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MEDICAL INQUIRIES

AND

OBSERVATIONS.

BY BENJAMIN RUSH, M. D.

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AND OF CLINICAL PRACTICE, IN THE UNIVERSITY
OF PENNSYLVANIA.

IN FOUR VOLUMES

VOL. II

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AN ACCOUNT

OF THE

CLIMATE OF PENNSYLVANIA,

AND ITS

INFLUENCE UPON THE HUMAN BODY.

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CHAPTER I
THE FOUNDING OF THE NATION
The first step in the formation of the United States was the signing of the Declaration of Independence in 1776. This document declared the colonies' separation from Great Britain and their status as free and independent states. The signing took place in Philadelphia, Pennsylvania, at the Second Continental Congress.

THE DECLARATION OF INDEPENDENCE
The Declaration of Independence was a formal statement of the colonies' reasons for separating from Great Britain. It was signed by representatives from twelve of the thirteen colonies. The document is one of the most important in American history, as it established the principles of self-government and individual rights that would guide the new nation.

THE CONSTITUTION
The next step in the formation of the United States was the signing of the Constitution in 1787. This document established the framework for the federal government and the relationship between the states and the national government. The signing took place in Philadelphia, Pennsylvania, at the Constitutional Convention.



AN ACCOUNT
OF THE
CLIMATE OF PENNSYLVANIA, &c.

IN order to render the observations upon the epidemic diseases which compose the following volumes more useful, it will be necessary to prefix to them a short account of the climate of Pennsylvania, and of its influence upon the human body. This account may perhaps serve further, to lead to future discoveries, and more extensive observations, upon this subject.

The state of Pennsylvania lies between $39^{\circ} 43' 25''$, and 42° north latitude, including, of course, $2^{\circ} 16' 35''$, equal to 157 miles from its southern to its northern boundary. The western extremity of the state is in the longitude of $5^{\circ} 23' 40''$, and the eastern, is that of 27° from the meridian of Philadelphia, comprehending in a due west course 311

miles, exclusive of the territory lately purchased by Pennsylvania from the United States, of which as yet no accurate surveys have been obtained. The state is bounded on the south by part of the state of Delaware, by the whole state of Maryland, and by Virginia to her western extremity. The last named state, the territory lately ceded to Connecticut, and Lake Erie, (part of which is included in Pennsylvania) form the western and north-western boundaries of the state. Part of New-York, and the territory lately ceded to Pennsylvania, with a part of Lake Erie, compose the northern, and another part of New-York, with a large extent of New-Jersey (separated from Pennsylvania by the river Delaware), compose the eastern boundaries of the state. The lands which form these boundaries (except a part of the states of Delaware, Maryland, and New-Jersey) are in a state of nature. A large tract of the western and north-eastern parts of Pennsylvania are nearly in the same uncultivated situation.

The state of Pennsylvania is intersected and diversified with numerous rivers and mountains. To describe, or even to name them all, would far exceed the limits I have proposed to this account of our climate. It will be sufficient only to remark, that one of these rivers, viz. the Susquehannah,

begins at the northern boundary of the state, twelve miles from the river Delaware, and winding several hundred miles, through a variegated country, enters the state of Maryland on the southern line, fifty-eight miles westward of Philadelphia; that each of these rivers is supplied by numerous streams of various sizes; that tides flow in parts of two of them, viz. in the Delaware and Schuylkill; that the rest rise and fall alternately in wet and dry weather; and that they descend with great rapidity, over prominent beds of rocks in many places, until they empty themselves into the bays of Delaware and Chesapeak on the east, and into the Ohio on the western part of the state.

The mountains form a considerable part of the state of Pennsylvania. Many of them appear to be reserved as perpetual marks of the original empire of nature in this country. The Allegany, which crosses the state about two hundred miles from Philadelphia, in a north, inclining to an eastern course, is the most considerable and extensive of these mountains. It is called by the Indians the back-bone of the continent. Its height, in different places, is supposed to be about 1,300 feet from the adjacent plains.

The soil of Pennsylvania is diversified by its vicinity to mountains and rivers. The valleys and bottoms consist of a black mould, which extends from a foot to four feet in depth. But in general a deep clay forms the surface of the earth. Immense beds of limestone lie beneath this clay in many parts of the state. This account of the soil of Pennsylvania is confined wholly to the lands on the east side of the Allegany mountain. The soil on the west side of this mountain, shall be described in another place.

The city of Philadelphia lies in the latitude of $39^{\circ} 57'$, in longitude $75^{\circ} 8'$ from Greenwich, and fifty-five miles west from the Atlantic ocean.

It is situated about four miles due north from the conflux of the rivers Delaware and Schuylkill. The buildings, which consist chiefly of brick, extend nearly three miles north and south along the Delaware, and above half a mile due west towards the Schuylkill, to which river the limits of the city extend, the whole of which includes a distance of two miles from the Delaware. The land near the rivers, between the city and the conflux of the rivers, is in general low, moist, and subject to be overflowed. The greatest part of it is meadow

ground. The land to the northward and westward, in the vicinity of the city, is high, and in general well cultivated. Before the year 1778, the ground between the present improvements of the city, and the river Schuylkill, was covered with woods. These, together with large tracts of wood to the northward of the city, were cut down during the winter the British army had possession of Philadelphia. I shall hereafter mention the influence which the cutting down of these woods, and the subsequent cultivation of the grounds in the neighbourhood of the city, have had upon the health of its inhabitants.

The mean height of the ground on which the city stands, is about forty feet above the river Delaware. One of the longest and most populous streets in the city rises only a few feet above the river. The air at the north is much purer than at the south end of the city; hence the lamps exhibit a fainter flame in its southern, than its northern parts.

The tide of the Delaware seldom rises more than six feet. It flows four miles in an hour. The width of the river near the city is about a mile.

The city, with the adjoining districts of Southwark and the Northern Liberties, contains between 90 and 100,000 inhabitants.

From the accounts which have been handed down to us by our ancestors, there is reason to believe that the climate of Pennsylvania has undergone a material change. Thunder and lightning are less frequent, and the cold of our winters and heat of our summers are less uniform, than they were forty or fifty years ago. Nor is this all. The springs are much colder, and the autumns more temperate than formerly, insomuch that cattle are not housed so soon by one month as they were in former years. Within the last eight years, there have been some exceptions to part of these observations. The winter of the year 1779-80, was uniformly and uncommonly cold. The river Delaware was frozen near three months during this winter, and public roads for waggons and sleighs connected the city of Philadelphia in many places with the Jersey shore. The thickness of the ice in the river near the city, was from sixteen to nineteen inches, and the depth of the frost in the ground was from four to five feet, according to the exposure of the ground, and the quality of the soil. This extraordinary depth of the frost in the earth, compared with its depth in more nor-

thern and colder countries, is occasioned by the long delay of snow, which leaves the earth without a covering during the last autumnal and the first winter months. Many plants were destroyed by the intenseness of the cold during this winter. The ears of horned cattle and the feet of hogs exposed to the air, were frost-bitten; squirrels perished in their holes, and partridges were often found dead in the neighbourhood of farm houses. The mercury in January stood for several hours at 5° below 0, in Fahrenheit's thermometer; and during the whole of this month (except on one day), it never rose in the city of Philadelphia so high as to the freezing point.

The cold in the winter of the year 1783-4 was as intense, but not so steady, as it was in the winter that has been described. It differed from it materially in one particular, viz. there was a thaw in the month of January, which opened all our rivers for a few days.

The summer which succeeded the winter of 1779-80, was uniformly warm. The mercury in the thermometer, during this summer, stood on one day (the 15th of August) at 95° , and fluctuated between 93° , and 80° for many weeks. The thermometer, in every reference that has been, or

shall be made to it, stood in the shade in the open air.

I know it has been said by many old people, that the winters in Pennsylvania are less cold, and the summers less warm, than they were forty or fifty years ago. The want of thermometrical observations before, and during those years, renders it difficult to decide this question. Perhaps the difference of clothing and sensation between youth and old age, in winter and summer, may have laid the foundation of this opinion. I suspect the mean temperature of the air in Pennsylvania has not altered, but that the principal change in our climate consists in the heat and cold being less confined than formerly to their natural seasons. I adopt the opinion of Doctor Williamson* respecting the diminution of the cold in the southern, being occasioned by the cultivation of the northern parts of Europe; but no such cultivation has taken place in the countries which lie to the north-west of Pennsylvania, nor do the partial and imperfect improvements which have been made in the north-west parts of the state, appear to be sufficient to lessen the cold, even in the city of Philadelphia. I have been able to collect no facts, which dispose

* American Philosophical Transactions, vol. I.

me to believe that the winters were colder before the year 1740, than they have been since. In the memorable winter of 1739-40, the Delaware was crossed on the ice, in sleighs, on the 5th of March, old style, and did not open till the 13th of the same month. The ground was covered during this winter with a deep snow, and the rays of the sun were constantly obscured by a mist, which hung in the upper regions of the air. In the winter of 1779-80, the river was navigable on the 4th of March; the depth of the snow was moderate, and the gloominess of the cold was sometime suspended for a few days by a cheerful sun. From these facts, it is probable the winter of 1739-40 was colder than the winter of 1779-80.

The winter of 1804-5 exhibited so many peculiarities that it deserves a place in the history of the climate of Pennsylvania. The navigation of the Delaware was obstructed on the 18th of December. The weather partook of every disagreeable and distressing property of every cold climate on the globe. These were intense cold, deep snows, hail, sleet, high winds, and heavy rains. They generally occurred in succession, but sometimes most of them took place in the course of four and twenty hours. A serene and star-light evening, often preceded a tempestuous day. The mercury

stood for many days, in Philadelphia, at 4° and 6° above 0 in Fahrenheit's thermometer. The medium depth of the snow was two feet, but from its fall being accompanied with high winds, its height in many places was three and four feet, particularly in roads, which it rendered so impassable, as to interrupt business and social intercourse, in many parts of the state. From the great depth of the snow, the ground was so much protected from the cold, that the frost extended but six inches below its surface. The newspapers daily furnished distressing accounts of persons perishing with the cold by land and water, and of shipwrecks on every part of the coast of the United States. Poultry were found dead, or with frozen feet, in their coops in many places.

This intense cold was not confined to Pennsylvania. In Norfolk, in Virginia, the mercury stood at 18° above 0 on the 22d of January. At Lexington, in Kentucky, it stood at 0 on the 21st of the same month. In Lower Canada the snow was seven feet in depth, which is three feet deeper than in common years. And such was the quantity of ice collected in the northern seas, that a ship was destroyed, and several vessels injured, by large masses of it, floating between the 41st and 42d degrees of north latitude.

Great fears were entertained of an inundation in Pennsylvania, from a sudden thaw of the immense quantities of snow and ice that had accumulated during the winter, in every part of the state ; but happily they both dissolved away so gradually, as scarcely to injure a bridge or a road. On the 28th of February the Delaware was navigable, and on the 2d of March no ice was to be seen in it.

Having premised these general remarks, I proceed to observe, that there are seldom more than twenty or thirty days in summer or winter, in Pennsylvania, in which the mercury rises above 80° in the former, or falls below 30° in the latter season. Some old people have remarked, that the number of *extremely* cold and warm days in successive summers and winters, bears an exact proportion to each other. This was strictly true in the years 1787 and 1788.

The warmest part of the day in summer is at two, in ordinary, and at three o'clock in the afternoon, in extremely warm weather. From these hours, the heat gradually diminishes till the ensuing morning. The coolest part of the four and twenty hours, is at the break of day. There are seldom more than three or four nights in a summer in which the heat of the air is nearly the same as in

the preceding day. After the warmest days, the evenings are generally agreeable, and often delightful. The higher the mercury rises in the day time, the lower it falls the succeeding night. The mercury at 80° generally falls to 68° , while it descends, when at 60° , but to 56° . The disproportion between the temperature of the day and night, in summer is always greatest in the month of August. The dews at this time are heavy in proportion to the coolness of the evening. They are sometimes so considerable as to wet the clothes; and there are instances in which marsh-meadows, and even creeks, which have been dry during the summer, have been supplied with their usual waters from no other source, than the dews which have fallen in this month, or in the first weeks of September.

There is another circumstance connected with the one just mentioned, which contributes very much to mitigate the heat of summer, and that is, it seldom continues more than two or three days without being succeeded with showers of rain, accompanied sometimes by thunder and lightning, and afterwards by a north-west wind, which produces a coolness in the air that is highly invigorating and agreeable.

The warmest weather is *generally* in the month of July. But intensely warm days are often felt in May, June, August, and September. In the annexed table of the weather for the year 1787, there is an exception to the first of these remarks. It shows that the mean heat of August was greater by a few degrees than that of July.

The transitions from heat to cold are often very sudden, and sometimes to very distant degrees. After a day in which the mercury has stood at 86° and even 90° , it sometimes falls, in the course of a single night, to the 65^{th} , and even to the 60^{th} degree, insomuch that fires have been found necessary the ensuing morning, especially if the change in the temperature of the air has been accompanied by rain and a south-east wind. In a summer month, in the year 1775, the mercury was observed to fall 20° in an hour and a half. There are few summers in which fires are not agreeable during some parts of them. My ingenious friend, Mr. David Rittenhouse, whose talent for accurate observation extends alike to all subjects, informed me, that he had never passed a summer, during his residence in the country, without discovering frost in every month of the year, except July.

The weather is equally variable in Pennsylvania during the greatest part of the winter. The mercury fell from 37° to $4\frac{1}{2}^{\circ}$ below 0 in four and twenty hours, between the fourth and fifth of February, 1788. In this season nature seems to play at cross purposes. Heavy falls of snow are often succeeded in a few days by a general thaw, which frequently in a short time leaves no vestige of the snow. The rivers Delaware, Schuylkill, and Susquehannah have sometimes been frozen (so as to bear horses and carriages of all kinds) and thawed so as to be passable in boats, two or three times in the course of the same winter. The ice is formed for the most part in a gradual manner, and seldom till the water has been previously chilled by a fall of snow. Sometimes its production is more sudden. On the night of the 31st of December, 1764, the Delaware was completely frozen over between ten o'clock at night and eight the next morning, so as to bear the weight of a man. An unusual vapour like a fog was seen to rise from the water, in its passage from a fluid to a solid state.

This account of the variableness of the weather in winter, does not apply to every part of Pennsylvania. There is a line about the 41° of the state, beyond which the winters are steady and

regular, insomuch that the earth there is seldom without a covering of snow during the three winter months. In this line the climate of Pennsylvania forms a union with the climate of the eastern and northern states.

The time in which frost and ice begin to show themselves in the neighbourhood of Philadelphia, is generally about the latter end of October or the beginning of November. But the intense cold seldom sets in till about the 20th or 25th of December; hence the common saying, "as the day lengthens, the cold strengthens." The coldest weather is commonly in January. The navigation of the river Delaware, after being frozen, is seldom practicable for large vessels, before the first week in March.

As in summer there are often days in which fires are agreeable, so there are sometimes days in winter in which they are disagreeable. Vegetation has been observed in all the winter months. Garlic was tasted in butter in January, 1781. The leaves of the willow, the blossoms of the peach tree, and the flowers of the dandelion and the crocus, were all seen in February, 1779; and I well recollect, when a school-boy, to have seen an apple orchard in full bloom, and small ap-

ples on many of the trees, in the month of December.

A cold day in winter is often succeeded by a moderate evening. The coldest part of the four and twenty hours, is generally at the break of day.

In the most intense cold which has been recorded in Philadelphia, within the last twenty years, the mercury stood at 5° below 0. But it appears from the accounts published by Messieurs Mason and Dixon, in the 58th volume of the Transactions of the Royal Society of London, that the mercury stood at 22° below 0, on the 2nd of January, 1767, at Brandywine, about thirty miles to the westward of Philadelphia. They inform us, that on the 1st of the same month, the mercury stood at 20° , and on the day before at 7° below 0. I have to lament that I am not able to procure any record of the temperature of the air in the same year in Philadelphia. From the variety in the height and quality of the soil, and from the difference in the currents of winds and the quantity of rain and snow which fall in different parts of the state, it is very probable this excessive cold may not have extended thirty miles from the place where it was first perceived.

The greatest degree of heat upon record in Philadelphia, is 95° .

The standard temperature of the air in the city of Philadelphia is $52\frac{1}{2}^{\circ}$, which is the temperature of our deepest wells, as also the mean heat of our common spring water.

The spring in Pennsylvania is generally less pleasant than in many other countries. In March the weather is stormy, variable, and cold. In April, and sometimes in the beginning of May, it is moist, and accompanied by a degree of cold which has been called *rawness*, and which, from its disagreeable effects upon the temper, has been called the *sirocco* of this country. From the variable nature of the weather in the spring, vegetation advances very differently in different years. The colder the spring, the more favourable it proves to the fruits of the earth. The hopes of the farmer from his fruit-trees in a warm spring are often blasted by a frost in April and May. A fall of snow is remembered with regret by many of them, on the night between the 3rd and 4th of May, in the year 1774; also on the morning of the 8th of May, 1803. Such was its quantity on the latter day, that it broke down the limbs of many poplar trees. This effect was ascribed to its not being

accompanied with any wind. The colder the winter, the greater delay we generally observe in the return of the ensuing spring.

Sometimes the weather during the spring months is cloudy and damp, attended occasionally with a gentle fall of rain resembling the spray from a cataract of water. A day of this kind of weather is called, from its resemblance to a damp day in Great-Britain, "an English day." This damp weather seldom continues more than three or four days. The month of May, 1786, will long be remembered, for having furnished a very uncommon instance of the absence of the sun for fourteen days, and of constant damp or rainy weather.

The month of June is the only month in the year which resembles a spring month in the southern countries of Europe. The weather is then generally temperate, the sky is serene, and the verdure of the country is universal and delightful.

The autumn is the most agreeable season in the year in Pennsylvania. The cool evenings and mornings, which generally begin about the first week in September, are succeeded by a moderate temperature of the air during the day. This kind of weather continues with an increase of cold

scarcely perceptible, till the middle of October, when the autumn is closed by rain, which sometimes falls in such quantities as to produce destructive freshes in the rivers and creeks, and sometimes descends in gentle showers, which continue, with occasional interruptions by a few fair days, for two or three weeks. The rains are the harbingers of the winter; and the Indians have long ago taught the inhabitants of Pennsylvania, that the degrees of cold during the winter, are in proportion to the quantity of rain which falls during the autumn*.

From this account of the temperature of the air in Pennsylvania, it is evident that there are seldom

* I cannot help agreeing with Mr. Kirwan, in one of his remarks upon the science of meteorology, in the preface to his estimate of the temperature of different latitudes. "This science, (says he), if brought to perfection, would enable us at least to foresee those changes in the weather which we could not prevent. Great as is the distance between such knowledge and our own present attainments, we have no reason to think it above the level of the powers of the human mind. The motions of the planets must have appeared as perplexed and intricate to those who first contemplated them; yet, by persevering industry, they are now known to the utmost precision. The present is (as the great Leibnitz expresses it) in every case pregnant

more than four months in which the weather is agreeable without a fire.

In winter the winds generally come from the north-west in *fair*, and from the north-east in *wet* weather. The north-west winds are uncommonly dry as well as cold. It is in consequence of the violent action of these winds that trees have uniformly a thicker and more compact bark on their northern than on their southern exposures. Even brick houses are affected by the force and dryness of the north-west winds: hence it is much more difficult to demolish the northern than the southern walls of an old brick house. This fact was communicated to me by an eminent bricklayer in the city of Philadelphia.

The winds in fair weather in the spring, and in warm weather in the summer, blow from the south-west and from west-north-west. The *raw* air before-mentioned comes from the north-east. The south-west winds likewise usually bring with

“with the future, and the connexion must be found by long
“and attentive observation.”

The influence which the perfection of this science must have upon health, agriculture, navigation, and commerce, is too obvious to be mentioned.

them those showers of rain in the spring and summer which refresh the earth. They moreover moderate the heat of the weather, provided they are succeeded by a north-west wind. Now and then showers of rain come from the west-north-west.

There is a common fact connected with the account of the usual winds in Pennsylvania, which it may not be improper to mention in this place. While the clouds are seen flying from the south-west, the *scud*, as it is called, or a light vapour, is seen at the same time flying below the clouds from the north-east.

The moisture of the air is much greater than formerly, occasioned probably by the exhalations which in former years fell in the form of snow, now descending in the form of rain. The depth of the snow is sometimes between two and three feet, but in general seldom exceeds between six and nine inches.

Hail frequently descends with snow in winter. Once in four or five years large and heavy showers of hail fall in the spring and summer. They generally run in narrow veins (as they are called)

of thirty or forty miles in length, and two or three miles in breadth. The heaviest shower of hail that is remembered in Philadelphia, did not extend in breadth more than half a mile north and south. Some of the stones weighed half an ounce. The windows of many houses were broken by them. This shower fell in May, 1783.

From sudden changes in the air, rain and snow often fall together, forming what is commonly called *sleet*.

In the uncultivated parts of the state, the snow sometimes lies on the ground till the first week in April. The backwardness of the spring has been ascribed to the passage of the air over the undissolved beds of snow and ice which usually remain, after the winter months are past, on the north-west grounds and waters of the state, and of the adjacent country.

The dissolution of the ice and snow in the spring is sometimes so sudden as to swell the creeks and rivers in every part of the state to such a degree, as not only to lay waste the hopes of the husbandman from the produce of his lands, but in some instances to sweep his barns, stables, and even his

dwelling house into their currents*. The wind, during a general thaw, comes from the south-west or south-east.

* The following account of the thaw of the river Susquehannah, in the spring of 1784, was published by the author in the *Columbian Magazine*, for November, 1786. It may serve to illustrate a fact related formerly in the history of the winters in Pennsylvania, as well as to exhibit an extraordinary instance of the destructive effects of a sudden thaw.

“The winter of 1783-4 was uncommonly cold, inso-much that the mercury in Fahrenheit’s thermometer stood several times at 5 degrees below 0. The snows were frequent, and, in many places, from two to three feet deep, during the greatest part of the winter. All the rivers in Pennsylvania were frozen, so as to bear waggons and sleds with immense weights. In the month of January a thaw came on suddenly, which opened our rivers so as to set the ice a-driving, to use the phrase of the country. In the course of one night, during the thaw, the wind shifted suddenly to the north-west, and the weather became intensely cold. The ice, which had floated the day before, was suddenly obstructed; and in the river Susquehannah, the obstructions were formed in those places where the water was most shallow, or where it had been accustomed to fall. This river is several hundred miles in length, and from half a mile to a mile and a half in breadth, and winds through a hilly, and in many places a fertile and highly cultivated country. It has as yet a most difficult communication with our bays and the sea, occasioned by the number and height of the falls which occur near the mouth of the river. The

The air, when dry in Pennsylvania, has a peculiar elasticity, which renders the heat and cold

ice in many places, especially where there were falls, formed a kind of dam of a most stupendous height. About the middle of March our weather moderated, and a thaw became general. The effects of it were remarkable in all our rivers; but in none so much as in the river I have mentioned. I shall therefore endeavour in a few words to describe them. Unfortunately the dams of ice did not give way all at once, nor those which lay nearest to the mouth of the river, first. While the upper dams were set afloat by the warm weather, the lower ones, which were the largest, and in which, of course, the ice was most impacted, remained fixed. In consequence of this, the river rose in a few hours, in many places, above 30 feet, rolling upon its surface large lumps of ice, from 10 to 40 cubic feet in size. The effects of this sudden inundation were terrible. Whole farms were laid under water. Barns, stables, horses, cattle, fences, mills of every kind, and, in one instance, a large stone house, 40 by 30 feet, were carried down the stream. Large trees were torn up by the roots; several small islands, covered with woods, were swept away, and not a vestige of them was left behind. On the barns which preserved their shape, in some instances, for many miles were to be seen living fowls; and, in one dwelling, a candle was seen to burn for some time, after it was swept from its foundation. Where the shore was level, the lumps of ice, and the ruins of houses and farms, were thrown a quarter of a mile from the ordinary height of the river. In some instances, farms were ruined by the mould being swept from them by the cakes of ice, or by depositions of sand; while others were enriched by large depositions of mud. The damage, upon

less insupportable than the same degrees of both are in moister countries. It is in those cases only when summer showers are not succeeded by north-west winds, that the heat of the air becomes oppressive and distressing, from being combined with moisture.

From tradition, as well as living observation, it is evident, that the waters in many of the creeks in Pennsylvania have diminished considerably within the last fifty years. Hence many mills, erected upon large and deep streams of water, now stand idle in dry weather; and many creeks, once navigable in large boats, are now impassable even in canoes. This diminution of the waters has been

the whole, done to the state of Pennsylvania by this fresh, was very great. In most places it happened in the day time, or the consequences must have been fatal to many thousands."

"I know of but one use that can be derived from recording the history of this inundation. In case of similar obstructions of rivers, from the causes such as have been described, the terrible effects of their being set in motion by means of a general thaw may in part be obviated, by removing such things out of the course of the water and ice as are within our power; particularly cattle, hay, grain, fences, and farming utensils of all kinds."

ascribed to the application of a part of them to the purpose of making meadows.

The mean elevation of the barometer in Philadelphia, is about 30 inches. The variations in the barometer are very inconsiderable in the greatest changes of the weather, which occur in the city of Philadelphia. During the violent and destructive storm which blew from the south-west on the 11th of November, 1788, it suddenly fell from 30 to 29 $\frac{3}{10}$. Mr. Rittenhouse informs me, that long and faithful observations have satisfied him, that the alterations in the height of the mercury in the barometer do not precede but always succeed changes in the weather. It falls with the south and south-west, and rises with the north and north-west winds.

The quantity of water which falls in rain and snow, one year with another, amounts to from 24 to 36 inches. But to complete the account of variable qualities in the climate, it will be necessary to add, that our summers and autumns are sometimes marked by a *deficiency*, and sometimes by an *excessive* quantity of rain. The summer and autumn of 1782 were uncommonly dry. Near two months elapsed without a single shower of rain. There were only two showers in the whole

months of September and October. In consequence of this dry weather, there was no second crop of hay. The Indian corn failed of its increase in many places, and was cut down for food for cattle. Trees newly planted, died. The pasture fields not only lost their verdure, but threw up small clouds of dust when agitated by the feet of men, or beasts. Cattle in some instances were driven many miles to be watered, every morning and evening. It was remarked during this dry weather, that the sheep were uncommonly fat, and their flesh well tasted, while all the other domestic animals languished from the want of grass and water. The earth became so inflammable in some places, as to burn above a foot below its surface. A complete consumption of the turf by an accidental fire kindled in the adjoining state of New-Jersey, spread terror and distress through a large tract of country. Springs of water and large creeks were dried up in many parts of the state. Rocks appeared in the river Schuylkill, which had never been observed before, by the oldest persons then alive. On one of them were cut the figures 1701. The atmosphere, during part of this dry weather, was often filled, especially in the mornings, with a thin mist, which, while it deceived with the expectation of rain, served the valuable purpose of abating the heat of the sun. A similar mist was ob-

served in France by Dr. Franklin, in the summer of 1782. The winter which succeeded it was uncommonly cold in France, as well as in Pennsylvania. I am sorry that I am not able to furnish the mean heat of each of the summer months. My notes of the weather enable me to add nothing further upon this subject, than that the summer was "uncommonly cool."

The summer of the year 1788 afforded a remarkable instance of *excess* in the quantity of rain which sometimes falls in Pennsylvania. Thirteen days are marked with rain in July, in the records of the weather kept at Spring-Mill. There fell on the 18th and 19th of August seven inches of rain in the city of Philadelphia. The wheat suffered greatly by the constant rains of July in the eastern and middle parts of the state. So unproductive a harvest in grain, from wet weather, had not been known, it is said, in the course of the last 70 years. The heat of the air, during these summer months was very moderate. Its mean temperature at Spring-Mill was 67,8 in June, 74,7 in July, and only 70,6 in August.

It is some consolation to a citizen of Pennsylvania, in recording facts which seem to militate against our climate, to reflect that the difference of

the weather, in different parts of the state, at the same season, is happily accommodated to promote an increase of the same objects of agriculture; and hence a deficiency of crops has never been known in one year throughout the *whole* state.

The aurora borealis and meteors are seen occasionally in Pennsylvania. In the present imperfect state of our knowledge of their influence upon the human body, it will be foreign to the design of this history of our climate to describe them.

Storms and hurricanes are not unknown in Pennsylvania. They occur once in four or five years, but they are most frequent and destructive in the autumn. They are generally accompanied by rain. Trees are torn up by their roots, and the rivers and creeks are sometimes swelled so suddenly as to do considerable damage to the adjoining farms. The wind, during these storms, generally blows from the south-east and south-west. In the storms which occurred in September, 1769, and in the same month of the year 1785, the wind veered round contrary to its usual course, and blew from the north.

After what has been said, the character of the climate of Pennsylvania may be summed up in a

few words. There are no two successive years alike. Even the same successive seasons and months differ from each other every year. Perhaps there is but one steady trait in the character of our climate, and that is, it is uniformly variable.

To furnish the reader with a succinct view of the weather in Pennsylvania, that includes all the articles that have been mentioned, I shall here subjoin a table containing the result of meteorological observations made near the river Schuylkill, for one year, in the neighbourhood of Philadelphia, by an ingenious French gentleman, Mr. Legeaux, who divides his time between rural employments, and useful philosophical pursuits. This table is extracted from the *Columbian Magazine*, for February, 1788. The height of Spring-Mill above the city of Philadelphia, is supposed to be about 70 feet.

| METEOROLOGICAL OBSERVATIONS, made at Spring-Mill, 13 miles NNW. of Philadelphia. Result of the year 1787. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------------------|-------------------------------|------------|----------------------------|---|------------------------------|--------------|--------------------------|-------------|-----------------------------|----------|--------------------------------|---|----|--|--|--|--|--|--|--|--|--|--|--|------------------------------|--|-------------------------------|--|----------------------------|--|------------------------------|--|--------------------------|--|-----------------------------|--|----------------|--|---|----|---|----|----|----|-----|---|----|----|----|---|----|---|----|-------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|
| MONTH. | THERMOMETER. | | BAROMETER. | WIND. | DAYS | | | | WATER | | WEATHER. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | of Fahrenheit, mean degree D. | de Reaumur, degrés moyens D. | | | mean height in. pts. ¹ / ₁₆ | PREVAILING | of aur. bor. | of rain. | of thunder. | of snow. | | of tempest. | of RAIN and SNOW. in. pts. ¹ / ₁₆ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | 35 | 1 | 29 | Variable still | | 7 | 1 | 4 | 3 | 10 | 10 | Fair, still, cold, and snow. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| February | 33 | 8 | 29 | NE | | 3 | | 3 | 2 | 7 | 7 | Fair, overcast. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| March | 45 | 1 | 29 | W | | 3 | | 3 | 2 | 2 | 2 | Fair, windy. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| April | 54 | 3 | 29 | Still, SW | | 6 | 2 | 1 | 2 | 4 | 4 | Fair, and very dry. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| May | 61 | 2 | 29 | Still, WSW | | 14 | 6 | 1 | 2 | 11 | 11 | Foggy, cold, and wet. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| June | 70 | 7 | 29 | WNW | | 9 | 1 | 1 | 4 | 10 | 10 | Very fair and growing weather. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| July | 72 | 2 | 29 | WWSW var. | | 5 | 2 | 2 | 1 | 3 | 1 | Fair, and overcast. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| August | 74 | 5 | 29 | W | | 11 | 4 | 1 | 1 | 5 | 2 | Very fair, and cloudy. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| September | 64 | 7 | 29 | WNW | | 10 | | 1 | 1 | 2 | 7 | Fair weather. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| October | 51 | 1 | 29 | WNW vari. | | 11 | | | | 10 | 10 | Foggy, fair, and dry weather. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| November | 45 | 1 | 29 | Still vari. | | 4 | | | | 6 | 10 | Very fair. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December | 34 | | 29 | WNW | | 5 | | 1 | 1 | 9 | 9 | Very fair, and very dry. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th colspan="13">RESULT.</th> </tr> <tr> <th colspan="2">10 Feb. greatest D. of cold.</th> <th colspan="2">10 Feb. D. du plus gr. froid.</th> <th colspan="2">8 Mar. greatest elevation.</th> <th colspan="2">3 July greatest D. de chaud.</th> <th colspan="2">2 Febr. least elevation.</th> <th colspan="2">3 Mar. greatest D. of heat.</th> <th colspan="2">3 July plus G.</th> </tr> <tr> <td>5</td> <td>12</td> <td>0</td> <td>30</td> <td>10</td> <td>29</td> <td>WNW</td> <td>4</td> <td>73</td> <td>17</td> <td>12</td> <td>9</td> <td>32</td> <td>8</td> <td>14</td> </tr> <tr> <th colspan="13">TEMPERATURE OF THE YEAR 1787.</th> </tr> <tr> <td colspan="13">Very fair, dry, abundant in every thing, and healthy.</td> </tr> </thead></table> | | | | | | | | | | | | | RESULT. | | | | | | | | | | | | | 10 Feb. greatest D. of cold. | | 10 Feb. D. du plus gr. froid. | | 8 Mar. greatest elevation. | | 3 July greatest D. de chaud. | | 2 Febr. least elevation. | | 3 Mar. greatest D. of heat. | | 3 July plus G. | | 5 | 12 | 0 | 30 | 10 | 29 | WNW | 4 | 73 | 17 | 12 | 9 | 32 | 8 | 14 | TEMPERATURE OF THE YEAR 1787. | | | | | | | | | | | | | Very fair, dry, abundant in every thing, and healthy. | | | | | | | | | | | | |
| RESULT. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 5 | 12 | 0 | 30 | 10 | 29 | WNW | 4 | 73 | 17 | 12 | 9 | 32 | 8 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEMPERATURE OF THE YEAR 1787. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Very fair, dry, abundant in every thing, and healthy. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature | | Temperature. | | Mean elevat. | | Variation. | | Variation. | | Variation. | | Temperature | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | 5 | 9 | 6 | 20 | 9 | 9 | 1 | 10 | 1 | 10 | 1 | 40 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Variation. | | Variation. | | Variation. | | Variation. | | Variation. | | Variation. | | Temperature | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 91 | 1 | 28 | 5 | 29 | 29 | WNW | 4 | 73 | 17 | 12 | 9 | 32 | 8 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

It is worthy of notice, how near the mean heat of the year, and of the month of April, in two successive years, are to each other in the same place. The mean heat of April, 1787, was $54^{\circ}3$, that of April, 1788, was $52^{\circ}2$. By the table of the mean heat of each month in the year, it appears that the mean heat of 1787 was $53^{\circ}5$ at Spring-Mill.

The following accounts of the climates of Pekin and Madrid, which lie within a few minutes of the same latitude as Philadelphia, may serve to show how much climates are altered by local and relative circumstances. The account of the temperature of the air at Pekin will serve further to show, that with all the advantages of the highest degrees of cultivation which have taken place in China, the winters are colder, and the summers warmer there than in Pennsylvania, principally from a cause which will probably operate upon the winters of Pennsylvania for many centuries to come, viz. the vicinity of an uncultivated north-west country.

“ PEKIN, lat. $39^{\circ} 54'$, long. $116^{\circ} 29'$ W.

“ By five years observations, its annual mean temperature was found to be $55^{\circ} 5'$.

| | | | | | |
|----------|---|--------|-----------|---|-------|
| January | - | 20°,75 | July | - | 84°,8 |
| February | | 32 | August | | 83 |
| March | - | 48 | September | | 63 |
| April | - | 59 | October | | 52 |
| May | - | 72 | November | | 41 |
| June | - | 83,75 | December | | 27 |

“ The temperature of the Atlantic under this parallel is 62, but the standard of this part of the globe is the North Pacific, which is here 4 or 5 degrees colder than the Atlantic. The Yellow Sea is the nearest to Pekin, being about 200 miles distant from it ; but it is itself cooled by the mountainous country of Corea, which interposes between it and the ocean, for a considerable part of its extent. Besides, all the northern parts of China (in which Pekin lies) must be cooled by the vicinity of the mountains of Chinese Tartary among which the cold is said to be excessive.

“ The Greatest cold usually experienced during this period was 5°, the greatest heat 98°: on the 25th of July, 1773, the heat arose to 108° and 110°; a N. E. or N. W. wind produces the greatest cold, a S. or S. W. or S. E. the greatest heat*.”

* “ 6. Mem. Scav. Etrang. p. 528.”

“MADRID, lat. $40^{\circ} 25'$, long. $3^{\circ} 20' E$.

“The usual heat in summer is said to be from 75° to 85° ; even at night it seldom falls below 70° ; the mean height of the barometer is 27,96. It seems to be about 1900 feet above the level of the sea*.”

The above accounts are extracted from Mr. Kirwan's useful and elaborate estimate of the temperature of different latitudes.

The history which has been given of the climate of Pennsylvania, is confined chiefly to the country on the east side of the Allegany mountain. On the west side of this mountain, the climate differs materially from that of the southeastern parts of the state in the temperature of the air, in the effects of the winds upon the weather, and the quantity of rain and snow which falls every year. The winter seldom breaks up on the mountains before the 25th of March. A fall of snow was once perceived upon it, which measured an inch and a half, on the 11th day of June. The trees which grow upon it are small, and Indian corn is with difficulty brought to maturity,

* “Mem. Par. 1777, p. 146.”

even at the foot of the east side of it. The southwest winds on the west side of the mountain are accompanied by cold and rain. The soil is rich, consisting of near a foot, in many places, of black mould. The roads in this country are muddy in winter, but seldom dusty in summer. The arrangement of strata of the earth on the west side, differs materially from their arrangement on the east side the mountain. “ The country (says Mr. Rittenhouse, in a letter to a friend in Philadelphia*), when viewed from the western ridge of the Allegany, appears to be one vast extended plain. All the various strata of stone seems to lie undisturbed in the situation in which they were first formed, and the layers of stone, sand, clay, and coal, are nearly horizontal.”

The temperature of the air on the west is seldom so hot, or so cold, as on the east side of the mountain. By comparing the state of a thermometer examined by Dr. Bedford at Pittsburg, 284 miles from Philadelphia, it appears that the weather was not so cold by twelve degrees in that town, as it was in Philadelphia, on the 5th of February, 1788.

* Columbian Magazine, for October, 1786.

To show the difference between the weather at Spring-Mill and in Pittsburg, I shall here sub-join an account of it, in both places, the first taken by Mr. Legaux, and the other by Doctor Bedford.

| METEOROLOGICAL OBSERVATIONS, made at SPRING-MILL, 13 miles NNW. of Philadelphia. April, 1788. | | | | | | | | | | | | | |
|---|--|---|------------|-------|------------|-------------|----------|----------|-------------|----------|-------------|--------|------------------------|
| D. of the month. | THERMOMETER. | | BAROMETER. | WIND. | PREVAILING | DAYS | of fair. | of rain. | of thunder. | of snow. | of tempest. | WATER. | WEATHER. |
| | of Fahrenheit, mean degree D. $\frac{1}{10}$ | de Reaumur, degrés moyens D. $\frac{1}{10}$ | | | | | | | | | | | |
| 1 | 58 | 11 | 29 | 10 | 5 | W. | | | | | | | Overcast, fair. |
| 2 | 46 | 9 | 30 | 1 | | Calm. | | | | | | | Overcast and windy. |
| 3 | 40 | 3 | 30 | 3 | 3 | Changeable. | 1 | | | | | 1 15 | Overcast, rainy. |
| 4 | 51 | 3 | 29 | 11 | | SW. | | | | | | | Overcast. |
| 5 | 51 | 1 | 30 | 7 | 7 | E. | | | | | | | Overcast, fair. |
| 6 | 55 | 5 | 29 | 11 | 7 | Calm. | | | | | | | Overcast, rainy. |
| 7 | 51 | 3 | 30 | 2 | 2 | NE. | 1 | | | | | 1 3 | Overcast, rainy. |
| 8 | 42 | 1 | 29 | 11 | 8 | E. | 1 | | | | | 2 7 | Overcast, rainy. |
| 9 | 63 | 5 | 29 | 8 | 4 | W. | | | | | | 1 4 | Rainy. |
| 10 | 46 | 6 | 29 | 10 | 2 | W. | | | | | | | Overcast, windy. |
| 11 | 53 | 7 | 30 | 2 | | W. | | | | | | | Fair. |
| 12 | 44 | 5 | 29 | 10 | 3 | Calm. | 1 | | | | | 1 11 | Overcast, rainy. |
| 13 | 60 | 5 | 29 | 10 | | SW. | | | | | | | Very fair. |
| 14 | 50 | 2 | 29 | 9 | | E. | 1 | | | | | 1 14 | Fair, overcast, rainy. |
| 15 | 58 | 1 | 29 | 9 | | SW. | 1 | | | | | 2 13 | Foggy, rainy. |
| METEOROLOGICAL OBSERVATIONS, made at PITTSBURG, 284 miles W. of Philadelphia. April, 1788. | | | | | | | | | | | | | |
| 1 | 46 | | | | | SW. | 1 | | | | | | Cloudy. |
| 2 | 42 | | | | | NE. by N. | | | | | | | Clear. |
| 3 | 43 | | | | | SE. | 1 | | | | | | Cloudy. |
| 4 | 64 | | | | | Calm. | | | | | | | Clear. |
| 5 | 80 | | | | | SE. by S. | 1 | | | | | | Cloudy. |
| 6 | 52 | | | | | SW. | 1 | | | | | | Cloudy. |
| 7 | 48 | | | | | NE. by N. | | | | | | | Cloudy. |
| 8 | 66 | | | | | SE. by S. | 1 | | | | | | Cloudy. |
| 9 | 56 | | | | | NW. by N. | | | | | | | Cloudy. |
| 10 | 60 | | | | | SW. | | | | | | | Cloudy, with wind |
| 11 | 62 | | | | | Calm. | | | | | | | Clear. |
| 12 | 67 | | | | | SW. | | | | | | | Cloudy, with wind |
| 13 | 62 | | | | | Calm. | | | | | | | Clear. |
| 14 | 60 | | | | | Variable. | 1 | | | | | | Cloudy. |

From a review of all the facts which have been mentioned, it appears that the climate of Pennsylvania is a compound of most of the climates in the world. Here we have the moisture of Britain in the spring, the heat of Africa in summer, the temperature of Italy in June, the sky of Egypt in the autumn, the cold and snows of Norway and the ice of Holland in the winter, the tempests in a certain degree of the West-Indies in every season, and the variable winds and weather of Great-Britain in every month of the year.

From this history of the climate of Pennsylvania, it is easy to ascertain what degrees of health, and what diseases prevail in the state. As we have the climates, so we have the health, and the acute diseases, of all the countries that have been mentioned. Without attempting to enumerate the diseases, I shall only add a few words upon the time and manner in which they are produced.

I. It appears from the testimonies of many aged persons, that pleurisies and inflammatory diseases of all kinds are less frequent now than they were forty or fifty years ago.

II. It is a well known fact, that intermitting and bilious fevers have increased in Pennsylvania in

proportion as the country has been cleared of its wood, in many parts of the state.

III. It is equally certain that these fevers have lessened or disappeared, in proportion as the country has been cultivated.

IV. Heavy rains and freshes in the spring seldom produce fevers, unless they are succeeded by unseasonably warm weather.

V. Sudden changes from great heat to cold, or cool weather, if they occur before the 20th of August, seldom produce fevers. After that time, they are generally followed by them.

VI. The same state of the atmosphere, whether cold or warm, moist or dry, continued for a long time, without any material changes, is always healthy. Acute and inflammatory fevers were in vain looked for in the cold winter of 1779-80. The dry summer of 1782, and the wet summer of 1788, were likewise uncommonly healthy in the city of Philadelphia. These facts extend only to those diseases which depend upon the sensible qualities of the air, for diseases from miasmata and contagion, are less influenced by the uniformity of the weather. The autumn of 1780 was very sickly in

Philadelphia, from the peculiar situation of the grounds in the neighbourhood of the city, while the country was uncommonly healthy. The dry summer and autumn of 1782 were uncommonly sickly in the country, from the extensive sources of morbid exhalations which were left by the diminution of the waters in the creeks and rivers.

VII. Diseases are often generated in one season and produced in another. Hence we frequently observe fevers of different kinds to follow every species of the weather that was mentioned in the last observation.

VIII. The excessive heat in Pennsylvania has sometimes proved fatal to persons who have been much exposed to it. Its morbid effects discover themselves by a difficulty of breathing, a general languor, and, in some instances, by a numbness and immobility of the extremities. The excessive cold in Pennsylvania has more frequently proved fatal, but it has been chiefly to those persons who have sought a defence from it, by large draughts of spirituous liquors. Its operation in bringing on sleepiness previous to death, is well known. On the 5th of February, 1788, many people were affected by the cold. It produced a violent pain in the head; and, in one instance, a

sickness at the stomach, and a vomiting appeared to be the consequence of it. I have frequently observed that a greater number of old people die, during the continuance of extreme cold and warm weather, than in the same number of days in moderate weather.

