THE CHANGES OF TYPE WHICH MALARIAL FEVERS HAVE UNDERGONE IN SUMTER COUNTY, ALABAMA, FROM 1833 TO 1883.

By R. D. WEBB, M. D.,
Of Livingston, Ala.,

EX-PRESIDENT AND GRAND SENIOR COUNSELLOR OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA.

Sumter county lies on the west side of the Tombigbee river, between latitudes 32° 16' and 33° 3', being forty-seven miles from north to south. At its southern extremity it is twenty-nine miles wide, while at its northern end it is only nine miles. Its greatest width, on the parallel of Livingston, its county site, is thirty-one miles. Its average width is about nineteen miles. It has an area of about nine hundred square miles. The Tombigbee river (corruption of the Indian name, Etomba-Ikibee) forms its eastern line, running in a south-easterly direction; while its western line is the line of the state of Mississippi, which runs here 7° east of north.

From this it is seen that Sumter county is in the shape of an irregular truncated triangle, with its base to the south. The eastern border, following the meanderings of the Bigbee river, is about one hundred miles, while its western is only forty-seven miles.

Besides the Bigbee, there are two smaller rivers, the Oka-Noxubee (Stinking Water) and the Sucarnatchie (Hog-Path river), running across the county in a south-westerly direction, and emptying into the Bigbee. Emptying into these two rivers are numerous smaller streams and creeks in every part of the county. Nearly all of these become “dried up” in the summer and fall, leaving in the deeper parts stagnant holes or pools of muddy water. All of these rivers and creeks have their alluvial bottoms, with an abundance of decaying vegetable matter.

The face of the county, owing to the different geological formations, is irregular and diversified. It is at the junction of the secondary and tertiary formations, crossed diagonally near its centre by the post-oak belt, and overlaid in many parts by the post-tertiary drift deposit of sand and clay (orange sand). Thus we have three primary strata, which make up the basis of the soils of the county, with a fourth (drift deposit), which is found superposed upon the primary strata in almost every part of the county. These are (1) the rotten limestone (cretaceous), occupying the northern half of the county, and forming the basis of the rich prairie lands; (2) the post-oak, or flat-woods (geological position uncertain), which crosses the county diagonally from west to east, near its centre, forming
a level belt of country from three to six miles wide; and (3) the sandy soils (tertiary) which occupy south Sumter. Upon these three primary formations, as already stated, is superposed the drift deposit, in some places to the depth of from ten to fifteen feet.

From this it will appear that Sumter presents a great variety in its water supply, its soils, and its geological formations, and offers a rich field for the investigation of the influence of soils upon the varieties of malarial fever. Time will not permit me to enter upon this branch of the subject, and I can only refer to an article by me, published in the Transactions of the Medical Association of Alabama, 1881.1

Sumter county was in the reservation of the Choctaw Indians, and was not opened for settlement by the whites until the fall of 1832. Its fertile lands offered a fine field for those enterprising pioneers who seek homes in new countries, and hence as soon as the Indians were removed (1832) a stream of immigration poured in, and, with a rapidity probably never exceeded, its dense forests were converted into cultivated fields, and the soil, loaded with vegetable mould, was everywhere upturned by the plow-share, and exposed to the burning sun.

So rapid was the conversion of forests into fields, that the period of almost uninterrupted health, which is the usual attendant upon the settlement of new countries, was of short duration. Malarial fevers soon made their appearance, and the hardy pioneers, who had laughed to scorn the dangers of the wily Indian and the beast of the forest, found themselves exposed to this insidious foe; and, as early as 1834, intermittent malarial fevers made their appearance. The variety was distinctly intermittent. The chill, or, as it was often called, the ague, was the prominent feature of the disease. The initiatory stage was ushered in by yawning, stretching, and severe shaking of the entire frame. The limbs quivered and the teeth chattered, and the pains in the back and limbs were severe. The patient looked and felt as if he were freezing, and eagerly sought the fire, or wrapped himself thickly in quilts or blankets. This chill would often last for an hour, and in some instances the shock to the nervous system was so severe as to bring on a depression from which it was necessary to procure reaction by stimulants, internal and external.

The chill was followed by fever, which went off in a few hours with profuse perspiration. Though having the appearance of considerable severity, the entire course of chill, fever, and sweating stage was over in from six to eight hours, when the patient was up, following his usual avocation, and did not seem to be seriously injured by the attack.

