# INTRODUCTORY LECTURE

Barton (E. H.)

ON

# ACCLIMATION,

DELIVERED AT THE

## OPENING OF THE THIRD SESSION

OF THE

## MEDICAL COLLEGE OF LOUISIANA.

By E. H. BARTON, M. D.,

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NEW ORLEANS:

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At a special meeting of the Class of the Medical College of Louisiana, held on Wednesday, the 22d March, 1837, Resolutions were unanimously adopted expressive of their high sense of the importance of Professor BARTON's Lecture on Acclimation, delivered at the commencement of the present session, and also of their conviction that its publicity would be highly calculated not only to promote the cause of science, but also that of humanity, and remove the films of ignorance and prejudice from the eyes of our countrymen with regard to this portion of our country.

It was further resolved that a committee of two be appointed to wait on the Doctor, to express the feelings of the Class and request a copy of his address for publication.

G. M. ORMOND, *Chairman.*

WHITEMAN WILCOX, SECRETARY.

G. COLMAR, WM. C. WILLIAMS, } *Committee.*

*March* 23, 1837.

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NEW ORLEANS, March 26.

*Gentlemen:*

I feel highly flattered by your request. My humble efforts have been, for many years, devoted to the correction of the manifold errors that have so extensively prevailed, not only here but to the north, with regard to our climate; to dissipate the prejudices that have so materially retarded its growth; and to develope the magnificent resources of our great south western country. I have reason to believe that those efforts have not been, altogether, unsuccessful.

The remarks I have made upon the subject of Acclimation, if true, are immeasurably important to our section of country, for much has been written by high and standard authorities in our profession, the basis of whose views is founded on error, and whose superstructure is destructive of all those principles of Hygiene, and of course, of health, which are applicable to this country. Eighteen years of observation here entitles me to speak with freedom, as I speak from experience, to show wherein closet men who write from hypothetical assumption, give advice founded on false data. I believe the good of the country will be materially influenced, by the exposition and proper application of the views contained in the lecture you have done me the honor to ask for publication. With these impressions I do not hesitate to comply with your wishes, though it was not prepared, nor is it fit, for the ordeal of criticism.

With my ardent wishes for your success in your profession, and your welfare in life,

I remain very respectfully,

Your obedient servant,

E. H. BARTON.

Messrs. COLMAR & WILLIAMS, Committee, &c.

# LECTURE

# ON ACCLIMATION.

GENTLEMEN:

IT has fallen to my province to open our third course of Lectures, and I do so in presenting to you in the name of my colleagues, the most cordial welcome. Though no house is built expressly for the accomodation of the class, all the advantages the most magnificent edifice dedicated to science could have afforded, are at our bidding; though young as a school we are all older than those principles of your profession which are the distinguishing characteristics of modern medicine: not drawing distinction, then, either from an edifice, or the age of our institution,—nor from the reputation of our predecessors, we stand before you as the humble, but earnest labourers in the cause of our science, with the determination to raise a name for ourselves, which shall be estimated by our success in teaching the science as it is—in shewing you its important practical and useful parts—in demonstrating disease at the bed side and how to cure it; these require not splendid halls nor the power or witchery of eloquent rhetoric—they require what I trust and believe you will be furnished by my colleagues—proper principles and the mode of applying them.

Previously to going directly into the branch of medicine which I have the honor to teach, I propose occupying your time this morning in inviting your attention to a subject of the deepest interest to every man exchanging a northern for a southern climate—it is that of ACCLIMATION, and probably there is no subject to which I could direct it of more importance to be properly understood than it. This will be duly appreciated by you when you reflect upon the migratory character of our countrymen, and that this great southern country, the very garden and store house of the confederacy, has been and is peopled mainly by inhabitants coming from sections of country so very different in climate from it. There is another reason why you should be acquainted with it—representatives as you are of such a wide extent of territory, with the usual uncertainty of medical students, what region of our happy country shall be the theatre of your destiny, it is of the utmost importance to *yourselves* individually to understand the principles and the data bearing on acclimation, but of still greater importance to the people at large, and yet they must look to *you* for the proper information on the subject. The mortality attendant on acclimation—proceeding almost entirely from an ignorance of the means of rendering the process easy, and pointing out those shoals upon which so many thousands have been wrecked and lost, I have no doubt, exceeds the calculation of the most heartless traducer of this region of country. The sad renown for perennial pestilence which the southern portions of the Union and particularly this state, and more especially this city, has obtained, is mainly attributable to the *cost of acclimation*. You see then I can neither over-rate its imporance, nor the interest necessarily attached to it. Were the subject properly understood and acted on, the great dread and apprehension with regard to this climate would be removed—this horrible "charnel house" of New Orleans and the swamps and bilious fevers of the South, would be no longer held up as a scare-crow to frighten away a population, which but for this, would be spread over every portion of this fertile and beautiful country.

Let us proceed to investigate, then, what is the meaning and philosophy of ACCLIMATION. By acclimation we mean the adaptation of man's physical and moral nature to the physical and moral condition of a country. Man's power in this respect has been much over-rated—his physical nature has been supposed to possess the attributes of universal adaptation, but very erroneously. Man possesses less in this respect than many other animals—the dog and horse for instance. With whatever power he may be endowed over inferior creation, he owes it to his superior intellect—an intelligence that enables him to take advantage of circumstances—to adapt himself to the conditions around him—to catch the manners and habits of the natives—'to study well the clime, to mould to its manners his obsequious frame, and mitigate the ills he cannot shun.'

The principal *physical* conditions we are to understand with reference to this adaptation, are those which constitute the elements of climate,—the chief of which are—temperature—moisture—winds—elevation, &c.