IX. May and June are usually the healthiest months in the year.

X. The influence of the winds upon health, depends very much upon the nature of the country over which they pass. Winds which pass over mill-dams and marshes in August and September, generally carry with them the seeds of fevers.

XI. The country in the neighbourhood of Philadelphia was formerly more sickly than the central parts of the city, after the 20th of August. Since the year 1793, the reverse of this has been the case.

XII. The night-air is always unwholesome from the 20th of August, especially during the passive state of the system in sleep. The frequent and sudden changes of the air from heat to cold render it unsafe to sleep with open windows, during the autumnal months.

XIII. Valetudinarians always enjoy the most health in Pennsylvania in the summer and winter months. The spring, in a particular manner, is very unfavourable to them.

I shall conclude the account of the influence of the climate of Pennsylvania upon the human body, with the following observations.

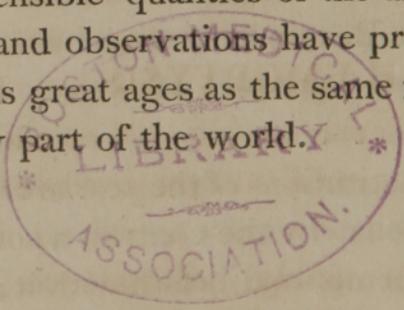
1. The sensations of heat and cold are influenced so much by outward circumstances, that we often mistake the degrees of them by neglecting to use such conveniencies as are calculated to obviate the effects of their excess. A native of Jamaica often complains less of the heat, and a native of Canada of the cold in their respective countries, than they do under certain circumstances in Pennsylvania. Even a Pennsylvanian frequently complains less of the heat in Jamaica, and of the cold in Canada, than in his native state. The reason of this is plain. In countries where heat and cold are intense and regular, the inhabitants guard themselves, by accommodating their houses and dresses to each of them. The instability and short duration of excessive heat and cold in Pennsylvania, have unfortunately led its inhabitants, in many instances, to neglect adopting customs, which are used in hot and cold countries to guard against

them. Where houses are built with a southern or a south-western front exposure, and where other accommodations to the climate are observed in their construction, the disagreeable excesses of heat and cold are rendered much less perceptible in Pennsylvania. Perhaps the application of the principles of philosophy and taste to the construction of our houses, within the last thirty or forty years, may be another reason why some old people have supposed that the degrees of heat and cold are less in Pennsylvania than they were in former years.

2. The variable nature of the climate of Pennsylvania does not render it necessarily unhealthy. Doctor Huxham has taught us, that the healthiest seasons in Great-Britain have often been accompanied by the most variable weather. His words upon this subject convey a reason for the fact. "When the constitutions of the year are frequently changing, so that by the contrast a sort of equilibrium is kept up, and health with it; and that especially if persons are careful to guard themselves well against these sudden changes*." Perhaps no climate or country is unhealthy, where men acquire from experience, or tradition, the arts

* Observations on the Air and Epidemic Diseases, vol. 1. p. 5.

of accommodating themselves to it. The history of all the nations of the world, whether savage, barbarous, or civilized, previously to a mixture of their manners by an intercourse with strangers, seems to favour this opinion. The climate of China appears, in many particulars to resemble that of Pennsylvania. The Chinese wear loose garments of different lengths, and increase or diminish the number of them, according to the frequent and sudden changes of their weather; hence they have very few acute diseases among them. Those inhabitants of Pennsylvania who have acquired the arts of conforming to the changes and extremes of our weather in dress, diet, and manners, escape most of those acute diseases which are occasioned by the sensible qualities of the air; and faithful inquiries and observations have proved, that they attain to as great ages as the same number of people in any part of the world.



AN ACCOUNT
OF THE
EFFICACY OF COMMON SALT,
IN THE CURE OF
HÆMOPTYSIS.

AN ACCOUNT, &c.

FROM the present established opinions and practice respecting the cause and cure of hæmoptysis, the last medicine that would occur to a regular-bred physician for the cure of it, is COMMON SALT; and yet I have seen and heard of a great number of cases, in which it has been administered with success.

The mode of giving it is to pour down from a tea to a table-spoonful of clean fine salt, as soon as possible after the hæmorrhage begins from the lungs. This quantity generally stops it; but the dose must be repeated daily for three or four days, to prevent a return of the disease. If the bleeding continue, the salt must be continued till it is checked, but in larger doses. I have heard of several instances in which two table spoons-full were taken at one time for several days.

It sometimes excites a sickness at the stomach, and never fails to produce a burning sensation in the throat, in its passage into the stomach, and considerable thirst afterwards.

I have found this remedy to succeed equally well in hæmorrhages, whether they occurred in young or in old people, or with a weak or active pulse.

I had prescribed it for several years before I could satisfy myself with a theory, to account for its extraordinary action upon the human body. My inquiries led me to attend more particularly to the following facts :

1. Those persons who have been early instructed in vocal music, and who use their vocal organs moderately through life, are seldom affected by a hæmorrhage from the lungs.

2. Lawyers, players, public cryers, and city watchmen, all of whom exercise their lungs either by long or loud speaking, are less affected by this disease, than persons of other occupations.

I acknowledge I cannot extend this observation to the public teachers of religion. I have known

several instances of their being affected by hæmoptysis; but never but one in which the disease came on in the pulpit, and that was in a person who had been recently cured of it. The cases which I have seen, have generally been brought on by catarrhs.

To this disease, the practice of some of our American preachers disposes them in a peculiar manner; for it is very common with this class of them, to expose themselves to the cold or evening air, immediately after taking what a celebrated and eloquent preacher used to call a pulpit sweat.

3. This hæmorrhage chiefly occurs in debilitated habits, or in persons afflicted by such a predisposition to consumption, as indicates a weak and relaxed state of the lungs.

4. It generally occurs when the lungs are in a passive state; as in sitting, walking, and more frequently in lying. Many of the cases that I have known, have occurred during sleep, in the middle of the night.

From these facts, is it not probable that the common salt, by acting primarily and with great force upon the throat, extends its stimulus to the

bleeding vessel, and by giving it a tone, checks the further effusion of blood ?

I shall only add to this conjecture, the following observations :

1. I have never known the common salt perform a cure where the hæmorrhage from the lungs has been a symptom of a confirmed consumption. In this case, however, it gives a certain temporary relief. But the bleeding, so unfavourable in the close of this disease, often prevents consumption when it occurs in its early stage, by depleting directly from the lungs.

2. The exhibition of common salt in the hæmoptysis, should by no means supersede the use of occasional bleeding when indicated by plethora, nor of that diet which the state of the pulse or of the stomach, may require.

3. I have given the common salt in one case with success, in a hæmorrhage from the stomach, accompanied by a vomiting; and have heard of several cases in which it has been supposed to have checked a discharge of blood from the nose and uterus, but I can say nothing further in its favour

in these last hæmorrhages, from my own experience.

It may perhaps serve to lessen the prejudices of physicians against adopting improvements in medicine, that are not recommended by the authority of colleges or universities, to add, that we are indebted to an old woman, for the discovery of the efficacy of common salt in the cure of hæmoptysis.

...the cause of the disease...

...the cause of the disease...

THOUGHTS

...the cause of the disease...

OF

THE CAUSE AND CURE

OF THE

PULMONARY CONGESTION

...the cause of the disease...

...the cause of the disease...

THOUGHTS

UPON

THE CAUSE AND CURE

OF THE

PULMONARY CONSUMPTION.

THOUGHTS, &c.

THE ancient Jews used to say, that a man does not fulfil his duties in life who passes through it, without building a house, planting a tree, and leaving a child behind him. A physician, in like manner, should consider his obligations to his profession and society as undischarged, who has not attempted to lessen the number of incurable diseases. This is my apology for presuming to make the consumption the object of a medical inquiry.

Perhaps I may suggest an idea, or fact, that may awaken the ideas and facts which now lie useless in the memories or common-place books of other physicians; or I may direct their attention to some useful experiments upon this subject.

I shall begin my observations upon the consumption, by remarking,

1. That it is unknown among the Indians in North-America.

2. It is scarcely known by those citizens of the United States, who live in the first stage of civilized life, and who have lately obtained the title of the first settlers.

The principal occupations of the Indians consist in war, fishing, and hunting. Those of the first settler, are fishing, and hunting, and the laborious employments of subduing the earth, cutting down forests, building a house and barn, and distant excursions in all kinds of weather, to mills and courts, all which tend to excite and preserve in the system, something like the Indian vigour of constitution.

3. It is less common in country places than in cities, and increases in both, with intemperance and sedentary modes of life.

4. Ship and house carpenters, smiths, and all those artificers whose business requires great exertions of strength in the open air, in all seasons of the year, are less subject to this disease, than men who work under cover, and at occupation which do not require the constant action of their limbs.

5. Women, who sit more than men, and whose work is connected with less exertion, are most subject to the consumption.

From these facts it would seem, that the most probable method of curing the consumption, is to revive in the constitution, by means of exercise or labour, that vigour which belongs to the Indians, or to mankind in their first stage of civilization.

The efficacy of these means of curing consumption will appear, when we inquire into the relative merit of the several remedies which have been used by physicians in this disease.

I shall not produce among these remedies the numerous receipts for syrups, boluses, electuaries, decoctions, infusions, pills, medicated waters, powders, draughts, mixtures, and diet-drinks, which have so long and so steadily been used in this disease; nor shall I mention as a remedy, the best accommodated diet, submitted to with the most patient self-denial; for not one of them all, without the aid of exercise, has ever, I believe, cured a single consumption.

1. SEA-VOYAGES have cured consumptions ; but it has been only when they have been so long ; or so frequent, as to substitute the long continuance of gentle, to violent degrees of exercise of a shorter duration, or where they have been accompanied by some degree of the labour and care of navigating the ship.

2. A CHANGE of CLIMATE has often been prescribed for the cure of consumptions, but I do not recollect an instance of its having succeeded, except when it has been accompanied by exercise, as in travelling, or by some active laborious pursuit.

Doctor Gordon of Madeira, ascribes the inefficacy of the air of Madeira in the consumption, in part to the difficulty patients find of using exercise in carriages, or even on horseback, from the badness of the roads in that island.

3. JOURNEYS have often performed cures in the consumption, but it has been chiefly when they have been long, and accompanied by difficulties which have roused and invigorated the powers of the mind and body.

4. VOMITS and NAUSEATING MEDICINES have been much celebrated for the cure of consump-

tions. These, by procuring a temporary determination to the surface of the body, so far lessen the pain and cough, as to enable patients to use profitable exercise. Where this has not accompanied or succeeded the exhibition of vomits, I believe they have seldom afforded any permanent relief.

5. BLOOD-LETTING has often relieved consumptions; but it has been only by removing the troublesome symptoms of inflammatory diathesis, and thereby enabling the patients to use exercise, or labour, with advantage.

6. VEGETABLE BITTERS and some of the STIMULATING GUMS have in some instances afforded relief in consumptions; but they have done so only in those cases where there was great debility, accompanied by a total absence of inflammatory diathesis. They have most probably acted by their tonic qualities, as substitutes for labour and exercise.

7. A PLENTIFUL and REGULAR PERSPIRATION, excited by means of a flannel shirt, worn next to the skin, or by means of a stove-room, or by a warm climate, has in many instances prolonged life in consumptive habits; but all these remedies have acted as palliatives only, and thereby have

enabled the consumptive patients to enjoy the more beneficial effects of exercise.

8. BLISTERS, SETONS, and ISSUES, by determining the perspirable matter from the lungs to the surface of the body, lessen pain and cough, and thereby prepare the system for the more salutary effects of exercise.

9. The effects of SWINGING upon the pulse and respiration, leave us no room to doubt of its being a tonic remedy, and therefore a safe and agreeable substitute for exercise.

From all these facts it is evident, that the remedies for consumption must be sought for in those *exercises and employments which give the greatest vigour to the constitution.* And here I am happy in being able to produce several facts which demonstrate the safety and certainty of this method of cure.

During the late war, I saw three instances of persons in confirmed consumptions, who were perfectly cured by the hardships of a military life. They had been my patients previously to their entering into the army. Besides these, I have heard of four well-attested cases of similar reco-

veries from nearly the same remedies. One of these was the son of a farmer in New-Jersey, who was sent to sea as the last resource for a consumption. Soon after he left the American shore, he was taken by a British cruiser, and compelled to share in all the duties and hardships of a common sailor. After serving in this capacity for twenty-two months, he made his escape, and landed at Boston, from whence he travelled on foot to his father's house (nearly four hundred miles), where he arrived in perfect health.

Doctor Way of Wilmington informed me, that a certain Abner Cloud, who was reduced so low by a pulmonary consumption as to be beyond all relief from medicine, was so much relieved by sleeping in the open air, and by the usual toils of building a hut, and improving a farm, in the unsettled parts of a new country in Pennsylvania, that he thought him in a fair way of a perfect recovery.

Doctor Latimer of Wilmington had been long afflicted with a cough and an occasional hæmoptysis. He entered into the American army as a surgeon, and served in that capacity till near the end of the war; during which time he was perfectly free from all pulmonary disease. The

spitting of blood returned soon after he settled in private practice. To remedy this complaint, he had recourse to a low diet, but finding it ineffectual, he partook liberally of the usual diet of healthy men, and he now enjoys a perfect exemption from it.

It would be very easy to add many other cases, in which labour, the employments of agriculture, and a life of hardship by sea and land, have prevented, relieved, or cured, not only the consumption, but pulmonary diseases of all kinds.

To the cases that have been mentioned, I shall add only one more, which was communicated to me by the venerable Doctor Franklin, whose conversation at all times conveyed instruction, and not less in medicine than upon other subjects. In travelling, many years ago, through New-England, the doctor overtook the post-rider; and after some inquiries into the history of his life, he informed him that he was bred a shoemaker; that his confinement, and other circumstances, had brought on a consumption, for which he was ordered by a physician to ride on horseback. Finding this mode of exercise too expensive, he made interest, upon the death of an old post-rider, to succeed to his appointment, in which he perfectly recovered

his health in two years. After this he returned to his old trade, upon which his consumption returned. He again mounted his horse, and rode post in all seasons and weathers, between New-York and Connecticut river (about 140 miles), in which employment he continued upwards of thirty years, in perfect health.

These facts, I hope, are sufficient to establish the advantages of restoring the original vigour of the constitution, in every attempt to effect a radical cure of consumption.

But how shall these remedies be applied in the time of peace, or in a country where the want of woods, and brooks without bridges, forbid the attainment of the laborious pleasures of the Indian mode of hunting; or where the universal extent of civilization does not admit of our advising the toils of a new settlement, and improvements upon bare creation? Under these circumstances, I conceive substitutes may be obtained for each of them, nearly of equal efficacy, and attainable with much less trouble.

1. Doctor Sydenham pronounced riding on horseback, to be as certain a cure for consumptions

as bark is for an intermitting fever. I have no more doubt of the truth of this assertion, than I have that inflammatory fevers are now less frequent in London than they were in the time of Doctor Sydenham. If riding on horseback in consumptions has ceased to be a remedy in Britain, the fault is in the patient, and not in the remedy. "It is a sign that the stomach requires milk (says Doctor Cadogan), when it cannot bear it." In like manner, the inability of the patient to bear this manly and wholesome exercise, serves only to demonstrate the necessity and advantages of it. I suspect the same objections to this exercise which have been made in Britain, will not occur in the United States of America; for the Americans, with respect to the symptoms and degrees of epidemic and chronic diseases, appear to be nearly in the same state that the inhabitants of England were in the seventeenth century. We find, in proportion to the decline of the vigour of the body, that many occasional causes produce fever and inflammation, which would not have done it a hundred years ago.

2. The laborious employments of agriculture, if steadily pursued, and accompanied at the same time by the simple, but wholesome diet of a farmhouse, and a hard bed, would probably afford a

good substitute for the toils of a savage or military life.

3. Such occupations or professions as require constant labour or exercise in the open air, in all kinds of weather, may be easily chosen for a young man who, either from hereditary predisposition, or an accidental affection of the lungs, is in danger of falling into a consumption. In this we should imitate the advice given by some wise men, always to prefer those professions for our sons, which are the least favourable to the corrupt inclinations of their hearts. For example, where an undue passion for money, or a crafty disposition, discover themselves in early life, we are directed to oppose them by the less profitable or more disinterested professions of divinity or physic, rather than cherish them by trade, or the practice of the law. Agreeably to this analogy, weakly children should be trained to the laborious, and the robust, to the sedantary occupations. From a neglect of this practice, many hundred apprentices to taylor, shoemakers, conveyancers, watchmakers, silversmiths, and mantua-makers, perish every year by consumption.

4. There is a case recorded by Dr. Smollet, of the efficacy of the cold bath in a consumption; and

I have heard of its having been used with success, in the case of a negro man, in one of the West-India islands. To render this remedy useful, or even safe, it will be necessary to join it with labour, or to use it in degrees that shall prevent the alternation of the system with vigour and debility; for I take the cure of consumption ultimately to depend upon the simple and constant action of tonic remedies. It is to be lamented that it often requires so much time, or such remedies to remove the inflammatory diathesis, which attends the first stage of consumption, as to reduce the patient too low to make use of those tonic remedies afterwards, which would effect a radical cure.

If it were possible to graduate the tone of the system by means of a scale, I would add, that to cure consumption, the system should be raised to the highest degree of this scale. Nothing short of an equilibrium of tone, or free and vigorous action of every muscle and viscus in the body, will fully come up to a radical cure of this disease.

In regulating the diet of consumptive patients, I conceive it to be as necessary to feel the pulse, as it is in determining when and in what quantity to draw blood. Where inflammatory diathesis prevails, a vegetable diet is certainly proper; but

where the patient has escaped, or passed this stage of the disease, I believe a vegetable diet alone to be injurious; and am sure a moderate quantity of animal food may be taken with advantage.

The presence or absence of this inflammatory diathesis, furnishes the indications for administering or refraining from the use of the bark and balsamic medicines. With all the testimonies of their having done mischief, many of which I could produce, I have known several cases in which they have been given with obvious advantage; but it was only when there was a total absence of inflammatory diathesis.

Perhaps the remedies I have recommended, and the opinions I have delivered, may derive some support from attending to the analogy of ulcers on the legs, and in other parts of the body. The first of these occur chiefly in habits debilitated by spirituous liquors, and the last frequently in habits debilitated by the scrophula. In curing these diseases, it is in vain to depend upon internal or external medicines. The whole system must be strengthened, or we do nothing; and this is to be effected only by exercise and a generous diet.

In relating the facts that are contained in this inquiry, I wish I could have avoided reasoning upon them; especially as I am confident of the certainty of the facts, and somewhat doubtful of the truth of my reasonings.

I shall only add, that if the cure of consumptions should at last be effected by remedies in every respect the opposites of those palliatives which are now fashionable and universal, no more will happen than what we have already seen in the tetanus, the small-pox, and the management of fractured limbs.

Should this be the case, we shall not be surprised to hear of physicians, instead of prescribing any one, or all of the medicines formerly enumerated for consumptions, ordering their patients to exchange the amusements, or indolence of a city, for the toils of country life; of their advising farmers to exchange their plentiful tables, and comfortable fire-sides, for the scanty but solid subsistence, and midnight exposures of the herdsman; or of their recommending, not so much the exercise of a passive sea voyage, as the active labours and dangers of a common sailor. Nor should it surprise us, after what we have seen, to hear patients relate the pleasant adventures of their excursions

or labours, in quest of their recovery from this disease, any more than it does now to see a strong or well-shaped limb that has been broken; or to hear a man talk of his studies, or pleasures, during the time of his being inoculated and attended for the small-pox.

I will not venture to assert, that there does not exist a medicine which shall supply, at least in some degree, the place of the labour or exercises, whose usefulness in consumptions has been established by the facts that have been mentioned. Many instances of the analogous effects of medicines, and of exercise upon the human body, forbid the supposition. If there does exist in nature such a medicine, I am disposed to believe it will be found in the class of TONICS. If this should be the case, I conceive its strength, or its dose, must far exceed the present state of our knowledge or practice, with respect to the efficacy or dose of tonic medicines.

I except the disease, which arises from recent abscesses in the lungs, from the general observation which has been made, respecting the inefficacy of the remedies that were formerly enumerated for the cure of consumptions without labour

or exercise. These abscesses often occur without being preceded by general debility, or accompanied by a consumptive diathesis, and are frequently cured by nature, or by very simple medicines.

VOLUME II OF THE WORKS

OF THE AUTHOR. These observations are not without
the assistance of several nobles, & of various
and of a considerable number, and are intended
to show the nature of the very simple and common
and the nature of the disease, and the manner
of its cure.

AN INQUIRY

INTO

THE CAUSE AND CURE

OF THE

PULMONARY CONSUMPTION.

VOL. II.

L

AN INQUIRY, &c.

IN the preceeding Inquiry, I attempted to show that this disease was the effect of causes which induce general debility, and that the only hope of discovering a cure for it should be directed to such remedies as act upon the whole system. In the following inquiry, I shall endeavour to establish the truth of each of those opinions, by a detail of facts and reasonings, at which I only hinted in the foregoing pages.

The method I have chosen for this purpose, is to deliver, and afterwards to support, a few general propositions.

I shall begin by remarking,

I. That the pulmonary consumption is induced by predisposing debility.

This I infer, 1st, From the remote and exciting causes which produce it. The remote causes are pneumony, catarrh, hæmoptysis, rheumatism, gout, asthma, scrophula, chronic diseases of the stomach, liver, and kidneys, nervous and intermitting fevers, measles, repelled humours from the surface of the body, the venereal disease, obstructed menses, sudden growth about the age of puberty, grief, and all other debilitating passions of the mind; hypochondriasis, improper lactation, excessive evacuation of all kinds, more especially by stool*, cold and damp air, a cough, external violence acting upon the body†; and finally, every thing that

* Sir George Baker relates, in the second volume of the Medical Transactions, that Dr. Blanchard had informed him, that he had seen the consumption brought on ten persons out of ninety, by excessive purging used to prepare the body for the small-pox. I have seen a case of consumption in a youth of 17, from the spitting produced by the intemperate use of segars.

† Dr. Lind says, that out of 360 patients whom he attended between July 1st, 1758, and July 1st, 1760, in consumptions, the disease was brought on *one fourth* of them

tends, directly or indirectly, to diminish the strength of the system.

The most frequent exciting cause of consumption is the alternate application of heat and cold to the whole external surface of the body ; but all the remote causes which have been enumerated, operate as exciting causes of consumption, when they act on previous debility. Original injuries of the lungs seldom excite this disease, except they first induce a debility of the whole system, by a troublesome and obstinate cough.

2. From the debilitating occupations and habits of persons who are most liable to this disease. These are studious men, and mechanics who lead sedentary lives in confined places ; also women, and all persons of irritable habits, whether of body or mind.

3. From the period in which persons are most liable to be affected by this disease. This is generally between the 18th and 36th year of life, a period in which the system is liable, in a peculiar manner, to most diseases which induce it, and in

by falls, bruises, and strains, received a year or two before the disease made its appearance.

which there is a greater expenditure of strength, than in any other stage of life, by the excessive exercises of the body and mind, in the pursuits of business or pleasure.

I have conformed to authors, in fixing the period of consumptions between the 18th and 36th year of life ; but it is well known that it sometimes appears in children, and frequently in persons beyond the 40th, or even 60th year of life.

II. The pulmonary consumption is a primary disease of the whole system. This I infer,

1. From the causes which produce it, acting upon the whole system.

2. From the symptoms of general debility which always precede the affection of the lungs. These symptoms are a quick pulse, especially towards evening ; a heat and burning in the palms of the hands ; faintness, head-ach, sickness at stomach, and an occasional diarrhæa. I have frequently observed each of these symptoms for several months before I have heard of a single complaint in the breast.

3. From the pulmonary consumption alternating with other diseases which obviously belong to the whole system. I shall briefly mention these diseases.

The RHEUMATISM. I have seen many cases in which this disease and the consumption have alternately, in different seasons or years, affected the system. In the winter of 1792, three clinical patients in the Pennsylvania hospital exemplified by their complaints the truth of this observation. They were relieved several times of a cough by rheumatic pains in their limbs, which seemed for a while to promise a cure to their pulmonic complaints.

The GOUT has often been observed to alternate with the pulmonary consumption, especially in persons in the decline of life. Dr. Sydenham describes a short cough continuing through the whole winter, as a symptom of gouty habits. A gentleman from Virginia died under my care in the spring of 1788, in the 45th year of his age, with all the symptoms of pulmonary consumption, which had frequently alternated with pains and a swelling in his feet.

The pulmonary consumption has been observed to alternate with MADNESS. Of this I have seen two instances, in both of which the cough and expectoration were wholly suspended during the continuance of the derangement of the mind. Dr. Mead mentions a melancholy case of the same kind in a young lady, and similar cases are to be met with in other authors. In all of them the disease proved fatal. In one of the cases which came under my notice, the symptoms of consumption returned before the death of the patient.

I have likewise witnessed two cases in which the return of reason after madness, was suddenly succeeded by a fatal pulmonary consumption. Perhaps the false hopes, and even the cheerfulness which so universally occur in this disease, may be resolved into a morbid state of the mind, produced by a general derangement of the whole system. So universal are the delusions and hopes of patients, with respect to the nature and issue of this disease, that I have never met with but one man, who, upon being asked what was the matter with him, answered unequivocally, "that he was in a consumption."

Again: Dr. Bennet mentions a case of "A phthisical patient, who was seized with a violent

“ PAIN IN THE TEETH for two days, and in
 “ whom, during that time, every symptom of a
 “ consumption, except the leanness of the body,
 “ altogether vanished :” and he adds further, “ that
 “ a defluction on the lungs had often been relieved
 “ by SALIVARY EVACUATIONS*.”

I have seen several instances in which the pulmonary symptoms have alternated with HEADACH and DYSPEPSIA ; also with pain and noise in one EAR. This affection of the ears sometimes continues throughout the whole disease, without any remission of the pulmonary symptoms. I have seen one case of a discharge of matter from the left ear, without being accompanied by either pain or noise.

In all our books of medicine are to be found cases of consumption alternating with ERUPTIONS ON THE SKIN.

And who has not seen the pulmonary symptoms alternately relieved and reproduced by the appearance or cessation of a diarrhæa, or pains in the BOWELS ?

* Treatise of the Nature and Cure of Consumptions.
 Exercitation X.

To these facts I shall only add, under this head, as a proof of the consumption being a disease of the whole system, that it is always more or less relieved by the change which is induced in the system by pregnancy.

4. I infer that the pulmonary consumption is a disease of the whole system from its analogy with several other diseases, which, though accompanied by local affections, are obviously produced by a morbid state of the whole system.

The rheumatism, the gout, the measles, small-pox, the different species of cynanche, all furnish examples of the connexion of local affections with a general disease; but the APOPLEXY, and the PNEUMONY, furnish the most striking analogies of local affection, succeeding a general disease of the system in the pulmonary consumption.

The most frequent predisposing cause of apoplexy is a general debility of the system, produced by intemperance in eating and drinking. The phenomena of the disease are produced by an effusion of blood or serum, in consequence of a morbid distension, or of a rupture of the vessels of the brain. The pulmonary consumption begins and ends in the same way, allowing only for the difference of

situation and structure of the brain and lungs. After the production of predisposing debility from the action of the remote causes formerly enumerated, the fluids are determined to the weakest part of the body. Hence effusions of serum or blood take place in the lungs. When serum is effused, a pituitous or purulent expectoration alone takes place; when blood is discharged, a disease is produced which has been called hæmoptysis. An effusion of blood in the brain, brought on by the operation of general debility, has been called by Dr. Hoffman, with equal propriety, a hæmorrhage of the brain. The effusion of blood in the lungs, in consequence of the rupture of a blood-vessel, is less fatal than the same accident when it occurs in the brain, only because the blood in the former case is more easily discharged from the system. Where no rupture of a blood-vessel is produced, death is nearly as speedy and certain in the one case as in the other. Dissections show many cases of suffocation and death, from the lungs being preternaturally filled with blood or serum. From this great analogy between the remote and proximate causes of the two diseases which have been described, I have taken the liberty to call them both by the name of apoplexy. The only symptom which does not accord with the derivation of the term, is, that in the apoplexy of the lungs, the patient does

not fall down as if by an external stroke, which is most frequently the case in the apoplexy of the brain.

The history of the remote and proximate causes of pneumony will furnish us with still more remarkable analogy of the connexion between a local affection, and a general disease of the system. The pneumony is produced by remote exciting causes which act on the whole system. The whole arterial system is frequently agitated by a fever in this disease before a pain is perceived in the breast or sides, and this fever generally constitutes its strength and danger. The expectoration which terminates the disease in health, is always the effect of effusions produced by a general disease, and even the vomicas, which sometimes succeed a deficiency of bleeding, always depend upon the same general cause. From this view of the analogy between pneumony and pulmonary consumption, it would seem that the two diseases differed from each other only by the shorter or longer operation of the causes which induce them, and by the greater or less violence and duration of their symptoms. The pneumony appears to be an acute consumption, and the consumption a chronic pneumony. From the analogy of the pulmonary consumption with the diminutive term of certain fevers, I have taken the liberty of calling it a PNEUMONICULA.

5. I infer that the pulmonary consumption is a disease of the whole system, from its existence without ulcers in the lungs. Of this there are many cases recorded in books of medicine.

Dr. Leigh informs us, in his Natural History of Lancashire, that the consumption was a very common disease on the sea coast of that country; but that it was not accompanied either by previous inflammation or ulcers in the lungs. It was generally attended, he says, by an unusual peevishness of temper.

6. I infer that the pulmonary consumption is a disease of the whole system, from its being relieved, or cured, only by remedies which act upon the whole system. This will appear, I hope, hereafter, when we come to treat of the cure of this disease.

Let us now enquire how far the principle I have laid down will apply to the supposed causes of consumption. These causes have been said to be, an abscess in the lungs, hæmoptysis, tubercles, without and with ulcers, catarrh, hereditary diathesis, contagion, and the matter of cutaneous eruptions, or sores repelled, and thrown upon the lungs. I shall make a few observations upon each of them.

1. An abscess in the lungs is generally the consequence of a neglected, or half-cured pneumony. It is seldom fatal, where it is not connected with a predisposition to consumption from general debility, or where general debility is not previously induced by the want of appetite, sleep, and exercise, which sometimes accompany that disease of the lungs. This explanation of the production of consumption by an abscess in the lungs, will receive further support from attending to the effects of wounds in the lungs. How seldom are they followed by pulmonary consumption; and this only because they are as seldom accompanied by predisposing general debility. I do not recollect a single instance of this disease having followed a wound in the lungs, either by the bayonet, or a bullet, during our revolutionary war. The recoveries which have succeeded such wounds, and frequently under the most unfavourable circumstances, show how very improbable it is that a much slighter affection of the lungs should become the cause of a pulmonary consumption.

A British officer, whom I met in the British camp, a few days after the battle of Brandywine, in September, 1777, informed me that the surgeon-general of the royal army had assured him, that out of twenty-four soldiers who had been admitted

into the hospitals, during the campaign of 1776, with wounds in their lungs, twenty-three of them had recovered. Even primary diseases of the lungs often exist with peculiar violence, or continue for many years without inducing a consumption. I have never known but one instance of the whooping-cough ending in consumption, and all our books of medicine contain records of the asthma continuing for twenty and thirty years without terminating in that disease. The reason in both cases, must be ascribed to those two original diseases of the lungs not being accompanied by general debility. One fact more will serve to throw still further light upon the subject. Millers are much afflicted with a cough from floating particles of flour constantly irritating their lungs, and yet they are not more subject to consumptions than other labouring people. Hence "a miller's cough" is proverbial in some places, to denote a cough of long continuance without danger.

2. The hæmoptysis is either a local disease, or it is the effect of general debility of the whole system. When it is local, or when it is the effect of causes which induce a temporary or acute debility only in the system, it is seldom followed by consumption. The accidental discharge of blood from the lungs, from injuries, and from an obstruction

of the menses in women is of this kind. Many persons are affected by this species of hæmorrhage once or twice in their lives, without suffering any inconvenience from it afterwards. I have met with several cases in which it has occurred for many years every time the body was exposed to any of the causes which induce sudden debility, and yet no consumption has followed it. The late king of Prussia informed Dr. Zimmerman that he had been frequently attacked by it during his seven years war, and yet he lived, notwithstanding, above twenty years afterwards without any pulmonary complaints. It is only in persons who labour under chronic debility, that hæmoptysis is necessarily followed by consumption.

3. I yield to the popular mode of expression when I speak of a consumption being produced by tubercles. But I maintain that they are the effects of general debility communicated to the bronchial vessels which cause them to secrete a preternatural quantity of mucus. This mucus is sometimes poured into the trachea from whence it is discharged by hawking, more especially in the morning; for it is secreted more copiously during the languid hours of sleep than in the day time. But this mucus is frequently secreted into the substance of the lungs, where it produces those tumours we

call tubercles. When this occurs, there is either no cough* or a very dry one. That tubercles are formed in this way, I infer from the dissections and experiments of Dr. Stark†, who tells us, that he found them to consist of inorganic matter ; that he was unable to discover any connexion between them and the pulmonary vessels, by means of the microscope or injections ; and that they first opened into the trachea through the bronchial vessels. It is remarkable that the colour and consistence of the matter of which they are composed, is nearly the same as the matter which is discharged through the trachea, in the moist cough which occurs from a relaxation of the bronchial vessels, and which has been called by Dr. Beddoes a bronchial gleet.

I am aware that these tumours in the lungs have been ascribed to scrophula. But the frequent occurrence of consumptions in persons in whom no scrophulous taint existed, is sufficient to refute this opinion. I have frequently directed my inquiries after this disease in consumptive patients, and have met with very few cases which were produced by it. It is probable that it may frequently be a pre-

* See Med. Com. Vol. II.

† Clinical and Anatomical Observations, p. 26, 27. See also Morgagni, letter xxii. 21.

disposing cause of consumption in Great Britain, but I am sure it is not in the United States. Baron Humboldt informed me, that the scrophula is unknown in Mexico, and yet consumptions, he said, are very common in that part of Spanish America. That tubercles are the effects, and not the cause of pulmonary consumption, is further evident from similar tumours being suddenly formed on the intestines by the dysentery, and on the omentum by a yellow fever. Cases of the former are to be met with in the dissections of Sir John Pringle, and one of the latter is mentioned by Dr. Mackittrick, in his inaugural dissertation upon the yellow fever, published in Edinburgh in the year 1766*.

4. The catarrh is of two kinds, acute and chronic, both of which are connected with general debility, but this debility is most obvious in the chronic catarrh: hence we find it increased by every thing which acts upon the whole system, such as cold and damp weather, fatigue, and, above all, by old age, and relieved or cured by exercise, and every thing else which invigorates the whole system. This species of catarrh often continues for twenty or thirty years without inducing pulmonary consumption, in persons who pursue active occupations.

* Pages 7, 8.

5. In the hereditary consumption there is either a hereditary debility of the whole system, or a hereditary mal-conformation of the breast. In the latter case, the consumption is the effect of weakness communicated to the whole system, by the long continuance of difficult respiration, or of such injuries being done to the lungs as are incompatible with health and life. It is remarkable, that the consumptive diathesis is more frequently derived from paternal, than maternal ancestors.

6. Physicians, the most distinguished characters, have agreed, that the pulmonary consumption may be communicated by contagion. Under the influence of this belief, Morgagni informs us, that Valsalva, who was prediposed to the consumption, constantly avoided being present at the dissection of the lungs of persons who had died of that disease. In some parts of Spain and Portugal, its contagious nature is so generally believed, that cases of it are reported to the magistrates of those countries, and the clothes of persons who die of it are burned by their orders. The doctrine of nearly all diseases spreading by contagion, required but a short and simple act of the mind, and favoured the indolence and timidity which characterized the old school of medicine. I adopted this opinion, with respect to the consumption, in the early part of my

life; but I have lately been led to call its truth in question, especially in the unqualified manner in which it has been taught. In most of the cases in which the disease has been said to be propagated by contagion, its limits are always confined to the members of a single family. Upon examination, I have found them to depend upon some one or more of the following causes :

1. Mal-conformation of the breast, in all the branches of the diseased family. It is not necessary that this organic predisposition should be hereditary.

2. Upon the debility which is incurred by nursing and the grief which follows the loss of relations who die of it.

3. Upon some local cause undermining the constitutions of a whole family. This may be exhalations from a foul cellar, a privy, or a neighbouring mill-pond, but of so feeble a nature as to produce debility only, with an acute fever, and thus to render the consumption a kind of family epidemic. I was consulted, in the month of August, 1793, by a Mr. Gale, of Maryland, in a pulmonary complaint. He informed me, that he had lost several brothers and sisters with the consumption, and

that none of his ancestors had died of it. The deceased persons, five in number, had lived in a place that had been subject to the intermitting fever.

4. Upon some peculiar and unwholesome article of diet, which exerts slowly debilitating effects upon all the branches of a family.

5. Upon a fearful and debilitating apprehension entertained by the surviving members of a family, in which one or two have died of consumption, that they shall perish by the same disease. The effects of all the passions, and especially of fear, acted upon by a lively imagination, in inducing determinations to particular parts of the body, and subsequent disease, are so numerous, as to leave no doubt of the operation of this cause, in producing a number of successive deaths in the same family, from pulmonary consumption.

In favour of its depending upon one or more of the above causes, I shall add two remarks.

1. There is often an interval of from two to ten years, between the sickness and deaths which occur in families from consumptions, and this we know never takes place in any disease which is admitted to be contagious.

2. The consumption is not singular in affecting several branches of a family. I was lately consulted by a young physician from Maryland, who informed me, that two of his brothers, in common with himself, were afflicted with epilepsy. Madness, scrophula, and a disposition to hæmorrhage, often affect, in succession, several branches of the same family; and who will say that any one of the above diseases is propagated by contagion?

The practise of the Spaniards and Portuguese, in burning the clothes of persons who die of consumptions, no more proves the disease to be contagious, than the same acts sanctioned by the advice or order of public bodies in the United States, establish the contagious nature of the yellow fever. They are, in both countries, marks of the superstition of medicine.

In suggesting these facts, and the inferences which have been drawn from them, I do not mean to deny the possibility of the acid and fœtid vapour, which is discharged by breathing from an ulcer or abscess in the lungs, nor of the hectic sweats, when rendered putrid by stagnating in sheets, or blankets, communicating this disease to persons who are long exposed to them, by sleeping with consumptive patients; but that such cases

rarely occur I infer, from the persons affected often living at a distance from each other, or when they live under the same roof, having no intercourse with the sick. This was the case with the black slaves, who were supposed to have taken the disease from the white branches of a family in Connecticut, and which was mentioned, upon the authority of Dr. Beardsley, in a former edition of this inquiry. Admitting the above morbid matters now and then to act as a remote cause of consumption, it does not militate against the theory I have aimed to establish, for if it follow the analogy of common miasmata and contagions, it must act by first debilitating the whole system. The approach of the jail and bilious fevers is often indicated by general langour. The influenza and the measles are always accompanied by general debility, but the small-pox furnishes an analogy to the case in question more directly in point. The contagion of this disease, whether received by the medium of the air or the skin, never fails of producing weakness in the whole system, before it discovers itself in affections of those parts of the body on which the contagion produced its first operation.

7. I grant that cutaneous humours, and the matter of old sores, when repelled, or suddenly healed,

have in some cases fallen upon the lungs, and produced consumption. But I believe, in every case where this has happened, the consumption was preceded by general debility, or that it was not induced, until the whole system had been previously debilitated by a tedious and distressing cough.

If the reasonings founded upon the facts which have been mentioned be just, then it follows,

III. That the abscess, cough, tubercles, ulcers, and purulent or bloody discharges which occur in the pulmonary consumption, are the effects, and not the causes of the disease; and, that all attempts to cure it, by inquiring after tubercles and ulcers, or into the quality of the discharge from the lungs, are as fruitless as an attempt would be to discover the causes or cure of dropsies, by an examination of the qualities of collections of water, or to find out the causes and cure of fevers, by the quantity or quality of the discharges which take place in those diseases from the kidneys and skin. It is to be lamented, that it is not in pulmonary consumption only, that the effects of a disease have been mistaken for its cause. Water in the brain, a membrane in the trachea, and a preternatural secretion of bile, have been accused of producing hydrocephalus internus, cynanche trachealis, and bilious fever,

whereas we now know they are the effects of those diseases only, in the successive order in which each of them has been mentioned. It is high time to harness the steeds which drag the car of medicine before, instead of behind it. The earth, in our science, has stood still long enough. Let us at last believe, it revolves round its sun. I admit that the cough, tubercles, and ulcers, after they are formed, increase the danger of a consumption, by becoming new causes of stimulus to the system, but in this they are upon a footing with the water, the membrane, and the bile that have been alluded to, which, though they constitute no part of the diseases that produce them, frequently induce symptoms, and a termination of them, wholly unconnected with the original disease.

The tendency of general debility to produce a disease of the lungs appears in many cases, as well as in the pulmonary consumption. Dr. Lind tells us, that the last stage of the jail fever was often marked by a cough. I have seldom been disappointed in looking for a cough and a copious excretion of mucus and phlegm after the 14th or 15th days of a chronic typhus fever. Two cases of hypochondriasis under my care, ended in fatal diseases of the lungs. The debility of old age is generally accompanied by a troublesome cough, and the de-

bility which precedes death, generally discovers its last symptoms in the lungs. Hence most people die with what are called the rattles. They are produced by a sudden and copious effusion of mucus in the bronchial vessels of the lungs.

Sometimes the whole force of the consumptive fever falls upon the trachea instead of the lungs, producing in it defluxion, a hawking of blood, and occasionally a considerable discharge of blood, which are often followed by ulcers, and a spitting of pus. I have called it a tracheal, instead of a pulmonary consumption. Many people pass through a long life with a mucous defluxion upon the trachea, and enjoy in other respects tolerable health. In such persons the disease is of a local nature. It is only when it is accompanied with debility of the whole system, that it ends in a consumption. Mr. John Harrison, of the Northern Liberties, died of this disease under my care, in the year 1801, in consequence of the discharge of pus from an ulcer which followed a hæmorrhage from the trachea being suddenly suppressed. I have seen another case of the same kind in a lady in this city, in the year 1797. Dr. Spence, of Dumfries, in Virginia, in a letter which I received from him in June, 1805, describes a case then under his care, of this form of consumption. He calls it, very properly, "phthisis trache-

alis." I have met with two cases of death from this disease, in which there were tubercles in the trachea. The patients breathed with great difficulty, and spoke only in a whisper. One of them died from suffocation. In the other, the tubercle bursted a few days before his death, and discharged a large quantity of fœtid matter.

Should it be asked, why does general debility terminate by a disease in the lungs and trachea rather than in any other parts of the body? I answer that it seems to be the law of the system, that general debility should always produce some local disease. This local disease sometimes manifests itself in dyspepsia, as in the general debility which follows grief; sometimes it discovers itself in a diarrhœa, as in the general debility which succeeds to fear. Again it appears in the brain, as in the general debility which succeeds intemperance, and the constant or violent exercise of the understanding, or of stimulating passions; but it more frequently appears in the lungs, as the consequence of general debility. It would seem as if the debility in the cases of consumption is seated chiefly in the blood-vessels, while that debility which terminates in diseases of the stomach and bowels, is confined chiefly to the nerves, and that the local affections of the brain arise from a debility, invading alike the ner-

vous and arterial system. What makes it more probable that the arterial system is materially affected in the consumption is, that the disease most frequently occurs in those periods of life, and in those habits in which a peculiar state of irritability or excitability is supposed to be present in the arterial system; also in those climates in which there are the most frequent vicissitudes in the temperature of the weather. It has been observed, that the debility in the inhabitants of the West-Indies, whether produced by the heat of the climate or the excessive pursuits of business or pleasure, generally terminates in dropsy, or in some disease of the alimentary canal.

I have said, that it seemed to be a law of the system, that general debility should always produce some local affection. But to this law there are sometimes exception: the atrophy appears to be a consumption without an affection of the lungs. This disease is frequently mentioned by the writers of the 16th and 17th centuries by the name of *tabes*. I have seen several instances of it in adults, but more in children, and a greater number in the children of black than of white parents. The hectic fever, and even the night sweat, were as obvious in several of these cases, as in those consumptions

where general debility had discovered itself in an affection of the lungs.

I come now to make a few observations upon the CURE of consumption ; and here I hope it will appear, that the theory which I have delivered admits of an early and very important application to practice.

