

Consumption in New England and elsewhere, or soil-moisture one of its chief causes / [H.I. Bowditch].

Contributors

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CONSUMPTION

IN

NEW ENGLAND AND ELSEWHERE,

OR

SOIL-MOISTURE ONE OF ITS CHIEF CAUSES.

BOSTON:
DAVID CLAPP & SON, PRINTERS.....334 WASHINGTON ST.
1868.

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[These "Prefatory and Historical Remarks," prepared as an introduction to a small second edition of my address on "Consumption in New England," have been printed separately, 1st because they contain the essential points of my whole argument for the existence of a law of soil-moisture as an important cause of Phthisis in New England and possibly elsewhere; 2d, because they contain the latest facts upon the subject, viz., returns from England proving that *artificial drying of the soil by subsoil drainage, &c., has actually caused a decrease of the death-rate by phthisis* in places where such sanitary measures have been adopted.

H. I. B.]

PREFATORY AND HISTORICAL REMARKS.

IN 1862 I published the following address on Consumption in New England, as it was delivered at the annual meeting of the Massachusetts Medical Society, in the same year. In the preface I used the following language:—"The force of facts presented to me by correspondents compels me to resign the commonly received opinion that consumption is *equally* diffused throughout New England, and to adopt the new one of the address, viz.: that there are some spots which have very little of that scourge of the human race, while in other places and even in particular houses it prevails to a frightful degree; and moreover that these spots may be perhaps within a very short distance from each other. Again: facts, as I believe, indicate that *dryness of the soil in the surroundings of any place is the prominent characteristic* of the former, or of places comparatively free from consumption; while *dampness of the soil characterizes the latter*, or as they may be aptly called, *consumption breeding districts*."

Long before this publication, however, viz., in 1855, and again in 1856, I had made reports to the same Society to the same effect.

During a visit to Europe in 1859, I laid these facts before



several persons on that side of the Atlantic. Among these were Drs. Farr and Greenhow of London, and the members of the London Society for Medical Observation ; * Dr. Gairdner of Glasgow, Dr. Bennett and Sir James Y. Simpson of Edinburgh, and Monsieur Louis at Paris. Some of these gentlemen expressed a deep interest in the results at which I had arrived. By conversation, I endeavored to induce the making of similar investigations in England.

Subsequent to the publication of the address I received several letters, and from some of these I take the liberty of quoting in order to show the opinions expressed therein.

That excellent man and wise physician, the late Dr. John Ware, wrote thus to me:—

Pavilion, January 11, 1863.

MY DEAR DR.—I have but just had time within a few days to go over your pamphlet in such a way as to satisfy myself. I think you have made out your case as satisfactorily as any point in so obscure and complicated a subject as the causes of disease, can be made, and it is surprising to me that any one can hesitate to admit that you have made out a very strong case—at least strong enough to be made the foundation of advice in practice. I do not hesitate to act upon it, and should consider myself criminal not to do so. * * * *

I am always very assuredly your friend,

Dr. Henry I. Bowditch.

JOHN WARE.

The following from the late Dr. Coolidge, of the United States Army, I deem of especial value, because in his very

* As this statement may not be confirmed by the records of the Society, I think it right to say that, strictly speaking, I did not present my observations to the Society while in session, because the communication was not considered a legitimate subject to be laid before that body. But I was allowed to present it to some of its members previous to a regular session of the Society.

able Army Medical Reports* he had arrived at similar conclusions, deduced from Medical Reports that had been forwarded to the Surgeon General of the United States, from all the military posts of the Union.

SURGEON GENERAL'S OFFICE,
Washington City, D. C., March 6, 1863.

DEAR DOCTOR,—* * * In tracing the connection between moist or wet soils and consumption you have gone one step, and an important step, beyond my own published conclusions, but my professional experience, and, I may add, my sad personal experience, corroborate your views, and make me willing to endorse them fully. * * *

Yours, with much respect,

RICHARD H. COOLIDGE.

Henry I. Bowditch, M.D., Boston, Mass.

Dr. Farr, the eminent medical gentleman so long connected with the Registration of England, I quote simply to prove that I laid the subject fully before him in the published address, as I had in 1859 verbally presented it to him.

London, March 17, 1863.

MY DEAR DR. BOWDITCH,—I beg to thank you for your valuable address on Consumption.

We have a series of tables in progress which will assist you in your researches. They show the mortality from consumption at different periods of life, in each district of England and Wales, during the years 1851-60. * * * * *

I am respectfully yours,

* W. FARR.

