





A

PRACTICAL TREATISE

ON

ENTERIC FEVER.

"IT HAS LONG BEEN A MATTER OF REGRET THAT MEDICAL PRACTITIONERS, GENERALLY, DO NOT PAY GREATER ATTENTION TO RECORDING SYSTEMATIC NOTES OF THEIR MORE IMPORTANT CASES."—*Tanner*.

A
PRACTICAL TREATISE
ON
ENTERIC FEVER;
ITS
DIAGNOSIS AND TREATMENT:

BEING
AN ANALYSIS OF ONE HUNDRED AND THIRTY CONSECUTIVE
CASES, DERIVED FROM PRIVATE PRACTICE,

AND EMBRACING A
PARTIAL HISTORY OF THE DISEASE IN VIRGINIA.

BY
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Annex
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TO THE
MEDICAL SOCIETY OF VIRGINIA,

This Work

IS
RESPECTFULLY DEDICATED

BY
THE AUTHOR.

P R E F A C E.

THE following volume is an enlarged account of the cases of enteric fever reported in 1856 for the *Buffalo Medical Journal*.

Since the publication of that Report, I have received letters from gentlemen of the profession, both in and out of the State, requesting that I would pursue the subject to greater length. In obedience to this request I now submit to the profession, in separate form, my experience, together with such statistical data concerning the disease, as I have been able to collect from the various sections of the State.

But, it may be asked, why serve it up in *book form*? Why another volume on enteric fever after the ample accounts of the disease given by Dr. Bartlett in his work on Fevers, and by Dr. Wood in his work on Practice, both paragons of American medical learning? If so, I reply that the material out of which this volume is compiled, has been collected in private practice—rural practice—and in a region of country where, on account of the frequency of the disease during the past fifteen years, extensive opportunities have been afforded for a thorough understanding of its symptoms, uncontrolled by the influences that operate in the production, march, and termination of the disease, in city and hospital practice. Again, if the accounts given by these

(vif)

and other writers be supported by country experience, is it not desirable that their labors should be indorsed by this testimony? If they differ in any particular, however slight, should this not also be known? The lovers of medical truth will answer.

The little volume herewith submitted is just as plain and simple a statement of an important disease as I could make. Its facts have been gathered at the bedside of the rich, and the *very* poor—in the well situated and comfortable dwelling, and in the unfavorably situated and poorly constructed cabin-house, and among all ages.

The importance of country practice in arriving at the true character of any given disease, is everywhere acknowledged; yet how small is the harvest, considering the number of laborers employed! In Virginia, as in many of the other States, *private practice* may well nigh be considered a *sealed* book, and that this should be the case is indeed unfortunate for the advancement of our knowledge of disease. It is a lamentable fact that when the best of country physicians die, their experience, valuable sometimes, as it is hard earned, generally dies with them; they are of much service while living, but afterwards, for all the good they have done to advance the profession, it was as well they had not lived. They have been like the sunlight on the wall, which comes and goes and leaves no mark behind; or the shadow on the shore, which silently passes and disappears, leaving no footprint to indicate its course on the sands. A few, however, have shed lustre on their names and calling, and left an impression for good that will remain; but alas! what a vast number have left no trace of their professional existence! There is this reason, perhaps, for the manifest indolence of country practitioners in recording their experience. It is the custom to estimate themselves as necessarily occupying an inferior position

in the profession, and they look up to the professors of their *Alma Mater*, and to the professors of the schools generally, with a sort of reverential awe. They esteem the intelligent labors of these gentlemen not *too* highly, but to the exclusion of their own worth, and the eligibility of their positions for the performance of good works, which, if industriously improved, by imitating the example set before them by those whom they are accustomed to deem their superiors, would not only prove of inestimable value to themselves, but forward the progress of their art, and especially tend to increase our knowledge of diagnosis and therapeutics.

Such is the extent of the apathy which prevails among the members of the medical calling, that our literature is almost entirely wrought from the labors of the few—professors of schools, and those in charge of hospitals. Were it not for the laudable endeavors of these men, we should not have an American medical literature.

In many of the States the profession is represented by one or more well conducted journals. These are the willing recipients of all that may seem of importance, even down to the humblest walks of the profession. There being no excuse for so much unprofitable silence, as at present exists, let us therefore speedily shake off our lethargy and elect to become useful members in the largest and best sense of the term. Let us individually and collectively, as students and practitioners, strive to improve our art, and each, being armed with the ægis of truth, contend one with the other for the greatest amount of carefully collected material for the completion of that great *national medical edifice* whose foundation-stones have been laid broad and deep by our venerable fathers.

If by the presentation of this little volume I can call the

attention of my country colaborers to the importance of recording systematic notes of their experience, I shall have performed a satisfactory labor.

For the arrangement of its contents I offer no apology, except that the one chosen seemed most natural and easiest of description.

To make it the more complete and convenient I have not hesitated to quote largely in the production of some of its chapters. Wherever I have quoted, I have always endeavored to acknowledge the authority. If, however, I have made any omissions in this respect, it has been done accidentally, or because I have considered whatever was thus employed common property.

To the gentlemen in the different sections of the State who so kindly and promptly responded to my interrogatories concerning the disease in their respective localities, I am under many obligations, not only for the valuable assistance afforded, but for their kind wishes for the success of the undertaking.

JAMES E. REEVES.

PHILIPPI, VA., *April*, 1859.

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ENTERIC FEVER.

CHAPTER I.

PRELIMINARY MATTERS.

FOLLOWING the example of Dr. Wood, I denominate the disease to be described in the following pages, *Enteric Fever*. A vast amount of learning has been expended upon the nomenclature of the disease, which, unfortunately, instead of elucidating, has obscured it. The name *typhoid fever*, although objectionable, is in common use. In a private letter to the author, Dr. Wood remarks: "The name typhoid fever, was given by Louis in ignorance of a part of the ground; for he did not know, certainly, that another fever existed which ought to be called typhus; and in this uncertainty he named it typhoid, so as to convey, at any rate, the idea of analogy, if not identity, with what had previously been called typhus. Now that the fact is recognized, that these are two wholly distinct diseases, it seems to

me quite unphilosophical to give to one of them a name from its supposed resemblance to the other. We say *varioloïd* very properly, because the affection so called is a modification of *variola*, and depends on the same cause; but the typhoid is not a modification of typhus, and depends on a different cause. It is true that, in some cases, and in certain symptoms, it is like typhus; but scarcely more than it is, in other instances, like miasmatic remittent. It is certainly, I think, not more like typhus than roseola is like scarlatina; and yet we do not call the former *scarlatinoid*, or the latter *roseoloïd*. Besides, the word typhoid has before been applied to a *state* occurring in numerous febrile diseases, resembling that of typhus: as a typhoid state of pneumonia, dysentery, bilious fever, etc. etc., and its application to any one disease at present may lead to confusion, as, in fact, it often has led, in the mind of the learner." The name enteric fever, I think, is unobjectionable, and will ultimately triumph, "as," in the language of Dr. Wood, "it merely indicates that the intestinal affection is characteristic, as in the case of smallpox, which we name from the eruption." Without further apology for the choice of this name for the disease, I shall at once proceed to classify its different forms, and describe the symptoms peculiar to each. I propose a division of the symptomatology of enteric fever into three distinct forms:—

1st. THE SIMPLE, OR MILD.

2d. THE INTERMEDIATE.

3d. THE MALIGNANT, including the FATAL.

This arrangement I think will be found preferable to any which our authorities supply. After a very limited experience at the bedside, I learned to recognize the disease in these forms, the correctness of which distinction a more enlarged service has abundantly verified.

I admit, however, that in some instances it may be difficult to say where the line is to be drawn, so very gradual is the transition from the one *form* into the other; but in the large majority of cases there is but little difficulty in recognizing it. During some seasons I have observed the character of the disease to be *mild* throughout; at other times the majority of cases occurring, passed rapidly into the *intermediate* form; and at others, either a tendency to still be protracted into the severer form, the *malignant*, or to assume this character in the beginning. Again, I have seen the disease prevail when the *medical constitution* did not seem to influence or favor the development, in the majority, of either form, but would appear in all, the force of the poison expending itself according to the peculiar aptitude or idiosyncrasy of each individual patient. When this was the case in the same family, I have had a patient suffering from the *mild form*; another, in which the disease, having been mild for a longer or shorter

time, passed into the *intermediate* form; another, in which there was a rapid march through the milder forms into the *malignant*; and another, in which the disease was essentially malignant from near the beginning.

The duration of each of these forms varies very considerably in different cases. There is perhaps no other acute disease in which the period of convalescence is more variable and uncertain. The duration of the mild form may not exceed nine days, or it may be protracted to twenty, thirty, forty, and even to fifty days, in either event neither the patient nor his physician observing any material change after the first twelve or twenty days, except that there has been a gradual decrease of bodily strength; or the case thus mild for several days may pass into the *intermediate* form and yet not run a longer course, before the more aggravated symptoms pass off; or, after having completed a longer or shorter measure of the symptoms of this form, may still take on the severer class of symptoms belonging to the *malignant*, and yet the duration of this case may not exceed the limits of one of the *mild* form. But the malignant form of enteric fever, as I have before indicated, is not always the consequence of the existence first of the milder forms. In many instances the disease is essentially malignant in the beginning, or a few days thereafter, and in these also the duration is alike variable. These differences of duration will be more fully set forth in a subsequent chapter.

CHAPTER II.

SYMPTOMATOLOGY OF ENTERIC FEVER.

Everything or circumstance happening in the body of a sick person, and capable of being perceived by himself or by others, which can be made to assist our judgment concerning the seat or the nature of his disease, its probable course and termination, or its proper treatment; every such thing or circumstance is a symptom.—*Watson.*

PRODROMATA.

THE accession of enteric fever is quite different in different cases; some come on suddenly without any premonitions. In others, the period of incubation is extended from two to six days, and in a few instances, even to eight, ten, and twelve days; the patient complaining the mean while of sensations of mental and bodily languor; inability to perform his accustomed exercise; a dull, heavy pain in the head, back, and limbs, with a degree of muscular soreness, almost amounting to positive pain. At the same time, he experiences feelings of chilliness alternating with heat; the appetite is greatly impaired; occasional nausea; some unnatural thirst, with a dry, insipid state of the mouth; the pulse grows quick, usually ninety to ninety-five per minute; the countenance expresses indifference; the sleep is in-

errupted, on account of an evening exacerbation of febrile excitement; and the morning arrives, bringing with it no marked alleviation of the symptoms. In some instances, however, there seems to be a morning remission of all the troublesome symptoms, and sometimes free sweating occurs. Again, in a very few instances, I have seen this relaxation of symptoms occur on alternate mornings, and continue for several days after the disease was fully formed, though not so distinctly marked as during the formative stage. There may be, at the same time, a moderate diarrhoea, or a costive state of the bowels, with now and then a few wandering pains in this region, with a sensation of more or less fullness of the stomach, the latter attracting the particular notice of the patient, who wonders why it is so, frequently remarking, that "for several days I have not been able to eat anything worth mentioning." Hour after hour these ill-feelings grow more distressing, when at last a sensation of chilliness, more severe and prolonged, is experienced, with an aggravation of the headache, backache, etc. The patient is now gladly induced to take his bed, although a few hours before he flattered himself that his feelings of *malaise* were only those resulting from the effects of a severe *cold*—too trifling to require medical aid—which would pass off of themselves.

Such is the outline of the formative symptoms of en-

teric fever, in the maximum number of cases. In the minimum number this regular succession of prodromata is not observed: headache, backache, chills, sometimes nausea and vomiting, with more or less prostration of physical strength, seem to be the immediate accompaniments of this mode of attack.

The annexed table will show the mode of access in one hundred and thirty consecutive cases in my practice, in which I endeavored to ascertain this point:—

MALES.	
Access sudden in.....	19 cases.
2 days formative stage in.....	9 “
3 days formative stage in.....	24 “
4 days formative stage in.....	11 “
5 days formative stage in.....	4 “
6 days formative stage in.....	2 “
8 days formative stage in.....	2 “
	—
	71 “

FEMALES.	
Access sudden in.....	21 cases.
2 days formative stage in.....	12 “
3 days formative stage in.....	15 “
4 days formative stage in.....	6 “
5 days formative stage in.....	4 “
6 days formative stage in.....	0 “
7 days formative stage in.....	1 case.
	—
	59 cases.

It will be seen that in those cases in which the access was sudden, and those on which the formative stage was lengthened to two days, a slight preponderance is exhibited in favor of females; but those in which it was protracted to three, four, five, and six days, form a majority in favor of males.

I.—SYMPTOMS OF THE MILD FORM.

Of the one hundred and thirty cases spoken of, sixty-four were of the *simple* or *mild* form, the symptoms peculiar to which were as follows: a marked increase of the former symptoms; the pulse more frequent, say from ninety-five to one hundred; increased heat of skin; respiration a little hurried; urgent thirst, the patient calling for water every twenty or thirty minutes; violent headache and throbbing of the temples; face flushed and apparently swollen; tongue covered with a white or yellowish fur, occasionally dotted with an aphthous exudation; urine diminished in quantity and highly colored; wandering pains in the stomach and bowels; nausea, and occasionally free vomiting; entire disgust for food; bowels inclined to looseness, slightly tympanitic, and a gurgling noise, with tenderness on pressure, over the cœcal region. This *gurgling noise* I have found to be a constant accompaniment of *enteric fever*. The patient passes restless nights, his sleep is disturbed, and even rendered painful by frightful dreams, frequently crying aloud as if an actual participant in some fearful tragedy. During his dozing moments through the day, painful impressions trouble his mind. A common impression is, that his body is severed in pieces, one portion at one side of the bed, another at the other, which he attempts to reunite, and at the point when he

is about to succeed in his imaginary undertaking, some other accident befalls him, when he suddenly awakes to communicate the torture of mind he has undergone.

Toward the fifth day the headache generally passes off, but in its stead, in many instances, increased obtuseness or drowsiness of manner is observed. During the progress of an ordinary case, the bowels are moved two or three times a day, the stools, in appearance, "resembling new cider;" there is a daily exacerbation of fever, most generally toward evening, sometimes twice a day, during which red spots about the size of a half-dollar occasionally appear, first upon one cheek and then the other, rarely upon both at the same time; or, in the absence of the spot on the cheek, the nose may become red and shining, giving to the patient rather a strange appearance; there may be also occasional epistaxis, though seldom profuse; the tongue, after the first four or five days begins to look red around the tip and edges; sometimes it remains clean throughout, at other times it is thickly coated with a whitish or yellowish looking fur; sometimes it parts with its fur first in patches, one side clean and of a bright-red, while the other half is covered more or less thickly; it may be moist, and continue so during the entire course of the disease, but it is very frequently inclined to dryness, and when protruded will tremble.

During the entire advance of the case, connected with

the above symptoms is more or less cough. It usually sets in after the close of the first four or five days, and may be very slight or troublesome, followed very often, toward the close of the disease, with free expectoration. After the disease has continued for several days, whether the diarrhœa be troublesome or not, there is invariably more or less tympanitis; most generally it is slight. But among the number of symptoms enumerated, no one is usually so well marked and constant as debility, and the degree in which it exists, at any period, cannot be correctly estimated, unless when the patient attempts to sit up, in or out of his bed: a soft couch and cool water are to him the greatest luxuries.

To complete the description of the symptoms of this form, I mention another accompaniment, the *rose-colored* eruption, the regular appearance of which I have seldom failed to observe at some period of the disease. I cannot say this much of the transparent vesicular eruption called *sudamina*, never having noticed it but in a few cases, all of which occurred in the form next to be described.

Delirium is not a constant symptom of the simple or mild form of enteric fever, though its occurrence on waking from sleep, or during the night, is not at all uncommon. The mind, however, always acts correctly when the attention is drawn to any particular person or subject.

I have thus attempted to describe the symptoms, with their modifications, peculiar to the *mild* form of enteric fever, all, or a majority of which, enter into the composition of every case of the disease. The duration of these symptoms differs very considerably in different cases, yet the amelioration or aggravation of certain symptoms at certain times, either point to approaching convalescence, or portend the conversion of this form into one of greater severity. If the case is to assume a graver character, the symptoms above enumerated become sooner or later exasperated; there is a greater diminution of the secretions; the pulse becomes more frequent, and exhibits less strength; greater obtuseness of the senses, with wandering of the mind during the day; diarrhoea increased, etc. But if the case is about to terminate in convalescence from this form, then there is an entire relaxation of these symptoms; the febrile exacerbations are less marked and of shorter duration; the skin relaxed and perspiring; the sleep refreshing; the pulse becomes soft and less frequent; the tongue, if it has been furred, loses its coating and is moist; the stools less frequent, and of greater consistence; the quantity of urine voided is considerably augmented; the abdomen becomes soft and loses its tympanitic sound when struck with the fingers; thirst diminished; the countenance brightens; the features shrink, and the appetite returns.

II.—THE INTERMEDIATE FORM.

Thirty-two cases presented the exasperation of symptoms characteristic of this form, which was as follows: the febrile exacerbations became more prolonged, and their abatement followed less frequently with moisture of the skin; the pulse more frequent, say 110, 115, 120, or 130 to the minute, and of less strength; greater dryness of the tongue, with an increase of coating. In this form, as the case advances, the condition of the tongue becomes peculiar; its edges are thin and of a bright-red color, and apparently contracted, for its surface is concave, resembling slightly in form, the bowl of a spoon with its point bluntly rounded and cracked at the centre. Frequently there is a dark-brown stripe, from a half to three-fourths of an inch in width, running down the middle of the tongue as far back as can be seen; and if the patient is told to show it, he does so with difficulty, but after a few trembling attempts he succeeds, the whole performance telling pretty plainly how much strength yet remains. There is also, at the same time, an accumulation of *sordes* about the angles of the lips, upon the gums and teeth; twitching of the tendons; increased somnolency; duskiness of the countenance, and increased confusion of mind. The patient does not call so often for cool drinks; he seems insensible, in a great measure, to his own wants. If there is

a disposition to go to stool, he does not make his want known to the attendants until just at the time he feels that the discharge must take place, and he will suffer his bladder to become enormously distended, sometimes without an effort, or even a desire, to empty it. Dullness of hearing is a common attendant upon this form of the disease. In some instances it almost amounts to complete deafness. Wandering of the mind, more or less, is almost always present. It now occurs during the day, and sometimes very strange impressions trouble the mind. It is quite a common thing for patients to imagine the foot-posts of the bed converted into uncomely personages, placed there to make all sorts of grimaces, and they will frequently start up in anger to drive them from the room, the effect of which, for the time, dispels the illusion, and they lie down wondering at themselves for being so grossly mistaken. Soon, however, this Quixotic sally is repeated, and thus the patient is constantly annoyed, except when the attention is rationally fixed. During the night the delirium becomes more constant, though in these cases never so profound but that the presence of the physician, or some strange visitor, causes the mind to act correctly.

Coincident with the above there are other and significant symptoms having peculiar reference to the state of the bowels. Upon an examination of the abdomen a marked increase of tympanitic distension will be ob-

served. Diarrhœa is more or less present, always proportioning the amount of meteorism to the frequency of the discharges. It is sometimes slight, causing not more than two or three stools in the course of a day, and at others, as many as ten or twelve in as many hours. The dejections, for the most part, are darker and more offensive than in the mild *form*, and sometimes attended with very acute pain, which is most generally referred to the umbilicus. The urine is deeply colored, passed in less quantities, and occasionally with much difficulty. When there is a disposition on the part of the patient to empty his bladder, he cannot always succeed in his effort, and unless relieved by the catheter much suffering is the consequence. It is in the region of the bowels that the *rose-colored* spots generally first make their appearance; sometimes they are but few in number, at other times spreading over the entire breast and shoulders. Upon an average, I have not found this eruption to occupy as much surface as in the preceding form. *Sudamina*, as before observed, I have not so often noticed, but whenever found was always in this form of the disease, preceded for a day or two, at intervals, by free perspiration. *Epistaxis*, when it occurred, was always more profuse than in the milder form. In three cases the loss of blood in this way was extensive, and for several days obstinately resisted all attempts to arrest it. Two of these patients

recovered. This form of the disease may go on undetermined for a few days only, or for many days, flattering us at one time with an approach of convalescence, at another exciting our fears. It is not at all uncommon to see the tongue clean, become moist, the countenance brighten, diarrhoea and tympanitis diminish, and the skin become moist, when, without the slightest apparent cause, there is a sudden and alarming aggravation of all the symptoms; the tongue, just rid of its coating, becomes dry, red, cracked, and bleeding; fresh sordes accumulate on the lips and teeth; frequent disposition to stool—at one time a free passage, dark and offensive, at another small, with a corresponding increase of tympanitis and abdominal tenderness; pulse more frequent and less resisting; previous duskiness of the countenance, and delirium; twitching of the tendons, and the skin hot and dry as before. This mutation of symptoms may last but a day or two, and the patient recover without necessarily taking on the graver symptoms reserved as peculiar to the next and gravest form, the malignant. When the case is to convalesce from this form, this aggravation of symptoms just named as rapidly subsides; the tongue coats over again with a thin white fur, and is moist, and the state of the pulse, the bowels, and the mind, become as favorable as before, and the case gradually merges into convalescence.

III.—THE MALIGNANT FORM.

I have already said that enteric fever may be stamped with malignancy from the beginning, without having necessarily to pass through the milder gradations. This, however, is not generally the case. The majority of cases of this form is preceded, for a longer or shorter period, by each of the simpler forms. Twenty-five cases passing through the milder gradations, resulted in this form. To describe the symptoms peculiar to these, I shall go back to the point at which I left off, as completing the description of the *intermediate* form, and endeavor to present a continuous picture of the disease, from the mildest to the most severe, and then proceed to notice the rapid succession of symptoms occasionally occurring, which mark the case as malignant in the beginning.

As already stated, it is not uncommon, after a seeming amelioration of all the symptoms, for sudden and alarming changes to occur, exposing the patient to the dangers of a still severer form, the most remarkable of which was the drying of the tongue after having become clean and moist. When the disease is to assume greater gravity, it is generally at this juncture that it becomes apparent; and the case, thus aggravated, more or less rapidly proceeds to a final termination, either in recovery or death. Prominent, amid this increase of

number and severity of symptoms, will be a marked prostration of strength. The patient does not usually lie upon his side, but on the back, with a disposition to slip down in the bed. The pulse becomes more frequent and feeble; in some cases it is almost impossible to count it, on account of the constant twitchings of the tendons of the wrists—*subsultus tendinum*. In a few cases these muscular twitchings amount to a general tremor, and in such instances even the bedclothes are in constant movement—or if one lean upon the bedstead, a trembling sensation is distinctly perceived. The tongue takes on an additional coating—is black, and bloody crusts form about the mouth. If the patient is requested to protrude his tongue, he may do so, but the movement is slow and trembling, and he will likely leave it exposed if not told to take it in. In many cases deglutition is interfered with, so that it is with great difficulty that food and drinks are introduced into the stomach. The voice is sensibly altered. In some cases it becomes so feeble that the patient cannot be heard above a whisper; at other times it may be strong enough, but the articulation is so imperfect that all attempts at conversation amount only to a trembling jargon. Cough is more or less present; expectoration sometimes free, at other times nothing but a little frothy mucus is expelled; the breathing is usually somewhat hurried, and occasionally it becomes irregular. The

heat of the surface may be uniform, or it may be unequally distributed,—one part hot and parched, while another is cool, or the face and hands may sweat freely, while the rest of the body is dry and husky. If, at the same time, attention is paid to the state of the bowels, a proportionate degree of disorganization will be found to have taken place there: the tympanitic distention has enormously increased, so as to present sometimes “a convex outline from the ensiform cartilage to the pubis;” and if pressure is made, the entire abdominal surface appears thin, hard, and resisting, “as though its walls were made of pasteboard;” and scattered here and there upon its surface will be found, perhaps, a few of the rose-colored spots. The stools are more or less frequent, very offensive, and in color and consistence may resemble brown paint, or even *tar*, and the coating which these discharges give to the *pot* is not always easily removed. It is in this form of the disease *always* that the most frequent and profuse hemorrhages are observed. In some instances the blood discharged from the bowels is red and but little changed; in others it is dark and disintegrated. The urinary discharge has also undergone a commensurate degree of alteration. While the quantity of urine voided at a time has become less, its color is that of dark lye, and not unfrequently little particles of coagulated blood are deposited at the bottom, on suffering it to stand awhile; or it may be re-

tained, requiring the repeated use of the catheter. Delirium is a common attendant upon this form of the disease. It may be attended with wild and violent agitation, but more frequently is of that species called *low* and *muttering*; the patient picks at the bedclothes, or at imaginary objects. Soon succeeds involuntary discharges of urine and fæces, and there arises from the patient's body the most sickening odor. Along with the above symptoms, the vitality of the skin becomes so feeble that the parts exposed to pressure, as the sacrum, hips, and shoulders, become abraded—which are most likely to be followed by sloughing.