The cases yielded readily to treatment, by quinine, boneseed, or sage tea, or, as was sometimes the case, disappeared without any special treatment after three or four paroxysms. The form was usually tertian, though quartans were not infrequent.

1 I have furnished herewith two photo-lithographed maps of Sumter (by Julius Bien, of New York) prepared by me for the State Association, in illustration of the article referred to above, which, if thought proper, can be reproduced in connection with this paper. I have made no references to the maps in the paper, as it may be thought best, from an economical point, not to reproduce them.
This type of fever prevailed till 1835, approaching gradually the remittent variety, being intermixed in the fall of 1835 with the milder forms of remittents; but it was not until the summer and fall of 1836 that the remittents had become the prominent variety.

In this year we enter upon the second, or remittent type. They were almost invariably quotidians, or double tertians. For convenience, they may be divided into two varieties:

(1) Bilious inflammatory.

(2) Congestive, with

(a) engorgements of the lungs, stomach, or head;

(b) the algid variety.

I will not pretend to enter into a minute description of these varieties, but give only the prominent features.

(1) Bilious inflammatory.

"These were ushered in with a sensation of coldness,—slight in degree, but often long continued,—with restlessness, thirst, and vomiting, which soon passed into a condition of intense heat and dryness of the skin, excruciating pain in head and back, with furred tongue, frequent tense pulse, restlessness, and irritability of temper. After eighteen or twenty hours, a moderate perspiration, with decrease of heat of surface and a less tense pulse, ensued."

This remission was of short duration, and was followed by a second paroxysm more severe, with excessive bilious vomiting. In the language of that day, they were known as "bilious inflammatory fevers," and owing to the violence of the vascular excitement, inflammation of the liver and stomach often occurred, if the attack was permitted to continue four or five days.

(2) Congestive fevers,—

(a) with engorgements of the lungs, stomach, and head.

In these, the first paroxysm was generally characterized by nothing to differentiate them from the bilious variety. But the second paroxysm was ushered in by a greater degree of prostration, a prolonged cold stage often extending to several hours, with severe congestions of the lungs, head, or stomach, giving rise to the phenomena consequent upon these pathological conditions; and followed by feeble reaction, with quick, frequent pulse, with little tension, and a somewhat moist surface,—the external temperature seeming to be but little elevated. If the third paroxysm was not arrested, the patient passed into a stage of delirium, coma, and fatal collapse.

(b) The algid variety.

The first paroxysm here, as in the last variety, may resemble the ordinary remittent form. But with the second paroxysm the patient "complains of being languid and depressed; he is restless; his skin is cool, damp, and clammy; his breathing is interrupted and sighing; the extremities are shrivelled, and, as felt by the hand of another, entirely cold, soon extending up to the body; while the patient complains of being hot,—

1 Dr. P. H. Lewis, Med. Hist. Ala.
burning up,—cannot bear the fire, and wants the cold, fresh air to blow
upon him.” He is restless, oppressed, rises up in the bed and looks
around with a bewildered, anxious countenance, and yet expresses him-
self as surprised that his friends around his bed manifest anxiety about
him. He may remain in this condition from six to twelve hours, and
gradually sink into a collapse resembling that of cholera, or he may
slowly react, passing into an ill-defined febrile stage, to be followed by a
third paroxysm more intense, and almost certainly fatal.

This justly dreaded type continued to be occasionally seen as late as
1853-’54, but it was not the prominent variety later than 1842-’43; and
as early as 1845 the malarial fevers began to assume a less active form.

In 1845 typhoid fever was imported into the county from Virginia by
a company of slaves bought in Richmond, and prevailed more or less for
the next ten years. During this time (up to 1855) the malarial fevers
had become still less active in their grade, and it was not uncommon to
meet with a case which in many of its symptoms resembled typhoid fever.
These were usually regarded, at that time, as “neglected remittents,”
and by a few as atypical typhoid fevers. Yet they retained the leading
characteristics of malarial fevers. I am now disposed to regard most of
them as continued malarial fevers, though at the time I looked upon them
as “neglected remittents,” or remittents modified by the then prevailing
typhoid fever.

In 1855 typhoid fever disappeared from the county, and from that time
to 1865 we had a period of health. Malarial fevers had become much
less frequent, and were more mild. The type was a mild remittent,
intermingled with remittents, which, however, were not characterized
by a distinct or severe chill. Agues were never seen; and both remit-
tents and remittents were ushered in with a scarcely perceptible chill-
iness, and very little coolness of the extremities, to be followed by a
febrile stage of mild grade.