If the consumption be preceded by general debility, it becomes us to attempt the cure of it before it produce the active symptoms of cough, bloody or purulent discharges from the lungs, and inflammatory or hectic fever. The symptoms which mark its first stage, are too seldom observed ; or if observed, they are too often treated with equal neglect by patient and physicians. I shall briefly enumerate these symptoms. They are a slight fever increased by the least exercise ; a burning and dryness in the palms of the hands, more especially towards evening ; rheumy eyes upon waking from sleep ; an increase of urine ; a dryness of the skin, more especially of the feet in the morning* ; an occasional flushing in one, and some-

* The three last-mentioned symptoms are taken notice of by Dr. Bennet, in his Treatise upon the Nature and Cure of the Consumption, as precursors of the disease. Dr. Boerhaave used to tell his pupils that they had never deceived him.

times in both cheeks ; a hoarseness* ; a slight or acute pain in the breast ; a fixed pain in one side, or shooting pains in both sides ; head-ach ; occasional sick and fainty fits ; a deficiency of appetite, and a general indisposition to exercise or motion of every kind.

It would be easy for me to mention cases in which every symptom that has been enumerated has occurred within my own observation. I wish them to be committed to memory by young practitioners ; and if they derive the same advantages from attending to them, which I have done, I am sure they will not regret the trouble they have taken for that purpose. It is probable, while a morbid state of the lungs is supposed to be the proximate cause of this disease, they will not derive much reputation or emolument from curing it in its forming stage ; but let them remember, that in all attempts to discover the causes and cures of diseases, which have been deemed incurable, a physician will do nothing effectual until he acquire a perfect indifference to his own interest and fame.

* I have seen the hoarseness in one case the first symptom of approaching consumption. In this symptom it preserves the analogy of pneumony, which often comes on with a hoarseness, and sometimes with paraphonia.

The remedies for consumption, in this stage of the disease, are simple and certain. They consist in a desertion of all its remote and exciting causes, particularly sedentary employments, damp or cold situations, and whatever tends to weaken the system. When the disease has not yielded to this desertion of its remote and exciting causes, I have recommended the cold bath, steel, and bark with great advantage. However improper, or even dangerous, these remedies may be after the disease assumes an inflammatory or hectic type, and produces an affection of the lungs, they are perfectly safe and extremely useful in the state of the system which has been described. The use of the bark will readily be admitted by all those practitioners who believe the pulmonary consumption to depend upon a scrophulous diathesis. Should even the lungs be affected by scrophulous tumours, it is no objection to the use of the bark, for there is no reason why it should not be as useful in scrophulous tumours of the lungs, as of the glands of the throat, provided it be given before those tumours have produced inflammation; and in this case, no prudent practitioner will ever prescribe it in scrophula, when seated even in the external parts of the body. To these remedies should be added a diet moderately stimulating, and gentle exercise. I shall hereafter mention the dif-

ferent species of exercise, and the manner in which each of them should be used, so as to derive the utmost advantage from them. I can say nothing of the use of salt water or sea air in this stage of the consumption, from my own experience. I have heard them commended by a physician of Rhode-Island ; and if they be used before the disease has discovered itself in pulmonary affections, I can easily conceive they may do service.

If the simple remedies which have been mentioned have been neglected, in the first stage of the disease, it generally terminates, in different periods of time, in pulmonary affections, which show themselves under one of the three following forms :

1. A fever, accompanied by a cough, a hard pulse, and a discharge of blood, or mucous matter from the lungs.

2. A fever of the hectic kind, accompanied by chilly fits, and night sweats, and a pulse full, quick, and occasionally hard. The discharges from the lungs, in this state of the disease, are frequently purulent.

3. A fever with a weak frequent pulse, a troublesome cough, and copious purulent discharges.

from the lungs, a hoarse and weak voice, and chilly fits and night sweats alternating with a diarrhœa.

From this short history of the symptoms of pulmonary consumption there are occasional deviations. I have seen four cases, in which the pulse was natural, or slower than natural, to the last day of life. Mrs. Rebecca Smith, the lovely and accomplished wife of Mr. Robert Smith, of this city, passed through the whole course of this disease, in the year 1802, without a single chilly fit. Two other cases have come under my notice, in which there was not only an absence of chills, but of fever and night sweats. A similar case is recorded in the Memoirs of the Medical Society of London; and lastly, I have seen two cases which terminated fatally, in which there was neither cough nor fever for several months. One of them was in Miss Mary Loxley, the daughter of the late Mr. Benjamin Loxley, in the year 1785. She had complained of a pain in her right side, and had frequent chills with a fever of the hectic kind. They all gave way to frequent and gentle bleeding. In the summer of 1786, she was seized with the same complaints, and as she had great objections to bleeding, she consulted a physician who gratified her, by attempting to cure her by recommending exercise and country air. In the autumn she re-

turned to the city, much worse than when she left it. I was again sent for, and found her confined to her bed with a pain in her right side, but without the least cough or fever. Her pulse was preternaturally slow. She could lie only on her left side. She sometimes complained of acute flying pains in her head, bowels, and limbs. About a month before her death, which was on the 3d of May, 1787, her pulse became quick, and she had a little heaving cough, but without any discharge from her lungs. Upon my first visit to her in the preceding autumn, I told her friends that I believed she had an abscess in her lungs. The want of fever and cough afterwards, however, gave me reason to suspect that I had been mistaken. The morning after her death, I received a message from her father, informing me that it had been among the last requests of his daughter, that the cause of her death should be ascertained, by my opening her body. I complied with this request, and, in company with Dr. Hall, examined her thorax. We found the left lobe of the lungs perfectly sound; the right lobe adhered to the pleura, in separating of which, Dr. Hall plunged his hand into a large sac, which contained about half a pint of purulent matter, and which had nearly destroyed the whole substance of the right lobe of the lungs.

I have never seen a dry tongue in any of the forms or stages of this disease.

The three different forms of the pulmonary affection that I have mentioned, have been distinguished by the names of the first, second, and third stages of the consumption ; but as they do not always succeed each other in the order in which they have been mentioned, I shall consider them as different states of the system.)

The first I shall call the INFLAMMATORY, the second the HECTIC, and the third the TYPHUS state. I have seen the pulmonary consumption come on sometimes with all the symptoms of the second, and sometimes with most of the symptoms of the third state ; and I have seen two cases in which a hard pulse, and other symptoms of inflammatory action, appeared in the last hours of life. It is agreeable to pursue the analogy of this disease with a pneumony, or an acute inflammation of the lungs. They both make their first appearance in the same seasons of the year. It is true, the pneumony most frequently attacks with inflammatory symptoms ; but it sometimes occurs with symptoms which forbid blood-letting, and I have more than once seen it attended by symptoms which required the use of wine and bark. The

pneumony is attended at first by a dry cough, and an expectoration of streaks of blood ; the cough in the consumption, in like manner, is at first dry, and attended by a discharge of blood from the lungs, which is more copious than in the pneumony, only because the lungs are more relaxed in the former than in the latter disease. There are cases of pneumony in which no cough attends. I have just now mentioned that I had seen the absence of that symptom in pulmonary consumption.

The pneumony terminates in different periods, according to the degrees of inflammation, or the nature of the effusions which take place in the lungs : the same observation applies to the pulmonary consumption. The symptoms of the different forms of pneumony frequently run into each other ; so do the symptoms of the three forms of consumption which have been mentioned. In short, the pneumony and consumption are alike in so many particulars, that they appear to resemble shadows of the same substance. They differ only as the protracted shadow of the evening does from that of the noon-day sun.

I know that it will be objected here that the consumption is sometimes produced by scrophula, and that this creates an essential difference between

it and pneumony. I formerly admitted scrophula to be one of the remote causes of the consumption; but this does not invalidate the parallel which has been given of the two diseases. The phenomena produced in the lungs are the same as to their nature, whether they be produced by the remote cause of scrophula, or by the sudden action of cold and heat upon them.

No more happens in the cases of acute and chronic pneumony, than what happens in dysentery and rheumatism. These two last diseases are for the most part so acute, as to confine the patient to his bed or his room, yet we often meet with both of them in patients who go about their ordinary business, and in some instances, carry their diseases with them for two or three years.

The parallel which has been drawn between the pneumony and consumption, will enable us to understand the reason why the latter disease terminates in such different periods of time. The less it partakes of pneumony, the longer it continues, and vice versa. What is commonly called in this country a galloping consumption, is a disease compounded of different degrees of consumption and pneumony. It terminates frequently in two or three months, and without many of the symptoms

which usually attend the last stage of pulmonary consumption. But there are cases in which patients in a consumption are suddenly snatched away by an attack of pneumonia. I have met with one case only, in which, contrary to my expectation, the patient mended after an attack of an acute inflammation of the lungs, so as to live two years afterwards.

It would seem from these facts, as if nature had preferred a certain gradation in diseases, as well as in other parts of her works. There is scarcely a disease in which there is not a certain number of grades, which mark, the distance between health and the lowest specific deviation from it. Each of these grades has received different names, and has been considered as a distinct disease, but more accurate surveys of the animal economy have taught us, that they frequently depend upon the same original causes, and that they are only greater or less degrees of the same disease.

I shall now proceed to say a few words upon the cure of the different states of pulmonary consumption. The remedies for this purpose are of two kinds, viz. PALLIATIVE and RADICAL. I shall first mention the palliative remedies which belong to each state, and then mention those

which are alike proper in them all. The palliative remedies for the

I. OR INFLAMMATORY STATE, are

1. BLOOD-LETTING. It may seem strange to recommend this debilitating remedy in a disease brought on by debility. Were it proper in this place, I could prove that there is no disease in which bleeding is prescribed, which is not induced by predisposing debility, in common with the pulmonary consumption. I shall only remark here, that in consequence of the exciting cause acting upon the system (rendered extremely excitable by debility) such a morbid and excessive excitement is produced in the arteries, as to render a diminution of the stimulus of the blood absolutely necessary to reduce it. I have used this remedy with great success, in every case of consumption attended by a hard pulse, or a pulse rendered weak by a laborious transmission of the blood through the lungs. In the months of February and March, in the year 1781, I bled a Methodist minister, who was affected by this state of consumption, fifteen times in the course of six weeks. The quantity of blood drawn at each bleeding was never less than eight ounces, and it was at all times covered with an inflammatory crust. By the addition of

country air, and moderate exercise, to this copious evacuation, in the ensuing spring he recovered his health so perfectly, as to discharge all the duties of his profession for many years, nor was he ever afflicted afterwards with a disease in his breast. I have, in another instance, bled a citizen of Philadelphia eight times in two weeks, in this 'state of consumption, and with the happiest effects. The blood drawn at each bleeding was always sizzly, and never less in quantity than ten ounces. Mr. Tracey of Connecticut informed me, in the spring of 1802, that he had been bled eighty-five times in six months, by order of his physician, Dr. Sheldon, in the inflammatory state of this disease. He ascribed his recovery chiefly to this frequent use of the lancet. To these cases I might add many others of consumptive persons who have been perfectly cured by frequent, and of many others whose lives have been prolonged by occasional bleedings. But I am sorry to add, that I could relate many more cases of consumptive patients, who have died martyrs to their prejudices against the use of this invaluable remedy. A common objection to it is, that it has been used without success in this disease. When this has been the case, I suspect that it has been used in one of the other two states of pulmonary consumption which have been mentioned, for it has unfortunately been too fashion-

able among physicans to prescribe the same remedies in every stage and form of the same disease, and this I take to be the reason why the same medicines, which, in the hands of some physicians, are either inert or instruments of mischief, are, in the hands of others, used with more or less success in every case in which they are prescribed. Another objection to bleeding in the inflammatory state of consumption, is derived from the apparent and even sensible weakness of the patient. The men who urge this objection, do not hesitate to take from sixty to a hundred ounces of blood from a patient in a pneumony, in the course of five or six days, without considering that the debility in the latter case is such as to confine a patient to his bed, while, in the former case, the patient's strength is such as to enable him to walk about his house, and even to attend to his ordinary business. The difference between the debility in the two diseases, consists in its being acute in the one, and chronic in the other. It is true, the preternatural or convulsive excitement of the arteries is somewhat greater in the pneumony, than in the inflammatory consumption; but the plethora, on which the necessity of bleeding is partly founded, is certainly greater in the inflammatory consumption than in pneumony. This is evident from women, and even nurses, discharging from four to six ounces

of menstrual blood every month, while they are labouring with the most inflammatory symptoms of the disease; nor is it to be wondered at, since the appetite is frequently unimpaired, and the generation of blood continues to be the same as in perfect health.

Dr. Cullen recommends the use of bleeding in consumptions, in order to lessen the inflammation of the ulcers in the lungs, and thereby to dispose them to heal. From the testimonies of the relief which bleeding affords in external ulcers and tumours accompanied by inflammation, I am disposed to expect the same benefit from it in inflamed ulcers and tumours in the lungs: whether, therefore, we adopt Dr. Cullen's theory of consumption, and treat it as a local disease, or assent to the one which I have delivered, repeated bleedings appear to be equally necessary and useful.

I have seen two cases of inflammatory consumption, attended by a hæmorrhage of a quart of blood from the lungs. I agreed at first with the friends of these patients in expecting a rapid termination of their disease in death, but to the joy and surprise of all connected with them, they both recovered. I ascribed their recovery wholly to the inflammatory action of their systems being

suddenly reduced by a spontaneous discharge of blood. These facts, I hope, will serve to establish the usefulness of blood-letting in the inflammatory state of consumption, with those physicians who are yet disposed to trust more to the fortuitous operations of nature, than to the decisions of reason and experience.

I have always found this remedy to be more necessary in the winter and first spring months, than at any other season. We obtain by means of repeated bleedings, such a mitigation of all the symptoms as enables the patient to use exercise with advantage as soon as the weather becomes so dry and settled, as to admit of his going abroad every day.

The relief obtained by bleeding, is so certain in this state of consumption, that I often use it as a palliative remedy, where I do not expect it will perform a cure. I was lately made happy in finding, that I am not singular in this practice. Dr. Hamilton, of Lynn Regis, used it with success in a consumption, which was the effect of a most deplorable scrophula, without entertaining the least hope of its performing a cure*. In those cases

* Observations on Scrophulous Affections.

where inflammatory action attends the last scene of the disease, there is often more relief obtained by a little bleeding than by the use of opiates, and it is always a more humane prescription, in desperate cases, than the usual remedies of vomits and blisters.

I once bled a sea captain, whom I had declared to be within a few hours of his dissolution, in order to relieve him of uncommon pain, and difficulty in breathing. His pulse was at the same time hard. The evacuation, though it consisted of but four ounces of blood, had the wished for effect, and his death, I have reason to believe, was rendered more easy by it. The blood, in this case, was covered with a buffy coat.

The quantity of blood drawn in every case of inflammatory consumption, should be determined by the force of the pulse, and the habits of the patient. I have seldom taken more than eight, but more frequently but six ounces at a time. It is much better to repeat the bleeding once or twice a week, than to use it less frequently, but in larger quantities.

From many years experience of the efficacy of bleeding in this state of consumption, I feel my-

self authorised to assert, that where a greater proportion of persons die of consumption when it makes its first appearance in the lungs, with symptoms of inflammatory diathesis, than die of ordinary pneumonies (provided exercise be used afterwards), it must, in nine cases out of ten, be ascribed to the ignorance, or erroneous theories of physicians, or to the obstinacy or timidity of patients.

In speaking thus confidently of the necessity and benefits of bleeding in the inflammatory state of consumption, I confine myself to observations made chiefly in the state of Pennsylvania. It is possible the inhabitants of European countries and cities, may so far have passed the simple ages of inflammatory diseases, as never to exhibit those symptoms on which I have founded the indication of blood-letting. I suspect moreover that in most of the southern states of America, the inflammatory action of the arterial system is of too transient a nature to admit of the repeated bleedings in the consumption which are used with so much advantage in the middle and northern states.

In reviewing the prejudices against this excellent remedy in consumptions, I have frequently wished to discover such a substitute for it as would with equal safety and certainty take down the mor-

bid excitement, and action of the arterial system. At present we know of no such remedy; and until it be discovered, it becomes us to combat the prejudices against bleeding; and to derive all the advantages from it which have been mentioned.

2. A second remedy for the inflammatory state of consumption should be sought for in a MILK and VEGETABLE DIET. In those cases where the milk does not lie easy on the stomach, it should be mixed with water, or it should be taken without its cheesy or oily parts, as in whey or buttermilk, or it should be taken without skimming; for there are cases in which milk will agree with the stomach in this state, and in no other. The oil of the milk probably helps to promote the solution of its curds in the stomach. It is seldom in the power of physicians to prescribe ass' or goat's milk in this disease; but a good substitute may be prepared for them by adding to cow's milk a little sugar, and a third or fourth part of water, or of a weak infusion of green tea. The quantity of milk taken in a day should not exceed a pint, and even less than that quantity when we wish to lessen the force of the pulse by the abstraction of nourishment. The vegetables which are eaten in this state of the disease, should contain as little stimulus as possible. Rice, in all the ways in

which it is usually prepared for aliment, should be preferred to other grains, and the less saccharine fruits to those which abound with sugar. In those cases where the stomach is disposed to dyspepsia, a little salted meat, fish, or oysters, also soft boiled eggs, may be taken with safety, mixed with vegetable aliment. Where there is no morbid affection of the stomach, I have seen the white meats eaten without increasing the inflammatory symptoms of the disease. The transition from a full diet to milk and vegetables should be gradual, and the addition of animal to vegetable aliment, should be made with the same caution. From the neglect of this direction, much error, both in theory and practice, has arisen in the treatment of consumptions.

In every case it will be better for the patient to eat four or five, rather than but two or three meals in a day. A less stimulus is by this means communicated to the system, and less chyle is mixed with the blood in a given time. Of so much importance do I conceive this direction to be, that I seldom prescribe for a chronic disease of any kind without enforcing it.

3. **VOMITS** have been much commended by Dr. Read in this disease. From their indiscriminate use in every state of consumption, I believe

they have oftener done harm than good. In cases where a patient objects to bleeding, or where a physician doubts of its propriety, vomits may always be substituted in its room with great advantage. They are said to do most service when the disease is the effect of a catarrh.

4. NITRE, in moderate doses of ten or fifteen grains, taken three or four times a day, has sometimes been useful in this disease; but it has been only when the disease has appeared with inflammatory symptoms. Care should be taken not to persevere too long in the use of this remedy, as it is apt to impair the appetite. I have known one case in which it produced an obstinate dyspepsia, and a disposition to the cholic; but it removed, at the same time, the symptoms of pulmonary consumption.

5. COLD and DRY AIR, when combined with the exercise of walking, deserves to be mentioned as an antiphlogistic remedy. I have repeatedly prescribed it in this species of the consumption with advantage, and have often had the pleasure of finding a single walk of two or three miles in a clear cold day, produce nearly the same diminution of the force and frequency of the pulse, as the loss of six or eight ounces of blood.

I come now to treat of the palliative remedies which are proper in the

II. OF HECTIC STATE of consumption. Here we begin to behold the disease in a new and more distressing form than in the state which has been described. There is in this state of consumption the same complication of inflammatory and typhus diathesis which occurs in the typhoid and puerperile fevers, and of course the same difficulty in treating it successfully; for the same remedies do good and harm, according as the former or latter diathesis prevails in the system.

All that I shall say upon this state is, that the treatment of it should be accommodated to the predominance of inflammatory or typhus symptoms, for the hectic state presents each of them alternately every week, and sometimes every day to the hand, or eye of a physician. When a hard pulse with acute pains in the side and breast occur, bleeding and other remedies for the inflammatory state must be used; but when the disease exhibits a predominance of typhus symptoms, the remedies for that state to be mentioned immediately, should be prescribed in moderate doses. There are several palliative medicines which have been found useful in the hectic state, but they are

such as belong alike to the other two states; and therefore will be mentioned hereafter in a place assigned to them.

I am sorry, however, to add, that where bleeding has not been indicated, I have seldom been able to afford much relief by medicine in this state of consumption. I have used alternately the most gentle, and the most powerful vegetable and metallic tonics to no purpose. Even arsenic has failed in my hands of affording the least alleviation of the hectic fever. I conceive the removal of this fever to be the great desideratum in the cure of consumption; and should it be found, after all our researches, to exist only in exercise, it will be no departure from a law of nature, for I believe there are no diseases produced by equal degrees of chronic debility, in which medicines are of any more efficacy, than they are in the hectic fever of the pulmonary consumption.

I proceed now to speak of the palliative remedies which are proper in the

III. Or TYPHUS STATE of the pulmonary consumption.

The first of these are STIMULATING MEDICINES. However just the complaints of Dr. Fothergill may be against the use of balsams in the inflammatory and mixed states of consumption, they appear to be not only safe, but useful likewise, in mitigating the symptoms of weak morbid action in the arterial system. I have therefore frequently prescribed opium, the balsam of copaivæ, of Peru, the oil of amber, and different preparations of turpentine and tar, in moderate doses, with obvious advantage. Garlic, elixir of vitriol, the juice of dandelion, a strong tea made of horehound, and a decoction of the inner bark of the wild cherry tree*, also bitters of all kinds, have all been found safe and useful tonics in this state of consumption. Even the Peruvian bark and the cold bath, so often and so generally condemned in consumptions, are always innocent, and frequently active remedies, where there is a total absence of inflammatory diathesis in this disease. The bark is said to be most useful when the consumption is the consequence of an intermitting fever, and when it occurs in old people. With these remedies should be combined

2. A CORDIAL and STIMULATING DIET. Milk and vegetables, so proper in the inflammatory, are

* *Prunus Virginiana*.

improper, when taken alone, in this state of consumption. I believe they often accelerate that decay of appetite and diarrhœa, which form the closing scene of the disease. I have lately seen three persons recovered from the lowest stage of this state of consumption, by the use of animal food and cordial drinks, aided by frequent doses of opium, taken during the day as well as in the night. I should hesitate in mentioning these cures, had they not been witnessed by more than a hundred students of medicine in the Pennsylvania hospital. The history of one of them is recorded in the 5th volume of the New-York Medical Repository, and of the two others in Dr. Coxe's Medical Museum. Oysters, it has been said, have performed cures of consumption. If they have, it must have been only when they were eaten in that state of it which is now under consideration. They are a most savoury and wholesome article of diet, in all diseases of weak morbid action. To the cordial articles of diet belong sweet vegetable matters. Grapes, sweet apples, and the juice of the sugar maple tree, when taken in large quantities, have all cured this disease. They all appear to act by filling the blood-vessels, and thereby imparting tone to the whole system. I have found the same advantage from dividing the meals in this state of consumption, that I mentioned under a former

nead. The exhibition of food in this case, should not be left to the calls of appetite, any more than the exhibition of a medicine. Indeed food may be made to supply the place of cordial medicines, by keeping up a constant and gentle action in the whole system. For this reason, I have frequently advised my patients never to suffer their stomachs to be empty, even for a single hour. I have sometimes aimed to keep up the influence of a gentle action in the stomach upon the whole system, by advising them to eat in the night, in order to obviate the increase of secretion into the lungs and of the cough in the morning, which are brought on in part by the increase of debility from the long abstraction of the stimulus of aliment during the night.

However safe, and even useful, the cordial medicines and diet that have been mentioned may appear, yet I am sorry to add, that we seldom see any other advantages from them than a mitigation of distressing symptoms, except when they have been followed by suitable and long continued exercise. Even under this favourable circumstance, they are often ineffectual; for there frequently occurs, in this state of consumption, such a destruction of the substance and functions of the lungs, as to preclude the possibility of a recovery by the use

of any of the remedies which have been discovered. Perhaps, where this is not the case, their want of efficacy may be occasioned by their being given before the pulse is completely reduced to a typhus state. The weaker the pulse, the greater is the probability of benefit being derived from the use of cordial diet and medicines.

I have said formerly, that the three states of consumption do not observe any regular course in succeeding each other. They are not only complicated in some instances, but they often appear and disappear half a dozen times in the course of the disease, according to the influence of the weather, dress, diet, and the passions upon the system. The great secret, therefore, of treating this disease consists in accommodating all the remedies that have been mentioned to the predominance of any of the three different states of the system, as manifested chiefly by the pulse. It is in consequence of having observed the evils which have resulted from the ignorance or neglect of this practice, that I have sometimes wished that it were possible to abolish the seducing nomenclature of disease altogether, in order thereby to oblige physicians to conform exactly to the fluctuating state of the system in all their prescriptions; for it is not more certain, that, in all cultivated languages, every idea

has its appropriate word, than that every state of a disease has its appropriate dose of medicine, the knowledge and application of which can alone constitute rational, or secure uniformly successful practice.

I come now to say a few words upon those palliative remedies which are alike proper in nearly every state of the pulmonary consumption.

The first remedy under this head is a DRY SITUATION. A damp air, whether breathed in a room, or out of doors, is generally hurtful in every form of this disease. A kitchen, or a bed-room, below the level of the ground, has often produced, and never fails to increase, a pulmonary consumption. I have often observed a peculiar paleness (the first symptom of general debility) to show itself very early in the faces of persons who work or sleep in cellar kitchens or shops.

2. COUNTRY AIR. The higher and drier the situation which is chosen for the purpose of enjoying the benefit of this remedy, the better. Situations exposed to the sea, should be carefully avoided; for it is a singular fact, that while consumptive persons are benefited by the sea-air, when they breathe it on the ocean, they are always injured

by that portion of it which they breathe on the sea-shore. To show its influence, not only in aggravating consumptions, but in disposing to them, and in adding to the mortality of another disease of the lungs, I shall subjoin the following facts. From one fourth to one half of the adults who die in Great Britain, Dr. Willan says, perish with this disease. In Salem, in the state of Massachusetts, which is situated near the sea, and exposed, during many months of the year, to a moist east wind, there died, in the year 1799, one hundred and sixty persons; fifty-three died of the consumption, making in all nearly one third of the inhabitants of the town. Eight more died of what is called a lung fever, probably of what is called in Pennsylvania the galloping grade of that disease. Consumptions are more frequent in Boston, Rhode-Island, and New-York, from their damp winds, and vicinity to the sea-shore, than they are in Philadelphia. In the neighbourhood, of Cape May, which lies near the sea-shore of New-Jersey, there are three religious societies, among whom the influenza prevailed in the year 1790. Its mortality, under equal circumstances, was in the exact ratio to their vicinity to the sea. The deaths were most numerous in that society which was nearest to it, and least so in that which was most remote from it. These unfriendly effects of the sea-air, in the

above pulmonary diseases, do not appear to be produced simply by its moisture. Consumptions are scarcely known in the moist atmosphere which so generally prevails in Lincolnshire, in England, and in the inland parts of Holland and Ireland.

I shall not pause to inquire, why a mixture of land and sea air is so hurtful in the consumption, and at the same time so agreeable to persons in health, and so medicinal in many other diseases, but shall dismiss this head by adding a fact which was communicated to me by Dr. Matthew Irvine, of South-Carolina, and that is, That those situations which are in the neighbourhood of bays or rivers, where the salt and fresh waters mix their streams together, are more unfavourable to consumptive patients than the sea-shore, and therefore should be more carefully avoided by them in exchanging city for country air.

3. A CHANGE of CLIMATE. It is remarkable that climates uniformly cold or warm, which seldom produce consumptions, are generally fatal to persons who visit them in that disease. Countries between the 30th and 40th degrees of latitude are most friendly to consumptive people.

4. LOOSE DRESSES, AND A CAREFUL ACCOMMODATION OF THEM TO THE CHANGES IN THE WEATHER: Many facts might be mentioned to show the influence of compression and of tight ligatures of every kind, upon the different parts of the body; also of too much, or too little clothing, in producing, or increasing diseases of every kind, more especially those which affect the lungs. Tight stays, garters, waistbands, and collars, should all be laid aside in the consumption, and the quality of the clothing should be suited to the weather. A citizen of Maryland informed me, that he twice had a return of a cough and spitting of blood, by wearing his summer clothes a week after the weather became cool in the month of September. But it is not sufficient to vary the weight or quality of dress with the seasons. It should be varied with the changes which take place in the temperature of the air every day, even in the summer months, in middle latitudes. I know a citizen of Philadelphia, who has laboured under a consumptive diathesis near thirty years, who believes that he has lessened the frequency and violence of pulmonic complaints during that time, by a careful accommodation of his dress to the weather. He has been observed frequently to change his waistcoat and small clothes twice or three times in a day, in a summer month.

A repetiton of colds, and thereby an increase of the disease, will be prevented by wearing flannel next to the skin in winter, and muslin in the summer, either in the form of a shirt or a waist-coat: where these are objected to, a piece of flannel, or of soft sheepskin, should be worn next to the breast. They not only prevent colds, but frequently remove chronic pains from that part of the body.

5. ARTIFICIAL EVACUATIONS, by means of BLISTERS and ISSUES. I suspect the usefulness of these remedies to be chiefly confined to the inflammatory and hectic states of consumption. In the typhus state, the system is too weak to sustain the discharges of either of them. Fresh blisters should be preferred to such as are perpetual, and the issues, to be useful should be large. They are supposed to afford relief by diverting a preternatural secretion and excretion of mucus or pus from the lungs, to an artificial emunctory in a less vital part of the body. Blisters do most service when the disease arises from repelled eruptions, and when they are applied between the shoulders, and the upper and internal parts of the arms. When it arises from rheumatism and gout, the blisters should be applied to the joints, and such other ex-

ternal parts of the body as had been previously affected by those diseases.

6. Considerable relief will often be obtained from the patient's SLEEPING BETWEEN BLANKETS in winter, and on a MATTRASS in summer. The former prevent fresh cold from night sweats; the latter frequently checks them altogether. In cases where a sufficient weight of blankets to keep up an agreeable warmth cannot be borne, without restraining easy and full acts of inspiration, the patient should sleep under a light feather bed, or an eider down coverlet. They both afford more warmth than double or treble their weight of blankets.

However comfortable this mode of producing warmth in bed may be, it does not protect the lungs from the morbid effects of the distant points of temperature of a warm parlour in the day time, and a cold bed-chamber at night. To produce an equable temperature of air at all hours, I have frequently advised my patients, when going to a warm climate was not practicable, to pass their nights as well as days in an open stove room, in which nearly the same degrees of heat were kept up at all hours. I have found this practice, in

several cases, a tolerable substitute for a warm climate.

7. The MODERATE use of the lungs, in READING, PUBLIC SPEAKING, LAUGHING, and SINGING. The lungs, when debilitated, derive equal benefit with the limbs, or other parts of the body; from moderate exercise. I have mentioned, in another place*, several facts which support this opinion. But too much pains cannot be taken to inculcate upon our patients to avoid all excess in the use of the lungs, by long, or loud reading, speaking, or singing, or by sudden and violent bursts of laughter. I shall long lament the death of a female patient, who had discovered many hopeful signs of a recovery from a consumption, who relapsed, and died, in consequence of bursting a blood-vessel in her lungs, by a sudden fit of laughter.

8. Are there any advantages to be derived from the excitement of certain PASSIONS in the treatment of consumptions? Dr. Blane tells us, that many consumptive persons were relieved, and that some recovered, in consequence of the terror

* An Account of the Effects of Common Salt in the Cure of Hæmoptysis.

which was excited by a hurricane in Barbadoes, in the year 1780. It will be difficult to imitate, by artificial means, the accidental cures which are recorded by Dr. Blane ; but we learn enough from them to inspire the invigorating passions of hope and confidence in the minds of our patients, and to recommend to them such exercises as produce exertions of body and mind analogous to those which are produced by terror. Van Sweiten and Smollet relate cures of consumptions, by patients falling into streams of cold water. Perhaps, in both instances, the cures were performed only by the fright and consequent exertion produced by the fall. This is only one instance out of many which might be mentioned, of partial and unequal action being suddenly changed into general and equal excitement in every part of the system. The cures of consumptions which have been performed by a camp life, have probably been much assisted by the commotions in the passions which were excited by the various and changing events of war.

9. SALIVATION has lately been prescribed in this disease with success. An accident first suggested its advantages, in the Pennsylvania hospital, in the year 1800*. Since that time, it has

* Medical Repository of New-York. Vol. V.

performed many cures in different parts of the United States. It is to be lamented, that in a majority of the cases in which the mercury has been given, it has failed of exciting a salivation. Where it affects the mouth, it generally succeeds in recent cases, which is more than can be said of any, or of all other remedies for this disease. In its hectic state, a salivation frequently cures, and even in its typhus and last stage, I have more than once prescribed it with success. The same regard to the pulse should regulate the use of this new remedy in consumption, that has been recommended in other febrile diseases. It should never be advised until the inflammatory diathesis of the system has been in a great degree reduced, by the depleting remedies formerly mentioned.

During the use of the above remedies, great care should be taken to relieve the patient from the influence of all those debilitating and irritating causes which induced the disease. I have said elsewhere that decayed teeth are one of them. These should be extracted where there is reason to suspect they have produced, or that they increased the disease.

I have hitherto said nothing of the digitalis as a palliative remedy in pulmonary consumption. I am sorry to acknowledge that, in many cases in

which I have prescribed it, it has done no good, and in some it has done harm. From the opposite accounts of physicians of the most respectable characters of the effects of this medicine, I have been inclined to ascribe its different issues, to a difference in the soil in which it has been cultivated, or in the times of gathering, or in the manner of preparing it, all of which we know influence the qualities of many other vegetables. If the theory of consumption which I have endeavoured to establish be admitted, that uncertain and unsafe medicine will be rendered unnecessary by the remedies that have been enumerated, provided they are administered at the times, and in the manner that has been recommended.

Before I proceed to speak of the radical cure of the consumption, it will be necessary to observe, that by means of the palliative remedies which have been mentioned, many persons have been recovered, and some have had their lives prolonged by them for many years; but in most of these cases I have found, upon inquiry, that the disease recurred as soon as the patient left off the use of his remedies, unless they were followed by necessary or voluntary exercise.

It is truly surprising to observe how long some persons have lived who have been affected by a consumptive diathesis, and by frequent attacks of many of the most troublesome symptoms of this disease. Van Sweiten mentions the case of a man, who had lived thirty years in this state. Morton relates the history of a man, in whom the symptoms of consumption appeared with but little variation or abatement from his early youth till the 70th year of his age. The widow of the celebrated Senac lived to be 84 years of age, thirty of which she passed in a pulmonary consumption. Dr. Nicols was subject to occasional attacks of this disease during his whole life, and he lived to be above eighty years of age. Bennet says he knew an instance in which it continued above sixty years. I prescribed for my first pupil, Dr. Edwards, in a consumption in the year 1769. He lived until 1802, and seldom passed a year without spitting blood, nor a week without a cough, during that long interval of time. The fatal tendency of his disease was constantly opposed by occasional blood-letting, rural exercises, a cordial, but temperate diet, the Peruvian bark, two sea voyages, and travelling in foreign countries. There are besides these instances of long protracted consumptions, cases of it which appear in childhood, and continue for many

years. I have seldom known them prove fatal under puberty.

I am led here to mention another instance of the analogy between pneumony and the pulmonary consumption. We often see the same frequency of recurrence of both diseases in habits which are predisposed to them. I have attended a German citizen of Philadelphia, in several fits of the pneumony, who has been confined to his bed eight-and-twenty times, by the same disease, in the course of the same number of years. He has, for the most part, enjoyed good health in the intervals of those attacks, and always appeared, till lately, to possess a good constitution. In the cases of the frequent recurrence of pneumony, no one has suspected the disease to have originated exclusively in a morbid state of the lungs; on the contrary, it appears evidently to be produced by the sudden influence of the same causes, which, by acting with less force, and for a longer time, produce the pulmonary consumption. The name of pneumony is taken from the principal symptom of this disease, but it as certainly belongs to the whole arterial system as the consumption; and I add further, that it is as certainly produced by general predisposing debility. The hardness and fulness of the pulse do not militate against this assertion,

for they are altogether the effect of a morbid and convulsive excitement of the sanguiferous system. The strength manifested by the pulse is moreover partial, for every other part of the body discovers, at the same time, signs of extreme debility.

It would be easy, by pursuing this subject a little further, to mention a number of facts which, by the aid of principles in physiology and pathology, which are universally admitted, would open to us a new theory of fevers, but this would lead us too far from the subject before us. I shall only remark, that all that has been said of the influence of general debilitating causes upon the lungs, both in pneumony and consumption, and of the alternation of the consumption with other general diseases, will receive great support from considering the lungs only as a part of the whole external surface of the body, upon which most of the remote and exciting causes of both diseases produce their first effects. This extent of the surface of the body, not only to the lungs, but to the alimentary canal, was first taken notice of by Dr. Boerhaave ; but was unhappily neglected by him in his theories of the diseases of the lungs and bowels. Dr. Keil supposes that the lungs, from the peculiar structure of the bronchial vessels, and air vesicles, expose a surface to the action of the

air, equal to the extent of the whole external and visible surface of the body.

There are several distressing symptoms which occur in pulmonary consumption that call for relief. These are chiefly a cough, night sweats, and a diarrhœa. The medicines for the cough, should be

1. DEMULCENT TEAS, SYRUPS, and LOZENGES. These are too common and too numerous to be mentioned. They should be more or less stimulating according to the state of the pulse.

2. OPIATES. It is a mistake in practice, founded upon a partial knowledge of the qualities of opium to administer it only at nights, or to suppose that its effects in composing a cough depend wholly upon its inducing sleep. A dose of the same strength should be given every morning, that is given at night, and small doses of it should be given during the day and night, when the cough is troublesome. The practice of giving laudanum in pulmonary consumption early in the morning is strongly recommended by Dr. Sydenham. It is founded alike upon the nature of the disease, and a law in the animal economy mentioned in the Lectures upon animal life, that is,

the system in its diurnal revolutions is always in a state of the greatest debility immediately after waking in the morning. A great advantage will arise from giving the dose of laudanum that is intended to compose the cough at night, early in the evening before the system is excited by an exacerbation of fever. The quantity of this medicine taken at all times should be proportioned to the degrees of action in the arterial system. The less this action the more of it may be taken with safety and advantage. It does most service when given in succession in the different forms of pills, liquid laudanum, and paregoric elixir.

3. Certain FUMIGATIONS and VAPOURS. An accidental cure of a pulmonary consumption by the smoke of rosin in a man who bottled liquors, raised for a while the credit of fumigations. I have tried them, but without much permanent effect. A vapour produced from pouring boiling water upon equal parts of tar and bran, received into the lungs has sometimes given great relief. The sulphurous and saline air of Lybia between mount Vesuvius, and the Mediteranean sea, and the effluvia of the pine forests of Lybia were supposed in ancient times to be powerful remedies in consumptive complaints; but it is probable the exercise used in travelling to those countries, contributed

chiefly to the cures which were ascribed to foreign matters acting upon the lungs.

4. Different positions of the body have been found to be more or less favourable to the abatement of the cough. These positions should be carefully sought for, and the body kept in that which procures the most freedom from coughing. I have heard of an instance in which a cough that threatened a return of hæmorrhage from the lungs, was perfectly composed for two weeks by keeping the patient nearly in one posture in bed, but relief is more generally obtained from coughing, by an erect posture of the body.

5. SILENCE. However much moderate speaking, reading, and singing may contribute to strengthen the lungs, there are cases in which a cough is suspended by refraining from them to such a degree, as to employ speech only for the most important purposes of life.

II. NIGHT SWEATS are to be checked by the elixir of vitriol; the nitric acid, drinking a pint of lime water daily, or instead of it, taking every night at bed time a small tea spoonful of the fine powder of calcined oyster shells, and lastly by eating water melons. The last remedy acts as a

diarrectic, and thus diverts the fluids from the skin to the kidneys. The seeds of that pleasant fruit bruised and made into a tea, might be substituted for it at every season of the year, and in every country.

III. A diarrhæa should be restrained by the chalk julep, prepared with laudanum and the tincture of cinnamon, by injections of laudanum into the bowels, and by astringent aliments and drinks.

Thus have I mentioned the usual palliative remedies for the consumption. Many of these remedies, under certain circumstances, I have said have cured the disease, but I suspect that most of these cures have taken place only when the disease has partaken of an intermediate nature between a pneumony and a true pulmonary consumption. Such connecting shades, appear between the extreme points of many other diseases. In a former essay*, I endeavoured to account for the transmutation (if I may be allowed the expression) of the pneumony into the consumption, by ascribing it to the increase of the debilitating refinements of civi-

* Inquiry into the Diseases and Remedies of the Indians of North-America ; and a comparative view of their diseases and remedies with those of civilized nations. Vol. I.

lized life. This opinion has derived constant support from every observation I have made connected with this subject, since its first publication, in the year 1772.

I come now to treat of the RADICAL REMEDIES for the pulmonary consumption.

In a preceding inquiry*, I mentioned the effects of labour, and the hardships of a camp or naval life, upon this disease. As there must frequently occur such objections to each of these remedies, as to forbid their being recommended or adopted, it will be necessary to seek for substitutes for them in the different species of exercise. These are, active, passive, and mixed. The active, includes walking, and the exercise of the hands and feet in working or dancing. The passive includes rocking in a cradle, swinging, sailing, and riding in carriages of different kinds. The mixed is confined chiefly to riding on horseback.

I have mentioned all the different species of exercise, not because I think they all belong to the class of radical remedies for the consumption, but because it is often necessary to use those which are

* On the Pulmonary Consumption.

passive, before we recommend those of a mixed or active nature. That physician does not err more who advises a patient to take physic, without specifying its qualities and doses, than the physician does who advises a patient, in a consumption, to use exercise, without specifying its species and degrees. From the neglect of this direction, we often find consumptive patients injured instead of being relieved by exercises, which, if used with judgment, might have been attended with the happiest effects.

I have before suggested that the stimulus of every medicine, which is intended to excite action in the system, should always be in an exact ratio to its excitability. The same rule should be applied to the stimulus of exercise. I have heard a well-attested case of a young lady, upon whose consumption the first salutary impression was made by rocking her in a cradle; and I know another case in which a young lady, in the lowest state of that debility which precedes an affection of the lungs, was prepared for the use of the mixed and active exercises, by being first moved gently backwards and forwards in a chariot without horses, for an hour every day. Swinging appears to act in the same gentle manner. In the case of a gardener, who was far advanced in a consumption, in the

Pennsylvania hospital, I had the pleasure of observing its good effects, in an eminent degree. It so far restored him, as to enable him to complete his recovery by working at his former occupation.

In cases of extreme debility, the following order should be recommended in the use of the different species of exercise.

1. Rocking in a cradle, or riding on an elastic board, commonly called a chamber-horse.
2. Swinging.
3. Sailing.
4. Riding in a carriage.
5. Riding on horseback.
6. Walking.
7. Running and dancing.

In the use of each of those species of exercise great attention should be paid to the degree or force of action with which they are applied to the body. For example, in riding in a carriage, the exercise

will be less in a four-wheel carriage than in a single horse chair, and less when the horses move in a walking, than a trotting gait. In riding on horseback, the exercise will be less or greater according as the horse walks, paces, canters, or trots, in passing over the ground.

I have good reason to believe, that an English sea-captain, who was on the verge of the grave with the consumption, in the spring of the year 1790, owed his perfect recovery to nothing but the above gradual manner, in which, by my advice, he made use of the exercises of riding in a carriage and on horseback. I have seen many other cases of the good effects of thus accommodating exercise to debility; and I am sorry to add, that I have seen many cases in which, from the neglect of this manner of using exercise, most of the species and degrees of it, have either been useless, or done harm. However carelessly this observation may be read by physicians, or attended to by patients, I conceive no direction to be more necessary in the cure of consumptions. I have been thus particular in detailing it, not only because I believe it to be important, but that I might atone to society for that portion of evil which I might have prevented by a more strict attention to it in the first years of my practice.

The more the arms are used in exercise the better. One of the proprietary governors of Pennsylvania, who laboured for many years under a consumptive diathesis, derived great benefit from frequently rowing himself in a small boat, a few miles up and down the river Schuylkill. Two young men, who were predisposed to a consumption, were perfectly cured by working steadily at a printing press in this city. A French physician in Martinique cured this disease, by simply rubbing the arms between the shoulders and the elbows, until they inflamed. The remedy is strongly recommended, by the recoveries from pulmonary consumption which have followed abscesses in the arm-pits. Perhaps the superior advantages of riding on horseback, in this disease, may arise in part from the constant and gentle use of the arms in the management of the bridle and the whip.

Much has been said in favour of sea voyages in consumptions. In the mild degrees of the disease they certainly have done service, but I suspect the relief given, or the cures performed by them, should be confined chiefly to seafaring people, who add to the benefits of a constant change of pure air, a share of the invigorating exercises of navigating the ship. I have frequently heard of consumptive patients reviving at sea, probably from the

transient effects of sea sickness upon the whole system, and growing worse as soon as they came near the end of their voyage. It would seem as if the mixture of land and sea airs was hurtful to the lungs, in every situation and condition in which it could be applied to them. Nor are the peculiar and morbid effects of the first operation of land and sea airs upon the human body, in sea voyages, confined only to consumptive people. I crossed the Atlantic ocean, in the year 1766, with a sea captain, who announced to his passengers the agreeable news that we were near the British coast, before any discovery had been made of our situation by sounding, or by a change in the colour of the water. Upon asking him upon what he founded his opinion, he said, that he had been sneezing, which, he added, was the sign of an approaching cold, and that, in the course of upwards of twenty years, he had never made the land (to use the seaman's phrase) without being affected in a similar manner. I have visited many sick people in Philadelphia soon after their arrival from sea, who have informed me, that they had enjoyed good health during the greatest part of their voyage, and that they had contracted their indispositions after they came within sight of the land. I mention these facts only to show the necessity of advising consumptive patients, who undertake a sea voyage for the recovery

of their health, not to expose themselves upon deck in the morning and at night, after they arrive within the region in which the mixture of the land and sea airs may be supposed to take place.