* Statistical Reports of the Sickness and Mortality in the Army of the United States, compiled from the Records of the Surgeon General's office from 1839 to 1854. By Richard H. Coolidge, M.D., Assistant Surgeon United States Army. Washington, D. C., 1856. Same from 1855 to '59. Washington, 1860.

Under date of June 18, 1863, I received very important testimony from the author of one of the ablest works on Climatology that has yet appeared in Europe, viz., A. Mühry, M.D., of Göttingen.*

To Henry I. Bowditch, M.D., Boston.

SIR,—You certainly have given the proof, that even in local distribution this almost "ubiquitous" disease prefers wet soil to dry soil, or, as I should like to express it, that the persons affected with tubercles of the lungs are exposed on moist and damp localities to the bad effect which such a soil inflicts in the greater part of the diseases, even if or though not producing them. This is a fact hitherto not sufficiently known and not taken into consideration in the treatment of the consumptives. It is in conformity with the geographical distribution of consumption. I take occasion to say that I now firmly believe in the wholesome effect of dry climates on the absence of phthisis; formerly I was unable to decide on this point, because in the East Indies the disease is rare, and the climate not dry (though in winter it may be called so). But I am now of opinion that though there may be exceptions, generally among the good effects of the dry climates belongs the absence of phthisis. In the Sahara and in the interior of Asia it is very rare or wanting. I have given this as my opinion, in a book which was published some years after the *Noso-Geography* (1856), in "*Allgem. Geograph. Meteorologie*," 1860, p. 144, Note. * * * *

I have the honour to be, Sir, Yours sincerely,

A. MÜHRY.

Göttingen, 18 June, 1863.

From the tenor of the following remarks, in a review of my address, in the *London Medical Times and Gazette*, Feb. 27, 1864, it will be evident that English Medical Opinion

* *Klimatologische Untersuchungen, &c.* A. Mühry, M.D. Leipzig et Heidelberg, 1858.

had little confidence in the results to which I had arrived. After giving the title of the address, the writer says:

"This pamphlet, though received a number of months ago, from being accidentally laid aside, has not yet received a notice in this journal, for which apparent indifference we owe Dr. Bowditch an ample apology."

Then follows an analysis of the main features of the address. The writer closes in these words:—

"Whether our author's zeal in the study of his subject has permitted him to overlook other causes that may influence the one in question or not, does not affect the value of his book, which will amply repay one for the time spent in its perusal."

My "zeal," to which the writer thus kindly alludes, was the result of a *firm conviction* that I had arrived at a great truth which I wished to impress upon my hearers and my readers—a truth, moreover, forced upon me by facts, and in opposition to my own previous views—a truth, as I thought, of vast importance to every village and township, nay, even to every family in New England, and *possibly elsewhere*.

Scarcely two years ago, Dr. Martin, author of an admirable work on the influence of Tropical Climates, * wrote as follows:

London, 37 Upper Brook Street W., }
December 20th, 1865. }

MY DEAR SIR,—* * * * I have much too long deferred thanking you for your great kindness in sending me a copy of your very interesting and important address on "Consumption in New England."

* * Influence of Tropical Climates on European Constitutions. By James Ranald Martin, F.R.S. London: 1856.

The subject is in a great measure new to us on this side of the water, and is therefore regarded with much interest, with a hope that it may be further investigated. * * * *

I remain, my dear Sir, yours very faithfully,

J. R. MARTIN.

To Dr. H. I. Bowditch.

Meanwhile, I obtained from time to time, from private individuals, facts confirmatory of my views, and the Rhode Island Registration sustained them. Little progress, however, was made in the spread of them.

Finally, observing that the first question proposed for discussion by the International Medical Congress that was to be held at Paris in August, 1867, was on the causation of phthisis, I thought I might possibly induce that body to appoint a Commission, composed of able men in different quarters of the globe, to investigate the question which I deemed settled for New England. I accordingly sent the following letter to the Secretary of the Congress.

BOSTON, United States of America, May 27, 1867.

*To the Secretary of the International Medical Congress,
called to meet at Paris during the month of August, 1867.*

SIR,—I see that one of the subjects proposed for discussion at the meeting is the causation of phthisis, or consumption as it is popularly called; its geographical distribution, &c.

I beg leave to present, through you, for the consideration of the Committee who may have to report on the geographical distribution of this disease, the accompanying address and documents.

The address was delivered by myself before the Massachusetts Medical Society at its Annual Meeting in 1862, and was printed in the Transactions of the Society (Vol. 6, Part 2, Second Series).

