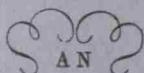


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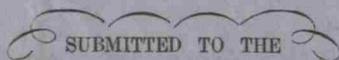


AN

INAUGURAL DISSERTATION,

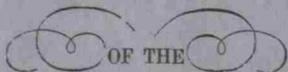
ON

Malaria



SUBMITTED TO THE

PRESIDENT, BOARD OF TRUSTEES, AND MEDICAL FACULTY



OF THE

University of Nashville,



FOR THE DEGREE OF

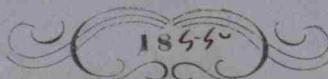
DOCTOR OF MEDICINE.

BY

Asa W. Grigg

OF

Georgia



1855

CHARLES W. SMITH,

BOOKSELLER AND STATIONER,

NASHVILLE, TENN.



1
That Autumnal Fever is the legitimate product of vegetable decomposition, has been the generally received opinion of the medical profession, from the days of the Italian physician Lancisi; up to this time. It is thought that during the decay of most vegetable substances, a peculiar poison, the physical and chemical qualities of which, have never been, nor in all probability, will ever be detected; is generated; and that this material what-ever it is, is the certain, and evident cause of the existence of Autumnal Fever. We must acknowledge that this Theory is supported by very high authority, and at first sight appears reasonable: but in these later days when science is shedding her beautiful effulgence in our midst, we are now not content with *prima facie* evidence of such radically important facts, which surely demand of us to be based on the most profound philosophic research. Now if the cause which

does produce this disease, be the result of the putre-
 -faction of vegetable substances, why do not the effluvia,
 which emanate from decaying masses of cotton seed
 and hay, exert at least some deleterious effect on the
 human organism? having passed two thirds of our
 life in malarious localities, we have never known
 this to be the case. You will find in many parts
 of the south and west, that farmers are careful
 to have considerable quantities of spoiled shooks,
 decayed vegetable matter from about the fences,
 straw, leaves, and animal excrement col-
 -lected in pens built for the purpose, which
 when the process of decomposition may have
 taken place, they are accustomed to convey
 off and spread upon their fields, in order
 to fertilize their soils. Now if this pestifer-
 -ous poison is absolutely generated either by the
 decay of vegetable or animal matter; why
 are not sufficient quantities of it engendered

in these pens of manure, to produce the fever; I have personally assisted in its removal, and have never felt any evil consequences. ^{my} Further if it does originate certainly from the decay of the products of vegetation; any process which at all favors the luxuriance of vegetable growth, evidently must proportionably increase the cause; as a greater amount of material will be in this way afforded. But the contrary is the fact, for every one knows that cultivation is destructive to the cause. Again if vegetable decomposition is unquestionably the actual cause of this fever, why does not the fever prevail most fearfully, when the greatest quantities of vegetables are undergoing decomposition? Yet we know that the fever most usually subsides, previous to the season of frost. ^{my} From these "data", we are led to the refutation of the old Theory, which though long lived must soon pass into oblivion.

^{ny} The truth is, that fever is generated by the action of a specific poison, the production of which is quite independent of either vegetable or animal decomposition. ^{ny} The poison was originally called "Marsh Miasm", because it was the opinion that marshy grounds were essential to its existence.

^{ny} The term Malaria, is now preferred, and is so restricted in its signification, as to imply, Cause of Autumnal Fever. It produces no fever beyond 47° N. Lat., and is bounded east and west by extensive chains of mountains, and is known to increase as we approach the Equator in North America.

^{ny} We have as good opportunities as any people in the world, to investigate its phenomena, and determine upon its cause. For it has been the scourge of our country for a great number of years. Very few people in the South, can boast of never having had an ague; and those few will prove to be the inhabitants of the older settled portions, of the

Country. First impressions are difficult to eradicate. We are accustomed to believe a thing until we consider it a self evident fact, & are perfectly at rest in regard to it, though we have no right to any notion about it, having never made investigation ourselves. We have asserted that Malaria is not at all necessarily connected with the decay of vegetable or animal substances: and if we are unable to prove the fact, we will not urge its reception.