Finally, if after a long and tedious struggle between the efforts of nature to *cure*, and the powers of disease to *kill*, nature is about to triumph, the pulse becomes less frequent and acquires strength; the delirium and stupor gradually subside; *subsultus tendinum* ceases; the tongue becomes moist and cleans from the tip and edges; the discharges from the bowels are less frequent, less offensive, of brighter color, and more consistent; the quantity of urine discharged is increased and it lightens in color, and on standing throws down a thick sediment; the skin becomes moist and of uniform temperature; the features shrink, the eye brightens, and the appetite returns. But if disease gain the mastery, it may accomplish its purpose of death in different ways. If it is to be by *coma*, the low muttering deli-

rium, from which the patient could at first be aroused, gradually becomes more profound; petechia and vibices make their appearance upon the surface; swelling and ulceration of the parotids not unfrequently occur; the jaw falls by its own weight, and the lips tremble continually; the patient lies with half-closed eye-lids, and the balls are seen to roll from side to side; the pulse beats so rapidly that it can scarcely be numbered, and with decreasing regularity and strength; the respiration is rapid and irregular; automatic efforts are made to expel the mucus which chokes up the lungs and begins to rattle in the throat; a cold, clammy sweat breaks out upon the skin; the extremities become cold, this coldness gradually extends to the trunk, when, at last, there is a final struggle and death reigns!

In other instances death approaches by almost imperceptible degress: the patient, with perfect consciousness, passes quietly away, bearing the happy testimony that the exit of life is more terrible to the spectators than to him whose frail bark is being launched upon the dismal stream. The tendency to this or that mode of death will be more fully spoken of in a subsequent chapter.

I have now completed the symptoms of a case of enteric fever, either *mild* throughout, or after having been mild for a longer or shorter time, passing into the *intermediate* form, and convalescing from this, or entering into one of still greater severity—the *malignant* form.

I now come to speak of those cases, occasionally occurring, in which a degree of malignancy is observed in the beginning or very soon thereafter. Nine cases assumed this cast immediately upon the full development of the fever. These patients were not all suddenly taken down: six of them complained of feeling unwell for three days previous to taking their beds; the remaining three retired to bed at night, enjoying their usual health, and awoke in the morning with sickness and vomiting, headache, etc., soon followed by a chill and then high fever, etc. In all of these cases strong manifestations of cerebral disorder were present at the development of the disease: aversion to light and sound, watchfulness, succeeded by confusion of mind and delirium, the latter coming on during the first two or three days of the disease. During the farther advance of the case, the delirium became continuous, and occasionally violent; the eyes injected; the countenance of a dusky hue; startings of the tendons; skin intensely hot; the bowels, at first, a little inclined to be sluggish; the tongue thickly coated, of a dark color, and inclined to dryness; pulse 115, 120 or 130, and not very firm; cough and hurried respiration; bleeding at the nose, which was sometimes free, and with difficulty arrested; the urine diminished in quantity and highly colored. Such were the symptoms attending these cases for the space of six or seven days, after which,

instead of the previous sluggishness of the bowels, diarrhoea set in, with thin, curdy-looking discharges, and accompanied with tympanitis, and a marked prostration of strength. The pulse after this time was of less strength; heavier *sordes* formed about the lips, gums, and teeth; the tongue very dry, and its coat looking as though it were made of black varnish, for it glistened, and when protruded trembled exceedingly. The case thus far described may go on undetermined for only a few days longer, or even for weeks. When it is to result fatally, the case takes on the additional symptoms tending to death by *coma*, as already enumerated. Two of these cases only terminated fatally.

CHAPTER III.

RECAPITULATION OF SYMPTOMS.

THE importance of carefully studying the symptoms of enteric fever cannot be over-estimated. From the symptoms we form our diagnosis and prognosis, and learn the proper direction to conduct the treatment.

From the description given in the previous chapter, it is seen that there are certain symptoms belonging to the disease which are of especial importance, both as regards their constancy and their relation to the diagnosis and prognosis of the affection. These I shall notice as follows:—

1. HEADACHE.
2. STATE OF THE MIND AND SENSES.
3. STATE OF THE MUSCLES.
4. STATE OF THE PULSE.
5. COUGH AND BRONCHIAL RALES.
6. DIARRHŒA.
7. TYMPANITIS.
8. THE ROSE-COLORED ERUPTION.
9. HEMORRHAGE.
10. TENDENCY TO THE FORMATION OF ESCHARS.

1. *Headache*.—Headache, with a sense of heaviness and vertigo, is very seldom absent at the beginning, and in many instances is the only subject of complaint throughout the entire course of the disease. In 128 of the 130 patients who were of sufficient age to express suffering, headache was complained of in all save one. This patient suffered from the mild form of the disease. It is most generally described as being confined to the forehead and temples, but sometimes to the back of the head and neck, and at other times the head is said to ache all over. Along with this pain, whether confined to the frontal or occipital region, there is usually more or less tenderness of the entire scalp. The character and degree of this pain are various. Generally it is described as a dull, heavy, throbbing pain. Sometimes it is excruciatingly severe, and now and then I have seen it assume a neuralgic character. This was the case with a patient, a female, included in the cases of the *intermediate* form. The duration of this pain varies. It may continue for three or four days only, or last until the beginning of convalescence. Its average duration, in the mild form, I think may be estimated at about six days. In those cases which pass into the severer form, the intermediate, it is usually of longer duration, and, perhaps, of a more acute character.

Relief from this suffering does not come suddenly. In the milder form its gradual cessation may be said to

occupy some two or three days. In the severer forms it is generally lost in delirium and stupor.

2. *State of the Mind and Senses.*—One of the earliest and most constant phenomena incident to enteric fever is a marked alteration in the activity of the mind. There is a blank, apathetic, or dejected expression of the countenance, which is so indicative of cerebral disorder that we have but to look on our patient to know that he is mentally indisposed. He is forgetful, and finds it difficult to fix his mind upon any one subject. He is indifferent to all occurrences that take place around him, for the prosperity of his business, however actively it was his custom to be engaged prior to taking his bed. Sometimes, however, instead of this listlessness and indifference of manner, the idea of his compulsory pause in business torments him, and he becomes restless, impatient, irritable, childlike, and manifests an interest not only in his business concerns, but the greatest solicitude for his recovery. He waits with impatience the promised visits of his physician, whom he charges with gross negligence if from any cause an expected visit has been for a few hours delayed. This supposed negligence, however, is soon atoned for by the physician's presence, and favorable answers to the interrogatories, "How do you think I

am to-day, doctor?" "How long will it be, do you think, before I shall begin to mend?"

Either of these conditions of mind, in the mild form, may continue up to the period of convalescence. In the graver forms they are sooner or later lost in delirium and stupor.

Delirium is a common accompaniment of the disease. It may be either calm or violent. In the mild form the mind wanders only at night, or when the patient is left to himself; but in the succeeding form this wandering occurs during the day, when the attention is not directly fixed. It is generally the case that the mind can be influenced to act correctly and to fix itself, when endeavors to this end are made by the physician or attendants; and it is rare to find a patient, at any stage of the disease, who does not retain a partial consciousness of his situation. He may keep up a constant muttering of incoherent sentences, yet if spoken to in a commanding tone pays a partially intelligent attention; or if opposed in his attempt to commit any impropriety, will offer no resistance. When the delirium is violent it usually requires constant restraint to keep the patient in bed. He cries, laughs, and makes use sometimes of the most obscene language. At other times he seems in a fit of anger, and in some imaginary rencounter, strikes at the bed-posts, the wall, or at the attendants, with all his strength; his consciousness being embar-

rassed "by false presentations, illusions, phantasms; a condition in which he is haunted by *spectra* analogous to those visual and auditory sensations which arise in connection with disease in the optic or acoustic nerve; a state in which the centre of consciousness, abnormally excited, forges subjectively all manner of images of incident and circumstance, with a self-assurance of their objective reality."* A very common impression with such patients is, that they are absent from home, and surrounded by persons who take particular delight in doing them an injury to both person and property; and, harassed by these impressions, they leap out of bed, and if not at once arrested, make for the door, or in the attempt, fall exhausted upon the floor. ✓

In a few instances the delirium is strictly monomaniacal. Thus a patient, aged thirty-six, included among the number of intermediate cases, had the impression that God had communicated to her His decree of her death, and the precise day on which she would die; that her *sins* were such as could not be forgiven, and therefore she was to be eternally lost! She indignantly spurned the idea of successful medical treatment, and even declared my presence presumptuous. My approaches to her bedside she endeavored to repulse by the interrogatory, "Do you think, sir, yourself greater

* Simon's Genl. Pathology, p. 153.

than God? He has decreed my death to take place next week, and it will take place at that time in spite of all earthly interposition." For several days she continued in this state of mind, yet finally recovered without anything further strange connected with her case.

The species of delirium most frequently observed in the severest form of the disease, is that denominated *low* and *muttering*, and succeeds the milder degrees of suspended consciousness. The patient lies with half-closed eyes, and utters in a low and whispering voice disjointed sentences, having only a vague connection. Sometimes he is in constant motion, picking at the bedclothes, throwing them about, or drawing them tightly over his head. In the majority of such cases profound coma soon succeeds, from which no stimulus can arouse the patient.

The frequency and degree of delirium are in proportion to the severity of the disease. When it appears early, and is well marked, the case is sure to run a grave course. In the majority of cases it does not usually make its appearance in a well-marked form until during the second week.

It is equally common among children, who suffer from the disease. Its character, however, is usually mild, and shows itself earlier than in adults. Of twenty-seven cases of the malignant form, terminating in recovery, delirium was well marked in twenty-five. Of eleven fatal cases, this symptom was present in a de-

cided form in ten, the exceptional case passing into death without a cloud to obscure its approach.

From the above it will be perceived that the symptoms relating to the state of the mind may vary from mere mental languor or inactivity, in the beginning, to the wildest delirium; that the embarrassment of consciousness may cease here, or be extended to *carus*, a state of complete insensibility, the last step in the march to death. The presence of this symptom is sometimes of long duration. I have known patients suffering from enteric fever who continued in a state of delirium for upwards of twenty days; but this is not common. Its subsidence or diminution constitutes the surest sign of approaching convalescence.

It is worthy of remark here that while it is usual for the mind to have regained its entire soundness by the time convalescence is fairly begun, that occasionally cases occur in which a morbid condition shows itself even after the patient is able to be out of doors. A case of this kind is included among the nine cases spoken of, presenting a severe form of the disease in the beginning. The case was that of a young man aged eighteen, of robust form, business that of clerk in a dry goods house, and of an active turn of mind, who, after complaining of the usual prodromata for a few days, was taken down, and suffered a rapid succession of grave symptoms. Delirium came on early, and after the first

five days was attended with wild and violent agitation to such a degree as to require the constant attention of his friends to keep him in bed. At the end of twenty-one days the delirium had entirely subsided, and he began to relish a little food, and by the thirty-second day he could be out of doors. From the time the delirium passed off up to this last-named date, he had not exhibited the slightest aberration of mind; but, very much to the surprise of his friends, on the next day, the thirty-third, he accused the servant-girl of having stolen his account-book, "with a leather back," in which, he said, he had charged several of his friends with large sums of money loaned, money that he had drawn in lottery, amounting in all to \$10,000. His mother, who was present at the time, endeavored to convince him that he was wholly mistaken; that he had certainly not been so fortunate as to gain money in that way, and that he was troubling himself about a matter altogether imaginary. At this he became angry, declaring most solemnly that his whole statement was true; that he had had the money in his own hands, charged the amounts loaned in the aforesaid book; that he was not mistaken, and accused her of having joined in with other of his debtors to defraud him of the whole sum. In a few days, however, he became convinced of his error, and could laugh over it heartily.

One other point concerning delirium I mention.

Among the educated classes, delirium is more frequent, and is usually more strongly marked than among the uneducated. My attention has frequently been called to this fact. Dr. Stokes mentions the same thing.

Dullness of hearing is one of the most constant alterations in the functions of the senses observed in enteric fever. It is usually preceded by dizziness and ringing noises in the ears, the latter sensation coming on when the patient attempts the upright posture. The sense of hearing, in some instances, is so materially altered as to amount almost to entire deafness. This was the case with a patient, a female, who suffered from the intermediate form of the disease. In order that she should hear me in conversation I had to speak at the top of my voice. This symptom is equally common in the mild as in the severer forms of the disease, but the degree to which it exists is not so great, usually, in the former as in the latter. In the severer forms the hearing is sometimes false, as when the patient answers to some imaginary interrogatory. Entirely to the converse of dullness, this sense sometimes becomes morbidly acute; the slightest noise, as the jar of the floor produced by walking across it, attracts the attention, and unless perfect stillness reigns about the room the discomfort of the patient is greatly increased. This occurred with a majority of the cases which terminated fatally.

In grave cases the sense of vision is more or less perverted. This accompanies that hyperæsthetic condition of the centre of consciousness heretofore spoken of. The patient sees the foot-posts of his bed, or any other object within his field of vision, not as they really are, but transformed into all sorts of things.

The expression of the eyes varies with the gravity of the disease. In mild cases the eyes are suffused and dull, or swimming and fatuous, as in incipient inebriety. In graver cases, especially in those which assume this character at an early stage, they are bright and shining, with increased sensibility to light, and soon follow injection and redness of the conjunctiva. At an advanced stage of the disease the eyelids move feebly; spasm of the levators occurs, and the patient lies with half-closed lids. Upon the approach of death the cornea sometimes becomes clouded, and often flakes of mucus obscure its surface.

3. *Prostration of Muscular Strength.*—Prostration of muscular strength stands prominent among the most constant phenomena of enteric fever. It has been already remarked that even in the mildest cases of the disease loss of strength is among the first subjects of complaint. During the formative stage, and before the patient takes to his bed, his gait is tottering, and if he attempt to perform any manual labor he finds himself

soon fatigued. Dr. W. W. Parker, of Richmond, Va., in a letter to me, dated November 24th, 1858, among other things, says: "This unnatural debility is one, if not the most, characteristic symptom in mild cases—indeed, it seems often to be the only symptom." The description given by Dr. Bartlett, of the state of the strength, cannot be improved. He says: "A great majority of patients take to their beds at the beginning of the disease, and remain there almost constantly until the commencement of convalescence. They will suffer themselves to be placed passively in a chair, in order that their beds may be made up and aired, but they are impatient and anxious to be returned as quickly as possible. When this prostration is extreme, unless there are great restlessness and distress, or delirium, the patient lies constantly in the same position on his back, entirely passive, with hardly sufficient strength to move his limbs. It is necessary for his attendants to raise him up in bed, and to hold to his lips the cup when he drinks. Conversation addressed to him is irksome and fatiguing, and he answers questions with reluctance, and with a painful effort of his exhausted strength."*

The frequency of spasmodic action of the muscles occurring in the disease, will excuse further remark concerning it. When this symptom shows itself in a well-marked form, I have invariably found the case one

* Treatise on Fevers, p. 51.

of great gravity. In mild cases it is only indicated by a tremulous movement in performing any voluntary act, caused by the irregular action of the muscles employed in its performance, and differing in some measure from the tremor of mere weakness by this irregularity. In the intermediate form it is more constant. In the gravest cases it is combined with delirium, assuming the character of *floccitatio*—a picking at the bedclothes, performed in this tremulous and irregular manner.* This spasmodic action is not always confined to the muscles of the arm; it frequently extends to the legs and other parts of the body; there may be hiccough, twitchings of the muscles of the face, etc. I have seen the jaw in constant motion. Sometimes the patient is all over in a tremor, along with which condition his strength is so exhausted that he inclines to slip down in the bed, knees drawn up, and inclined to one side, and, when delirium is present, with the hands resting upon the genitals. Permanent rigidity of the muscles of the arm is a fearful symptom.

From the beginning to the close of the disease there is generally a gradual increase of muscular disorder. In those cases of raving delirium, the patient will sometimes, even during the third week of the fever, exhibit an astonishing degree of strength on being opposed in his attempts to commit any impropriety—for instance,

* Barclay's Med. Diagnosis.

to get out of bed. An increase of strength is the sure harbinger of returning health. This increase is generally first shown in grave cases by the patient being able to change his position from lying on his back to his side; next he manifests a disposition to be propped up in bed; then to get out of the bed; and at each successive attempt is disposed to prolong the time of sitting, until he has accomplished a *whole* day out of bed. It is indeed amusing sometimes to see with what precision patients measure their return to strength.

4. *State of the Pulse.*—The change of pulse most frequently observed, is that of frequency combined with weakness, and this change is in nearly exact proportion to the severity of the disease. In the mild form it rarely exceeds 115, and in quite a number of instances falls far short of these figures, and in a very few instances it falls below the natural standard. Dr. Parker, of whom mention was made on a preceding page, mentions an instance of this kind which fell under his observation. In mild cases it may be said to range between 90 and 110. It may be full and strong, but this is not commonly the case even during the earlier stages, weakness, with frequency, being the almost uniform condition. In the severer form, the intermediate, it is not only marked by increased frequency, but it sustains a proportionate loss of strength. The pulse

in this form runs between 110 and 135, the last-mentioned figures always standing as a strong probability that the case will pass into the third and gravest form of the disease. When the case takes on the character of greater malignancy, there may still be a more frequent pulse; but in those cases which end in recovery, the proportion of increase is considerably less than is observed in fatal cases. In the worst class of cases it is quite common to find a pulse of 140, and even in some cases which recover, it counts as high as 160. Recovery, however, after a pulse of 160, is rare. In fatal cases, for a day or two before death, it sometimes runs so rapidly that it cannot be counted. Along with its frequency in the severer forms of the disease, it sometimes becomes so weak and small that it requires considerable delicacy of touch to detect it, and this difficulty is greatly enhanced if subsultus is present. In cases which exhibit a grave form of the disease in the beginning, the pulse may at first show, along with its frequency, considerable strength. But this strength is not permanent; in the course of a few hours sometimes, it becomes small and weak. In the choice of blood-letting this fact is of the greatest importance to be remembered.

5. *Cough and Bronchial Rales.*—Cough, more or less, almost invariably attends the disease. It may

exist in the beginning, or not make its appearance until the latter part of the second week; most generally it sets in during the first week. Its degree of severity is influenced a good deal according to the previous exposure of the patient, and the season of the year he is attacked. Cases occurring during the winter and spring months generally present this symptom in a well-marked form. At first, and in the mild form of the disease, the sputa are small, tenacious, and colorless; but in the severer forms, or at an advanced stage of the disease, they are sometimes streaked with blood. This is most apt to be the case on clearing the throat in the morning, and especially if there has been epistaxis. It sometimes becomes rusty from a complication of pneumonitis.

The physical signs connected with the respiratory organs, characteristic of the disease, consist in a rhonchus, dry, sonorous, or sibilant, and which may be heard more or less extensively over the thorax. These rales are out of all proportion to the existing amount of oppression or dyspnoea, when compared with the auscultatory sounds heard in ordinary catarrhal affections, and hence the importance of the sign.* As was said of the cough, these signs sometimes follow close upon the accession of the disease, but in the majority of cases not until the disease is fully formed and continued for

* Bartlett's Treatise on Fevers, p. 45.

a few days. In the graver forms of the disease, and when the cough is attended with a rusty-colored sputa, they give place to crepitous rhonchus, the sign of secondary inflammation in the parenchyma of the lungs, a complication full of danger to the life of the patient.

6. *Diarrhœa*.—If to constitute a diarrhœa simply requires the existence of a liquid state of the stools, then I have witnessed but two cases of enteric fever in which this symptom was not more or less present at some time or other, in the progress of the disease, and even in these exceptional cases the stools presented less consistency than is ordinarily observed in health. But this is not all that is necessary, in my use of the term, to constitute a diarrhœa, and unless along with the liquid discharges is added some unnatural frequency of peristaltic action, I do not so consider it. I mention this not because it is important that I should give a definition of diarrhœa, but simply that I desire to be correctly understood in the description of this symptom given in the previous chapter. When I have said that there may be either *costiveness* or *diarrhœa*, I mean simply by the former that the dejections may be less frequent than in health; and by the latter, that they may become more frequent. When I have said that the bowels may be *sluggish*, I mean that the discharges

may not be wanting in natural frequency, but that there is a diminution in the quantity of fæces discharged at a time. With this explanation I proceed to complete the description of this symptom.

There is perhaps no one symptom belonging to enteric fever which, according to the degree of its manifestation, is so well proportioned to the gravity of the disease as diarrhœa. Even when it does not exist among the prodromata, the bowels show an increased susceptibility to the action of cathartic medicine, and by the exhibition of such medicine to purge off the supposed *bad cold*, the irritability of the bowels is increased, and diarrhœa brought on much earlier perhaps than it would have naturally occurred. In many instances, however, the discharges are liquid and frequent in the beginning, without any assignable cause, and in such cases the disease soon assumes a grave form. In mild cases it is not usual for diarrhœa to become troublesome. Sometimes the patient will have a discharge regularly every day, and this regularity will continue throughout the entire progress of the disease. In other instances in the same class of cases, the number of stools will amount to two, three, or four, in the same space of time. In some instances the patient will have three or four discharges following each other in rapid succession, perhaps all in the space of an hour; after which he is not troubled again for many hours,

and may be the bowels are not moved again until acted on by medicine given for that purpose. I have observed this tumultuous action of the bowels to occur more frequently in grave than in mild cases. Sometimes there is a degree of pain attending each effort at stool, and in some cases it precedes the discharge for an hour or two. Occasionally it becomes very severe, and is most often referred to the navel and right iliac quarter. Deep firm pressure is not well borne when made upon this region, and when made, almost always produces a *gurgling noise*. I have spoken sufficiently of this gurgling noise on pressure over the cœcal region. The color of the discharges requires some remark. It is natural enough in the beginning, but on account of the loss of consistence the stools bear no resemblance to healthy ones. They have been aptly compared to *new cider* containing particles of the pomace. In the intermediate form of the disease, they are usually darker and more offensive. Pain of the bowels, in this form of the disease, is more frequently present, but is not complained of generally until the patient is just in the act of having a discharge.

In a very few cases I have known the discharges assume a dysenteric character, and which were accompanied with almost constant tenesmus. In the malignant form there is generally urgent diarrhœa.

The discharges present a dark and grumous aspect, sometimes resembling *plum-juice*, very offensive, and passed in considerable quantities. At other times they are red, from an admixture with blood; and at other times resemble black paint, both as regards color and consistence. In one or two instances I have seen the very thin ochry-colored discharges continue to the close of the disease. In a fatal case, a boy aged eleven, the discharges, forty hours before death, resembled in color and consistence Indian-meal mush. Profuse hemorrhage from the bowels took place eight hours before death.

In those cases denominated as grave in the beginning, there is generally but little, if any, increase of frequency to stool above that observed in health, during the first week of the disease, yet there is the same susceptibility to the action of purgative medicine which exists in the other classes of cases. During the second week the condition of the bowels, as regards diarrhœa, is the same as in those cases gradually assuming a malignant character.

Along with the diarrhœa of either form, strangury sometimes occurs, and when it exists, is particularly complained of when the patient is at stool.

7. *Tympanites*.—Among the earliest symptoms of enteric fever is tympanites. It has been said already,

that even during the formative stage, a sense of fullness of the stomach and bowels is complained of. This results from tympanites, for when the abdomen is percussed the characteristic sound is heard. The degree of its manifestation is generally proportioned to the amount of existing tenderness on pressure over the abdomen, and the frequency of the discharges, though I have observed it well marked in a few cases in which there was no appreciable tenderness, and that required medicines to act on the bowels; and in two instances have seen obstinate diarrhœa, with considerable tenderness on pressure, which were not accompanied with any increase of this symptom beyond that ordinarily observed in the mildest cases of the disease. The transition from the mild into the intermediate form, is most always attended with a marked increase of tympanites, and if the case still advance in gravity, the distention sometimes becomes enormous, and may materially interfere with respiration. In one fatal case a tympanitic sound could be produced from the pubis to the top of the sternum.

This symptom generally continues until the beginning of convalescence, or the termination in death. In a few cases I have seen it diminish to a marked degree, without the slightest abatement of other symptoms. In a fatal case, aged eighteen, eight days before death, this symptom, after having existed for many days, and

to a very considerable degree, suddenly lessened, and, at the end of the succeeding twenty-four hours, had almost disappeared; it soon reappeared, and continued to increase as the disease advanced to death.

8. *Rose-colored Eruption.*—The frequency of appearance, if not to say constancy of this eruption, has been remarked by all who have written concerning enteric fever. In my experience I have seldom failed to observe it at some stage of the disease. It has been graphically described by Professor Wood, in his work on Practice. He says: “This,” the eruption, “consists of small red spots, usually roundish, and about a line in diameter, though sometimes much larger, often slightly prominent, and disappearing under pressure with the finger, to return upon the removal of the pressure. They are never seen at the commencement of the disease, but generally first make their appearance between the seventh and fifteenth day, and occasionally later.” Their number, I think, is diminished in proportion to the extent of intestinal alteration. ✓ In mild cases of the disease, in which the diarrhœa is not troublesome, I have several times seen the patient spotted from head to foot. At other times the eruption was principally confined to the abdomen, chest, and inner part of the thighs. In other instances it was scattered upon the extremities, even to the fingers and toes,

while upon the trunk, it was either entirely absent or only a spot here and there to be found. Again, I have seen it thickly set upon the back; and I am inclined to believe that it more frequently occupies this locality than is generally supposed. It is not so conveniently sought for in this region as upon the abdomen, chest, and extremities; and therefore results, perhaps, the rarity of its being spoken of as occupying this region. All this I have observed in mild cases of the disease.

