AN INAUGURAL DISSERTATION
ON
The Remittent Type
of
Malarial Fever.
SUBMITTED TO THE
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FOR THE DEGREE OF
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BY
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OF
Sumner County
Tennessee

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Fever, although they are the most common of all diseases, and by whose agency, it is said, that more than one half of the human race usually perish, are also those by which mankind, whether professional, or laicul, are the most apt to be misled.

It has been very properly remarked, that, in reality no writer seems to have been fully satisfied with his own definition of their various types, and it is not extraordinary therefore, that he should have seldom given satisfaction to others. This difficulty arises in a great measure from the complexity of the symptoms that enter into the character of a fever; the contrariety of many of them to each other in its different stages; and in the occasional absence of some, that in other instances appear to constitute its leading features. Besides these, there are two other difficulties of no inconsiderable magnitude which the nosologist has to contend with in laying down a clear and perspicuous survey of fevers. Namely, their division or classification, and their generic names.
The usual division of fevers is into two classes, namely
Intermittent and Continued; this arises on account
of their lasting up different times in their natural duration.
Some being complicated of a number of paroxysms following
one after another in regular succession at some little distance of
time, as happens in intermittents or agues; in others a
fresh paroxysm comes on immediately as a crisis of the
former, so as hardly to leave the patient wholly free from
fever, as occurs in remittents of which type I propose
giving a slight outline on this present occasion; and in
others there is such a quick succession of the paroxysms
that the one comes on before there is any visible abate-
ment of the febrile symptoms of the other.

Remittent fever, which I before stated is the
type of Malarial fever, to the consideration of which I
have addressed myself in the present disquisition, is with
the exception of the intermittent, the most common form
of fever, and of which, therefore, it is requisite for the young
practitioners to have a thorough knowledge; this type
prevails to a considerable extent and is most common in the middle Southern and Southwestern sections of the United States and is generally denominated from the evidences of more or less derangement of the hepatic functions by which it is attended, the Bilious remittent, or simply, Bilious fever. It constitutes the summer and autumnal endemic of many of our States, and even in those which are exempted from its annual occurrence it occasionally prevails during seasons of unusual heat and dryness. Sporadically, or as a severe and widely spread epidemic. This fever is not peculiar to the United States but prevails also extensively in the Southern portions of France, and Italy, Spain also and other portions of the South of Europe, in Africa and in the East and West Indies. It is in fact the endemic of the Marshy districts of all hot climates, its prevalence, as well as violence is almost invariably in direct proportion to the heat of the season, even in many of the Northern States during a summer of extraordinary heat it will sometimes prevail to a considerable
extent, its operations being limited, however, to those situations noted in other seasons for their insalubrity, in which the cause of disease was ready to be developed upon the occurrence of any unusual degree of atmospheric heat.

Whether this fever can be produced by exposure alone to a high degree of atmospheric heat, is a question that has been frequently raised, and while many maintain the affirmative, others as positively assume the negative. Nothing, however, in my opinion is more certain, than that the long continued action of excessive heat upon the body by predisposing it to the action of other morbid agents will in this manner often bring on an attack of Bilious fever, independently of Malarious influences; thus, nothing is more common than for the disease to occur to those who after exposure to the midday sun or many hours of severe labour in intensely hot weather allow their bodies to become chilled by sleeping on the ground in the open air after night has set in, by neglecting to change their clothing when they become.
out by a shower of rain or other causes, or while the
perspiration is running in streams from every pore of
the body, throw off a portion of their clothing and sit
or lie in a draught of air, particularly after sun down.
Nothing I say is more likely than that this conduct
should be a prolific cause of Relim or Remittent fevers.

