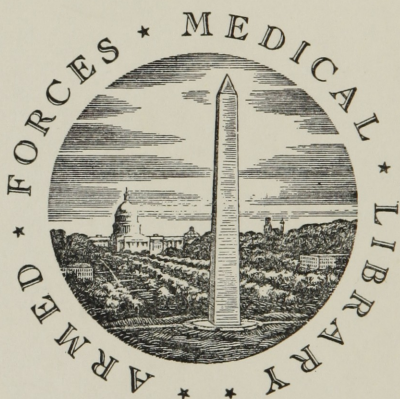


UNITED STATES OF AMERICA



FOUNDED 1836

WASHINGTON, D.C.

A
PHYSICAL AND TOPOGRAPHICAL
SKETCH

OF THE
MISSISSIPPI TERRITORY, LOWER LOUISIANA,
AND
A PART OF WEST FLORIDA :

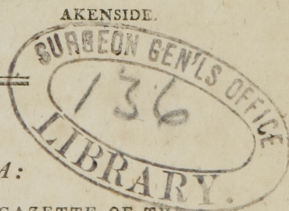
BY GARRETT ELLIOTT PENDERGRAST,
OF NATCHES ; MEMBER OF THE PHILADELPHIA MEDICAL
AND CHYMICAL SOCIETIES, AND OF THE AMERICAN
LINNEAN SOCIETY.

“ For man loves knowledge, and the beams of truth,
More welcome touch his understanding's eye,
Than all the blandishments of found his ear,
Than all of taste his tongue.”

PHILADELPHIA :

PRINTED AT THE OFFICE OF THE GAZETTE OF THE
UNITED STATES.

1803.



PHYSIC I. AND THERMODYNAMICS

KETCH

OF THE

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OF THE

AN
INAUGURAL DISSERTATION,
FOR
THE DEGREE
OF
DOCTOR OF MEDICINE,

SUBMITTED TO THE EXAMINATION OF THE

REV. JOHN ANDREWS, D. D.

PROVOST, PRO TEMPORE,

THE TRUSTEES, AND MEDICAL PROFESSORS OF THE UNIVER-
SITY OF PENNSYLVANIA, ON THE EIGHTH
DAY OF JUNE, 1803.

TO CASPAR WISTAR, M. D.

PROFESSOR OF ANATOMY, SURGERY, AND

MIDWIFERY,

IN THE UNIVERSITY OF PENNSYLVANIA,

ONE OF THE VICE PRESIDENTS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY, &c. &c.

THE FOLLOWING PAGES

ARE INSCRIBED, AS A MARK OF ESTEEM,

FOR

HIS INGENUOUS FRIENDSHIP, AS A MAN,

AND

HIS UNREMITTED EXERTIONS

IN THE

CAPACIOUS FIELD OF GENERAL SCIENCE,

AS A PHILOSOPHER ;

BY HIS FRIEND,

THE AUTHOR.

TO BENJAMIN S. BARTON, M. D.

PROFESSOR OF BOTANY, NATURAL HISTORY, AND MATERIA
MEDICA, IN THE UNIVERSITY OF PENNSYLVANIA, ONE OF
THE VICE PRESIDENTS OF THE AMERICAN PHILOSOPHI-
CAL SOCIETY, &c. &c.

SIR,

THAT your disposition to diffuse Natural
Knowledge, in your intercourse with your fellow
men, may ever secure you the fame which you now
enjoy, and which is the natural inheritance of such
talents as you possess, is the cordial wish of

Your friend,

G. E. PENDERGRAST.

TO JAMES WOODHOUSE, M. D.
PROFESSOR OF CHYMISTRY, IN THE UNIVERSITY OF
PENNSYLVANIA, &c. &c.

SIR,

IT affords me great pleasure, that I have it in my power thus publickly to tender you my respects, as well as to acknowledge my obligations for the much useful information derived from your publick as well as private instruction, and for the polite personal attention with which you have been pleased to honour me, while attending the Univerfity of this place.