In 1866 another malarial wave struck the county, and malarial fevers
became again more frequent and more severe.

In the fall of 1867 the fearful form of hemorrhagic malarial fever made
its appearance as an endemic, and prevailed until 1874. A very few cases
had been seen in the county before this time,—one as early as 1848, by
Dr. Anderson; another in 1853, by Dr. Hunter and myself; and one in
1852, by Dr. Arrington,—but it was not until 1867 that it attracted atten-
tion as a variety of malarial fever, the earlier cases being regarded as
exceptional curiosities. I cannot here enter into details of this variety,
but will, as in the other varieties, give only a succinct account of its
characteristic phenomena. The patient may have an ordinary paroxysm
of intermittent and remittent fever, attended probably by a greater sense
of lassitude and debility than is usual during the intermission or remis-
sion, but nothing to attract special attention or to excite alarm. The second
paroxysm, or, in a few instances, the third, is, however, ushered in by a
severe rigor, more like the rigor attending a shock to the nervous system
than an ordinary chill. As the rigor passes off the patient feels a desire
to pass his urine, which is found to be deeply colored, the hue being, in bulk, and by reflected light, a dark port wine color, but when seen in smaller quantity and by transmitted light, a cherry red.

Or the chill may be an ordinary one, and in the remittent variety scarcely perceptible (only a slight coolness of the extremities), the passage of the characteristic urine being the first thing to create anxiety in the mind of the patient. This characteristic urine is passed frequently, and in large quantities, during the continuation of the fever, and in the remittent varieties retains its characteristic hue during the remission; but in the intermittent variety, and the milder remittents, it frequently becomes almost of a natural color, but retains its albuminous character.

In from three to six hours after the chill, the skin rapidly assumes a bright lemon-yellow color, and, in some cases, a bronzed-yellow color. This discoloration, but more of a reddish hue, extends to all the tissues of the body.

The febrile excitement which follows the chill is of a lower grade than in other forms of malarial fever. The system seems to labor under a depression. The pulse is frequent, soft, compressible, or gaseous, as in yellow fever. The temperature is but little elevated, and the surface, instead of being dry and burning to the hand, is often moist, and sometimes bathed in profuse perspiration. The tongue is broad, flabby, indented by the teeth, and covered with a pale whitish or yellowish-brown fur. The bowels are constipated, but readily respond to purgatives. The dejections are usually dark, and show the presence of a natural and frequently a superabundance of bile. Occasionally they are yellowish-green or dark grumous. In such cases we frequently meet with hemorrhage from the mucous membrane of the bowels, in addition to the hematuria. Concurrently with the febrile stage the patient suffers with incessant distressing nausea and vomiting, anorexia, and thirst. The ejected matters at first are the contents of the stomach; but soon the patient throws up large quantities of tenaceous mucus tinged yellowish or greenish, and often the ejected matter is of a light indigo blue, or a grass-green fluid mixed with mucus, in which are brownish flocculi, and not infrequently, in severe cases, a dark grumous or black matter, with coffee-ground sediment, resembling very closely the black vomit of yellow fever. In addition to the usual pain in the head, back, and limbs, there is not infrequently a severe pain in the bowels and over the hypogastric region.

There may be also epistaxis, hemorrhage from the gums, stomach, bowels, or blistered surfaces. These symptoms occur in paroxysms, intermittent, remittent, or semi-continued, and the type may be quotidian, tertian, or double tertian, but it is usually quotidian or double tertian. In the latter stages of an attack, suppression of urine is sometimes met with, and these cases are almost certainly fatal. The mind generally remains clear, but in a few cases we meet with spasms, followed by active delirium or coma.

Such is a succinct account of this fearful form of malarial fever which
prevailed in this county, as an epidemic, from 1867 to 1875, and is now occasionally seen in very rare instances. Only yesterday I saw in consultation a young man from an adjoining county (the first case seen by me in the last five years), who had, on the return of his third paroxysm, several fearful spasms, followed by active delirium, and death in six or eight hours after the first spasm.

In 1874 to 1876 this variety almost entirely disappeared from this county, and is now very rarely met with. From 1875 to the present time the malarial fevers have taken a more continued form, being ushered in with scarcely perceptible chill, and followed by a low grade of fever, with but slight remissions,—the attack often lasting from ten to twenty days, and it may extend even to four or five weeks. This is the so-called typho-malarial fever, or, more properly, continued malarial fever, which is now very frequently met with here and in other parts of this state.