The principal *moral* conditions are those comprehended in manners, modes of life, &c. The physical are obvious to every one, and will be particularly adverted to hereafter. The effect of moral circumstances and conditions, though very curious, have not been sufficiently pourtrayed, and however inscrutable, are as undeniable as the physical. Thus, with all the infinite and marvellous varieties of individual expression, there is, nevertheless, it is admitted, a national physiognomy, to show the effect of this influence. Hence every one can detect a French face from an American—the difference is equally striking in an Irish, English, Scotch, German, Italian, Chinese, Indian, &c. &c. And it is as well established that the removal to and incorporation of a new stock of emigrants with a native, will in a few generations, and sometimes in a shorter time, lose most of their original peculiarities, and become identified with those into whose country they have removed. Such has been eminently the case in various parts of our own country. The city of Philadelphia was originally settled by Quakers, yet notwithstanding the constant and varied ingress of emigration to it since, the manners of the great mass still strongly partake of the simplicity and peculiarity of that demure and guileless sect. The same is true of almost every one of the states—each has more or less of peculiarity, notwithstanding the constant influx from the others. It has been remarked by foreigners that the American countenance, as a whole, has the same cast of features as that of the Aborigines, and the portrait of our Washington has been pointed to as furnishing a striking evidence of the fact.

Further evidence of the same fact has been produced, of even the influence of one generation on the children of Europeans sent to Botany Bay—they are all, almost without exception, of the same color of hair and eyes—complexion and disposition. The same has been remarked of the descendants of the English settlers in Ireland in Queen Elizabeth's time, and they were even said to be—Hybernis ipsis Hyberniores. The children born in Ireland of Scotch parents assume the character of their mother country, even more surely than they acquire its accent. The Irish and Scotch sprung from the same stock; of course they were the same, but a change of country, &c. has had such an influence upon them that none can be more distinct and unlike. The same general facts are fully illustrated in the creole of our own state, let his parentage be American, French or Spanish, or a descendant of the early inhabitants. The influence of climate, then, is almost unbounded, and might have been farther illustrated by numberless examples in the history of nations.

The fact, therefore, is undeniable, that there are vast physical and moral influences incidental to a change of climate, and universal experience attests,

that in this alteration or mutation to adapt man to the new position in which Providence may place his lot, there is usually great mortality.

I now propose to make the interesting inquiry—how far this mortality is inevitable, or controllable by the intelligence of man, and how far the physical conditions I have adverted to, can be limited in their influence and shorn of their virulence. There are doubtless situations on the surface of the globe, where no skill of adaptation, as yet devised, nor any period of habituation, can blunt or lessen their deleterious impressions. In such places animal life is poisoned in its source; its growth is stunted; its energy is sapped, and its very limited duration attests their unfriendliness to existence. The industry and researches of travellers have even discovered situations where the very existence of animal life is impossible, like those sterile spots that forbid vegetation, or, where the fabled Upas sheds its blasting influence around. One of these is situated near Acapulco in Mexico, and another in the East Indies—valleys unaffected by winds, with a stagnant and immoveable air forever hanging over them—where the breezes of heaven never reach—that are literally Golgothas—'valleys of the shadow of death,' that no living being can visit and return from alive. The fabled Avernus of the ancients is here realized—the bones of the victims of temerity whiten the surface of the earth, and remain as beacons to warn the traveller of the abodes of death; stunted is the vegetation in and around it; it is even said that birds cannot fly through them with impunity.

With these exceptions, and they are very few, man is endowed with the power, by the exercise of his distinguishing characteristic (intellect) of seeing, foreseeing, and surmounting all obstacles, and obeying the early behest of heaven, of 'subduing the earth so that he may cultivate and enjoy it.'

How far then can man so far modify the influence of climate upon him, as to render the transition from one climate to another, and particularly from a cold to a warm one, (the particular object of our research,) safe, and how can he so far protect himself, while his system is undergoing the change, as not to be unnecessarily exposed?

The principal agent that is appretiable and controllable by us, and that constitutes the greatest agent in these climatural modifications, is difference of *temperature*. The system of the inhabitant of a cold region has the calorific (or heat-producing process) in a state of great activity to adapt it to the temperature of the region he dwells in. When he moves south, this process is no longer required, to the same extent, and consequently the individual coming from the north to the south suffers in a twofold degree—1st. from the increased temperature of the region itself; and 2nd. from the habitual activity of the organic action in him which engenders animal heat. This power of engendering heat, and retaining nearly the same temperature under almost every variety of exposure, is a property peculiar to life, and in consequence of it, even vegetables have a power of controlling their own temperature, though in a much more limited degree. Without this power of adaptation, it is obvious that man must have been chained for life to the climate which gave him birth, and even there have suffered constantly from the change of seasons.

This process of calorification in man is accommodated to the latitude in which he is placed. In more northern latitudes its requirements are much greater for the very existence of animal life, and the expenditure of it, in winter, must be exceedingly great. As we proceed south, these demands no longer exist, (to the same degree.) The habit, however, has been formed, and time and other means are requisite, to reduce the process to the lessened demands of the system. Fortunately for us, in this respect, the visiting a warm climate is, to the system, as the occurrence of summer; unless assisted

by artificial excitants and provocatives, less food, and particularly of a stimulating nature, is craved for, under its relaxing zephyrs, than under the bracing blasts of winter: these indications of its greater or less activity in proportion to the demands of the system seem to be a wise provision in the economy of nature, to prevent that fulness of the bloodvessels that would be oppressive in summer, and with the effect of accumulating it in winter, when there is such a demand for the calorific energies of the system.

There are other circumstances besides that of temperature upon which climate is dependent for its influence and effects. It is a well known fact, that a slight, an inappretiable difference, of soil will be readily shown in the different qualities of the products of vegetation—soils similar in appearance and exposure, of the same neighborhood, produce vegetables and fruit of varying flavor and other qualities. Sheep, of the same kind, in adjoining and apparently similar pastures, have differently flavored mutton; even their wool differs, and they exchange these qualities in exchanging pastures. It is a most limited spot that yields the celebrated Tokay, and transplantation has in vain attempted to acquire, for its products, its much admired bouquet. These hidden mysteries of nature are fruitlessly sought for—the cause "let sages versed in nature's lore explain." Fortunately for us, it is of little *practical* importance; all that is valuable upon this subject is easily controllable by information derived from experience and observation.