In the intermediate form of the disease, I have occasionally observed it largely spread over the different parts of the surface, but this was rare when compared with its frequency in milder cases. In this form it is mainly confined to the abdomen, with, perhaps, a patch now and then to be seen upon the breast and shoulders. It is also somewhat later in its appearance than in the mild form. In cases of still greater severity—those belonging to the malignant form—it is, as a general rule, still more tardy in its appearance, and does not occupy as much surface at a time as is usually seen in the preceding forms. It has been in the worst cases of the disease that I have observed the smallest amount of this eruption. In a very few instances I have seen it thickly spread upon the abdomen, chest, and shoulders, with a few spots on the back and thighs; but, in the majority of severe cases, it occupied only the region of the abdomen. It does not always make its appearance

upon all of the several parts of the surface named at the same time, but comes out in successive crops—sometimes abundant in one region, and at other times only one, two, three or four spots in the next locality. When the first patch begins to fade, a second will make its appearance, and so on, until the eruption ceases, or is lost in the larger and more livid discolorations, known as petechia, which, in very grave cases, show themselves. The time occupied in this fading and recurrence of the eruption may vary from five to twenty-five days. The greatest duration of this process I have noticed, almost invariably, to occur in those cases which passed through the milder forms to the malignant, and particularly in those cases which terminated in death. In the majority of these cases but few spots could be found at a time after the most careful search. ✓

Among children this eruption is generally earlier in its appearance than among adults, and does not usually occupy the average duration in the latter.

“These spots,” says Professor Wood, “must not be confounded with petechia, which also appear in this disease, but are by no means peculiar to it. The latter can scarcely be considered strictly as an eruption, consisting merely of blood extravasated in the skin. They are distinguishable usually by their more livid color, by never projecting above the surface, and by not disappearing upon pressure. They occur much less fre-

quently in enteric fever than the rose-colored eruption, and are more common in genuine typhus fever than in that disease. 'Sometimes the hemorrhagic effusion is more extensive, constituting patches or vibices.'—*Prac. Med.*, vol. i. p. 320.

I may here allude to another eruption seen to accompany enteric fever, called *Sudamina*. It consists in transparent vesicles, varying in size from a pin's head to that of a barley-grain, and even larger, of circular or oval shape, and produced by the deposit of a limpid fluid beneath the cuticle, and by which it is elevated. These vesicles may usually be detected by the touch, but to be seen may require that they be viewed in an oblique direction. It is said to show itself most frequently upon the sides of the neck, in the axillas and about the front and upper part of the shoulders. Whenever I have observed it, it always occupied those localities. By some observers it is considered a frequent accompaniment of the disease, and they attach to it importance as a diagnostic sign.* It is said also to occupy, sometimes, a large extent of surface—almost the whole body being covered with it except the face.† I have already spoken of the comparative rarity with which I have noticed this eruption in enteric fever. I

* Bartlett on Fevers, p. 61.

† Wood's Practice, p. 320.

repeat, I have witnessed it in but few cases, although I have carefully searched for it at the time that it is said most frequently to show itself—at a late stage of the disease; but when seen, was in cases belonging to the intermediate form, preceded for a day or two by free perspiration. It is proper to remark that my experience in this particular has not been the uniform experience of other practitioners almost in my immediate locality. A highly respectable and intelligent acquaintance, Dr. A. Spitler, late of Buckhannon, Upshur County, Virginia, but now of Carthage, Illinois, informed me that from the frequency with which he had observed *sudamina*, he was led to attach importance to it, not only as a diagnostic sign, but to consider it a critical eruption, and, deeming it such, he always searched for it after the fifteenth day with no little anxiety.

9. *Hemorrhage*.—This is a frequent symptom in enteric fever. It generally first makes its appearance by epistaxis, and this may occur very early in the disease. In mild cases it is not usual for it to become profuse at any stage, not more perhaps than a few drops at a time, which may happen several times during the progress of the disease. In grave cases blood frequently flows copiously from the nostrils. When narrating the symptoms connectedly of the intermediate form, mention was there made of these large losses

which sometimes take place. In the most severe form of the disease there may be added hemorrhage from the gums. The next and most extensive losses take place from the bowels. Several times I have seen the usual-sized *pot* filled with blood at a single sitting, and in one case, immediately succeeding the discharge, which was the first one of the kind, the patient sank from his chair to the floor, exclaiming as he was about to fall, "I am dying!" He was carried to bed *almost* lifeless. In this case hemorrhage succeeded hemorrhage, until the eighth day, from the first one, when he died.

In some cases the blood thus discharged is red, and but little changed; in others it is dark and disintegrated. Of the thirty-four cases belonging to the gravest form of the disease, eighteen suffered more or less hemorrhage from the bowels. Of these eighteen, eight were fatal. But the nostrils, gums, and bowels are not the only parts from which blood may flow. In a few cases I have known the urine to be retained by firm coagula in the bladder. In one case, a male, I had to break up and dilute a coagulum by injections into the bladder of flaxseed tea, before the urine could pass out through the catheter, and yet, notwithstanding this operation had to be performed regularly for several days, the patient recovered. Another example of hemorrhage is petechia, which shows itself toward the close of fatal cases.

10. *Tendency to the Formation of Eschars.*—At a late stage of the disease, when the blood has become vitiated and the constitutional powers diminished, sloughing of the skin on parts exposed to pressure, such as the sacrum, the trochanters, and the shoulders, is likely to occur. The skin covering these parts becomes congested and inflamed, and speedily becomes excoriated without the least pain being complained of by the patient. If blisters have been drawn, they are frequently attacked with ulceration. “They become, especially about their edges, covered with a white or grayish exudation, like that which is frequently seen on blistered surfaces in cases of protracted scarlatina, and which is commonly called *canker*. The ulceration underneath this matter sometimes becomes deep and extensive, adding, in no small degree, to the irritation of the disease. In some cases true gangrene occurs, followed by eschars and extensive sloughing.”* In all grave cases this tendency to excoriation of the skin on points pressed upon should not be overlooked, and should it occur in spite of the efforts to prevent it, means must at once be adopted to relieve the parts from further injurious compression. Great care is necessary in preventing the contact of fæces or urine, because of their additional influence to produce softening

* Bartlett's Treatise on Fevers.

of the subcutaneous cellular tissue corresponding to the inflamed patch. When a slough has once formed, it may extend by a process of undermining of the integuments, and on its separation disclose extensive mischief. These bed-sores are troublesome things to manage, and always render the period of convalescence exceedingly tedious and uncertain.

CHAPTER IV.

ANATOMICAL LESIONS.

IF I were compelled to rely upon my own observation for a description of the changes found in the several organs and structures after death from enteric fever, I should omit this chapter entirely. In country practice the physician may enjoy extensive opportunities of learning symptoms, and by this knowledge be able to assign to each its due value as regards the diagnosis and prognosis of the disorder, but concerning the changes found on dissection, which have given rise to the living morbid phenomena, his opportunities for observing are confessedly limited. To obviate this sensible defect of my own experience, which otherwise would materially diminish the value and completeness of my treatise, I copy from Dr. Wood his account of the morbid anatomy of the disease. He says: "There is scarcely a single organ of the body in which signs of inflammation are not sometimes found after death from enteric fever, for it is one of the peculiarities of this affection, or possibly of the febrile movement, which, in this affection, is of unusual duration, to develop local

disease of an inflammatory nature. But there are certain anatomical changes which are especially characteristic of enteric fever, and which are so seldom wanting that they may be considered as almost essential. Such is the affection of the elliptical patches of aggregated mucous follicles in the ilium, denominated the glands of Peyer. This is quite as characteristic of the disease in question as the peculiar pustular eruption is of small-pox. It has in fact come to be regarded almost as a necessary post-portem test of the existence of the disease. The affection had been observed by various pathologists, as by Stark, Petit, and Bretonneau, but it is to Louis that the credit is especially due of fixing its precise relation to this form of fever. The facts ascertained by the last-mentioned pathologist in relation to the enteric fever of Europe, have been proved by the dissections of Drs. Gerhard, Jackson, Bartlett, and many others, to be equally applicable to the disease as it prevails in the United States.

“The opportunity has not yet been offered of ascertaining the condition of the *glands of Peyer* in the earliest period of the disease. They have been examined, however, at all stages after the sixth day. At first the patches are observed to be thickened, and their surface elevated one, two, or even three lines above that of the surrounding mucous membrane. The largest are from two to three inches long, and from half an inch to

an inch broad; the longest diameter being in the direction of the intestine. Some are smaller and more circular. Their edges are in general clearly defined, smooth, and regular, but sometimes irregular and ragged. Some of them are dark-red, some pale, and others of an intermediate hue. There are two varieties of them, distinguished by Louis by the names of *hard* and *soft*. The former are hard to the touch, and, when dissected, are found to contain, beneath the mucous membrane, and resting upon the muscular coat, a layer of white or yellowish, firm, brittle matter, the cut surface of which is smooth and shining. The latter are softer, less elevated, and destitute of the whitish layer above mentioned, their elevation, when at all observable, being caused by an inflammatory thickening of the mucous membrane covering the patches, and of the submucous cellular tissue. In these, the mucous surface appears at first granular or finely mammellated, with innumerable small orifices, which give it a reticulated appearance; a condition which is ascribed by Louis to enlargement of the several follicles. This character is lost in the progress of the affection, the surface becoming uniform, smooth, and still softer. Sometimes the same elliptical patch exhibits both the forms just described, one in one part of it, the other in another; and often some of both varieties are found in the same case. The patches vary in number from one up to

thirty, averaging, perhaps, ten or twelve. They appear upon the surface of the intestine opposite to the mesentery. They do not all originate at once, but in general come successively, those near the ileo-coecal valve first appearing, and afterwards those higher up, even into the jejunum. The consequence of this successive appearance is a difference in the degree of their development, the oldest being the most advanced.

“The hard patches may undergo resolution or ulceration; the soft always ulcerate. In the former, the matter deposited beneath the mucous membrane first softens and separates from its connections, so as to be thrown off when the mucous coat above it is removed. The surface is found in various stages of ulceration; but, when the process is completed, the whole patch constitutes one ulcer, which sometimes remains of the original size, sometimes spreads, and is occasionally stained yellow by the bile. In some instances the floor of the ulcer is the muscular coat, in others, in consequence of the destruction of that tissue, it is the peritoneal coat, and this occasionally is found penetrated, so as to form a communication with the cavity of the peritoneum. Out of fifty-five cases which he examined, Louis found eight of perforation. Sometimes there was only one orifice, sometimes two or three. The opening was in the centre of the ulcerated patches, and always in the vicinity of the cœcum. The perforation is pro-

duced either by the progress of ulceration, by mortification of the uncovered peritoneal membrane, or by its rupture from force applied within the bowel.

“The ulcers are not necessarily fatal. On the contrary, dissection has afforded abundant proof that they have a tendency to heal. In the process, the elevated border is depressed, the cavity is filled by granulations, and the surface is ultimately covered with a new mucous membrane, which, though at first smooth, more glossy, and more tender than the healthy membrane, in the end cannot be distinguished from it.

“The *solitary mucous follicles* of the ilium, frequently denominated, though perhaps erroneously, the *glands of Brunner*, the glands properly so named being situated in the duodenum, are usually affected in the same manner as the glands of *Peyer*, being enlarged so as to be distinctly visible, and either hard or soft, ulcerated, etc. These diseased follicles are scattered, in larger or smaller numbers, over the whole circumference of the lower portion of the ilium, and are sometimes found also in the colon. Occasionally the elliptical patches are alone affected; and it is asserted that, in some rare instances, the solitary glands have been diseased without any affection of the patches; but, in general, they are both more or less diseased. The aggregated glands are more frequently ulcerated than the solitary.

“The mucous membrane of the ilium, between the affected glands, generally exhibits signs of disease, being sometimes thickened by sanguineous infiltration, sometimes softened, and sometimes of a white or grayish color, though more generally reddened.

“The *mesenteric glands* are as constantly diseased as the mucous follicles. Those corresponding with the morbid patches are most affected, but not exclusively so. The glands are reddened, enlarged, and softened, and sometimes exhibit traces of pus, though very rarely in such quantities as to form an abscess. As they become diseased with the patches, so do they also return along with these to the healthy state. The lymphatic glands elsewhere are also, sometimes, enlarged and reddened, but less frequently, and in less degree, than those corresponding with the diseased glands of Peyer.

“The lesions above described are those characteristic of the disease. There are numerous others, which, being incidental, require only a brief notice.

“Other parts of the *alimentary canal*, besides those mentioned, are often diseased. The *pharynx* was found by Louis in one-sixth of the cases, either ulcerated or coated with false membrane, or infiltrated with pus. The *oesophagus* was ulcerated about as frequently, the ulcers being generally small, and sometimes numerous. The *gastric mucous membrane* was more frequently quite natural than in subjects who had died of any

other acute disease; but it was, nevertheless, often diseased, being softened, reddened, thinned, mammeloned, ulcerated, etc. The softening, which is the most frequent lesion, though sometimes inflammatory, is thought not to be so in many instances. The *duodenum* is not often much affected. Its lesions are similar to those of the stomach. The *colon* is almost always distended with air, sometimes enormously so. Occasionally, isolated mucous follicles are found diseased like those of the small intestines; and a few small, round patches, similar to those of the ilium, have been observed in a very few cases. The mucous membrane sometimes shows signs of inflammation, such as redness, softness, and ulceration.

“The *spleen* is in almost all cases more or less altered, being generally enlarged and softened, and sometimes very much so. In some instances, it is four or five times the usual size, and softened to the condition of a bloody pulp, through which the finger will pass readily in any direction.

“The *liver* is also frequently softened, though in a less degree, and is otherwise variously altered, but without any constant or characteristic lesion. The same may be said, in a still less degree, of the *kidneys*. The gall-bladder and the urinary passages have been found inflamed, in a very few instances. The *heart* is sometimes softened, and the inner coat of the *aorta*

tinged red with blood, probably from imbibition. In relation to the *respiratory organs*, the epiglottis and larynx are sometimes, though rarely ulcerated, or coated with inflammatory exudation; the bronchial membrane is often reddened; and signs of congestion, inflammation or apoplectic sanguineous effusion, are observed in the parenchyma of the lungs. The *brain* exhibits fewer evidences of disease than might have been suspected from the symptoms. In a large proportion of cases it is quite healthy. Sometimes the membranes appear congested or inflamed; serous effusion has been observed; and the substance of the brain has exhibited red points when cut. But no satisfactory connection has been traced between these lesions and the symptoms of cerebral disorder evinced during life.

“The blood drawn during life often does not apparently differ from its condition in health. It coagulates firmly, and, unless the disease is attended with some accessory inflammation, exhibits no buffy coat. But if pleurisy, pneumonia, or rheumatism be superadded, the inflammatory crust appears, though usually soft, and sometimes gelatinous. Sometimes, in low typhus cases, the blood is either but partially coagulable, or wholly uncoagulable. It has been found in both states after death. When uncoagulated it is sometimes mixed with air. It generally contains a smaller proportion of fibrin than healthy blood.

“Many of the above phenomena indicate the existence of inflammation in connection with the fever; but the softness which has been noticed in so many organs is thought, by the best pathologists, not to be inflammatory, but rather the result of a direct loss of vital cohesion in the organs, either from debility, or the state of the blood.”—*Practice of Medicine*, vol. i. p. 324.

CHAPTER · V.

HISTORY AND CAUSES.

1. ENTERIC fever has become a common disease in Virginia, and in some localities has almost completely supplanted the bilious-remittent form, which was of such frequent occurrence in former years. This remark applies with especial truth to some sections of Eastern and Southeastern Virginia. In this low country of the State, prior to the last twenty-five or thirty years, periodic fevers were the only forms of fever to be met with, but since then they have been gradually giving place to the enteric or typhoid form, and now, in some particular localities, the latter is as common as was the former. Dr. L. Faulkner, of Halifax County, in a letter to me, dated October 1st, 1858, says: "With us typhoid fever has become a frequent disease. We have also bilious-remitting fever, and there is frequently a modifying influence exerted by the one upon the other. Typhoid fever sometimes sets in, with prominent biliary derangement, and in these cases it is not uncommon for well-marked remissions to occur during the first five or six days. In such

cases quinine fails to arrest the disease, if indeed it does not aggravate it. In 1854 the majority of cases of typhoid fever occurring in this section was obscured, for the first several days, by the conditions just mentioned. On the other hand, I have seen remittent fever with all the prominent symptoms of typhoid in the beginning, there being no well-marked remissions until the case was subjected to proper treatment, when its true colors would be run up, and the desired quinine state hailed with joy."

Dr. Robert A. Gholson, of Petersburg, in a letter dated September 14th, 1858, says: "Typhoid fever began to show itself in this region in an unequivocal form, soon after the epidemic of erysipelalous fever which visited us in the year 1845. During the summer of 1850 I met with a most malignant form of continued fever among the blacks on several plantations in the County of Greensville.* Since the occurrence of this endemic, I have occasionally met, both in country and city, with sporadic cases of the disease." Concerning bilious-remittent fever in his locality he remarks: "This form of fever is not of unfrequent occurrence among us, but in many instances it is so changed as not to be easily distinguished, in the beginning, from continued or typhoid fever. It is con-

* See Dr. Gholson's Report in the July number of the Virginia Medical Journal, 1857.

fessedly a rare thing to meet with the old-fashioned (as it is called) remittent fever of this climate. So great is the change which its character has undergone that it would hardly be recognized now by those who met with it, say some twenty-five years ago."

Dr. William W. Parker, of Richmond, to whom I am greatly indebted for a valued letter dated November 24th, 1858, says: "A highly intelligent physician of this city, who has been in practice some forty years, informs me that he is now well satisfied of having met with cases of typhoid fever in the early years of his practice, though then called by a different name. The disease was then very rare, certainly so in comparison to its frequency at the present time. That the disease is on the *increase* in this part of the State, and that it has been especially so observed during the past eight or ten years, is the uniform opinion. Yet, along with its increase in frequency, it has I think materially lessened in severity. For the last two or three years it has been generally very mild in its character." Concerning bilious-remittent fever he adds: "It seems to be the prevailing opinion in the lower country that typhoid fever is gradually taking the place of the ordinary bilious fever of that district, and an intelligent acquaintance informs me that the two affections are sometimes so intimately blended with each other that it is with the greatest difficulty in the beginning to say which of the influ-

ences will preponderate. I have often myself mistaken typhoid fever in the beginning for bilious-remittent fever. Latterly, however, I have aided the diagnosis by a gentle purgative."

Through the kindness of Dr. Charles R. Cullen, of Hanover County, I am in possession of an interesting letter from Dr. Carthon Archer, of Henrico County, dated November 12th, 1858, who says: "Bilious-remittent and intermittent were the prevailing types of fever until within the last twelve or fifteen years, when they became less frequent, and the continued or typhoid form took their place. Intermittent fever still prevails to a considerable extent upon James River, but bilious-remittent fever is seldom met with. With regard to the present frequency of typhoid fever in this region of the State, I do not think that more than one or one-half per cent. of the population is annually attacked by it, though I have no positive statistics in regard to it. The disease was more fatal last year, during the heat of the summer and early part of autumn, than any other year or season in my experience. I have seen several cases which commenced with well-marked symptoms of intermittent fever, and in which subsequently all the symptoms of typhoid fever were unequivocally developed. Nor could it be thought in these cases that the typhoid symptoms were the result of improper treatment, as especial care was taken to avoid any

treatment tending to produce or exasperate any existing intestinal irritation."

Passing along round the tide-water boundary, and over a district of country in which the disease is more or less frequent, we come to Alexandria, from which point I have an interesting letter from Dr. Charles W. Chancellor, dated February 11th, 1857. He says: "Enteric or typhoid fever is not a common disease in Alexandria and its vicinage, but was known to our oldest physicians in the early years of their practice, and undoubtedly existed here before they made their professional *début*. As a rule we can only claim the existence of the disease in sporadic cases; certain it is we have never had it as an epidemic. Nor has it existed here, to my knowledge, in an intractable or malignant form, being generally of mild character, and running its course in from three to six weeks. Bilious-remittent fever is of frequent occurrence in the fall of the year, and often assumes a very low and asthenic character; but even in the lowest grades of this fever, according to my own observation, there is always a well-marked period of remission, whereas in typhoid fever the febrile symptoms continue usually with little or no remission. I have never met with a case in which I believed the lesions of the two diseases existed simultaneously."

Advancing from this point toward the Blue Ridge,

we come to Loudon, from which county I have a letter from Dr. W. Cross, of Leesburg, dated February 13th, 1857. Dr. Cross says: "As well as my recollection serves me, and as far as I have been able to get information upon the subject, typhoid fever first appeared in this and the adjacent counties somewhere about the year 1845. The cases have not been numerous, *but greatly on the increase* in the course of the last year or two. During the last year, I suppose some twenty cases have occurred on an average, in a range of eight square miles. It was also more fatal during the last year than any other year of my experience, the patient sinking calmly into death, sometimes in a few days, at other times under excessive jactitation, with great mental derangement. The disease has never prevailed here as an epidemic. I have occasionally met with cases of bilious-remittent fever in my practice."

Passing along the Eastern base of the Blue Ridge, through the Counties of Fauquier, Rappahannock, and Madison, in which the disease is more or less frequently observed, we arrive at Green, from which county I have a letter from Dr. Y. C. Blakey, of Stanardsville, dated August 20th, 1857. The doctor writes: "Typhoid fever first made its appearance in this and the surrounding counties about the year 1845. In relation to its frequency, sometimes it is met with more or less often for two or three years in succession, then again

we are exempt for the same length of time. Its character as regards gravity, has been tolerably uniform, the disease being generally amenable to the proper treatment. Bilious-remittent fever has been a rare disease with us for fifteen years past. I have never witnessed a 'blending' of the two affections."

Proceeding in the same direction, and passing the Counties of Albemarle, Nelson, and Amherst, in all which the disease is more or less common, we come to Bedford County, from which I have a most satisfactory letter from Dr. P. C. Sutphin, dated October 20th, 1858, which says: "Typhoid fever is quite a common disease with us, occurring more or less often every year. It is usually regarded as having first made its appearance in our midst about the year 1843, when it prevailed in an epidemic form, sweeping off a great number of our citizens. Since the appearance of this epidemic the character of the disease as regards gravity has been tolerably uniform, being generally mild. Bilious-remittent fever is not often met with in Bedford. In a few instances I have observed a 'blending' of the two diseases. I have seen bilious fever become so feeble in its remissions as to lead to the belief that it had lost its remittent type and assumed the continued form." Corresponding with the experience of Dr. Faulkner, of Halifax, Dr. Sutphin adds: "In the County of Halifax there is such an apparent commin-

gling of types that it is nothing uncommon for physicians of that section to characterize remittent as 'typhoid-remittent fever.'"

In the district of country embracing the Counties of Franklin, Henry, Pulaski, Wythe, Washington, and Lee, the disease is equally common, and sometimes has been exceedingly fatal in its character. Of the date of its advent in these counties I have no reliable information.

Turning our course and skipping the Counties of Tazewell, Mercer, Giles, Craig, Alleghany, Botetourt, Bath, and Rockbridge, for want of reliable data, we come down the Valley to Augusta, from which county I have positive information. Dr. C. R. Harris, of Mount Sidney, in a letter dated February 2d, 1857, says: "I have practiced medicine for fifteen years, and in this time have met with three epidemics of typhoid fever; but every year, and at all seasons, I have occasionally met with sporadic cases. The mortality in my practice during the epidemics of 1843, 1844, and 1852, amounted to some three or four deaths—in near 200 cases. I have met, now and then, with cases of bilious-remittent fever, some of which I have seen merge into the typhoid state, but have never observed a 'blending' of the two affections. In the management of my typhoid fever patients I have pursued 'a course of masterly inactivity'—watched the patient closely; adminis-

tering mild laxatives (after a mercurial purge early in the attack;) then, in the language of Broussais, listening to the cry of the suffering organ, combating local inflammation by revellents; sustaining the system by nutritious broths; dark room, and quiet nurse; cold or tepid sponging; opiates to insure rest: these constitute the sum total of my practice. Late in the disease it is important to watch the tendency to death; whether by coma, anæmia, asthenia, or apnœa, and treat accordingly."

