

AN  
INAUGURAL DISSERTATION

ON

*Malaria*

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AND MEDICAL FACULTY  
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BY

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## Malaria

This is a subject upon which much has been said and written by men competent to do ample justice to the cause

Therefore it would be presumptuous in me to attempt any new theory; consequently I will content myself by giving the arguments used by others concerning the cause of this poison with my own opinion regarding the correctness of the arguments employed

There are good reasons for supposing that this poison has infected the human family from the earliest existance of man

But it has been comparatively a short time since



There were any speculations  
concerning the cause

It was known for a  
long time by the name of marsh  
miasmata as it was known to  
be very infectious near low marshes  
or fens; being found to exist  
elsewhere however, it was concluded  
that this name was not an approp-  
-riate one, accordingly the name  
malaria was used which I think  
equally inappropriate, for this  
term has <sup>for</sup> its legitimate meaning  
simply, bad air without any  
reference to a particular kind of air.

From particular circumstan-  
-ces connected with this poison it  
was supposed to be produced by the  
decomposition of vegetable matter to



which the popular opinion of investigators still adheres.

Circumstances in support of this theory are, that wherever there is found vegetation in much abundance growing and afterwards decaying there malaria is sure to be found most abundantly at the time the vegetable products of this region are in the highest state of decomposition. It has been further noticed that after this great abundance of vegetation has become entirely decomposed this poison is found to a great extent to disappear

After the construction of large ponds in a region of country where previously it had been remarkably exempted from this



affection, and the country had ~~had~~ been submerged and a large quantity of vegetation being killed by this process, and afterwards undergoing decomposition the inhabitants of this whole region of country were affected by this poison and continued to be affected with it until the vegetation has undergone decay. Then to become entirely free from malaria

Also in the construction of canals where there is a large amount of vegetable matter which was buried in the soil and by this process is exposed in a state of putrefaction to the atmosphere this poison is produced

The occurrence of a



meadow being submerged and the growing vegetation being killed by it, after the water had subsided malarial diseases are found to be produced among the inhabitants where they had been free from it previous to that time

Draining of ponds have been assigned as a producer of this poison by the same process, that of exposing decaying vegetation to the atmospheric influence

In fact do we not find that where vegetation is in its most flourishing condition when this vegetation has arrived at its full growth and the process of decay commences then we are sure to find this poison in great abundance



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Thus on the course of our southern and western rivers where vegetation grows more luxuriantly perhaps than any place on the face of the Earth, there we find malarial diseases more abundant than any other place.

These are only a few of the many arguments adduced in support of the putrefaction of vegetable matter as the essential cause of the production of malaria.

There is another source of its production contended for with considerable tenacity by men of considerable experience in this affection.

And this is, that vegetable matter in any way has nothing to do with the production of malaria.



This set contend that heat and moisture are the essential agents in the production of this poison; in order to produce this effect they require the heat to continue for sixty or ninety days at a temperature above 60°. For

With this theory they account for its production in all the before mentioned localities where it is known to exist, and account for its existence where there is no vegetation

For its existance where the country had been cleared off, they account for it by the moisture contained in the timber which is in considerable quantities for the support and growth of the timber previous to its death, is now left exposed to



The Sun's rays by the foliage  
 being gone which protected this forest  
 from it, as well as the soil beneath  
 in a moist condition, now readily  
 yield their moisture to the beaming  
 rays of the Sun; thus we have all  
 the material that they consider  
 necessary for the production of this  
 poison. But after several years,  
 when this timber has decayed or  
 become dry as well as the soil which  
 becomes more so each succeeding year;  
 we find this poison has disappeared  
 Although there may have been  
 successful cultivation of the land prod-  
 ucing by this means vegetation in abund-  
 -ance. We may account for the  
 production of this poison where the  
 meadow was overflown by the same



circumstances After the water had subsided the effects of malaria were observed before it was possible for any putrefaction of the vegetable matter to have taken place. But the soil and products were thoroughly saturated with water, and this exposed to the rays of a burning Sun is all that is requisite, for its production

Again we find by traveling through various regions of country that are infested with malaria, large tracts of country perfectly destitute of vegetation on account of being low and wet drowning out all vegetation, still we find these places the most pestiferous from malaria; it being found out that by draining these places of their water that they



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were well adapted to cultivation and enormous quantities of vegetation being produced where before there was none. But instead of the malaria being increased it was found to diminish as the country becomes more highly cultivated. Another circumstance which is opposed to vegetable putrefaction as the cause, is, that in the northern portion of our own country this disease is unknown; while if vegetation will produce it, it appears reasonable that it would be bounded only by the want of this material; this we know not to be so. The observation of Sir Gilbert Blane and Dr Ferguson are very strong evidence that the production of this poison is not dependant on the decay of vegetation.