I subscribe, from what I have observed, to the bold declaration of Dr. Sydenham, in favour of the efficacy of riding on horseback, in the cure of consumption. I do not think the existence of an abscess, when broken, or even tubercles in the lungs, when recent, or of a moderate size, the least objection to the use of this excellent remedy. An abscess in the lungs is not necessarily fatal, and tubercles have no malignity in them which should render their removal impracticable by this species of exercise. The first question, therefore, to be asked by a physician who visits a patient in this disease should be, not what is the state of his lungs, but, is he able to ride on horseback.

There are two methods of riding for health in this disease. The first is by short excursions; the second is by long journeys. In slight consumptive affections, and after a recovery from an acute illness, short excursions are sufficient to remove the existing debility; but in the more advanced stages of consumption, they are seldom effectual, and frequently do harm, by exciting an

occasional appetite without adding to the digestive powers. They, moreover, keep the system constantly vibrating by their unavoidable inconstancy, between distant points of tone and debility*, and they are unhappily accompanied at all times, from the want of a succession of fresh objects to divert the mind, by the melancholy reflection that they are the sad, but necessary conditions of life.

In a consumption of long continuance or of great danger, long journeys on horseback are the most effectual modes of exercise. They afford a constant succession of fresh objects and company, which divert the mind from dwelling upon the danger of the existing malady; they are moreover attended by a constant change of air, and they are not liable to be interrupted by company, or transient changes in the weather, by which means appetite and digestion, action and power, all keep pace with each other. It is to be lamented that the use of this excellent remedy is frequently opposed by indolence and narrow circumstances in both sexes, and by the peculiarity of situation and temper in the female sex. Women are attached

* The bad effects of inconstant exercise have been taken notice of in the gout. Dr. Sydenham says, when it is used only by fits and starts in this disease, it does harm.

to their families by stronger ties than men. They cannot travel alone. Their delicacy, which is increased by sickness, is liable to be offended at every stage; and, lastly, they sooner relax in their exertions to prolong their lives than men. Of the truth of the last observation, sir William Hamilton has furnished us with a striking illustration. He tells us, that in digging into the ruins produced by the late earthquake in Calabria, the women who perished in it, were all found with their arms folded, as if they had abandoned themselves immediately to despair and death; whereas, the men were found with their arms extended, as if they had resisted their fate to the last moment of their lives. It would seem, from this fact, and many others of a similar nature which might be related, that a capacity of bearing pain and distress with fortitude and resignation, was the distinguishing characteristic of the female mind; while a disposition to resist and overcome evil, belonged in a more peculiar manner to the mind of man. I have mentioned this peculiarity of circumstances and temper in female patients, only for the sake of convincing physicians that it will be necessary for them to add all the force of eloquence to their advice, when they recommend journeys to women in preference to all other remedies, for the recovery of their health.

Persons, moreover, who pursue active employments, frequently object to undertaking journeys, from an opinion that their daily occupations are sufficient to produce all the salutary effects we expect from artificial exercise. It will be highly necessary to correct this mistake, by assuring such persons that, however useful the habitual exercise of an active, or even a laborious employment may be to preserve health, it must always be exchanged for one which excites new impressions, both upon the mind and body, in every attempt to restore the system from that debility which is connected with pulmonary consumption.

As travelling is often rendered useless, and even hurtful in this disease, from being pursued in an improper manner, it will be necessary to furnish our patients with such directions as will enable them to derive the greatest benefit from their journeys. I shall, therefore, in this place, mention the substance of the directions which I have given in writing for many years to such consumptive patients as undertake journeys by my advice.

1. To avoid fatigue. Too much cannot be said to enforce this direction. It is the hinge on which the recovery or death of a consumptive patient frequently turns. I repeat it again, therefore, that

patients should be charged over and over when they set off on a journey, as well as when they use exercise of any kind, to avoid fatigue. For this purpose they should begin by travelling only a few miles in a day, and increase the distance of their stages, as they increase their strength. By neglecting this practice, many persons have returned from journeys much worse than when they left home, and many have died in taverns, or at the houses of their friends on the road. Travelling in stage-coaches is seldom safe for a consumptive patient. They are often crowded; they give too much motion; and they afford by their short delays and distant stages, too little time for rest, or for taking the frequent refreshment which was formerly recommended.

2. To avoid travelling too soon in the morning, and after the going down of the sun in the evening, and, if the weather be hot, never to travel in the middle of the day. The sooner a patient breakfasts after he leaves his bed the better; and in no case should he leave his morning stage with an empty stomach.

3. If it should be necessary for a patient to lie down, or to sleep in the day time, he should be advised to undress himself, and to cover his body

between sheets or blankets. The usual ligatures of garters, stocks, knee-bands, waistcoats, and shoes, are very unfriendly to sound sleep; hence persons who lie down with their clothes on, often awake from an afternoon's nap in terror from dreams, or in a profuse sweat, or with a head-ach or sick stomach; and generally out of humour. The surveyors are so sensible of the truth of this remark, that they always undress themselves when they sleep in the woods. An intelligent gentleman of this profession informed me, that he had frequently seen young woodsmen, who had refused to conform to this practice, so much indisposed in the morning, that, after the experience of a few nights, they were forced to adopt it.

Great care should be taken in sleeping, whether in the day time or at night, never to lie down in damp sheets. Dr. Sydenham excepts the danger from this quarter, when he speaks of the efficacy of travelling on horseback in curing the consumption.

4. Patients who travel for health in this disease should avoid all large companies, more especially evening and night parties. The air of a contaminated room, phlogisticated by the breath of fifteen or twenty persons, and by the same

number of burning candles, is poison to a consumptive patient. To avoid impure air from every other source, he should likewise avoid sleeping in a crowded room, or with curtains around his bed, and even with a bed-fellow.

5. Travelling, to be effectual in this disease, should be conducted in such a manner as that a patient may escape the extremes of heat and cold. For this purpose he should pass the winter, and part of the spring, in Georgia or South-Carolina, and the summer in New-Hampshire, Massachusetts, or Vermont, or, if he pleases, he may still more effectually shun the summer heats, by crossing the lakes, and travelling along the shores of the St. Laurence to the city of Quebec. He will thus escape the extremes of heat and cold, particularly the less avoidable one of heat; for I have constantly found the hot month of July to be as unfriendly to consumptive patients in Pennsylvania, as the variable month of March. By these means too he will enjoy nearly an equable temperature of air in every month of the year; and his system will be free from the inconvenience of the alternate action of heat and cold upon it. The autumnal months should be spent in New-Jersey or Pennsylvania.

In these journeys from north to south, or from south to north, he should be careful, for reasons before mentioned, to keep at as great a distance as possible from the sea coast. Should this inquiry fall into the hands of a British physician, I would beg leave to suggest to him, whether more advantages would not accrue to his consumptive patients from advising them to cross the Atlantic ocean, and afterwards to pursue the tour which I have recommended, than by sending them to Portugal, France, or Italy. Here they will arrive with such a mitigation of the violence of the disease, in consequence of the length of their sea voyage, as will enable them immediately to begin their journeys on horseback. Here they will be exposed to fewer temptations to intemperance, or to unhealthy amusements, than in old European countries. And, lastly, in the whole course of this tour, they will travel among a people related to them by a sameness of language and manners, and by ancient or modern ties of citizenship. Long journeys for the recovery of health, under circumstances so agreeable, should certainly be preferred to travelling among strangers of different nations, languages, and manners, on the continent of Europe.

6. To render travelling on horseback effectual in a consumption, it should be continued with moderate intervals from *six to twelve months*. But the cure should not be rested upon a single journey. It should be repeated every *two or three years*, till our patient has passed the consumptive stages of life. Nay, he must do more; he must acquire a *habit* of riding constantly, both at home and abroad; or, to use the words of Dr. Fuller, “ he must, like a Tartar, learn to live on horseback, by which means he will acquire in time the constitution of a Tartar*.”

Where benefit is expected from a change of climate, as well as from travelling, patients should reside at least two years in the place which is chosen for that purpose. I have seldom known a residence for a shorter time in a foreign climate do much service.

To secure a perfect obedience to medical advice, it would be extremely useful if consumptive patients could always be accompanied by a physician. Celsus says, he found it more easy to cure the dropsy in slaves than in freemen, because they more readily submitted to the restraints he im-

* *Medicina Gymnastica*, p. 116.

posed upon their appetites. Madness has become a curable disease in England, since the physicians of that country have opened private mad-houses, and have taken the entire and constant direction of their patients into their own hands. The same successful practice would probably follow the treatment of consumptions, if patients were constantly kept under the eye and authority of their physicians. The keenness of appetite, and great stock of animal spirits, which those persons frequently possess, hurry them into many excesses which defeat the best concerted plans of a recovery; or, if they escape these irregularities, they are frequently seduced from our directions by every quack remedy which is recommended to them. Unfortunately the cough becomes a signal of their disease, at every stage of their journey, and the easy or pleasant prescriptions of even hostlers and ferry-men, are often substituted to the self-denial and exertion which have been imposed by physicians. The love of life in these cases seems to level all capacities; for I have observed persons of the most cultivated understandings to yield in common with the vulgar, to the use of these prescriptions.

In a former volume I mentioned the good effects of accidental LABOUR in pulmonary con-

sumptions. The reader will find a particular account in the first volume of Dr. Coxe's Medical Museum, of a clergyman and his wife, in Virginia, being cured by the voluntary use of that remedy.

The following circumstances and symptoms, indicate the longer or shorter duration of this disease, and its issue in life and death :

The consumption from gout, rheumatism, and scrophula, is generally of long duration. It is more rapid in its progress to death, when it arises from a half cured pleurisy, or neglected colds, measles, and influenza. It is of shorter duration in persons under thirty, than in those who are more advanced in life.

It is always dangerous in proportion to the length of time, in which the debilitating causes, that predisposed to it, have acted upon the body.

It is more dangerous when a predisposition to it has been derived from ancestors, than when it has been acquired.

It is generally fatal when accompanied with a bad conformation of the breast.

Chilly fits occurring in the forenoon, are more favourable than when they occur in the evening. They indicate the disease to partake a little of the nature of an intermittent, and are a call for the use of the remedies proper in that disease.

Rheumatic pains, attended with an abatement of the cough, or pains in the breast, are always favourable ; so are

Eruptions, or an abscess on the external parts of the body, if they occur before the last stage of the disease.

A spitting of blood, in the early, or forming stage of the disease, is favourable, but after the lungs become much obstructed, or ulcerated, it is most commonly fatal.

A pleurisy, occurring in the low state of the disease, generally kills, but I have seen a case in which it suddenly removed the cough and hectic fever, and thus became the means of prolonging the patient's life for several years.

The discharge of calculi from the lungs by coughing and spitting, and of a thin watery liquid, with a small portion of pus swimming on its sur-

face, are commonly signs of an incurable consumption.

No prediction unfavourable to life can be drawn from pus being discharged from the lungs. We see many recoveries after it has taken place, and many deaths where that symptom has been absent. Large quantities of pus are discharged in consumptions attended with abscesses, and yet few die of them, where they have not been preceded by long continued debility of the whole system. No pus is expectorated from tubercles, and how generally fatal is the disease, after they are formed in the lungs! It is only after they ulcerate that they discharge pus, and it is only after ulcers are thus formed, that the consumption probably becomes uniformly fatal. I suspect these ulcers are sometimes of a cancerous nature.

A sudden cessation of the cough, without a supervening diarrhœa, indicates death to be at hand.

A constant vomiting in a consumption, is generally a bad sign.

Feet obstinately cold, also a swelling of the feet during the day, and of the face in the night, com-

monly indicate a speedy and fatal issue of the disease.

Lice, and the falling off of the hair, often precede death.

A hoarseness, in the beginning of the disease, is always alarming, but it is more so in its last stage.

A change of the eyes from a blue, or dark, to a light colour, similar to that which takes place in very old people, is a sign of speedy dissolution.

I have never seen a recovery after an apthous sore throat took place.

Death from the consumption comes on in some or more than one, of the following ways :

1. With a diarrhœa. In its absence,
2. With wasting night sweats.
3. A rupture of an abscess.
4. A rupture of a large blood-vessel in the lungs, attended with external or internal hæmorrhage.

Sudden and unexpected death in a consumption is generally induced by this, or the preceding cause.

5. Madness. The cough and expectoration cease with this disease. It generally carries off the patient in a week or ten days.

6. A pleurisy, brought on by exposure to cold.

7. A typhus fever, attended with tremors, twitchings of the tendons, and a dry tongue.

8. Swelled hands, feet, legs, thighs, and face.

9. An aphthous sore throat.

10. Great and tormenting pains, sometimes of a spasmodic nature in the limbs.

In a majority of the fatal cases of consumption, which I have seen, the passage out of life has been attended with pain; but I have seen many persons die with it, in whom all the above symptoms were so lenient, or so completely mitigated by opium, that death resembled a quiet transition from a waking, to a sleeping state.

I cannot conclude this inquiry without adding, that the author of it derived from his paternal ancestors a predisposition to the pulmonary consumption, and that between the 18th and 43d years of his age, he has occasionally been afflicted with many of the symptoms of that disease which he has described. By the constant and faithful use of many of the remedies which he has recommended, he now, at an advanced age, enjoys nearly an uninterrupted exemption from pulmonary complaints. In humble gratitude, therefore, to that BEING, who condescends to be called the preserver of men, he thus publicly devotes this result of his experience and inquiries to the benefit of such of his fellow-creatures as may be afflicted with the same disease, sincerely wishing that they may be as useful to them, as they have been to the author.

OBSERVATIONS

ON

THE CAUSE AND CURE

OF

DROPSIES.

OBSERVATIONS, &c.

WHETHER we admit the exhaling and absorbing vessels to be affected in general dropsies by preternatural debility, palsy, or rupture, or by a retrograde motion of their fluids, it is certain that their exhaling and absorbing power is materially affected by too much, or too little action in the arterial system. That too little action in the arteries should favour dropsical effusions, has been long observed; but it has been less obvious, that the same effusions are sometimes promoted, and their absorption prevented, by too much action in these vessels. That this fact should have escaped our notice is the more remarkable, considering how long we have been accustomed to seeing serous swellings in the joints in the acute rheumatism, and copious, but partial effusions of water in the

form of sweat, in every species of inflammatory fever.

It is nothing new that the healthy action of one part, should depend upon the healthy action of another part of the system. We see it in many of the diseases of the nerves and brain. The tetanus is cured by exciting a tone in the arterial system; madness is cured by lessening the action of the arteries by copious blood-letting; and epilepsy and hysteria are often mitigated by the moderate use of the same remedy.

By too much action in the arterial system, I mean a certain morbid excitement in the arteries, accompanied by preternatural force, which is obvious to the sense of touch. It differs from the morbid excitement of the arteries, which takes place in common inflammatory fevers, in being attended by less febrile heat, and with little or no pain in the head or limbs. The thirst is nearly the same in this state of dropsy, as in inflammatory fevers. I include here those dropsies only in which the whole system is affected by what is called a hydropic diathesis.

That debility should, under certain circumstances, dispose to excessive action, and that exces-

sive action should occur in one part of the body, at the same time that debility prevailed in every other, are abundantly evident from the history and phenomena of many diseases. Inflammatory fever, active hæmorrhages, tonic gout, asthma, apoplexy, and palsy, however much they are accompanied by excessive action in the arterial system, are always preceded by original debility, and are always accompanied by obvious debility in every other part of the system.

But it has been less observed by physicians that an undue force or excess of action occurs in the arterial system in certain dropsies, and that the same theory which explains the union of predisposing and nearly general debility, with a partial excitement and preternatural action in the arterial system, in the diseases before-mentioned, will explain the symptoms and cure of certain dropsies.

That debility predisposes to every state of dropsy, is evident from the history of all the remote and occasional causes which produce them. It will be unnecessary to mention these causes, as they are to be found in all our systems of physic. Nor will it be necessary to mention any proofs of the existence of debility in nearly every part of the body. It is too plain to be denied. I shall only

mention the symptoms which indicate a morbid excitement and preternatural action of the arterial system. These are,

1. A hard, full, and quick pulse. This symptom, I believe, is more common in dropsies than is generally supposed, for many physicians visit and examine patients in these diseases, without feeling the pulse. Dr. Home mentions the frequency of the pulse, in the patients whose cures he has recorded*, but he takes no notice of its force except in two cases. Dr. Zimmerman, in his account of the dropsy which terminated the life of Frederick II, of Prussia, tells us that he found his pulse hard and full. I have repeatedly found it full and hard in every form of dropsy, and more especially in the first stage of the disease. Indeed I have seldom found it otherwise in the beginning of the dropsy of the breast.

2. Sisy blood. This has been taken notice of by many practical writers, and has very justly been ascribed, under certain circumstances of blood-letting, to an excessive action of the vessels upon the blood.

* Medical Facts.

3. Alternation of dropsies with certain diseases which were evidently accompanied by excess of action in the arterial system. I have seen anasarca alternate with vertigo, and both ascites and anasarca alternate with tonic madness. A case of nearly the same kind is related by Dr. Mead. Dr. Grimes, of Georgia, informed me that he had seen a tertian fever, in which the intermissions were attended with dropsical swellings all over the body, which suddenly disappeared in every accession of a paroxysm of the fever.

4. The occasional connexion of certain dropsies with diseases evidently of an inflammatory nature, particularly pneumony, rheumatism, and gout.

5. Spontaneous hæmorrhages from the lungs, hæmorrhodial vessels, and nose, cases of which shall be mentioned hereafter, when we come to treat of the cure of dropsies.

6. The appearance of dropsies in the winter and spring, in habits previously affected by the intermitting fever. The debility produced by this state of fever, frequently disposes to inflammatory diathesis, as soon as the body is exposed to the alternate action of heat and cold, nor is this inflammatory diathesis always laid aside, by the transition

of the intermitting fever into a dropsy, in the succeeding cold weather.

7. The injurious effects of stimulating medicines in certain dropsies, prove that there exists in them, at times, too much action in the blood-vessels. Dr. Tissot, in a letter to Dr. Haller, "De Variolis, apoplexia, et hydrope," condemns, in strong terms, the use of opium in the dropsy. Now the bad effects of this medicine in dropsies, must have arisen from its having been given in cases of too much action in the arterial system; for opium, we know, increases, by its stimulating qualities, the action and tone of the blood-vessels, and hence we find, it has been prescribed with success in dropsies of too little action in the system.

8. The termination of certain fevers in dropsies in which blood-letting was not used. This has been ascertained by many observations. Dr. Wilkes relates*, that after "an epidemical fever, which began in Kidderminster, in 1728, and soon afterwards spread, not only over Great Britain, but all Europe, more people died dropsical in three years, than did perhaps in twenty or thirty years

* Historical Essay on the Dropsy, p. 326.

before," probably from the neglect of bleeding in the fever.

But the existence of too much action in the arterial system in certain dropsies, will appear more fully from the history of the effects of the remedies which have been employed either by design or accident in the cure of these diseases. I shall first mention the remedies which have been used with success in tonic or inflammatory dropsies; and afterwards mention those which have been given with success in dropsies of a weak action in the arteries. I have constantly proposed to treat only of the theory and cure of dropsies in general, without specifying any of the numerous names it derives from the different parts of the body in which they may be seated; but in speaking of the remedies which have been used with advantage in both the tonic and atonic states, I shall occasionally mention the name or seat of the dropsy in which the remedy has done service.

The first remedy that I shall mention for dropsies is blood-letting. Dr. Hoffman and Dr. Home both cured dropsies accompanied by pulmonic congestion by means of this remedy. Dr. Monroe quotes a case of dropsy from Sponius, in which bleeding succeeded, but not till after it had been

used twenty times*. Mr. Cruikshank relates a case† of accidental bleeding, which confirms the efficacy of blood-letting in these diseases. He tells us that he attended a patient with dropsical swellings in his legs, who had had a hoarseness for two years. One morning, in stooping to buckle his shoes, he bursted a blood-vessel in his lungs, from which he lost a quart of blood; in consequence of which, both the swellings and the hoarseness went off gradually, and he continued well two years afterwards. I have known one case in which spontaneous hæmorrhages from the hæmorrhoidal vessels, and from the nose, suddenly reduced universal dropsical swellings. In this patient there had been an uncommon tension and fulness in the pulse.

I could add the histories of many cures of anasarca and ascites, performed by means of blood-letting, not only by myself, but by a number of respectable physicians in the United States. Indeed I conceive this remedy to be as much indicated by a tense and full pulse in those forms of dropsy, as it is in a pleurisy, or in any other common inflammatory disease.

* Treatise on the Dropsy.

† Treatise on the Lymphatics.

In those deplorable cases of hydrothorax, which do not admit of a radical cure, I have given temporary relief, and thereby protracted life, by taking away occasionally a few ounces of blood. Had Dr. Zimmerman used this remedy in the case of the king of Prussia, I cannot help thinking from the account which the doctor gives us of the diet and pulse of his royal patient, that he would have lessened his sufferings much more than by plentiful doses of dandelion; for I take it for granted, from the candour and integrity which the doctor discovered in all his visits to the king, that he did not expect that dandelion, or any other medicine, would cure him.

Although a full and tense pulse is always an indication of the necessity of bleeding; yet I can easily conceive there may be such congestions, and such a degree of stimulus to the arterial system, as to produce a depressed, or a low or weak pulse. Two cases of this kind are related by Dr. Monroe, one of which was cured by bleeding. The same symptom of a low and weak pulse is often met with in the first stage of pneumonia, and apoplexy, and is only to be removed by the plentiful use of the same remedy.

II. Vomits have often been given with advantage in dropsies. Dr. Home says, that squills were useful in these diseases only when they produced a vomiting. By abstracting excitement and action from the arterial system, it disposes the lymphatics to absorb and discharge large quantities of water. The efficacy of vomits in promoting the absorption of stagnating fluids is not confined to dropsies. Mr. Hunter was once called to visit a patient in whom he found a bubo in such a state that he purposed to open it the next day. In the mean while, the patient went on board of a vessel, where he was severely affected by sea-sickness and vomiting; in consequence of which the bubo disappeared, and the patient recovered without the use of the knife.

Mr. Cruikshank further mentions a case* of a swelling in the knee being nearly cured by a patient vomiting eight and forty hours, in consequence of his taking a large dose of the salt of tartar instead of soluble tartar.

III. Purges. The efficacy of this remedy, in the cure of dropsies, has been acknowledged by physicians in all ages and countries. Jalap, calo-

* Letter to Mr. Clare, p. 166.

mel, scammony, and gamboge, are often preferred for this purpose ; but I have heard of two cases of ascites being cured by a table spoonful of sweet oil taken every day. It probably acted only as a gentle laxative. The cream of tartar, so highly commended by Dr. Home, seems to act chiefly in the same way. Gherlius, from whom Dr. Home learned the use of this medicine, says, that all the persons whom he cured by it were in the vigour of life, and that their diseases had been only of a few months continuance. From these two circumstances, it is most probable they were dropsies of great morbid action in the arterial system. He adds further, that the persons who were cured by this medicine, were reduced very low by the use of it. Dr. Home says that it produced the same effect upon the patients whom he cured by it, in the infirmary of Edinburgh. Dr. Sydenham prefers gentle to drastic purges, and recommends the exhibition of them every day. Both drastic and gentle purges act by diminishing the action of the arterial system, and thereby promote the absorption and discharge of water. That purges promote absorption, we learn not only from their effects in dropsies, but from an experiment related by Mr. Cruikshank*, of a man who acquired several

* Letter to Mr. Clare, p. 117.

ounces of weight after the operation of a purge. The absorption in this case was from the atmosphere. So great is the effect of purges in promoting absorption, that Mr. Hunter supposes the matter of a gonorrhœa, or of topical venereal ulcers to be conveyed by them in some instances into every part of the body.

IV. Certain medicines, which, by lessening the action of the arterial system, favour the absorption and evacuation of water. The only medicines of this class which I shall name are nitre, cream of tartar, and foxglove.

1. Two ounces of nitre dissolved in a pint of water, and a wine-glass full of it taken three times a-day have performed perfect cures, in two cases of ascites, which have come under my notice. I think I have cured two persons of anasarca, by giving one scruple of the same medicine three times a-day for several weeks. The two last cures were evidently dropsies of violent action in the arterial system. Where nitre has been given in atonic dropsies it has generally been useless, and sometimes done harm. I have seen one instance of an incurable diarrhœa after tapping, which I suspected arose from the destruction of the tone of the stomach and bowels, by large and long continued

doses of nitre, which the patient had previously taken by the advice of a person who had been cured by that remedy. To avoid this, or any other inconvenience from the use of nitre in dropsies, it should be given at first in small doses, and should always be laid aside, if it should prove ineffectual after having been given two or three weeks.

2. I can say nothing of the efficacy of cream of tartar in dropsies from my own experience, where it has not acted as a purge. Perhaps my want of decision upon this subject has arisen only from my not having persisted in the use of it for the same length of time which is mentioned by Dr. Home.

3. There are different opinions concerning the efficacy of fox-glove in dropsies. From the cases related by Dr. Withering, it appears to have done good; but from those related by Dr. Lettsom* it seems to have done harm. I suspect the different accounts of those two gentlemen have arisen from their having given it in different states of the system, or perhaps from a difference in the quality of the plant from causes mentioned in another place†.

* Medical Memoirs, vol. II.

† Inquiry into the Causes and Cure of Pulmonary Consumption.

I am sorry to add further, that after many trials of this medicine I have failed in most of the cases in which I have given it. I have discharged the water in three instances by it, but the disease returned, and my patients finally died. I can ascribe only one complete cure to its use, which was in the year 1789, in a young man in the Pennsylvania hospital, of five and thirty years of age, of a robust habit, and plethoric pulse.

Where medicines have once been in use, and afterwards fall into disrepute, as was the case with the foxglove, I suspect the cases in which they were useful, to have been either few or doubtful, and that the cases in which they have done harm, were so much more numerous and unequivocal, as justly to banish them from the materia medica.

V. Hard labour, or exercise in such a degree as to produce fatigue, have, in several instances, cured the dropsy. A dispensary patient, in this city, was cured of this disease by sawing wood. And a patient in an ascites under my care in the Pennsylvania hospital, had his belly reduced seven inches in circumference in one day, by the labour of carrying wood from the yard into the hospital. A second patient belonging to the Philadelphia dispensary was cured by walking to Lancaster, 66

miles from the city, in the middle of winter. The efficacy of travelling in this disease, in cold weather, is taken notice of by Dr. Monroe, who quotes a case from Dr. Holler, of a French merchant, who was cured of dropsy by a journey from Paris to England, in the winter season. It would seem, that in these two cases, the cold co-operated as a sedative with the fatigue produced by labour or exercise, in reducing the tone of the arterial system.

VI. Low diet. I have heard of a woman who was cured of a dropsy by eating nothing but boiled beans for three weeks, and drinking nothing but the water in which they had been boiled. Many other cases of the good effects of low diet in dropsies are to be found in the records of medicine.

VII. Thirst. This cruel remedy acts by debilitating the system in two ways: 1st, by abstracting the stimulus of distension; and, 2dly, by preventing a supply of fresh water to replace that which is discharged by the ordinary emunctories of nature.

VIII. Fasting. An accidental circumstance, related by sir John Hawkins, in the life of Dr. Johnson, first led me to observe the good effects

of fasting in the dropsy. If the fact alluded to stood alone under the present head of this essay, it would be sufficient to establish the existence of too much action, and the efficacy of debilitating remedies in certain dropsies. I am the more disposed to lay a good deal of stress upon this fact, as it was the clue which conducted me out of the labyrinth of empirical practice, in which I had been bewildered for many years, and finally led me to adopt the principles and practice which I am now endeavouring to establish. The passage which contains this interesting fact is as follows: “ A few days after (says sir John) he [meaning Dr. Johnson] sent for me, and informed me, that he had discovered in himself the symptoms of a dropsy, and, indeed, his very much increased bulk and the swollen appearance of his legs, seemed to indicate no less. It was on Thursday that I had this conversation with him; in the course thereof he declared, that he intended to devote the whole of the next day to fasting, humiliation, and such other devotional exercises as became a man in his situation. On the Saturday following I made him a visit, and, upon entering his room, I observed in his countenance such a serenity as indicated, that some remarkable crisis of his disease had produced a change in his feelings. He told me that, pursuant to the reso-

“ lution he had mentioned to me, he had spent the
 “ preceding day in an abstraction from all worldly
 “ concerns ; that to prevent interruption he had in
 “ the morning ordered Frank [his servant] not to
 “ admit any one to him, and, the better to enforce
 “ the charge, had added these awful words, *for*
 “ *your master is preparing himself to die.* He
 “ then mentioned to me, that in the course of this
 “ exercise he found himself relieved from the dis-
 “ ease which had been growing upon him, and was
 “ becoming very oppressive, viz. the dropsy, by
 “ the gradual evacuation of water, to the amount
 “ of twenty pints, a like instance whereof he had
 “ never before experienced.” Sir John Hawkins
 ascribes this immense discharge water to the in-
 fluence of Dr. Johnson’s prayers ; but he neglects
 to take notice, that these prayers were answered,
 in this instance, as they are in many others, in a
 perfect consistence with the common and esta-
 blished laws of nature.

To satisfy myself that this discharge of water,
 in the case of Dr. Johnson, was produced by the
 fasting only, I recommended it, soon after I read
 the above account, to a gentlewoman whom I was
 then attending in an ascites. I was delighted with
 the effects of it. Her urine, which for some time
 before had not exceeded half a pint a-day, amounted

to two quarts on the day she fasted. I repeated the same prescription once a week for several weeks, and each time was informed of an increase of urine, though it was considerably less in the last experiments than in the first. Two patients in an ascites, to whom I prescribed the same remedy, in the Pennsylvania hospital, the one in the winter of 1790, and the other in the winter of 1792, exhibited proofs in the presence of many of the students of the university, equally satisfactory of the efficacy of fasting in suddenly increasing the quantity of urine.

IX. Fear. This passion is evidently of a debilitating nature, and, therefore, it has frequently afforded an accidental aid in the cure of dropsies, of too much action. I suspect, that the fear of death, which was so distinguishing a part of the character of Dr. Johnson, added a good deal to the efficacy of fasting, in procuring the immense discharge of water before-mentioned. In support of the efficacy of fear simply applied, in discharging water from the body in dropsies, I shall mention the following facts.

In a letter which I received from Dr. John Pennington, dated Edinburgh, August 3, 1790, I was favoured with the following communication.

“ Since the conversation I had with you on the sub-
“ ject of the dropsy, I feel more and more inclined
“ to adopt your opinion. I can furnish you with
“ a fact which I learned from a Danish sailor, on
“ my passage to this country, which is much in fa-
“ vour of your doctrine. A sailor in an ascites,
“ fell off the end of the yard into the sea ; the wea-
“ ther being calm, he was taken up unhurt, but,
“ to use the sailor’s words, who told me the
“ story, he was frightened half to death, and as
“ soon as he was taken out of the water, he dis-
“ charged a gallon of urine or more. A doctor
“ on board ascribed this large evacuation to sea
“ bathing, and accordingly ordered the man to be
“ dipped in the sea every morning, much against
“ his will, for, my informant adds, that he had
“ not forgotten his fall, and that in four weeks he
“ was perfectly well. I think this fact can only
“ be explained on your principles. The sedative
“ operation of fear was, no doubt, the cause of his
“ cure.”

There is an account of an ascite being cured by a fall from an open chaise, recorded in the third volume of the Medical Memoirs, by M. Lowdell. I have heard of a complete recovery from dropsy, having suddenly followed a fall from a horse. In

both these cases, the cures were probably the effects of fear.

Dr. Hall, of York-town, in Pennsylvania, informed me, that he had been called to visit a young woman of 19 years of age, who had taken all the usual remedies for ascites without effect. He at once proposed to her the operation of tapping. To this she objected, but so great was the fear of this operation, which the proposal of it suddenly excited in her mind, that it brought on a plentiful discharge of urine, which in a few days perfectly removed her disease.

On the 27th of August, 1790, I visited a gentlewoman in this city with the late Dr. Jones, in an ascites. We told her for the first time, that she could not be relieved without being tapped. She appeared to be much terrified upon hearing our opinion, and said that she would consider of it. I saw her two days afterwards, when she told me, with a smile on her countenance, that she hoped she should get well without tapping, for that she had discharged two quarts of water in the course of the day after we had advised her to submit to that operation. For many days before, she had not discharged more than two or three gills in twenty-four hours. The operation, notwithstand-

ing, was still indicated, and she submitted to be tapped a few days afterwards.

I tapped the same gentlewoman a second time, in January, 1791. She was much terrified while I was preparing for the operation, and fainted immediately after the puncture was made. The second time that I visited her after the operation was performed, she told me (without being interrogated on that subject), that she had discharged a pint and a half of urine, within twenty minutes after I left the room on the day I tapped her. What made this discharge the more remarkable was, she had not made more than a table spoonful of water in a day, for several days before she was tapped.

I have seen similar discharges of urine in two other cases of tapping which have come under my notice, but they resembled so nearly those which have been mentioned, that it will be unnecessary to record them.

But the influence of fear upon the system, in the dropsy, extends far beyond the effects which I have ascribed to it. Dr. Currie, of this city, informed me that he called, some years ago, by appointment, to tap a woman. He no sooner entered the room than he observed her, as he thought,

to faint away. He attempted to recover her, but to no purpose. She died of a sudden paroxysm of fear.

It is a matter of surprise, that we should have remained so long ignorant of the influence of fear upon the urinary organs in dropsies, after having been so long familiar with the same effect of that passion in the hysteria.

X. A recumbent posture of the body. It is most useful when the dropsy is seated in the lower limbs. I have often seen, with great pleasure, the happiest effects from this prescription in a few days.

XI. Punctures. These, when made in the legs and feet, often discharge in eight and forty hours the water of the whole body. I have never seen a mortification produced by them. As they are not followed by inflammation, they should be preferred to blisters, which are sometimes used for the same purpose.

I cannot dismiss the remedies which discharge water from the body through the urinary passages, without taking notice, that they furnish an additional argument in favour of blood-letting in dropsies, for they act, not by discharging the stagnating

water, but by creating such a plentiful secretion in the kidneys from the serum of the circulating blood, as to make room for the absorption and conveyance of the stagnating water into the blood-vessels.

Now the same effect may be produced in all tonic or inflammatory dropsies, with more certainty and safety, by means of blood-letting.

In recommending the antiphlogistic treatment of certain dropsies, I must here confine myself to the dropsies of such climates as dispose to diseases of great morbid action in the system. I am satisfied that it will often be proper in the middle and eastern states of America; and I have lately met with two observations, which show that it has been used with success at Vienna, in Germany. Dr. Stoll tells us, that, in the month of January, 1780, “Hydropic and asthmatic patients discovered more or less marks of inflammatory diathesis, and that blood was drawn from them with a sparing hand with advantage;” and in the month of November, of the same year, he says, “The stronger diuretics injured dropsical patients in this season; but an antiphlogistic drink, composed of a quart of the decoction of grass, with two ounces of simple oxymel, and nitre and cream

“ of tartar, of each a drachm, did service*.” It is probable that the same difference should be observed between the treatment of dropsies in warm and cold climates that is observed in the treatment of fevers. The tonic action probably exists in the system in both countries. In the former it resembles the tides which are suddenly produced by a shower of rain, and as suddenly disappear; whereas, in the latter, it may be compared to those tides which are produced by the flow and gradual addition of water from numerous streams, and which continue for days and weeks together to exhibit marks of violence in every part of their course.

I come now to say a few words upon atonic dropsies, or such as are accompanied with a feeble morbid action in the blood-vessels. This morbid action is essential to the nature of dropsies, for we never see them take place without it. This is obvious from the absence of swellings after famine, marasmus, and in extreme old age, in each of which there exists the lowest degree of debility, but no morbid action in the blood-vessels. These atonic or typhus dropsies may easily be distinguished from those which have been described, by occur-

* *Ratio Medendi Nosocomio Practico Vindobonensi*, vol. iv. p. 56 and 99.

ring in habits naturally weak ; by being produced by the operation of chronic causes ; by a weak and quick pulse ; and by little or no preternatural heat or thirst.

The remedies for atonic dropsies are all such stimulating substances as increase the action of the arterial system, or determine the fluids to the urinary organs. These are,

I. Bitter and aromatic substances of all kinds, exhibited in substance or in infusions of wine, spirit, beer, or water.

II. Certain acrid vegetables, such as scurvy-grass, horse-radish, mustard, water-cresses, and garlic. I knew an old man who was perfectly cured of an anasarca, by eating water-cresses, on bread and butter.

III. Opium. The efficacy of this medicine in dropsies has been attested by Dr. Willis, and several other practical writers. It seems to possess almost an exclusive power of acting alike upon the arterial, the lymphatic, the glandular, and the nervous systems.

IV. Metallic tonics, such as chalybeate medicines of all kinds, and the mild preparations of copper and mercury. I once cured an incipient ascites and anasarca by large doses of the rust of iron; and I have cured many dropsies by giving mercury in such quantities as to excite a plentiful salivation. I have, it is true, often given it without effect, probably from my former ignorance of the violent action of the arteries, which so frequently occurs in dropsies, and in which cases mercury must necessarily have done harm.

V. Diuretics, consisting of alkaline salts, nitre, and the oxymels of squills and colchicum. It is difficult to determine how far these medicines produce their salutary effects by acting directly upon the kidneys. It is remarkable that these organs are seldom affected in dropsies, and that their diseases are rarely followed by dropsical effusions in any part of the body.

VI. Generous diet, consisting of animal food, rendered cordial by spices; also sound old wine.

VII. Diluting drinks taken in such large quantities as to excite the action of the vessels by the stimulus of distention. This effect has been produced, sir George Baker informs us, by means of

large draughts of simple water, and of cyder and water*. The influence of distention in promoting absorption is evident in the urinary and gall bladders, which frequently return their contents to the blood by the lymphatics, when they are unable to discharge them through their usual emunctories. Is it not probable that the distention produced by the large quantities of liquids which we are directed to administer after giving the foxglove, may have been the means of performing some of those cures of dropsies, which have been ascribed to that remedy?

VIII. Pressure. Bandages bound tightly around the belly and limbs, sometimes prevent the increase or return of dropsical swellings. The influence of pressure upon the action of the lymphatics appears in the absorption of bone which frequently follows the pressure of contiguous tumours, also in the absorption of flesh which follows the long pressure of certain parts of the body upon a sick bed.

* The remark upon this fact by sir George, is worthy of notice, and implies much more than was probably intended by it. "When common means have failed, success has sometimes followed a method directly contrary to the established practice." Medical Transactions, vol. II.

IX. Frictions, either by means of a dry, or oiled hand, or with linen or flannel impregnated with volatine and other stimulating substances. I have found evident advantages from following the advice of Dr. Cullen, by rubbing the lower extremities upwards, and that only in the morning. I have been at a loss to account for the manner in which sweet oil acts, when applied to dropsical swellings. If it act by what is improperly called a sedative power upon the blood-vessels, it will be more proper in tonic than atonic dropsies; but if it act by closing the pores, and thereby preventing the absorption of moisture from the air, it will be very proper in the state of dropsy which is now under consideration. It is in this manner that Dr. Cullen supposes that sweet oil, when applied to the body, cures that state of diabetes in which nothing but insipid water is discharged from the bladder.

X. Heat, applied either separately or combined with moisture in the form of warm or vapour baths, has been often used with success in dropsies of too little action. Dampier, in his voyage round the world, was cured of a dropsy by means of a copious sweat, excited by burying himself in a bed of warm sand. Warm fomentations to the legs, rendered moderately stimulating by the addition of saline or aromatic substances, have often done ser-

vice in the atonic dropsical swellings in the lower extremities.

XI. The cold bath. I can say nothing in favour of the efficacy of this remedy in dropsies, from my own experience. Its good effects seem to depend wholly on its increasing the excitability of the system to common stimuli, by the diminution of its excitement. If this be the case, I would ask, whether fear might not be employed for the same purpose, and thus become as useful in atonic, as it was formerly proved to be in tonic dropsies?

XII. Wounds, whether excited by cutting instruments or by fire, provided they excite inflammation and action in the arteries, frequently cure atonic dropsies. The good effects of inflammation and action in these cases, appear in the cure of hydrocele by means of the needle, or the caustic.

XIII. Exercise. This is probably as necessary in the atonic dropsy as it is in the consumption, and should never be omitted when a patient is able to take it. The passive exercises of swinging, and riding in a carriage, are most proper in the lowest stage of the disease; but as soon as the patient's strength will admit of it, he should ride

on horseback. A journey should be preferred, in this disease, to short excursions from home.

XIV. A recumbent posture of the body should always be advised during the intervals of exercise, when the swellings are seated in the lower extremities.

XV. Punctures in the legs and feet afford the same relief in general dropsy, accompanied with a weak action in the blood-vessels, that has been ascribed to them in dropsies of an opposite character.

In the application of each of the remedies which have been mentioned, for the cure of both tonic and atonic dropsies, great care should be taken to use them in such a manner, as to accommodate them to the strength and excitability of the patient's system. The most powerful remedies have often been rendered hurtful, by being given in too large doses in the beginning, and useless, by being given in too small doses in the subsequent stages of the disease.

I have avoided saying any thing of the usual operations for discharging water from different parts of the body, as my design was to treat only of the symptoms and cure of those dropsies which

affect the whole system. I shall only remark, that if tapping and punctures have been more successful in the early, than in the late stages of these diseases, it is probably because the sudden or gradual evacuation of water takes down that excessive action in the arterial system, which is most common in their early stage, and thereby favours the speedy restoration of healthy action in the exhaling or lymphatic vessels.

Thus have I endeavoured to prove, that two different states of action take place in dropsies, and have mentioned the remedies which are proper for each of them under separate heads. But I suspect that dropsies are often connected with a certain intermediate or mixed action in the arterial system, analogous to the typhoid action which takes place in certain fevers. I am led to adopt this opinion, not only from having observed mixed action to be so universal in most of the diseases of the arterial and nervous system, but because I have so frequently observed dropsical swellings to follow the scarlatina, and the puerperile fever, two diseases which appear to derive their peculiar character from a mixture of excessive and moderate force, combined with irregularity of action in the arterial system. In dropsies of mixed action, where too much force prevails in the action

of some, and too little in the action of other of the arterial fibres, the remedies must be debilitating or stimulating according to the greater or less predominance of tonic or atonic diathesis in the arterial system.

I shall conclude this history of dropsies, and of the different and opposite remedies which have cured them, by the following observations.

1. We learn, in the first place, from what has been said, the impropriety and even danger of prescribing stimulating medicines indiscriminately in every case of dropsy.

2. We are taught, by the facts which have been mentioned, the reason why physicians have differed so much in their accounts of the same remedies, and why the same remedies have operated so differently in the hands of the same physicians. It is because they have been given without a reference to the different states of the system, which have been described. Dr. Sydenham says, that he cured the first dropsical patient he was called to, by frequent purges. He began to exult in the discovery, as he thought, of a certain cure for dropsies, but his triumph was of short duration. The same remedy failed in the next case in which he prescribed it. The reason probably was, the

dropsy in the first case was of a tonic, but in the second of an atonic nature; for the latter was an ascites from a quartan ague. It is agreeable, however, to discover, from the theory of dropsies which has been laid down, that all the different remedies for these diseases have been proper in their nature, and improper only in the state of the system in which they have been given. As the discovery of truth in religion reconciles the principles of the most opposite sects, so the discovery of truth in medicine reconciles the most opposite modes of practice. It would be happy if the inquirers after truth in medicine should be taught, by such discoveries, to treat each other with tenderness and respect, and to wait with patience till accident, or time, shall combine into one perfect and consistent system, all the contradictory facts and opinions, about which physicians have been so long divided.

3. If a state of great morbid action in the arteries has been demonstrated in dropsies, both from its symptoms and remedies, and if these dropsies are evidently produced by previous debility, who will deny the existence of a similar action in certain hæmorrhages, in gout, palsy, apoplexy, and madness, notwithstanding they are all the offspring of predisposing debility? And who will deny the efficacy of bleeding, purges, and other debilitating

medicines in certain states of those diseases, that has seen the same medicines administered with success in certain dropsies? To reject bleeding, purging, and the other remedies for violent action in the system, in any of the above diseases, because that action was preceded by general debility, will lead us to reject them in the most acute inflammatory fevers, for these are as much the offspring of previous debility as dropsies or palsy. The previous debility of the former differs from that of the latter diseases, only in being of a more acute, or, in other words, of a shorter duration.