Massachusetts is one of the New England States. These States are six in number, and are the most Northern and

Eastern States of the Union. Massachusetts holds in the New England States a nearly central position—three of them lying north and two south of it. Situated as it is on the eastern coast of the Continent, its shores are bathed by the Atlantic and are fully exposed to all the winds that come from the east over that ocean.

It lies between $41^{\circ} 15'$ and $42^{\circ} 52'$ of North Latitude, and between $69^{\circ} 54'$ and $73^{\circ} 30'$ of Longitude west of Greenwich, England. Its coast, chiefly sandy or rocky, bends inward, forming numerous small harbors, and is between 200 and 300 miles long when following the various curves—but is less than a hundred if a straight line be thrown between its southern and northern capes. It extends into the continent in a nearly rectangular shape about two hundred miles from east to west, and is about ninety miles broad from north to south. Its surface is undulating with many lofty hills, but no very high mountains are found in it. The Connecticut River runs through nearly its centre from north to south, and it has a few more rivers of lesser size, which with numerous rivulets and ponds provide ample supplies of water.

Every diversity of soil may be found, from the dry perfectly arid sand, down to the moist meadow.

The climate is very cold in winter—quite hot at mid-summer—chilly and damp in the spring—cool and more balmy in the autumn.

It is the type of New England in its natural peculiarities; and its inhabitants, in their social and industrial relations, are second to none of its sister States. Comfort and thrift prevail generally in New England. Pauperism is rare among the native born population.

Mr. Keith Johnston, in his chart on the Geographical distribution of Disease, marks New England as the place where consumption is peculiarly endemic. That writer makes no mention of this malady prevailing otherwise than *equally* in all parts of New England. Such was deemed to be a fact until the investigations, the results of which I wish to lay before the Congress, were made by me, aided by intelligent physicians resident in all of the three hundred and twenty-five *townships* of Massachusetts.

I myself certainly held firmly to that opinion, and it was only after returns had been made from numerous towns that I was led to doubt the truth of it.

I now believe,

1st. That phthisis is very *unequally distributed* in New England:

2d. That there are some places which enjoy a very great exemption, if not quite as much exemption from its ravages as any portion of the globe can claim:

3d. That there are some spots, nay even particular houses, which are frightfully subject to it:

4th. That there is a cause governing this unequal distribution of the disease; a law not recognized before my investigations, and still practically ignored by the majority of human beings, which, however, is one of the main causes, if not the sole cause of this *unequal* distribution in New England, and possibly elsewhere:

5th. That this cause is intimately connected with and apparently dependent on moisture of the soil on or near which stand the towns, villages or houses in which consumption prevails.

That this law of soil moisture is a cause of consumption certainly in New England, and possibly in other parts of the globe, is proved in the paper herewith presented, by the following data:

A. By the Massachusetts State Registration Reports:

NOTE. (It may be added that the Reports made, subsequently to my investigations, by Registrars of Massachusetts, fully confirm my investigations relative to the unequal distribution of the disease, although one proposes to modify somewhat the law as laid down by me.* The Registration of Rhode Island, a sister State immediately adjacent on the south, fully sustains my views. I beg leave to lay those reports also before your body):

* I do not, however, admit the cogency of his argument. On the contrary, I deny entirely even its relevancy to the point at issue. The assertion, even if true, that consumption decreases from North to South in this country, is no proof for or against the question whether dampness of soil causes phthisis. See Twentieth Report of Births, Deaths and Marriages in Massachusetts in 1861, pp. 54-7, by Oliver Warner, Boston, 1863.

B. By the Medical Opinion of Massachusetts as embodied in returns made to me (as a Committee of the Massachusetts Medical Society), from physicians resident in all the towns of the State, one hundred and eighty-three of whom give specific details bearing upon the subject:

C. By actual statistics of deaths received from such correspondents—the statistics being generally given before either my correspondents or I were aware of the prevalence of any law upon the subject, or in fact that there was any really *unequal* distribution of consumption within the limits of the State:

D. By peculiarities of certain towns where consumption is either prevalent or of rare occurrence, such differences being most clearly connected with corresponding differences of soil-moisture:

E. From statistics, sometimes reaching over half a century, in regard to families successively inhabiting certain well-known houses in Maine and Massachusetts—rather popularly celebrated as containing many consumptive patients; whole families having been, at times, cut down by the disease, while the reason for such mortality has never been suspected until after these investigations were completed:

F. By confirmatory facts and statistics from the sister States of Maine, New Hampshire, and Rhode Island, indicating that the same law exists over New England generally.