Nor does climate depend upon latitude alone; east and west have also their peculiarities, as well from position, elevation, winds, soil, &c. and it has been accordingly remarked, that of an equal number of Europeans embarking for the unhealthy parts of the East and West Indies, a greater portion of the latter would perish during the first year after their arrival, but the acclimatement of the remainder being more complete, a far greater number would probably be alive at the end of 10 years, than of those who established themselves in the eastern hemisphere. This fact has been fully proved in English regiments sent to the East and West Indies. Of a 1000 British troops arriving in Jamaica, it has been calculated that between one third and one half perish during the first year after their disembarkation, whilst of a similar number sent to India, not more than one fourth will fall victims to the climate during an equal space of time. But, as just observed, this disproportion of mortality diminishes every succeeding year, till finally in about 5 or 6 years, the loss of both parties will have been about the same.

The western coast of Africa is by far a more burning clime than that of the eastern, in the same degree of latitude. Witness the lightly bronzed complexion of the natives of the eastern coast, and compare it with the rayless black of the native of the Gold Coast. The prevailing winds are eastern, and they come upon the natives of the former in all their bracing freshness, while 'tis almost with the siroc's breath they steam the western borderer, after passing over the furnace of Afric's burning sand plains. Comparisons equally striking, of other latitudes, in different countries, could be added, did our time admit of it.

To give these remarks a practical bearing—their only real value—and as there is but one condition (of the physical constituents of climate) that we can be said to thoroughly understand, or which it is necessary to control, (except moisture, which will be mentioned hereafter,) the varying amount of caloric and the calorific process, we must necessarily confine ourselves to the regulation of these, so as to adapt them to the varying circumstances of the changes contemplated or effected. How then is this to be effected? The first is, to lower atmospheric temperature or avoid exposure to it, and will be mentioned hereafter. With regard to the second, the corrective influence is

derivable from such sources or means as lessen the influence of the temperature upon man directly—by lessening the activity of the calorific process, and by diminishing the impressionability of his system, or its susceptibility to heat, by duly protecting and giving tone to the surface.

To fulfil these objects, the various modes of depletion, direct and indirect, comprehended in the antiphlogistic treatment, are plainly indicated. They are—avoiding exposure to an elevated temperature, moderate clothing and exercise, cooling drinks, the strictest temperance, light diet, and when the calorific process exists in excess, with a full habit of body, bleeding, the tepid bath and cooling purging is called for.

There are other means, still less understood, that require some explanation.

The influence of climate is first felt and most sensibly felt, upon the *surface*. It is there that its most active influences are made, and it is there must be made the impressions to remove and modify them. This may be considered as a primary principle; others are more or less subservient to it. All animals have coverings to adapt them to the climate they inhabit—in changing their climate, most of those that are exposed, likewise, in process of time, have such changes effected in their attires, as to adapt them to their new positions, as the thick wool of the northern sheep becomes, on being removed into hot countries, converted into or exchanged for, hair, &c.

Were farther proof required, (for which I have so little time,) the fact that the appearance of the skin is indicative of the health of the individual, is a matter of common observation; the ruddy complexion of health, the pale, jaundiced, shrivelled condition of disease, with its diminished vitality; the importance of its undisturbed secretion, the influence of its suppression, of wet clothes, drafts of air, wet feet, in the production of disease in warm climates, where the system is made additionally susceptible from a long continuance of an elevated temperature, and not from miasm; the influence of the cold bath, of friction, of flannel, and even corpulency, in protecting the system, is in corroboration of these general views. The importance of the bath and friction cannot be overrated. I have seen persons that were unacclimated, pass unscathed, under their influence and temperance, through the worst epidemics of this country.

It has been remarked, with great truth, that those men who are accustomed to a rude, laborious life, who are little regardful of the unseasonableness of the weather, to the vicissitudes of which they are constantly exposing themselves, certainly live in the enjoyment of health and vigor, like other animals: nor was it till man discovered and brought to perfection artificial means of defending the body generally from the extremities of the seasons, that he was subdued by the severity of his native clime. But, we must treat man as he is; and inasmuch as he has acquired these susceptibilities, and cultivated this delicacy, it is essential for his comfort and sometimes even for his existence, that it should be overcome or modified by such antidotes and correctives, as we shall presently point out.

The indications that I have laid down and their fulfilment seem to be so plain and self evident, that it is surprising there ever should have been a doubt or disagreement with regard to the proper course. I have no hesitation in expressing my belief that the error of the counsel given to those going South, to employ stimulants to counteract the supposed debilitating influence of a warm climate, (which has no mean authority for its advocacy,) has arisen from confounding the effect of the long continuance of heat, with that of first impressions—the one bearing, often calling for stimulants—the other, (proceeding directly from the stimulus of heat,) adding to and heightening all the injurious effects of a hot climate. This fatal error has carried millions to the grave,

and will continue to do so until men reason rightly from effects to causes.—Experience upon this subject lends its important aid and confirms the value of the theory; a few references to illustrative authority will not be out of place.

Dr. Davy relates in his travels in Ceylon, from his personal observation, that on first landing in a tropical climate, the standard heat of the body of a European is raised 2 or 3 degrees, and febrile symptoms occur, which require temperance—the avoiding every cause of excitement of the vascular system, and the use of aperient medicines, for its removal. The elevation of the temperature of the surrounding atmosphere is so great, (as in all warm climates,) that no relief can be obtained from that source, and the consequence would be a speedy destruction of the vital functions, if nature had not afforded relief through the cutaneous system, and thus established a healthy equilibrium.

Dr. Rush, in his Inquiries, mentions the case of a regiment of European troops, arriving in the sickly season in the West Indies, saved from the devastation other troops were suffering, by being bled to a man, and not a case (I think) of fever, occurred among them. The same indefatigable collector of facts also mentions the case of a Yankee captain, saving his whole ship's crew, similarly circumstanced, by exhibiting to them a cathartic of sea water every morning.

The influence of care—of the free use of flannel and cleanliness, is shewn too, in the remarkable health enjoyed in the British ship of war 'Valorous,' which, after two years' service among the icebergs of Labrador, went immediately to the West Indies, visiting almost every one of them, and returning to England without losing a man, out of 150.