4. From the symptoms of tonic dropsy which have been mentioned, it follows, that the distinction of apoplexy into serous and sanguineous, affords no rational indication for a difference in the mode of treating that disease. If an effusion of serum in the thorax, bowels, or limbs, produce a hard and full pulse, it is reasonable to suppose that the same symptom will be produced by the effusion of serum in the brain. But the dissections collected by Lieutaud* place this opinion beyond all controversy. They prove that the symptoms of great and feeble morbid action, as they appear in the pulse, follow alike the effusion of serum and

* *Historia Anatomico Medica*, vol. II.

blood in the brain. This fact will admit of an important application to the disease, which is to be the subject of the next inquiry.

5. From the influence which has been described, of the different states of action of the arterial system, upon the lymphatic vessels, in dropsies, we are led to reject the indiscriminate use of bark, mercury, and salt water, in the scrophula. When the action of the arteries is weak, those remedies are proper; but when an opposite state of the arterial system occurs, and, above all, when scrophulous tumours are attended with inflammatory ulcers, stimulating medicines of all kinds are hurtful. By alternating the above remedies with a milk and vegetable diet, according to the tonic, or atonic states of the arterial system, I have succeeded in the cure of a case of scrophula, attended by large ulcers in the inguinal glands, which had for several years resisted the constant use of the three stimulating remedies which have been mentioned.

6. Notwithstanding I have supposed dropsies to be connected with a peculiar state of force in the blood-vessels, yet I have not ventured to assert, that dropsies may not exist from an exclusive affection of the exhaling and absorbing vessels. I conceive this to be as possible, as for a fever to

exist from an exclusive affection of the arteries, or a hysteria from an exclusive affection of the nervous system. Nothing, however, can be said upon this subject, until physiology and pathology have taught us more of the structure and diseases of the lymphatic vessels. Nor have I ventured further to assert, that there are not medicines which may act specifically upon the lymphatics, independently of the arteries. This I conceive to be as possible as for *asafætida* to act chiefly upon the nerves, or *ipecacuanha* and *jalap* upon the alimentary canal, without affecting other parts of the system. Until such medicines are discovered, it becomes us to avail ourselves of the access to the lymphatics, which is furnished through the medium of the arteries, by means of most of the remedies which have been mentioned.

7. If it should appear hereafter, that we have lessened the mortality of certain dropsies by the theory and practice which have been proposed, yet many cases of dropsy must still occur in which they will afford us no aid. The cases I allude to are dropsies from enclosing cysts, from the ossification of certain arteries, from *schirri* of certain viscera from large ruptures of exhaling or lymphatic vessels, from a peculiar and corrosive acrimony of the fluids, and, lastly, from an exhausted

state of the whole system. The records of medicine furnish us with instances of death from each of the above causes. But let us not despair. It becomes a physician to believe, that there is no disease necessarily incurable; and that there exist in the womb of time, certain remedies for all those morbid affections, which elude the present limits of the healing art.

AN INQUIRY

INTO THE

CAUSES AND CURE

OF THE

INTERNAL DROPSY OF THE BRAIN.

AN INQUIRY, &c.

HAVING, for many years, been unsuccessful in all the cases, except two, of internal dropsy of the brain, which came under my care, I began to entertain doubts of the common theory of this disease, and to suspect that effusion of water should be considered only as the effect of a primary disease in the brain.

I mentioned this opinion to my colleague, Dr. Wistar, in the month of June, 1788, and delivered it the winter following in my lectures. The year afterwards I was confirmed in it, by hearing that the same idea had occurred to Dr. Quin. I have since read Dr. Quin's treatise on the dropsy of the brain with great pleasure, and consider it as the first dawn of light which has been shed upon it. In pursuing this subject, therefore, I shall avail

myself of Dr. Quin's discoveries, and endeavour to arrange the facts and observations I have collected in such a manner, as to form a connected theory from them, which I hope will lead to a new and more successful mode of treating this disease.

I shall begin this inquiry by delivering a few general propositions.

1. The internal dropsy of the brain is a disease confined chiefly to children.

2. In children the brain is larger in proportion to other parts of the body, than it is in adults; and of course a greater proportion of blood is sent to it in childhood, than in the subsequent periods of life. The effects of this determination of blood to the brain appear in the mucous discharge from the nose, and in the sores on the head and behind the ears, which are so common in childhood.

3. In all febrile diseases, there is a preternatural determination of blood to the brain. This occurs in a more especial manner in children; hence the reason why they are so apt to be affected by convulsions in the eruptive fever of the small-pox, in dentition, in the diseases from worms, and in the first paroxysms of intermitting fevers.

4. In fevers of every kind, and in every stage of life, there is a disposition to effusion in that part to which there is the greatest determination. Thus, in inflammatory fever, effusions take place in the lungs and in the joints. In the bilious fever they occur in the liver, and in the gout in every part of the body. The matter effused is always influenced by the structure of the part in which it takes place.

These propositions being premised, I should have proceeded to mention the remote causes of this disease; but as this inquiry may possibly fall into the hands of some gentlemen who may not have access to the description of it as given by Dr. Whytt, Dr. Fothergill, and Dr. Quin, I shall introduce a history of its symptoms taken from the last of those authors. I prefer it to the histories by Dr. Whytt and Dr. Fothergill, as it accords most with the ordinary phenomena of this disease in the United States.

“ In general, the patient is at first languid and
“ inactive, often drowsy and peevish, but at inter-
“ vals cheerful and apparently free from complaint.
“ The appetite is weak, a nausea, and, in many
“ cases, a vomiting, occurs once or twice in the
“ day, and the skin is observed to be hot and dry

“ towards the evenings; soon after these symp-
“ toms have appeared, the patient is affected with
“ a sharp head-ach, chiefly in the fore-part, or, if
“ not there, generally in the crown of the head:
“ it is sometimes, however, confined to one side
“ of the head, and, in that case, when the posture
“ of the body is erect, the head often inclines to
“ the side affected. We frequently find, also,
“ that the head-ach alternates with the affection of
“ the stomach; the vomiting being less trouble-
“ some when the pain is most violent, and vice
“ versa, other parts of the body are likewise sub-
“ ject to temporary attacks of pain, viz. the extre-
“ mities, or the bowels, but more constantly the
“ back of the neck, and between the scapulæ; in
“ all such cases the head is more free from unea-
“ siness.

“ The patient dislikes the light at this period;
“ cries much, sleeps little, and when he does sleep,
“ he grinds his teeth, picks his nose, appears to
“ be uneasy, and starts often, screaming as if he
“ were terrified; the bowels are in the majority of
“ cases very much confined, though it sometimes
“ happens that they are in an opposite state: the
“ pulse in this early stage of the disorder, does
“ not usually indicate any material derangement.

“ When the symptoms above-mentioned have
“ continued for a few days, subject as they always
“ are in this disease to great fluctuation, the axis
“ of one eye is generally found to be turned in to-
“ wards the nose; the pupil on this side is rather
“ more dilated than on the other; and when both
“ have the axes directed inwards (which some-
“ times happens) both pupils are larger than they
“ are observed to be in the eyes of healthy per-
“ sons: the vomiting becomes more constant, and
“ the head-ach more excruciating; every symp-
“ tom of fever then makes its appearance, the
“ pulse is frequent, and the breathing quick; ex-
“ acerbations of the fever take place towards the
“ evening, and the face is occasionally flushed;
“ usually one cheek is much more affected than
“ the other; temporary perspirations likewise
“ break forth, which are not followed by any alle-
“ viation of distress; a discharge of blood from
“ the nose, which sometimes appears about this
“ period, is equally inefficacious.

“ Delirium, and that of the most violent kind,
“ particularly if the patient has arrived at the age
“ of puberty, now takes place, and with all the
“ preceding symptoms of fever, continues for a
“ while to increase, until about fourteen days, of-
“ ten a much shorter space of time, shall have

“ elapsed since the appearance of the symptoms,
“ which were first mentioned in the above detail.

“ The disease then undergoes that remarkable
“ change, which sometimes suddenly points out
“ the commencement of what has been called its
“ second stage: the pulse becomes slow but une-
“ qual, both as to its strength, and the intervals
“ between the pulsations; the pain of the head, or
“ of whatever part had previously been affected,
“ seems to abate, or at least the patient becomes
“ apparently less sensible of it; the interrupted
“ slumbers, or perpetual restlessness which pre-
“ vailed during the earlier periods of the disorder,
“ are now succeeded by an almost lethargic tor-
“ por, the strabismus, and dilatation of the pupil
“ increase, the patient lies with one, or both eyes
“ half closed, which, when minutely examined,
“ are often found to be completely insensible to
“ light; the vomiting ceases; whatever food or
“ medicine is offered is usually swallowed with
“ apparent voracity; the bowels at this period ge-
“ nerally remain obstinately costive.

“ If every effort made by art fails to excite the
“ sinking powers of life, the symptoms of what
“ has been called the second stage are soon suc-
“ ceeded by others, which more certainly an-

“ nounce the approach of death. The pulse
“ again becomes equal, but so weak and quick,
“ that it is almost impossible to count it; a diffi-
“ culty of breathing, nearly resembling the stertor
“ apoplecticus, is often observed; sometimes the
“ eyes are suffused with blood, the flushing of the
“ face is more frequent than before, but of shorter
“ duration, and followed by a deadly paleness;
“ red spots, or blotches, sometimes appear on the
“ body and limbs; deglutition becomes difficult,
“ and convulsions generally close the scene. In
“ one case, I may observe, the jaws of a child of
“ four years of age were so firmly locked for more
“ than a day before death, that it was impossible
“ to introduce either food or medicine into his
“ mouth; and, in another case, a hæmiplegia, at-
“ tended with some remarkable circumstances,
“ occurred during the two days preceding disso-
“ lution.

“ Having thus given as exact a history of apo-
“ plexia hydrocephalica as I could compile from
“ the writings of others, and from my own obser-
“ vations, I should think myself guilty of imposi-
“ tion on my readers, if I did not caution them
“ that it must be considered merely as a general
“ outline: the human brain seems to be so ex-
“ tremely capricious (if the expression may be al-

“lowed) in the signals it gives to other parts of
“the system, of the injury it suffers throughout
“the course of this disease, that although every
“symptom above-mentioned does occasionally oc-
“cur, and indeed few cases of the disease are to
“be met with, which do not exhibit many of
“them; yet it does not appear to me, that any
“one of them is constantly and inseparably con-
“nected with it.”

To this history I shall add a few facts, which are the result of observations made by myself, or communicated to me by my medical brethren. These facts will serve to shew that there are many deviations from the history of the disease which has been given, and that it is indeed, as Dr. Quin has happily expressed it, of “a truly proteiform” nature.

I have not found the dilated and insensible pupil, the puking, the delirium, or the strabismus, to attend universally in this disease.

I saw one case in which the appetite was unimpaired from the first to the last stage of the disease.

I have met with one case in which the disease was attended by blindness, and another by double vision.

I have observed an uncommon acuteness in hearing to attend two cases of this disease. In one of them the noise of the sparks which were discharged from a hickory fire, produced great pain and startings which threatened convulsions.

I have seen three cases in which the disease terminated in hemiplegia. In two of them it proved fatal in a few days; in a third it continued for nearly eighteen months.

I have met with one case in which no preternatural slowness or intermission was ever perceived in the pulse.

I have seen the disease in children of nearly all ages. I once saw it in a child of six weeks old. It was preceded by the cholera infantum. The sudden deaths which we sometimes observe in infancy, I believe, are often produced by this disease. Dr. Stoll is of the same opinion. He calls it, when it appears in this form, "apoplexia infantalis."*

* Prælectiones, vol. I. p. 254.

In the month of March, 1771, I obtained a gill of water from the ventricles of the brain of a negro girl of nine years of age, who died of this disease, who complained in no stage of it of a pain in her head or limbs, nor of a sick stomach. The disease in this case was introduced suddenly by a pain in the breast, a fever, and the usual symptoms of a catarrh.

Dr. Wistar informed me, that he had likewise met with a case of internal dropsy of the brain, in which there was a total absence of pain in the head.

Dr. Carson informed me, that he had attended a child in this disease that discovered, for some days before it died, the symptom of hydrophobia.

Dr. Currie obtained, by dissection, seven ounces of water from the brain of a child which died of this disease; in whom, he assured me, no dilatation of the pupil, strabismus, sickness, or loss of appetite had attended, and but very little head-ach.

The causes which induce this disease, act either *directly* on the brain, or *indirectly* upon it, through the medium of the whole system.

The causes which act *directly* on the brain are falls or bruises upon the head, certain positions of the body, and childish plays, which bring on congestion or inflammation, and afterwards an effusion of water in the brain. I have known it brought on in a child by falling into a cellar upon its feet.

The *indirect* causes of this disease are more numerous, and more frequent, though less suspected, than those which have been mentioned. The following diseases of the whole system appear to act indirectly in producing an internal dropsy of the brain.

1. *Intermitting, remitting, and continual* fevers. Of the effects of these fevers in inducing this disease, many cases are recorded by Lieutaud.*

My former pupil, Dr. Woodhouse, has furnished me with a dissection, in which the disease was evidently the effect of the remitting fever. That state of continual fever which has been distinguished by the name of typhus, is often the remote cause of this disease. The languor and weakness in all the muscles of voluntary motion, the head-ach, the inclination to rest and sleep, and

* *Historia Anatomica-Medica*, vol. II.

the disposition to be disturbed, or terrified by dreams, which are said to be the precursors of water in the brain, I believe are frequently symptoms of a typhus fever which terminates in an inflammation, or effusion of water in the brain. The history which is given of the typhus state of fever in children by Dr. Butter,* seems to favour this opinion.

2. The *rheumatism*. Of this I have known two instances. Dr. Lettsom has recorded a case from the same cause.† The pains in the limbs, which are supposed to be the effect, I suspect are frequently the cause of the disease.

3. The *pulmonary consumption*. Of the connection of this disease with an internal dropsy of the brain, Dr. Percival has furnished us with the following communication:‡ “ Mr. C———’s daughter, aged nine years, after labouring under the
“ phthisis pulmonalis four months, was affected
“ with unusual pains in her head. These rapidly
“ increased, so as to occasion frequent screamings.

* Treatise on the Infantile Remitting Fever.

† Medical Memoirs, vol. I. p. 174.

‡ Essays, Medical, Philosophical, and Experimental, vol. II. p. 339, 340.

“The cough, which had before been extremely violent, and was attended with stitches in the breast, now abated, and in a few days ceased almost entirely. The pupils of the eyes became dilated, a strabismus ensued, and in about a week death put an end to her agonies. Whether this affection of the head arose from the effusion of water or of blood, is uncertain, but its influence on the state of the lungs is worthy of notice.” Dr. Quin likewise mentions a case from Dr. Cullen’s private practice, in which an internal dropsy of the brain followed a pulmonary consumption. Lieutaud mentions three cases of the same kind,* and two, in which it succeeded a catarrh.†

4. *Eruptive fevers.* Dr. Odier informs us,‡ that he had seen four cases in which it had followed the small-pox, measles, and scarlatina. Dr. Lettson mentions a case in which it followed the small-pox,|| and I have seen one in which it was obviously the effects of debility induced upon the system by the measles.

* *Historia Anatomica-Medica*, vol. II. lib. tertius, obs. 380, 394, 1121.

† Obs. 383, 431.

‡ *Medical Journal*.

|| *Medical Memoirs*, vol. I. p. 171.

5. *Worms*. Notwithstanding the discharge of worms gives no relief in this disease, yet there is good reason to believe, that it has, in some instances, been produced by them. The morbid action continues in the brain, as in other cases of disease, after the cause which induced it, has ceased to act upon the body.

6. From the dissections of Lieutaud, Quin, and others, it appears further, that the internal dropsy of the brain has been observed to succeed each of the following diseases, viz. the colic, palsy, melancholy, dysentery, dentition, insolation, and scrofula, also the sudden healing of old sores. I have seen two cases of it from the last cause, and one in which it was produced by the action of the vernal sun alone upon the system.

From the facts which have been enumerated, and from dissections to be mentioned hereafter, it appears, that the disease in its first stage is the effect of causes which produce a less degree of that morbid action in the brain which constitutes phrenitis, and that its second stage is the effect of a less degree of that effusion, which produces serous apoplexy in adults. The former partakes of the nature of the chronic inflammation of Dr. Cullen, and of the asthenic inflammation of Dr. Brown. I

have taken the liberty to call it *phrenicula*, from its being a diminutive species or state of phrenitis. It bears the same relation to phrenitis, when it arises from indirect causes, which pneumonica does to pneumony; and it is produced nearly in the same manner as the pulmonary consumption, by debilitating causes which act primarily on the whole system. The peculiar size and texture of the brain seem to invite the inflammation and effusions which follow debility, to that organ in childhood, just as the peculiar structure and situation of the lungs invite the same morbid phænomena to them, after the body has acquired its growth, in youth and middle life. In the latter stage which has been mentioned, the internal dropsy of the brain partakes of some of the properties of apoplexy. It differs from it in being the effect of a *slow*, instead of a *sudden* effusion of water or blood, and in being the effect of causes which are of an acute instead of a chronic nature. In persons advanced beyond middle life, who are affected by this disease, it approaches to the nature of the common apoplexy, by a speedy termination in life or death. Dr. Cullen has called it simply by the name of "apoplexia hydrocephalica." I have preferred for its last stage the term of *chronic apoplexy*; for I believe with Dr. Quin, that it has no connection with a hydropic diathesis of the whole system. I

am forced to adopt this opinion, from my having rarely seen it accompanied by dropsical effusions in other parts of the body, nor a general dropsy accompanied by an internal dropsy of the brain. No more occurs in this disease than takes place when hydrothorax follows an inflammation of the lungs, or when serous effusions follow an inflammation of the joints. I do not suppose that both inflammation and effusion always attend in this disease; on the contrary, dissections have shown some cases of inflammation, with little or no effusion, and some of effusion without inflammation. Perhaps this variety may have been produced by the different stages of the disease in which death and the inspection of the brain took place. Neither do I suppose, that the two stages which have been mentioned, always succeed each other in the common order of inflammation and effusion. In every case where the full, tense, slow and intermitting pulse occurs, I believe there is inflammation; and as this state of the pulse occurs in most cases in the beginning of the disease, I suppose the inflammation, in most cases, to precede the effusion of water. I have met with only one case in which the slow and tense pulse was absent; and out of six dissections of patients whom I have lost by this disease, the brains of four of them exhibited marks of inflammation.

Mr. Davis discovered signs of inflammation, after death from this disease, to be universal. In eighteen or twenty dissections, he tells us, he found the pia mater always distended with blood.* Where signs of inflammation have not occurred, the blood-vessels had probably relieved themselves by the effusion of serum, or the morbid action of the blood-vessels had exceeded that grade of excitement, in which only inflammation can take place. I have seen one case of death from this disease, in which there was not more than a tea-spoonful of water in the ventricles of the brain. Dr. Quin mentions a similar case. Here death was induced by simple excess of excitement. The water which is found in the ventricles of the brain refuses to coagulate by heat, and is always pale in those diseases, in which the serum of the blood, in every other part of the body, is of a yellow colour.

In addition to these facts, in support of the internal dropsy of the brain being the effect of inflammation, I shall mention one more, communicated to me in a letter, dated July 17th, 1795, by my former pupil, Dr. Coxe, while he was prosecuting his studies in London. "It so happened (says my ingenious correspondent), that at the time of my receiving

* Medical Journal, vol. VIII.

your letter, Dr. Clark was at the hospital. I read to him that part which relates to your success in the treatment of hydrocephalus internus. He was much pleased with it, and mentioned to me a fact which strongly corroborates your idea of its being a primary inflammation of the brain. This fact was, that upon opening, not long since, the head of a child that had died of this disease, he found between three and four ounces of water in the ventricles of the brain; also an inflammatory crust on the optic nerves, as thick as he had ever observed it on the intestines in a state of inflammation. The child lost its sight before it died. The crust accounted in a satisfactory manner for its blindness. Perhaps something similar may always be noticed in the dissections of such as die in this disease, in whom the eyes are much affected.”

Having adopted the theory of this disease, which I have delivered, I resolved upon such a change in my practice as should accord with it. The first remedy indicated by it was

I. *Blood-letting*. I shall briefly mention the effects of this remedy in a few of the first cases in which I prescribed it.

CASE I.

On the 15th of November, 1790, I was called to visit the daughter of William Webb, aged four years, who was indisposed with a cough, a pain in her bowels, a coma, great sensibility of her eyes to light, costiveness, and a suppression of urine, a slow and irregular, but tense pulse, dilated pupils, but no head-ach. I found, upon inquiry, that she had received a hurt on her head by a fall, about seven weeks before I saw her. From this information, as well as from her symptoms, I had no doubt of the disease being the internal dropsy of the brain. I advised the loss of five ounces of blood, which gave her some relief. The blood was sizzly. The next day she took a dose of jalap and calomel, which operated twelve times. On the 18th she lost four ounces more of blood, which was more sizzly than that drawn on the 15th. From this time she mended rapidly. Her coma left her on the 20th, and her appetite returned; on the 21st she made a large quantity of turbid dark coloured urine. On the 22d her pulse became again a little tense, for which she took a gentle puke. On the 23d she had a natural stool. On the 24th her pupils appeared to be contracted to their natural size, and on the 30th I had the pleasure of seeing her seated at a

tea-table in good health. Her pulse notwithstanding, was a little more active and tense than natural.

CASE II.

On the 24th of the same month, I was called to visit the son of John Cypher, in South-street, aged four years, who had been hurt about a month before, by a wound on his forehead with a brick-bat, the mark of which still appeared. He had been ill for near two weeks with coma, head-ach, colic, vomiting, and frequent startings in his sleep. His evacuations by stool and urine were suppressed; he had discharged three worms, and had had two convulsion fits just before I saw him. The pupil of the right eye was larger than that of the left. His pulse was full, tense, and slow, and intermitted every *fourth* stroke. The symptoms plainly indicated an internal dropsy of the brain. I ordered him to lose four or five ounces of blood. But three ounces of blood were drawn, which produced a small change in his pulse. It rendered the intermission of a pulsation perceptible only after every tenth stroke. On the 25th he lost five ounces of blood, and took a purge of calomel and jalap. On the 26th he was better. On the 27th the vomiting

was troublesome, and his pulse was still full and tense, but regular. I ordered him to lose four ounces of blood. On the 28th his puking and head-ach continued; his pulse was a little tense, but regular; and his right pupil less dilated. On the 29th his head-ach and puking ceased, and he played about the room. On the 4th of December he grew worse; his head-ach and puking returned, with a hard pulse, for which I ordered him to lose five ounces of blood. On the 5th he was better, but on the 6th his head-ach and puking returned. On the 7th I ordered his forehead to be bathed frequently with vinegar, in which ice had been dissolved. On the 8th he was much better. On the 9th his pulse became soft, and he complained but little of head-ach. After appearing to be well for near three weeks, except that he complained of a little head-ach, on the 29th his pulse became again full and tense, for which I ordered him to lose six ounces of blood, which for the first time discovered a buffy coat. After this last bleeding, he discharged a large quantity of water. From this time he recovered slowly, but his pulse was a little fuller than natural on the 19th of January following. He afterwards enjoyed good health.

CASES III. AND IV.

In the month of March, 1792, I attended two children of three years of age, the one the daughter of William King, the other the daughter of William Blake: each of whom had most of the symptoms of the inflammatory stage of the internal dropsy of the brain. I prescribed the loss of four ounces of blood, and a smart purge in both cases, and in the course of a few days had the pleasure of observing all the symptoms of the disease perfectly subdued in each of them.

CASE V.

In the months of July and August, 1792, I attended a female slave of Mrs. Oneal, of St. Croix, who had an obstinate head-ach, coma, vomiting, and a tense, full, and *slow* pulse. I believed it to be the phrenicula, or internal dropsy of the brain, in its inflammatory stage. I bled her five times in the course of two months, and each time with obvious relief of all the symptoms of the disease. Finding that her head-ach, and a disposition to vomit, continued after the tension of her pulse was nearly reduced, I gave her as much calomel as ex-

cited a gentle salivation, which in a few weeks completed her cure.

CASE VI.

The daughter of Robert Moffat, aged eight years, in consequence of the suppression of a habitual discharge from sores on her head, in the month of April, 1793, was affected by violent head-ach, puking, great pains and weakness in her limbs, and a full, tense, and *slow* pulse. I believed these symptoms to be produced by an inflammation of the brain. I ordered her to lose six or seven ounces of blood, and gave her two purges of jalap and calomel, which operated very plentifully. I afterwards applied a blister to her neck. In one week from the time of my first visit to her she appeared to be in perfect health.

CASE VII.

A young woman of eighteen years of age, a hired servant in the family of Mrs. Elizabeth Smith, had been subject to a head-ach every spring for several years. The unusual warm days which occurred in the beginning of April, 1793, pro-

duced a return of this periodical pain. On the eighth of the month, it was so severe as to confine her to her bed. I was called to visit her on the ninth. I found her comatose, and, when awake, delirious. Her pupils were unusually dilated, and insensible to the light. She was constantly sick at her stomach, and vomited frequently. Her bowels were obstinately costive, and her pulse was full, tense, and so slow as seldom to exceed, for several days, from 56 to 60 strokes in a minute. I ordered her to lose ten ounces of blood every day, for three days successively, and gave her, on each of those days, strong doses of jalap and aloes. The last blood which was drawn from her was sizzly. The purges procured from three to ten discharges every day from her bowels. On the 12th, she appeared to be much better. Her pulse was less tense, and beat 80 strokes in a minute. On the 14th, she had a fainting fit. On the 15th, she sat up, and called for food. The pupils of her eyes now recovered their sensibility to light, as well as their natural size. Her head-ach left her, and, on the 17th, she appeared to be in good health. Her pulse, however, continued to beat between 50 and 60 strokes in a minute, and retained a small portion of irregular action for several days after she recovered.

I am the more disposed to pronounce the cases which have been described to have been internal dropsy of the brain, from my having never been deceived in a single case in which I have examined the brains of patients whom I have suspected to have died of it.

I could add many other cases to those which have been related, but enough, I hope, have been mentioned to establish the safety and efficacy of the remedies that have been recommended.

I believe, with Dr. Quin, that this disease is much more frequent than is commonly supposed. I can recollect many cases of anomalous fever and head-ach in children, which have excited the most distressing apprehensions of an approaching internal dropsy of the brain, but which have yielded in a few days to bleeding, or to purges and blisters. I think it probable, that some, or perhaps most of these cases, might have terminated in an effusion of water in the brain, had they been left to themselves, or not been treated with the above remedies. I believe further, that it is often prevented by all those physicians who treat the first stage of febrile diseases in children with evacuations, just as the pulmonary consumption is pre-

vented by bleeding, and low diet, in an inflammatory catarrh.

Where blood-letting has failed of curing this disease, I am disposed to ascribe it to its being used less copiously than the disease required. If its relation to pneumonacula be the same in its cure, that I have supposed it to be in its cause, then I am persuaded, that the same excess in blood-letting is indicated in it, above what is necessary in phrenitis, that has been practised in pneumonacula, above what is necessary in the cure of an acute inflammation of the lungs. The continuance, and, in some instances, the increase of the appetite in the internal dropsy of the brain, would seem to favour this opinion no less in this disease, than in the inflammatory state of pulmonary consumption. The extreme danger from the effusion of water into the ventricles of the brain, and the certainty of death from its confinement there, is a reason likewise why more blood should be drawn in this disease, than in diseases of the same force in other parts of the body, where the products of inflammation have a prompt, or certain outlet from the body. Where the internal dropsy is obviously the effect of a fall, or of any other cause which acts *directly* on the brain, there can be no doubt of the safety of very plentiful bleeding; all practical writers upon surge-

ry concur in advising it. The late Dr. Pennington favoured me with an extract from Mr. Cline's manuscript lectures upon anatomy, delivered in London in the winter of 1792, which places the advantage of blood-letting, in that species of inflammation which follows a local injury of the brain, in a very strong point of light. " I know (says he) that several practitioners object to the use of evacuations as remedies for concussions of the brain, because of the weakness of the pulse; but in these cases the pulse is *depressed*. Besides, experience shows, that evacuations are frequently attended with very great advantages. I remember a remarkable case of a man in this [St. Thomas's] hospital, who was under the care of Mr. Baker. He lay in a comatose state for three weeks after an injury of the head. During that time he was bled *twenty* times, that is to say, he was bled once every day upon an average. He was bled twice a day *plentifully*, but towards the conclusion he was bled more sparingly, and only every other day; but at each bleeding, there were taken, upon an average, about sixteen ounces of blood. In consequence of this treatment, the man perfectly recovered his health and reason."

Local bleeding by cups, leaches, scarifications, or arteriotomy, should be combined with venesection, or preferred to it, where the whole arterial system does not sympathize with the disease in the brain.

II. A second remedy to be used in the second stage of this disease is *purges*. I have constantly observed all the patients whose cases have been related, to be relieved by plentiful and repeated evacuations from the bowels. I was led to the use of frequent purges, by having long observed their good effects in palsies, and other cases of congestion in the brain, where blood-letting was unsafe, and where it had been used without benefit. In the Leipsic Commentaries,* there is an account of a case of internal dropsy of the brain, which followed the measles, being cured by no other medicines than purges and diuretics. I can say nothing in favour of the latter remedy, in this disease, from my own experience. The foxglove has been used in this city by several respectable practitioners, but, I believe, in no instance with any advantage.

* Vol. xxix. p. 139.

III. *Blisters* have been uniformly recommended by all practical writers upon this disease. I have applied them to the head, neck, and temples, and generally with obvious relief to the pain in the head. They should be omitted in no stage of the disease; for even in its inflammatory stage, the discharge they occasion from the vessels of the head, greatly overbalances their stimulating effects upon the whole system.

IV. *Mercury* was long considered as the only remedy, which gave the least chance of a recovery from a dropsy of the brain. Out of all the cases in which I gave it, before the year 1790, I succeeded in but two: one of them was a child of three years old, the other was a young woman of twenty-six years of age. I am the more convinced that the latter case was internal dropsy of the brain, from my patient having relapsed, and died between two or three years afterwards, of the same disease. Since I have adopted the depleting remedies which have been mentioned, I have declined giving mercury altogether, except when combined with some purging medicine, and I have given it in this form chiefly with a view of dislodging worms. My reasons for not giving it as a sialagogue are the uncertainty of its operation, its frequent inefficacy when it excites a salivation, and, above all, its dis-

position to produce gangrene in the tender jaws of children. Seven instances of its inducing death from that cause, in children between three and eight years of age, and with circumstances of uncommon distress, have occurred in Philadelphia since the year 1795.

V. *Linen cloths*, wetted with cold vinegar, or water, and applied to the forehead, contribute very much to relieve the pain in the head. In the case of Mr. Cypher's son,* the solution of ice in the vinegar appeared to afford the most obvious relief of this distressing symptom.

A puncture in the brain has been proposed by some writers to discharge the water from its ventricles. If the theory I have delivered be true, the operation promises nothing, even though it could always be performed with perfect safety. In cases of local injuries, or of inflammation from any cause, it must necessarily increase the disease; and in cases of effusion only, the debilitated state of the whole system forbids us to hope for any relief from such a local remedy.

Bark, wine, and opium promise much more suc-

* Case II.

cess in the last stage of the disease. I can say nothing in their favour from my own experience; but from the aid they afford to mercury in other diseases, I conceive they might be made to accompany it with advantage.

Considering the nature of the indirect causes which induce the disease, and the case of a relapse, which has been mentioned, after an interval of near three years, as well as the symptoms of slow convalescence, manifested by the pulse, which occurred in the first and seventh cases, I submit it to the consideration of physicians, whether the use of moderate exercise, and the cold bath, should not be recommended to prevent a return of the disease in every case, where it has yielded to the power of medicine.

I have great pleasure in adding, that the theory of this disease, which I have delivered, has been adopted by many respectable physicians in Philadelphia, and in other parts of the United States, and that it has led to the practice that has been recommended, particularly to copious blood-letting; in consequence of which, death from a dropsy of the brain is not a more frequent occurrence, than from any other of the acute febrile diseases of our country.

OBSERVATIONS

UPON

The Cause and Cure

OF THE

GOUT.

VOL. II.

I i

OBSERVATIONS, &c.

IN treating upon the gout, I shall deliver a few preliminary propositions.

1. The gout is a disease of the whole system. It affects the ligaments, blood-vessels, stomach, bowels, brain, liver, lymphatics, nerves, muscles, cartilages, bones, and skin.

2. The gout is a primary disease, only of the solids. Chalk-stones, abscesses, dropsical effusions into cavities, and cellular membrane, and eruptions on the skin, are all the effects of a morbid action in the blood-vessels. The truth of this proposition has been ably proved by Dr. Cullen in his *First Lines*.

3. It affects most frequently persons of a sanguineous temperament; but sometimes it affects persons of nervous and phlegmatic temperaments. The idle and luxurious are more subject to it, than the labouring and temperate part of mankind. Women are said to be less subject to it than men. I once believed, and taught this opinion, but I now retract it. From the peculiar delicacy of the female constitution, and from the thin covering they wear on their feet and limbs, the gout is less apt to fall upon those parts than in men, but they exhibit all its other symptoms, perhaps more frequently than men, in other parts of the body. The remote causes of gout moreover to be mentioned presently, act with equal force upon both sexes, and more of them I believe upon women, than upon men.

It generally attacks in those periods of life, and in those countries, and seasons of the year, in which inflammatory diseases are most common. It seldom affects persons before puberty, or in old age, and yet I have heard of its appearing with all its most characteristic symptoms in this city in a child of 6, and in a man above 80 years of age. Men of active minds are said to be most subject to it, but I think I have seen it as frequently in persons of slender and torpid intellects, as in persons of an

opposite character. I have heard of a case of gout in an Indian at Pittsburg, and I have cured a fit of it in an Indian in this city. They had both been intemperate in the use of wine and fermented liquors.

4. It is in one respect a hereditary disease, depending upon the propagation of a similar temperament from father to son. When a predisposition to the gout has been derived from ancestors, less force in exciting causes will induce it than in those habits where this has not been the case. This predisposition sometimes passes by children, and appears in grand-children. There are instances likewise in which it has passed by the males, and appeared only in the females of a family. It even appears in the descendants of families who have been reduced to poverty, but not often where they have been obliged to labour for a subsistence. It generally passes by those children who are born before the gout makes its appearance in a father. It is curious to observe how extensively the predisposition pervades some families. An English gentleman, who had been afflicted with the gout, married a young woman in Philadelphia many years ago, by whom he had one daughter. His wife dying three weeks after the birth of this child, he returned to England, where he married a second

wife, by whom he had six children, all of whom except one died with the gout before they attained to the usual age of matrimony in Great Britain. One of them died in her 16th year. Finally the father and grandfather died with the same disease. The daughter whom this afflicted gentleman left in this city, passed her life subject to the gout, and finally died under my care in the year 1789, in the 68th year of her age. She left a family of children, two of whom had the gout. One of them, a lady, has suffered exquisitely from it.

5. The gout is always induced by general predisposing debility.

6. The remote causes of the gout which induce this debility, are, indolence, great bodily labour, long protracted bodily exercise, intemperance in eating, and in venery, acid aliments and drinks, strong tea and coffee, public and domestic vexation, the violent, or long continued exercise of the understanding, imagination, and passions in study, business, or pleasure, and lastly, the use of ardent and fermented liquors. The last are absolutely necessary to produce that form of gout which appears in the ligaments and muscles. I assert this, not only from my own observations, but from those of Dr. Cadogan, and Dr. Darwin, who say they

ever saw a case of gout in the limbs in any person who had not used spirits or wine in a greater or less quantity. Perhaps this may be another reason why women, who drink less of those liquors than men, are so rarely affected with this disease in the extreme parts of their bodies. Wines of all kinds are more disposed to produce this form of gout than spirits. The reason of this must be resolved into the less stimulus in the former, than in the latter liquors. Wine appears to resemble, in its action upon the body, the moderate stimulus of miasmata which produce a common remitting fever, or intermitting fever, while spirits resemble that violent action induced by miasmata which passes by the blood-vessels, ligaments, and muscles, and invades at once the liver, bowels, and brain. There is one symptom of the gout in the extremities which seems to be produced exclusively by ardent spirits, and that is a burning in the palms of the hands, and soles of the feet. This is so uniform, that I have sometimes been able to convict my patients of intemperance in the use of spirits, when no other mark of their having taken them in *excess*, appeared in the system.

While I thus ascribe the gout to the use of fermented and distilled liquors, let me repeat that they are not its exclusive causes. Dr. Harle of

New-Castle died of the gout, and yet he never tasted wine nor spirits in the whole course of his life. He could not even bear the taste of either of them in a piece of sweet cake. The Bramins who neither drink wine nor spirits, nor eat animal food, are not exempted from this disease; and Sir James Jay has assured me that he has seen instances of it in persons who lived wholly upon vegetables.

I have enumerated among the remote causes of the gout, the use of strong tea. I infer its predisposing quality to that disease, from its frequency at Japan, where tea is used in large quantities, and from the gout being more common among that sex in our country who drink the most, and the strongest tea.

7. The exciting causes of the gout are frequently a greater degree, or a sudden application of its remote and predisposing causes. They act upon the accumulated excitability of the system, and by destroying its equilibrium of excitement, and regular order of actions, produce convulsion, or irregular morbid and local excitement. These exciting causes are either of a stimulating, or of a sedative nature. The former are violent exercise, of body or mind, night-watching, and even sitting up late at night, a hearty meal, a fit of drunkenness, a few

glasses of claret or a draught of cyder, where those liquors have not been habitual to the patient, a sudden paroxysm of joy, anger, or terror, a dislocation of a bone, straining of a joint, particularly of the ankle, undue pressure upon the foot, or leg, from a tight shoe or boot, an irritated corn, and the usual remote causes of fever. The latter exciting causes are sudden inanition from bleeding, purging, vomiting, fasting, cold, a sudden stoppage of moisture on the feet, fear, grief, excess in venery, and the debility left upon the system by the crisis of a fever. All these causes act more certainly when they are aided by the additional debility induced upon the system in sleep. It is for this reason that the gout generally makes its first attack in the night, and in a part of the system most remote from the energy of the brain, and most debilitated by exercise, viz. in the great toe, or in some part of the foot. In ascribing a fit of the gout to a cause which is of a sedative nature, the reader will not suppose that I have departed from the simplicity and uniformity of a proposition I have elsewhere delivered, that disease is the effect of stimulus. The abstraction of a natural and habitual impression of any kind, by increasing the force of those which remain, renders the production of morbid and excessive actions in the system as much the effect of preternatural or disproportioned stimulus,

as if they were induced by causes that are externally and evidently stimulating. It is thus in many other of the operations of nature, opposite causes produce the same effects.

8. The gout consists simply in morbid excitement, accompanied with irregular action, or the absence of all action from the force of stimulus. There is nothing specific in the morbid excitement and actions which take place in the gout different from what occur in fevers. It is to be lamented that a kind of metastasis of error has taken place in pathology. The rejection of a specific acrimony as the cause of each disease, has unfortunately been followed by a belief in as many specific actions as there are different forms and grades of disease, and thus perpetuated the evils of our ancient systems of medicine. However varied morbid actions may be by their causes, seats, and effects, they are all of the same nature, and the time will probably come when the whole nomenclature of morbid actions will be absorbed in the single name of disease.

I shall now briefly enumerate the symptoms of the gout, as they appear in the ligaments, the blood-vessels, the viscera, the nervous system, the alimentary canal, the lymphatics, the skin, and the bones

of the human body, and here we shall find that it is an epitome of all diseases.

1. The ligaments which connect the bones are the seats of what is called a legitimate or true gout. They are affected with pain, swelling, and inflammation. The pain is sometimes so acute as to be compared to the gnawing of a dog. We perceive here the sameness of the gout with the rheumatism. Many pages, and indeed whole essays, have been composed by writers to distinguish them, but they are exactly the same disease while the morbid actions are confined to this part of the body. They are, it is true, produced by different remote causes, but this constitutes no more difference in their nature than is produced in a coal of fire, whether it be inflamed by a candle, or by a spark of electricity. The morbid actions which are induced by the usual causes of rheumatism affect, though less frequently, the lungs, the trachea, the head, the bowels, and even the heart, as well as the gout. Those actions, moreover, are the means of a fluid being secreted which is changed into calcareous matter in the joints and other parts of the body, exactly like that which is produced by the gout. They likewise twist and dislocate the bones in common with the gout, in a manner to be described hereafter. The only difference between what are called

gouty, and rheumatic actions, consists in their seats and in the degrees of their force. The debility which predisposes to the gout, being greater, and more extensively diffused through the body than the debility which precedes rheumatism, the morbid actions in the former case, pass more readily from external to internal parts, and produce in both more acute and more dangerous effects. A simile derived from the difference in the degrees of action produced in the system by marsh miasmata, made use of upon a former occasion, will serve me again to illustrate this part of our subject. A mild remittent, and a yellow fever, are different grades of the same disease. The former, like the rheumatism, affects the bones chiefly with pain, while the latter, like the gout, affects not only the bones, but the stomach, bowels, brain, nerves, lymphatics, and all the internal parts of the body.

II. In the arterial system the gout produces fever. This fever appears not only in the increased force or frequency of the pulse, but in morbid affections of all the viscera. It puts on all the different grades of fever, from the malignity of the plague, to the mildness of a common intermittent. It has moreover its regular exacerbations and remissions once in every four and twenty hours, and its crisis usually on the fourteenth day, in violent

cases. In moderate attacks, it runs on from twenty to forty days in common with the typhus or slow chronic state of fever. It is common for those persons who consider the gout as a specific disease, when it appears in the above forms, to say, that it is complicated with fever; but this is an error, for there can exist but one morbid action in the blood-vessels at once, and the same laws are imposed upon the morbid actions excited in those parts of the body by the remote causes of the gout, as by the common causes of fever. I have seen two instances of this disease appearing in the form of a genuine hectic, and one in which it appeared to yield to lunar influence, in the manner described by Dr. Balfour. In the highly inflammatory state of the gout, the sensibility of the blood-vessels far exceeds what is seen in the same state of fever from more common causes. I have known an instance in which a translation of the gouty action to the eye produced such an exquisite degree of sensibility, that the patient was unable to bear the feeble light which was emitted from a few coals of fire in his room, at a time too when the coldness of the weather would have made a large fire agreeable to him. I once attended a lady in this disease, in whom the walking of her attendants across the floor of her chamber, and even the touch of a hand upon any part of her body in moving her in bed, excited con-

siderable pain. It is from the extreme sensibility which the gout imparts to the stomach, that the bark is so generally rejected by it. I knew a British officer who had nearly died from taking a spoonful of the infusion of that medicine, while his arterial system was in this state of morbid excitability, from a fit of the gout. It is remarkable that the gout is most disposed to assume a malignant character, during the prevalence of an inflammatory constitution of the atmosphere. This has been long ago remarked by Dr. Huxham. Several instances of it have occurred in this city since the year 1793.

III. The gout affects most of the viscera. In the brain it produces head-ach, vertigo, coma, apoplexy, and palsy. In the lungs it produces pneumonia vera, notha, asthma, hæmoptysis, pulmonary consumption, and a short heaving cough, first described by Dr. Sydenham. In the throat it produces inflammatory angina. In the uterus it produces hæmorrhagia uterina. It affects the kidneys with inflammation, strangury, diabetes, and calculi. The position of the body for weeks or months on the back, by favouring the compression of the kidneys by the bowels, is the principal reason why those parts suffer so much in gouty people. The strangury appears to be produced by the same kind of engorgement or choking of the vessels of the

kidneys, which takes place in the small-pox and yellow fever. Four cases of it are described in the 3d volume of the Physical and Literary Essays of Edinburgh, by Dr. David Clark. I have seen one instance of death in an old man from this cause. The catheter brought no water from his bladder. The late Mr. John Penn, formerly governor of Pennsylvania, I have been informed by one of his physicians, died from a similar affection in his kidneys from gout. The catheter was as ineffectual in giving him relief, as it was in the case of my patient. The neck of the bladder sometimes becomes the seat of the gout. It discovers itself by spasm, and a suppression of urine in some cases, and occasionally by an habitual discharge of mucus through the urethra. This disease has been called, by Lieutaud, "a catarrh of the bladder." Dr. Stoll describes it and calls it "hæmorrhoids of the bladder." But of all the viscera, the liver suffers most from the gout. It produces in it inflammation, suppuration, melena, schirrus, gall-stones, jaundice, and an habitual increased secretion and excretion of bile. These affections of the liver appear most frequently in southern countries, and in female habits. They are substitutes for a gout in the ligaments, and in the extremities of the body. They appear likewise in drunkards from ardent spirits. It would seem that certain stimuli act spe-

cifically upon the liver, probably for the wise purpose of discharging such parts of the blood from the body, as are vitiated by the rapidity of its circulation. I shall, in another place,* take notice of the action of marsh miasmata upon the livers of men and beasts. It has been observed that hogs that live near brewhouses, and feed upon the fermented grains of barley, always discover enlarged or diseased livers. But a determination of the blood to the liver, and an increased action of its vessels, are produced by other causes than marsh miasmata, and fermented and distilled liquors. They appear in the fever which accompanies madness and the malignant sore-throat, also in contusions of the brain, and in the excited state of the blood-vessels which is produced by anger and exercise. I have found an attention to these facts useful in prescribing for diseases of the liver, inasmuch as they have led me from considering them as idiopathic affections, but as the effects only of morbid actions excited in other parts of the body.

