

## Malaria:

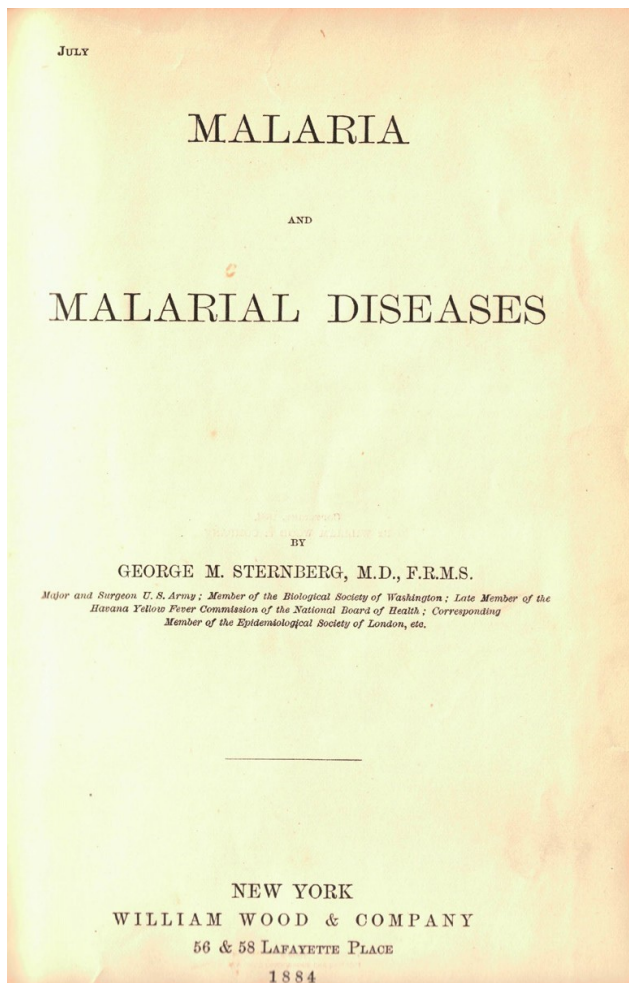
### From the History and Archives

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Malaria was a significant infectious disease threat in the United States in the late 1800's which originated in Constantine, Algeria and was discovered by Charles Louis Alphonse Laveran, a French Army surgeon. The symptoms of malaria were described in ancient Chinese medical writings as early as 2700 BC.

Today we know that malaria is transmitted by mosquitos, however chapter 2 of a book from the collection of the Academy/ DPHA paints a very different picture (see Figure 1).

Figure 1. Malaria, title page



Chapter two has several interesting quotes (see Figure 2). “Telluric” is defined as being of the soil (earth).

Figure 2. Malaria, chapter 2

## CHAPTER II.

CONDITIONS GOVERNING THE EVOLUTION AND DISSEMINATION  
OF MALARIA.

The malarial poison is of telluric origin, but its production, as manifested by its effects, is limited to certain parts of the earth's surface, and is governed by conditions relating to soil, climate, and topography, which will receive consideration in the present section.

## CONDITIONS RELATING TO SOIL AND TO VEGETATION.

Malaria, although indisputably of telluric origin, is not given off from every kind of earth. Those who mould clay into bricks or earthen-ware, and those who excavate banks of pure sand or gravel, are not subject to attacks of malarial fevers by reason of their occupation. On the other hand, agricultural laborers who are exposed to the emanations from a soil rich in organic material are especially liable to be attacked by these fevers.

The evidence connecting the production of malaria with the presence of organic matter in the soil is overwhelming and conclusive. But it does not follow that a considerable amount of organic matter is essential. No doubt in rich virgin soils the amount is very much in excess of that required for the abundant evolution of malaria, for it is only after being cultivated for a series of years that the malarious emanations from such soils are perceptibly diminished. And, on the other hand, there is ample evidence that sandy soils containing comparatively little organic matter may produce malaria. The general rule, however, holds good that soils rich in organic matter are most prolific of malaria. Such soils are found in low, marshy places, in the deltas of great rivers, in the broad alluvial plains bordering great rivers, and in the valleys of smaller streams.