The same immunity was enjoyed in the "Recruit," under the same careful treatment, lying 9 weeks at Vera Cruz, while the other vessels of the squadron, with whom they were in constant intercourse, lost from 25 to 50 each.

A late distinguished writer has attributed the comparative immunity from what has been called 'malarious disease,' enjoyed by the ancient Romans, to their being always attired in warm woollen dresses. This remark is justified by the observation, that since the period at which the use of woollen clothing came again into vogue, intermittent fevers have very sensibly diminished in Rome. Even in the warmest weather, the shepherds are now clothed in sheep skins. Similar means have been found effectual in preserving the health of laborers digging drains, and excavating canals in marshy grounds, where, previous to the employment of this precaution, the mortality from fever was considerable.

The distinguished Dr. Mosely, who has had such extensive experience in hot climates, and who has written a valuable work 'on tropical diseases,' avers, that water should be the only drink there. Dr. Johnson, the eminent author of the work on 'tropical climates,' whose experience here is probably greater than any living authority, fully concurs with Dr. Mosely in the propriety of abstaining from all stimulants. Were it necessary to appeal farther to the authority of experience, the great mass of the profession practising in warm climates might be cited in corroboration, and the experience particularly in this place, would be most emphatic and trumpet-tongued.

There is a valuable lesson furnished us upon this subject, and it is by the native or acclimated population themselves, and none are more to the point—it is that of graduating our living and habits by that standard which unfailing instinct and experience have taught them, is adapted to their positions. This is a universal truth, whose single exception or prerequisite is, that in coming from a cold to a hot climate, the *calorific process* must first be reduced to the scale of the native. This is a rule of such general application, so reasonable, so often proved by experience, that it is surprising that it is not universally enforced

upon those changing climates. The English cockney, in contempt of what he calls native effeminacy, exposes himself without an umbrella to the scorching rays of an Indian sun, and afterwards quaffs his glass and gormandizes, as in the invigorating climate of London, and condemns the CLIMATE for prostrating him. The more accommodating Frenchman confines himself to vegetables and soup, and withstands influences under which the other sinks. And so with our northern brethren, *this climate* has to stand answerable for all the sins of juleps and champagne—beef and bacon!

Capt. Parry, in his perilous voyages to discover a north west passage, found that in proportion as his men adopted the manners and habits of the indigenous inhabitants, so did they with the more facility bear the climate, and he found that an exclusive animal diet, a large use of oil and fat meats, was the true secret of life in those frozen regions, and he expressed his conviction, that if his sailors could swill blubber oil with as much *gout* as the natives, and conform to their usages and experience, the unhappy destiny of the many men who have wintered in those icy solitudes would have been very different.

And how afflictive to humanity has been the experience afforded by the numberless travellers whose lives have been sacrificed by the unfriendly climates of Africa and India, unprepared by a knowledge of the customs of the natives, or the requirements of climate, they have blundered on with European habits, until death has put a period to their wanderings. Such too has lent to war a scourge of tenfold devastation, from the ignorance of those having its direction, upon this subject. From the possession of this knowledge, the rigors of an arctic winter have now no terrors. It has been made, with a detention of near two years, without losing a man; and there cannot be a doubt that with the same attention to the '*non-naturals*,'* a like immunity would be enjoyed in the south.

There are certain Hygienic rules to be followed during the process of acclimation, which time permits me only very briefly to advert to—in the careful observance of which individuals are enabled to resist morbific climatural influences they are unavoidably exposed to. They prescribe certain regulations with regard to DIET, DRINKS, CLOTHING, HABITS OF LIFE, &c.

This is not the place to descend to much detail into these circumstances.—They will come in more appropriately at an early period of our course. I shall then merely fill up, in a general manner, the outline I have sketched.

The kind of *diet* required during the *process of acclimation* is clearly inferrible from the position laid down with regard to calorification, and has been, in general, mentioned. It is to be of the lightest kind, of plain unirritating vegetables, of little animal food during the first summer, and that fresh—and avoiding much indulgence in salt food. The advice of using salt food in hot weather, given by a distinguished Professor, now no more, has cost thousands of lives, some to my own personal knowledge. The second summer a little more freedom may be indulged. After acclimation, a more generous living is advisable. I have little doubt that good living is conducive to health, as giving that degree of tone to the system that enables it to resist the influence of morbific causes.

The same general principles are applicable to DRINKS, absolutely forbidding those of a stimulating nature, as increasing the range of those organic actions, and particularly those of the gastric system, already over-stimulated by the cli-

* NOTE.—Under this term the ancient physicians comprehended air, meat, drink, sleep, watching, motion, rest, the retentions and excretions, and the affections of the mind; or, in other words, those principal matters which do not enter into the composition of the body, but at the same time are necessary to its existence.

mate. Bland and acidulated drinks, (where they agree,) and the Seltzer water, are highly refreshing and proper. The consequences of indulging in stimulating drinks in a warm climate have been recently shewn on another occasion.* The indulgence, particularly the intemperate use of ardent spirits, retards acclimation, multiplies the chances of febrile excitement, and lessens the prospect of passing the acclimating fever with safety. It has been shewn in the address just referred to, that they act in a direct line with and aggravate all the injurious influences of a hot climate and season. This influence was exhibited in a remarkable manner from the records of the Charity Hospital, (the only data of the kind in this country.) From these it appears that the mortality in that house in 1835 amounted to 1226; of these 940 or 4 fifths! were produced by intemperance, and that only nine of this number had passed through their acclimation! a more pregnant and condemnatory fact of the use of stimulating drinks in a hot climate could not be cited. I know of no circumstances in which they are *necessary* for health, whether from exposure to wet, heat, or fatigue, and believe them to be injurious and only a counterfeiter of good in all.

Clothing must be adapted to circumstances, bearing in mind the general principles, and that the surface is the great avenue to disease. A corpulent individual will require less than a spare man. If exposed much to the sun with a liability to perspire freely, increased susceptibility is produced. Hence that kind of clothing is requisite, which, though light, is a bad conductor of caloric, for the heat of exposure to the direct rays of the sun is greater than that of the human body. If the occupation does not exact such an exposure, or loss of fluids by perspiration; then light cool clothing is clearly called for.