IV. The gout sometimes affects the arterial and nervous systems *jointly*, producing in the brain, coma, vertigo, apoplexy, palsy, loss of memory, and madness, and in the *nerves*, hysteria, hypochondriasis and syncope. It is common to say the gout counterfeits all these diseases. But this is an in-

* Vol. IV.

accurate mode of speaking. All those diseases have but one cause, and they are exactly the same, however different the stimulus may be, from which they are derived. Sometimes the gout affects the brain and nerves exclusively, without producing the least morbid action in the blood-vessels. I once attended a gentleman from Barbadoes who suffered from this affection of his brain and nerves, the most intolerable depression of spirits. It yielded to large doses of wine, but his relief was perfect, and more durable, when a pain was excited by nature or art, in his hands or feet.

The muscles are sometimes affected by the gout with spasm, with general and partial convulsions, and lastly with great pain. Dr. Stoll describes a case of *opisthotonos* from it. The *angina pectoris*, or a sudden inability to breath after climbing a hill, or a pair of stairs, and after a long walk, is sometimes a symptom of the gout. There is a pain which suddenly pervades the head, breast, and limbs, which resembles an electric shock. I have known two instances of it in gouty patients, and have taken the liberty of calling it the "*aura arthritica*." But the pain which affects the muscles is often of a more permanent nature. It is felt with most severity in the calves of the legs. Sometimes it affects the muscles of the head, breast, and

limbs, exciting in them large and distressing swellings. But further; the gout in some cases seizes upon the tendons, and twists them in such a manner as to dislocate bones in the hands and feet. It even affects the cartilages. Of this I once saw an instance in colonel Adams, of the state of Maryland. The external parts of both his ears were so much inflamed in a fit of the gout, that he was unable to lie on either of his sides.

V. The gout affects the alimentary canal, from the stomach to its termination in the rectum. Flatulency, sickness, acidity, indigestion, pain, or vomiting, usually usher in a fit of the disease. The sick head-ach, also dyspepsia, with all its train of distressing evils, are frequently the effects of gout concentrated in the stomach. I have seen a case in which the gout, by retreating to this viscus, produced the same burning sensation which is felt in the yellow fever. The patient who was the subject of this symptom died two days afterwards with a black vomiting. It was Mr. Patterson, formerly collector of the port of Philadelphia, under the British government. I was not surprised at these two uncommon symptoms in the gout, for I had long been familiar with its disposition to affect the biliary secretion, and the actions of the stomach. The colic and dysentery are often produced by the gout

in the bowels. In the southern states of America, it sometimes produces a chronic diarrhœa, which is known in some places by the name of the "downward consumption." The piles are a common symptom of gout, and where they pour forth blood occasionally render it a harmless disease. I have known an instance in which a gouty pain in the rectum produced involuntary stools in a gentleman in this city, and I have heard from a southern gentleman, who had been afflicted with gouty symptoms, that a similar pain was excited in the same part to such a degree, whenever he went into a crowded room lighted by candles, as to oblige him to leave it. In considering the effects of the gout upon this part, I am led to take notice of a troublesome itching in the anus which has been described by Dr. Lettsom, and justly attributed by him to this disease.* I have known several cases of it. They always occurred in gouty habits. A distressing collection of air in the rectum, which renders frequent retirement from company necessary to discharge it, is likewise a symptom of gout. It is accompanied with frequent, and small, but hard stools.

* Medical Memoirs, vol. III.

Of the above morbid affections of the nerves, stomach, and bowels, the hysteria, the sick head-ach, and the colic, appear much oftener in women than in men. I have said that dyspepsia is a symptom of gout. Out of more than 500 persons who were the patients of the Liverpool infirmary and dispensary, in one year, Dr. Currie informs us, "a great majority were females."†

VI. The gout affects the glands and lymphatics. It produced a salivation of a profuse nature in major Pearce Butler, which continued for two days. It produced a bubo in the groin in a citizen of Philadelphia. He had never been infected with the venereal disease, of course no suspicion was entertained by me of its being derived from that cause. I knew a lady who had periodical swellings in her breasts, at the same season of the year in which she had before been accustomed to have a regular fit of the gout. The scrofula and all the forms of dropsy are the effects in many cases of the disposition of the gout to attack the lymphatic system. There is a large hard swelling without pain, of one, or both the legs and thighs, which has been called a dropsy, but is very different from the common disease of that name. It comes on, and goes off

† Medical Reports on the Effects of Hot and Cold Water, p. 215.

suddenly. It has lately been called in England the *dumb* gout. In the spring of 1798 I attended colonel Innes, of Virginia, in consultation with my Edinburgh friend and fellow-student, Dr. Walter Jones, of the same state. The colonel had large anasarcaous swellings in his thighs and legs, which we had reason to believe were the effects of an indolent gout. We made several punctures in his feet and ancles, and thereby discharged a large quantity of water from his legs and thighs. A day or two afterwards his ancles exhibited in pain and inflammation, the usual form of gout in those parts. In the year 1794 I attended Mrs. Lloyd Jones, who had a swelling of the same kind in her foot and leg. Her constitution, habits, and the sober manners of her ancestors, gave me no reason to suspect it to arise from the usual remote causes of gout. She was feverish, and her pulse was tense. I drew ten ounces of blood from her, and gave her a purge. The swelling subsided, but it was succeeded by an acute rheumatic pain in the part, which was cured in a few days. I mention these facts as an additional proof of the sameness of the gout and rheumatism, and to show that the vessels in a simple disease, as well as in malignant fevers, are often oppressed beyond that point in which they emit the sensation of pain.

Under this head I shall include an account of the mucous discharge from the urethra, which sometimes takes place in an attack of the gout, and which has ignorantly been ascribed to a venereal gonorrhæa. There is a description of this symptom of the gout in the 3d volume of the Physical and Literary Essays of Edinburgh, by Dr. Clark. It was first taken notice of by Sauvages by the name of "gonorrhæa podagrica," in a work entitled *Pathologia Methodica*, and afterwards by Dr. Whytt. Dr. Plaigne saw an instance of this symptom alternating with a pain in the great toe, and which was removed by a blister to that part of the body. It occurs most frequently in old people. I have known three instances of it in this city. In the visits which the gout pays to the genitals, it sometimes excites great pain in the testicles. Dr. Whytt mentions three cases of this kind. One of them was attended with a troublesome itching of the scrotum. I have seen one case in which the testicles were affected with great pain, and the penis with an obstinate priapism. They succeeded a sudden translation of the gout from the bowels.

From the occasional disposition of the gout to produce a mucous discharge from the urethra in men, it is easy to conceive that it is the frequent cause of the fluor albus in women, for in them, the

gout which is restrained from the feet, by a cause formerly mentioned, is driven to other parts, and particularly to that part which, from its offices, is more disposed to invite disease to it, than any other. The fluor albus sometimes occurs in females, apparently of the most robust habits. In such persons, more especially if they have been descended from gouty ancestors, and have led indolent and luxurious lives, there can be no doubt but the disease is derived from the gout, and should be treated with remedies which act not only upon the affected part, but the whole system. It is known by being accompanied with pains in the limbs, and by being worst when in bed. An itching similar to that I formerly mentioned in the anus, sometimes occurs in the vagina of women. Dr. Lettsom has described it. In all the cases I have known of it, I believe it was derived from the usual causes of the gout.

VII. There are many records in the annals of medicine of the gout affecting the skin. The erysipelas, gangrene, and petechiæ are its acute, and tetter, and running sores are its usual chronic forms when it appears in this part of the body. I attended a patient with the late Dr. Hutchinson, in whom the whole calf of one leg was destroyed by a mortification which succeeded the gout. Dr.

Alexander, of Baltimore, informed me that petechiæ were among the last symptoms of this disease in the Rev. Mr. Oliver, who died in the town of Baltimore, about two years ago. In the disposition of the gout to attack external parts, it sometimes affects the eyes and ears with the most acute and distressing inflammation and pain. I hesitate the less in ascribing them both to the gout, because they not only occur in gouty habits, but because they now and then effuse a calcareous matter of the same nature with that which is found in the ligaments of the joints.

VIII. Even the bones are not exempted from the ravages of this disease. I have before mentioned that the bones of the hands and feet are sometimes dislocated by it. I have heard of an instance in which it dislocated the thigh bone. It probably produced this effect by the effusion of that part of the blood which constitutes chalk-stones, or by an excrescence of flesh in the cavity of the joint. Two instances have occurred in this city of its dislodging the teeth, after having produced the most distressing pains in the jaws. The long protracted, and acute pain in the face, which has been so accurately described by Dr. Fothergill, probably arises wholly from the gout acting upon the bones of the part affected.

I have more than once hinted at the sameness of some of the states of the gout, and the yellow fever. Who can compare the symptoms and seats of both diseases, and not admit the unity of the remote and immediate causes of fever?

Thus I have enumerated proofs of the gout being a disease of the *whole* system. I have only to add under this proposition, that it affects different parts of the body in different people, according to the nature of their congenial or acquired predispositions, and that it often passes from one part of the body to another in the twinkling of an eye.

The morbid excitement, and actions of the gout, when seated in the ligaments, the blood-vessels, and viscera, and left to themselves, produce effects different in their nature, according to the parts in which they take place. In the viscera they produce congestions composed of all the component parts of the blood. From the blood-vessels which terminate in hollow cavities and in cellular membrane, they produce those effusions of serum which compose dropsies. From the same vessels proceed those effusions which produce on the skin erysipelas, tetters, and all the different kinds of eruptions. In the ligaments they produce an effusion of coagulable lymph, which by stagnation is changed into

what are called chalk-stones. In the urinary organs they produce an effusion of particles of coagulable lymph or red blood, which, under certain circumstances, are changed into sand, gravel, and stone. All these observations are liable to some exceptions. There are instances in which chalk-stones have been found in the lungs, mouth, on the eye-lids, and in the passages of the ears, and a preternatural flux of water and blood has taken place from the kidneys. Pus has likewise been formed in the joints, and air has been found in the cavity of the belly, instead of water.

Sometimes the gout is said to combine with the fevers which arise from cold and miasmata. We are not to suppose from this circumstance, that the system is under a twofold stimulus. By no means. The symptoms which are ascribed to the gout, are the effects of morbid excitement, excited by the cold, or miasmata acting upon parts previously debilitated by the usual remote causes of that disease. A bilious constitution of the air so often excites the peculiar symptoms of gout in persons predisposed to it, that it has sometimes been said to be epidemic. This was the case, Dr. Stoll says, in Vienna, in the years 1782 and 1784. The same mixture of gouty and bilious symptoms was observed by Dr.

Hillary, in the fevers of Barbadoes. It is because gouty people have some parts of their bodies previously debilitated, that they often escape epidemic diseases. Those weak parts invite, and fix disease to one or two places, and thus prevent its being diffused throughout the whole system. Of this Sir John Pringle relates a striking instance. While the British army was in the north of Scotland, in the year 1746, the weather became suddenly very cold, in consequence of which catarrhs became general among the soldiers, while many of the officers were affected only with gout. Here the obstructed perspiration which fell upon the breast in the soldiers, was translated to parts previously debilitated in the officers, and there excited the symptoms of what is called another disease.

From a review of the symptoms of the gout, the impropriety of distinguishing it from its various seats, by specific names, must be obvious to the reader. As well might we talk of a yellow fever in the brain, in the nerves, or in the groin, when its symptoms affect those parts, as talk of *misplaced* or *retrocedent* gout. The great toe, and the joints of the hands and feet, are no more its exclusive seats, than the "stomach is the throne of the yellow fever." In short, the gout may be compared to a

monarch whose empire is unlimited. The whole body crouches before it.

It has been said as a reflection upon our profession, that physicians are always changing their opinions respecting chronic diseases. For a long while they were all classed under the heads of nervous, or bilious. These names for many years afforded a sanctuary for the protection of fraud and error in medicine. They have happily yielded of late years to the name of gout. If we mean by this disease a primary affection of the joints, we have gained nothing by assuming that name; but if we mean by it a disease which consists simply of morbid excitement, invited by debility, and disposed to invade every part of the body, we conform our ideas to facts, and thus simplify theory and practice in chronic diseases.

I proceed now to treat of the METHOD OF CURE.

Let not the reader startle when I mention curing the gout. It is not a sacred disease. There will be no profanity in handling it freely. It has been cured often, and I hope to deliver such directions under this head, as will reduce it as much under the power of medicine, as a pleurisy or an intermitting fever. Let not superstition say here, that the

gout is the just punishment of folly and vice, and that the justice of Heaven would be defeated by curing it. The venereal disease is more egregiously the effect of vice than the gout, and yet Heaven has kindly directed human reason to the discovery of a remedy which effectually eradicates it from the constitution. This opinion of the gout being a curable disease, is as humane as it is just. It is calculated to prompt to early application for medical aid, and to prevent that despair of relief which has contributed so much to its duration, and mortality.

But does not the gout prevent other diseases, and is it not improper upon this account to cure it? I answer, that it prevents other diseases, as the daily use of drams prevents the intermitting fever. In doing this, it brings on a hundred more incurable morbid affections. The yellow fever carried off many chronic diseases in the year 1793, and yet who would wish for, or admit such a remedy for a similar purpose? The practice of encouraging, and inviting what has been called a "friendly fit" of the gout as a cure for other diseases, resembles the practice of school boys who swallow the stones of cherries to assist their stomachs in digesting that delicate fruit. It is no more necessary to produce the gout in the feet, in order to cure it,

than it is to wait for, or encourage abscesses or natural hæmorrhages, to cure a fever. The practice originated at a time when morbid matter was supposed to be the cause of the gout, but it has unfortunately continued under the influence of theories which have placed the seat of the disease in the solids.

The remedies for the gout naturally divide themselves into the following heads.

I. Such as are proper in its approaching, or forming state.

II. Such as are proper in *violent* morbid action in the blood-vessels and viscera.

III. Such as are proper in a *feeble* morbid action in the same parts of the body.

IV. Such as are proper to relieve certain local symptoms which are not accompanied by general morbid action. And

V. Such as are proper to prevent its recurrence, or, in other words, to eradicate it from the system.

I. The symptoms of an approaching fit of the

gout are great languor and dulness of body and mind, doziness, giddiness, wakefulness, or sleep disturbed by vivid dreams, a dryness, and sometimes a coldness, numbness, and prickling, in the feet and legs, a disappearance of pimples in the face, occasional chills, acidity and flatulency in the stomach, with an increased, a weak, or a defect of appetite. The chemists have discovered another symptom of an approaching fit of the gout, and that is, the presence of the phosphoric acid in the urine. The very sweats they say of gouty patients tinge the syrup of violets of a red colour from the predominance of this acid in them. The symptoms which have been mentioned are not universal, but more or less of them usher in nearly every fit of the gout. The reader will see at once their sameness with the premonitory symptoms of fever from cold and miasmata, and assent, from this proof in addition to others formerly mentioned, to the propriety of considering a fit of the gout, as a paroxysm of fever.

The system, during the existence of these symptoms, is in a state of morbid depression. The disease is as yet unformed, and may easily be prevented by the loss of a few ounces of blood, or, if this remedy be objected to, by a gentle dose of

physic, and afterwards by bathing the feet in warm water, by a few drops of the spirits of hartshorn in a little sage or camomile tea, by a draught of wine whey, or a common dose of liquid laudanum, and, according to a late Portuguese physician, by taking a few doses of bark.

It is worthy of notice, that if these remedies are omitted, all the premonitory symptoms that have been mentioned disappear as soon as the arthritic fever is formed, just as lassitude and chilliness yield to a paroxysm of fever from other causes.

II. Of the remedies that are proper in cases of great morbid action in the blood-vessels and viscera.

I shall begin this head by repudiating the notion of a specific cure for the gout existing in any single article of the materia medica. Every attempt to cure it by elixirs, diet-drinks, pills or boluses, which were intended to act singly on the system, has been as unsuccessful as the attempts to cure the whooping cough by spells, or tricks of legerdemain.

The first remedy that I shall mention for reducing great morbid action in the blood-vessels and viscera is BLOOD-LETTING. I was first taught the safety of this remedy in the gout by reading the

works of Dr. Lister, near forty years ago, and I have used it ever since with great advantage. It has the sanction of Dr. Hoffman, Dr. Cullen, and many others of the first names in medicine in its favour.

The usual objections to bleeding as a remedy, have been urged with more success in the gout, than in any other disease. It has been forbidden, because the gout is said to be a disease of debility. This is an error. Debility is not a disease. It is only its predisposing cause. Disease is preternatural strength in the state of the system now under consideration, occasioned by the abstraction of excitement from one part, and the accumulation of it in another part of the body. Every argument in favour of bleeding in a pleurisy applies in the present instance, for they both depend upon the same kind of morbid action in the blood-vessels. Bleeding acts moreover alike in both cases by abstracting the excess of excitement from the blood-vessels, and restoring its natural and healthy equality to every part of the system.

It has been further said, that bleeding disposes to more frequent returns of the gout. This objection to the lancet has been urged by Dr. Syden-

ham, who was misled in his opinion of it, by his theory of the disease being the offspring of morbid matter. The assertion is unfounded, for bleeding in a fit of the gout has no such effect, provided the remedies to be mentioned hereafter are used to prevent it. But a fit of the gout is not singular in its disposition to recur after being once cured. The rheumatism, the pleurisy, and the intermitting fever are all equally disposed to return when persons are exposed to their remote and exciting causes, and yet we do not upon this account consider them as incurable diseases, nor do we abstain from the usual remedies which cure them.

The inflammatory or violent state of the gout is said most commonly to affect the limbs. But this is far from being the case. It frequently makes its first attack upon the head, lungs, kidneys, stomach, and bowels. The remedies for expelling it from the stomach and bowels are generally of a stimulating nature. They are as improper in full habits, and in the recent state of the disease, as cordials are to drive the small-pox from the vitals to the skin. Hundreds have been destroyed by them. Bleeding in these cases affords the same speedy and certain relief that it does in removing pain from the stomach and bowels in the first stage of the yellow fever. Colonel Miles owes his life to

the loss of 60 ounces of blood in an attack of the gout in his bowels, in the winter of 1795, and major Butler derived the same benefit from the loss of near 30 ounces, in an attack of the gout in his stomach in the spring of 1798.

I could add many more instances of the efficacy of the lancet in the gout when it affects the viscera, from my own experience, but I prefer mentioning one only from sir John Floyer, which is more striking than any I have met with in its favour. He tells us, sir Henry Coningsby was much disposed to the palsy from the gout when he was 30 years old. By frequent bleedings, and the use of the cold bath, he recovered, and lived to be 88. During his old age, he was bled every three months.

I have said, in the history of the symptoms of the gout, that it sometimes appeared in the form of a hectic fever. I have prescribed occasional bleedings in a case of this kind accompanied with a tense pulse, with the happiest effects. It confined the disease for several years wholly to the blood-vessels, and it bid fair in time to eradicate it from the system.

The state of the pulse, as described in another

place,* should govern the use of the lancet in this disease. Bleeding is required as much in its depressed, as in its full and chorded state. Colonel Miles's pulse, at the time he suffered from the gout in his bowels, was scarcely perceptible. It did not rise till after a second or third bleeding.

Some advantage may be derived from examining the blood. I have once known it to be dissolved; but for the most part I have observed it, with Dr. Lister, to be covered with the buffy coat of common inflammation.

The arguments made use of in favour of bleeding in the diseases of old people in a former volume, apply with equal force to its use in the gout. The inflammatory state of this disease frequently occurs in the decline of life, and bleeding is as much indicated in such cases as in any other inflammatory fever. The late Dr. Chovet died with an inflammation in his liver from gout, in the 86th year of his age. He was twice bled, and his blood each time was covered with a buffy coat.

Where the gout affects the head with obstinate pain, and appears to be seated in the muscles, cup-

* Defence of Blood-letting, vol. IV.

ping and leeches give great relief. This mode of bleeding should be trusted in those cases only in which the morbid action is confined chiefly to the head, and appears in a feeble state in the rest of the arterial system.

The advantages of bleeding in the gout, when performed under all the circumstances that have been mentioned, are as follow:

1. It removes or lessens pain.

2. It prevents those congestions and effusions which produce apoplexy, palsy, pneumonia notha, calculi in the kidneys and bladder, and chalk-stones in the hands and feet. The gravel and stone are nine times in ten, I believe, the effects of an effusion of lymph or blood from previous morbid action in the kidneys. If this disease were narrowly watched, and cured as often as it occurs, by the loss of blood, we should have but little gravel or stone among gouty people. A citizen of Philadelphia died a few years ago, in the 96th year of his age, who had been subject to the strangury the greatest part of his life. His only remedy for it was bleeding. He lived free from the gravel and stone, and died, or rather appeared to fall asleep in death, from old age. Dr. Haller mentions a similar

case in his *Bibliotheca Medicinæ*, in which bleeding had the same happy effects.

3. It prevents the system from wearing itself down by fruitless pain and sickness, and thereby inducing a predisposition to frequent returns of the disease.

4. It shortens the duration of a fit of gout, by throwing it, not into the feet, but out of the system, and thus prevents a patient's lying upon his back for two or three months with a writhing face, scolding a wife and family of children, and sometimes cursing every servant that comes near enough to endanger the touch of an inflamed limb. Besides preventing all this parade of pain and peevishness, it frequently, when assisted with other remedies to be mentioned presently, restores a man to his business and society in two or three days: a circumstance this of great importance in the public as well as private pursuits of men; for who has not read of the most interesting affairs of nations being neglected or protracted, by the principal agents in them being suddenly confined to their beds, or chairs, for weeks or months, by a fit of the gout?

2. A second remedy in the state of the gout which has been mentioned, is *purging*. Sulphur

is generally preferred for this purpose, but castor oil, cream of tartar, sena, jalap, rhubarb, and calomel, may all be used with equal safety and advantage. The stomach and habits of the patient should determine the choice of a suitable purge in every case. Salts are generally offensive to the stomach. They once brought on a fit of the gout in Dr. Brown.

3. *Vomits* may be given in all those cases where bleeding is objected to, or where the pulse is only moderately active. Mr. Small, in an excellent paper upon the gout, in the 6th volume of the Medical Observations and Inquiries, p. 205, containing the history of his own case, tells us that he always took a vomit upon the first attack of the gout, and that it never failed of relieving all its symptoms. The matter discharged by this vomit indicated a morbid state of the liver, for it was always a dark greenish bile, which was insoluble in water. A British lieutenant, whose misfortunes reduced him to the necessity of accepting a bed in the poor-house of this city, informed the late Dr. Stuben, that he had once been much afflicted with the gout, and that he had upon many occasions strangled a fit of it by the early use of an emetic. Dr. Pye adds his testimony to those which have been given in favour of vomits, and says further, that they do most service when they discharge an

acid humour from the stomach. They appear to act in part by equalizing the divided excitement of the system, and in part by discharging the contents of the gall-bladder and stomach, vitiated by the previous debility of those organs. Care should be taken not to exhibit this remedy where the gout attacks the stomach with symptoms of inflammation, or where it has a tendency to fix itself upon the brain.

4. *Nitre* may be given with advantage in cases of inflammatory action, where the stomach is not affected.

5. A fifth remedy is *cool* or *cold air*. This is as safe and as useful in the gout as in any other inflammatory state of fever. The affected limbs should be kept out of bed, *uncovered*. In this way Mr. Small says he moderated the pains of the gout in his hands and feet.* I have directed the same practice with great comfort, as well as advantage to my patients. Even cold water has been applied with good effects to a limb inflamed by the gout. Mr. Blair M'Clenachan taught me the safety and benefit of this remedy, by using it upon himself without the advice of a physician. It instantly removed his pain, nor was the gout translated by it to any other part of his body. It was removed in

* Medical Observations and Inquiries, vol. VI. p. 201.

the same manner, Dr. Heberden tells us, by the celebrated Dr. Harvey, from his own feet. Dr. Kinlake has lately published a treatise in favour of the application of cold water to the limbs of gouty patients. To be effectual, he says it should be applied by means of wet cloths for eight and forty hours, and that frictions should be used afterwards to the parts affected. This practice has had its advocates and its opponents. Where no internal predisposition exists from debility, it is I believe as safe as in a common rheumatism, but I would by no means advise it to persons who had been previously affected with gout in the stomach, bowels, breast or brain. Perhaps it would be best in most cases to prefer cool, or cold air, to cold water. The safety and advantages of both the modes of applying cold to the affected limbs which have been mentioned, show the impropriety of the common practice of wrapping them in flannel.

6. *Diluting liquors*, such as are prescribed in common inflammatory fevers, should be given in such quantities as to dispose to a gentle perspiration.

7. *Abstinence from wine, spirits, and malt liquors*, also from such aliments as afford much nourishment or stimulus, should be carefully enjoined. Sa-

go, panada, tapioca, diluted milk with bread, and the pulp of apples, summer fruits, tea, coffee, weak chocolate, and bread soaked in chicken water or beef tea, should constitute the principal diet of patients in this state of the gout.

8. *Blisters* are an invaluable remedy in this disease, when used at a proper time, that is, after the reduction of the morbid actions in the system by evacuations. They should be applied to the joints of the feet and wrists in general gout, and to the neck and sides, when it attacks the head or breast. A strangury from the gout is no objection to their use. So far from increasing this complaint, Dr. Clark and Dr. Whytt inform us, that they remove it.* But the principal advantage of blisters is derived from their collecting and concentrating scattered and painful sensations, and conveying them out of the system, and thus becoming excellent substitutes for a tedious fit of the gout.

9. *Fear* and *terror* have in some instances cured a paroxysm of this disease. A captain of a British ship of war, who had been confined for several weeks to his cabin by a severe fit of the gout in his feet, was suddenly cured by hearing the cry of

* *Physical and Literary Essays*, vol. III. p. 469.

fire on board his ship. This fact was communicated to me by a gentleman who was a witness of it. Many similar cases are upon record in books of medicine. I shall in another place insert an account of one in which the cure effected by a fright, eradicated the disease from the system so completely, as ever afterwards to prevent its return.

Thus have I enumerated the remedies which are proper in the gout when it affects the blood-vessels and viscera with great morbid action. Most of those remedies are alike proper when the morbid actions are seated in the muscular fibres, whether of the bowels or limbs, and whether they produce local pain, or general convulsion, provided they are of a violent nature.

There are some remedies under this head of a doubtful nature, on which I shall make a few observations.

Sweating has been recommended in this state of the gout. All the objections to it in preference to other modes of depletion, mentioned in another place,* apply against its use in the inflammatory state of the gout. It is not only less safe than bleed-

* Defence of Blood-letting.

ing, purging, and abstinence, but it is often an impracticable remedy. The only sudorific medicine to be trusted in this state of the disease is the Seneka snake-root. It promotes all the secretions and excretions, and exerts but a feeble stimulus upon the arterial system.

Many different preparations of *opium* have been advised in this state of the gout. They are all hurtful if given before the morbid action of the system is nearly reduced. It should then be given in small doses accommodated to the excitability of the system.

Applications of various kinds to the affected limbs have been used in a fit of the gout, and some of them with success. The late Dr. Chalmers of South-Carolina used to meet the pain of the gout as soon as it fixed in any of his limbs, with a blister, and generally removed it by that means in two or three days. I have imitated this practice in several cases, and always with success, nor have I ever seen the gout thrown upon any of the viscera by means of this remedy. Caustics have sometimes been applied to gouty limbs with advantage. The moxa described and used by Sir William Temple, which is nothing but culinary fire, has often not only given relief to a pained limb, but carried off

a fit of the gout in a few hours. These powerful applications may be used with equal advantage in those cases in which the gout by falling upon the head produces coma, or symptoms of apoplexy. A large caustic to the neck roused Mr. John M. Nesbit from a coma in which he had lain for three days, and thereby appeared to save his life. Blisters and cataplasms of mustard, had been previously used to different parts of his body, but without the least effect. In cases of moderate pain, where a blister has been objected to, I have seen a cabbage leaf afford considerable relief. It produces a moisture upon the part affected, without exciting any pain. An old sea captain taught me to apply molasses to a limb inflamed or pained by the gout. I have frequently advised it, and generally with advantage. All volatile and stimulating liniments are improper, for they not only endanger a translation of the morbid excitement to the viscera, but where they have not this effect, they increase the pain and inflammation of the part affected.

The sooner the patient exercises his lower limbs by walking after a fit of the gout, the better. "I made it a constant rule (says Mr. Small) to walk abroad as soon as the inflammatory state of the gout was past, and though by so doing, I often suffered great pain, I am well convinced that the

free use I now enjoy of my limbs is chiefly owing to my determined perseverance in the use of that exercise; nor am I less persuaded that nine in ten of gouty cripples owe their lameness more to indolence and fear of pain, than to the genuine effects of the gout.* Sir William Temple confirms the propriety of Mr. Small's opinion and practice, by an account of an old man who obviated a fit of the gout as often as he felt it coming in his feet, by walking in the open air, and afterwards by going into a warm bed, and having the parts well rubbed where the pain began. "By following this course (he says) he was never laid up with the gout, and before his death recommended the same course to his son if ever he should fall into that accident." Under a conviction of the safety of this practice the same author concludes the history of his own case in the following words: "I favoured it [viz. the swelling in my feet] all this while more than I needed, upon the common opinion, that walking too much might draw down the humour, which I have since had reason to conclude is a great mistake, and that if I had walked as much as I could from the first day

* Medical Observations and Inquiries, vol. vi. p. 220.

the pain left me, the swelling might have left me too in a much less time.”*

III. I come now to mention the remedies which are proper in that state of the gout in which a *feeble* morbid action takes place in the blood-vessels and viscera.

I shall begin this head, by remarking, that this state of the gout is often created, like the typhus state of fever, by the neglect, or too scanty use of evacuations in its first stage. When the prejudices which now prevent the adoption of those remedies in their proper time, are removed, we shall hear but little of the low state of the arthritic fever, nor of the numerous diseases from obstruction which are produced by the blood-vessels disorganizing the viscera, by repeated and violent attacks of the disease.

To determine the character of a paroxysm of gout and the remedies proper to relieve it, the climate, the season of the year, the constitution of the atmosphere, and the nature of the prevailing epidemic, should be carefully attended to by a phy-

* Essay upon the Cure of the Gout by Moxa, vol. i. folio edition, p. 143 and 141.

sician. But his principal dependence should be placed upon the state of the pulse. If it do not discover the marks which indicate bleeding formerly referred to, but is weak, quick, and soft, the remedies should be such as are calculated to produce a more vigorous and equable action in the blood-vessels and viscera. They are,

1. *Opium*. It should at first be given in small doses, and afterwards increased, as circumstances may require.

2. *Madeira* or *Sherry wine* alone, or diluted with water, or in the form of whey, or rendered more cordial by having any agreeable spice infused in it. It may be given cold or warm, according to the taste of the patient, or the state of his stomach. If this medicine be rejected in all the above forms,

3. *Porter* should be given. It is often retained when no other liquor will lie upon the stomach. I think I once saved the life of Mr. Nesbit by this medicine. It checked a vomiting, from the gout, which seemed to be the last symptom of his departing life. If porter fail of giving relief,

4. *Ardent spirits* should be given, either alone, or in the form of grog or toddy. Cases have oc-

curred in which a pint of brandy has been taken in the course of an hour with advantage. Great benefit has sometimes been found from Dr. Warner's tincture, in this state of the gout. As these observations may fall into the hands of persons who may not have access to Dr. Warner's book, I shall here insert the receipt for preparing it.

Of raisins, sliced and stoned, half a pound.

Rhubarb, one ounce.

Sena, two drachms.

Coriander and fennel seeds, of each one drachm.

Cochineal, saffron, and liquorice root, each half a drachm.

Infuse them for ten days in a quart of French brandy, then strain it, and add a pint more of brandy to the ingredients, afterwards strain it, and mix both tinctures together. Four table spoons full of this cordial are to be taken every hour, mixed with an equal quantity of water, until relief be obtained.

Ten drops of laudanum may be added to each dose in those cases in which the cordial does not produce its intended effects, in two or three hours. If all the different forms of ardent spirits which have been mentioned fail of giving relief,

5. From 30 drops to a tea spoon full of *æther* should be given in any agreeable vehicle. Also,

6. *Volatile alkali*. From five to ten grains of this medicine should be given every two hours.

7. *Aromatic substances*, such as alspice, ginger, Virginia snake-root, cloves, and mace in the form of teas have all been useful in this state of the gout. Dr. Heberden prefers them to wine and spirits, from their being more permanent in their effects.

All these remedies are indicated in a more especial manner when the gout affects the stomach. They are likewise proper when it affects the bowels. The laudanum in this case should be given by way of clyster. After the vomiting was checked in Mr. Nesbit by means of porter, he was afflicted with a dull and distressing pain in his bowels, which was finally removed by two anodyne clysters injected daily for two or three weeks.

8. Where the gout produces spasmodic or convulsive motions, the *oil of amber* may be given with advantage. I once saw it remove for a while a convulsive cough from the gout.

9. In cases where the stomach will bear the *bark*,

it should be given in large and frequent doses. It does the same service in this state of gout, that it does in the slow, or low states of fever from any other cause. Where the gout appears in the form of an intermittent, the bark affords the same relief that it does in the same disease from autumnal exhalations. Mr. Small found great benefit from it after discharging the contents of his stomach and bowels by a dose of tartar emetic. "I do not call (says this gentleman) a fit of the gout a paroxysm, for there are several paroxysms in the fit, each of which is ushered in with a rigour, sickness at stomach, and subsequent heat. In this the gout bears a resemblance to an irregular intermittent, at least to a remitting fever, and hence perhaps the efficacy of the bark in removing the gout."*

10. The *warm bath* is a powerful remedy in exciting a regular and healthy action in the sanguiferous system. Where the patient is too weak to be taken out of bed, and put into a bathing tub, his limbs and body should be wrapped in flannels dipped in warm water. In case of a failure of all the above remedies,

11. A *salivation* should be excited as speedily as

* Medical Observations and Inquiries, vol. vi. p. 220.

possible, by means of mercury. Dr. Cheyne commends it in high terms. I have once used it with success. The mercury, when used in this way, brings into action an immense mass of latent excitement, and afterwards diffuses it equally through every part of the body.

12. Besides these internal remedies, frictions with brandy, and volatile liniment, should be used to the stomach and bowels. Blisters should be applied to parts in which congestion or pain is seated, and stimulating cataplasms should be applied to the lower limbs. The flour of mustard has been justly preferred for this purpose. It should be applied to the upper part of the foot.

The reader will perceive, in the account I have given of the remedies proper in the feeble state of chronic fever, that they are the same which are used in the common typhus, or what is called nervous fever. There is no reason why they should not be the same, for the supposed two morbid states of the system are but one disease.

It is agreeable in medical researches to be under the direction of principles. They render unnecessary, in many instances, the slow and expensive operations of experience, and thus multiply know-

ledge, by lessening labour. The science of navigation has rested upon this basis, since the discovery of the loadstone. A mariner who has navigated a ship to one distant port, is capable of conducting her to every port on the globe. In like manner, the physician who can cure one disease by a knowledge of its principles, may by the same means cure all the diseases of the human body, for their causes are the same. Judgment is required, only in accommodating the force of remedies to the force of each disease. The difference in diseases which arises from their seats, from age, sex, habit, season, and climate, may be known in a short time, and is within the compass of very moderate talents.

IV. Were I to enumerate all the local symptoms of gout which occur without fever, and the remedies that are proper to relieve them, I should be led into a tedious digression. The reader must consult practical books for an account of them. I shall only mention the remedies for a few of them.

The theory of the gout which has been delivered, will enable us to understand the reason why a disease which properly belongs to the whole system should at any time be accompanied only with local morbid affection. The whole body is a unit,

and hence morbid impressions which are resisted by sound parts are propagated to such as are weak, where they excite those morbid actions we call disease.

The *head-ach* is a distressing symptom of the gout. It yields to depleting or tonic remedies, according to the degree of morbid action which accompanies it. I have heard an instance of an old man, who was cured of an obstinate head-ach by throwing aside his nightcap, and sleeping with his bare head exposed to the night air. The disease in this case was probably attended with great morbid action. In this state of the vessels of the brain, cupping, cold applications to the head, purges, a temperate diet, and blisters behind the ears, are all proper remedies, and should be used together, or in succession, as the nature of the disease may require. Many persons have been cured of the same complaint by sleeping in woollen nightcaps. The morbid action in these cases is always of a feeble nature. With this remedy, tonics, particularly the bark and cold bath, will be proper. I have once known a chronic gouty pain in the head cured by an issue in the arm, after pounds of bark, and many other tonic remedies, had been taken to no purpose.

The *ophthalmia* from gout should be treated with the usual remedies for that disease when it arises from other causes, with the addition of such local applications to other and distant parts of the body, as may abstract the gouty action from the eye.

Dull but constant pains in the limbs yield to frictions, volatile liniments, muslin and woollen worn next to the skin, electricity, a salivation, and the warm and cold bath. A gentleman who was afflicted with a pain of this kind for three years and a half in one of his arms, informed me, that he had been cured by wearing a woollen stocking that had been boiled with sulphur in water, for two weeks upon the affected limb. He had previously worn flannel upon it, but without receiving any benefit from it. I have known wool and cotton, finely carded, and made into small mats, worn upon the hips, when affected by gout with great advantage. A cerecloth or taffety by touching the flesh at more, or at all points has been found to give great relief. Rubbing the limbs with castor oil, and wrapping them up in hot sand have likewise been useful. In obstinate sciatic pains, with fever or inflammation, Dr. Pitcairn's remedy, published by Dr. Cheyne, has performed many cures. It consists in taking from one to four tea spoons full of the fine spirit of

turpentine every morning, for a week or ten days, in three times the quantity of honey, and afterwards in drinking a large quantity of sack whey, to settle it on the stomach, and carry it into the blood. An anodyne should be taken every night after taking this medicine.

A *gouty diarrhœa* should be treated with the usual astringent medicines of the shops. Blisters to the wrists and ankles, also a salivation, have often cured it. I have heard of its being checked, after continuing for many years, by the patient eating large quantities of alspice, which he carried loose in his pocket for that purpose.

The *angina pectoris*, which I have said is a symptom of the gout, generally comes on with fulness and tension in the pulse. After these are reduced by two or three bleedings, mineral tonics seldom fail of giving relief.

Spasms in the stomach, and pains in the bowels, often seize gouty people in the midst of business or pleasure, or in the middle of the night. My constant prescription for these complaints is ten drops of laudanum every half hour, till relief be obtained. If this medicine be taken in the forming state of these pains, a single dose generally removes the dis-

ease. It is preferable to spiced wine and spirits, inasmuch as it acts quicker, and leaves no disposition to contract a love for it when it is not required to ease pain.

The *pain in the rectum*, which has been described, yields to the common remedies for the piles. Cold water applied to the part, generally gives immediate relief.

For a *preternatural secretion and excretion of bile*, gentle laxatives, and abstinence from oily food, full meals, and all violent exercises of the body and mind, are proper.

The *itching in the anus*, which I have supposed to be a symptom of gout, has yielded in one instance that has come within my knowledge to mercurial ointment applied to the part affected. Dr. Lettsom recommends fomenting the part with a decoction of poppy heads and hemlock, and advises lenient purges and a vegetable diet as a radical cure for the disease.*

For the *itching in the vagina* I have found a solution of the sugar of lead in water to be an excel-

* Medical Memoirs, vol. III.

lent palliative application. Dr. Lettsom recommends as a cure for it, the use of bark in delicate habits, and occasional bleeding, with a light and moderate diet if it occur about the time of the cessation of the menses.

Obstinate *cutaneous eruptions*, which are the effects of gout, have been cured by gentle physic, a suitable diet, issues, and applications of the unguentum citrinum to the parts affected.

The *arthritic gonorrhœa* should be treated with the same remedies as a gonorrhœa from any other cause.

In the treatment of all the local symptoms that have been enumerated, it will be of great consequence to inquire, before we attempt to cure them, whether they have not succeeded general gout, and thereby relieved the system from its effects in parts essential to life. If this have been the case, the cure of them should be undertaken with caution, and the danger of a local disease being exchanged for a general one, should be obviated by remedies that are calculated to eradicate the gouty diathesis altogether from the system. The means for this purpose, agreeably to our order, come next under our consideration. Before I enter upon this head,

I shall premise, that I do not admit of the seeds of the gout remaining in the body to be eliminated by art after a complete termination of one of its paroxysms, any more than I admit of the seeds of a pleurisy or intermitting fever remaining in the body, after they have been cured by blood-letting or bark. A predisposition only remains in the system to a return of the gout, from its usual remote and exciting causes. The contrary idea took its rise in those ages of medicine in which morbid matter was supposed to be the proximate cause of the gout, but it has unfortunately continued since the rejection of that theory. Thus in many cases we see wrong habits continue long after the principles have been discarded, from which they were derived.

I have known several instances in which art, and I have heard and read of others in which accidental suffering from abstinence, pain, and terror have been the happy means of overcoming a predisposition to the gout. A gentleman from one of the West-India islands, who had been for many years afflicted with the gout, was perfectly cured of it by living a year or two upon the temperate diet of the jail in this city, into which he was thrown for debt by one of his creditors. A large hæmorrhage from the foot, inflamed and swelled by the gout, acci-

dentally produced by a penknife which fell upon it, effected in an Irish gentleman a lasting cure of the disease. Hildanus mentions the history of a gentleman, whom he knew intimately, who was radically cured of a gout with which he had been long afflicted, by the extreme bodily pain he suffered innocently from torture in the canton of Berne. He lived to be an old man, and ever afterwards enjoyed good health.* The following letter from my brother contains the history of a case in which terror suddenly eradicated the gout from the system.

“ Reading, July 27th, 1797.

“ DEAR BROTHER,

“ WHEN I had the pleasure of seeing you last week, I mentioned an extraordinary cure of the gout in this town, by means of a *fright*. In compliance with your request, I now send an exact narration of the facts.

“ Peter Fether, the person cured, is now alive, a householder in Reading, seventy-three years of age, a native of Germany, and a very hearty man. The first fit of the gout he ever had, was about the

* Observat. Chirurg. 1. Cent. Obs. 79.

year 1773; and from that time till 1785, he had a regular attack in the spring of every year. His feet, hands, and elbows were much swollen and inflamed; the fits lasted long, and were excruciating. In particular, the last fit in 1785 was so severe, as to induce an apprehension, that it would inevitably carry him off, when he was suddenly relieved by the following accident.

“ As he lay in a small back room adjoining the yard, it happened that one of his sons, in turning a wagon and horses, drove the tongue of the wagon with such force against the window, near which the old man lay stretched on a bed, as to beat in the sash of the window, and to scatter the pieces of broken glass all about him. To such a degree was he alarmed by the noise and violence, that he instantly leaped out of bed, forgot that he had ever used crutches, and eagerly inquired what was the matter. His wife, hearing the uproar, ran into the room, where, to her astonishment, she found her husband on his feet, bawling against the author of the mischief, with the most passionate vehemence. From *that* moment, he has been entirely exempt from the gout, has never had the slightest touch of it, and *now* enjoys perfect health, has a good appetite, and says he was never heartier in his life. This is probably the more remark-

able, when I add, that he has always been used to the hard work of a farm, and *since* the year 1785 has frequently mowed in his own meadow, which I understand is low and wet. I am well informed, in his mode of living, he has been temperate, occasionally indulging in a glass of wine, after the manner of the German farmers, but not to excess.

“ To you, who have been long accustomed to explore diseases, I leave the task of developing the principles, on which this mysterious restoration from the lowest decrepitude and bodily wretchedness, to a state of perfect health, has been accomplished. I well know that tooth-achs, head-achs, hiccoughs, &c. are often removed by the sudden impression of fear, and that they return again. But to see a debilitated gouty frame instantly restored to vigour; to see the whole system in a moment, as it were, undergo a perfect and entire change, and the most inveterate and incurable disease *radically* expelled, is surely a *different* thing, and must be acknowledged a very singular and marvellous event. If an old man, languishing under disease and infirmity, had *died* of mere fright, nobody would have been surprised at it; but that he should be absolutely cured, and his constitution renovated by it, is a most extraordinary fact, which,

while I am compelled to believe by unexceptionable evidence, I am totally at a loss to account for.

“ I am your sincerely

“ affectionate brother,

“ JACOB RUSH.”