^{we} We hold that if one case, of Autumnal Fever, was ever known to exist where there was no possible chance, for it to have originated from the decomposition of vegetable or animal matter; that the single case, well established, should be most conclusive evidence to our minds, of the correctness of the assertion. Now the question is, did such a case ever happen? undoubtedly, we find many inscribed on the records, of the eminently great Doctor ^{Dr} William Ferguson. Here

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We learn that in the year, One thousand eight hundred and nine, "Several regiments of the British Army" encamped in a hilly ravine, which had lately been a water course; fountains of pure sweet water, stood about in the excavated rocks: there was no vegetable growth there; for the soil was kept washed away by the "rolling torrents;" and we imagine that there were no animals there, as there was no vegetation for their subsistence. Yet several of the soldiers were attacked with violent remittents during the single night. Let us note that this was at the close of a very dry and hot season. From well authenticated statements like these, we are led in our consideration of the cause of Malaria, necessarily to the truth, that soil has no part in its production, except as a mechanical agent. The idea of some that soil is necessary to its evolution,

is, I suppose, predicated of the accident, that soils mostly impregnated with decayed vegetable matter, generally belong to malarious localities.

But this is no reason why soil should have any thing to do in its production. One thing is not the cause of another, merely because it is found in its company; if this were so, Saturn would be the cause of his satellites; yet the God of hosts "spoke into being." Doctor ^{my} W^m ^{my} Ferguson, states that the soil at Malcheron, consists of one proportion of white sand, and a half a proportion of clay; and also that the soil of Roosendaal & Oosterhout consists of those ingredients in the same proportions. Now we know that soils like those can not produce vegetation; Still the records of the historian bear testimony, that nearly all of the British army was destroyed while it was stationed at these several places; and that Remittent fever was the instrument of destruction, which committed

such fearful ravages in their ranks. Again this
 happened at the close of a very dry and hot
 season; moisture was circulating a little beneath
 the surface. Now from a careful examination
 of facts like these, we are wonderfully relieved
 of the burthen of our "first impressions," and
 are led by imperceptible degrees, to the knowledge
 of the truth in regard to the cause of Mal-
 aria. Only two of the original elements, seem
 essential to generate this morbid and disaster-
 ous agent, about which there has been so much
 ill grounded speculation. ^{1st} Heat and moisture.
^{2nd} The moisture must be situate a little way beneath
 the surface, and sufficient heat must play upon
 that surface; and where-ever a high enough
 degree of heat, and a great enough quantity
 of moisture can be found under these necessa-
 ry conditions; Malaria will produce its specific
 effects, upon the inhabitants of that locality.

It matters very little what may contain the moisture, so that we find it bearing its necessary relation to heat; where Malaria is produced we most commonly find it percolating beneath the surface of the earth, being restrained from sinking down, by a substratum of impermeable clay, or frequently by foundation rocks, which act altogether as mechanical hinderances. Carroll county in state of Georgia, consists chiefly of red & gray lands, the former being most abundant in those parts of the county, which suffer most with malarial diseases. The lands about Villa Rica in the north eastern portion of said county, are so very porous that after the most tremendous showers of rain, they dry up in a very few hours, so that the ploughman can resume his duties. This is certainly the healthiest spot in the state, when the year is seasonable.

Twenty years ago, it began to be settled up,
 in consequence of the discovery of the gold
 mines, & a great number of pits were dug
 which have kept partly filled with water,
 a great part of the year ever since. Now
 so long as the water remains in these pits,
 we notice that no malaria manifests itself;
 but when heavy rains fall in the winter,
 and spring, & a scorching dry summer
 such as was, last year, succeeds. There is
 any amount of fever & dysentery, in the
 country. Rock is found not a great way
 beneath the top of the ground. Putnam co.
 in the eastern part of the state, was twenty
 years ago undoubtedly amongst the sickliest
 portions of the world, & it continued so for a
 number of years, & became quite free of malaria.
 The lands were fertile & the low grounds, are
 yet rich, producing luxuriant cotton growth.