With regard to the habits of life, the errors have not been less serious than extensive; I cannot stop to enumerate them in detail; they may be inferred from the advice I am about to give. *Early rising*, to enjoy the delightful freshness of the morning breeze, is highly conducive to health. An early breakfast is the only 'fortifying' the stomach requires.

*Exercise* is of great importance in this climate. It should be taken during the early morning and evening hours, avoiding the mid day sun. The night air is only injurious to those who have been exposed much to the sun and excessive perspirations during the day; otherwise it is grateful and safe, particularly if in motion, carefully avoiding the extent of chilliness. Probably there is no habit more universal or that would strike a stranger more forcibly, on visiting this country for the first time in summer, than the general habit of setting out and indulging in the evening air, (and particularly in this city,) and with perfect safety, under the restrictions just laid down, in defiance of all the predictions of the miasmatists.

There is no habit more eminently promotive of health and long life, and as a preventative to disease, than the free use of the Bath. Believing that the main avenue to climatural disease to be the surface, that its appearance is the main index to the condition of the individual—the protection of that surface—the fortifying it against the inroads of morbific impressions, which are principally through the medium of the atmosphere, to which it is constantly exposed—the removal or modification of that sensibility and impressionability, upon which its susceptibility depends, surely cannot be over-rated. This is done by the purifying and cleansing process of the bath—opening the clogged and exciting the torpid capillaries, giving tone to the surface by its temperature and quality, and by frictions with the flesh brush. They should be daily administered.

From these Hygienic rules with regard to the *individual*, it is but an easy and natural transition to pass to that of *communities*, in which are embraced,

* Vide Address 'On the applicability of stimulants in a hot climate,' by the author.

among other objects, the important condition formerly adverted to—that of reducing atmospheric temperature. This is not the place to go into details upon a subject so fruitful. I shall hence limit myself to such remarks as have not been dwelt upon, or but sparingly, by others, confining myself to our present location.

The speedy removal of offensive filth is too obvious but to be mentioned: the streams of running water in the gutters, not only for their purifying influence, but their effects upon the temperature, and particularly when spread on the streets, has not been sufficiently attended to, in all parts of the city. The amount of caloric taken up by water passing to a state of vapor, is almost incredible to those unacquainted with the principles of chemistry, and amounts to near 900 degrees—the air is then proportionally cooled, and the dust incidental to our miserable system of paving, effectually kept down.

There is another objection to our climate and locality—and though carried to the extent of the *argumentum ad absurdum*, yet being, to some extent, a great evil, merits a careful notice of the physician, or of one desirous of ameliorating the condition of the climate. I allude to the "great dampness" alleged to exist here. Surrounded as the city is by arms of the sea on many sides, and by morasses at no great distance, and having the river running by our doors, which, for probably six months in the year, from February to July, is higher than the level of our streets;* it is certainly allowed that there are great causes of moisture.† The extent, however, to which this moisture is injurious, has not been, by any means, so clearly ascertained. Such is the propensity and the unfortunate weakness of the human mind, that the moment a plausible cause to which an evil may be ascribed is ascertained to exist, no matter to what extent, all evil is at once attributed to it, and reason is obscured by the blindness of prejudice and prepossession; not a moment is left to reflect what would have been the condition of New Orleans, if it had been situated upon a dry arid plain, instead of being surrounded by these sources for lowering its temperature. Its average annual temperature, instead of being about 66 as it is now, would probably have reached 6 to 8 degrees higher, the average temperature of similar latitudes elsewhere. Our sickliest seasons are our hottest and dryest—our most injurious winds (northern quarters) are the most drying, and the dryest skin is the most uncomfortable one. Here then are *positive benefits* from this fruitful source of all our supposed evils.

Yet still it is freely acknowledged that there is *too much* dampness often in our atmosphere; and when so, it has the effect of increasing our atmospheric vicissitudes, and particularly between day and night—it augments the fall of dew, with all its injurious influences, and the amount of rain—renders the climate, in a measure, unfit for *the continued preservation of various kinds of merchandize*, and certainly is productive, when combined with a very elevated temperature, of increased disease. It is gratifying, however, to know, that every natural evil has a remedy, and that a kind Providence has placed within the reach of the industry and intelligence of man, means for the removal of all.

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* It is a great mistake to suppose that the vicinity to the surface of sub-terrene water, as noticed by our wells and digging, depends entirely upon the height of the river, it being supposed to be passed through by percolation, or capillary attraction. From a number of experiments repeatedly made by myself on the subject, I am clearly of opinion, that it depends more upon the quantity of water that falls in rains; the quality of the soil being such as to retain it, and the moderate inclination preventing its passing off rapidly. Hence the additional force to the recommendation in the text, to be mentioned presently, of the species of pavement to meet this difficulty.

† See Table A. in Appendix. ‡ See Table B. in Appendix.

Let us pause for a moment and consider with what facility the cause of all these evils may be removed.

The first and most important step to accomplish that valuable end is a proper system of PAVING; and as there is none that adds, also, so much to our comfort and convenience—that enables us more to benefit by our commercial advantages, or is *more conducive to health*, you will excuse my going a little more into detail. Its important influence in the prevention of disease has long been remarked in Europe, where unpaved cities have been much more subject to epidemic diseases than the paved, and in this country (U. States) it has been noticed that disease has sometimes been *confined to the unpaved portions of cities*, and none can be ignorant of the remarkable ameliorations that have taken place in the public health in this city since the extension of the pavements, bad and imperfect as they are, though I do not attribute the whole to this influence, and the time is not distant, if this and other means shall be perfected, that the salubrity of the place will be as remarkable as it was formerly the reverse.

