nothing remarkable. Bile, viscid. Spleen softened, more

than six inches long, of a very dark colour. Kidneys of the usual appearance. Mesenteric glands small and firm. The coats of the stomach contained much acid, tinging litmus paper red immediately.

Remarks.—This patient entered in the most advanced period of the disease, and with very malignant symptoms. The fœtor arising from the skin and breath was very intense, and one of the assistants contracted the disease directly from him, while supporting him in bed. After death the lesions were a very dissolved dark blood, permeating the tissues like a sponge, and, from the livid aspect of the face, the same condition of the blood probably existed during life. The decomposition of the body seemed to have begun already—the autopsy was made twenty-seven hours after death, in a cool season of the year. Another lesion intimately connected with the state of the fluids was the softening of the great tuberosity of the stomach and the acid developed in its coats. The glands of the intestines and mesentery were as usual found perfectly healthy, but the spleen was enlarged and softened. The lesion, then, was chiefly a very liquid state of the blood, which was darker than usual, and infiltrated the most depending tissues. The stimulating treatment was adopted, and seemed to promise some success, but the patient afterwards sank into a greater degree of prostration.

Case VI. *Fever began after a debauch, and lasted eighteen days—Great prostration, stupor, &c.—Pneumonia of the right lung and softening of the cardiac portion of the stomach.*—Henry Holmes, black, aged 22, employed in unloading vessels, lived with four others, in a small cellar. On the 12th of May drank very freely. Taken ill on the 13th, with the following symptoms: pain in back, pelvis and limbs, chilliness lasting a short time, and returning frequently; very dry skin; no sweating; slight delirium; sight confused; hearing good; tinnitus aurium; no nausea nor vomiting; bowels constipated; urine red, not altered in quantity.

Admitted 20th May. His tongue furred; cephalalgia great; no injection of eyes; sight confused; hearing good; a little tinnitus; pain in back and limbs; no chilliness; skin hot and pungent; bowels open. Pulse 100, feeble. Intelligence good. R. Mixt. efferves., cups to back of neck; neut. mixt. with 1 gr. antim. tart. Sponging with vinegar; gruel; lemonade.

May 21st. Intellect much more obtuse; decubitus more abandoned; no cephalalgia; answers confused; giddiness slight; sight and hearing good; no tinnitus aurium; tremor great; eyes more suffused; tongue moist at edges, furred at centre; bad taste in mouth; thirst great; no appetite; has once vomited; two or three stools, daily. No

cutaneous sensibility; no pain in back or limbs; skin hot, pungent and dry. Pulse 108, regular, undulating, but firm. Spirit. mindereri. \bar{z} vss., spt. nitri, dulc. \bar{z} ss. S. \bar{z} ss. q. sec. hora. Sponging; cold applications to the head; flaxseed enemata; gruel; thin broth. On the evening of the 20th, dry cups were applied to the back of the neck with some diminution of the cerebral symptoms.

On the 23d there was much more dulness of intellect, and insomnia; a blister was ordered to the back of the neck. In the night of the 23d to the 24th, there was frequent muttering delirium; skin clammy and cool. On the 25th, the prostration was extreme; heat of skin pungent. Delirium throughout the day; a blister was applied over the whole scalp, and, on the preceding evening, five grains of the carbonate of ammonia and ten drops of the spirits of turpentine were given every hour, and continued on the 25th.

On the 26th, the intelligence was clearer, the thirst greater; can take food with pleasure. Pulse 128, feeble. The teeth and tongue were more coated, and the prostration greater.

On the 27th, Huxham's tincture of bark, carbonate of ammonia and camphor, as injection. Blister to thighs.

28th. Eyes less injected; articulation still difficult; feels better; stupor continues, but he hears and answers questions. Skin less burning; extremities cool; great thirst; tongue brownish, mouth dry; constipation. Pulse 120, rather feeble. Continue treatment; wine, sixteen ounces; broth; gruel; poultice, with chloride of soda, to abdomen.

29th. Less stupor; pulse 120; less feeble. Respiration quick; much increase of cough; some subsultus; tongue less fuliginous; skin of natural temperature; one dejection. Continue treatment.