G. E. PENDERGRAST.

TOPOGRAPHICAL SKETCH.

THE tract of country to which my observations are more particularly confined, and Medical Topography of which it is the object of these pages to illustrate, will be found between twenty-nine and thirty-two degrees twenty-eight minutes north latitude, and twelve and fourteen degrees west longitude, from the city of Washington, and includes what is called the Natches, the country of the Lower Chactaws, a part of West Florida, and a considerable portion of Lower Louisiana.

From the mouth of the Ohio to that of the Yazow river, in latitude thirty-two degrees twenty-eight minutes north, the inundated country on the Mississippi is little varied by high lands, except at the Iron Banks, and Chickafaw Bluffs; generally preserving a width of about sixty miles: but at these places, particularly the latter, it is contracted to half its usual width. The high country, inhabited by the Chactaws, on the east

side of the river, projects in at the last named place, and has its shores for many miles laved by the impetuous current of the Mississippi. To a person descending that river, the majestick rudeness of these hills breaking suddenly on his sight, after having been accustomed to see nothing but one uniform flat wilderness, grown over with cypresses, and brakes of the *arundo gigantea*, is truly pleasing. Added to this, the depression to which he is subject from an apprehension that he is going to an unhealthy climate, his solitary mode of travelling, together with the gloom which the atmosphere of this valley naturally induces, prepare him well to relish the variety which it affords. Indeed, it might almost be said, that his feelings on this occasion, are not dissimilar to those that agitated the breast of the immortal Columbus, when he viewed a new world.

The elevated country on the east side of the river, at this place, is extremely poor, producing only a few plants and those of a very arid complexion, such as the *quercus alba*, *sideroxylon*, *rhus*, *smilax*, *bryonia*, *rubus*, &c. But on the west side, nothing can be more strikingly opposite than the character which the face of the country assumes. After passing the valley, we come into a moderately elevated country, well watered, of a rich black soil, abounding in a great variety of vegetables; such as the *quercus rubra*, *quercus tinctoria*, *quercus alba*, *morus*, *ulmus*, *fraxinus*, *aristolochia frutescens*, *tilea*, *cornus florida*, *betula nigra*, *angelica lucida*, *juglans nigra*, *juglans alba*,

juglans hickory, acer striatum, acer rubrum, convallaria majalis, styrax, viburnum, staphylea, panax, acer saccharum, &c.*

It would appear that the Mississippi at this place, not only forms a boundary in point of soil; but is also a great line between a different zone of vegetables.

The country which we mentioned on the east side of the river, extends as far as the upper branches of the Tombigby, pretty uniformly composed of a tough clayey soil, interspersed, occasionally, with strips of good land, on the banks of some of the larger streams; and free from morasses in its whole extent.

Continuing south, the same character will apply to all the country between a parallel line drawn forty miles east from the Mississippi, and another twenty miles west from the Tombigby river, as far as the head waters of the Yazow, where the soil (with the exception of perhaps about one hundred miles in length, and thirty in breadth, which is extremely fertile, and swelled into healthful irregularities) changes its clayey complexion for one that is poor and sandy; preserving the same barren appearance all the way to the settlements on the Pearl river. An extent in width, from

* Captain Recce, an intelligent Savage, who had frequently travelled on the west side of the Mississippi, from the mouth of the Missouri to the Apalusaus, informed me, that in all his perigrinations to the southward, this was the last place he had ever seen the white walnut or sugar tree.

east to west, of near two hundred miles, and in length, from north to south, of about three degrees.

From what is called the Walnut Hills (a short distance below the mouth of the Yazow river, which we have made our northern boundary) to Baton Rouge, about one hundred and fifty miles above New Orleans, in keeping the course of the Mississippi, the hills, every ten or fifteen miles, recede from our view, affording extents of drowned country at the seasons of high water: and in many places, in more elevated situations, large lakes, supplied with water from springs that burst forth at the base of these hills, by which they are kept cool and limpid throughout the summer.