Our present system of pebble paving is expensive in the outlay and constantly requiring repairs—is a burdensome tax to every man who keeps a horse or wheel carriage of any description—is very annoying in the noise and dust which it subjects the neighborhood of all streets where it exists, and *does not prevent evaporation from the soil beneath either of moisture or offensive smells*, and though it is better than none, it in a great measure fails in the great essential of a pavement here. The substitute I would recommend is a *wooden pavement*, of durable materials, properly cemented together, and of such depth in the soil and such arch, as to render it of sufficient solidity. It has all the advantages and none of the disadvantages of the pebble pavement; it produces or permits no noise, no dust, no mud, no stagnant water; no evaporation through it; no offensive smells, no filth. The idea of its being unhealthy is one of those heretical hypotheses that I cannot stop to combat now, but which I shall dwell upon, in extenso, when we reach that part of our course where we have to examine the various speculations with regard to that very Briareus—malaria. I shall only observe now, that if a something called miasma, the supposed cause of fever, be the result of heat, moisture and putrefaction of dead organic matter, animal and vegetable, we should have much less of it, when the soil, a mixture of both, would be covered with a solid floor, a foot thick, *impassable to any thing*, than when we have—mud, original soil, filth, and evaporation through the pebble pavement, *all of which* would be prevented by the other.*

The next most important step is the draining the neighboring marshes, clearing them of forest growth, and subjecting them to cultivation: the sun and winds would then keep them dry, with the aid of the invaluable draining company.

But this is not all; our courts and back yards should be kept as dry and clean as the streets—the rooms of our dwellings large, with lofty ceilings, with careful exclusion of light and reflected heat during the day, but open to the evening air. It is from such causes that the interior of St. Paul's and Westminster, in London, and of Notre Dame and St. Sulpice in Paris, are from 6 to 8 degrees cooler than the adjoining houses. And if the highest elevation of the thermometer never exceeds 88 degrees,† in the hottest climate and season, with per-

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* I rejoice to see a commencement of the wooden pavements since the above remarks were written, although of a most imperfect kind, yet they. (the boat gunwales.) are infinitely more adapted to our moist and yielding soil, than any kind of stone, flat or round.

† Vide De La Beches' Geology, Amer. edition

fect exclusion of *radiated* caloric and light, how very comfortable we have it in our power to make it here, in latitude near 30, where the thermometer, with radiation, rarely reaches to 90, and the average of our summer months at the hottest parts of the day, is only 83.27°.

No less important to the enjoyment and perpetuation of health, is a free and sufficient VENTILATION. Medical records are pregnant with valuable and interesting details upon this subject—from the celebrated black hole of Calcutta to the Assizes of Oxford,—the jail and hospital fevers, and the proverbial unhealthiness of the leeward stations in the West Indies. Stagnant air is injurious every where—motion in air, as in water, is essential to its salubrity, as in fact it is to every condition of life. It is eminently so in warm countries. Fortunately for us, *calm* weather is hardly known to us—our happy vicinage to the gulf stream, and to the alternations of large bodies of land and water, keep the elements constantly stirring around us. Our interests and pleasure here happily coincide to invite the refreshing zephyrs. From an examination of my meteorological journal, which I have carefully collated, for a number of years back, it appears that during the six warm months, (when they are most wanting,) the most frequent winds are the S. W. and S. E.* It is obvious then that the windows and doors of our houses should be made, as far as practicable, to correspond with these directions, carefully excluding all dry or northerly winds—as productive of a dry, disagreeable, chilly or burning state of the skin, and tending to produce disease, and in fact our worst forms of autumnal fever are cotemporaneous with winds from the N. N. E. and N. W. They should be carefully excluded from our houses during these periods. The streets should be at right angles, and in a direction to correspond with the most frequent winds, to insure the greatest ventilation, without obstruction.

He, then, who carefully traces effects to causes, and reasons upon their respective influences, is not permitted to doubt that if, in obedience to a proper system of medical police, there is established a mode of paving that shall prevent the accumulation of filth or stagnant water above, and evaporation from the moist soil beneath—a sufficient draining, clearing and cultivation of the swamps in the neighborhood—a removal of impediments to a proper ventilation—curtailing irradiations of elevated temperature—lowering the heat of the streets by streams of running water and its occasional diffusion over the surface—with a suitable attention to hygiene rules, and with an accommodation of our habits to the altered conditions, in the various relations which a change of climate exacts—there cannot be a doubt that this city would not only be dry enough for all the purposes and demands of commerce, but would be unequalled for its salubrity by any city on this continent.

Fortunately, our climate is subject to no great variety of diseases that is indigenous, when compared with other portions of our country, a large proportion of our complaints, having other sources, many of the afflicted coming here for the benefit of climate. And if our acclimatement is sometimes severe, it is the only ordeal we have to pass through—no such immunity is enjoyed in the northern portion of the U. States—no period of acclimation can protect the pulmonary organs of the natives or emigrants from a scourge that yearly takes off, in some of their healthiest cities, 1 in every 4.52 of their deaths.

It is impossible to obtain correct data in order to give precise details upon the subject of our own diseases—the nearest approach to it is derived from the records of the Charity Hospital, which furnishes about 1 in 3.86 of our annual mortality. In comparing the detail derived from that source, it will result, that pulmonary consumption, which carries off in the northern cities 1 in every 5 or

* Vide Table of Winds in Appendix—C.

6 of their deaths, is here fatal to about 1 in 50, few of which doubtless originated here.* Of pulmonary diseases in general, which in the northern cities carries off near 1 in every 4 of their deaths, is here fatal to about 1 in 30, of which about one third were acclimated,† furnishing, in fact, a ratio of pulmonary diseases to the entire mortality of that house, probably unprecedented in any country, and in private practice, it is probably less.

Of the class *fevers*, the great mass of our mortality consists,—these records shew the proportion of 1 in every 2.92 of the entire mortality of the house, and the estimates are taken from years of the greatest mortality that ever occurred in this country. But it must not be forgotten that a large proportion of this consists of the unacclimated—the exposed and besotted, of which New Orleans has a larger ratio probably than any city in the Union. From a statement from the books, it appears that there were actually of unacclimated individuals nearly four fifths of the whole. The mortality of the acclimated population in the house from fevers, to the entire mortality is 1 in 29.02, and of the unacclimated there appears a proportion of 1 in 6, and the cost of acclimation through fever, so far as these returns furnish an estimate, is annually about 131—and if the relative proportion in this house to the entire city mortality be correct in this respect, (in fact much the largest portion die in the Charity Hospital,) the annual mortality in the city through acclimation may be estimated at about 507, and be it recollected, however, that the estimate embraces one of the epidemic years, (1832.)