G. From medical statistics from the United States Army Reports, strongly supporting the possibility of the prevalence of the same law over the whole territory of the United States.*

H. From the results of my own medical practice since being convinced of the truth of the law; which results prove that persons, having only the early signs of phthisis, viz., hæmoptysis, cough, &c., and general prostration, and without marked physical signs, have decidedly improved and finally recovered after moving from wet localities to well-selected dry ones; that persons having well-marked crackling under the clavicle, &c., with the rational signs of phthisis, have at times rapidly improved, and have at length recovered wholly

* Dr. Coolidge's Report, cited above.

or in part, under the same circumstances of change; and finally, that cases of well-advanced phthisis have had prolonged life given by following the same course.

From the writings of various authors on the proper selection of a place of residence for consumptives, I have tried to find out whether or not the same law prevails over the entire globe.

This part of the subject I have, of course, been obliged to treat very imperfectly for want of data. But on consulting the various authors alluded to, I find as follows. Pau, Villa Franca, Nice, Mentone, Malta, Egypt, Madeira, Canary Isles, the Azores, Bermudas and Bahamas, Undercliff (at the Isle of Wight), St. Croix, St. Thomas, West India Islands, and parts of Mexico and Peru, have each and all essentially dry soils, and, though some of them are liable at times to heavy rains, the soil, being porous, becomes very quickly dried up. All these places are well known places of resort for consumptives. On the contrary, Pisa, Naples, Milan, Mantua, Verona, Exmouth and Sidmouth, &c., are all stated by authors to be prejudicial to consumptives, and certainly public opinion never sends patients to them. These all have essentially moist soils.

All these points I present with great deference to the Assembly of my honorable and accomplished associates at Paris. Although from the correspondence I have had with one or more eminent climatologists in Europe and America, I am aware that they are disposed to consent to my general deductions, I know that the subject has never been investigated in the broad manner that is proposed in the programme of the Commission that calls the International Congress into being.

While thus presenting my views, I trust with becoming modesty, I should do injustice to my own firmest convictions if I did not earnestly press them with their accompanying proofs upon your candid consideration, inasmuch as I believe that in them are contained evidences of one of the primal laws of the development of phthisis, not only in New England but perhaps over the whole surface of the earth. This latter and equivocal part of the question I ask the Congress to take measures for settling either affirmatively or negatively, on the firm basis of actual observation and research.

I regret extremely that circumstances beyond my control prevent me from joining personally in your deliberations.

I therefore send this letter, and documents accompanying it, by the hand of the Commission appointed by the Suffolk District Medical Society (an integral part of the Massachusetts Medical Society), to represent it in your body.

I remain respectfully yours,

HENRY I. BOWDITCH,

President of the Suffolk District Medical Society,
Professor of Clinical Medicine in Harvard University,
Member of the Society of Medical Observation at Paris.

The result of my efforts was simply an abortion. The Secretary and the Congress virtually ignored the whole subject—as the following letter will perhaps sufficiently indicate.

BOSTON, DEC. 12th, 1867.

To the Editors of the Archives Générales de Médecine.

GENTLEMEN,—In the October number of your excellent Journal, page 496, you use the following words: “En outre, la commission avait reçu les travaux du Dr. Bowditch (de Boston), de Mons. Carnuff (d’ Ontario), sur la Tuberculisation en Massachusetts et en Canada. Ces diverses travaux établissent que les mauvaises conditions hygiéniques, la mauvaise alimentation, le manque d’air, de lumière, d’exercice, sont les principales causes de la phthisie.”

Your reporter could not have looked at my communication, or at the papers which I forwarded to the Congress—otherwise I am sure he would not have used the language given above. The sole object of my communication was to prove that in Massachusetts, and probably in all New England, and possibly in other parts of the world, *a residence on, or near a wet soil*, is one chief cause of phthisis. I desired that the question should be investigated with reference to a much larger extent of country, than I, or any one person could reach.

I believe that this law of *soil-moisture*, as a cause of phthisis, exists elsewhere than in New England, but it has

not been thoroughly investigated by any one. I hoped that this investigation would have been undertaken by the International Congress. But your reporter has put me in the absurd position of one writing a formal communication to a learned body upon what seem to me self-evident propositions. In my communication I made not a single allusion to any of the causes of phthisis mentioned in the above extract. I know of no one who would deny the truth of each and all of them.