This interval between the river and high land, where there are no lakes, is generally grown over with the following trees and plants, viz. cupressus, populus, juglans pecan, quercus phellos, sambucus, fraxinus, acer rubrum, ac. glaucum, ac. negundo, several species of iris, palmetto, several species of amarillis and lilium, willow, and near the borders of the lakes and banks of the river, impenetrable brakes of the arundo gigantea.

At Baton Rouge, on both sides of the river, the face of the country assumes one uniform champaign appearance, the highest part of the earth being that directly on the banks of the river; so that when the river is swelled by the spring floods beyond its banks, the water, which escapes in this way, never gets back

to its parent stream; but discharges itself on the west into the bay of St. Bernard, and on the east into lake Ponchantran and the bay of Pensacola. However, the quantity which passes by these routs is much less now than it formerly was; on account of the embankments which the inhabitants have thrown up to protect their farms from the encroachments of the floods. A circumstance much to be lamented by the succeeding generations that are to inhabit these shores, at some remote future period; for, doubtless, had these embankments never been thrown up, and the river suffered to continue its progress of inundation and deposition, in a few centuries a sufficient quantity of accreted sediment would have been accumulated to have elevated the adjacent country beyond the reach of inundation; and a few years of vegetation would have been adequate to render it dry and healthful. But the present method which is practised of restraining it within its banks, appears to involve consequences sufficiently powerful to break the shackles which the Louisianians impose at the expense of the lives and happiness of so many of *Africa's injured sons*, and once more emancipate this great river from the control of its present masters. Is it not reasonable to suppose, that the bed of the river must become more filled than it otherwise would, were its waters and sediment suffered to escape; and that in time these banks will, though annually increased, be insufficient to withstand the superiour pressure of the water, and that nature will accomplish by her means what the Louisianians have so long been striving to execute by artificial? Nor do I conceive

this period of change so remotely distant, when I take into view some phenomena which have come under my observation since my residence in that country, together with others that have been related to me by gentlemen whose veracity I would be sorry to doubt.

In many places, the trees, instead of having their roots visibly diverging from their trunks, have them buried in the earth, that they look like posts that have been driven into the ground by some powerful engine; and, in some of them, where accidental breaches in the banks of the river have exposed their roots, we can mark the extent of sediment accumulated by each year's inundation, from distinct sets of horizontal roots that burst from little fissures in their bark at regular distances, one above another. The distance between these roots differs in different situations, but in low situations I think about three inches might be estimated as the mean standard. From counting the several sets of these roots, in one or two trees, I concluded, that the short period of twenty-five years was sufficient to produce six feet of ground.

It will, perhaps, be said, that my geological inferences have been drawn from too slender premises, and that the laws which govern vegetables are too fortuitous in their issue, to afford data sufficiently determinate for our application in accounting for phenomena so thickly enveloped in the mists of time. My answer is, that St. Pierre* was not ashamed to enu-

* St. Pierre's Studies of Nature.

merate trees among our best avenues to chronological truth, and that the corruscating rays of Darwin's genius have illuminated the subject of vegetation too profusely for us to rank them any longer among the senseless children of blind Nature's operations; but has assigned them to their proper place on the scale of creation, and has taught the lords of the universe to know that they are more closely allied to the humble vegetable than their ambition is wont to acknowledge. Darwin's genius, by investigating their economy, has placed them among the *capax rationis* ;* and Lavoisier has proven, that the vital principle in them depends on the same set of agents that give birth to it in the more elevated orders of animated nature. "Organization, sensation, spontaneous motion, and life, exist only at the surface of the earth, and in places exposed to light. We might affirm, that the flame of Prometheus's torch was the expression of a philosophical truth which did not escape the ancients. Without light, nature was lifeless, inanimate, and dead. A benevolent God, by producing light, has spread organization, sensation, and thought over the surface of the earth."