If this is only one of the causes supposed to generate
Relim fevers, what it may be asked is the generally received
opinion as to the sources from which it originates is
derived. Professor Bowdich in his lectures on Malaria
fevers gave in my opinion the only true solution to this
question, namely, the action of a high degree of solar heat
upon water existing a few inches below the surface of the
Earth, as in the plains of Estramadura in Spain, also
upon the beds of rivers which are apparently dried up, but
underneath the surface of which at a few inches from the
surface, water is found, as in the case of the river Guadiana,
along the course of which, the British Army retreated after
the battle of Talavera, and the rest of the rains being with

the exception of pools of stagnant water met with here and
there apparently dried up. Malarial fever was engendered
of such a malignant fever, that the army was almost com-
pletely estopped. This being the true source of Malaria
is very clearly defined by a comparison of the salubrity of
the lands lying on each bank of the river Tagus. This river
is at Lisbon about two miles wide and separates a healthy
from a very unhealthy region. On one side is a bare, hilly,
Country, the foundation of the soil and the banks of the streams
being pebbly, with free, open, water courses, among the hills;
This is the healthy region. But the Alercita land, on
the other side, though clay superficially being perfectly flat
and sandy, yet, a few inches below the surface, Water is found,
and this region is proved to be most pestiferous.

At one time [and probably at the present time it is accepted
by many physicians] the theory prevailed as the cause of
Malaria was, the putrefaction of vegetable matter, but the above
mentioned facts seem to prove that the Malaria and the
product of vegetable decomposition are two distinct things.
Whoever in a Malavious Country, says Dr. Ferguson, \textit{will for the evidence of putrefaction, will wait too long. For producing Malaria it appears to be requisite that there should be a surface capable of absorbing moisture, and that this surface should be flooded and saturated with water, and then dried; and the higher the temperature, and the quicker the drying process, the more plentiful, and the more virulent is the poison that is evolved.}

Having thus glanced superficially at the exciting causes of Malavious diseases, I shall now proceed to examine into the Connexion of \textit{Remittent}, with \textit{Falciformal}, after which, I propose to endeavour to give a correct diagnosis of the former, in the \textit{Mild, Inflammatory, and Congestive} stages.

\large{\textit{We find that Remittent fever is closely allied in its nature, the localities in which it chiefly prevails, and in many of its phenomena to Falciformal, of which by many physicians it is considered a mere modification. It is presumed, and I think with much plausibility, that a mere}}
The operation of the same Prevailing cause required for the production of Intermittent fever, engenders Remittent, and that the more violent the latter, the more remote is its character from intermittent, or, in other words, the less perceptible are the remissions. This is supposed to be indicated by the circumstance, that when periodic fevers are prevalent in certain countries, the permanent residents are observed to have the disease in the form of Ague only; and the mortality among them is small, but strangers, unaccustomed to the climate and its diseases, suffer from Remittents, with a proportionable greater loss of life. In more thickly seasons Remittents will be the prevailing type among both classes of persons, but strangers are more violently affected, and the mortality among them is greater. Its affinity to intermittent is shown too, by the tendency which it has to that form after the more violent exacerbations are passed, and, inversely, by the proclivity of Ague to assume the Remittent type.

Notwithstanding Bilious Remittent fevers can scarcely ever be mistaken by the least experienced practitioners, it exhibits, however, considerable diversity in many of its phenomena in different
situations and often in different individuals. For, while in
some cases the phenomena are well marked, approaching in some
to a complete intermission, in others, they are so slight that the
fever has almost a continued form. There are always however
 certain prominent symptoms invariably present an attention to
which will lead at once to an accurate diagnosis. These are
Gastric irritability, a sense of oppression and distress at the Epi-
gastric region, pain of the head, back and limbs, and the great pro-
bition of strength early exhibited by the patient.