These facts, and many similar ones which might be mentioned, afford ample encouragement to proceed in enumerating the means which are proper to prevent the recurrence of the gout, or, in other words, to eradicate it from the system. Besides these cases of radical cures, it has often been suspended, from two to thirty years by the power of medicine.

V. I shall first mention the means of preventing the return of that state of the disease which is accompanied with *violent* action, and afterwards take notice of the means of preventing the return of that state of it, in which a *feeble* morbid action takes place in the blood-vessels. The means for this purpose consist in avoiding all the remote, exciting, and predisposing causes of the gout which have been mentioned. I shall say a few words upon the most important of them, in the order that has been proposed.

I. The first remedy for obviating the *violent* state of gout is,

1. *Temperance.* This should be regulated in its degrees by the age, habits, and constitution of the patient. A diet consisting wholly of milk, vegetables, and simple water, has been found necessary to prevent the recurrence of the gout in some cases. It was cured in lord Nelson by two years' abstinence from wine and animal food, during which time he lived wholly upon milk and vegetables. But, in general, fish, eggs, the white meats and weak broths may be taken in small quantities once a day, with milk and vegetables at other times. A little salted meat, which affords less nourishment than fresh, may be eaten occasionally. It imparts vigour to the stomach, and prevents dyspepsia from a diet consisting chiefly of vegetables. The low and acid wines should be avoided, but weak Madeira or sherry wine and water, or small beer, may be drunken at meals. The latter liquor was the favourite drink of Dr. Sydenham in his fits of the gout. Strong tea and coffee should not be tasted, where there is reason to believe the habitual use of them has contributed to bring on the disease.

From the disposition of the gout to return in the spring and autumn, greater degrees of abstinence in eating and drinking will be necessary at those seasons than at any other time. With this diminution of aliment, gentle purges should be taken, to

obviate an attack of the gout. In persons above fifty years of age, an abstemious mode of living should be commenced with great caution. It has sometimes, when entered upon suddenly, and carried to its utmost extent, induced fits of the gout, and precipitated death. In such persons, the abstractions from their usual diet should be small, and our dependence should be placed upon other means to prevent a return of the disease.

2. *Moderate labour* and *gentle exercise* have frequently removed that debility and vibratility in the blood-vessels, on which a predisposition to the gout depends. Hundreds of persons who have been reduced by misfortunes to the necessity of working for their daily bread, have thrown off a gouty diathesis derived from their parents, or acquired by personal acts of folly and intemperance. The employments of agriculture afford the most wholesome labour, and walking, the most salutary exercise. To be useful, they should be moderate. The extremes of indolence and bodily activity meet in a point. They both induce debility, which predisposes to a recurrence of a fit of the gout. Riding in a carriage, and on horseback, are less proper as a means of preventing the disease than walking. Their action upon the body is partial. The lower limbs derive no benefit from it, and on these

the violent state of gout generally makes its first attack. In England, many domestic exercises have been contrived for gouty people, such as shuttle-cock, bullets, the chamber-horse, and the like, but they are all trifling in their effects, compared with labour, and exercise in the open air. The efficacy of the former of those prophylactic remedies will appear in a strong point of light, when we consider, how much the operation of the remote and exciting causes of the gout which act more or less upon persons in the humblest ranks of society, are constantly counteracted in their effects, by the daily labour which is necessary for their subsistence.

3. To prevent the recurrence of the gout, cold should be carefully avoided, more especially when it is combined with moisture. Flannel should be worn next the skin in winter, and muslin in summer, in order to keep up a steady and uniform perspiration. Fleecy hosiery should be worn in cold weather upon the breast and knees, and the feet should be kept constantly warm and dry by means of socks and cork soled shoes. It was by wetting his feet, by standing two or three hours upon the damp ground, that Colonel Miles produced the gout in his stomach and bowels which had nearly destroyed him in the year 1795.

4. Great moderation should be used by persons who are subject to the gout in the exercise of their understandings and passions. Intense study, fear, terror, anger, and even joy, have often excited the disease into action. It has been observed, that the political and military passions act with more force upon the system, than those which are of a social and domestic nature; hence generals and statesmen are so often afflicted with the gout, and that too, as was hinted in another place, in moments the most critical and important to the welfare of a nation. The combination of the exercises of the understanding, and the passion of avarice in gaming, have often produced an attack of this disease.

These facts show the necessity of gouty people subjecting their minds, with all their operations, to the government of reason and religion. The understanding should be exercised only upon light and pleasant subjects. No study should ever be pursued till it brings on fatigue; and above all things, midnight, and even late studies should be strictly avoided. A gouty man should always be in bed at an early hour. This advice has the sanction of Dr. Sydenham's name, and experience proves its efficacy in all chronic diseases.

5. The venereal appetite should be indulged with moderation. And,

6. Costiveness should be prevented by all persons who wish to escape a return of violent fits of the gout. Sulphur is an excellent remedy for this purpose. Dr. Cheyne commends it in high terms. His words are, "Sulphur is one of the best remedies in the intervals of the gout. In the whole extent of the materia medica, I know not a more safe and active medicine."* Two cases have come within my knowledge, in which it has kept off fits of the gout for several years, in persons who had been accustomed to have them once or twice a-year. Rhubarb in small quantities chewed, or in the form of pills, may be taken to obviate costiveness, by persons who object to the habitual use of sulphur. Dr. Cheyne, who is lavish in his praises of that medicine as a gentle laxative, says, he "knew a noble lord of great worth and much gout, who, by taking from the hands of a quack a drachm of rhubarb, tinged with cochineal to disguise it, every morning for six weeks, lived in health, for four years after, without any symptom of it."†

I have said that abstinence should be enjoined

* Essay on the Nature and True Method of Treating the Gout, p. 36.

† Page 30.

with more strictness in the spring and autumn, than at any other time, to prevent a return of the gout. From the influence of the weather at those seasons in exciting febrile actions in the system, the loss of a pint of blood will be useful in some cases for the same purpose. It will be the more necessary if the gout has not paid its habitual visits to the system. The late Dr. Gregory had been accustomed to an attack of the gout every spring. Two seasons passed away without his feeling any symptoms of it. He began to flatter himself with a hope that the predisposition to the disease had left him. Soon afterwards he died suddenly of an apoplexy. The loss of a few ounces of blood at the usual time in which the gout affected him, would probably have protracted his life for many years. In the year 1796, in visiting a patient, I was accidentally introduced into a room where a gentleman from the Delaware state had been lying on his back for near six weeks with an acute fit of the gout. He gave me a history of his sufferings. His pulse was full and tense, and his whole body was covered with sweat from the intensity of his pain. He had not had his bowels opened for ten days. I advised purging and bleeding in his case. The very names of those remedies startled him, for he had adopted the opinion of the salutary nature of a fit of the gout, and therefore hugged his chains. After ex-

plaining the reason of my prescriptions, he informed me, in support of them, that he had escaped the gout, but two years in twenty, and that in one of these two years he had been bled for a fall from his horse, and, in the other, his body had been reduced by a chronic fever, previously to the time of the annual visit of his gout.

As a proof of the efficacy of active, or passive depletion, in preventing the gout, it has been found that persons who sweat freely, either generally or partially, or who make a great deal of water, are rarely affected by it.

An epitome of all that has been said upon the means of preventing a return of the gout, may be delivered in a few words. A man who has had one fit of it, should consider himself in the same state as a man who has received the seeds of a malignant fever into his blood. He should treat his body as if it were a Florence flask. By this means he will probably prevent, during his life, the re-excitement of the disease.

Are *issues* proper to prevent the return of the violent state of gout? I have heard of an instance of an issue in the leg having been effectual for this purpose; but if the remedies before-mentioned be

used in the manner that has been directed, so unpleasant a remedy can seldom be necessary.

Are *bitters* proper to prevent a return of this state of gout? It will be a sufficient answer to this question to mention, that the duke of Portland's powder, which is composed of bitter ingredients, excited a fatal gout in many people who used it for that purpose. I should as soon expect to see gold produced by the operations of fire upon copper or lead, as expect to see the gout prevented or cured by any medicine that acted upon the system, without the aid of more or less of the remedies that have been mentioned.

II. We come now, in the last place, to mention the remedies which are proper to prevent a return of that state of gout which is attended with a *feeble* morbid action in the blood-vessels and viscera.

This state of gout generally occurs in the evening of life, and in persons of delicate habits, or in such as have had their constitutions worn down by repeated attacks of the disease.

The remedies to prevent it are,

1. A *gently stimulating diet*, consisting of animal

food well cooked, with sound old Madeira or sherry wine, or weak spirit and water. Salted, and even smoked meat may be taken, in this state of the system, with advantage. It is an agreeable tonic, and is less disposed to create plethora than fresh meat. Pickles and vinegar should seldom be tasted. They dispose to gouty spasms in the stomach and bowels. Long intervals between meals should be carefully avoided. The stomach, when over-stretched or empty, is always alike predisposed to disease. There are cases in which the evils of inanition in the stomach will be prevented, by a gouty patient eating in the middle of the night.

2. The use of *chalybeate medicines*. These are more safe when used habitually, than bitters. I have long been in the practice of giving the different preparations of iron in large doses, in chronic diseases, and in that state of debility which disposes to them. A lady of a weak constitution informed Dr. Cheyne, that she once asked Dr. Sydenham how long she might safely take steel. His answer was, that "she might take it for thirty years, and then begin again if she continued ill."*

Water impregnated with iron, either by nature

* Essay on the Nature and True Method of Treating the Gout, p. 69.

or art, may be taken instead of the solid forms of the metal. It will be more useful if it be drunken in a place where patients will have the benefit of country air.

3. The habitual use of the *volatile tincture of gum guaiacum*, and of other cordial and gently stimulating medicines. A clove of garlic taken once or twice a day, has been found useful in debilitated habits predisposed to the gout. It possesses a wonderful power in bringing latent excitement into action. It moreover acts agreeably upon the nervous system.

Mr. Small found great benefit from breakfasting upon a tea made of half a drachm of ginger cut into small slices, in preventing occasional attacks of the gout in his stomach. Sir Joseph Banks was much relieved by a diet of milk, with ginger boiled in it. The root of the sassafras of our country might probably be used with advantage for the same purpose. Aurelian speaks of certain remedies for the gout which he calls "annalia."* The above medicines belong to this class. To be effectual, they should be persisted in, not for one year only, but for many years.

* Morborum Chronicorum. Lib. v. Cap. 2.

4. *Warmth*, uniformly applied, by means of suitable dresses, and sitting rooms, to every part of the body.

5. The *warm bath* in winter, and the *temperate or cold bath* in summer.

6. *Exercise*. This may be in a carriage, or on horseback. The viscera being debilitated in this state of predisposition to the gout, are strengthened in a peculiar manner by the gentle motion of a horse. Where this or other modes of passive exercise cannot be had, frictions to the limbs and body should be used every day.

7. *Costiveness* should be avoided by taking occasionally one or two table spoons full of Dr. Warner's purging tincture prepared by infusing rhubarb, orange peel, and caraway seeds, of each an ounce, for three days in a quart of Madeira, or any other white wine. If this medicine be ineffectual for opening the bowels, rhubarb may be taken in the manner formerly mentioned.

8. The understanding and passions should be constantly employed in agreeable studies and pursuits. Fatigue of mind and body should be carefully avoided.

9. A warm climate often protracts life in persons subject to this state of gout. The citizens of Rome who had worn down their constitutions by intemperance, added many years to their lives, by migrating to Naples, and enjoying there, in a warmer sun, the pure air of the Mediterranean, and sir William Temple says the Portuguese obtain the same benefit by transporting themselves to the Brazils, after medicine and diet cease to impart vigour to their constitutions in their native country.

Thus have I enumerated the principal remedies for curing and preventing the gout. Most of them are to be met with in books of medicine, but they have been administered by physicians, or taken by patients with so little regard to the different states of the system, that they have in many instances done more harm than good. Solomon places all wisdom, in the management of human affairs, in finding out the proper times for performing certain actions. Skill in medicine consists in an eminent degree in timing remedies. There is a time to bleed, and a time to withhold the lancet. There is a time to give physic, and a time to trust to the operations of nature. There is a time to eat meat, and there is a time to abstain from it. There is a time to give tonic medicines, and a time to refrain from them. In a word, the cure of the gout depends

wholly upon two things, viz. *proper* remedies, in their proper *times*, and *places*.

I shall take leave of this disease, by comparing it to a deep and dreary cave in a new country, in which ferocious beasts and venomous reptiles, with numerous ghosts and hobgoblins, are said to reside. The neighbours point at the entrance of this cave with horror, and tell of the many ravages that have been committed upon their domestic animals, by the cruel tenants which inhabit it. At length a school-boy, careless of his safety, ventures to enter this subterraneous cavern, when! to his great delight, he finds nothing in it but the same kind of stones and water he left behind him upon the surface of the earth. In like manner, I have found no other principles necessary to explain the cause of the gout, and no other remedies necessary to cure it, than such as are admitted in explaining the causes, and in prescribing for the most simple and common diseases.

The following is an epitome of the opinions upon the cause and cure of the gout, which are contained in the preceding observations, most of which are opposed by modern systems of medicine.

1. The gout does not depend upon a *specific ac-*

tion in the blood-vessels, any more than it does upon a specific morbid matter.

2. It is not seated exclusively in the joints, nor in the limbs.

3. It is not induced exclusively by ardent nor fermented liquors, nor by intemperance in eating, but by every other cause that induces chronic debility from action or abstraction; also by the causes that induce nearly all other diseases.

4. It is more common in the female than in the male sex, and that in the ratio of ten to one.

5. It differs from the rheumatism, only in its seats and grades.

6. There is no specific remedy for it. The numerous and pompous specifics that have been recommended for its cure, are melancholy records of the imperfection and obliquity of the human understanding.

7. It is, notwithstanding, subject to the power of medicine; and may be cured by the application of the same principles and remedies to it, which cure other acute and chronic diseases.

8. It is not necessary, in order to prevent or cure the gout, to translate or to fix it in the limbs. It should be chased out of the system.

9. It is not a healthy, nor a friendly disease.

10. It does not cure other diseases. It suspends weak diseases only, when it attacks with great force. But while it suspends weak diseases, it aggravates all such as are of a violent nature.

OBSERVATIONS

UPON

The Cause and Cure

OF THE

HYDROPHOBIA.

OBSERVATIONS, &c.

IN entering upon the consideration of this formidable disease, I feel myself under an involuntary impression, somewhat like that which was produced by the order the king of Syria gave to his captains when he was conducting them to battle: "Fight not with small or great, save only with the king of Israel."* In whatever light we contemplate the hydrophobia, it may be considered as pre-eminent in power and mortality, over all other diseases.

It is now many years since the distress and horror excited by it, both in patients and their friends, led me with great solicitude to investigate its nature. I have at length satisfied myself with a the-

* II. Chron. xviii. 30.

ory of it, which, I hope, will lead to a rational and successful mode of treating it.

For a history of the symptoms of the disease, and many interesting facts connected with it, I beg leave to refer the reader to Dr. Mease's learned and ingenious inaugural dissertation, published in the year 1792.

The remote and exciting causes of the hydrophobia are as follow:

1. The bite of a rabid animal. Wolves, foxes, cats, as well as dogs, impart the disease. It has been said that blood must be drawn in order to produce it, but I have heard of a case in Lancaster county, in Pennsylvania, in which a severe contusion, by the teeth of the rabid animal, without the effusion of a single drop of red blood, excited the disease. Happily for mankind, it cannot be communicated by blood or saliva falling upon sound parts of the body. In Maryland, the negroes eat with safety the flesh of hogs that have perished from the bite of mad dogs; and I have heard of the milk of a cow, at Chestertown, in the same state, having been used without any inconvenience by a whole family, on the very day in which she was affected by this disease, and which killed her in a few hours.

Dr. Baumgarten confirms these facts by saying, that "the flesh and milk of rabid animals have been eaten with perfect impunity."*

In the following observations I shall confine myself chiefly to the treatment of the hydrophobia which arises from the bite of a rabid animal, but I shall add in this place a short account of all its other causes.

2. Cold night air. Dr. Arthaud, late president of the society of Philadelphians in St. Domingo, has published several cases in which it was produced in negroes by sleeping all night in the open air.

3. A wound in a tendinous part.

4. Putrid and impure animal food.

5. Worms.

6. Eating beech nuts.

7. Great thirst.

* Medical Commentaries, Philadelphia edition, vol. 7. p. 409

8. Exposure to intense heat.
9. Drinking cold water when the body was very much heated.
10. A fall.
11. Fear.
12. Hysteria.
13. Epilepsy.
14. Tetanus.
15. Hydrocephalus. Of the presence of hydrophobia in the hydrocephalic state of fever, there have been several instances in Philadelphia.
16. An inflammation of the stomach.
17. The dysentery.
18. The typhus fever. Dr. Trotter mentions the hydrophobia as a symptom which frequently occurred in the typhus state of fever in the British navy.*

* *Medicina Nautica*, p. 301.

19. It is taken notice of likewise in a putrid fever by Dr. Coste;* and Dr. Griffiths observed it in a high degree in a young lady who died of the yellow fever, in 1793.

20. The bite of an angry, but not a diseased animal.

21. An involuntary association of ideas.

Cases of spontaneous hydrophobia from all the above causes are to be met with in practical writers, and of most of them in M. Audry's learned work, entitled, "*Recherches sur la Rage.*"

The dread of water, from which this disease derives its name, has five distinct grades. 1. It cannot be drunken. 2. It cannot be touched. 3. The sound of it pouring from one vessel to another, 4. the sight of it, and 5. even the naming of it, cannot be borne, without exciting convulsions. But this symptom is not a universal one. Dr. Mead mentions three cases in which there was no dread of water, in persons who received the disease from the bite of a rabid animal. It is unfortunate for

* Medical Commentaries, Dobson's edition, vol. II. p. 476.

this disease, as well as many others, that a single symptom should impose names upon them. In the present instance it has done great harm, by fixing the attention of physicians so exclusively upon the dread of water which occurs in it, that they have in a great measure overlooked every other circumstance which belongs to the disease. The theory of the hydrophobia, which an examination of its causes, symptoms, and accidental cures, with all the industry I was capable of, has led me to adopt, is, that it is a *malignant state of fever*. My reasons for this opinion are as follow:

1. The disease in all rabid animals is a fever. This is obvious in dogs who are most subject to it. It is induced in them by the usual causes of fever, such as scanty or putrid aliment,* extreme cold, and the sudden action of heat upon their bodies. Proofs of its being derived from each of the above causes are to be met with in most of the authors who have written upon it. The animal matters which are rendered morbid by the action of the

* "Animal food, in a state of putridity, is amongst the most frequent causes of canine madness."

"Canine madness chiefly arises from the excessive number of ill-kept and ill-fed dogs."

YOUNG'S ANNALS, vol. XVII. p. 561.

above causes upon them, are determined to the saliva, in which a change seems to be induced, similar to that which takes place in the perspirable matter of the human species from the operation of similar causes upon it. This matter it is well known, is the remote cause of the jail fever. No wonder the saliva of a dog should produce a disease of the same kind, after being vitiated by the same causes, and thereby disposed to produce the same effects.

2. The disease called canine madness, prevails occasionally among dogs at those times in which malignant fevers are epidemic. This will not surprise those persons who have been accustomed to observe the prevalence of the influenza and bilious fevers among other domestic animals at a time when they are epidemic among the human species.

3. Dogs, when they are said to be mad, exhibit the usual symptoms of fever, such as a want of appetite, great heat, a dull, fierce, red, or watery eye, indisposition to motion, sleepiness, delirium, and madness. The symptom of madness is far from being universal, and hence many dogs are diseased and die with this malignant fever, that are inoffensive, and instead of biting, continue to fawn upon their masters. Nor is the disposition of the fever

to communicate itself by infection universal among dogs any more than the same fever in the human species, and this I suppose to be one reason why many people are bitten by what are called mad dogs, who never suffer any inconvenience from it.

4. A dissection of a dog, by Dr. Cooper, that died with this fever, exhibited all the usual marks of inflammation and effusion which takes place in common malignant fevers. I shall in another place mention a fifth argument in favour of the disease in dogs being a malignant fever, from the efficacy of one of the most powerful remedies in that state of fever, having cured it in two instances.

II. The disease produced in the human species by the bite of a rabid animal, is a *malignant* fever. This appears first from its symptoms. These, as recorded by Aurelian, Mead, Fothergill, Plummer, Arnold, Baumgarten, and Morgagni, are chills, great heat, thirst, nausea, a burning sensation in the stomach, vomiting, costiveness; a small, quick, tense, irregular, intermitting, natural, or slow pulse; a cool skin, great sensibility to cold air, partial cold and clammy sweats on the hands, or sweats accompanied with a warm skin diffused all over the body, difficulty of breathing, sighing, restlessness, hiccup, giddiness, head-ach, delirium, coma, false vision,

dilatation of the pupils, dulness of sight, blindness, glandular swellings, heat of urine, priapism, palpitation of the heart, and convulsions. I know that there are cases of hydrophobia upon record, in which there is said to be a total absence of fever. The same thing has been said of the plague. In both cases the supposed absence of fever is the effect of stimulus acting upon the blood-vessels with so much force as to suspend morbid action in them. By abstracting a part of this stimulus, a fever is excited, which soon discovers itself in the pulse and on the skin, and frequently in pains in every part of the body. The dread of water, and the great sensibility of the system to cold air, are said to give a specific character to the hydrophobia; but the former symptom, it has been often seen, occurs in diseases from other causes, and the latter has been frequently observed in the yellow fever. It is no more extraordinary that a fever excited by the bite of a rabid animal should excite a dread of water, than that fevers from other causes should produce aversion from certain aliments, from light, and from sounds of all kinds; nor is it any more a departure from the known laws of stimulants, that the saliva of a mad dog should affect the fauces, than that mercury should affect the salivary glands. Both stimuli appear to act in a specific manner.

2. The hydrophobia partakes of the character of a malignant fever, in appearing at different intervals from the time in which the infection is received into the body. These intervals are from one day to five or six months. The small-pox shows itself in intervals from eight to twenty days, and the plague and yellow fever from the moment in which the miasmata are inhaled, to nearly the same distance of time. This latitude in the periods at which infectious and contagious matters are brought into action in the body, must be resolved into the influence which the season of the year, the habits of the patients, and the passion of fear have upon them.

Where the interval between the time of being bitten, and the appearance of a dread of water, exceeds five or six months, it is probable it may be occasioned by a disease derived from another cause. Such a person is predisposed in common with other people to all the diseases of which the hydrophobia is a symptom. The recollection of the poisonous wound he has received, and its usual consequences, is seldom absent from his mind for months or years. A fever, or an affection of his nerves from their most common causes, cannot fail of exciting in him apprehensions of the disease which usually follows the accident to which he has

been exposed. His fears are then let loose upon his system, and produce in a short time a dread of water which appears to be wholly unconnected with the bite of a rabid animal. Similar instances of the effects of fear upon the human body are to be met with in books of medicine. The pains produced by fear acting upon the imagination in supposed venereal infections, are as real and severe as they are in the worst state of that disease.

3. Blood drawn in the hydrophobia exhibits the same appearances which have been remarked in malignant fevers. In Mr. Bellamy, the gentleman whose case is so minutely related by Dr. Fothergill, the blood discovered with "slight traces of size, *serum* remarkably *yellow*." It was uncommonly sily in a boy of Mr. George Oakley whom I saw, and bled for the first time, on the fourth day of his disease, in the beginning of the year 1797. His pulse imparted to the fingers the same kind of quick and tense stroke, which is common in an acute inflammatory fever. He died in convulsions the next day. He had been bitten by a mad dog on one of his temples, three weeks before he discovered any signs of indisposition. There are several other cases upon record, of the blood exhibiting, in this disease, the same appearances as in common malignant and inflammatory fevers.

4. The hydrophobia accords exactly with malignant fevers in its duration. It generally terminates in death, according to its violence, and the habit of the patient, in the first, second, third, fourth, or fifth day, from the time of its attack, and with the same symptoms which attend the last stage of malignant fevers.

5. The body, after death from the hydrophobia, putrefies with the same rapidity that it does after death from a malignant fever in which no depletion has been used.

6. Dissections of bodies which have died of the hydrophobia, exhibit the same appearances which are observed on the bodies of persons who have perished of malignant fevers. These appearances, according to Morgagni and Sauvry,* are marks of inflammation in the throat, œsophagus, trachea, brain, stomach, liver, and bowels. Effusions of water, and congestions of blood in the brain, large quantities of dark-coloured or black bile in the gall-bladder and stomach, mortifications in the bowels and bladder, livid spots on the surface of the body, and, above all, the arteries filled with fluid blood and the veins nearly empty. I am

* *Bibliothèque Choisie de Médecine*, tome XV. p. 210.

aware, that two cases of death from hydrophobia are related by Dr. Vaughan, in which no appearance of disease was discovered by dissection in any part of the body. Similar appearances have occasionally been met with in persons who have died of malignant fevers. In another place I hope to prove, that we err in placing disease in inflammation, for it is one of its primary effects only, and hence, as was before remarked, it does not take place in many instances in malignant fevers, until the arteries are so far relaxed by two or three bleedings, as to be able to relieve themselves by effusing red blood into serous vessels, and thus to produce that error loci which I shall say hereafter is essential to inflammation.* The existence of this grade of action in the arteries may always be known by the presence of sisy blood, and by the more obvious and common symptoms of fever.

* In the 6th volume of the Medical Observations and Inquiries, there is an account of the dissection of a person who had been destroyed by taking opium. "No morbid appearance (says Mr. Whateley, the surgeon who opened the body) was found in any part of the body, except that the villous coat of the stomach was very slightly inflamed." The stimulus of the opium in this case either produced an action which transcended inflammation, or destroyed action altogether by its immense force, by which means the more common morbid appearances which follow disease in a dead body could not take place.

The remedies for hydrophobia, according to the principles I have endeavoured to establish, divide themselves naturally into two kinds.

I. Such as are proper to prevent the disease, after the infection of the rabid animal is received into the body.

II. Such as are proper to cure it when formed.

I. The first remedy under the first general head is, abstracting or destroying the virus, by cutting or burning out the wounded part, or by long and frequent effusions of water upon it, agreeably to the advice of Dr. Haygarth, in order to wash the saliva from it. The small-pox has been prevented, by cutting out the part in which the puncture was made in the arm with variolous matter. There is no reason why the same practice should not succeed, if used in time, in the hydrophobia. Where it has failed of success, it has probably been used after the poison has contaminated the blood. The wound should be kept open and running for several months. In this way a servant girl, who was bitten by the same cat that bit Mr. Bellamy, is supposed by Dr. Fothergill to have escaped the disease. Dr. Weston of Jamaica believes that he prevented the disease by the same means, in two

instances. Perhaps an advantage would arise from exciting a good deal of inflammation in the wound. We observe after inoculation, that the more inflamed the puncture becomes, and the greater the discharge from it, the less fever and eruption follow in the small-pox. The inflammation in both cases prevents the absorption of the poison, by abstracting the usual excitement or capacity of action in the lymphatics, and concentrating it in the blood-vessels.

A second preventive is a low diet, such as has been often used with success to mitigate the plague and yellow fever. The system, in this case, bends beneath the stimulus of the morbid saliva, and thus obviates or lessens its effects at a future day.

During the use of these means to prevent the disease, the utmost care should be taken to keep up our patient's spirits, by inspiring confidence in the remedies prescribed for him.

Mercury has been used in order to prevent the disease. There are many well-attested cases upon record, of persons who have been salivated after being bitten by mad animals, in whom the disease did not show itself, but there are an equal number of cases to be met with, in which a salivation did not prevent it. From this it would seem probable,

that the saliva did not infect in the cases in which the disease was supposed to have been prevented by the mercury. At the time calomel was used to prepare the body for the small-pox, a salivation was often induced by it. The affection of the salivary glands in many instances lessened the number of pock, but I believe in no instance prevented the eruptive fever.

I shall say nothing here of the many other medicines which have been used to prevent the disease. No one of them has, I believe, done any more good than the boasted specifics which have been used to eradicate the gout, or to procure old age. They appear to have derived their credit from some of the following circumstances accompanying the bite of the animal.

1. The animal may have been angry, but not diseased with a malignant fever such as I have described.
2. He may have been diseased, but not to such a degree as to have rendered his saliva infectious.
3. The saliva, when infectious, may have been so washed off in passing through the patient's

clothes, as not to have entered the wound made in the flesh. And

4. There may have been no predisposition in the patient to receive the fever. This is often observed in persons exposed to the plague, yellow fever, small-pox, and to the infection of the itch, and the venereal disease.

II. The hydrophobia, like the small-pox, generally comes on with some pain, and inflammation in the part in which the infection was infused into the body, but to this remark, as in the small-pox, there are some exceptions. As soon as the disease discovers itself, whether by pain or inflammation in the wounded part, or by any of the symptoms formerly mentioned, the first remedy indicated is *blood-letting*. All the facts which have been mentioned, relative to its cause, symptoms, and the appearances of the body after death, concur to enforce the use of the lancet in this disease. Its affinity to the plague and yellow fever in its force, is an additional argument in favour of that remedy. To be effectual, it should be used in the most liberal manner. The loss of 100 to 200 ounces of blood will probably be necessary in most cases to effect a cure. The pulse should govern the use of the lancet as in other states of fever, taking care not to

be imposed upon by the absence of *frequency* in it, in the supposed absence of fever, and of *tension* in affections of the stomach, bowels, and brain. This practice, in the extent I have recommended it, is justified not only by the theory of the disease, but by its having been used with success in the following cases.

Dr. Nugent cured a woman by two copious bleedings, and afterwards by the use of sweating and cordial medicines.

Mr. Wrightson was encouraged by Dr. Nugent's success to use the same remedies with the same happy issue in a boy of 15 years of age.*

Mr. Falconer cured a young woman of the name of Hannah Moore, by "a copious bleeding," and another depleting remedy to be mentioned hereafter.†

Mr. Poupart cured a woman by bleeding until she fainted, and Mr. Berger gives an account of a number of persons being bitten by a rabid animal,

* Medical Transactions, vol. ii. p. 192.

† Ditto, p. 222.

all of whom died, except two who were saved by bleeding.*

In the 40th volume of the Transactions of the Royal Society of London, there is an account of a man being cured of hydrophobia by Dr. Hartley, by the loss of 120 ounces of blood.

Dr. Tilton cured this disease in a woman in the Delaware state by very copious bleeding. The remedy was suggested to the doctor by an account taken from a London magazine of a dreadful hydrophobia being cured by an accidental and profuse hemorrhage from the temporal artery.†

A case is related by Dr. Innes,‡ of the loss of 116 ounces of blood in seven days having cured this disease. In the patient who was the subject of this cure, the bleeding was used in the most depressed, and apparently weak state of the pulse. It rose constantly with the loss of blood.

The cases related by Dr. Tilton and Dr. Innes were said to be of a spontaneous nature, but the

* *Bibliothèque Choisie de Médecine*, tome xv. p. 212.

† *Medical Essays of Edinburgh*, vol. i. p. 226.

‡ *Medical Commentaries*, vol. iii. p. 496.

morbid actions were exactly the same in both patients with those which are derived from the bite of a rabid animal. There is but one remote cause of disease, and that is stimulus, and it is of no consequence in the disease now under consideration, whether the dread of water be the effect of the saliva of a rabid animal acting upon the fauces, or of a morbid excitement determined to those parts by any other stimulus. The inflammation of the stomach depends upon the same kind of morbid action, whether it be produced by the miasmata of the yellow fever, or the usual remote and exciting causes of the gout. An apoplexy is the same disease when it arises from a contusion by external violence, that it is when it arises spontaneously from the congestion of blood or water in the brain. A dropsy from obstructions in the liver induced by strong drink, does not differ in its proximate cause from the dropsy brought on by the obstructions in the same viscus which are left by a neglected, or half cured bilious fever. These remarks are of extensive application, and, if duly attended to, would deliver us from a mass of error which has been accumulating for ages in medicine: I mean the nomenclature of diseases from their remote causes. It is the most offensive and injurious part of the rubbish of our science.

I grant that bleeding has been used in some instances in hydrophobia without effect, but in all such cases it was probably used out of time, or in too sparing a manner. The credit of this remedy has suffered in many other diseases from the same causes. I beg it may not be tried in this disease, by any physician who has not renounced our modern systems of nosology, and adopted, in their utmost extent, the principles and practice of Botallus and Sydenham in the treatment of malignant fevers.

Before I quit the subject of blood-letting in hydrophobia, I have to add, that it has been used with success in two instances in dogs that had exhibited all the usual symptoms of what has been called madness. In one case, blood was drawn by cutting off the tail, in the other, by cutting off the ears of the diseased animal. I mention these facts with pleasure, not only because they serve to support the theory and practice which I have endeavoured to establish in this disease, but because they will render it unnecessary to destroy the life of a useful and affectionate animal in order to prevent his spreading it. By curing it in a dog by means of bleeding, we moreover beget confidence in the same remedy in persons who have been bitten by

him, and thus lessen the force of the disease, by preventing the operation of fear upon the system.

2. Purges and clysters have been found useful in the hydrophobia. They discharge bile which is frequently vitiated, and reduce morbid action in the stomach and blood-vessels. Dr. Coste ascribes the cure of a young woman in a convent wholly to clysters given five or six times every day.

3. Sweating after bleeding completed the cure of the boy whose case is mentioned by Mr. Wrightson. Dr. Baumgarten speaks highly of this mode of depleting, and says further, that it has never been cured "but by evacuations of some kind."

4. All the advantages which attend a salivation in common malignant fevers, are to be expected from it in the hydrophobia. It aided blood-letting in two persons who were cured by Mr. Falconer and Dr. Le Compt.

There are several cases upon record in which musk and opium have afforded evident relief in this disease.

A physician in Virginia cured it by large doses of bark and wine. I have no doubt of the efficacy

of these remedies when the disease is attended with a moderate or feeble morbid action in the system, for I take it for granted, it resembles malignant fevers from other causes in appearing in different grades of force. In its more violent and common form, stimulants of all kinds must do harm, unless they are of such a nature, and exhibited in such quantities, as to exceed in their force the stimulus of the disease; but this is not to be expected, more especially as the stomach is for the most part so irritable as sometimes to reject the mildest aliments as well as the most gentle medicines.

After the morbid actions in the system have been weakened, tonic remedies would probably be useful in accelerating the cure.

Blisters and stimulating cataplasms, applied to the feet, might probably be used with the same advantage in the declining state of the disease, that they have been used in the same stage of other malignant fevers.

The cold bath, also long immersion in cold water, have been frequently used in this disease. The former aided the lancet, in the cure of the man whose case is related by Dr. Hartley. There can be no objection to the cold water in either of the

above forms, provided no dread is excited by it in the mind of the patient.

The reader will perceive here that I have deserted an opinion which I formerly held upon the cause and cure of the tetanus. I supposed the hydrophobia to depend upon debility. This debility I have since been led to consider as partial, depending upon abstraction of excitement from some, and a morbid accumulation of it in other parts of the body. The preternatural excitement predominates so far, in most cases of hydrophobia, over debility, that depleting remedies promise more speedily and safely to equalize, and render it natural, than medicines of an opposite character.

In the treatment of those cases of hydrophobia which are not derived from the bite of a rabid animal, regard should always be had to its remote and exciting causes, so as to accommodate the remedies to them.

The imperfection of the present nomenclature of medicine has become the subject of general complaint. The mortality of the disease from the bite of a rabid animal has been increased by its name. The terms hydrophobia and canine madness convey ideas of the symptoms of the disease only,

and of such of them too as are by no means universal. If the theory I have delivered, and the practice I have recommended, be just, it ought to be called the hydrophobic state of fever. This name associates it at once with all the other states of fever, and leads us to treat it with the remedies which are proper in its kindred diseases, and to vary them constantly with the varying state of the system.

In reviewing what has been said of this disease, I dare not say that I have not been misled by the principles of fever which I have adopted; but if I have, I hope the reader will not be discouraged by my errors, from using his reason in medicine. By contemplating those errors, he may perhaps avoid the shoals upon which I have been wrecked. In all his researches, let him ever remember that there is the same difference between the knowledge of a physician who prescribes for diseases as limited by genera and species, and of one who prescribes under the direction of just principles, that there is between the knowledge we obtain of the nature and extent of the sky, by viewing a few feet of it from the bottom of a well, and viewing from the top of a mountain the whole canopy of heaven.

Since the first edition of the foregoing observations, I have seen a communication to the editors of the Medical Repository,* by Dr. Physick, which has thrown new light upon this obscure disease, and which, I hope, will aid the remedies that have been proposed, in rendering them more effectual for its cure. The doctor supposes death from hydrophobia to be the effect of a sudden and spasmodic constriction of the glottis, inducing suffocation, and that it might be prevented by creating an artificial passage for air into the lungs, whereby life might be continued long enough to admit of the disease being cured by other remedies. The following account of a dissection is intended to show the probability of the doctor's proposal being attended with success.

On the 13th of September, 1802, I was called, with Dr. Physick, to visit, in consultation with Dr. Griffitts, the son of William Todd, Esq. aged five years, who was ill with the disease called hydrophobia, brought on by the bite of a mad dog, on the 6th of the preceding month. The wound was small, and on his cheek, near his mouth, two circumstances which are said at all times to increase

* Volume V.

the danger of wounds from rabid animals. From the time he was bitten, he used the cold bath daily, and took the infusion, powder, and seeds of the anagallis, in succession, until the 9th of September, when he was seized with a fever which at first resembled the remittent of the season. Bleeding, purging, blisters, and the warm bath were prescribed for him, but without success. The last named remedy appeared to afford him some relief, which he manifested by paddling and playing in the water. At the time I saw him he was much agitated, had frequent twitchings, laughed often; but, with this uncommon excitement in his muscles and nerves, his mind was unusually correct in all its operations.

He discovered no dread of water, except in one instance, when he turned from it with horror. He swallowed occasionally about a spoon full of it at a time, holding the cup in his own hand, as if to prevent too great a quantity being poured at once into his throat. The quick manner of his swallowing, and the intervals between each time of doing so, were such as we sometimes observe in persons in the act of dying of acute diseases. Immediately after swallowing water, he looked pale, and panted for breath. He spoke rapidly, and with much difficulty. This was more remarkably the case when he attempted to pronounce the words *carriage, water.*

and *river*. After speaking he panted for breath in the same manner that he did after drinking. He coughed and breathed as patients do in the moderate grade of the cynanche trachealis. The dog that had bitten him, Mr. Todd informed me, made a similar noise in attempting to bark, a day or two before he was killed. We proposed making an opening into his windpipe. To this his parents readily consented; but while we were preparing for the operation, such a change for the worse took place, that we concluded not to perform it. A cold sweat, with a feeble and quick pulse, came on; and he died suddenly, at 12 o'clock at night, about six hours after I first saw him. He retained his reason, and a playful humour, till the last minute of his life. An instance of the latter appeared in his throwing his handkerchief at his father just before he expired. The parents consented to our united request to examine his body. Dr. Griffiths being obliged to go into the country, and Dr. Physick being indisposed, I undertook this business the next morning; and, in the presence of Dr. John Dorsey (to whom I gave the dissecting knife), and my pupil Mr. Murduck, I discovered the following appearances. All the muscles of the neck had a livid colour, such as we sometimes observe, after death, in persons who have died of the sore throat. The muscles employed in deglutition

and speech were suffused with blood. The epiglottis was inflamed, and the glottis so thickened and contracted, as barely to admit a probe of the common size. The trachea below it was likewise inflamed and thickened, and contained a quantity of mucus in it, such as we observe, now and then, after death from cynanche trachealis. The œsophagus exhibited no marks of disease; but the stomach had several inflamed spots upon it, and contained a matter of a brown appearance, and which emitted an offensive odour.

From the history of this dissection, and of many others, in which much fewer marks appeared of violent disease, in parts whose actions are essential to life, it is highly probable death is not induced in the ordinary manner in which malignant fevers produce it, but by a sudden or gradual suffocation. It is the temporary closure of this aperture which produces the dread of swallowing liquids: hence the reason why they are swallowed suddenly, and with intervals, in the manner that has been described; for, should the glottis be closed during the time of two swallows, in the highly diseased state of the system which takes place in this disease, suffocation would be the immediate and certain consequence. The same difficulty and danger attend the swallowing saliva, and hence the symptom of spit-

ting, which has been so often taken notice of in hydrophobia. Solids are swallowed more easily than fluids, only because they descend by intervals, and because a less closure of the glottis is sufficient to favour their passage into the stomach. This remark is confirmed by the frequent occurrence of death in the very act of swallowing, and that too with the common symptoms of suffocation. To account for death from this cause, and in the manner that has been described, it will be necessary to recollect, that fresh air is more necessary to the action of the lungs in a fever than in health, and much more so in a fever of a malignant character, such as the hydrophobia appears to be, than in fevers of a milder nature. An aversion from swallowing liquids is not peculiar to this disease. It occurs occasionally in the yellow fever. It occurs likewise in the disease which has prevailed among the cats, both in Europe and America, and probably, in both instances, from a dread of suffocation in consequence of the closure of the glottis, and sudden abstraction of fresh air.

The seat of the disease, and the cause of death, being, I hope, thus ascertained, the means of preventing death come next under our consideration. Tonic remedies, in all their forms, have been administered to no purpose. The theory of the dis-

ease would lead us to expect a remedy for it in blood-letting. But this, though now and then used with success, is not its cure, owing, as we now see, to the mortal seat of the disease being so far removed from the circulation, as not to be affected by the loss of blood in the most liberal quantity. As well might we expect the inflammation and pain of a paronychia, or what is called a felon on the finger, to be removed by the same remedy. Purging and sweating, though occasionally successful, have failed in many instances; and even a salivation, when excited (which is rarely the case), has not cured it. An artificial aperture into the windpipe alone bids fair to arrest its tendency to death, by removing the symptom which generally induces it, and thereby giving time for other remedies, which have hitherto been unsuccessful, to produce their usual salutary effects in similar diseases.* In removing faintness, in drawing off the water in ischuria, in composing convulsions, and in stopping hemorrhages in malignant fever, we do not cure the disease, but we prevent death, and thereby gain time for the use of the remedies which are proper to cure it. Laryngotomy ac-

* The hoarse barking, or the total inability of mad dogs to bark, favours still further the idea that the mortal seat of the disease is in the glottis, and that the remedy which has been proposed is a rational one.

According to Fourcroy's advice, in diseases of the throat which obstruct respiration, should be preferred to tracheotomy, and the incision should be made in the triangular space between the thyroid and cricoid cartilages. Should this operation be adopted, in order to save life, it will not offer near so much violence to humanity as many other operations. We cut through a large mass of flesh into the bladder in extracting a stone. We cut into the cavity of the thorax in the operation for the empyema. We perforate the bones of the head in trepanning; and we cut through the uterus, in performing the Cæsarian operation, in order to save life. The operation of laryngotomy is much less painful and dangerous than any of them; and besides permitting the patient to breathe and to swallow, it is calculated to serve the inferior purpose of lessening the disease of the glottis by means of local depletion. After an aperture has been thus made through the larynx, the remedies should be such as are indicated by the state of the system, particularly by the state of the pulse. In hot climates it is, I believe, generally a disease of feeble re-action, and requires tonic remedies; but in the middle and northern states of America it is more commonly attended with so much activity and excitement of the blood-vessels, as to require copious blood-letting and other depleting remedies.

Should this new method of attacking this furious disease be adopted, and become generally successful, the discovery will place the ingenious gentleman who suggested it in the first rank of the medical benefactors of mankind.

I have only to add a fact upon this subject which may tend to increase confidence in a mode of preventing the disease, which has been recommended by Dr. Haygarth, and used with success in several instances. The same dog which bit Mr. Todd's son, bit at the same time, a cow, a pig, a dog, and a black servant of Mr. Todd's. The cow and pig died; the dog became mad, and was killed by his master. The black man, who was bitten on one of his fingers, exposed the wound for some time, immediately after he received it, to a stream of pump water, washed it likewise with soap and water. He happily escaped the disease, and is now in good health. That his wound was poisoned is highly probable, from its having been made eight hours after the last of the above animals was bitten, in which time there can be but little doubt of such a fresh secretion of saliva having taken place as would have produced the hydrophobia, had it not been prevented by the above simple remedy. I am not, however, so much encouraged by its happy issue in this case as to advise

it in preference to cutting out the wounded part. It should only be resorted to where the fears of a patient, or his distance from a surgeon render it impossible to use the knife.

INQUIRY

Cause and Cure

OF THE

CHOLERA INFANTUM

[Faint, mirrored bleed-through text from the reverse side of the page, including the words 'INQUIRY', 'Cause and Cure', and 'CHOLERA INFANTUM'. The text is largely illegible due to fading and bleed-through.]