Twenty or thirty years ago, the lakes between Baton Rouge and the Natches were so intimately connected with each other, that the people used, in order to avoid the impetuous current of the Mississippi, to pass with their large row-boats from one to the other with facility; but now it would be impracticable,

* Darwin's Botanic Garden.

even with the smallest cypress canoe; and many places that were once the aqueous apartments of the sportive trout, dressed with gaudy hangings of the nymphæa nelumbo, are now become the habitations of different kinds of forest trees, and so perfectly free from moisture, that the traveller finds himself little incommoded in passing these infant tracts of country.

Baton Rouge, the last place at which we see high land, in descending the Mississippi, must, I think, originally have been the confines of the Mexican Gulf; for, if here we preserve an east course, we pretty generally find the same appearance in the complexion of the earth and its productions, that are to be met with at the entrance of lake Ponchantrain into the gulf; and I am inclined to believe, that the Amité, which now disembogues into lake Maurepas, about fifty miles below its confluence with the Iber Ville Bayau, originally had its mouth somewhere about the place where it now meets the Iber Ville, and not more than ten miles from the Mississippi. Nothing can exceed the dreariness of the country through which the Amité passes after its junction with the Iber Ville, or Bayau Manchac. Obstructed from disgoring its contents into the Maurepas by the swellings of that lake, which are frequent, situated as it is, with only the intervention of lake Ponchantrain between it and the gulf. The land is so low, and extremely level, that the smallest swell in any of these lakes, is sufficient to cause the water of these small streams to regurgitate; and it frequently happens that the water of Amité is many weeks rising to a height great enough to force its way out into

the Maurepas; during which time it inundates a very large tract of country. The frequent alternations which the earth and vegetables undergo at this place, in passing from a moist to a dry state, render it one of the greatest laboratories of noxious effluvia any where on the Mississippi. Certain it is, that it is more uniform the year round; for it continues to produce its effects long after the common causes in other situations have ceased to exist.

As the object of these pages is neither to instruct the geographer, nor amuse the traveller, but for the perusal of the pathologist, I will quit the banks of the Mississippi, and penetrate the interior of the country; with a view of developing such of its features as can, in a medical consideration, influence the salubrity of its atmosphere, without having any regard to minute geographical description.

A chain of hills, six or seven miles in width, and near two hundred miles in length, extends the whole distance between the mouth of the Yazow river and Baton Rouge, immediately in contact with the valley of the great river on the eastern side. They are of immense irregularity, and clad in such impenetrable brakes of the arundo gigantea, that they are almost inaccessible with man's most fertile inventions. The cane here, instead of being what Virgil has described,

Hic virides tenerâ prætexit arundine ripas
Mincius,.....

arrogates some of the prerogatives of the more stately

inhabitants of the forests. As if conscious of its supernatural stature and thickness, it here usurps the sovereignty, denying residence to all other citizens of the vegetable republic; but a few towering magnolias, the *liriodendron tulipifera*, *juglans nigra*, *laurus sassafras*, and, rarely, a solitary cotton tree, that on silken pinions, while in embryo, has strayed from the aqueous region that stimulated the passions of its parents to imbue it with vitality, and has settled here among strangers. Like Proteus's herds it has come here *visere montes*.

On the eastern side of these hills, their declivity is so extremely gradual, that, in travelling over them, we are insensible of the place of their termination. From giddy heights and deep hollows the face of the country is insensibly transmuted into a fertile plain, from fifteen to twenty miles in width; intersected with small streams of limpid water, rolling over beds of black sand, and meandering through rich forests, until they find some chasm in the hills by which they discharge themselves into the Mississippi. This beautiful plain, of at least two hundred miles in length from north to south, abounds in a great variety of trees, among which are the following, viz. *liriodendron tulipifera*, *gleditsia*, *morus*, several species of *ulmus* and *fraxinus*, *magnolia grandiflora*, *mag. auriculata*, *laurus sassafras*, *l. borbonia*, *juglans nigra*, *jug. hickory*, *fagus sylvatica*, *quercus nigra*, *q. rubra*, *q. alba*, *fagus castanea*, and among the more humble kind the *cornus florida*, *carica*, several species of *æsculus* and *ilex*, *rhus*,