In the Counties of Highland, Pendleton, and Rockingham, the disease is more or less often met with every year. During some years, in the Counties of Highland and Pendleton, the disease has not only been very frequent, but exceedingly malignant in its character. In the County of Rockingham, Dr. John Q. Winfield has seen much of the disease. Dr. Harvey Moffett, of Harrisonburg, speaks of its frequency within the limits of his practice. In the Counties of Page, Warren, and Shenandoah, the disease has shown itself more or less often for the past fifteen years. A valued friend, Dr. Jacob Neff, of New Market, Shenandoah County, in a letter dated February 6th, 1857, says: "I cannot say exactly the time when typhoid fever first made its appearance in this part of the Valley. Certain it is, I have met with the disease for the last ten or twelve years, and quite often in the last five or six years. My

experience leads me to look upon typhoid fever as a grave disease, and one in which we may both hope and fear constantly. I have seen very low conditions recovered from, and I have also seen cases which were entirely free from the ordinary symptoms of malignancy, in which death suddenly and unexpectedly occurred. The disease, I think, cannot be broken up suddenly by any method of treatment, yet by watching the symptoms closely, and employing such means as experience has proved best for their relief, we may conduct the large majority of our patients to convalescence." In the same county, during the years 1848 and 1849, Dr. Samuel Coffman witnessed a severe endemic in the neighborhood of Mount Jackson. Dr. Meim, of that vicinity, witnessed the same scourge. The Drs. Henkle, of New Market, have also seen much of the disease.

In the Counties of Frederick, Clark, Jefferson, Berkeley, and Morgan, the disease is of greater or less frequency every year. In Winchester, and the adjacent country, Dr. Robert Baldwin has frequently met with enteric fever during the last twelve years. In Morgan County it has been extremely severe. Dr. J. W. Brown, of that county, writes me from Bath, dated 9th February, 1857, that "Morgan County has suffered more from typhoid fever, in all its phases, than from any other disease." Continues the doctor: "The first I saw of the disease was in 1843, when some five cases

occurred, and one death. From 1843 to 1855, the disease was pretty uniform in its character, the average number of deaths being about one in twenty. In 1856, I met with sixty cases, thirteen of which were fatal. We have, also, more or less bilious-remittent and intermittent fever; and sometimes I have observed a 'blending' of the remittent and continued form, though generally the distinctive character of each affection is well preserved. Concerning bilious-remittent, intermittent, and typhoid fever in Morgan, I may mention a curious circumstance which came under my observation. In 1856, the south end of our county was severely visited with typhoid fever; in the opposite direction many cases of bilious-remittent and intermittent fever occurred. The district of country which I speak of as south, is divided by a ridge running parallel with the great Ca-Capon Mountain, and forms a valley, say two miles wide by eight miles long. In this valley not a case of typhoid fever occurred—all the cases there being bilious-remittent and intermittent fever; but on the other side of the ridge there occurred some sixty cases of typhoid fever, and of a most malignant character. Of these, twelve were fatal. For this difference I am wholly unable to account. The country is similar in soil, in elevation, and in the habits of the people."

Coming west of the Alleghany Mountains, we find

enteric fever not only of great frequency, but assuming its genuine character. Indeed, so frequently has North-western Virginia been scourged by the disease, during the past fifteen years, and so exceedingly fatal in some of the counties, that it will long be remembered by many, whom it caused to mourn the loss of friends and relatives, cut off by its ravages, alike in the bloom of youth and the ripeness of mature age.

Dr. J. A. McLane, of Morgantown, Monongalia County, in a letter dated February 12th, 1857, says: "In this county, and in the western portion of Preston, we have had enteric or typhoid fever in epidemic form, more or less frequently, since the autumn of 1845. In the County of Preston it first showed itself as an epidemic, in the latter part of the summer of 1844, and was known by the general *sobriquet* of 'Evansville, or Black-tongue Fever.' There was nothing peculiar in the character of this epidemic from that which the disease at present assumes, unless it was an association of meningitis, which manifested itself in almost all cases of a protracted character. The worst epidemic we have ever had occurred in the year 1853, and commenced about the first of September. The peculiar disposition exhibited in nearly every case, was an early and well-marked inclination to hemorrhage. The most extensive hemorrhages by the bowels were not unfrequent as early as the tenth or twelfth day. Since the

date of its first recognition in Monongalia, it has occurred in the various sections of the county more or less extensively every year to the present."

From Wheeling I have a letter from Dr. E. A. Hildreth, dated February 18th, 1857. The doctor says: "From the best authority at hand, typhoid fever was first distinctly recognized here in the winter of 1833 and 1834, and prevailed to a greater or less extent for the two succeeding years; after which it seemed to have left us, and our old-fashioned bilious-remittent fever resumed the sway. From 1837 we met with no fever having the continued or typhoid type, until after the epidemic cholera of 1849, *since which time we have had nothing but typhoid fever*. In 1850 and 1851, the majority of cases were of grave cast: there was great tympanitis, tenderness of the abdomen, and profuse diarrhœa. Since 1851 the poison seems to expend itself most on the brain—there is almost constantly delirium and coma, and in fatal cases, spasmodic rigidity of the extremities."

Dr. A. Payne, of Pruntytown, Taylor County, in a letter dated February 3d, 1857, says: "I am unable to give the date of the advent of typhoid fever in Taylor. I came to the county in 1847, and found a few cases, some two or three of which proved fatal. The disease, I learned, had not been common, and I saw nor heard nothing more of it, with the exception of here and there

an isolated case, until the summer of 1850, when it appeared as an epidemic, and was fatal to a fearful extent. In 1851 it passed off, and, with the exceptions before stated, did not appear until the latter part of January, 1853, when quite a number of cases occurred. From 1854 till the close of 1855, but few cases were met with; but in 1856 it became again common, and so it continues to the present."

Dr. A. Spitler, of Buckhannon, Upshur County, in a letter dated April 2d, 1857, says: "The first time typhoid fever was certainly known to visit our county was the summer of 1847. During that summer ten persons were attacked, one of whom died. Since 1847 it has prevailed more or less extensively every year to the present, but was most frequent in 1848 and 1852. The mortality was greatest in 1851 and 1852."

From Lewis County I have an interesting letter from Dr. W. J. Bland, of Weston, dated February 5th, 1857. Dr. Bland says: "Typhoid fever was first recognized in this region of country in the year 1845. In the winter and spring of 1846, it prevailed on the Little Kanawha, in Braxton County. I attended 119 cases, thirteen of which were fatal. It has made its appearance almost every winter and spring from that time to the present. It was more fatal in the winter and spring of 1848 than I have ever known; but as warm weather approached it grew milder. I do not

recollect the rate of deaths in any one year except as above stated."

In the country bordering on the Ohio River, from Marshall to Wayne County, the disease is of equal frequency, and during the years between 1847 and 1853 some of the counties included between these points were severely visited.

2. *Season.*—Enteric fever certainly prevails oftenest during the autumnal and winter months, though it occurs at all months of the year. The 130 cases occurred as follows: January, 18; February, 7; March, 8; April, 5; May, 5; June, 10; July, 3; August, 9; September, 11; October, 18; November, 24; December, 12.

Dr. Faulkner says: "We have more fever during the summer and fall months, but there are more cases occurring, of genuine typhoid character, during the autumnal and winter months, though I meet with the disease at all months of the year. This year I have met with more cases in the spring." Dr. Gholson thinks he meets with more cases of the disease during the summer and fall. Dr. Parker writes: "I have certainly had more cases of typhoid fever this summer and fall than in any other year of my practice." Dr. Blakey says he has met with a greater number of cases in the fall and winter. Dr. Cross writes: "The disease oftenest shows itself in my practice late in

autumn and winter.” Dr. Hildreth says: “The greatest number occurred the latter part of summer and during the fall months.” Dr. Sutphin says: “It occurs with us most frequently in the latter part of summer and earlier fall months.” Dr. Harris has met with more cases in the fall of the year. Dr. Neff thinks he has seen more of the disease in fall and winter. Dr. McLane writes: “The disease is both more frequent and grave during the fall and winter months.” Dr. Spitler remarks: “The disease, in our county, has been more prevalent during summer and fall.” In Dr. Bland’s experience, it occurs oftenest in the winter and spring months. Dr. Payne thinks it has most frequently prevailed in winter.

3. *Contagion*.—Concerning the contagiousness of enteric fever there is much difference of opinion. Dr. Hildreth says: “This is truly a vexed question. If I ask half a dozen physicians, three declare it contagious, the other three as positively deny its being so, each party adducing their experience in support of their views.” Dr. McLane says: “I have been much perplexed on this subject, but have inclined to non-contagion.” Dr. Spitler says: “If the disease is contagious, it is surely feebly so.” Drs. Blakey and Harris say they have no evidence “whatever of its contagiousness.” Dr. Brown positively denies it being so. Drs.

Bland, Neff, and Payne, say that "it may be *infectious* to a certain extent." Dr. Chancellor says he has no authority which would warrant him in the belief that it is at all contagious.

It is undoubtedly true that numerous instances occur in which patients sick of the disease are unable to refer their sickness to any appreciable cause, and more, that the disease frequently springs up in a neighborhood, and those constantly with the sick will escape, while those who have had no communication whatever will be attacked. But while all this is true and verified by my own experience, it is equally true that by comparing the number of persons who escape after contact and proximity with the sick with that of those who become ill of the same affection, after such exposure, the latter number greatly preponderates. Dr. Sutphin says: "In regard to the contagiousness of typhoid fever I could say a good deal if I had leisure. The following must suffice. In the year 1843, a Mr. Wright of this county, (Bedford,) went to Roanoke on a visit. While there he contracted the disease, which then prevailed in that county, and among the friends whom he visited. After partially recovering, he returned home to his father's, in whose family there had been no fever. In a short time after getting home he relapsed, and the disease attacked several members of the family. Of those who visited this family a majority contracted the

disease, and thus typhoid fever, which, prior to the return of Mr. Wright, had not existed in the neighborhood, became then quite common. Another instance of similar character: the disease was introduced into a certain neighborhood, previously free, by the removal into it of a negro girl who had contracted it from a family to whom she was hired. The girl was brought home to her mistress, in order that she should receive due attention, and it was but a short while thereafter until some five or six cases occurred among the other members of the family. From these it extended to several neighboring families, all of whom had visited the house to which the sick girl was brought. Every case that occurred in that neighborhood came directly under my care, and to my certain knowledge no one took the disease who had not been in immediate communication with the sick, or in other words, that had kept aloof from the disease. Some, it is true, escaped who were directly exposed, but these fell far short of the number who, being exposed, took the disease."

Dr. Faulkner relates the following: "In 1845 a young man, on account of threatened phthisis, left Lynchburg, where typhoid fever was then prevalent, and came to his mother's in this county, (Halifax,) where, at the time, there was not a case of typhoid fever. Soon after his arrival, he was taken down with as clearly-marked typhoid fever as I had ever met with. I saw him the

15th of July, and he died the 2d of August, with all the symptoms of intestinal perforation. His brother-in-law, who watched him most, was attacked on the 15th of August, and a negro woman, who had emptied the chambers for both, was attacked the 27th of August. Then his mother, aged fifty-six, sister, and little niece; only two of the family escaping, son of the negro woman, aged three years, and the wife of the brother-in-law."

Dr. William W. Parker narrates the following: "Some time during the past summer two young ladies, from different parts of the State, paid a visit to a female acquaintance living in Charles City County. Upon their arrival at this friend's dwelling they found her sick of typhoid fever, on account of which they fled immediately to their homes. One of them resided in Petersburg. This one had not long returned until she was attacked. The other lived in the country, and was also seized with the disease soon after getting home."

Dr. Archer says: "I have heard of several well-authenticated instances in which a case has been introduced into a family previously healthy, and the disease immediately attacking other members of the family. Two or three instances of the same occurrence have fallen under my own observation. A lady had a servant brought from Richmond to her farm in the country, sick of typhoid fever. No case of the disease

had, up to that time, occurred in her family for several years; but two weeks afterwards three other cases occurred. It is proper to remark that the servants who took the disease were not more exposed to it, if as much, as several others who escaped. Last summer a lady from Williamsburg, at which place typhoid fever was prevailing, visited her friends in this neighborhood, and soon after her arrival was taken sick of the disease; and shortly afterwards several friends with whom she had been, were also taken down, but from these the disease did not spread farther.”

Dr. Cullen thinks it contagious under some circumstances.

My own opinion is not wavering upon the subject, and I do not hesitate to declare my firm belief of its contagiousness. I have reserved the history of the disease in Barbour County until now, because of the evidence of contagion which it will exhibit.

Enteric fever was not recognized in Barbour prior to the year 1837. In October of that year, a gentleman by the name of Selvey, who had been on a visit to Athens County, Ohio, was brought home sick of the disease, called at that time in Ohio, “*slow fever.*” In three or four weeks after his arrival, his mother, father, and three brothers, were taken down with the disease; the mother died. The last of November following, six of another family near by, took the disease, and one

died. In December it appeared in a third family; five of these had the disease, and three died. From these it sprang up in another family; five had the disease, and one died. The last of January, 1838, nine of another family had the disease; four died. During the following spring and summer two other families took it; nine of these died. In the winter of 1838 and 1839, several other families took the disease, amounting in all to twenty cases; of these six died. From that time up to the winter of 1840 and 1841, there were occasional cases springing up throughout the country. But during the fall and winter of 1841, the disease appeared in another neighborhood, ten miles distant; several families were attacked; among which there occurred ten cases, and four died. In the fall of 1842, a merchant returned from the North, sick with the disease, (his neighborhood alike previously free;) several of his family took it, but none died. The following winter it appeared in another neighborhood; six had the disease, and three died. From this date up to the winter of 1843, there were but few cases occurring; but during the next spring it made its appearance in still another neighborhood; some ten cases occurred, and four died. During the year 1845 it was generally prevalent in the county; about thirty cases occurred, and but one or two deaths. From the close of the year 1845 up to the year 1851, the disease became less common; but during

the spring and summer of the last-named year the extent of its visitation exceeded that of any former year; and the citizens of our village, particularly, suffered severely from the disease.

Philippi is situated about ten miles west of the Laurel Mountain, on the Tygart's Valley River, forty miles from its junction with the Monongahela, which, for two miles above and five miles below, has a sluggish current. Across the river, immediately opposite Philippi, is a small village, Georgetown. The bank on that side is very low for a few hundred yards, spreading out into a level in extent of about ten acres, and bordered on both sides by high hills. The greater portion of this ground is inundated at every considerable rise of the river. In the spring of 1851 the construction of a bridge, connecting Philippi with Georgetown, was commenced; adding about thirty to the population of this last-named village. Among the workmen, whose business required them to stand in the water, enteric fever began; from these it occurred among the workmen in stone upon the banks, and from these to the citizens generally. Our side of the river, Philippi, was next attacked, extending from family to family. Several of the workmen at the bridge, on being taken sick, went to their families in various parts of the county, forming starting-points of the disease in their several neighborhoods. Other hands were employed to fill the places of those taken sick, but

were soon likewise taken down. Fresh workmen were again and again secured; but the disease as successively continued to attack them, until at last, during the year 1852, the work was, in consequence of it, almost completely suspended.

In September of this year, 1851, there was a menagerie exhibited at Philippi, which was largely attended by the people of the county; the following night nine persons, in attendance during the day, began to feel unwell, and had the disease.

From 1851 to 1858, our county has never been entirely free from the disease for more than a few months at a time. During this period it has been wandering about the different neighborhoods, at one time mild, at another severe, attacking one neighborhood this year, another the next; and then, perhaps, returning to the locality it visited the year before. The fall and winter of 1855, the disease was uniformly severe. The summer was wet throughout; vegetation grew rapidly and was abundant. Heavy frosts appeared early, and the offensive exhalation from the decomposition of vegetable matter was remarkable. Hemorrhage from the bowels was of frequent occurrence at this season.

I could bring forward other testimony of the contagiousness of enteric fever in abundance, but this I deem unnecessary, and shall content myself with the following single instance:—

Riley M., aged twenty-four, a farmer, visited an ac-

quaintance sick of the disease, October, 1855, distant some ten miles. There was no fever in Mr. M.'s neighborhood at the time of his visit to this friend, nor had there been for several years; but in two weeks after his return, he took the disease at his father's dwelling, and in twenty-eight days died. In ten or twelve days after his death, his sister, two brothers, mother and father, took it; the mother died. Among those who visited Mr. M., during his illness, was a cousin, a girl of nineteen, and a male friend, both of whom immediately contracted the disease; the cousin died. From these, other cases occurred in the neighborhood, no one taking the disease who had not visited the sick. Others were exposed also, but were not attacked.

Dr. Elam D. Talbott, of Philippi, who has watched the progress of the disease in Barbour from the date of its advent, in 1837, to the present, is a firm believer in its contagiousness. This gentleman has met with the disease more often than any other of his county brethren; and though his usefulness is for the present denied, on account of the heavy hand of affliction which rests upon him, his long successful practice will be remembered by the community and acknowledged by his professional acquaintances.

4. *Exemption from Second Attacks.*—Like other contagious affections, the occurrence of enteric fever is

almost perfect security against a subsequent attack. The gentlemen whose names I have mentioned, without an exception, say they never knew an individual to have the disease a second time. Dr. Bland, of Weston, says: "To this fact my attention has been particularly directed, and I have frequently made inquiry of physicians of large experience, and they have uniformly answered that they had never known a patient to suffer the disease a second time."

5. *Age*.—Age has some influence on the permission of the disease. Dr. Chancellor says: "I have most frequently found it to attack those who are in the meridian and full vigor of life: no case has come under my observation of its occurrence under twelve or over forty years of age." Dr. McLane writes: "The great majority of cases has occurred with individuals between fifteen and thirty years of age. The youngest that came under my observation was five years, and the oldest sixty years." Dr. Brown has "never known the disease to occur in persons above the age of fifty, nor below the age of nine." He never saw but one case at fifty, and only ten at nine. Dr. Harris thinks "the age most liable from twenty to fifty." When epidemic, he has seen it "in children from five years to adults at sixty five." Dr. Hildreth says: "I have seen the disease well marked in a boy seven years of age;

another, in which the patient was fifty-eight; but by far the greatest number occurs between the ages of twenty and thirty-five." Dr. Gholson writes: "Typhoid fever, in my experience, is confined to early and middle life. I have seen cases in children of three or four years of age; have never seen a well marked-case of it in subjects over thirty years." Dr. Spitler says: "I have seen well developed cases in children between two and three years of age. The disease seldom attacks very aged persons, yet it sometimes does occur. In the fall of 1850, I attended P. H., who was in his sixty-ninth year, and suffered a most severe form of the disease, but convalesced so far as to be able to ride out on horseback, when he relapsed and died. In the autumn of 1851, I attended Mrs. S., then in her seventy-eighth year, who was also afflicted with a well-marked form of the disease. After many days this old lady recovered, and is now enjoying ordinary health." Dr. Cross has seen more of the disease "between the ages of fifteen and thirty-five." Dr. Payne says: "So far as my experience extends, age has much to do in the permission of the disease, the young (say from six to twenty-five years of age) being much the most liable to take it. I do not recollect of having met with a case under the age of five, or older than sixty years." Dr. Blakey writes: "I have much more frequently met with the disease in persons between twenty and thirty years of age." Dr.

Archer writes: "From fifteen to thirty furnish a majority of the cases. I cannot remember meeting with a case at a more advanced age than forty-five. At this time I am attending a well-marked case in a child of three years, which has already lasted over twenty-five days. I have seen the disease once or twice in children of two years." Dr. Parker observes: "I think the disease one of early life. Of eight patients, treated in the last sixty days, seven were between ten and twenty-five—the eighth forty-five years old. I do not recollect having treated a patient under six years, or over forty-five. A friend informs me that he is now treating a well-marked case, aged two and a half years." Dr. Faulkner remarks: "It belongs to the young. In a family with seventy slaves over twelve years of age, it was confined, with one exception, to those under twenty-one years old. I saw one case, in 1845, in a child under two years of age; in 1845, one at fifty-six years; this is my widest range." In Dr. Sutphin's experience, between the ages of eight and thirty furnish the greatest number of cases. The doctor writes: "I seldom meet with typhoid fever in persons over forty years of age. The oldest patient of the disease I have ever met with was upwards of sixty; the youngest twenty months old." Dr. Bland remarks: "Old persons are not so apt to take it as the young; though I have attended a number of persons over sixty years, and some over seventy. The

youngest person I have ever known to have the disease was an infant of fifteen months." Dr. Cullen says his experience in Virginia has not been extensive, but the cases that have fallen under his notice were those "between fifteen and thirty years of age." Dr. Neff has witnessed more of the disease "between the ages of fifteen and thirty-five."

The annexed table will exhibit my own experience in one hundred and thirty cases, in which I paid attention to this point:—

MALES.	FEMALES.
1 at 18 months.	1 at 18 months.
1 at 30 months.	2 from 3 to 6 years.
7 from 3 to 6 years.	4 " 6 to 9 "
4 " 6 to 9 "	3 " 9 to 12 "
3 " 9 to 12 "	9 " 12 to 15 "
6 " 12 to 15 "	5 " 15 to 18 "
8 " 15 to 18 "	8 " 18 to 21 "
3 " 18 to 21 "	11 " 21 to 25 "
13 " 21 to 25 "	7 " 25 to 30 "
12 " 25 to 30 "	2 " 30 to 35 "
4 " 30 to 35 "	2 " 35 to 40 "
3 " 35 to 40 "	3 " 40 to 45 "
4 " 40 to 50 "	1 " 50 to 60 "
3 " 50 to 60 "	1 " 60 to 65 "
<hr/> 71	<hr/> 59

6. *Sex.*—From the above it is also seen that the majority is in favor of males. This, however, has not been

constant, and I look upon the result as entirely accidental. Dr. James Jackson thinks the disease occurs oftenest among males. Among children, Barthez and Rilliet found a majority of males. In Taupin's cases there was a like result. Nathan Smith did not notice a balance of liability in favor of either sex.*

7. *Exposure*.—Exposure to cold, excesses in the manner of living, may have some influence in the production of the disease; but according to my own observation, the large majority of patients are taken sick of the disease in the midst of full health.

8. *Recency of Residence*.—Strangers coming into a district of country where the disease exists, and remaining a time, are particularly liable to be seized. Several instances of this kind have fallen under my notice.

9. *Race*.—I am not aware that the slave population is more obnoxious to the disease than the whites, after excepting the advantages in its production which would accrue, in either race, from large assembling in small and ill-ventilated houses, which is sometimes the case on farms where a large number of blacks are worked.

* Bartlett's Treatise on Fevers.

CHAPTER VI.

DURATION, AND COMPLICATIONS.

1. THE duration of enteric fever varies considerably in different cases, and under different circumstances. Dr. Bland writes: "I do not recollect having known a case to commence getting well in less than seven days. The longest duration of the disease, in my experience, was sixty-three days. I think the average duration may be set down at twenty-one days." Dr. Hildreth thinks "the average to be about twenty-six days." According to Dr. Harris's experience, "the duration varies from five to seven weeks." Dr. Archer writes: "The duration, in the large majority, varies between twenty-one and twenty-eight days. I have treated some cases which convalesced in eight days; others, not until after several weeks." Dr. Payne thinks the average to be "about three weeks." Dr. McLane says: "In regular cases the average duration is twenty-one days." Dr. Brown remarks: "The average duration of those who recovered, was thirty-two days; of my fatal cases, ten days." Dr. Gholson says "its average duration is about three

weeks." Dr. Spitler writes: "The duration of typhoid fever differs widely in different cases. I do not remember ever to have seen a well-developed case of the disease recover under twelve days. It more frequently continues twenty or thirty days. I have known some cases of unusual persistence—for example, seventy-five days." Dr. Cross says: "Between twenty and thirty days furnish the duration in a large majority." Dr. Parker observes: "I have never witnessed a case the duration of which exceeded ninety days; nor do I remember to have seen a patient get well under a fortnight. It is sometimes rather difficult to say when a patient is really well of the disease. I have frequently ceased to visit patients who, nevertheless, were not fit for business for two or three weeks afterwards." Dr. Faulkner says "*slow continued fever* is its most appropriate name, in many cases. Its duration is from three to six weeks." Dr. Cullen says: "Duration generally from three to six weeks." Dr. Sutphin writes: "The average duration, I should think, might be put down at fifteen days."

In estimating its duration I have dated the first extreme of the period to be measured at the time patients become unable to pursue their accustomed exercise, and take to their beds; the other extreme, with the cessation of the febrile symptoms, the return of the appetite, and the ability to take solid food. It is proper to remark, however, that the date at which a patient, suffer-

ing from enteric fever, may take to bed, will not, in every instance, be the date of the fully-developed disease, but generally it is the case. "Walking cases," as they are called, are sometimes met with. I have known several patients suffering from the disease, who did not take to their beds for more than an hour or two at a time during the day, throughout the entire course of the disease, but wandered from place to place, the subjects of remark. In one such case, the patient was delirious for several days, and on this account his peregrinations about the streets were of particular notice.

Reckoning as above proposed, the duration of sixty-four cases of the mild form of enteric fever was according to the annexed table:—

MALES.