The mortality in early life in Philadelphia is about one half the entire mortality, and so unfriendly is the climate to early life, that one half these die within the year. We have no data of our own with which to compare it. I feel very confident, however, that it does not exceed one fourth of these proportions. It is almost useless to stop to lament these deficiencies. For want of them we know not the mean duration of life—the chances of living—when we are traduced by all the world for the precariousness of existence here, when but a little trouble would give the exact truth; nor the cost of acclimation, circumstances indispensable to insurance. Indeed, no record could be more valuable and interesting to the country. Oblivious darkness as to the past shrouds and must forever shroud it—no laborious research, no searching scrutinies can throw much light upon it. We are all so absorbed in the future, that little thought is given to the past. This, to be sure, is not true wisdom; we are leaving out the most important data with regard to our progressive condition, and blunder on in ignorance and uncertainty. Were such data present to *prove* that the health of the place is actually and materially ameliorating, of which there cannot be a doubt, but there is wanting the *official* proof to convey to and produce conviction on others, millions might be added to the value of our property, and the city would become duly appreciated.

The period of removal to any climate is when the temperature of the country you move from is, in the revolution of its seasons, the nearest to that you are moving to. And the reason is obvious, because the calorific process will have been most on a par with both, will have equalized itself with the temperatures actually existing, and there will be, consequently, the least shock to

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* It is proper to state that these data are not only imperfect, but vary greatly in different years. In some years, the cases of Phthisis to the entire mortality in the house is but 1 in 80, and in another in 14, (in 1832.)

† This is very difficult to ascertain from our imperfect records. From the same source I have procured most of the above data, it appears that in a series of years, of the phthisical patients in that institution, the average of the acclimated to the unacclimated were as 8 to 20. This, however, can hardly be considered correct, many persons coming to this climate, for its generally acknowledged benefit in pulmonary affections, with strong phthisical predispositions and liabilities, which may and do ultimately become developed, after they have been here three years (or "acclimated,") and hence add materially to the number.

the system. If you are moving to the north, you should seize the period when our mild winter is closing its march, and a few weeks of travelling would hardly leave you conscious of any change. On the contrary, if it is your intention to remove south, from the northern and middle states, the temperature of their late autumnal season is much the same as that of our winters; hence that is the safest period for removal south, as the system will have already measurably accommodated itself to the condition existing here, and the reduction incidental to a calorific process at its maximum, would be but partially required.

The enquiry so often made—how long a period is required for the acclimating process, and what assurance have we that it is passed?—is not so easily answered, to a mathematical certainty, but sufficiently so for all practical purposes. There are various compound considerations to influence it—the temperament of the individual—his habits and modes of life—the more or less northern his place of departure, &c. Following the directions and governed by the principles here laid down—three years, at the farthest, may be considered a fair period for this much valued immunity. But it may be acquired in less,—a severe or protracted attack of a febrile disease may reduce the tone of the system to that condition to which a long residence in a warm climate subjects us all.

It has been most erroneously supposed that this probationary period must be accompanied with fever to procure the rewarded acclimation, and many are most reckless of their health, regardless of all prudential considerations, presuming there is no other road of safety but through this much dreaded one.—It is often a fatal error, for it is most obvious that *however* that condition of constitution is acquired by which this much dreaded result is obtained—the end is the same, immunity, influenced very much by his conformity or departure in his habits and modes of life, from those principles already laid down. There is no secret or system about it, nor is there any specific inoculation necessary.—It is most true, that much the largest portion pass through this ordeal, and the reason is as obvious as the prevalence—there is departure from those hygienic rules and restrictions, that so wonderfully, yet rationally adapts the yielding system of man to the requirements of a different order of things, and he pays the penalty accordingly.

In those parts of our country which are constantly varying in their aspects, from successive clearing and cultivation, there can be no steadiness in the conditions to constitute climate, hence the system has not the time to habituate itself to *any* condition, and there can be no acclimation. It is for this reason that the period which elapses between the first removal of the forest growth and general cultivation, the native and emigrant possess nearly equal advantages, and each is subject to the seasoning or acclimating process, and the country, during this period, is generally sickly;—hence the constant necessity which exists, for a continuance of those hygienic rules and restrictions, which are requisite during this process. And from the various changes in the conditions that go to constitute climate, (and particularly with regard to temperature,) the acclimation to a northern country, where the extremes of temperature are so much greater, is much more difficult than in a southern one—hence the frequency in the repetitions of attacks of yellow fever, (besides their own peculiar diseases,) subjecting those it seizes to almost constant repetition on each visitation, as has been so frequently remarked in Philadelphia and elsewhere, while here this repetition is almost unknown, unless with such a change of climate as would be equivalent to a northern winter. It is for this reason that in the most equable climate, habituation to its condition, or acclimation, is most facilitated, and it is for the same reason that aggravated seasons of sick-

ness may be most reasonably expected, when there is the greatest difference between the winter and summer temperature, and my long experience in this country has fully corroborated the fact.

In the north the most active apparatus of the system is the respiratory, on account of the great demand for caloric to enable the inhabitants to withst nd the influence of cold on their systems, and hence the predominance of their pulmonary diseases over others. But on coming to the south, where this increased temperature is no longer required to preserve the integrity of his organization, this active demand on the respiratory system is diminished, and transferred to other systems, now called into more active operation—viz: the circulatory and gastro-intestinal—1st, from the direct effect of heat in awakening the great organ of the circulation, and its numerous branches into increased activity; and 2dly—from the immediate influence of this increased temperature on the skin, and through it on the gastro-intestinal surface, with which it is associated in the closest sympathetic connexion, and hence the result—fever and intestinal affections, the great outlets of human life in southern countries. The character of these latter affections—the cause and the mode of operation, will all point to a course of treatment that is as rational and satisfactory in theory, as it has been successful and conclusive from experience—it is the sedulous avoidance of each and every gradation of stimulation to organs that are now threatened with disorganization from its excess. I speak now especially to the unacclimated: when, however, the system has become worn down by the debilitating influence of a protracted continuance of an elevated temperature, an order of stimuli, then, of a permanent kind may be advisable. In an admission of this kind, however, I exclude the necessity of the diffusable stimulants of any kind whatever, ardent spirits especially.