fideroxylon, *fambucus*, *prunus alba*, *p. rubra*, &c. This beautiful assemblage of trees is dressed out with festoons of different kinds of *vitis*, and wreaths of different species of climbing plants, such as the *bignonia radicans*, *smilax*, *bryonia*, several species of *passiflora*, bastard foxglove, yellow jasmine, &c.

The happy climate which prevails throughout this delicious valley, added to the prolific quality of its soil, renders it perhaps one of the most desirable spots in North America. There are few tropical plants that could not find an asylum in this hospitable situation; and daily experience proves, that plants which have been brought here from more northern countries thrive with luxuriance. As it may not be uninteresting I will enumerate a few such as are commonly cultivated in their gardens, viz. *anguria*, *pepo*, *capficum*, *mala aurea*, *asparagus*, *rapum*, *daucus*, *mentha*, *melo*, *cucumis*, *brassica coleflora*, *cynara*, *pastinaca*, *brassica capitata*, *lactuca*, *spinachia*, *beta*, *nasturtium*, *cepa*, *apium dulce*, *raphanus*, *alium*, *porrum*, *pifum*, *cydonia*, *malus*, *pyrus*, *aurantium*, *ficus nigra*, *fragaria*, &c.

After we leave this valley, continuing east, the soil grows poorer, and the country somewhat more elevated, though not so much so as to give it a hilly appearance, until we meet with the open pine lands; where it assumes a character which it afterwards preserves for a width of near two hundred miles. Gently swelling sand plains, thinly covered with the *pinus tæda*, *p. lutea*, occasionally interrupted with copses of

the *cornus florida*, *æsculus flava*, *pyrus coronara*, with quantities of the *vitis campestris*, that attach themselves to their trunks and branches; and here and there a solitary horse chestnut, in places where the soil loses its sandy complexion, remote from the large savannas, and on the borders of the streams which wind through these gently swelling sand knolls.

As we approach the Tombigby river, or bay of Mobile, the country becomes more hilly, and the land richer; producing extensive forests of *juglans hickory*, *fraxinus*, *nyssa sylvatica*, *cornus florida*, *magnolia grandiflora*, *quercus nigra*, *juglans nigra*, *quercus semper virens*, *flammula rubra*, *myrica*, and, until we reach the river, when we once more meet with swamps covered with the *cupressus*, *populus deltoides*, *acer*, and bordered round with the *arundo gigantea*. This observation will apply more especially to the west side of the bay and river, the east being either sand plains, or, immediately contiguous to the bay, extensive salt marshes. A chain of islands, between twenty and twenty-five miles in length, and five or six in breadth, lie in the Tombigby river, above where it expands into what afterwards takes the name of Mobile Bay; which, for several months in the beginning of the warm season, are inundated by the freshes in that river.

The country between the town of Mobile and lake Ponchantrain, keeping the course of the gulf, for a width of thirty or forty miles, is uniformly level and dry;

interfected with a few small rivers that never overflow their banks. The whole space between these two places may be called an extensive sand plain. The only interruption to its champaign character is in one or two places almost contiguous to the gulf, where we meet with some curious mounds of oyster shells, of a very singular appearance. Some of them cover more than an acre in circumference; and are from fifty to sixty feet in height. When they are denudated of a black mould, of from six inches to one foot deep, which produces several kinds of small trees, such as the *cornus florida*, *prunus alba*, *myrica*, &c. The shells look as fresh as if they had not been there more than one or two years; and are so free from any kind of foreign matter, that the people of Mobile and New Orleans convert them into excellent lime, by only making small excavations in these banks, and placing fire in them. I have often, when looking at these mounds, been reminded of Ossian's feasts of shells. I can never believe they were thrown up here by accidental means; but have thought it more probable that they have been carried here by some of the nations of men that once inhabited these shores. When, perhaps, their religion had the building up of mounds as one of its rituals; or, what is still more reasonable, it was then their custom, when meeting in large bodies, for the purposes of war, or the more pacifick measures of their savage cabinets, to repair to the confines of the Mexican gulf, to make its shelly and finny inhabitants tributary to their wants at this interesting period; and that each of these mounds has been the receptacle for the feastings of a whole nation.