	In 2 cases the duration was.....	9 days.
	2 cases the duration was.....	10 "
	2 cases the duration was.....	12 "
	3 cases the duration was.....	13 "
15	6 cases the duration was.....	14 "
	7 cases the duration was.....	15 "
	1 case the duration was.....	16 "
21	6 cases the duration was.....	17 "
	5 cases the duration was.....	18 "
	<hr/>	
	34	

FEMALES.

	In 1 case the duration was.....	9 days.
	1 case the duration was.....	10 "

24	15	In 3 cases the duration was.....	12 days.
	9	1 case the duration was.....	13 “
		5 cases the duration was.....	14 “
		9 cases the duration was.....	15 “
37	21	5 cases the duration was.....	17 “
	16	2 cases the duration was.....	18 “
		2 cases the duration was.....	23 “
3	3	1 case the duration was	25 “
		—	
		30	

From the above it will be seen that a majority of the cases of this form terminated between the thirteenth and eighteenth days.

The duration of the *intermediate* form, like its kindred, is not always the same. But to be understood: I said in an early chapter that a case of this form, the intermediate, may not run a longer course than one in which the disease was mild throughout, *i.e.* a case mild in its character at first, may, after the lapse of several days, become aggravated, and present the severer class of symptoms described, and end in convalescence as soon as one that did not partake of this increase of severity. Therefore, in speaking of the duration of the *intermediate* form, it will be remembered that I include the whole time, from the date of the first development of the fever to the establishment of convalescence.

The subjoined table will exhibit the duration of thirty-two cases passing into this form:—

MALES.

In 1 case the duration was.....	15 days.
2 cases the duration was.....	16 “
3 cases the duration was.....	18 “
3 cases the duration was.....	20 “
3 cases the duration was.....	23 “
2 cases the duration was.....	25 “
1 case the duration was.....	31 “
2 cases the duration was.....	32 “
1 case the duration was.....	40 “
<hr/>	
18	

FEMALES.

In 1 case the duration was.....	17 days.
4 cases the duration was.....	18 “
2 cases the duration was.....	20 “
2 cases the duration was.....	23 “
1 case the duration was.....	25 “
2 cases the duration was.....	28 “
1 case the duration was.....	35 “
1 case the duration was.....	48 “
<hr/>	
14	

The duration of twenty-five cases of the malignant form, the result of the existence first of the milder forms, was according to the following table:—

MALES.

In 1 case the duration was.....	12 days.
3 cases the duration was.....	18 “
1 case the duration was.....	23 “
1 case the duration was.....	25 “

In 6 cases the duration was.....	28 days.
1 case the duration was.....	30 “
1 case the duration was.....	31 “
<hr/>	
14	

FEMALES.

In 2 cases the duration was.....	15 days.
1 case the duration was.....	18 “
1 case the duration was.....	21 “
2 cases the duration was.....	26 “
2 cases the duration was.....	28 “
2 cases the duration was.....	31 “
1 case the duration was.....	35 “
<hr/>	
11	

Among these twenty-five cases were nine fatal cases, the duration of which the following table shows:—

MALES.

In 1 case the duration was.....	23 days.
1 case the duration was.....	25 “
4 cases the duration was.....	28 “
1 case the duration was.....	30 “
<hr/>	
7	

FEMALES.

In 1 case the duration was.....	26 days.
1 case the duration was.....	28 “
<hr/>	
2	

The duration of nine cases assuming a malignant character from the beginning, is seen in the annexed table:—

MALES.

In 2 cases the duration was.....	15 days.
1 case the duration was.....	18* “
1 case the duration was.....	26 “
1 case the duration was.....	60 “
—	
5	

FEMALES.

In 2 cases the duration was.....	12 days.
1 case the duration was.....	18 “
1 case the duration was.....	23* “
—	
4	

2. *Complications.* — Enteric fever is occasionally complicated with other diseases; with some in the beginning, with others, and more often, not until an advanced stage of the case. The earliest complications are with bilious-remittent fever and acute pneumonia. That bilious-remittent fever and enteric fever are sometimes closely commingled in miasmatic districts, the preceding pages indubitably show; and so intimate is this blending of types, that it is not until the way has been cautiously felt that it can be determined which of the influences at work is foremost.

The complication with acute pneumonia I have seen in two instances. One patient recovered. In the fatal case hemorrhage from the bowels ensued on the twelfth

* Fatal.

day, the patient dying on the eighteenth day. At a late stage of the disease this complication is of more common occurrence, preceded by the most frequent of all complications, bronchitis. It is needless to mention the signs indicative of the springing up of these inter-current inflammations.

Pleurisy is sometimes met with during the progress of enteric fever. I have met with one or two such cases.

Erysipelas is not unfrequently observed to attack patients suffering from the disease. In a case included in the table of fatal cases, of twenty-three days' duration, erysipelas attacked the ear on the evening of the twenty-first day of the disease, which spread rapidly over the head and neck, killing the patient by the twenty-third day.

The most fearful of the accidental inflammations is peritonitis, the result of perforation, and occurs sometimes when least expected. "Its occurrence," observes Dr. Bartlett, "is marked by the sudden supervention of acute pain in the abdomen. This pain comes on, all at once, with no premonitory symptoms, with nothing in the condition of the patient to account for it; and the suffering which it occasions is excessive. The access of the pain is frequently accompanied by chills; the abdomen becomes rapidly and acutely tender on pressure, and, if it was not so before, hard and tympanitic. The

pulse is quick and compressed. An instantaneous change takes place in the physiognomy of the patient. The countenance is expressive of intense suffering; the features are pinched and cadaverous; and the face is covered with a profuse sweat. There is a constant and urgent desire for cold drinks. Nausea and vomiting are present soon after the inflammation has commenced; the matter ejected from the stomach is of a grass-green color, and it continues to be thrown up to the last moment of life. Notwithstanding the constancy and the intensity of the distress, the patient preserves the same position, lying upon his back, and dreading every moment that may add to the pain and tenderness of the abdomen. Such, in most cases, is the formidable array of symptoms which indicate the occurrence and mark the progress of this fatal complication. Occasionally they are more obscure, and this peritoneal inflammation, like the fever itself, is, to a certain extent, latent. It is exceedingly rare, however, that there can be any difficulty in ascertaining its existence. Death usually takes place in from one to three days after the occurrence of the perforation.”*

* Treatise on Fevers, pp. 111, 112.

CHAPTER VII.

TERMINATIONS, AND SEQUELÆ.

1. *Convalescence*.—The period occupied in convalescence is of variable length. In a few cases, the passage to health is rapid. In the larger number of cases, it is slow and gradual; and sometimes the period thus occupied equals the duration of the disease. The return to health, in some instances, is so severely interrupted by unpleasant symptoms growing out of the irregular performance of the enfeebled functions, that what is gained at one period seems to be lost at another; and the case becomes more troublesome, and the prognosis even more unfavorable, perhaps, than during the height of the disease. These drawbacks generally consist of irregularity of the appetite, which at one time is tolerably sharp, at another, requires stimulation; copious night-sweats; bowels either too loose or too costive; frequency of the pulse, with increased heat of skin, restlessness, wakefulness, etc.

The signs of convalescence are these: cleaning of the tongue, if it has been coated, or if red and dry, it is moist, and covered with a thin whitish fur; reduction of

the frequency of the pulse; moisture of the skin; increased quantity of urine discharged; in place of wakefulness, delirium, twitchings of the tendons, etc., the patient is disposed to refreshing rest; tympanitis gradually diminishes; the discharges from the bowels are less frequent and of greater consistence; gradual increase of appetite; and shrunken features. So marked is the emaciation of convalescence, sometimes, that the patient's look is ghastly. How often do doctors receive the following reply, on announcing to the friends of the patient that convalescence has begun? "He may be better, doctor, but indeed, he does not look so: see how pale and how much more badly he looks now than he did two days ago!"

Ordinarily, this emaciated look is not of long duration. As the functions assume their wonted activity, the features swell out to their normal limits, and sometimes a degree of fleshiness ensues, and becomes permanent far beyond that of previous health. More generally, after the lapse of a few months any increase of flesh, beyond the accustomed point, subsides. In a word, the patient "is himself again," with the exception of the loss, may be, of a luxuriant suit of hair, which requires several months for its reproduction.

Another fact I mention. It is possible for convalescence to be interrupted by a return of the disease. In my experience true relapses have not often occurred. I

have met with but one such case. The patient, a female, suffered a mild form of the disease, the duration of which was twelve days, and convalescence progressed rapidly for several days, when she committed an impropriety in diet, that caused a return of the disease in a grave form, and confinement to bed for twenty-eight days.

2. *Death*.—All patients do not die in the same manner. There are several modes of death, and the importance of studying attentively the “tendency” to this or that mode, not only on the appearance of an epidemic, but in each individual case, cannot be too strongly inculcated; because it is only by the attainment of this knowledge that a successful practice can be instituted.

Death by *anæmia* is caused by a want of the due supply of blood to the heart. In death by *asthenia* there is no deficiency of supply, but a failure of the contractile power of the heart. In death by *asphyxia* or *apnœa*, there is a stoppage of the entrance of air into the lungs. In death by *coma*, the only difference in the cause from that of *apnœa* being this: in death by *apnœa*, the chemical functions of the lungs cease first, and then the circulation of venous blood through the arteries suspends the sensibility; whereas, in death by *coma*, the sensibility ceases first, and in consequence of this the movements of the thorax are arrested, as well as the

chemical functions of the lungs. Thus the circulation of venous blood through the arteries is in one case the cause, in the other the effect of the cessation of animal life.* To these Dr. Williams adds another, "*necræmia*, or *death beginning* with the blood," an example of which is frequently afforded in the termination of the disease under consideration. It is indicated when petechia and vibices make their appearance, by the occurrence of more extensive hemorrhages in internal parts, the increased fluidity of the blood, and its tendency to pass into decomposition.†

Death beginning at the heart, as existing by itself, is not common; but is usually complicated with one or both of the two other modes. I have seen a few cases in which there was no pulmonary obstruction, nor was the mind at all clouded even up to the latest moment of life. The symptoms tending to death by asthenia are simply those of debility, which have been narrated in a previous chapter. I may be allowed to reiterate the following: a small thread-like pulse; position constantly on the back, with the inclination to slip toward the foot of the bed; involuntary discharges of fæces and urine; sharpening of the features; the eyes sunken, filmy, and half-closed; the temples and cheeks hollow; the ears

* Tanner's Clinical Med., p. 76.

† Williams's Principles of Med., p. 416.

shriveled and retracted; the skin shrunken and pale, or of a greenish, livid, or leaden hue; falling of the jaw; cold sweating on different parts of the surface; when, at last, the heart stops and death is complete! This mode of death is most often observed in those cases in which diarrhœa has been troublesome, and followed by hemorrhage, and occurs in protracted cases of the disease.

Death by *asphyxia* or *apnœa* is more frequent than by *asthenia*, and is often combined with *coma*. The symptoms denoting the "tendency to death" by *apnœa* are easy of detection. Among the first is a noticeable quickness of respiration, and more or less dyspnœa, which cannot be wholly accounted for by the degree of fever and the state of the pulse; but if we apply "the educated ear" to the chest, the cause is explained—there is a commencing pneumonia, and it may kill, though there be none of the ordinary symptoms—cough, rust-colored sputa, or pain. How death by *apnœa* partakes also of *coma* is simple enough. Owing to the diminished capacity of the lungs for arterializing the blood, the venous blood, instead of acquiring in its circuit through the lungs the qualities of arterial blood, is returned to the left side of the heart, and thence distributed over the system, still loaded with the matters which should have been exhaled, or revived by contact with the air. The blood, thus unfit for a healthy supply, is carried to the brain, where it destroys voluntary motion, sense, and

general sensibility, and induces *coma*; “it impairs even the excited movements of the respiratory muscles, thus allowing the lungs, the pulmonary artery, and the right side of the heart, to become gorged with blood—the last-named organ, receiving through the coronary arteries so imperfect a stimulus, soon loses its power of contracting, and death ensues.”*

The most common mode of death begins in the head, by *coma*. Delirium comes on, the patient lies half-conscious, with eyelids partly closed, muttering disjointed sentences, and finally becomes completely insensible.

Dr. Watson observes: “Coma may result from at least two different kinds of cause. One cause is pressure, which is mechanical; another, which is probably chemical, is the circulation of some noxious or narcotic substance (such as opium) in the blood. And there are, doubtless, many physical conditions of the nervous mass itself which are capable of arresting the cerebral functions and producing coma. To which kind of cause are we to ascribe the stupor that supervenes during the progress of fever? That is an interesting, and, in reference to practice, an important question. Physicians have diligently attempted its solution by examining the dead brain. I cannot tell you how often I have

* Stillé's Elements of General Pathology, p. 140.

looked, and looked in vain, for some palpable disorganization, or some effusion implying pressure. All who are familiar with the dead-house of a hospital are aware that this fruitless search for some physical explanation of the comatose state, after death by fever, is of very common occurrence. * * * Not only do we fail to discover, in many instances, any traces of inflammation, upon inspecting the dead brain, but we find that during the life of the patient measures which would be likely to aggravate any inflammatory mischief—strong stimulants, for example, wine or brandy—do actually and obviously, in cases innumerable, relieve the comatose symptoms, and benefit the patient. The inference seems unavoidable, that the coma, in such cases, has some other cause than that mechanical pressure which arises sometimes from the effusion of fluid upon the surface of the brain, or within its ventricles, and that other cause is supplied by the poisoned blood.”*

3. *Sequelæ*.—Upon this subject I have but one single remark to make. I have seen two instances of swelled leg and thigh like that which is incidental to parturient women. In one case the swelling came on during convalescence; in the other, not until some weeks after the

* Watson's Lectures on Practice, p. 942.

patient was able to be out of bed. In the first-mentioned case the swelling was accompanied with the most excessive tenderness, confined only to the upper third of the thigh. In the other case a slight degree of lameness was all that was complained of.

CHAPTER VIII.

DIAGNOSIS—MORTALITY AND PROGNOSIS—NATURE.

1. *Diagnosis.*—Enteric fever is not always easily recognized in the beginning, although in the majority of instances it may be distinguished by the experienced observer. In cases of sudden access, the diagnosis becomes sometimes very difficult, because chilliness, heat, thirst, quick pulse, pain in the head, back, and limbs, nausea, and vomiting, are the symptoms which usher in not only other febrile affections, but the local phlegmasia generally, and hence the difficulty in the beginning in deciding upon the precise character of the attack. But two or three days will clear up all uncertainty and confirm the diagnosis; the symptoms after that time, in an uncomplicated case, being wholly unlike those of any other febrile or local inflammatory affection.

The most characteristic symptoms have been already singled out, and their several degrees of importance enlarged upon. I have but little now to add except their enumeration.

Coupled with the frequently slow and insidious mode

of attack, is headache, more or less severe; diarrhœa, either from the beginning or soon afterwards, the discharges from the bowels being of watery consistence and of an ochry color; expression of the countenance dull and apathetic; obtuseness of the senses; greatly impaired appetite; occasional bleedings from the nose; signal loss of muscular strength; acceleration of the pulse, with an evening exacerbation of febrile heat; cough and bronchial rales; tympanitis; gurgling on pressure over the right iliac quarter; the *rose-colored* eruption; dullness on percussion over the spleen; somnolency, or restlessness, vigilance, etc.

If the case assume the intermediate grade of severity, increase of the above symptoms is superadded; the tongue becomes dry, with a brown stripe down its middle; slight collection of sordes about the lips, gums, and teeth; twitchings of the tendons; deafness; delirium; discharges from the bowels more frequent, in color a little darker than before. The demand for cold drinks is less; the patient seems insensible to his wants. In addition, the symptoms may go on to greater severity. The senses are more completely benumbed; the patient lies constantly on his back, and inclined to slip down in the bed; constant muttering of disjointed sentences; picking at the bedclothes; the tongue protruded slowly and tremblingly, and with a blackish crust upon its surface; abdomen largely tympanitic; incessant twitchings

of the tendons; diarrhœa; increased tendency to hemorrhage from the nostrils, gums, and bowels; heat of the surface unequally distributed, and its vitality so diminished that the parts exposed to pressure become abraded, followed by sloughing. "These symptoms coming on without any obvious cause, occurring usually in a person under forty years of age, and referable to no local disease; increasing in severity, and terminating in death at an indefinite period after the eighth day, or gradually subsiding and disappearing one after another, and giving way to convalescence at an indefinite period after the fifteenth or twentieth day, mark most clearly and unquestionably, a disease *wholly unlike any other.*"*

The diseases with which enteric fever is most liable to be confounded are bilious-remittent fever, typhus fever, inflammation of the membranes of the brain, gastritis, mucous enteritis, and puerperal peritonitis. In miasmatic regions enteric fever is frequently blended with, and influenced by, the element of periodicity; and in some instances this blending is so complete that the real disease is, for several days, completely obscured. Dr. Robert A. Gholson, of the City of Petersburg, in a letter says: "This mixed type of fever usually makes its appearance among us with a chill, followed in the course

* Bartlett's Treatise on Fevers, p. 125.

of one or two days by another, or distinct remission. This paroxysmal character of the fever does not usually continue longer than the first week, when the continued or typhoid character is shown forth. In many cases the enteric lesions are not evinced until the latter stages of the disease; no prominent meteorism, diarrhœa, etc.; on the other hand, there is frequently torpor of the abdominal and intestinal secretions. Sooner or later, however, we have the usual symptoms characterizing the bowel lesions."

In consequence of this commingling of types the diagnosis becomes sometimes very difficult, and especially is this the case when the remittent type assumes low and protracted tendencies.

Periodicity may exhibit itself at either extremity of enteric fever, during its access, or at its decline; in the latter event, intermittent may result.

Uncomplicated enteric fever may be distinguished from bilious-remittent fever—*first*, in the latter, by the more regular and decided remissions; *second*, the bilious vomiting and jaundiced hue of the skin; *third*, its shorter duration, and its tendency to end in intermittent; *fourth*, the entire absence of diarrhœa, epistaxis, dull and listless expression, tympanitis, the rose-colored spots, and that degree of prostration of muscular strength which mark enteric fever. Dissection confirms the diagnosis. In remittent fever the stomach is

more frequently inflamed; greater discoloration of the liver; the spleen less diseased; and there is a total absence of the characteristic change invariably found to accompany enteric fever in the elliptical plates and mesenteric glands.

Enteric fever was long confounded with true *typhus fever*, and notwithstanding the conclusive researches of recent years, which have established beyond all cavil the dissimilarity of the two affections, the doctrine of identity is still adhered to by some writers. That the two diseases are essentially and fundamentally unlike each other in their nature, their symptoms, their pathology, and the treatment which they require, I think we have now the most abundant proof. For further information concerning the non-identity of *typhoid* and *typhus*, the reader is referred to the writings of Louis, Gerhard, Jackson, Jenner, Bartlett, and Wood.

There are some diseases of the brain which, in certain cases, may be difficult to distinguish from enteric fever, and when occurring in children the difficulty of diagnosis is greatly enhanced. In general, however, the presence or absence of diarrhœa, tympanitis, prostration of muscular strength, the rose-colored eruption, heaviness without delirium, will determine the true character of the affection.

From gastritis, enteric fever may usually be distinguished without much difficulty. So with mucous en-

teritis. For the diagnostic symptoms of these affections the reader is referred to the works of Wood and Watson on Practice.

Our powers at accurate diagnosis may sometimes be heavily taxed to distinguish enteric fever from puerperal peritonitis, especially when the symptoms of the latter bear the typhoidal relationship. The *typhoidal state* may attach to many diseases, and it is of the utmost importance that this relationship should be distinguished from enteric fever proper. Puerperal peritonitis may present many of the most characteristic elements of enteric fever, such as rapid prostration of muscular strength, subsultus tendinum, diarrhœa, gurgling on pressure over the right iliac quarter, tympanitic distension of the abdomen, a dry, red, cracked, or blackish tongue, and wandering delirium. For the puerperal state this *typhoidal condition* seems to have a peculiar affinity, and should always be remembered in practice. My friend, Dr. William J. Bland, of Weston, Lewis County, in his letter heretofore referred to, says: "We have a disease following childbirth very much resembling enteric fever, but which is most unquestionably puerperal peritonitis. It usually commences on the second day after delivery, with chills, fever, purging, great tympanitic distension of the abdomen, and with a pulse ranging from 110 to 180 per minute."

I may in this place allude to a singular exhibition of

disease spoken of by Dr. Faulkner, in his letter of the date before mentioned. The doctor says: "In regard to our epidemic last year, I have an opinion of my own, in which I do not know that any of my brethren agree, that it was modified by an approaching epidemic erysipelas, which even then existed, unrecognized, in some neighborhoods. I saw in our neighborhood, in 1849, several cases, in different families, that I diagnosed as erysipelatous, and which terminated in effusion of purulent fluid in the peritoneal cavity. These had the *general symptoms of typhoid fever*; and the case that gave me a clue to its pathology had a little erysipelatous spot on the face, which vanished in a day or two, when there was added to the other symptoms tenderness of the abdomen, which began soon to enlarge as in ascites, until there was a discharge, from the bowels, of a fluid resembling pus, but was most probably serum. In all, there were about three pints discharged in the course of twenty-four hours; and this was repeated about twice, at intervals of ten or twelve days, the abdomen gradually enlarging each time until spontaneously tapped through the alimentary canal. This was the only case that I had charge of. Dr. Craddock had two cases under his care: one pursuing the same course as the one just described, with the exception of a less amount of discharge; in the other, the fluid finding an outlet through the abdominal parietes first, and then into the

bowels. A part of the fluid was thrown up by the stomach, and some discharged per anum. This patient was the sister of my patient, and was the only fatal case. In another family, Dr. Carrington had a similar case. Dr. C. tapped his patient for ascites, and was surprised to find, instead of a simple case of dropsy consequent on fever, a fluid of the same character as was exhibited in the other cases. This was to me a most remarkable batch of fever cases."

Dr. Parker says he has "known one or two instances in which the patient, suffering from typhoid fever, was treated for chronic diarrhœa."

2. *Mortality and Prognosis.*—I have already had occasion to allude to the rate of mortality of the disease. I now add that it varies with the character of the disease, in each epidemic visitation; when endemic, according to the particular locality; in sporadic cases, it differs widely; and lastly, during some years, whether epidemic, endemic, or sporadic, it varies materially from other years, and during like seasons.

But while it is not an easy matter to arrive at any positive average result, on account of the variable influences which operate in its production, march, and termination, though it must be considered a grave disease, there is, perhaps, no other acute disease of like gravity, which, under proper management, more often terminates

in recovery. A considerable experience in its management has led me to consider no case, however mild it may seem, as free from danger: none so grave but that the patient may recover.

While the prognosis, in any case, can very rarely be pronounced with absolute certainty, yet, in many instances, by carefully noting the degree of exasperation of certain symptoms as they arise, and comparing them with the amount of resistance offered by the state of the muscular strength, the result, if it cannot be pronounced with certainty, may be approximated. In other instances the utmost foresight and sagacity are useless in attempting to predict the result with any degree of confidence. In some cases, the physician's solicitude is peculiarly *excited*. For a time favorable symptoms will largely preponderate, flattering both the physician and friends of the patient with the approach of speedy convalescence; at another time—and perhaps the change has been sudden—symptoms of an unfavorable character will assume the lead and continue for several hours only, or for several days: this mutation occurring several times, perhaps, before the case takes a final turn; or the symptoms, favorable and unfavorable, may remain for several days so equally balanced that no one of the usual indices is left for reckoning as to the result.

The *mode of access* would seem to have some influence

upon the subsequent character of the disease. Of forty cases, in which the access was sudden, only one was fatal; while of ninety cases, in which the access was more or less gradual, ten were fatal.

Headache is more severe, I think, in cases which run a grave course.

Diarrhœa is a grave symptom in proportion to its urgency and continuance. No danger accrues from two or three discharges in the course of twenty-four hours: these do not seem to induce much prostration, and, I think, are of service; but when the number of dejections, in the same space of time, amounts to more than five or six, then the case becomes of serious moment. I have never known a patient to die of the disease, whose stools did not exceed in number two or three in the course of a day or night. This is the experience also of many of my professional acquaintances, of whom I have inquired touching the subject.

Hemorrhage, and involuntary discharges of fæces, occur only in very grave cases of the disease. Sometimes hemorrhage by the bowels occurs as early as the twelfth day. Dr. McLane mentions this occurrence as having been quite frequent during an epidemic which he witnessed in 1853. I have myself, upon several occasions, witnessed the discharge of enormous quantities of blood from the bowels. In one instance, along with the excessive loss by the bowels, there was a continual oozing

of blood from the gums and nostrils; and yet my patient recovered. After such extensive losses a favorable termination is of rare occurrence.

In cases of moderate hemorrhage from the bowels, I have seen the majority recover. After the occurrence of involuntary discharges of fæces the case does not always result in death; but the majority of such cases terminate fatally.

A *pulse* running above one hundred and thirty, when associated with grave symptoms, is unfavorable. In females, however, a pulse of one hundred and thirty is not more unfavorable than a pulse of one hundred and twenty in males.