30th. Much more intelligent, but extreme prostration. No cephalalgia; no subsultus; sight nearly natural; tongue less brown and less dry; skin quite cool at extremities, and on the rest of the surface of less temperature than natural; very little delirium; sleep pretty good; thirst; some appetite; one stool. Pulse 120, less feeble. No subsultus; no cough. Continue wine, carbonate of ammonia, &c.

Death occurred on the morning of the 31st.

Autopsy, thirty-six hours after death.—Exterior. General rigidity, no emaciation, nor infiltration.

Head.—Sinus of the dura mater containing a small quantity of dark blood; arachnoid moist; almost two ounces of serum at the base of the brain. Pia mater easily detached; the large veins are distended with dark blood, but there is no injection of the smaller vessels. Cortical substance of a violet colour, which also extends to the medul-

lary portion, from which drops of dark blood exude in abundance. Consistence good throughout. Ventricles containing two drachms each of limpid serum—cerebellum and medullary protuberance firm, rather livid.

Neck.—Larynx and pharynx not injected, firm.

Thorax.—Left pleura contains no serum; has an unctuous feel to the touch. The left lung is soft, grayish, permeable to the air, the bronchi pale and natural. The right pleura is free from adhesions, and contains no serum. The upper and middle lobes of the right lung are soft and grayish, but the lower lobe and the lower margin of the upper, is heavy, impervious to the air, of a dark red colour, slightly granulated. The bronchi are reddish, and contain thick reddish mucus. Pericardium of the same unctuous feel as the pleura. Heart of the usual red colour; the valves natural, except a slight cartilaginous deposit in the mitral; tissue firm, large, flaccid; coagulum in the right cavities surrounded by much serum, a little fluid blood in the left; aorta pale and empty.