METEOROLOGICAL OBSERVATIONS.

AS the state of the weather may be considered as the most important of all agents in its influence over the diseases of a country, it will be proper for me, previous to my saying any thing of the diseases themselves, to make a few remarks on that subject.

The barometer at any time, and at any place in all this extensive tract of country, seldom rises higher than thirty inches forty-three lines, or falls lower than twenty-nine thirty-eight. The thermometer, contrary to what we would expect in a country like this, without any important hills in its whole extent, and in so low a latitude, is subject to very considerable vicissitudes. In

January it librates between.....	21 & 68
February.....	25 - 73
March.....	28 - 77
April.....	43 - 85
May.....	60 - 90
June.....	62 - 97
July.....	63 - 99
August.....	70 - 100
September.....	60 - 95
October.....	35 - 87
November.....	28 - 80
December.....	18 - 75

The only places that appear to have any considerable influence in altering the state of the mercury

from what might be estimated its main standard, are those on the banks of the Mississippi, where I am authorized to say I have generally seen it much lower than in interior situations, the most elevated not excepted. Where the sea-breeze prevails, we find little difficulty in accounting for this difference: but in situations remote from its influence, as on the banks of the Mississippi, four or five hundred miles from the sea, the solution of the phenomenon becomes more difficult—I would attempt its explanation in this way.—The Mississippi originating in such northern latitudes, and rolling down such a depth of water, requires so great a length of time to become equalized to the temperature of the countries through which it passes, that it must absorb a great deal of the circumambient caloric. Thus, at Natchez, even as late as the autumnal equinox, we find many portions of the Mississippi water much lower in temperature than that taken from small rivers in the neighbourhood of this place; a circumstance of which the boat-men on this river often avail themselves in the hottest weather, when they are in the habit of letting down some heavy vessel to the bottom of the river, to procure water of a low temperature for the purpose of mixing with their *taffia*. We are not surpris'd at this being the case, when we take into view the great opacity of the Mississippi water, owing to the immense quantities of sand suspended in it, which, by obstructing the solar rays in their passage through that fluid, and thus making the evaporatory process commence near

the surface, prevents the equalization of temperature, being as uniform as it otherwise would.

Another circumstance which we must take into consideration, is the immense quantities of caloric rendered latent in waters passing from the aqueous to the æreiform state. As the specifick gravity of air impregnated with water is much less than pure air, a vertical motion, or rising up of this aqueous air, and a rushing in of more dense air to fill up the vacuum, will be continually going on; and thus a large quantity of heat abstracted from the adjacent atmosphere. This observation receives considerable confirmation from situations such as have been mentioned enjoying more uniform breezes than other situations less contiguous to the river. In travelling on the banks of the Mississippi in places where it is inhabited, the smoke from the different plantations will be seen uniformly in a calm day inclining toward the river. How shall we account for this phenomenon, unless we attribute it to the air rushing in to restore the density of the atmosphere at that place where the continual process of rarification, by the means of humidity, is going on? Certainly it cannot depend on any specifick attraction between carbonick gas, and on the hydrogen and oxygen of water. We are aware here that the superiour gravity of carbonick air, would naturally dispose it to seek the lowest situations; but on the river this is not the case. Many situations back are much lower; and from Baton Rouge to the sea it is uniformly the case, that

the farther you recede from the Mississippi the lower the country becomes.