As seen in this county, it presents a varied series of severity, ranging from a somewhat mild but protracted attack of remittent fever, to that of a severe and dangerous attack, extending even to weeks, with but slight daily remissions, and, in its latter stages, often closely simulating typhoid fever.

The scope of this paper does not admit of an exhaustive analysis of the phenomena of this variety, and I must confine myself here, as in the other varieties, only to the prominent features, which are to some extent characteristic. Nor are these characteristics so marked as in the other varieties, and hence the differentiation is more difficult; yet I believe one thoroughly familiar with the different varieties of malarial fevers will be able to trace the lineaments of its features, even though in the midst of typhoid fever, which it most closely resembles. The milder attacks, as already stated, differ but little from ordinary remittent fevers, except in their longer duration, nearer approach to a continued form, and milder grade of phenomena.

The typical variety of continued malarial fever is ushered in with very slight chill, only a mere coldness of tips of fingers, ears, and nose, and is followed by a mild grade of fever, which, at the expiration of twenty-four hours, has a very short remission,—the patient during the first paroxysm scarcely feeling the necessity of taking his bed. The next paroxysm is a little more marked in its febrile stage, and in a few days the patient is confined to his bed with a fever, which presents the following symptoms: At the morning exacerbations he has nausea and vomiting, of bilious character; his tongue is moist, broad, and coated with a thin white fur; his abdomen is flat, with no tenderness, borborygmus, or tympanitis; and his bowels are constipated, and when acted upon by purgatives the feces are dark, or yellowish-brown,—the bowels remaining, after the action of the medicine, in a constipated condition, and usually requiring the use of purgatives throughout the attack to procure any action. The morning temperature is 102 or 103, and the evening temperature may go to 105 or 105½. Towards the end of the first hebdomadal period the febrile symptoms begin somewhat to abate, and we flatter ourselves that our patient
is about to convalesce. And in the milder forms, often on the seventh or eighth day, the persevering use of quinine is rewarded by a cessation of the attack. But if this end is not obtained, we have an exacerbation of the symptoms. The nausea and vomiting are again troublesome, the patient may even have a more distinct chill, or, at any event, the fever again rises higher, and for another week we have an increased repetition of the symptoms of the first week,—the temperature ranging from 103 in the morning, to 105, or even 106, in the evening. But still the bowels are constipated, there is no tenderness over the iliac region, very slight, if any, tympanitis, the tongue remains moist and broad, and the fur is only slightly more brown than in the first week. But during this week we sometimes have fearful hemorrhages from the bowels, which are from the congested state of the mucous membrane, as I have verified by post-mortem examinations. There is, in these hemorrhagic cases, no appearance of disease in Peyer's glands, but an intensely congested state of the smaller intestines.

At the end of the second hebdomadal period we often have a change for the better, and the patient slowly convalesces during the third week. But we may not be so fortunate. The third period may be ushered in with another exacerbation of symptoms; the fever becomes more continued, the patient takes on a typhoid condition, the tongue becomes somewhat dry and brownish, delirium often supervenes, and your patient dies from coma or asthenia; or he may, at the end of this third hebdomadal period, begin to improve, the fever becoming more distinctly remittent, and gradually disappearing.

The distinctive characteristics may be thus summed up: The decidedly remittent character of the fever at its outset,—temperature ranging from 101 and 102 in the morning, to 104 or 105 in the evening; the well-marked hebdomadal periods corresponding with the well known hebdomadal returns of intermittent and remittent fevers; the moist, broad tongue, coated with a whitish fur, rarely even in severe cases becoming pointed, red, dark, or dry; the bilious vomiting at the commencement of the attack, its more sudden onset, as compared with typhoid fever; the flat abdomen, with constipation and absence of gurgling, tympanitis, and tenderness over the iliac region; the absence of sudamina and rose-colored spots; the general absence of enteric hemorrhage, and when it does occur its greater profuseness and earlier appearance (it being usually in the second week); the decided influence of quinine over the fever in its earlier stages, often checking it in from seven to ten days; and its habitual occurrence in sporadic form in isolated country places, where there is no other known cause for it than the prevailing malarial influences.

It would be pertinent to enter into a discussion of the causes of these changes in the types of malarial fevers, but this paper has already exceeded its intended limits. I offer it in this crude form, as an item, to the American history of malarial fevers.