It would detain you too long to enumerate all the diseases and conditions of life from which benefit has been received in exchanging a northern for a southern clime—let me refer to a few, the principal of them—as the pulmonary—cardiac and calculous affections—gout, rheumatism, scrofula—old chronic affections—for worn-down constitutions—for advanced age and delicate early life: and the advantage derived here has resulted from—the diffusion of excitement—its translation to the capillaries of the periphery, and the unlocking in that proportion, those numerous congestions and local actions which seem to have chained in their embrace the vitality of the system. The lessened demand for the exercise of those organs, (the pulmonary,) one of whose functions it is to increase the heat, and calling into activity others that are torpid or worn down, by the application of a mild and constant stimulus, (heat,) which, when duly accommodated to the wants of the system, supplies one of those natural demands without which we cannot live, resuscitates exhausted nature, and prolongs the period of human existence. History teems with the effects of such removals:—the ancient Romans of the higher latitudes of Italy, worn down by intemperance and age, were wont to emigrate to the warmer sun and purer air of the Mediterranean, and thus of adding many years to their lives. Such, also, we are told, has been the habit of the Portuguese, who emigrate to the Brazils, to renovate their exhausted constitutions. And such will be, as it has been to some extent, the habit in our own country, and the sunny clime and mild temperature of Louisiana, which has been proved to have been more favorable, especially to the extremes of human life, than *any other* portion of our common country, will be the ordinary resort of the aged—the delicate and the young—the decrepid and the afflicted—the diseased and worn down constitutions of other portions of the Union. Happy Louisiana! With a soil inexhaustible in fertility—with a position accessible, with unparalleled facility, by water and

land, at all times, from every portion of the globe,—with wealth and refine ment almost unrivalled, and with a climate that is equally friendly to the nativ population and the afflicted of other countries, you are destined to be the lon desired and envied Utopia of other nations.

# APPENDIX.

## TABLE A.

**Average monthly recession of the Mississippi from high water mark, at New Orleans—average for the years 1833-4-5-6.**

| | Inches | | Inches |
|---|---|---|---|
| JANUARY, | 7.90 | JULY, | 5.82 |
| FEBRUARY, | 5.13 | AUGUST, | 7.97 |
| MARCH, | 4.27 | SEPTEMBER, | 13.10 |
| APRIL, | 2.94 | OCTOBER, | 13.33 |
| MAY, | 4.63 | NOVEMBER, | 12.34 |
| JUNE | 4.72 | DECEMBER, | 8.84 |

Monthly fall of rain on an average of 4 last years.

| | Inches | | Inches |
|---|---|---|---|
| JANUARY, | 4.69 | JULY, | 5.63 |
| FEBRUARY, | 2.08 | AUGUST, | 5.24 |
| MARCH, | 2.64 | SEPTEMBER, | 5.79 |
| APRIL, | 5.31 | OCTOBER, | 1.29 |
| MAY, | 2.44 | NOVEMBER, | 3.10 |
| JUNE, | 6.17 | DECEMBER, | 2.97 |
| | 23.33 | | 23.33 |
| | | Total, | 47.35 |

## TABLE B.

**Of Temperatures of New Orleans by SEASONS.**

| AVERAGE Of 1833—'4—'5—'6 | Average at sunrise | Average at mid day | Average in the sun | Average at sun set | Average at 10 at night | Highest | Lowest | General Average | Range |
|---|---|---|---|---|---|---|---|---|---|
| Winter Average | 47.57 | 58.46 | | 54.38 | 1.69 | 72.66 | 28.66 | 53.17 | 41.66 |
| Spring Average | 62.10 | 70.52 | | 68.23 | 63.41 | 86. | 46. | 66.06 | 27.47 |
| Summer Average | 76.72 | 83.27 | 104.96 | 80.76 | 78.29 | 89. | 72. | 79.75 | 16.56 |
| Fall Average | 64.29 | 72.89 | | 70.63 | 67.13 | 83.66 | 34. | 68.73 | 32.61 |
| | | | | | | | | 66.93 | |

The temperature of Cairo in Egypt, at least 6 minutes north of us, is 73 degrees. The temperature *by calculation*, for the latitude of 30 degrees, would make it 76.66 deg. for the six warm months—it is actually but 72.91 deg.

## TABLE C.

**Table shewing the relative and progressive frequency of the various WINDS at New Orleans during the months of April, May, June, July, August and September of the last four years. Notices of the winds being usually taken thrice a day.**

| APRIL | | MAY | | JUNE | | JULY | | AUGUST | | SEPT. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S | 18.25 | S W | 22.25 | S W | 23.25 | S E | 16.25 | S W | 19.75 | N E | 18.50 |
| S E | 17.75 | S E | 11. | S E | 13. | S W | 13. | S E | 10.50 | S E | 13.25 |
| S W | 10.75 | N E | 10.75 | S | 8.25 | E | 9.75 | S | 9.25 | E | 12.25 |
| E | 8. | E | 6.50 | E | 7. | N W | 9.33 | N E | 9. | N | 10.50 |
| N W | 7.75 | N W | 6. | N W | 7. | S | 9.25 | N W | 9. | N W | 10.33 |
| N E | 7.00 | W | 5.50 | W | 5.25 | N E | 7.66 | N | 8.66 | S | 7. |
| W | 5.75 | W | 4.50 | N E | 5. | W | 7.33 | W | 8.50 | S W | 5.66 |
| N | 5.25 | N | 4. | N | 4.75 | N | 7. | E | 5.25 | W | 4.33 |

The following table shews the Winds according to their successive prevalency, during the above six warm months.

| | | | | | | |
|---|---|---|---|---|---|---|
| SW15.78 | SE14.46 | NE9.69 | S8.58 | NW8.23 | E8.12 | N6.69 | W5.94 |