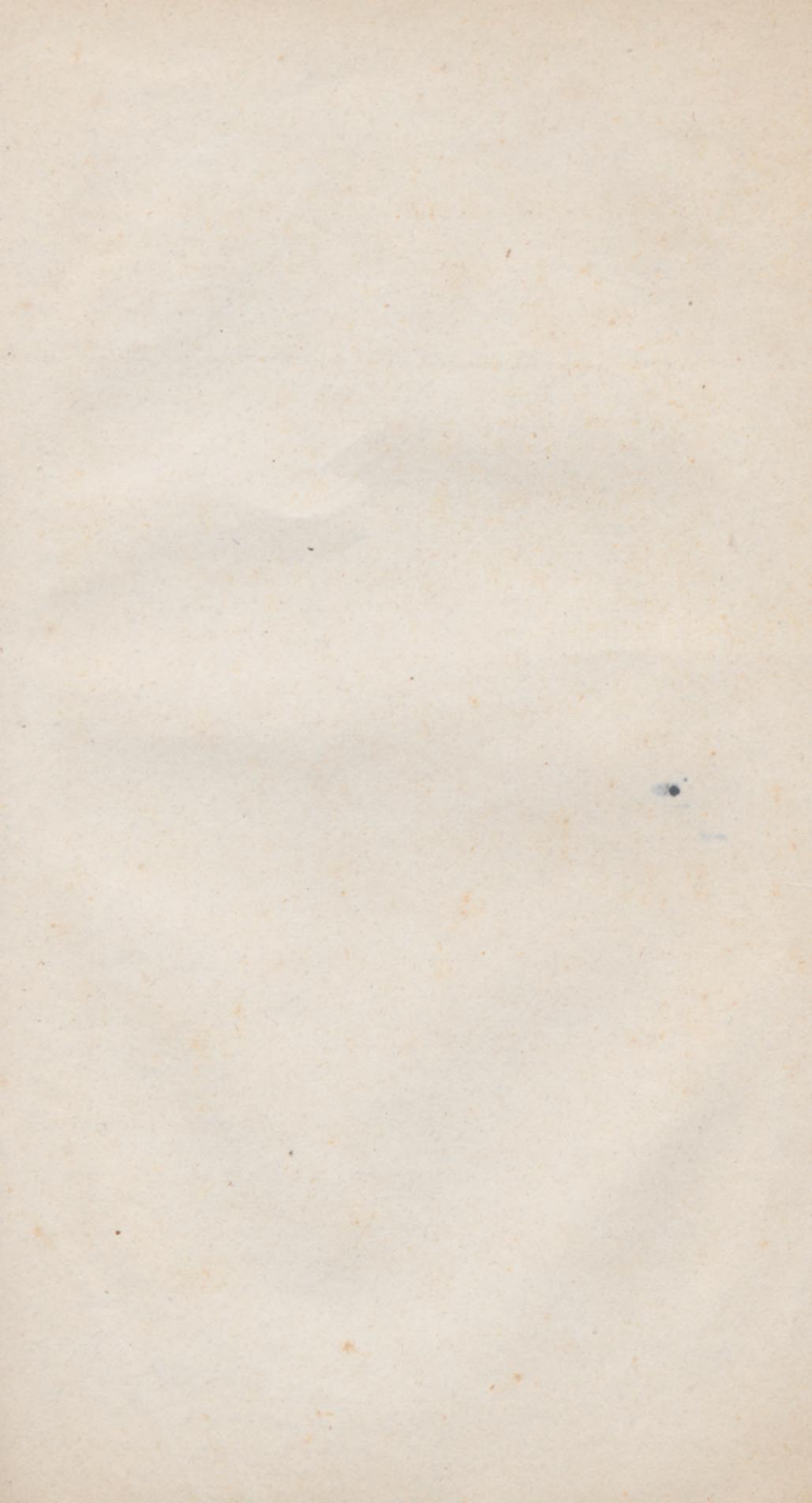
Stomach, rather distended by a grayish liquid. Cardiac half of the mucous coat is of a dirty-white colour, traversed by large blue veins, of the natural thickness, but much softened. In the rest of its extent this coat is of a slate colour, a little mammillated, but firm and not thickened. Small intestine contains the usual greenish mucous, its inner coat is throughout pale and of good consistence. Glands of Peyer distinctly visible, but slightly elevated, perfectly normal. Isolated follicles not visible. Mesenteric glands small and firm. Large intestine contains some liquid fæces, mucous coat pale and firm. Liver darker than usual, and rather less firm. Bile abundant and healthy. Spleen four inches in length, firm. Kidneys normal. Bladder contracted.

In this case there existed a considerable degree of inflammation of the right lung, which probably had an important agency in accelerating the patient's death. The stomach also presented the general slate colour so frequently seen in cases of chronic inflammation of its mucous coat, and the cardiac portion was softened, although the body was examined within thirty hours after death. The termination of the case was unexpected. The patient had decidedly improved and the disease would probably have terminated happily, if the inflammation of the lungs had not intervened, and rapidly increased just before death. On account of the extreme exhaustion of the patient the chest was not thoroughly examined in the last two days of his life, it had previously offered the usual signs of bronchitis, sonorous, sibilant and mucous rhonchi.

I have prepared for publication a case of dothineritis, and one of malignant remittent, or as it is called in the southern states, congestive fever. These cases occurred during the past summer when the epidemic of typhus still continued. The appearances observed on dissection did not differ from those already described in this Journal, in the report of cases which I published in the year 1834. In the dothineritis there were inflammation, and ulceration of the glands of Peyer, with a diseased condition of the mesenteric glands, and of the spleen. In the case of remittent fever the lesions were limited to softening and enlargement of the spleen and liver, and inflammation of the mucous coat of the stomach.