The milder and more simple form of Remittent fever is generally
preceded for some days by languor, nausea, a bitter taste in the
mouth, a fullness about the epigastrium, sometimes Costiveness
and very generally more or less pain and heaviness over the eyes.
The attack is usually ushered in by a slight cold, or merely by
a sense of coldness, particularly about the back, which in an hour
or two, and often sooner, is followed by increased heat of the whole
surface of the body, the skin becoming at the same time dry and
Constricted, the face flushed, the eyes inflamed, the respiration
hurried and uneven, the pulse quick and frequent, rarely tense.
and by considerable prostration of strength, with restlessness and watchfulness. The patient complains of a sense of fullness and tension of the head, pain of the back and extremities, particularly of the calves of the legs, and often of pain at the epigastrium, which, just generally exhibits more or less tenderness upon pressure, even if no pain is complained of before. The stomach is more or less irritable, some cases being attended with more or less nausea, whilst in other, everything swallowed, is instantly rejected. Spontaneous vomiting is not an unfrequent symptom, it is often present from the commencement of the attack, but more frequently does not commence until the second, or third day, sometimes later, the mucus vomited, is of a bitter taste, and of a yellow greenish, or bright green color. The tongue is usually moist, red at the sides and edges, and coated on its upper surface with a whitish, light brown, or yellowish fur, which often acquires considerable thickness. Thirst is usually considerable. Bowels, constive, and the urine is marked by an increase of color. After the disease has continued for some days, the skin acquires a yellow tinge, which is sometimes very decided, and extends to the anterior of the eyes.
The convulsion lasts from eight to twelve hours, when a gradual
abatement of all the prominent symptoms takes place, and often a
light intumescence breaks out upon the surface and the patient falls
into a refreshing sleep. More generally however, the skin continues
dry after the heat has declined, and the patient during the
remission continues restless, uneasy, and disinclined to sleep.

The duration of the remission varies with the violence of the
attack, gradually however, the heat of the surface increases, and
an exacerbation of the fever follows, marked by the same degree
of intensity as the former, or even by increased violence.

All the preceding symptoms in an aggravated degree, with
long continued opacifications, and deep distinct remissions, mark
what has been called the highly inflammatory stage of this
disease. During the paroxysms, the skin is intensely hot,
the eyes suffused, of a muddy yellowish hue, and often dull
and languid; intense pain and an insupportable sense of weight
and tension of the head, great thirst, and sometimes, an
insupportable feeling of oppression at the chest, the respirations
being quick, and laboured. The pains in the back and extremities,
often of extreme severity, the pulse quick, and more or less tense.
The nausea and vomiting are generally peculiarly distressing.
The mucus, discharged being a thick, scepy fluid, of a yellow-dark
brown, or green color. The bowels are obstinate, or, if open, discharge
with tenesmus and griping a thin watery fluid. When evacuations
are procured by appropriate means, they are large in quantity, dark
shiny, tenacious, and offensive. There is always an intolerable sense
of oppression, or constriction at the epigastrium, and a degree of
tenderness which resists the slightest amount of pressure intolerable.
In the course of the disease, the skin acquires most generally a
brownish, bronzed, or more frequently a deep yellow tinge, particularly
upon the face, and breast.

The succeeding expectorations are marked by an increased
existence of all the predominant symptoms of the disease, and unless
the intensity of the fever is abated by an appropriate course of
treatment, the powers of life gradually succumb to its influences,
the surface generally becomes moist, or covered with a cold, clammy
sweat, the pulse small, and weak, the tongue, covered with a
dark thick coating (occasionally it is chapped), the respiration
short, quick, and difficult; the abdomen sometimes swelled and tympanitic; stitches, or cram, often ensues, and at length, in voluntary discharge from the bowels takes place, the matter being dark in color and very offensive, and finally death ensues.

There is another form of Remittent fever yet to be described, this is the Congestive. The propriety of denominated cases of congestive disease, Remittents, when they frequently run their course without exhibiting the slightest indication of febrile reaction, has been doubted by some; they are, however, produced by the same causes as bilious fever, and when the congestion is early reduced, the case often assumes all the characteristics, and runs the same course, as in the ordinary forms of Remittents; showing that the phenomenon of the latter were only masked, or suspended, by the congested state of the principle organs.

The Congestive form of bilious fever may attack suddenly, when it is apt to assume a peculiarly malignant form, and to terminate rapidly in death, in many cases however, it is produced by the same symptoms as the milder, and more open forms of the disease. In the more violent attacks of congestive fever, the
The system seems to sink at once prostrate before the incursion, or exacerbation, which can scarcely at times be called febrile.

Reaction does not take place, or very feebly, if at all. The skin is cold, and covered with a clammy sweat, as in the collapse of cholera; the pulse, weak and fluttering; the stomach is very irritable, with frequent, but ineffectual efforts to vomit. The countenance, shrivelled, or pale and livid, often in a muttering delirium, with shivering and panting. In some cases, the patient seems to be in a lethargic state, and makes no complaint of pain; in others, the most extreme anguish is endured by the miserable sufferer. The vital powers are speedily and irrecoverably ex-------

The duration of malignant fever varies with its degree of violence, it may terminate in a few days or, remain for several weeks, but its usual duration is from nine to fifteen days.