The geological character of the soil, as pointed out by Colin, is not an essential condition, for malarial fevers may prevail in regions having a surface soil of the most varied composition—calcareous, sandy, argillaceous, or even granitic.

An impervious subsoil, of whatever character, is everywhere recognized as a condition favorable for the production of malaria, and this presumably because it retains water, which, as we shall see, is an essential factor.

The intimate association in many parts of the world of malarial fevers with marshes has given rise to the designation paludal or marsh fevers, as applied to these diseases, and malaria is very commonly spoken of as a paludal miasm, or as the marsh poison. These terms have been objected to on the ground that malarial fevers occur as well in non-marshy localities. But the general fact must be admitted that a certain amount of moisture in the soil is essential for the production of malaria, and that ma-

“The malaria poison is of telluric origin, but its production, as manifested by its effects, is limited to certain parts of the earth’s surface, and is governed by conditions relating to soil, climate, and topography....”

The associated table (see Figure 3) shows various statistics gathered regarding malaria. In the notes section, below the table, Delaware is listed as having been a part of the “Middle Department.” The area described as the Middle Department fared better (as reported by ratio of deaths to cases) than most areas.

Figure 3. Malaria, Malaria statistics.

The remark is made that "in the present state of registration it is not possible to define the special character and type of these fevers. They are certainly, for the most part, malarial in character."<sup>1</sup>

The percentage of sickness and mortality per annum, among the white troops in the armies of the United States, computed from the returns for three years (June 30, 1862, to July 1, 1865), is given in the following table.<sup>2</sup> The figures relate to troops in the field and in garrison; the deaths in general hospitals are not included:

MILITARY DEPARTMENT.	Ratio of cases to mean strength.	Ratio of deaths to mean strength.	Ratio of deaths to cases.
Department of the East . . . . .	18.63	0.02	0.12
Middle Department . . . . .	25.20	0.07	0.26
Department of Washington . . . . .	34.54	0.06	0.18
Army of the Potomac . . . . .	26.85	0.12	0.46
Department of Virginia . . . . .	65.12	0.02	0.29
" of North Carolina . . . . .	108.71	0.36	0.32
" of the South . . . . .	57.90	0.26	0.46
" of the Gulf . . . . .	80.34	0.48	0.60
Northern Department . . . . .	40.56	0.20	0.49
Department of the Ohio . . . . .	29.41	0.11	0.33
" of the Cumberland . . . . .	45.49	0.13	0.28
" of the Tennessee . . . . .	84.81	0.59	0.70
" of the Missouri . . . . .	49.55	0.25	0.50
" of the Northwest . . . . .	20.10	0.06	0.30
Pacific Region . . . . .	19.74	0.03	0.05

NOTE.—For full details with reference to the geographical limits of these various departments, the reader is referred to the volume from which the data have been taken. The following notes are given, however, for the purpose of defining in a general way the limits of the areas to which our figures refer:

The Department of the East embraces all reports received from troops in New England and the Middle States, excepting the State of Delaware.

The Middle Department includes the State of Delaware, the Eastern Shore of Maryland and Virginia, and the counties of Cecil, Harford, Baltimore, and Anne Arundel, in Maryland.

The Department of Virginia includes that part of Virginia south of the Rappahannock and east of the railroad from Fredericksburg to Richmond.

The Department of the South. "Here are included the reports received from the troops at Hilton Head and the various points occupied along the coast of South Carolina, Georgia, and the east coast of Florida."

The reports under the heading Department of the Gulf relate to the troops stationed at the occupied points on the Gulf coast.

The Northern Department includes the States of Michigan, Ohio, Indiana, and Illinois.

Under the designation Department of the Ohio are embraced all reports received from troops in that portion of Kentucky lying east of the Tennessee River.

The Department of the Cumberland "embraces the reports received from the Army of the Ohio, under General Buell, the Army of the Cumberland, under General Rosecrans, and during the first six months the reports from that part of Kentucky lying east of the Tennessee River."

<sup>1</sup> Op. cit., p. 14.

<sup>2</sup> The data from which the ratios in this table have been computed are contained in the first medical volume of the Medical and Surgical History of the War of the Rebellion.

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