Delirium is of evil augury, in proportion to its early appearance, its kind, and degree of persistence. Mild delirium, occurring at night, or when the patient is alone, cannot, when considered by itself, be regarded as unfavorable; but when associated with that perverted impression which induces the patient to say that he is "not much sick," the chances are against his recovery. This feeling was manifested by a majority of my fatal cases. Wild and furious delirium occurs only in bad cases. In all cases the aphorism of Hippocrates is true: "When sleep puts an end to delirium it is a good symptom."

Cases without more or less obtuseness of the senses, are rarely met with, and it is only when the senses have become profoundly blunted that danger is to be appre-

hended. The opposite conditions—restlessness, watchfulness, etc.—are far more unfavorable, and when present, in a well-marked form, other unfavorable symptoms are not far in the rear.

I have already spoken of the prognostic value of the presence of *deafness* and *epistaxis*.

The expression of the countenance is sometimes of significant importance. I am unable, however, to describe its traits. There are some things occurring in our dealings with the sick, and which, to the experienced eye, are easily recognized, but which cannot always be imparted to others. This is exactly true as regards the expression of the countenance. We are quick to understand its meanings, but to tell how we understand is not always an easy matter. Suffice it to say, that if after the obliteration of an intelligent expression, for a greater or less length of time, the features brighten, and the patient pay some attention to things and persons about the chamber, and if, especially, he become solicitous for his own condition and safety, convalescence is at hand.

In nine cases out of ten, there is more or less *meteorism* or tympanitic distension of the abdomen, and it becomes unfavorable only when its increase is sudden, or when it becomes strongly marked.

Spasmodic twitchings of the muscles are of serious significance. In mild cases of the disease they are some-

times observed; but always to a slight degree. When they are well marked danger is to be apprehended. One case only I have seen recover after they were present to the extent of epileptiform agitation of the whole body.

In five of the eleven fatal cases, *permanent* rigidity of one of the limbs occurred. I have never known a case recover in which this symptom was present. Great difficulty of swallowing is, perhaps, of not less unfavorable import.

The *condition of the tongue*, if not of much importance when considered singly, may support the prognosis of other symptoms present. A *dry, denuded, cracked, red*, or blackish tongue generally accompanies grave conditions. A dry and red tongue is the usual companion of severe disease within the bowels.

The manner in which a patient respire is sometimes significant. If he breathes irregularly, and with a noisy hissing sound, and there are present other symptoms of gravity, the case is beyond all hope of recovery. In every such case which came under my observation death soon followed.

Prostration of strength, when strongly marked in the beginning, is the sure precursor of a dangerous form of the disease.

From my own experience I am not led to attach much importance to *retention of urine*. It occurred in only one of the fatal cases.

I have already spoken of the several intercurrent inflammations most likely to spring up during the progress of the disease. Of course their occurrence adds to its danger. The occurrence of erysipelas is full of evil augury.

The presence of *eschars* accompanies low and dangerous conditions. They are of frequent occurrence among fatal cases. The same may be said of petechia and vibices, swelling and ulceration of the parotids.

There is a condition of great danger frequently occurring in the course of the disease, and which has already received a considerable share of notice. I allude to that point in its progress when, after a seeming amelioration of many of the most troublesome symptoms, there is a sudden return; the tongue again becomes red and dry; tympanitis occurs; diarrhoea is as urgent as before; the skin becomes dry and parched; there is delirium, with greatly accelerated arterial action. This exasperation of symptoms is of fearful import.

There are some other points worthy of mention. Constitutional weakness does not seem to exert an unfavorable influence upon the course of the disease. When occurring in delicate subjects, it is most generally of mild character. But in young, robust persons, it often runs a rapid course, and frequently to death. The ages of the eleven fatal cases are as follows:—

Males.—1 at fifty-two; 1 at twenty-four; 1 at twenty-three; 2 at eighteen; 1 at sixteen; 1 at fifteen; 1 at eleven years.

Females.—1 at forty-eight; 1 at twenty-one; 1 at eighteen years.

This number is of course too small to insure a correct conclusion as to the degree of danger to be apprehended from age.

I think, as a general rule, the disease is more fatal during the fall and winter months than at other seasons. Nine of the above cases occurred during the months of November and December.

Recency of residence most certainly has some influence upon the character of the disease. Strangers suffer more severely than acclimated residents. I have witnessed frequent examples confirming this assertion.

I am not aware that the severity of the disease is at all influenced by difference in race.

Pregnancy and lactation I have not found to have any material influence upon the character of the disease. In the fourteen cases of the intermediate form pregnancy existed in five, the advance of which was two months in 2; three months in 1; four months in 1; and six months in the remaining one. None of these miscarried. Among the cases of the malignant form, pregnancy existed in one, at an advance of two months. Miscarriage occurred on the tenth day of the

disease, and was not followed by any serious result. The patient began to improve by the twenty-first day.

Of those who gave suck, two were of the mild, and one of the malignant form. In neither of the former was the child denied the breast. In the latter case, during the second week, the secretion of milk was entirely suspended; the child was in consequence of it removed to a neighboring family, and not permitted its mother's breast for two months, when an abundant secretion again took place.

Taking into account physiological differences, I have not seen the course of the disease in infancy and childhood materially different from that in adults. In two cases, it has been seen, the disease appeared as early as the eighteenth month, (the mothers suffering from the disease at the same time;) and from the third year up to the twelfth there were twenty-one cases. The duration of the disease varied between nine and twenty-eight days. In the case of the last-mentioned duration, (aged eleven,) profuse hemorrhage from the bowels took place on the twenty-third day, followed by petechia, etc., terminating the life of the boy on the twenty-eighth.

3. *Nature*.—Concerning the real nature of enteric fever much difference of opinion has existed; and even at the present day, notwithstanding the uniform teachings derived from a careful examination of the changes

found on dissection, opinions still differ. The new inquirer, therefore, is left to select one of two courses: propose a new theory, or adhere, in part or in whole, to one or the other of those already promulgated. I choose to adopt that theory which supposes enteric fever to be the result of a specific poison, by some means introduced into the blood; that in the attempt to eliminate this poison from the blood-current, the glands of the bowels, whose office is assigned to be that of eliminating any putrescent accumulations from this fluid, become over-burdened, and thenceforth result in more or less change of structure; that by such change the channels also, through which nutriment reaches the blood, are more or less obstructed; that in consequence of this the blood becomes additionally depraved; and that these causes, primary and secondary, acting together, are capable of giving rise to the several conditions characteristic of enteric fever.

CHAPTER IX.

TREATMENT.

PREFATORY REMARKS.

How far it is needful for the physician to interfere in the management of enteric fever, is a question of great importance. That too much may be, and often has been done, there can be no doubt. The bills of mortality from the disease, in the last few years, in many parts of the State, show favorably over former years; and there is at present, perhaps, no other part of the country that equals Virginia in the frequency of the disease, in which the amount of recoveries, in a given number of cases, is exceeded. The present success, in the management of the disease, is not attributable to much medication, but the reverse of it, great care being taken that the little employed is well timed. The natural tendency of the disease is toward recovery, and many cases will end favorably without medical treatment; and a goodly number will get well in spite of a very bad treatment. From this fact, too often has resulted confidence in a course of practice which, nevertheless, may have lengthened the duration of the disease, and prolonged the period of

convalescence. Here the old aphorism, that a desperate disease requires for its cure a desperate remedy, does not hold good; but in place of it we may rely, to a considerable degree, upon the *vis medicatrix naturæ*. But while it is important that we should guard ourselves against too much confidence in the use of medicines, we ought to be careful lest we fall into the opposite extreme. Empiricism and skepticism are alike objectionable, and should be avoided, if we desire to be honest, while we are successful. To know *how* and *when* to interfere, constitutes the successful practice; and this knowledge, to a very great degree, can be obtained only by observing closely at the bedside. The great mistake with very young practitioners, is their overweening confidence in medicines; and in no other disease is the temptation to be officious more powerful. To act with deliberation is the golden rule—"never permit the patient to be endangered by accidental suggestions at the bedside," but wait patiently the progress of any unfavorable symptom before attempting to combat it with drugs. It is not at all uncommon for alarming symptoms suddenly to arise and soon subside; and this may occur several times in the progress of the disease; and in nine cases out of ten, if we have withheld medicines, the patient is as well off, and may be better, than if they had been administered.

It should be recollected that enteric fever is a disease which cannot be suddenly broken up by any method of

treatment, and to attempt to interrupt its progress by active measures is worse than folly: it would be risking the life of the patient. But while this is so, I think much may be done to moderate the violence of the disease, and, in many instances, a fatal termination averted. To be able to do the patient the greatest amount of good, requires close watching on the part of the physician. He should decide upon the "tendency" to this or that mode of death, and work accordingly, remembering that "violence in therapeutics is never justifiable when moderation is adequate to the same good end."

There are other points of interest which should be constantly borne in mind in the management of the disease. These are, the condition of the system at the time of the attack; the stage of the disease; age; sex, with its peculiarities; individual peculiarities; habits; previous disease; and the tendency to complications. Without attention to all of these, no hope can be had of a successful practice.

Therapeutic Processes and Agents.—The means proposed and employed by different practitioners, in the management of enteric fever, have been various and conflicting, each plan of treatment having had its advocates, and *all* supported by experience. Owing to the increased frequency of the disease in late years, this

subject has received additional importance; able investigators have been employed; former extremes of treatment have been abandoned, or extensively modified; new agents have been discovered and successfully introduced; old ones have been either entirely discarded, or only occasionally employed; a simple or mild treatment has been instituted; and an approximation to uniformity of practice is apparent, which was unknown prior to the works of Drs. Bartlett and Wood.

At present the difference in treatment consists more in the period at which certain remedies should be administered, than in their choice. This is especially true of stimulants and tonics. Their usefulness is uniformly acknowledged, but much difference of opinion prevails as to the proper time of their administration. This difference is perceptible when the practice in Virginia is compared with the practice in some of the Northern States. There, quinia, beef, and brandy are resorted to freely in the beginning of the attack; here, in Virginia, reliance is had first on diluents, and lastly on stimulants. It is probable that both parties are right, and that the difference in locality justifies and renders necessary this difference in treatment.

I now come to speak of the several therapeutic processes and agents which are indorsed by the authority of experience, as of use, when timely employed, in moderating the violence of the disease, and in conducting

it to a favorable termination. I desire, however, to have it borne in mind that I am not in the habit, in every case, of employing all of the means to be hereafter mentioned. Some of them I have rarely resorted to; but, by other practitioners, the same measures are more frequently employed, and I speak of them in order to present to the reader a fair *exposé* of the subject. I shall allude to them in the order of their most frequent use.

1. *Emetics*.—By many practitioners, emetics are considered of eminent service, when administered in the beginning of the disease; and of their good effect, when thus employed, no little amount of evidence is on record. This is the favorite practice with the venerable Dr. Jackson, of Boston, who is of opinion that it is not only capable of modifying the violence of the disease, but that in proportion to its early adoption, is the duration of the disease diminished. He says: “Among those admitted to the hospital in the first two weeks of the disease, one hundred and fifty took emetics before or after admission; of these one hundred and fifty, thirteen died, being one in 11·53.

“In the same period eighty were admitted who did not take emetics; of these ten died, being one in 8·00.

“The difference is very striking. But of the one hundred and fifty who took emetics, some took them

earlier and some later in the disease. It has been thought that the earlier this and other active and depletory remedies are administered, the greater the benefit. See how far this is confirmed by the same report.

“Fifty-nine entered the first week of the disease, and took emetics in that week; four of these died, being one in 14·75.

“Thirty-one entered the same week, and did not take emetics; of these three died, being one in 10·33.

“Ninety-one entered the second week, and took emetics either before or after admission; of these nine died, being one in 10·11.

“Forty-eight entered the same week, and did not take emetics; of these seven died, being one in 6·85.

“The advantage was on the side of those who took emetics; but more decided as to those who entered the first week, than as to those who entered the second. The last had not probably been so well nursed in the first week as the others. But also they had not, on an average, taken the emetic so early, and that, no doubt, made a difference in favor of those entering the first week. My own experience taught me long ago that emetics were most useful when taken within the first three days of the disease. This is confirmed by the hospital cases. It appears from the report that thirty-two patients took emetics within the first three days of the disease; of these one died—one in 32.

“Twenty-seven took emetics within the last four days of the first week; of these three died, being one in nine.

“Undoubtedly these last numbers, relative to those who took emetics in the last four days of the first week, are less favorable than would be found if the number was larger; for the proportion of deaths is greater than in those who entered the second week, and took emetics, and of whom the larger part, no doubt, took their emetics at a later period of the disease than the above twenty-seven.

“If now we inquire what was the effect or the duration of the disease in those who took emetics and recovered, it does not seem to have been much, if anything, to the advantage of those taking emetics later than the third day. But as to those who took emetics on either of the first three days, the benefit is unequivocal.

“Of those who took emetics on the first day of the disease, the average day of convalescence was the 14·66.

“Of those who took emetics on the second day, the average day of convalescence was the 15·32.

“Of those who took emetics on the third day, the average day of convalescence was the 16·46.

“While of those who took emetics on the fourth, fifth, and sixth days of the disease, and recovered, the average day of convalescence was the 19·45.

“It cannot surely be attributed to accident that these

results were so favorable to those who took emetics, among cases not selected, but taken as they came, through many successive years. But I feel assured that the result would have been found much more favorable, had all those who took emetics at an early period been properly managed afterwards. To the best success of this mode of treatment it is necessary that great care should be taken after the first relief from the emetic. However well the patient may seem, he should be treated as a sick man. The emetic should be followed by an active cathartic on the following day, unless it should itself have had a powerful operation on the bowels. Probably this was done in most of the cases. And then, for a week at least, however well the patient may appear, he should be restrained from all efforts of body or mind, and should be kept on a very moderate, bland, vegetable diet. Though the headache and pain in the back and limbs be removed, the pulse restored to natural frequency, the chills and heat subsided, still the liability to the disease remains. Therefore the disease is easily lighted up anew, and if great errors are committed, it may return in its full force and run through its entire period. All this I have learned long ago, in private practice."—*Letters to a Young Physician*, p. 330.

I have now presented the most carefully collected evidence in favor of the emetic plan to be found on re-

cord. Much additional testimony could be adduced, no doubt, of its usefulness in a certain class of cases, when employed early, in moderating the severity of the disease. Whenever I have found present nausea and a bilious coating upon the tongue, I have been in the habit of administering an emetic, alone or in combination with a cathartic, and have seen much good result. Sydenham remarked: "It is astonishing how it happens that a vomit, which does not produce either a large or a morbid discharge from the stomach, should so materially relieve the nausea, restlessness, anxiety, and furred tongue of the patient."

At an advanced stage of the disease, sometimes emetics are not less useful. The stomach becomes nauseated from vitiated secretion or other contents, and the patient lies so sickened that he is scarcely able to move, unless compelled in his unsuccessful attempt to vomit, and in these cases the exhibition of a mild emetic will afford marked relief, on which account it should not be omitted. To accomplish emesis at this period of the disease, the mildest articles should be used. Simple tepid water I have found sufficiently active in the majority of instances.

2. *Purgatives*—In the beginning of the disease, when diarrhoea is not present, the propriety of a brisk purgative is uniformly conceded. By common consent, also,

calomel is preferable from its more complete evacuation of the bowels; "from its superior power of arousing the recuperative energies and counteracting the tendency to congestion, or relieving its incipient formation, as well as from its excellence in restoring or rectifying secretory action, not to mention other salutary effects." It may be given singly, or in combination with other purgative medicine, as rhubarb or jalap; and in cases where gastric disturbance is present, it may, with excellent effect, be administered with a sufficient quantity of ipecacuanha to produce vomiting. When the bowels are spontaneously purged, as often happens, the *hyd. cum. creta* may be substituted for the *calomel*, and to which may be added a small quantity of the *pulv. Doveri*, should pain of the bowels be complained of, and the disposition to stool frequent; this to be followed in due time, if necessary, by a dose of castor oil, or of *soda et pot. tart.* Throughout the entire progress of the disease, it is generally thought best that the bowels should be moved once or twice in the course of twenty-four hours, and if this do not occur naturally, laxatives should be administered. In the earlier stages of the disease, *Seidlitz water* is usually sufficient to accomplish a regular action of the bowels, while it is, perhaps, the most acceptable dose to the patient. Late in the disease, regulation of the bowels is more properly managed by rhubarb and castor oil. But it sometimes happens

that these means, notwithstanding their frequent use, fail to produce full evacuations, and the dejections are small, dark, and offensive. Here a full dose of senna infusion or other active medicine, is followed with good effect. In several instances I have seen the patient, after an apparent stand-still for several days, enter into convalescence almost immediately after the action of a full dose of senna. Such means are particularly serviceable when the stools are small and frequent, say three or four a day. It is of importance that attention be paid to the time for administering medicines to act on the bowels. The morning should be chosen, in order that their effects may be accomplished before night, and especially so as to avoid interfering with the usual opiate dose, to insure rest. A restless night should be avoided whenever possible.

But there is another class of cases which require other means for the regulation of the bowels. Sometimes the stomach is so irritable that ordinary aperients are rejected, and even increase the irritation; in such cases the bowels should be regulated by injections, by which the large intestines are unloaded, and the action of the upper part of the alimentary canal is as thoroughly promoted.

In that condition of the disease, when the tongue is dry, the skin parched, scanty urine, diarrhoea and tympanitis, delirium or stupor, twitchings of the tendons,

a small and weak pulse, the propriety of small doses of mercury, with a view to its specific effect, by some authorities is urged with no little emphasis. Dr. Wood says: "Under these circumstances I know of no remedy so effectual as mercury, given so as slightly to effect the gums. It is indicated by the general failure of the secretions, and the general languor of the vital functions. It is also indicated as an antiphlogistic remedy." In these conditions I have frequently given mercury, with a view to effect the gums, though I have but rarely witnessed the attainment of my object, until when it could not be thought serviceable, when the force of the poison was naturally expended, and convalescence begun. The readiness to take on the mercurial action is in proportion to the gravity of the disease. In the severer class of cases I have found it almost impossible to bring the patient under its specific influence, until after the turning-point of the disease had arrived, when, instead of a benefit, it was a disadvantage. But while this has been my experience, I do not reject as useless the employment of small doses of mercury. In the conditions above specified they are of much service, though the gums are not affected; and few cases occur in which an occasional pill of calomel or blue mass, conjoined with ipecacuanha and some preparation of opium, if the condition of the brain allow of the latter, may not be employed with benefit.

3. *Blood-letting.*—General blood-letting is now very rarely practiced in enteric fever. Formerly the same caution and nice discernment now observed in its employment was not exercised, and to this, more than from any other cause perhaps, may be attributed the very great increase in the number of recoveries in late years. In those cases which bear a severe character from the beginning, where headache is violent, increased sensibility to light and sound, the pulse full and strong, high fever, with a robust and plethoric habit, it may be proper to abstract a moderate quantity of blood from the arm; but unless it is resorted to during the first two or three days of the disease, it had better be omitted. The state of the pulse is not an infallible sign of the admissibility or propriety of general blood-letting, and unless along with its full and bounding condition there are other and significant indications, its employment may so prostrate the patient as to cause him ultimately to sink under the disease. This uncertainty of reliance on the state of the pulse, in the choice of general bleeding, I have already adverted to, and I mention it again because it is important to be remembered. The local abstraction of blood, however, is of very great service, and there are but few cases to be met with in which it may not be beneficially employed. Cups are preferable from their more ready and easy use, and may be employed wet or dry, according to the object to be at-

tained, and the degree of prostration present. In the early stage of the disease they may be applied for the removal or abatement of epigastric pain and tenderness; for the relief of headache, and other manifestations of strong determinations of blood to the brain; for the removal of abdominal pain and tenderness. Subsequently they may be applied to the chest, for the relief of any pulmonary complication, and repeated according to the urgency of the case. The good to be derived from their application depends, to some degree, upon the time of their employment, the best time being when the skin is dry, and during an elevation of febrile excitement.

4. *Diaphoretics, etc.*—The means proposed to influence relaxation of the surface and the reduction of febrile heat are various, and more or less uncertain in their effects. The means most frequently employed with the view to these objects, are the *neutral mixture*, or *effervescing draught*; the *citrate*, or *acetate of ammonia*; *sweet spirits of nitre*, and cold or tepid sponging; the choice of these depending upon the circumstances of the case, or the opinion of the practitioner. In the commencement of the disease the citrate of potassa is the article most generally chosen. This, in the form of the neutral mixture, or effervescing draught, may be administered every two or three hours during the day, when the skin is hot and dry; and for a night

dose, when undue determination of blood to the head does not contraindicate it, the pulv. Doveri, with the addition of a small quantity of one of the salts of morphia, may be given to induce moisture and procure rest.

By many valued authorities, when the stomach is quiet and diarrhoea not troublesome, a small quantity of tartar emetic is recommended to be added to the saline mixture; but while the stomach may be quiet I have noticed a marked susceptibility to the action of this medicine, and after witnessing both its good and bad effects, have thought that I served my patients best by withholding it altogether. When restlessness, wakefulness, twitchings of the tendons, etc., come on, there may be added to the mixture sweet spirits of nitre, and should this fail to produce quietude, the aqua camphor, Hoffman's anodyne, or opiates, if admissible, may be administered, in connection with the above remedies. In the severer forms of the disease a better article for inducing moisture is, perhaps, the *spiritus mindererii*. This is especially serviceable when irritability of the stomach exists, it being not only easily retained, but capable, frequently, of allaying irritability of this organ. It is also an excellent vehicle for the administration of other remedies. Besides its power to control nervous irritability, *camphor* certainly possesses a marked tendency to produce diaphoresis, and without exciting the heart's action, and when combined with the

more decided agents, sometimes a happy effect is produced. In cases in which the combination is allowable, (and in the large majority of cases it is allowable,) camphor, with Dover's powder, is an excellent combination for the purpose of producing moisture, and allaying any undue excitement of the nervous system. The *veratrum viride* is certainly, sometimes, a prompt and powerful diaphoretic. I regard it as of especial importance in the management of enteric fever. When I come to speak of this agent as an arterial sedative, its diaphoretic tendency will be recurred to.

To quench thirst, as well as to assist in cooling the surface, the mineral and vegetable acids may be added to the ordinary drinks. Those most acceptable to the patient are made with lemon, orange, and tamarind; and on account of their acceptability, some caution is requisite to be given to the attendants, lest they be used to excess, and when the bowels are acting too freely.

When diarrhœa is urgent, even simple unacidulated drinks should be restricted. As often happens in country practice, the vegetable fruits above named cannot be had, and in this case the mineral acids, such as the diluted sulphuric or nitric acid, may be employed, and, if the patient desire it, he may take into his mouth small particles of ice. The most effectual means of reducing the morbid heat are *cold* and *tepid* spongings. In the early stages of the disease cold water is generally

most grateful to the feelings of the patient, and it may be applied to the entire surface when the skin is uniformly hot and dry. Ordinarily the application is made only to the face, temples, and extremities. In the severer forms of the disease, or when the patient is much prostrated, *tepid sponging* (from 87° to 97° Fahrenheit) is the more acceptable application, and may be employed when the heat of the surface is above the natural standard. *Tepid water* with vinegar, or even *brandy-and-water*, forms an excellent wash when the patient is much prostrated. Many times I have had the patient sponged from head to foot with warm brandy, very slightly diluted, and with the most gratifying results.

For the abatement of headache, cold evaporating lotions may be employed. For wild and furious delirium, when coming on early in the attack, the *cold douche* will rarely fail to produce calmness, at least for a time; and this may be resorted to several times if necessary.

The admission of plenty of cool air into the sick-room is of great importance in the successful management of the disease. The bed and body linen should be changed daily if possible, but among the very poor this generally cannot be done. Their destitution, however, of the many little delicacies which are so grateful to the feelings and tastes of the sick, together with the ordinary

conveniences which belong to the sick-room, is fully compensated by the cool breezes which gain free and continual admission through their open and humble dwellings.

5. *Veratrum Viride*.—During the past two or three years this agent has engaged much attention as a remedy in enteric fever, and like all other newly introduced articles, it has had its advocates, opposers, and stigmatizers. By some authorities it has been declared the most decided and valuable *arterial sedative* of which we have any knowledge; by others this property, if not wholly denied, has been thought uncertain; and by others it has been charged with the tendency to cause abortion, and, therefore, pronounced unsafe in general practice. At present, however, it occupies no little prominence in the therapeutics of enteric fever. That it is capable of controlling the heart's action, and may be relied on, is a fact of which I am as well convinced as of any other established truth in medicine. How it produces its effect upon the pulse, whether by its action directly on the nerves governing the circulatory function, or indirectly through a nauseant impression, is a matter of some difference of opinion. That it does frequently produce the most deadly nausea is true, but I have also seen the pulse under its entire control without the least distress at the stomach being produced. A

professional friend, Dr. W. R. Kinkaid, of Burnersville, Barbour County, who suffers from a heart affection, informs me that he has frequently taken the *veratrum viride* in thirty and forty drop doses, and without the slightest disturbance of the stomach, the only sensation produced being a sensation of dizziness.