Dr. Dickson of South Carolina remarks, that it is not
uncommon especially among the most perfectly acclimated adult natives, resident in malarial districts, to find bilious remittents of very protracted duration, the patient sinking after the tenth or twelfth day into a low form resembling the less severe grade of typhus, and hence obtaining the name of the typhoidal stage of bilious fever. Dr. Dickson says, that he has known cases of this kind protracted, in three instances, to thirty, thirty-five and fifty days, though the average he observes, would scarcely reach beyond fifteen or twenty days.

A careful analysis of the phenomena of bilious or Remittent fever, shows very conclusively that the organs chiefly affected, are, the liver, and stomach, and the result of post-mortem examinations, confirm the accuracy of this deduction. In many cases, it is true, the symptoms during life, and the lesions detected after death, indicate more or less affection of the lungs, or bronchitis, but this, however, seems to be an accidental complication, and not essential to the disease.

In the Treatment of bilious remittent fever, the first and most important question that presents itself is, the
propriety of direct depletion by the lancet. If the exacerbatation is well marked and prolonged, attended by a hot, dry, flushed face, severe pains of the head and back, oppression about the pericardia, a firm and corded pulse, and when the intermissions are short, and imperfect, more particularly in cases occurring in young, robust, and plethoric habits, and who have but lately arrived from a colder climate, there can be no doubt of the importance of bloodletting. In such cases, a vein of the arm should be opened at an early period of the attack, and a sufficient amount of blood drawn off at once to reduce the evidence of the exacerbation; one sufficient bleeding at the onset is far more efficacious, and better adapted to prevent local deterioration, than the repeated extraction of small quantities of blood during its course. If the use of the lancet has been neglected in the early stage of the disease, it is seldom admirable afterwards, but should symptoms seem to demand its use, it should be employed with the utmost caution, and only to a moderate extent. Local bloodletting is a remedy more generally demanded in this fever than bleeding from the arm; the application of leeches, or
cups, in the neighborhood of the local suffering, six numbers per
 pertinent to the intensity, and to the age and condition of the
 patient, will invariably be followed by decidedly, and not infrequently,
 by permanent relief. As regards the use of cathartics,
 there is a much greater unanimity of opinion, than in relation
to bloodletting. There are few, if any cases, in which their oper-
ation will not be found beneficial, by removing the vitiated secretions
with which the intestines are often filled, and producing healthy
 stools, and by assisting to reduce the congestion of the portal
 system, and thus restoring the healthy functions of the liver and
digestive organs generally. Sulfonato, is probably one of the
 best cathartics in this disease, given either alone, in a full dose,
 and followed by occasional doses of eau de cologne, or, what is
 frequently a more effectual plan, a full dose of Epsom salt given
 first, and followed every three or four hours, according to the effect
 produced, by moderate doses of the blue ground, and Alum, with
 the addition of a small portion of echinacand. By this means,
 the bowels are generally freed of the dark colicid viscid matters
 which they are often loaded, and more regular and healthy stools
procured, after this, an occasional dose of the mildest laxatives is alone required.

**Cold Water applications** according to the testimony of Dr. Dickson, and other physicians of eminent abilities, rank among the most efficacious of our feverish age measures. The local delirium which it controls most promptly, he remarks, is the brain; shown by headache, flushed face, red eyes, delirium, &c., with a full, hard, bounding pulse. In such cases, the patient should be placed in a convenient receptacle, and a large stream of cold water poured over his head and body, from some little elevation, and continued until he becomes pale, or his pulse loses its fullness, or his skin becomes corneous, and he begins to shiver; he should then be dried and placed in bed, with just as much cover as he feels to be comfortable; the room at the same time, being fully, and freely ventilated; or, without removing the patient from the bed, he may be supported over the side, and the cold water poured from a pitcher over the vertex. This testimony of Dr. Dickson is fully borne out by the experience of physicians in Europe, who have also extensively used it as a curative for the
disease under consideration. Equally important is its use
externally, and the patient should be allowed to drink freely of cold,
or even iced water, or lemonade, which is not only highly grateful
to him, but also tends to diminish the morbid excitement, relax the
skin, and promote a free and uniform diaphoresis. When the
skin is cold, or covered with perspiration, the use of cold water is
of course indispensable; it is only when the skin is dry and when
there is a considerable, and increased heat over the whole surface
that it should be used. On the propriety of using blisters,
there is no little diversity of opinion; some ranking them among
the most valuable remedies, whilst others, condemn them in
toto, they however, might never to be used, until the expectorations
have been considerably reduced, and then their application
to the parts affected, will in most cases give considerable and
prompt relief.