But for the most part, the lands have been
 badly used & are now worn out. The citizens are
 no longer moving off to find health, for
 the country seems to have been purged of Malaria
 in most sections. Now this is accounted for
 by the "old foggy" doctrine, in this way, that while
 the country was new, vegetation was more ab-
 undant & therefore fever was more rife, & that
 fever has diminished the limits of its extension,
 in proportion to the age of the country. But
 we argue that when the land was fresh, that
 the depth from the top soil to the clay, was
 perhaps the most favorable distance, for the
 proper relation of heat & moisture in the pro-
 duction of Malaria: & that fever has diminished
 its ⁱⁿ proportion to the disturbance of this re-
 lation, in consequence of the washing away of
 the soil, which necessarily diminished that de-
 pth. We sometimes have fever in countries, of very

deep soil; in this case it requires a very dry & hot season: for if we increase the depth of the soil, a more severe & continued drought, must take place in order to raise the poison.^{ny} The country about water courses, it is true, is often rich, and when it is overflown, great quantities of decaying vegetable matter are left upon the flats, exposed to the action of the sun.

Now when there is a good enough resisting medium beneath the surface, and if this happen during the hot season, and within the necessary latitude and longitude, we will have the formation of Malaria, and would have had it, any how, if no vegetable substance had - have been left on the surface. But if soil be light & porous and have no resisting substrata beneath, Malaria will not manifest itself. It is said that no Autumnal Fever is found in the "Piny Woods." We ask Why?

For, I know that the most productive land we
 ever saw in our state, is "Piny Woods." The pine
 straw is very excellent manure, and is used,
 in this way a great deal by scientific farmers
 of my acquaintance. Malaria is not often produ-
 ced in these lands, because they are very gen-
 erally of a light porous character, and have
 not the ability to retain moisture properly
 for its production: & not because there is no
 vegetable matter to decay. Some argue that here
 the decomposed matter also sinks as does the moisture.
 Their own theory denies, that bodies after entire
 decomposition, are further capable of producing
 Malaria; and certainly complete decomposition
 must precede the absorption of such substances,
 by the earth. & Malaria must be evolved during
 decomposition, if such substances are capable of
 producing it. Most new countries are at first
 exempt from the dangers of Malaria, though

Their soils may present one expanse of decomposed, and decomposing leaves, grass, wild flowers, and other innumerable substances. But when the population increases, and they begin to kill the trees of the forest, which they do, by interrupting their circulation of their fluids, the destroyer comes, and desolates the land which but a short time before, was the haunt of health. The history of the early settlements in the west abundantly proves, this fact. People who settled, and enjoyed for a while the blessings of health, soon began to go back to their old homes, which in their turn had become healthy. Prairies are carpeted with vegetation, and are almost exempt from Malaria. Mill ponds when new, are productive of Malaria because the trees are deadened. Old ponds contain accumulations of vegetable matter, and are usually healthy.

The specific gravity of the poison under consideration, is much greater than that of common air. Hence the reason, that it is confined to low grounds. Water has power to dissolve it, and therefore a rainy spell during the prevalence of Malarial fever, will check its progress. Malaria can not often originate in cities, though many are situated on large streams which annually overflow, throwing out much vegetable matter, which undergoes decomposition. — but the surface of the ground about cities is trodden and will not absorb moisture, or if it be absorbed the sun's heat is obstructed, & the two can not be brought under the necessary conditions, for the evolution of Malaria. — Finally, Malaria is a specific poison and is only capable of producing specific diseases, which never degenerate into other diseases.