One of the advantages this agent possesses over tartar emetic is, that it does not disturb the bowels, and this, if it were without other advantage, entitles it to a decided preference as a remedy in the management of enteric fever. Besides its signal property as an arterial sedative, it is capable of producing other excellent effects, to some of which attention has not been much directed. I allude more particularly to its diaphoretic tendency; and that it possesses this to a marked degree an experience with the remedy during the past two and a half years in the management of this and other diseases, enables me to speak of its action with no little degree of confidence. In all proper cases of enteric fever, according to my own experience, it is a safe, reliable, and valuable adjuvant to other means employed for its management. I have administered it to the young and to the aged, to the delicate and robust, in the pregnant state at all its periods, and have not had cause to regret its effect. The accusation brought against it by Dr. Brown, of Georgia, that it is an abortive agent, and therefore its employment is unsafe in general practice,

is, I am persuaded, wholly without just foundation. So far indeed from possessing a tendency to produce abortion, further experience may possibly establish that, in certain conditions, the *veratrum viride* may be beneficially employed for the purpose of defending the pregnant state. If my own experience does not directly contribute to establish this fact, it at least assists in proving the remedy free from the charge preferred against it. As an apology for what is said, I offer the following case: Mrs. —, aged thirty-six, of very weak habit, a sufferer from prolapsus uteri for ten years, the mother of seven children, aborted once at four months; was taken sick of enteric fever, January 1st, 1858; pregnant the eighth time at an advance of four and a half months. During the first week of the disease the pulse ranged between 110 and 115 per minute, and by the twelfth day it was running at 130. Along with this state of the pulse was restlessness, heat and dryness of skin, pain in the small of the back and abdomen, with a slight show of blood from the vagina. Being partially authorized, from previous experience, to regard the *veratrum viride* as of service for the relief of this condition, I determined to bring my patient under its full influence. I began with *Norwood's tincture*, at the dose of five drops, and increased the quantity by two drops at each successive dose, every three hours, until the dose of *eleven* drops was reached, after which

the pulse came down to 84, and the patient's condition was much improved, being free from pain, the whole surface covered with a gentle perspiration, and all this with but very little accompanying nausea. To maintain this control of the symptoms the dose of five drops was ordered to be given every four hours. Under the influence of this diminished dose, the pulse ranged pretty steadily, between 80 and 90, for the space of some forty hours; but the nurse omitted the regular administration of the remedy, and a rapid circulation recurred, with restlessness and great heat of skin. Ten drops were now given, and the dose ordered to be increased as before, and continued until its effects should be displayed. After the administration of a dose of *seventeen drops*, the pulse came down from 130 to 70 in the minute, accompanied with relaxation of the surface, and a little increased nausea. To keep up this control eight drops were ordered to be repeated every four hours, and for several days the influence of the remedy was well sustained, the number of pulsations not exceeding 104 per minute. But it was again omitted, and this time occurred a pulse of 140, and of greatly reduced strength. The remedy was again pushed to the conquering dose, which was *nineteen drops*. The pulse came down to 74, and brandy and morphia were required to relieve nausea, which this time was considerable. The remedy was continued in doses of eight drops, every four hours,

for several days, after which the dose was reduced to five drops, then to three drops, and in this dose it was continued more or less often for many days. The patient convalesced, went on to her full time, and was delivered of a healthy child.

This case presents the strongest testimony I am able to offer in support of the non-abortive tendency of the *veratrum viride*; but it is not the only testimony I have. I have administered the remedy at all periods of pregnancy, and thus far have not observed the slightest excuse for the charge made against it by Dr. Brown. And I go a step farther and say, that in a certain class of cases, instead of the *veratrum viride* having a tendency to procure abortion, I think it may be successfully employed to prevent this result. In the above narrated case, the *telling* doses were eleven, seventeen, and nineteen drops—the greatest quantities that I have found requisite to bring the pulse under control; and the remedy was more or less regularly persevered in for some twenty-eight days.

A well-written review of the ideas advanced by Dr. Brown appeared in the December number of the *Nashville Medical Journal* for 1856, page 496, by Dr. R. E. Haughton, of Richmond, Indiana. Dr. Haughton says: "My own experience teaches me that, in low conditions, when the heart's action is feeble and rapid, this remedy may be used, reducing the number of beats,

and as this is done the pulse becomes fuller and softer, while the extremities, which had been cold from deficient circulation, now become warm, and the shrunken skin again resuming its natural color, fullness, etc. The sedative then does not weaken the powers of life under such circumstances, but acts as a conservator of the life forces." Again he says: "I rely upon this medicine in the treatment of enteric fever more than any other one article, yet, when the indications require, I do not reject others; and this is the experience of many of my professional friends who have tried it at my request." In proof of its non-abortive tendency, he writes: "I have used this remedy freely but carefully for the last three years, in cases of pregnancy in all its periods, having had no case of abortion, either from that or anything else, during the time of using it."

While I declare my esteem of the virtues of the *veratrum viride*, I am unwilling to acknowledge it a curative agent, or as even being necessary in every case of enteric fever; but I am willing to declare it a most valuable auxiliary, in many instances, to other recognized means, in moderating its violence, and in conducting it to a favorable termination. I do not think that we are authorized to believe that the disease can be suddenly interrupted by any method of treatment. But while this is so, much good may be accomplished by moderating symptoms that cannot be wholly subdued,—in re-

pairing dangerous complications incident to the disease, and toward aiding the flagging efforts of the *vis medicatrix naturee*. Whenever thought proper to resort to the *veratrum viride*, with the view to its full effect, I have begun by giving five or six drops of the saturated tincture, in a little sweetened water, and repeated the dose every three hours (increasing the quantity by two drops at each successive dose) until the pulse was brought down to, or below, the natural standard. I have never had reason to think that any material benefit was to be gained by pressing the pulse below sixty-five or seventy, and have been satisfied with the result when the number of pulsations was reduced to between seventy and eighty per minute.

After the telling dose has been reached, I have generally been able to perpetuate its influence by the administration of from two to eight drops every three or four hours. Ordinarily, it rarely requires the fourth dose to effect complete mastery of the pulse. In one instance, a female, I found the first dose, of five drops, sufficient to bring a pulse of one hundred and thirty down to seventy; and complete control was maintained by the use of two drops every three hours. When excessive nausea follows its administration, it may be promptly relieved by a little sweetened brandy and morphia.

In the management of fever patients, when the *veratrum* was employed, I have noticed that, as a general

rule, the appetite was better sustained, and the thirst less urgent than when not used. I have never noticed that it had the slightest effect on the bowels. For much important information concerning the properties and uses of the *veratrum viride*, the reader is referred to the *North American Medico-Chirurgical Review*, vol. ii. No. 5, p. 914.

6. *Astringents*.—Medicines of this class are of much importance in the management of the disease. The articles most frequently employed are opium, tannin, creosote, benzoin, acetate of lead, and argenti nitras. The manner in which opium produces constipation has been differently explained. It cannot be said to possess any of the characters of a general astringent; and yet, says Headland, there is no other astringent like it in its action on the bowels. By this authority, its action, as an astringent, is attributed to its general paralyzing influence on muscular fibre, “both of the voluntary and involuntary kind, but particularly of the latter.” And he adds: “The only reasonable attempt that can be made to explain the action of opium in producing constipation, is by a reference to this, its paralyzing influence on the coat of the bowel, taken in conjunction with the torpid condition of the general system and suspension of the animal functions, produced by

the secondary action of this narcotic on the nervous forces."*

To control diarrhoea, when sanguineous determination to the brain does not forbid of its employment, opium, alone or in combination with ipecacuanha and potassa, such as Dover's powder, may be administered two or three times a day, if necessary. Should the stools indicate too much acidity, prepared chalk may be added to the Dover's powder. When hemorrhage from the bowels occurs, the free use of opium and the sugar of lead is uniformly considered the best means for its arrest; and when taken along with vinegar, to prevent the acetate from being converted into the carbonate of lead, it may be used with perfect safety. From one grain to two grains of opium, with from two to six grains of the acetate, may be given every fourth hour, washed down with a draught containing a quantity of distilled vinegar.

To arrest hemorrhage from the gums and nostrils, when attention is required, tannin, creosote, or benzoin may be employed.† These may be used in solution; and when for the purpose of arresting hemorrhage from the gums, the article chosen may be taken into the mouth and retained for a few minutes, and repeated ac-

* Action of Medicines, p. 348.

† On the use of benzoin, in epistaxis, Dr. Fordyce Barker. See Am. Med. Monthly, vol. ix. p. 124.

according to the urgency of the case. For epistaxis they may be injected into the nostrils, or dossils of lint, saturated with the solution, introduced, and renewed from time to time until the flow has ceased. Should hæmaturia occur, much benefit sometimes follows the administration of a solution of gallic acid, or infusion of buchu.

In the late stages of the disease, when there is a dry tongue and wasting diarrhœa, the nitrate of silver is recommended. This was the favorite remedy of the late Dr. J. K. Mitchell, of Philadelphia; and on account of its use by so valued an authority, it has been more or less extensively employed throughout the country, and there are many physicians to be found who heartily indorse all that its author claimed for the remedy. That in many instances its action is prompt in correcting diarrhœa and tympanitis, and in producing a change of the condition of the tongue, there can be no doubt. When opium was admissible, I have generally preferred to administer the nitrate according to the annexed formula:—

R.—Pil. opii officinalis, ʒss ;
Argent nitratis, grs. viij.

M. Fiat mass in pil. xxx divid. qua rum sumat unam terve in die.

7. *Fomentations, etc.*—Fomentations may be regarded as a species of local bathing, and are of great

service in the management of enteric fever. Their use is for the relief of abdominal pain and tenderness. Flannel cloths wrung out of boiling water, and applied as hot as can be borne, form the best fomentations; but on account of their unavoidable tendency to wet the bed and body clothes, poultices are most generally preferred. Clean and pleasant applications, but objectionable for the same reasons attached to hot fomentations with flannel, are wet compresses, which are advocated with much earnestness by Dr. Huss, of Stockholm. The ordinary applications, which are, perhaps, as good as any, are made of corn-meal mush, and applied warm as can be borne. When they succeed cupping upon the abdomen, much good often results from their employment. A favorite application, with me, is a large warm cake made of batter of buckwheat flour. This is easily prepared, nice when prepared, and retains warmth for a considerable time,—above all, it is very light. As fast as one becomes cold another should be applied. When much tenderness exists, mustard flour may be sprinkled upon the cake before applying it, or a mustard cataplasm may at once be applied. To derive the full benefit of poultices, they should be regularly applied; and it will usually require the services of one person to attend to these. Hot pediluvia may also be frequently resorted to with benefit. In any stage of the disease they are not objectionable, and frequently become absolutely necessary.

8. *Blisters*.—The propriety of blisters in enteric fever has been variously estimated. According to my own observation, they are powerful both for good and evil. When delirium or stupor exists, a blister timely applied to the occiput may save the patient. The same may be said frequently to result from their use when applied to the chest. Many times I have seen a pneumonic complication, which threatened the speedy death of the patient, vanish after the drawing of a large blister. When applied to the abdomen late in the disease, I think they are of doubtful propriety. Occasionally I have thought that I observed good to result from their use; but in other instances I have witnessed bad consequences follow, and on this account sorely regretted their use. Their tendency to become gangrenous, when applied upon the abdomen, should always be remembered, and whenever employed upon this region great caution should be observed. When the skin has become fully reddened, the blister has been on long enough, and should be followed by a light bread and milk poultice. When the blister has been drawn by the poultice, the serum should be let out and the same dressings continued. If, instead of healing kindly, they should assume the appearance of an eating sore, oxide of zinc ointment, spread tolerably thick on lint or a piece of ordinary cloth, may be applied, over which is laid a light poultice. When the sore becomes gangrenous, a solu-

tion of chlorinated soda, or a solution of chlorinated potassa should be added to the dressings; but greatest reliance is to be had on the internal use of quinia, wine, and milk-punch. When opium is allowable, it forms a valuable stimulant and one of peculiar benefit, in the condition above mentioned, and on this account should not be omitted.

9. *Oil of Turpentine*.—To Dr. Wood belongs the credit of having brought to the attention of the profession the value of this agent as a remedy in the management of enteric fever; and that it *is* useful, and sometimes eminently so, when employed according to the indications pointed out in his writings, much testimony could be adduced. By his works on Practice and Therapeutics, this great and good man has done a special and lasting kindness to American practitioners; and in no instance is the truth of this remark more exactly in point than in his directions concerning the management of the disease under consideration. His account, though short, is invaluable to every practitioner; and if, by the publication of these pages, it is shown that his observations concerning the disease are indorsed by country experience, that his precepts for its management are successfully practiced by his brethren in Virginia, this alone will be an apology for their appearance. I cannot do

better than to give Dr. Wood's own language concerning the use and benefits of the oil of turpentine. He says: "Though the oil may be of some use as a mere stimulant in this disease, it is, in that respect, of but comparatively little value, and cannot be depended on to the exclusion of wine-whey, carbonate of ammonia, and nutritious aliment, in low conditions of the fever. But the oil will accomplish what these cannot. It acts most happily in stimulating the diseased patches of Peyer's glands, and the isolated glands of the same kind, whereby the softened and disorganized matter is more readily thrown off, and the ulcerated surfaces disposed to heal when they might otherwise be unable to do so. The remedy, therefore, is to be given at the period during which the discharge of the softened matter is going on, and ulcers are forming or in existence. This is usually, I believe, about the middle, or toward the close of the second week. Before this time I count upon no material service from the oil. It is now that the tongue becomes *dry*; and the occurrence of the dry state of the tongue, in a decided degree, is the signal for commencing with the use of the remedy. I give it usually in doses of ten drops every two hours, but sometimes increase to fifteen or twenty drops. At the end of twenty-four, or at the furthest, of forty-eight hours, there may very generally be seen a return of moisture, with a white fur on the surface of the tongue at the

sides, for its whole length, leaving the surface in the middle still dry and often cracked. With this amendment, there is often also a diminution of the tympanitis, a cooler and moister skin, and a less frequent pulse. The same change goes on till the whole tongue becomes moist, and covered usually with a whitish fur, which then gradually disappears, commencing from the tip and edges. Sometimes, even when there has been no dryness of the tongue in the case, I have seen the oil to act favorably in ameliorating the symptoms; and frequently, when the disease has appeared to linger in its advanced stages, and, though not severe, to show a perverse disposition to hang on to the patient, I have seen it almost immediately enter into convalescence under the use of the remedy. Again, when the case is marked in its progress by the cleaning of the tongue by flakes or in patches, leaving a red and smooth surface, or if deprived of the outer layer of the epithelium and papillæ, and when the surface of the tongue, whether completely or only partially cleaned, instead of remaining moist as it does in favorable cases, becomes very dry, with an aggravation of the general symptoms, I take it for granted that there has been a corresponding unfavorable change in the intestinal ulceration, indicating the use of the oil. It is precisely under these circumstances that, previously to my original use of the oil, I had seen a majority of the cases that came under my

notice prove fatal; and, since the use of it, only two. I do not claim for the oil any specific power over enteric fever. It will not prevent death from intercurrent pneumonia, or meningitis, or various other sources of mischief; but I do think, as the result, too, of great experience in the disease, that so far as the mere affection of the intestinal glands and its direct consequences are concerned, it will vastly diminish the chances of a fatal issue. The reason why, in the special condition of the tongue last described, the favorable effects of the remedy may be almost certainly calculated on, is that at the commencement of the cleaning process, the proper idiopathic disease has about run its course, and would almost certainly end well, but for an unfavorable change in the condition of the ulcerated surfaces; and whatever, therefore, will favor the healing of these, will, in all probability, secure a favorable termination. I have been more particular in this account of the use of the oil of turpentine in enteric fever, because I have great confidence in the efficiency of the remedy myself, and wish to prevail on others to use it by showing the grounds of this confidence, and pointing out the precise circumstances under which, according to my experience, it should be employed."—*Treatise on Therapeutics*, vol. i. pp. 563-5.

I have employed the oil of turpentine quite often, and sometimes with good effect. A case has just passed

through my hands, in which the remedy was unusually prompt in relieving the *dry* tongue, etc., and the patient entered into convalescence without any other remedial resort. The case came under my care with the state of symptoms described above,—and fifteen drops every three hours made quite a new man out of my patient in the course of a day's time. But while I, with profound pleasure, bear testimony to the virtues of the oil, it is not my only reliance for the conditions so particularly pointed out by Dr. Wood. In cases admitting the free exhibition of *opium*, I have found this remedy equally beneficial in subduing the symptoms for which the turpentine is mainly prescribed. I allude to the use of solid opium, which, in my hands, has been so effectual that I have been unwilling to exchange it for any other means. I am not, however, authorized in believing that my proportion of favorable cases has exceeded that of some of my country co-laborers, who place greatest reliance on the oil of turpentine; yet I think I am warranted in saying that my success has, at least, been equal to theirs. In many instances I have administered the turpentine and opium conjointly, and when thus employed, sometimes have had reason to think that the good effect of both articles was increased. Where opium is admissible, I am in the habit of giving from a half to two grains every four or six hours. Under the use of this remedy I have seen a red and dry tongue

become moist, and coat itself over with a thin whitish fur; the pulse become less frequent, and increase in volume; subsultus diminish; delirium calmed; the skin relaxed and gently perspiring; diarrhoea and tympanitis diminish; and refreshing rest take the place of wakefulness and great uneasiness. When thought proper to administer the opium and turpentine together, the same dose of opium may be added to every other dose of the oil emulsion. I have, indeed, been many times highly pleased with the effect of this combination.

10. *Chlorate of Potash.*—This agent is certainly of much service in the management of enteric fever. I have been in the habit of employing it in almost every case of the disease that has fallen under my care for the last five years. When sordes begin to form about the lips, gums, and teeth, I am in the habit of ordering it in weak solution as a constant drink. It is an excellent vehicle for the administration of the *veratrum viride*, and may be used then according to the formula proposed by Dr. Taliaferro: *R*̄.—Chlorate potash, saturated solution, f̄ z iv; tinct. verat. viride, ʒss. *M.* Of this the patient is to take a tablespoonful every three hours during the day.

11. *Tonics and Stimulants.*—The resort to tonics and stimulants is not necessary in every case of enteric

fever, though they are not on this account the less important; sometimes they become essential to the saving of the patient. In their employment the nicest discrimination is very often requisite. When untimely resorted to they are as potent for evil as they are for good when timely employed. If the disease prevail as an epidemic, a careful study of its particular tendency will guide materially in the decision. Without attention to the epidemic constitution, by which we learn the "tendency" to death, fatal mistakes are likely to be made in the use of these remedies.

During some epidemics, the conditions that require to be met by stimulants and tonics present at an early period of the disease. More commonly, however, they are not essential until during the second or third week of grave cases. In deciding upon their admissibility the state of the pulse, the skin, and the muscular strength, demand particular consideration. If the pulse be soft and compressible, the skin cool and moist, and the strength considerably prostrated, the indications for a stimulant are pretty surely made out. If, in addition to the above, there are twitchings of the tendons, a dry, brown or red tongue, dark sordes about the lips, gums, and teeth, low muttering, delirium, and, perhaps, purple spots scattered upon the surface, the demand for stimulants is urgent, and are required to be administered freely. But there is another condition, in some points

differing from the above, in which stimulants are sometimes eminently useful. Instead of the skin being moist, it is somewhat hot and dry; and the pulse, besides being weak, is very frequent. Here a stimulant, cautiously administered, is often productive of a marked alleviation of the symptoms. In the employment of these means it is best to begin with the mildest articles, and keep the patient under close surveillance during their trial, so that should they fail to accomplish a salutary purpose, actual mischief may be prevented. If, after the administration of tonics and stimulants, the pulse diminish in frequency and increase in volume, the skin lose its heat and dryness, (if these have existed,) and become moist, the delirium is calmed and the attention more easily fixed, muscular twitchings abate or disappear, the countenance brighten, and instead of previous wakefulness or stupor, the patient is disposed to healthy sleep, the remedy is acting well, and should be continued. If, instead of this amelioration, the symptoms become exasperated, the remedy should at once be omitted. To quiet nervous irritation, sweet spirits of nitre, Hoffman's anodyne, camphor, etc., may be employed. The usefulness of camphor in the treatment is everywhere acknowledged, and when administered in conjunction with opium, its influence in quieting nervous agitation, restlessness, and inducing quiet sleep, is often most happily displayed. Indeed, it is sometimes sur-

prising how quickly a moderate dose of camphor and opium will quiet delirium and other troublesome symptoms. In the section on diaphoretics these remedies were spoken of. To the list of medicines of this class may now be added serpentaria, quinia, wine, carbonate of ammonia, brandy, and opium. Much discussion has been had concerning the amount of reliance to be placed in quinia as a remedy in the treatment. With some practitioners it is the chief reliance from first to last; by others its early employment is strongly deprecated. In districts where periodic fevers also prevail, the quinia plan finds its greatest number of advocates, and it is at least possible that this confidence may sometimes have been the result of errors in diagnosis, and that instead of the disease, so benefited by the free and early use of quinia, being in every instance, as it has been called, genuine enteric or typhoid fever, it was remittent fever with very low tendencies. In sections of Virginia where periodical fevers are now almost entirely unknown, but in which enteric fever in its genuine form is to be met with more or less extensively every year, the early use of quinia in the treatment finds but few advocates; but during the stage of prostration, then it becomes a favorite resort, and the effect sometimes produced in improving the appetite and strength is almost magical. When employed it should be commenced with in small doses, say two or three grains two or three times a day,

and may be given alone or in combination with wine, oil of turpentine, etc., as the case may require. Should it produce nausea and vomiting, or increase the frequency of the pulse and the heat of the skin, it must be omitted. In very low and prostrate conditions, injections of quinia are occasionally of great service. I have known a wasting diarrhoea, which had resisted all of the ordinary means for its arrest, speedily checked by an injection composed of about twenty grains of quinia and three or four ounces of tolerably sharp vinegar, this to be repeated at intervals of three or four hours. During the stage of exhaustion, animal broths, wine, carbonate of ammonia, and even pure brandy, sometimes, are required. When wine is employed it may be administered in the form of wine-whey, prepared by adding one part of good wine to two parts of boiling milk, and straining after coagulation, of which a wineglassful or less may be given once in two or three hours. As a diffusible stimulant, carbonate of ammonia is well adapted to low conditions. The following formula, from Dr. Wood, is the one I am in the habit of employing: \mathcal{R} .—Ammonia carbonat. \mathfrak{z} ij; acaciae pulv. sacch. alb., āā \mathfrak{z} ij; aq. menth. p. *vel* aq. fluv. f \mathfrak{z} vj. M. From a teaspoonful to a tablespoonful to be taken every hour or two, diluted with a little water.—*Prac. Med.*, vol. i. p. 335, *note*.

Pure brandy sometimes becomes absolutely essential. An agreeable mode for its administration is in the form

of *milk-punch*. In those cases in which extreme prostration comes on suddenly, generally the result of large losses of blood by hemorrhage, the internal exhibition of brandy, sulphuric ether etc. are not the only means of resort; and if, along with the debility, the skin is cool and of a bluish color, hot brandy should be rubbed upon the surface, and if this fail to excite sufficient stimulation, hot spirits of turpentine, etc. should be briskly rubbed upon the extremities, or, if necessary, mustard plasters may be applied to the wrists and ankles. In the employment of sinapisms upon the extremities, care should be taken that they are not suffered to remain on longer than is merely sufficient to produce slight reddening of the skin. From inattention to this, I have once or twice seen sloughing of the surfaces to which they had been applied.