It generally happens that after the morbid excitement or
whatever cerebral excitement that may have existed has been
removed, there remains great restlessness, and watchfulness,
occaisioned from mere nervous debility, to allay this, an
opiates of the following compounds is found beneficial, viz.

Tinct. Opii 3 ss

Acid Citric gr. v to viij

Ag. pura. Zij m; of which a tablespoonful,
or half an ounce is a dose, and should be repeated if necessary
after a short interval.

In the congestive form of the fever, the practitioner
should endeavour to rouse the nervous energies of the system, and
to relieve as quickly as possible, the central organs from their
state of hyperaemia, and to restore to the capillaries, of the surface,
their healthy action. This may be done by applying heat to the
surface of the body, in the form of hot, or vapour baths, or, in a dry
form, by bags of heated bran, salt or sand, bottles, of hot water to
the warm bath should be preferred, and the patient which in
it well rubbed with a flannel or soft brush over the whole surface
particularly over the epigastreic and abdominal regions. On
coming out of the bath the patient should be rubbed dry with
heated flannels, put into a well aired bed between flannels,
and supplied with some mild diaphoretic drink; as the infusion
of temperance of tepid wa%er; a combination of Camphor, Opium and ephed,), one grain each, with two grains of Nitre, grievous at this period, is found highly beneficial. External stimulants ranked next in efficacy to the warm bath, so that in the early stage, ipecacuanha should be applied to the extremities and over the epigastrium, and liniments with friction along the spine. Internal stimulants are recommended by some practitioners, but as a general rule, their free use is calculated to produce injury rather than good. Cathartics of an active nature, as the combination of Saline, or Blue Mass, with Aloes and extract of colocynth, followed in a few hours by the compound infusion of Seneca, will often produce a marked improvement in the general symptoms of the disease.

Oxen-ction is highly recommended by some practitioners and the evidence in its favor is certainly strong, it is hummen only in the early stages of the highly congestive form of the fever that it is admirable, and even then, the flow of blood should be in-
stantly arrested of the pulse is found to sink, or even to remain oppressed, undeveloped, after a small quantity has been lost.
Should there be found, however, prominent symptoms of hyperemia of the brain, lungs, or other important viscera, the application of cups to the head, or other part oppressed, will often be found decidedly advantageous. As soon as reaction takes place, the use of quinine should be commenced with in large doses. Many physicians place their chief reliance upon this remedy, in Congestive Remittent fever, and administer it in doses of twenty, thirty, and even fifty grains, until a solution of the disease is obtained. In the simple, and inflammatory forms of the disease, its use should be commenced with, so soon as a complete remission has been obtained, and may be given in solution, with the addition of a few drops of the liquid of cinchona, and from the extent of three to five grains, repeated at short intervals as the circumstances of the case demands. The more violent the form of the disease has been, the more important is the administration of quinine, so soon as a complete remission has been obtained, and the larger should be the dose of the remedy.

I have now presented to your notice a general outline of the diagnosis, and treatment of Remittent fever, in its various forms; it is hardly necessary for me to say, that, the
extent to which each remedy is to be carried, and the propriety of its repetition and continuance, as well as the period and particular circumstances of the disease to which it is adapted, must be determined by the application of the great principles of Pathology and Therapeutics to each case the practitioner is called upon to treat, and, although this will demand a degree of judgement which can only be acquired by habits of close attention, and nice discrimination, combined with a somewhat extended field of operation, it is the only source from which success can be anticipated in the treatment of a disease which like the one I have had under consideration, varies so much in its character in different seasons, and localities, and even in different individuals, attacked at the same place, and during the same period.