According to Dr Ferguson I  
use Dr Watson's statement taken from  
a paper On the Nature and History  
of the Marsh Poison Published in the  
Edinburgh Philosophical Transactions

In August 1794 after a very hot and  
dry summer our army in Holland  
encamped at Rosendale and Oosterhout

The soil in both places was a level  
plain of sand with a perfectly dry  
surface where no vegetation existed or  
could exist but stunted heath plants.

It was universally percolated to within  
a few inches of the surface with  
water which so far from being putrid  
was perfectly potable. There fever  
of the intermitent and remittent  
type appeared among the troops in great  
abundance. It is interesting to observe



That the soil at Waleheran is precisely similar; Sir Gilbert Blane describes it as consisting of a fine white sand, known in the eastern counties of England as silt and about a third part clay.

It was after a hot and dry summer also that the British army suffered in that Island from the endemic fever to a degree which Dr Ferguson speaks of as being unprecedented in the annals of warfare.

In the year 1809 several regiments of our army in Spain took up an encampment in a hilly ravine which had lately been a water-course.

Pools of water still remained here and there among the rocks so pure that the soldiers were anxious to bivouack near them for the sake of using the



water; several of the men were seized with violent remittent fever before they could move from the bivouack next morning.

Till then (says Dr Ferguson) it had always been believed amongst us that vegetable putrefaction was essential to the production of pestiferous miasmata but in this instance of the half dried ravine before us from the stony bed of which the very existance even of vegetation was impossible it proved as pestiferous as the bed of a fen

After the battle of Salavera the army retreated along the course of the Gaudiana river into the plains of Estremadura. The country was so arid and dry for want of rain, that the Gaudiana itself



and all the smaller streams had in fact ceased to be streams and were no more than lines of detached pools in the courses that had formerly been rivers. The troops there suffered remittent fevers of such destructive malignity that the enemy and all Europe believed that the British host was exterminated.

Ciudad Rodrigo is situated on a rocky bank of the river Ugeda a remarkably clear stream but the approach to it on the side of Portugal is through a bare open hollow country that has been likened to the dried up bed of an extensive lake; and upon more than one occasion when this low land after having been flooded in the



rainy season, had become as dry as  
brick ground with the vegetation  
afterly burned up; these arose  
to our troops, fevers which for  
malignancy of type could only be  
matched by those before mentioned  
at the Gaudiana

These are some of the  
arguments used in favor of this  
view of the subject

I find difficulty in  
forming my own opinion upon  
the source of this poison

The facts on either side in  
particular cases seem conclusive.

Again there are circumstances  
where it seems to be produced  
without either of these agents

Admitting the reports of



Dr Ferguson we are bound to admit that this poison has been produced independant of vegetation or moisture; in its most malignant form.

In one place he stats that no vegetation did or could exist. The same reports say that malarial diseases arose to the British army of the most malignant type where the soil was as dry as a brick ground.

There has been two cases related within my hearing occuring in this city in which we find this effect produced by both agents; one was that a family who were all seized with intermitten fever there was no apparent cause for this fever; the family had not visited any malarial region also Quinine



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had failed to put a stop to them; therefore it became necessary to search for the cause: on a thorough search there could be nothing found he considered necessary to produce it but a few bushels of potatoes in a cellar which had remained there till putrefaction had taken place; on finding this out and having them moved the fever disappeared

The other was a case like the above, it was a family taken with malarial fever from no apparent cause; but on enquiry there was found a small pool of water in the yard situated so that it was exposed to the rays of the Sun for a large portion of the day.

This was the cause of the fever as accounted for by him I do not now



remember whether the pond was moved  
as a test

The source of production of this  
poison I think remains unknown as well  
as what it is or how its effects are  
produced on the system. It is we know  
contended that it is in the atmosphere  
and displays its deleterious effects  
on the system by being inhaled.

This I think could be detected if true  
by analyzing the atmosphere of malarial  
districts, this has been done expert  
chemist with no success; So that  
all that has been said on the subject  
can be regarded as nothing more than  
theory I think that it would be more  
honorable for us to frankly acknowledge  
our ignorance of its cause and be satisfied  
with having a knowledge of its antidote