The value of *opium* as a stimulant in enteric fever cannot be too highly estimated; but it is a sharp, two-edged sword, and of such energy that if does not fulfill a restorative intention, it will surely endanger the life of the patient. Its value depends therefore, on the discrimination with which it is employed. Not only is nice discrimination requisite in deciding on the cases which may be benefited by its use, but also in regulating the dose. Dr. Sandwith remarks: "There is no instance in the whole range of practical medicine more imperatively demanding a sure diagnosis, and our warrant to prescribe it

hinges on our ability to ascertain precisely that condition of the brain which alone will admit of its safe employment." He further remarks: "The class of cases of purely irritable states of the brain is to be discriminated, as Dr. Latham shows, less by any *series* of symptoms flowing from the brain than from the *single* symptom of a state of protracted wakefulness. Nor is the wakefulness pathognomonic, *per se*, but to warrant the use of opium, it must occur in combination with an irritable state of the nervous system."*

Dr. Latham, in his remarks upon the subject, says: "I have seen the sensorial affections incident to fever, which require opium for their cure, manifest themselves in another form. There has been high vascular action from the first, and *large depletion* has been required to subdue it and to guard particular organs, and especially the brain, from injury. Under such treatment, all has gone on successfully, and the patient has reached the point of convalescence, with a soft pulse, a cleaning tongue, no pain, and refreshing sleep for two or three days; when suddenly—the tongue, the pulse, and all other circumstances continuing the same—some strangeness of manner has arisen, and then the wildest delirium, and then the unrestrained passage of the evacua-

* Half-Yearly Abstract of the Med. Sciences, No. xvii.

tions. I have known the transition from such a state of *convalescence* to such a state of peril take place in a few hours; and I have known the patient again brought back to a state of convalescence in twenty-four hours by a moderate dose of opium. This is a rare form of disease, but one in which, when it does occur, opium is eminently indicated.*

“When injudiciously administered, as in sthenic cerebral excitement, or in the improper arrest of diarrhoea in certain states of fever, it has been observed to produce phrenitis, epilepsy, and coma.” In its employment we are to be guided by the degree of sensorial excitement. “Simple wakefulness,” observes Dr. Latham, “may be gently lulled to sleep by a few drops of laudanum, but wild delirium requires to be mastered and (as it were) forced into repose by a much larger dose.” “Wild delirium, and long wakefulness, and a circulation weak and fluttering, seem to call for a considerable dose of opium. Yet, withal, there is a *certain jerk* in the pulse, so that we cannot help suspecting that the blood-vessels have something to do with the sensorial excitement. Under such circumstances I have certainly seen twenty minims of laudanum produce tranquil sleep, from which the patient has awoke quite a new man; but I

* Dr. P. M. Latham on the use of Opium in Fevers; London Med. Gazette, 1852, vol. x. p. 10.

have also seen the same quantity produce a fatal coma, from which he has never been roused." To avoid "striking a heavy blow in the dark," Dr. Latham advises that the remedy should be commenced with in small doses at intervals of an hour or two, "so as to stop short of actual mischief at the first glimpse of its approach, or be led by a plain earnest of benefit to push the remedy to its full and consummate effect." Dr. Sandwith observes: "Great and marvelous, therefore, as are the virtues of opium in a variety of diseases, and admirable as are its soothing qualities in several of the forms of cerebral disorder in fever itself, yet let no man venture to prescribe it for the latter (whether in large or small doses) in the dark or at random."*

For much valuable information concerning the uses and advantages to be derived from tonics and stimulants in fever, and especially as relating to the use of sulphate of quinia and wine, the reader is referred to the paper of Dr. Wilks "On the treatment of Fever," published originally in *Guy's Hospital Reports*, vol. i., 1855, and copied in No. xxiii. of *Ranking's Half-Yearly Abstract of the Medical Sciences*, p. 28.

The remedies most frequently employed to relieve muscular spasms are camphor, musk, and valerian. Of these I have found valerian to be as effectual as any

* Association Med. Journal, Jan. 1, 1853.

other article of the class. I mean the pulverized valerian, and which may be given in teaspoonful doses every hour or two.

Dietetic Management.—Strict attention to the diet of the sick is not less important in the successful management of the disease. The following instructions from Dr. Wood, embraced in few words, are all that is essential to be observed concerning it: “In the early stages it should be very light, consisting chiefly of liquid substances, which may also answer the purposes of drink. Solutions of gum Arabic, barley-water, rice-water, toast and water, weak solutions of tapioca, sago, or arrow-root, very weak gruels of oatmeal or Indian-meal, molasses and water, vegetable jellies mixed with water, and other similar preparations may be successively, or interchangeably employed; and the patient may be allowed, if he desire it, to swallow the juice of sweet grapes and oranges, taking care to reject the solid portions of these fruits. Cold lemonade or orangeade, carbonic acid water, and pure iced-water in moderation, may also be used as drinks. At a more advanced period, in the second week, for example, when the symptoms of debility begin to show themselves, it will be necessary to support the strength by a more nutritive diet, which, however, should not be stimulating. Preparations of tapioca, sago, or arrow-root of a nearly

gelatinous consistence, thick gruels, or panada, may now be given, flavored with nutmeg or other spice, and sugar, and not unfrequently with wine. It will often be desirable to give these in certain quantities, at certain intervals, so as to insure that enough is taken. I have generally been in the habit of directing a wineglassful to be given every two or three hours, or less frequently, according to the apparent strength of the patient. A cup of tea may also be allowed, with dry toast or water-cracker, morning and evening. Still further on in this stage of the disease, milk in small quantities frequently repeated, will often be found to suit the case admirably well. A tablespoonful of it may be given every hour or two through the day; and, if the stomach be irritable, it may very properly be associated with an equal quantity of lime-water. In the last, or prostrate stage, it is proper that the diet should not only be nutritive, but also stimulating. Animal broths or jellies may now be given; and, in the lowest cases, it is necessary to resort to egg beat up with wine, milk-punch, and the essence of beef or mutton.

“Throughout the whole case, the greatest attention should be paid to cleanliness and ventilation; and, when the atmosphere cannot be sufficiently purified by these means, as sometimes happens when many patients are crowded together, recourse may be had to the corrective influence of chlorine.”—*Prac. Med.*, vol. i. p. 336.

Management of Complications.—Enteric fever may become suddenly complicated with local inflammation. The brain and the lungs are particularly liable to become involved, and very frequently these are the immediate cause of death. The careful study of the symptoms flowing from the brain cannot be too strongly impressed. Delirium, it is to be remembered, is not in every case the result of inflammation within the cranium. Dr. Tweedie remarks: “There is a form of low delirium in fever which requires to be distinguished from that arising from inflammation of the brain or its membranes. It arises from some peculiar condition of the brain with which we are unacquainted, and may be distinguished from the acute form of febrile delirium by the palor of the face, the bloodless appearance of the conjunctiva, the softness of the pulse, the cool state of the scalp, and the absence of muscular twitchings. It occurs chiefly in feeble and exhausted habits, and frequently in persons who have suffered large losses of blood in the treatment. In other instances it may be traced to intestinal irritation, or some of those lesions in the bowels which so frequently accompany continued fever. This sympathetic delirium is not relieved, but invariably increased by the abstraction of blood. It is best managed by small quantities of nourishment and opiates, with a blister to the nape.”*

* Cyclo. Prac. Med., article Fever, vol. ii. p. 191.

When the symptoms indicate the existence of inflammatory action within the encephalon, such as pain in the head, flushing of the face, hot skin, thirst, rapid pulse, acute delirium, watchfulness, etc., means must be immediately adopted for its arrest. Should it follow close upon the attack, a moderate general bleeding may be practiced, followed by cups to the temples and nucha, cold water or pounded ice to the scalp, and small doses of mercury and ipecacuanha. At an advanced stage of the disease, the greatest reliance must be had on the effect of the *cold douche*; this to be repeated as often as an exasperation of the symptoms occurs, and followed by cupping and a blister to the nape of the neck and occiput. Concerning the employment of blisters to the head, for cerebral inflammation, Dr. Tweedie remarks: "The too common practice of blistering the head in such instances, before the excitement is diminished by blood-letting, is reprehensible. The application of blisters to the head in fever should be confined to those cases in which there is danger of the inflammatory action terminating in effusion, or to that particular state of the brain in inflammation, which, though there be an effusion, is attended by coma. Hence when, notwithstanding depleting measures have been judiciously applied, the patient becomes drowsy and insensible to surrounding objects, except when roused, a blister may be advantageously applied to the occiput, while an iced

evaporating lotion is kept on the forehead, and the system brought under the influence of mercury conjoined with digitalis and squill, so as to promote the action of the kidneys."*

Bronchitis is the most frequent of the pulmonary complications; and unless the chest be frequently ausculted, a grave character of inflammation may escape notice. When delirium or stupor supervenes, the frequent employment of the ear becomes absolutely necessary, as by it we not only detect the existence of inflammatory mischief, but the degree of its intensity. When this complication is in its incipient stage, a few cups to the chest, and demulcents to allay cough, together with the general plan of treatment, is usually adequate for its arrest; but when it has been fully set up, more active interference is necessary. Here free cupping is requisite, and should be followed by warm poultices of Indian-meal mush, or cakes of buckwheat flour, and an occasional mustard cataplasm, and a blister if necessary.

Prior to the introduction of the *veratrum viride*, tartrate of antimony was the chief reliance for the relief of pneumonitis; and sometimes this remedy was administered in very large doses, though the pneumonia occurred at a late stage of the disease. At present,

* Cyclo. Prac. Med., article Fever; vol. ii. p. 191.

however, the number of advocates of the use of this agent, in any condition of enteric fever, is considerably diminished, the *veratrum viride* having been found equally efficacious, without effecting the least disturbance of the bowels. Along with the use of the *veratrum viride* may be employed warm poultices upon the chest; occasional cuppings, wet or dry; small doses of calomel, ipecacuanha and morphia, or of Dover's powder, and, if necessary, blistering and stimulating expectorants.

Sometimes there is a sudden supervention of *acute pleuritic* pain. When this occurs, cups should be applied over the painful spot, and if relief does not soon follow, a blister should be drawn.

Erysipelas is best treated by penciling the inflamed surface with tr. iodine or tr. mur. ferri, and the internal exhibition of the latter remedy in doses of from ten to sixty drops every few hours.

When *peritonitis* occurs, opium is the only remedy which is at all capable of affording any hope of relief. It should be administered in large doses, and perfect rest enjoined, at the same time rejecting every article of food or medicine which, in the least, may have the tendency to disturb the tranquillity of the bowels. In those cases in which there is a blending with the bilious-remittent type, Dr. Gholson writes: "If called in the commencement of such attacks, I usually commence the

treatment with a mild mercurial cathartic, and as soon as the bowels are by this means evacuated, commence with the sulphate of quinia, without much regard to the fever, but if it should run high, cold water is to be plentifully allowed as drinks, and the same applied to the surface, by sponging; and sometimes the *cold douche* becomes necessary. The quinia is continued for several days, or until the fever loses its periodical feature, or we are satisfied that enough of the remedy has been administered to lead to this result, if, indeed, it can be brought about by quinia. - The subsequent treatment becomes mostly *eclectic* and *rational*, depending upon the condition of the various organs, etc. If the *head symptoms* are prominent, we may continue the cold applications, leeches, or blisters to the nape, at our discretion. If the *bowels* require it, they are opened occasionally by emollient or laxative enemata; and when the *liver* is not acting healthily, a few grains of blue mass may be given every night or every other night, and there may be added to the mercurial a small quantity of ipecacuanha, Dover's powder, or opium, as the symptoms may require. If there be much heat, tenderness, etc., of the abdomen, fomentations, leeches, or a blister should be applied. In the latter stages, when the more decided dothineritic symptoms present themselves, the oil of turpentine, in the form of emulsion, with laudanum if necessary, or sugar of lead,

with opium, hyoscyamus, etc., or any other of the metallic astringent alteratives, associated frequently with quinia or the compound tincture of bark, or, what sometimes answers a better purpose, a pure article of *wine* or *brandy*. These remedies, quinia, mercury, oil of turpentine, etc. are pushed according to the peculiar views of the practitioner."

Outline of Treatment.—As it has been shown that enteric fever presents different grades of severity, so will it appear proper that the treatment should be alike varied to meet the indications of each form. I shall, under this caption, speak of the course of practice I am myself in the habit of employing in each of these forms of the disease.

First. *The Mild Form.*—General bleeding I have very rarely practiced in either form—but three times, I believe, in the 130 cases. But the local abstraction of blood by cups is with me a frequent practice. They may be applied to the nucha and temples when headache is severe, and upon the bowels when pain and tenderness exist. An emeto-cathartic of calomel and ipecacuanha in the beginning, I am much in favor of, and never omit it unless the bowels are too much purged without medicine. After this I am in the habit of being content with a daily change of the body and bed linen;

cups, and poultices to the bowels, when tenderness exists; a draught of effervescing water, composed of citric acid and bicarbonate of potassa, several times during the day; a Dover's powder at night to procure rest, followed by one in the morning, if the bowels are acting too frequently; if not moved naturally every day, an occasional glass of Seidlitz water to influence a regular action; a little spts. nitre dulc. after the first few days; a cloth dipped in cold water and applied to the forehead, when headache is present; cold water for drinks, but not in too great quantities at a time; the *veratrum viride* to control the pulse, when it runs above 110; occasional drinks of sol. chlor. potash; and the regular allowance of a little food.

Second. *The Intermediate Form.*—In this form, instead of sponging the surface with cold water, tepid water with vinegar, I think is best. Instead of the effervescing water, the *spiritus mindereri* is substituted, in the dose of a half fluidounce every three or four hours. To control the pulse, and thereby prevent damage of important organs, the tr. verat. vir. is to be administered and pushed to the telling point, after which the dose is to be reduced, and its action maintained by its administration in sol. chlor. potash every three or four hours. When there is tenderness on pressure over the bowels, free cupping should be employed, not with small cups,

but the largest ones to be had, followed by poultices of mush or warm buckwheat cakes, and, if thought advisable, these to be sprinkled with flour of mustard, and made large enough to cover all over the bowels, and applied as often as they become cold, or until pain and tenderness are relieved. It is always best that the bowels should be suffered to remain moderately loose. Two or three discharges a day, I think, are of service, and if these do not take place naturally, some mild laxative should be administered. But should there be too great a looseness of the bowels, which is most commonly the case, they may be restrained by a dose of Dover's powder, three or four times a day. It is in this and the subsequent form that the good effects of opium, when administered with due discrimination, are to be witnessed. A favorite formula with me is, tinct. opii., Hoffman's anodyne, āā ʒij; spts. lavender comp. ʒij. Dose, a teaspoonful, given in the morning. For a night dose, six or eight grains of Dover's powder, with the addition of a little sulph. of morphia and camphor pulv.

In many instances the above course of treatment is all that is necessary to conduct the case to an early convalescence. But should it happen that after the tongue has cleaned and become moist, the diarrhoea and tympanitis diminish, there is a sudden exasperation of these symptoms, the tongue, just rid of its coating, be-

comes red, smooth, and dry, with an increase of diarrhoea and tympanitis, subsultus tendinum, etc., then opium with camphor should be freely administered. Should there have been no abatement of the symptoms, but a gradual progression toward gravity, and to that condition especially in which there is a dry, brown, or red tongue, the opium and camphor are equally beneficial. For this peculiar condition of enteric fever, as represented by the state of the tongue, other remedies have been highly extolled, and some of them deservedly so. Oil of turpentine and argenti nitras are both capable of effecting much good when properly and timely administered. Of the two articles the oil is entitled to greatest credit. As already said, I have used both articles, and sometimes with marked advantage. For the relief of the same conditions for which the oil and argenti nitras is prescribed, I have also declared my confidence in the efficacy of opium. I repeat, when the condition of the brain will allow of its full employment, it is capable of effecting a most salutary change of these symptoms, and the success of the cases which have passed through my hands, under its influence, has established a confidence I can repose in no other remedy.

Third. *The Malignant Form.*—In this form of the disease our object is to assist nature in her final struggle. In those cases with a red and dry tongue, as they pass

into this form, hemorrhage from the bowels not unfrequently follows; and in these cases I continue the opium in as large quantities as the patient can well bear, with a proper proportion of the sugar of lead. For hemorrhage from the gums and nostrils I like the employment of creosote;* this is to be used either by injecting into the nostrils, or pledgets of lint saturated in the solution and plugged into the nostrils; for the arrest of bleeding from the gums it may be taken into the mouth and retained a few minutes, when properly weakened. For the arrest of diarrhœa, opium, alone or with chalk, argenti nitras, and the several vegetable astringents may be employed. If these means fail, injections of quinine and vinegar may be employed, and sometimes its effect is almost magical. If the bowels are not sufficiently evacuated, castor oil or rhubarb (the syrup of the latter is a good preparation) may be used. For the debility which attends this form, tonics and stimulants become absolutely essential; but in the allowance of these, the state of the pulse and the skin must be carefully considered. Washing the surface with brandy and water, and the internal exhibition of carbonate of ammonia, wine, and the sulphate of quinia, are eligible remedies. In some cases I have found it necessary to resort to pure brandy with quinine, and

* Solution prepared by G. W. Carpenter & Co., Phila.

have witnessed the most gratifying results. Throughout this form of the disease the *tr. verat. viride*, in solution of chlor. potash, should be employed. It is capable of effecting great good, and may be employed in doses of from three to six drops every three or six hours. I have already spoken of the value of opium as a stimulant. When the brain is not involved, it is *multum in parvo*, and in this form of the disease is of signal service. In connection with camphor I have seen it quiet delirium, induce moisture of the surface, reduce the frequency of the pulse, and cause it to increase in volume, and promote gentle sleep, from which indeed the patient awoke "quite a different person." Throughout the entire progress of the case the state of the bowels, as regards tenderness, should not be lost sight of, but wet and dry cupping, as the case may require, with the continued application of the poultices, and now and then the mustard-plaster, should be attended to. Blisters over the bowels I have not seen attended with sufficient good to give them importance. For the relief of muscular twitchings valerian has disappointed me less often than any other article of its class. I mean the powdered valerian in teaspoonful-doses every two or three hours. Retention of urine is a common occurrence. The importance of examining into the state of the bladder daily, has already been sufficiently stated. A tendency to the formation of eschars, from pressure, should

not be forgotten. The parts exposed to pressure should be frequently washed with brandy, and the position of the patient as often changed. When obstinate delirium or coma exists, I have seen much advantage result from the timely application of a blister to the nape of the neck and the administration of a few blue pills.

In those cases that present the symptoms of malignancy in the beginning, the pulse full and strong, and obvious sanguineous determination to the brain, a moderate quantity of blood may be taken from the arm. But in the majority of such cases that have fallen under my management, I have preferred to trust to the effect of the *cold douche*, and thus far with entire satisfaction. As it is impossible for us to guess correctly the duration of any case of enteric fever, from any symptoms that may present, in the beginning, the general abstraction of blood should be cautiously practiced. But whether we bleed or not, it is important that the bowels should be thoroughly purged. Along with these cases, in the beginning, there is generally a torpid state of the bowels, and requires a larger dose than in the milder forms. In all these cases, if the patient be an adult, I give not less than twenty grains of calomel, followed, in due time, if it does not operate, by a dose of sulphate of magnesia or infusion of senna. During the first few days free cupping on the back of the neck, followed by a blister; if delirium is obstinate,

cold applications to the head, a blue pill given at night, followed by a Seidlitz powder in the morning, is the course of practice I usually adopt, after which I omit the mercury and pursue the course of practice before described.

CHAPTER X.

MANAGEMENT OF CONVALESCENCE.

WHEN convalescence has begun, the patient should be closely watched, lest by some impropriety he be suddenly cut off, even after having passed near unto death's door, and when his march toward health, with all its renewed charms and prospects, had well-nigh been completed.

The most important part of the management of convalescence refers to *diet, regulation of the bowels,* and exercise.

The necessity of caution in the quality and quantity of food, at this time, is even greater than during the progress of the fever, and cannot be too strongly urged upon the attention of the attendants. From simple fluids—which were all that were required to satisfy the desires of the patient during his period of febrile excitement—to more stimulating and solid nourishment, the transition should be gradual.

From inattention to this point in the management, a speedy and happy convalescence has been often gravely interrupted, and many instances are on record of death

having resulted. No error is greater, and more common among patients and their friends, than in supposing that debility is always to be removed by nourishing and stimulating food, wine or other stimulant beverages. I have seen convalescents suffer most severely from a single improper meal. In one instance, a female, in which the disease was of mild form, convalescence had so far advanced that the patient was able to be out of bed the greater portion of the day, for some two or three days, but not regaining her former strength in this time, the nurse, regardless of my strict injunctions, prepared a "meal that looked like living"—*roast beef* and *turnips*, and of which the patient partook freely. In a few hours afterwards she went to bed with pain of the stomach, thirst, and high fever, and soon succeeded a pulse of one hundred and forty. The disease ran through its entire course again, and in a much graver form.

The first change of diet should be to another article of the same kind of food as was allowed during the progress of the disease: for example, from simple *arrow-root mucilage* to *arrow-root and milk*, or to some other of the farinaceous compounds. From this advance may be made to *Indian-meal mush and milk*; rice, well boiled and served up with milk and sugar, nutmeg, or other spice; rice-puddings, and custards, etc. If the patient desire it he may partake of some

of the fruits—the orange, apple, strawberries, mulberries, and grapes—when freed of the skin and seeds. In the allowance of animal food, it is best to begin with broths: of chicken, squirrel, beef, or mutton. On account of its less stimulant nourishment, and easy digestion, the *white* fish, when boiled, is well fitted for the early stage of convalescence. When wine is allowed, attention should be paid to the kind and quantity. Sherry and claret are, perhaps, preferable. In fixing the quantity to be allowed, the age, the degree of debility, and previous habits of the patient, should be taken into account. It should be remembered that young persons and females are more easily excited by stimulants of this class than older persons and males; that young persons, as a general rule, convalesce more rapidly than the aged; and, therefore, they require less wine in proportion. If the patient, when in health, have been in the habit of taking wine or other alcoholic stimulant, he will require wine in more liberal quantities than if he had been strictly temperate, both during the fever and in convalescence. As health becomes confirmed, it should be gradually withdrawn.

With respect to the number of meals, and the periods best adapted for taking them, no specific rules can apply.

Constipation of the bowels is a common condition of convalescence. This is to be overcome, if possible, by

a properly regulated diet; if not, laxative medicines, such as rhubarb, castor oil, etc., or injections must be resorted to. The subjoined mixture answers an excellent purpose in obviating troublesome constipation:—

R.—Rad. columbæ contus,	℥ss;
Fol. sennæ,	℥j;
Extr. taraxaci,	
Manna, āā	℥ss;
Aqua fervent,	℥xij;
Macera per horam, cola	
et adde Holland gin,	℥jv.

Misce sumat cochleare mag. j vel ij pro dosi.

When convalescence becomes tedious, and profuse and exhausting sweats occur at night, much benefit will accrue from the administration of the aromatic sulphuric acid, or some one of the simple bitters. “Convalescence appears to be sometimes very much retarded by a debility of the alimentary canal, which disables the ulcerated surfaces from healing. A species of hectic excitement is sustained for a long time. The pulse remains frequent; something like a febrile paroxysm occurs every afternoon, and the patient sweats copiously at night. Under these circumstances, I have found nothing so effectual as sulphate of quinia.”—*Wood*.

With regard to exercise, not less care is required than concerning the allowance of food. Convalescents soon grow tired of their beds, and not a few, if unop-

posed, will overtask their feeble strength by long sittings out of bed. Errors of this sort have not unfrequently been followed by very bad consequences. In quitting his bed the patient should do so gradually. Even should the observance of this advice be unnecessarily strict, no danger can result; whereas if disregarded, dangerous if not fatal consequences may be incurred. Especial care is to be observed in the return to out-door exercise. The patient may have regained sufficient strength to allow of his being out of the bed the greater part of the day, but he should not on this account thrust himself out of doors. Injury has often resulted from venturing out too early during the cold weather of winter and spring. Dr. Tweedie remarks: "That many persons who have struggled through a most dangerous fever have, from imprudent exposure to cold, been seized with intense inflammation in some organ, which has rapidly destroyed life."

During convalescence every source of mental exertion should be strictly avoided; the mind should be engaged without being oppressed. Much advantage may be afforded the patient by a proper selection of visitors, for, above all things, the presence of idle gossipers should be avoided. These wiseacres, with which the country is infested, are usually very kind and prompt in their attentions to the sick; so kind indeed, that they almost invariably leave an *infallible* prescription of medicine

or diet at each successive visit, which benefited Mr. or Mrs. So-and-So, who was for all the world in a similar condition, and it was used by Dr. Somebody.

One or two other remarks and I shall have ended these pages.

Boils are more or less apt to form on various parts during the establishment of health. If the patient have been blistered on the neck, they are most likely to occur in this locality, and sometimes a succession of these painful affections will worry the patient for months. In the beginning they may be completely destroyed by plunging a lancet exactly through the centre of the forming pimple. The success of this simple procedure is exactly in proportion to its early resort, and on which account the incision should be made, if possible, during the first day or two; but it is better to do it even as late as the fifth or sixth day, than not at all. When a succession of these pustules are likely to occur, the patient should be advised a course of quinine. Dr. Jackson's advice is surely correct, which simply told is this: *the least done* in the way of *poulticing* the better. Dressings of simple cerate are all that is necessary.

Alopecia, or falling of the hair, is a common sequence of enteric fever. The production of the new suit of hair may be aided by gentle frictions to the scalp, and keeping it warm. Benefit may also accrue from the use of some of the stimulant pomades. The following, recom-

mended by Dr. Copland will be found as good as any other :—

R.—Adipis præparati, ℥ij ;
 Ceræ albæ, ℥ss ;
 Lento igne simul liquefac, tunc ab igne re-
 move et ubi primum lentescant ;
 Balsami Peruviani veri, ℥ij ;
 Olei lavandulæ, ℥xij.
 Adjice et assiduè move donec refrixerint.

Having in a concise and simple manner completed the task assigned to myself at the commencement of this volume, I submit the result to the candor of an honorable and intelligent profession, trusting that even if nothing of importance be added to the information already possessed by my medical brethren, it may serve, in some humble measure, to direct their attention to a more careful study and a better understanding of a wide-spread disease, fearful in its character, tendency, and complications.

THE END.