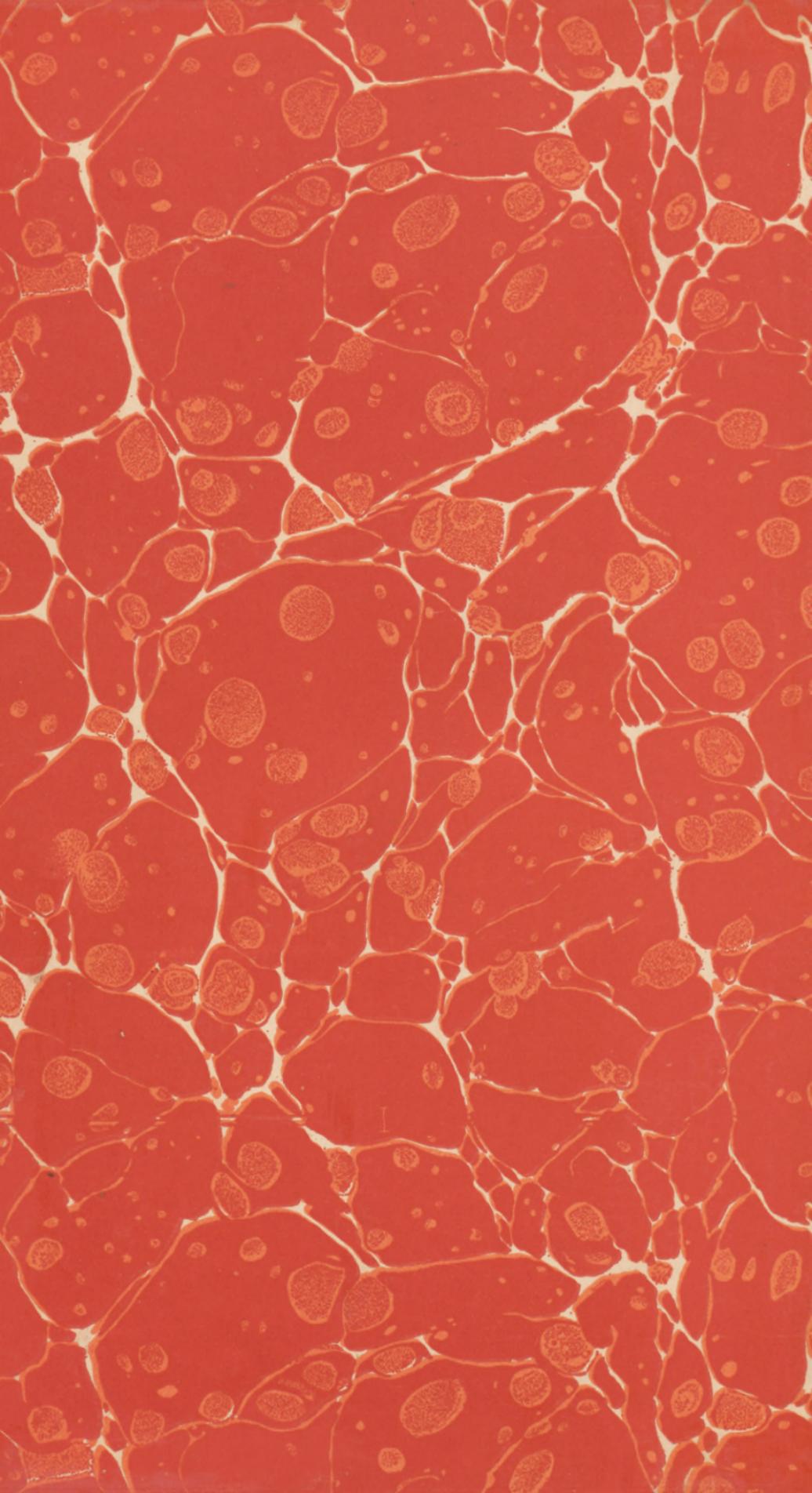
As their publication would extend the length of this memoir beyond the limits of a Journal, I refer the reader to the cases reported in 1834. The fevers differed in their symptoms, as well as in their anatomical lesions. The symptoms of these different affections will be compared in the concluding part of this memoir, at present, and I shall consider the anatomical lesions only, which were as different in each form of fever as the pustules of small pox are unlike the eruption of measles. The anatomical characters of these varieties of fevers are peculiar to themselves, and it is as impossible to substitute the lesion of the follicles of the small intestine observed in the typhoid fever for the pathological phenomena of typhus, as it is by treatment or other means to transform the eruption of measles into the pustules of small pox.