I am indebted to William Dumbar, Esq. of the Mississippi Territory, for the following observations.

The winds of this country, in the winter season, are extremely variable, seldom blowing three days successively from the same point. The north-west winds bring us the severest cold. It may be considered as a general rule, that all winds during winter, blowing from the east of the meridian, bring rain, and those from the west, dry weather. The east and south-east winds are not abundantly charged with moisture, as the opposite points are always the driest. The north-east, during this season, are most disagreeable, but seldom prevail for any length of time. The north wind brings (though rarely) sleet or snow. After three or four days damp, cloudy, and rainy weather, it suddenly clears up with a cold north-west wind, which blows frequently with great force during the first, and sometimes the second day of the change; the night being generally calm. After a like period of clear weather, of which the two first days are clear and freezing, and the other two fine, mild, and agreeable, with a morning's hoar frost, it revolves into the same circle of damp and rainy weather. This, with some exceptions, may be considered the general character of our winter season.

As the spring and summer advance, the winds blow chiefly from between south-east and south-west,

with frequent variations from all points of the compass. During the hot season, the winds are frequently remarked to follow the progress of the sun ; being found at north-east in the morning, and, shifting round, die away in the evening at South S. West. The summer evenings are generally still until between eight and nine o'clock, when a fine cool zephyr from the west or south-west sets in. The months of June and July compose the hottest part of the year. Daily refreshing showers of rain begin and continue throughout August, which diminish the excessive degree of heat that otherwise would prevail at this season. The weather continues showery through September, it settles fair, and there is yearly, almost without exception, six or seven weeks of the most delightful season imaginable.

Pluviometrical registers prove, that our greatest fall of rain is in April, September, July, May, and February ; and in point of quantity in each month nearly in the order they have been enumerated. The quantity which falls in a whole year, is somewhere about thirty-five inches.

MEDICAL REMARKS.

IT is generally not until the middle or latter end of June that the people settled on the Mississippi and Tombigby rivers begin to be visited by disease. The waters of these rivers, which had been rising for three or four months, now begin to recede from the face of the country, leaving huge surfaces of mud and water exposed to the influence of the solar heat which occasions an immense decomposition of water and vegetable substances, and consequently, a copious emission of a gas composed of some of the component principles of these articles. Some experiments performed on what I presume was a similar air gave the following results.

Having obtained in two separate bottles, in each above a pint of the air from the bottom of the Schuylkill, and from a marsh adjoining, it was subjected to the following tests to ascertain its nature.

FIRST BOTTLE.

EXPERIMENT I. A measure of the air was thrown over lime water in an eudeometer, which did not make it turbid.

EXPERIMENT II. A measure of pure nitrous air, obtained from the action of the nitrick acid on copper, being added to one measure of the air in the eudeometer, produced no absorption.

EXPERIMENT III. An ounce measure of oxygen air added to two of this air in the eudeometer of Volta could not be exploded by the electric spark. But upon adding a second measure of oxygen, the explosion was very loud, and one measure and a half disappeared. The air left in the eudeometer was found to contain carbonick acid, which was proved by passing one hundred parts through lime water, which was rendered turbid, and twelve and a half parts were absorbed, giving the quantity of the carbonick acid. After this last experiment the remaining air was highly inflammable, burning for a considerable time.

SECOND BOTTLE.

The air in this bottle was found a little different from the first, being collected in another place, a little distance off. The first and second experiments turned out as before; so did the third.

EXPERIMENT IV. Two measures of oxygen and two of the air being put into the eudeometer of Volta, being fired by the electric spark, only half a measure was absorbed, with a less explosion than before.

EXPERIMENT V. To two measures of the air were added two and a half of oxygen. As before, they now exploded by the spark violently, and one and a half measures were absorbed. The portion of carbonick acid was the twenty-fifth part; the remainder still burning as at first, i. e. before any experiments were made.