I feel especial regret that the Congress took no notice of the suggestions contained in my communication, because I see that independent observations have recently been made in England by Dr. John Simon, medical officer of the Privy Council, and given in his last official report.*

These observations, based on the official mortuary statistics of twenty-five towns in Great Britain, as investigated by Dr. Buchanan, prove that in *these towns, which had been thoroughly drained so as to be comparatively dry*, instead of wet places as originally, the most striking fact resulting is a *marked diminution in the number of cases of death from phthisis*.

This result in Old England, thus far, fully sustains what I had proved for New England, where I have found, First, that from twice to three times as many more phthisical cases occur in the wet than in the dry localities; and, Second, that about in proportion to the amount of damp soil near or in a locality will be the number of phthisical persons found in it. Statements similar to this I openly defended in an address delivered before the Massachusetts Medical Society in 1862, having made partial reports to the same effect several years previously to the same body. Under the circumstances, may I ask you to correct the erroneous statements of your reporter?

Respectfully, yours,

HENRY I. BOWDITCH, M.D.

P. S. By this mail I take the liberty of sending my address mentioned in this letter.

* The Ninth Privy Council's Report on Public Health. London, 1867.

The English investigations mentioned in the preceding letter are referred to in an editorial review, in the London Medical Times and Gazette (Sept. 28, 1867), of the Ninth Report of the Medical Officer of the Privy Council, Dr. John Simon. The Report itself has not yet reached this country.

It appears that Dr. Buchanan had been directed, in 1865 and '66, "to investigate the effect of drainage works, and other sanitary regulations designed to promote the public health." It was deemed important to prove to the popular mind the value of those works and regulations. "Therefore twenty-five towns, containing an aggregate population of 600,000 souls, were selected as the places where structural sanitary works had been most thoroughly done and had been longest in operation." These were visited by Dr. Buchanan, and he has given with much patient detail the nature of the experiments with their results, as shown in the mortuary statistics of the different towns. Among the results are the following. He found a reduction of the death rate in the majority of the towns. He then examined with reference to various classes of disease, and observed various results, more or less curious and important, but which, as being not germane to our subject, I will not mention here, but pass immediately to that bearing upon the etiology of consumption. It was discovered that there had been but little apparent influence produced on the prevalence of all pulmonary affections excepting pulmonary phthisis. And upon this latter I prefer to quote the exact words used by Dr. Simon, when reporting to the Privy Council Dr. Buchanan's results.

"These facts appear to indicate a partial dependence of pulmonary phthisis on some of the unwholesome conditions which have been removed, and when detailed examination is

made of the cases that give that indication, and they are compared with the different class where phthisis has not lessened in its amount, the *novel and most important* conclusion suggests itself that the *drying of the soil* (my italics) which has in most cases accompanied the laying of main sewers in the improved towns, has led to the diminution, more or less considerable, of phthisis. The facts which are yet in evidence seem most strongly to support this conclusion, which, should it be substantiated, will constitute a *very valuable discovery*, evolved by Dr. Buchanan from the inquiries here reported upon. It will be seen that the reduction of phthisis where certain works have been executed is far too large and far too general to be regarded as an accidental coincidence, and the fact that in some of these cases the diminished fatality of phthisis is by far the largest amendment, if not the only one, which has taken place in local health, becomes *extremely interesting and significant* (my italics) when the circumstance is remembered that works of sewerage by which the drying of the soil is effected, must always, of necessity, precede, and sometimes indeed precede by years, the accomplishment of other objects (house drainage, abolition of cess-pools, and so forth), on which the cessation of various other diseases is dependent."

Dr. S. considers the results so important that, by his advice, the Privy Council has directed further inquiry to be made on the subject. Thus, at last, it appears that the "very valuable discovery" and "novel and most important conclusion" has been arrived at in England, that by an artificial drying of the soil of towns the mortality-rates from phthisis is lessened!

The Privy Council of England has now taken up the subject, and we may confidently expect from that august body reports that will be deemed worth consideration by all.

For myself, I rejoice that the authorities of at least one great nation have now fairly commenced the investigation of this question.

The benign influences of such an investigation cannot be overrated. I believe it will be of immense importance to those now living, but of far greater good to future generations, when what is now to most minds comparatively speaking a problem to be solved, shall have been adopted as the abiding thought and rule of action of the citizens at least of Old and of New England. At present, I think that every medical practitioner in New England, who, like Dr. Ware, conscientiously investigates the matter, ought to feel it "criminal" not to act upon the idea that a residence on a damp soil is liable to bring with it inevitable injury, a shortened life, and perhaps death itself, to the consumptive under his care.

HENRY I. BOWDITCH.

113 *Boylston Street*, Jan., 1868.

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