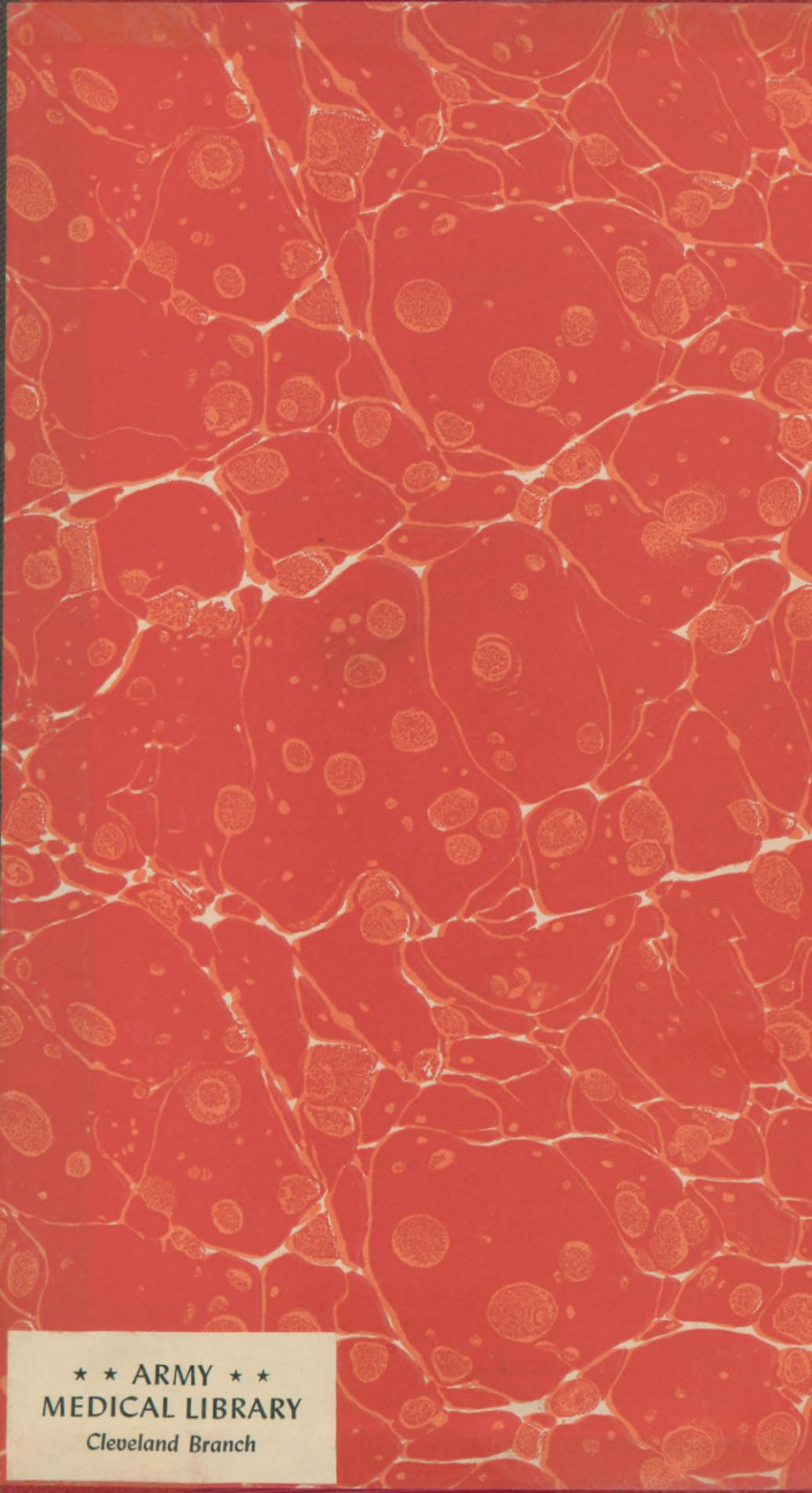
We shall hereafter inquire if the symptoms are equally distinct and characteristic in these fevers, which, from an abuse of names, are so often confounded with each other.



Small

Large





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