It is not my intention, in this place, to enter upon an inquiry into the relation which marsh effluvia bear to the health of the inhabitants of places where it abounds. So many gentlemen have wreathed their brows with the laurels of ingenuity, by volunteering their services in this gaseous investigation, that the simple enumeration of their several names, would be exceeding the limits which time has prescribed to this essay. Yet had it been within my power to give an analysis of the *atmosphere* of this country, I certainly would have done it; as it doubtless would be an important consideration in the pathology of its diseases; especially at this enlightened era in science,—when the torch of Philosophy, guided by the hand of Chemistry, is illuminating the most intricate arcana of nature, in spite of the massy barriers erected by ages of superstition and ignorance.

The low temperature of our nights in May, June, July, and August, owing to heavy dews, together with, perhaps, the want of a sufficient quantity of oxygen in the atmosphere, owing to the great admixture of hydro-carbonick air with it, accumulates such a surface of excitability, and the stimulus of the solar heat during the day is so excessive, that the sanguiferous system, unable any longer to resist, begins to take an unhealthy action, evincing its morbid appearances generally in some of the following forms, viz.—Intermittent, mild remittent, and yellow remittent fevers, cholera, diarrhœa, dysenteria, hepatitis, splenitis, or tumor-splenis, urticaria, phrenitis, erysipelas, op-

thalmia, icterus, and different kinds of hydropick affections.

In October, the yellow remittent fever, which is frequently epidemick in some of our most unhealthy situations (such as New Orleans) during the summer, now begins to disappear; and the only diseases to be met with are, mild remittents, dysenteries, obstructions of the chylopoetic viscera, and a few intermittents. But by no means in the proportion that has hitherto been supposed. While in the service of the United States, I kept a register of the sick at head-quarters, Mulberry Vale, five miles east of the Mississippi, and, as well as I am able to recollect at present, out of three hundred men whose health I had under my care during the summer and fall, there never were more than ten cases of intermittents, in one day's report, while the number of remittents have often amounted to more than fifty.

Those who have suffered from the diseases of the warm season, by the middle of November, from the fine weather which prevails at this season, begin to regain their strength, and usual vivacity; and from this time until the first of May, the people of this country enjoy as good health as perhaps any of their more northern neighbours. Added to a more moderate climate during this period, their systems have the advantage of being worn down to a reduced state of excitability, which enables them to resist the morbid tendency of the few catarrhal affec-

tions which occasionally appear at this time. Thus it is a rare occurrence for a cynanche to become dangerous; or for a pneumonia to terminate in either vomica pulmonum, phthisis, or death. Original typhus I believe, has seldom or never appeared among us; and the few cases of typhus which I have seen have always succeeded neglected or ill treated yellow remittent fever, pneumonia. Podagra and rheumatisms are almost unknown among us. Even the soldiers of the first, second, third, and fourth regiments, who had served under generals St. Clair, Harmer, and the immortal Wayne, in their several campaigns carried on against the savages in the inhospitable climate of the lakes and North-western Territory, have since their arrival in this country become quite free from any rheumatick affection. Notwithstanding that, many of them when they first landed at the Natchez were so ill with it, they were unable to perform the ordinary duties of camp.

To the diseases that have been mentioned as being peculiar to this country, we may add a few others which observe no particular seasons of approach, viz. diabetes, frambœsia, lepra, and trismus nascentium. This last complaint is very common in the low country from Baton Rouge to the sea, insomuch that it is a very difficult thing for the planters to raise young negroes: and notwithstanding that they take the precaution of always giving them some mild cathartick shortly after birth, at least five eighths of all that are born die of this complaint within the first

two weeks after birth. That the children of this part of the country should be so subject to this disease while those of Natches and New Telleciana immediately adjoining, are free from it, is curious. With Dr. Moseley. I would attribute it to the greater inhumanity of the Spanish and French planters exercised over the parents of these unfortunate children, and to the want of proper attention in the nursing of the child itself.

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