AN INQUIRY

INTO THE

Cause and Cure

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AN INQUIRY
INTO THE
Cause and Cure
OF THE
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BY this name I mean to designate a disease, called in Philadelphia, the “vomiting and purging of children.” From the regularity of its appearance in the summer months, it is likewise known by the name of “the disease of the season.” It prevails in most of the large towns of the United States. It is distinguished in Charleston, in South Carolina, by the name of “the April and May disease,” from making its first appearance in those two months. It seldom appears in Philadelphia till the middle of June, or the beginning of July, and generally continues till near the middle of Septem-

ber. Its frequency and danger are always in proportion to the heat of the weather. It affects children from the first or second week after their birth, till they are two years old. It sometimes begins with a diarrhœa, which continues for several days without any other symptom of indisposition; but it more frequently comes on with a violent vomiting and purging, and a high fever. The matter discharged from the stomach and bowels is generally yellow or green, but the stools are sometimes slimy and bloody, without any tincture of bile. In some instances they are nearly as limpid as water. Worms are frequently discharged in each kind of the stools that has been described. The children, in this stage of the disease, appear to suffer a good deal of pain. They draw up their feet, and are never easy in one posture. The pulse is quick and weak. The head is unusually warm, while the extremities retain their natural heat, or incline to be cold. The fever is of the remitting kind, and discovers evident exacerbations, especially in the evenings. The disease affects the head so much, as in some instances to produce symptoms not only of delirium, but of mania, insomuch that the children throw their heads backwards and forwards, and sometimes make attempts to scratch, and to bite their parents, nurses, and even themselves. A swelling fre-

quently occurs in the abdomen, and in the face and limbs. An intense thirst attends every stage of the disease. The eyes appear languid and hollow, and the children generally sleep with them half closed. Such is the insensibility of the system in some instances in this disease, that flies have been seen to alight upon the eyes when open, without exciting a motion in the eyelids to remove them. Sometimes the vomiting continues without the purging, but more generally the purging continues without the vomiting, through the whole course of the disease. The stools are frequently large, and extremely fetid, but in some instances they are without smell, and resemble drinks and aliments which have been taken into the body. The disease is sometimes fatal in a few days. I once saw it carry off a child in four and twenty hours. Its duration is varied by the season of the year, and by the changes in the temperature of the weather. A cool day frequently abates its violence, and disposes it to a favourable termination. It often continues, with occasional variations in its appearance, for six weeks or two months. Where the disease has been of long continuance, the approach of death is gradual, and attended by a number of distressing symptoms. An emaciation of the body to such a degree, as that the bones come through the skin, livid spots, a singultus, convulsions, a

strongly marked hippocratic countenance, and a sore mouth, generally precede the fatal termination of this disease. Few children ever recover, after the last symptoms which have been mentioned make their appearance.

This disease has been ascribed to several causes; of each of which I shall take notice in order.

I. It has been attributed to dentition. To refute this opinion, it will be necessary to observe, that it appears only in one season of the year. Dentition, I acknowledge, sometimes aggravates it; hence we find it is most severe in that period of life, when the greatest number of teeth make their appearance, which is generally about the 10th month. I think I observed more children to die of this disease at that age, than at any other.

II. Worms have likewise been suspected of being the cause of this disease. To this opinion, I object the uncertainty of worms ever producing an idiopathic fever, and the improbability of their combining in such a manner as to produce an annual epidemic disease of any kind. But further, we often see the disease in all its force, before that age, in which worms usually produce diseases; we likewise often see it resist the most

powerful anthelmintic medicines; and, lastly, it appears from dissection, where the disease has proved fatal, that not a single worm has been discovered in the bowels. It is true, worms, are in some instances discharged in this disease, but they are frequently discharged in greater numbers in the hydrocephalus internus, and in the small-pox, and yet who will assert either of those diseases to be produced by worms.

III. The summer fruits have been accused of producing this disease. To this opinion I object, that the disease is but little known in country places, where children eat much more fruit than in cities. As far as I have observed, I am disposed to believe, that the moderate use of ripe fruits, rather tends to prevent, than to induce the disease.

From the discharge of bile which generally introduces the disease, from the remissions and exacerbations of the fever which accompanies it, and from its occurring nearly in the same season with the cholera and remitting fever in adults, I am disposed to consider it as a modification of the same diseases. Its appearance earlier in the season than the cholera and remitting fever in adults, must be ascribed to the constitutions of children being more predisposed from weakness

to be acted upon, by the remote causes which produce those diseases.

I shall now mention the remedies which are proper and useful in this disease.

I. The first indication of cure is to evacuate the bile from the stomach and bowels. This should be done by gentle doses of ipecacuanha, or tartar emetic. The vomits should be repeated occasionally, if indicated, in every stage of the disease. The bowels should be opened by means of calomel, manna, castor oil, or magnesia. I have generally found rhubarb improper for this purpose, while the stomach was in a very irritable state. In those cases, where there is reason to believe that the offending contents of the *primæ viæ* have been discharged by nature (which is often the case), the emetics and purges should by no means be given; but, instead of them, recourse must be had to

II. Opiates. A few drops of liquid laudanum, combined in a testaceous julep, with peppermint or cinnamon-water, seldom fail of composing the stomach and bowels. In some instances, this medicine alone subdues the disease in two or three days; but where it does not prove so successful,

it produces a remission of pain, and of other distressing symptoms, in every stage of the disease.

III. Demulcent and diluting drinks have an agreeable effect in this disease. Mint and mallow teas, or a tea made of blackberry roots infused in cold water, together with a decoction of the shavings of hartshorn and gum arabic with cinnamon, should all be given in their turns for this purpose.

IV. Clysters made of flaxseed tea, or of mutton broth, or of starch dissolved in water, with a few drops of liquid laudanum in them, give ease, and produce other useful effects.

V. Plasters of Venice treacle applied to the region of the stomach, and flannels dipped in infusions of bitter and aromatic herbs in warm spirits, or Madeira wine, and applied to the region of the abdomen, often afford considerable relief.

VI. As soon as the more violent symptoms of the disease are composed, tonic and cordial medicines should be given. The bark in decoction, or in substance (where it can be retained in that form), mixed with a little nutmeg, often produces the most salutary effects. Port wine or claret

mixed with water are likewise proper in this stage of the disease. After the disease has continued for some time, we often see an appetite suddenly awakened for articles of diet of a stimulating nature. I have seen many children recover from being gratified in an inclination to eat salted fish, and the different kinds of salted meat. In some instances they discover an appetite for butter, and the richest gravies of roasted meats, and eat them with obvious relief to all their symptoms. I once saw a child of sixteen months old perfectly restored, from the lowest stage of this disease, by eating large quantities of rancid English cheese, and drinking two or three glasses of port wine every day. She would in no instance eat bread with the cheese, nor taste the wine, if it was mixed with water.

We sometimes see relief given by the use of the warm bath, in cases of obstinate pain. The bath is more effectual, if warm wine is used, instead of water.

I have had but few opportunities of trying the effects of cold water applied to the body in this disease; but from the benefit which attended its use in the cases in which it was prescribed, I am disposed to believe that it would do great service,

could we overcome the prejudices which subsist in the minds of parents against it.

After all that has been said in favour of the remedies that have been mentioned, I am sorry to add, that I have very often seen them all administered without effect. My principal dependence, therefore, for many years, has been placed upon

VII. Country air. Out of many hundred children whom I have sent into the country, in every stage of this disease, I have lost but three; two of whom were sent, contrary to my advice, into that unhealthy part of the neighbourhood of Philadelphia called the *Neck*, which lies between the city and the conflux of the rivers Delaware and Schuylkill. I have seen one cure performed by this remedy, after convulsions had taken place. To derive the utmost benefit from the country air, children should be carried out on horseback, or in a carriage, every day; and they should be exposed to the open air as much as possible in fair weather, in the day time. Where the convenience of the constant benefit of country air cannot be obtained, I have seen evident advantages from taking children out of the city once or twice a day. It is extremely agreeable to see the little sufferers revive

as soon as they escape from the city air, and inspire the pure air of the country.

I shall conclude this inquiry, by recommending the following methods of preventing this disease, all of which have been found, by experience to be useful.

1. The daily use of the cold bath.
2. A faithful and attentive accommodation of the dresses of children to the state and changes of the air.
3. A moderate quantity of salted meat taken occasionally in those months in which the disease usually prevails. It is perhaps in part from the daily use of salted meat in diet, that the children of country people escape this disease.
4. The use of sound old wine in the summer months. From a tea spoon full, to half a wine glass full, according to the age of the child, may be given every day. It is remarkable, that the children of persons in easy circumstances, who sip occasionally with their parents the remains of a glass of wine after dinner, are much less subject to

this disease, than the children of poor people, who are without the benefit of that article of diet.

5. Cleanliness, both with respect to the skin and clothing of children. Perhaps the neglect of this direction may be another reason why the children of the poor are most subject to this disease.

6. The removal of children into the country before the approach of warm weather. This advice is peculiarly necessary during the whole period of dentition. I have never known but one instance of a child being affected by this disease, who had been carried into the country in order to avoid it.

I have only to add to the above observations, that since the prevalence of the yellow fever in Philadelphia after the year 1793, the cholera infantum has assumed symptoms of such malignity, as to require bleeding to cure it. In some cases, two and three bleedings were necessary for that purpose.

OBSERVATIONS

ON THE

Cynanche Trachealis.

VOL. II.

3 B

OBSERVATIONS

ON THE

Cynanche Trachealis.

THE vulgar name of this disease in Pennsylvania is *HIVES*. It is a corruption of the word *heaves*, which took its rise from the manner in which the lungs heave in breathing. The worst degree of the disease is called the *BOWEL HIVES*, from the great motion of the abdominal muscles in respiration.

It has been called *suffocatio stridula* by Dr. Home, and *cynanche trachealis* by Dr. Cullen. Professor Frank calls it *trachitis*, and Dr. Darwin considers it as a pleurisy of the windpipe. By the two latter names, the authors mean to convey the correct idea, that the disease is the same in its nature with the common diseases of other internal parts of the body.

It is brought on by the same causes which induce fever, particularly by cold. I have seen it accompany as well as succeed, the small-pox, measles, scarlet-fever, and apthous sore throat. In the late Dr. Foulke it succeeded acute rheumatism. The late Dr. Sayre informed me, he had seen it occur in a case of yellow fever, in the year 1798.

It sometimes comes on suddenly, but it more frequently creeps on in the form of a common cold. Its symptoms are sometimes constant, but they more generally remit, particularly during the day. It attacks children of all ages, from three months to five years old. But it occasionally attacks adults. It generally runs its course in three or four days, but we now and then see it protracted in a chronic and feeble form, for eight and ten days.

Dissections show the following appearances in the trachea. 1 A slight degree of inflammation. 2. A thick matter resembling mucus. 3. A membrane similar to that which succeeds inflammation in the pleura and bowels, formed from the coagulating lymph of the blood. 4. In some cases the trachea exhibits no marks of disease of any kind. These cases are generally violent, and terminate suddenly. The morbid excitement here transcends

inflammation. Similar instances of the absence of the common signs of disease after death, occur in other parts of the body. Where the cynanche trachealis has appeared in the high grade which has been last mentioned, it has been called spasmodic. Where the serous vessels of the trachea have been tinged with red blood, it has been considered as inflammatory. Where a liquid matter has been found in the trachea, it has been called humoral; and where a membrane has been seen adhering to the trachea, it has received from Dr. Michaelis the name of angina polyposa. But all these different issues of the cynanche trachealis are the effects of a difference only in its force, or in its duration: they all depend upon one remote, and one proximate cause.

In the *forming* state of this disease, which may be easily known by a hoarseness, and a slight degree of stertorous cough, a puke of antimonial wine, tartar emetic, ipecacuanha, or oxymel of squills, is for the most part an immediate cure. To be effectual, it should operate four or five times. Happily children are seldom injured by a little excess in the operation of this class of medicines. I have prevented the formation of this disease many hundred times, and frequently in my own family, by means of this remedy.

After the disease is completely formed, and appears with the usual symptoms described by authors, the remedies should be

1. Blood-letting. The late Dr. Bailie of New-York used to bleed until fainting was induced. His practice has been followed by Dr. Dick of Alexandria, and with great success. I have generally preferred small, but frequent, to copious bleedings. I once drew twelve ounces of blood, at four bleedings, in one day, from a son of Mr. John Carrol, then in the fourth year of his age. Dr. Physick bled a child, of but three months old, three times in one day. Life was saved in both these cases. Powerful as the lancet is, in this disease, its violence and danger require that it should be aided by

2. Vomits. These should be given every day, or oftener, during the continuance of the disease. Their good effects are much more obvious and certain in a disease of the trachea, than of the lungs, and hence their greater utility, as I shall say hereafter, in a consumption from a catarrh, than from any other of its causes.

3. Purges. These should consist of calomel and jalap, or rhubarb, and should always follow

the use of emetics, if they fail of opening the bowels.

4. Calomel should likewise be given in large doses. Dr. Physick gave half a drachm of this medicine, in one day, to the infant whose case has been mentioned. I have never known it excite a salivation when given to children whose ages render them subjects of it, probably because it has been given in such large quantities as to pass rapidly through the bowels. Its good effects seem to depend upon its exciting a counter-action in the whole intestinal canal, and thereby lessening the disposition of the tracheal blood-vessels to discharge the mucus, or form the membrane, which have been described.

5. Blisters should be applied to the throat, breast, and neck, and even to the limbs.

6. Dr. Archer of Maryland commends, in high terms, the use of polygola, or Seneca snake-root, in this disease. I can say nothing in favour of its exclusive use, from my own experience, having never given it, but as an auxiliary to other remedies.

7. I have seen great relief given by the use of the warm bath, especially when it has been followed by a gentle perspiration.

8. Towards the close of the disease, after the symptoms of great morbid action begin to decline, a few drops of liquid laudanum, by quieting the cough which generally succeeds it, often produce the most salutary effects. They should be given in flaxseed, or bran, or onion tea, of which drinks the patient should drink freely in every stage of the disease.

The cynanche trachealis is attended with most danger, when the patient labours under a *constant* and audible stertorous breathing. The danger is less, when a dry stertorous cough attends, with *easy* respiration in its intervals. The danger is nearly over when the cough, though stertorous, is *loose*, and accompanied with a *discharge* of mucus from the trachea.

An eruption of little red blotches, which frequently appears and disappears two or three times in the course of this disease, is always a favourable symptom.

I once attended a man from Virginia, of the name of Bampfield, who, after an attack of this disease, was much distressed with the stertorous breathing and cough which belong to it. I suspected both to arise from a membrane formed by

inflammation in his trachea. This membrane I supposed to be in part detached from the trachea, from the rattling noise which attended his breathing. He had used many remedies for it to no purpose. I advised a salivation, which in less than three weeks perfectly cured him.

Since the general adoption of the remedies which have been enumerated, for the cynanche trachealis, instances of its mortality have become very uncommon in the city of Philadelphia.

AN ACCOUNT
OF THE
Bilious Remitting Fever,

AS IT APPEARED

IN PHILADELPHIA,

In the Summer and Autumn of the Year 1780.

AN ACCOUNT
OF THE
Bilious Remitting Fever, &c.

BEFORE I proceed to describe this fever, it will be necessary to give a short account of the weather, and of the diseases which preceded its appearance.

The spring of 1780 was dry and cool. A catarrh appeared among children between one year and seven years of age. It was accompanied by a defluxion from the eyes and nose, and by a cough and dyspnœa, resembling, in some instances, the cynanche trachealis, and in others a peripneumony. In some cases it was complicated with the symptoms of a bilious remitting and intermitting fever. The exacerbations of this fever were always attended with dyspnœa and cough. A few patients expectorated blood. Some had swellings behind their ears,

and others were affected with small ulcers in the throat. I met with only one case of this fever in which the pulse indicated bleeding. The rest yielded in a few days to emetics, blisters, and the bark, assisted by the usual more simple remedies in such diseases.

An intermittent prevailed among adults in the month of May.

July and August were uncommonly warm. The mercury stood on the 6th of August at $94\frac{1}{2}^{\circ}$, on the 15th of the same month at 95° , and for several days afterwards at 90° . Many labouring people perished during this month by the heat, and by drinking, not only cold water but cold liquors of several kinds, while they were under the violent impressions of the heat.

The vomiting and purging prevailed universally, during these two warm months, among the children, and with uncommon degrees of mortality. Children from one year to eight and nine years old were likewise very generally affected by blotches and little boils, especially in their faces. An eruption on the skin, called by the common people the prickly heat, was very common at this time among persons of all ages. The winds during these

months blew chiefly from the south, and southwest. Of course they passed over the land which lies between the city, and the conflux of the rivers Delaware and Schuylkill, the peculiar situation of which, at that time, has been already described.

The dock, and the streets of Philadelphia, supplied the winds at this season, likewise, with a portion of their unwholesome exhalations.

The moschetoes were uncommonly numerous during the autumn. A certain sign (says Dr. Lind) of an unwholesome atmosphere.

The remitting fever made its first appearance in July and August, but its symptoms were so mild, and its extent so confined, that it excited no apprehensions of its subsequent more general prevalence throughout the city.

On the 19th of August the air became suddenly very cool. Many hundred people in the city complained, the next day, of different degrees of indisposition, from a sense of lassitude to a fever of the remitting type. This was the signal of the epidemic. The weather continued cool during the remaining part of the month, and during the

whole month of September. From the exposure of the district of Southwark (which is often distinguished by the name of the *Hill*) to the south-west winds, the fever made its first appearance in that appendage of the city. Scarcely a family, and, in many families, scarcely a member of them, escaped it. From the Hill it gradually travelled along the second street from the Delaware, improperly called Front-street. For a while it was confined to this street only, after it entered the city, and hence it was called by some people the *Front-street fever*. It gradually spread through other parts of the city, but with very different degrees of violence. It prevailed but little in the Northern Liberties. It was scarcely known beyond Fourth-street from the Delaware. Intemperance in eating or drinking, riding in the sun or rain, watching, fatigue, or even a fright, but more frequently cold, all served to excite the seeds of this fever into action, wherever they existed.

All ages and both sexes were affected by this fever. Seven of the practitioners of physic were confined by it nearly at the same time. The city, during the prevalence of the fever, was filled with an unusual number of strangers, many of whom, particularly the Friends (whose yearly meeting was held in the month of September), were affected

by it. No other febrile disease was observed during this time in the city.

This fever generally came on with rigour, but seldom with a regular chilly fit, and often without any sensation of cold. In some persons it was introduced by a slight sore throat, and in others by a hoarseness which was mistaken for a common cold. A giddiness in the head was the forerunner of the disease in some people. This giddiness attacked so suddenly, as to produce, in several instances, a faintness, and even symptoms of apoplexy. It was remarkable that all those persons who were affected in this violent manner, recovered in two or three days.

I met with one instance of this fever attacking with coma, and another with convulsions, and with many instances, in which it was introduced by a delirium.

The pains which accompanied this fever were exquisitely severe in the head, back, and limbs. The pains in the head were sometimes in the back parts of it, and at other times they occupied only the eyeballs. In some people, the pains were so acute in their backs and hips, that they could not lie in bed. In others, the pains affected the neck

and arms, so as to produce in one instance a difficulty of moving the fingers of the right hand. They all complained more or less of a soreness in the seats of these pains, particularly when they occupied the head and eyeballs. A few complained of their flesh being sore to the touch, in every part of the body. From these circumstances, the disease was sometimes believed to be a rheumatism; but its more general name among all classes of people was, the *break-bone fever*.

I met with one case of pain in the back, and another of an acute ear-ach, both of which returned periodically every night, and without any fever.

A nausea universally, and in some instances a vomiting, accompanied by a disagreeable taste in the mouth, attended this fever. The bowels were, in most cases, regular, except where the disease fell with its whole force upon them, producing a dysentery.

The tongue was generally moist, and tinged with a yellow colour.

The urine was high coloured, and in its usual quantity in fevers.

The skin was generally moist, especially where the disease terminated on the third or fourth day.

The pulse was quick and full, but never hard, in a single patient that came under my care, till the 28th of September.

It was remarkable, that little, and, in some instances, no thirst attended this fever.

A screatus, or constant hawking and spitting, attended in many cases through the whole disease, and was a favourable symptom.

There were generally remissions in this fever every morning, and sometimes in the evening. The exacerbations were more severe every other day, and two exacerbations were often observed in one day.

A rash often appeared on the third and fourth days, which proved favourable. This rash was accompanied, in some cases, by a burning in the palms of the hands and soles of the feet. Many people at this time, who were not confined to their beds, and some, who had no fever, had an efflorescence on their skins.

In several persons the force of the disease seemed to fall upon the face, producing swellings under the jaw and in the ears, which in some instances terminated in abscesses.

When the fever did not terminate on the third or fourth day, it frequently ran on to the eleventh, fourteenth, and even twentieth days, assuming in its progress, according to its duration, the usual symptoms of the typhus gravior, or mitior, of Doctor Cullen. In some cases, the discharge of a few spoons-full of blood from the nose accompanied a solution of the fever on the third or fourth day; while in others, a profuse hemorrhage from the nose, mouth, and bowels, on the tenth and eleventh days, preceded a fatal issue of the disease.

Several cases came under my care, in which the fever was succeeded by a jaundice.

The disease terminated in some cases without sweating or sediment in the urine; nor did I observe such patients more disposed to relapse than others provided they took a sufficient quantity of the bark.

About the beginning of October the weather became cool, accompanied by rain and an easterly

wind. This cool and wet weather continued for four days. The mercury in the thermometer fell to 60° , and fires became agreeable. From this time the fever evidently declined, or was accompanied by inflammatory symptoms. On the 16th of October, I met with a case of inflammatory angina; and on the next day I visited a patient who had a complication of the bilious fever with a pleurisy, and whose blood discovered strong marks of the presence of the inflammatory diathesis. His stools were of a green and black colour. On the third day of his disease a rash appeared on his skin, and on the fourth, in consequence of a second bleeding, his fever terminated with the common symptoms of a crisis.

During the latter end of October, and the first weeks in November, the mercury in the thermometer fluctuated between 50° and 60° . Pleurisies and inflammatory diseases of all kinds now made their appearance. They were more numerous and more acute, than in this stage of the autumn, in former years. I met with one case of pleurisy in November, which did not yield to less than four plentiful bleedings.

I shall now add a short account of the METHOD I pursued in the treatment of this fever.

I generally began by giving a gentle vomit of tartar emetic. This medicine, if given while the fever was in its forming state, frequently produced an immediate cure; and if given after its formation, on the *first* day, seldom failed of producing a crisis on the third or fourth day. The vomit always discharged more or less bile. If a nausea, or an ineffectual attempt to vomit continued after the exhibition of the tartar emetic, I gave a second dose of it with the happiest effects.

If the vomit failed of opening the bowels, I gave gentle doses of salts and cream of tartar,* or of the butter-nut pill,† so as to procure two or three plentiful stools. The matter discharged from the bowels was of a highly bilious nature. It was sometimes so acrid as to excoriate the rectum, and so offensive, as to occasion, in some cases,

* I have found that cream of tartar renders the purging neutral salts less disagreeable to the taste and stomach; but accident has lately taught me, that the juice of two limes or of one lemon, with about half an ounce of loaf sugar, added to six drachms of Glauber's or Epsom salt, in half a pint of boiling water, form a mixture that is nearly as pleasant as strong beverage.

† This pill is made from an extract of a strong decoction of the inner bark of the white walnut-tree.

sickness and faintness both in the patients and in their attendants. In every instance, the patients found relief by these evacuations, especially from the pains in the head and limbs.

In those cases, where the prejudices of the patients against an emetic, or where an advanced state of pregnancy, or a habitual predisposition to a vomiting of blood occurred, I discharged the bile entirely by means of the lenient purges that have been mentioned. In this practice I had the example of Doctor Cleghorn, who prescribed purges with great success in a fever of the same kind in Minorca, with that which has been described.* Doctor Lining prescribed purges with equal success in an autumnal pleurisy in South Carolina, which I take to have been a form of a bilious remittent, accompanied by an inflammatory affection of the breast.

After evacuating the contents of the stomach and bowels, I gave small doses of tartar emetic, mixed with Glauber's salt. This medicine excited a general perspiration. It likewise kept the bowels gently open, by which means the bile was discharged as fast as it was accumulated.

* The tertiana interposita remissione tantum of Dr. Cullen.

I constantly recommended to my patients, in this stage of the disorder, to *lie in bed*. This favoured the eruption of the rash, and the solution of the disease by perspiration. Persons who struggled against the fever by *sitting up*, or who attempted to shake it off by labour or exercise, either sunk under it, or had a slow recovery.

A clergyman of a respectable character from the country, who was attacked by the disease in the city, returned home, from a desire of being attended by his own family, and died in a few days afterwards. This is only one, of many cases, in which I have observed travelling, even in the easiest carriages, to prove fatal in fevers after they were formed, or after the first symptoms had shown themselves. The quickest and most effectual way of conquering a fever, in most cases, is, by an early submission to it.

The drinks I recommended to my patients were sage and balm teas, weak punch, lemonade, wine whey, tamarind and apple water.

The apple water should be made by pouring boiling water upon slices of raw apples. It is more lively than that which is made by pouring the water on roasted apples.

I found obvious advantages, in many cases, from the use of pediluvia every night.

In every case, I found the patients refreshed and relieved by frequent changes of their linen.

On the third or fourth day, in the forenoon, the pains in the head and back generally abated, with a sweat which was diffused over the whole body. The pulse at this time remained quick and weak. This was, however, no objection to the use of the bark, a few doses of which immediately abated its quickness, and prevented a return of the fever.

If the fever continued beyond the third or fourth day without an intermission, I always had recourse to blisters. Those which were applied to the neck, and behind the ears, produced the most immediate good effects. They seldom failed of producing an intermission in the fever, the day after they were applied. Where delirium or coma attended, I applied the blister to the neck on the *first* day of the disease. A worthy family in this city will always ascribe the life of a promising boy, of ten years old, to the early application of a blister to the neck, in this fever.

Where the fever did not yield to blisters, and assumed malignant, or typhus symptoms, I gave the medicines usually exhibited in both those states of fever.

I took notice, in the history of this fever, that it was sometimes accompanied with symptoms of a dysentery. Where this disease appeared, I prescribed lenient purges and opiates. Where these failed of success, I gave the bark in the intermissions of the pain in the bowels, and applied blisters to the wrists. The good effects of these remedies led me to conclude, that the dysentery was the febris introversa of Dr. Sydenham.

I am happy in having an opportunity, in this place, of bearing a testimony in favour of the usefulness of OPIUM in this disease, after the necessary evacuations had been made. I yielded, in prescribing it at first, to the earnest solicitations of my patients for something to give them relief from their insupportable pains, particularly when they were seated in the eyeballs and head. Its salutary effects in procuring sweat, and a remission of the fever, led me to prescribe it afterwards in almost every case, and always with the happiest effects. Those physicians enjoy but little pleasure in practising physic, who know not how much

of the pain and anguish of fevers, of a certain kind, may be lessened by the judicious use of opium.

In treating of the remedies used in this disease, I have taken no notice of blood-letting. Out of several hundred patients whom I visited in this fever, I did not meet with a single case, before the 27th of September, in which the state of the pulse indicated this evacuation. It is true, the pulse was *full*, but never *hard*. I acknowledge that I was called to several patients who had been bled without the advice of a physician, who recovered afterwards on the usual days of the solution of the fever. This only can be ascribed to that disposition which Doctor Cleghorn attributes to fevers, to preserve their types under every variety of treatment, as well as constitution. But I am bound to declare further, that I heard of several cases in which bleeding was followed by a fatal termination of the disease.

In this fever relapses were very frequent, from exposure to the rain, sun, or night air, and from an excess in eating or drinking.

The convalescence from this disease was marked by a number of extraordinary symptoms, which

rendered patients the subjects of medical attention for many days after the pulse became perfectly regular, and after the crisis of the disease.

A bitter taste in the mouth, accompanied by a yellow colour on the tongue, continued for near a week.

Most of those who recovered complained of nausea, and a total want of appetite. A faintness, especially upon sitting up in bed, or in a chair, followed this fever. A weakness in the knees was universal. I met with two patients, who were most sensible of this weakness in the right knee. An inflammation in one eye, and in some instances in both eyes, occurred in several patients after their recovery.

But the most remarkable symptom of the convalescence from this fever, was an uncommon dejection of the spirits. I attended two young ladies, who shed tears while they vented their complaints of their sickness and weakness. One of them very aptly proposed to me to change the name of the disease, and to call it, in its present stage, instead of the break-bone, the *break-heart fever*.

To remove these symptoms, I gave the tincture of bark and elixir of vitriol in frequent doses. I likewise recommended the plentiful use of ripe fruits; but I saw the best effects from temperate meals of oysters, and a liberal use of porter. To these was added, gentle exercise in the open air, which gradually completed the cure.

AN ACCOUNT
OF THE
SCARLATINA ANGINOSA,
AS IT
APPEARED IN PHILADELPHIA,
In the Years 1783 and 1784.

AN ACCOUNT
OF THE
SCARLATINA ANGINOSA.

THE beginning of the month of July was unusually cool; insomuch that the mercury in Fahrenheit's thermometer stood at 61° in the day time, and fires were very comfortable, especially in the evening. In the last week but one of this month, the weather suddenly became so warm, that the mercury rose to $94\frac{1}{2}$, at which it remained for three days. As this heat was accompanied by no breeze from any quarter, the sense of it was extremely distressing to many people. Upwards of twenty persons died in the course of those three days, from the excess of the heat, and from drinking cold water. Three old people died suddenly within this space of time. This extreme heat was succeeded by cool weather, the mercury having

fallen to 60° , and the month closed with producing a few intermitting and remitting fevers, together with several cases of inflammatory angina.

The weather in the month of August was extremely variable. The mercury, after standing for several days at 92° , suddenly fell so low, as not only to render fires necessary, but in many places to produce frost.

Every form of fever made its appearance in this month. The synocha was so acute, in several cases, as to require from three to four bleedings. The remitting fever was accompanied by an uncommon degree of nausea and faintness. Several people died, after a few days' illness, of the malignant bilious fever, or typhus gravior, of Dr. Cullen. The intermittents had nothing peculiar in them, in their symptoms or method of cure.

Towards the close of the month, the scarlatina anginosa made its appearance, chiefly among children.

The month of September was cool and dry, and the scarlatina anginosa became epidemic among adults as well as young people. In most of the patients who were affected by it, it came on with

a chilliness and a sickness at the stomach, or a vomiting; which last was so invariably present, that it was with me a pathognomonic sign of the disease. The matter discharged from the stomach was always bile. The swelling of the throat was in some instances so great, as to produce a difficulty of speaking, swallowing, and breathing. In a few instances, the speech was accompanied by a squeaking voice, resembling that which attends the *cynanche trachealis*. The ulcers on the tonsils were deep, and covered with white, and, in some instances, with black sloughs. In several cases, there was a discharge of a thick mucus from the nose, from the beginning, but it oftener occurred in the decline of the disease, which most frequently happened on the fifth day. Sometimes the subsiding of the swelling of the throat was followed by a swelling behind the ears.

An eruption on the skin generally attended the symptoms which have been described. But this symptom appeared with considerable variety. In some people it preceded, and in others it followed the ulcers and swelling of the throat. In some, it appeared only on the outside of the throat, and on the breast; in others, it appeared chiefly on the limbs. In a few it appeared on the second or third day of the disease, and never returned afterwards.

I saw two cases of eruption without a single symptom of sore throat. The face of one of those patients was swelled, as in the *erisypelas*. In the other, a young girl of seven years old, there was only a slight redness on the skin. She was seized with a vomiting, and died delirious in fifty-four hours. Soon after her death, a livid colour appeared on the outside of her throat.

The bowels, in this degree of the disease, were in general regular. I can recollect but few cases which were attended by a diarrhœa.

The fever which accompanied the disease was generally the *typhus mitior* of Dr. Cullen. In a few cases it assumed symptoms of great malignity.

The disease frequently went off with a swelling of the hands and feet. I saw one instance in a gentlewoman, in whom this swelling was absent, who complained of very acute pains in her limbs, resembling those of the rheumatism.

In two cases which terminated fatally, there were large abscesses; the one on the outside, and the other on the inside of the throat. The first of these cases was accompanied by troublesome sores

on the ends of the fingers. One of these patients lived twenty-eight, and the other above thirty days, and both appeared to die from the discharge which followed the opening of their abscesses.

Between the degrees of the disease which I have described, there were many intermediate degrees of indisposition which belonged to this disease.

I saw in several cases a discharge from behind the ears, and from the nose, with a slight eruption, and no sore throat. All these patients were able to sit up, and walk about.

I saw one instance of a discharge from the inside of one of the ears in a child, who had ulcers in his throat, and the squeaking voice.

In some, a pain in the jaw, with swellings behind the ears, and a slight fever, constituted the whole of the disease.

In one case the disease came on with a coma, and in several patients it went off with this symptom.

A few instances occurred of adults, who walked about and even transacted business, until a few hours before they died.

The intermitting fever, which made its appearance in August, was not lost during the month of September. It continued to prevail, but with several peculiar symptoms. In many persons it was accompanied by an eruption on the skin, and a swelling of the hands and feet. In some, it was attended by a sore throat and pains behind the ears. Indeed, such was the predominance of the scarlatina anginosa, that many hundred people complained of sore throats, without any other symptom of indisposition. The slightest occasional or exciting cause, particularly cold, seldom failed of producing the disease.

The month of October was much cooler than September, and the disease continued, but with less alarming symptoms. In several adults, who were seized with it, the hardness of the pulse indicated blood-letting. The blood, in one case, was covered with a buffy coat, but beneath its surface it was dissolved.

In the month of November, the disease assumed several inflammatory symptoms, and was attended with much less danger than formerly. I visited one patient whose symptoms were so inflammatory as to require two bleedings. During the decline of the disease, many people complained of trouble-

some sores on the ends of their fingers. A number of children likewise had sore throats and fevers, with eruptions on their skin, which resembled the chicken-pox. I am disposed to suspect that this eruption was the effect of a spice of the scarlatina anginosa, as several instances occurred of patients who had all the symptoms of this disease, in whom an eruption of white blisters succeeded their recovery. This form of the disease has been called by Sauvage, the scarlatina variolosa.

I saw one case of sore throat, which was succeeded not only by swelling, in the abdomen and limbs, but by a catarrh, which brought on a fatal consumption.

A considerable shock of an earthquake was felt on the 29th of this month, at ten o'clock at night, in the city of Philadelphia; but no change was perceived in the disease, in consequence of it.

In December, January, and February, the weather was intensely cold. There was a thaw for a few days in January, which broke the ice of the Delaware, but it was followed by cold so excessive, as to close the river till the beginning of March. The mercury, on the 28th and 29th of February, stood below 0 in Fahrenheit's thermometer.

For a few weeks in the beginning of December, the disease disappeared in the circle of my patients, but it broke out with great violence the latter end of that month, and in the January following. Some of the worst cases that I met with (three of which proved fatal) were in those two months.

The disease disappeared in the spring, but it spread afterwards through the neighbouring states of New-Jersey, Delaware, and Maryland.

I shall now add an account of the remedies which I administered in this disease.

In every case that I was called to, I began the cure by giving a vomit joined with calomel. The vomit was either tartar emetic or ipecacuanha, according to the prejudices, habits, or constitutions of my patients. A quantity of bile was generally discharged by this medicine. Besides evacuating the contents of the stomach, it cleansed the throat in its passage downwards. To insure this effect from the calomel, I always directed it to be given mixed with syrup or sugar and water, so as to diffuse it generally over every part of the throat. The calomel seldom failed to produce two or three stools. In several cases I was obliged, by the continuance of nausea, to repeat the emetics,

and always with immediate and obvious advantage. I gave the calomel in moderate doses in every stage of the disease. To restrain its purgative effects, when necessary, I added to it a small quantity of opium.

During the whole course of the disease, where the calomel failed of opening the bowels, I gave lenient purges, when a disposition to costiveness required them.

The throat was kept clean by detergent gargles. In several instances I saw evident advantages from adding a few grains of calomel to them. In cases of great difficulty of swallowing or breathing, the patients found relief from receiving the steams of warm water mixed with a little vinegar, through a funnel into the throat.

A perspiration kept up by gentle doses of antimonials, and diluting drinks, impregnated with wine, always gave relief.

In every case which did not yield to the above remedies on the third day, I applied a blister behind each ear, or one to the neck, and, I think, always with good effects.

I met with no cases in which the bark appeared to be indicated, except the three in which the disease proved fatal. Where the sore throat was blended with the intermitting fever, the bark was given with advantage. But in common cases it was unnecessary. Subsequent observations have led me to believe, with Doctor Withering, that it is sometimes hurtful in this disease.

It proved fatal in many parts of the country, upon its first appearance; but wherever the mode of treatment here delivered was adopted, its mortality was soon checked. The calomel was used very generally in New-Jersey and New-York. In the Delaware state, a physician of character made it a practice not only to give calomel, but to anoint the outside of the throat with mercurial ointment.

ADDITIONAL OBSERVATIONS

UPON THE

Scarlatina Anginosa.

THIS disease has prevailed in Philadelphia, at different seasons, ever since the year 1783. It has blended itself occasionally with all our epidemics. Many cases have come under my notice since its first appearance, in which dropsical swellings have succeeded the fever. In some instances there appeared to be effusions of water not only in the limbs and abdomen, but in the thorax. They yielded, in every case that I attended, to purges of calomel and jalap. Where these swellings were neglected, they sometimes proved fatal.

In the winter of 1786-7, the scarlatina anginosa was blended with the cynanche parotideae, and in one instance with a typhus mitior. The last was in

a young girl of nine years of age. She was seized with a vomiting of bile and an efflorescence on her breast, but discovered no other symptoms of the scarlatina anginosa till the sixteenth day of her fever, when a swelling appeared on the outside of her throat, and after her recovery, a pain and swelling in one of her knees.

In the month of July, 1787, a number of people were affected by sudden swellings of their lips and eyelids. These swellings generally came on in the night, were attended with little or no pain, and went off in two or three days. I met with only one case in which there was a different issue to these symptoms. It was in a patient in the Pennsylvania hospital, in whom a swelling in the lips ended in a suppuration, which, notwithstanding the liberal use of bark and wine, proved fatal in the course of twelve days.

In the months of June and July, 1788, a number of people were affected by sudden swellings, not only of the lips, but of the cheeks and throat. At the same time many persons were affected by an inflammation of the eyes. The swellings were attended with more pain than they were the year before, and some of them required one or two

purges to remove them; but in general they went off without medicine, in two or three days.

Is it proper to refer these complaints to the same cause which produces the scarlatina anginosa?

The prevalence of the scarlatina anginosa at the *same time* in this city; its disposition to produce swellings in different parts of the body; and the analogy of the intermitting fever, which often conceals itself under symptoms that are foreign to its usual type; all seem to render this conjecture probable. In one of the cases of an inflammation of the eye, which came under my notice, the patient was affected by vomiting a few hours before the inflammation appeared, and complained of a sickness at his stomach for two or three days afterwards. Now a vomiting and nausea appear to be very generally symptoms of the scarlatina anginosa.

In the autumn of 1788, the scarlatina anginosa appeared with different degrees of violence in many parts of the city. In two instances it appeared with an obstinate diarrhœa; but it was in young subjects, and not in adults, as described by Doctor Withering. In both cases, the disease

proved fatal; the one on the third, the other on the fifth day.

In the month of December of the same year, I saw one case in which a running from one of the ears, and a deafness came on, on the fifth day, immediately after the discharge of mucus from the nose had ceased. This case terminated favourably on the ninth day, but was succeeded, for several days afterwards, by a troublesome cough.

I shall conclude this essay by the following remarks:

1. Camphor has often been suspended in a bag from the neck, as a preservative against this disease. Repeated observations have taught me, that it possesses little or no efficacy for this purpose. I have had reason to entertain a more favourable opinion of the benefit of washing the hands and face with vinegar, and of rinsing the mouth and throat with vinegar and water every morning, as means of preventing this disease.

2. Whenever I have been called to a patient where the scarlatina appeared to be in a *forming* state, a vomit of ipecacuanha or tartar emetic,

mixed with a few grains of calomel, has never failed of completely checking the disease, or of so far mitigating its violence, as to dispose it to a favourable issue in a few days; and if these observations should serve no other purpose than to awaken the early attention of patients and physicians to this speedy and effectual remedy, they will not have been recorded in vain.

3. When the matter which produces this disease has been received into the body, a purge has prevented its being excited into action, or rendered it mild, throughout a whole family. For this practice I am indebted to some observations on the scarlatina, published by Dr. Sims in the first volume of the Medical Memoirs.

4. During the prevalence of the inflammatory constitution of the atmosphere, between the years 1793 and 1800, this disease occurred occasionally in Philadelphia, and yielded, like the other epidemics of those years, to copious blood-letting, and other depleting remedies.

AN ACCOUNT

THE MEASLES,

APPEARED IN PHILADELPHIA,

OF THE ASSOCIATION OF THE

...the ... of ...
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AN ACCOUNT

OF

THE MEASLES,

AS THEY

APPEARED IN PHILADELPHIA,

In the Spring of 1789.

VOL. II.

3 H

AN ACCOUNT, &c.

THE weather in December, 1788, and in January, 1789, was variable, but seldom very cold. On the first of February, 1789, at six o'clock in the morning, the mercury in Fahrenheit's thermometer fell 5° below 0, in the city of Philadelphia. At twenty miles from the city, on the Schuylkill, it fell 12° below 0, at the same hour. On the 19th and 20th of this month, there fell a quantity of snow, the depth of which, upon an average, was supposed to be about eight or ten inches. On the 23d, 24th, 25th, and 27th the weather was very cold. The mercury fluctuated during these days between 4° and 10° above 0.

In the intervals between these cold days, the weather frequently moderated, so that the Delaware was frozen and thawed not less than four

times. It was not navigable till the 8th of March. There were in all, during the winter and month of March, sixteen distinct falls of snow.

In April and May there were a few warm days; but upon the whole, it was a very cold and backward spring. The peaches failed almost universally. There were no strawberries or cherries on the 24th of May, and every other vegetable product was equally backward. A country woman of 84 years of age informed me, that it was the coldest spring she had ever known. It was uncomfortable to sit without fire till the first of June.

The measles appeared first in the Northern Liberties, in December. They spread slowly in January, and were not universal in the city till February and March.

This disease, like many others, had its *precursor*. It was either a gum-boil, or a sore on the tongue. They were both very common, but not universal. They occurred, in some instances, several days before the fever, but in general they made their appearance during the eruptive fever, and were a sure mark of the approaching eruption of the measles. I was first led to observe this fact, from having read Dr. Quin's accurate account of the

measles in Jamaica. I shall now proceed to mention the symptoms of the measles as they appear in the different parts of the body.

1. In the *head*, they produced great pain, swelling of the eye-lids, so as to obstruct the eye-sight, tooth-ach, bleeding at the nose, tinnitus aurium, and deafness; also coma for two days, and convulsions. I saw the last symptom only in one instance. It was brought on by a stoppage of a running from the ear.

2. In the *throat* and *lungs*, they produced a soreness and hoarseness, acute or dull pains in the breast and sides, and a painful or distressing cough. In one case this cough continued for two hours without any intermission, attended by a copious expectoration. In two cases, I saw a constant involuntary discharge of phlegm and mucus from the mouth, without any cough. One of them terminated fatally. Spitting of blood occurred in several instances. The symptoms of pneumonia vera notha and typhoides were very common. I saw two fatal cases from pneumonia notha, in both of which the patients died with the trunk of the body in an erect posture. I met with two cases in which there was no cough till the eruption made its appearance on the fourth day, and one which

was accompanied by all the usual symptoms of the cynanche trachealis.

3. In the *stomach* the measles produced, in many instances, sickness and vomiting. And

4. In the *bowels*, griping, diarrhœa, and in some instances, bloody stools. The diarrhœa occurred in every stage of the disease, but it was bloody and most painful in its decline. I attended a black girl who discharged a great many worms, but without the least relief of any of her symptoms.

There was a great variety in this disease. 1. In the *time* of the attack of the fever, from the *time* of the reception of the contagion. In general the interval was fourteen days, but it frequently appeared before, and sometimes later than that period.

2. In the *time of the eruption*, from the beginning of the fever. It generally appeared on the third and fourth days. In one case, Dr. Waters informed me, it did not appear till the eighth day.

3. In the *abatement* or *continuance* of the fever after the eruption.

4. In the *colour* and *figure* of the eruption. In some it put on a *pale* red, in others a *deep*, and in a few a *livid* colour, resembling an incipient mortification. In some there appeared red blotches, in others an equally diffused redness, and in a few, eruptions like the small-pox, called by Dr. Cullen, *rubiola varioloides*.

5. In the *duration* of the eruption on the skin. It remained in most cases only three or four days; but in one, which came under my care, it remained nine days.

6. In the *manner of its retrocession*. I saw very few cases of its leaving the branny appearance so generally spoken of by authors on the skin.

7. In *not affecting* many persons, and even families who were exposed to it.

The symptoms which continued in many after the retrocession of the measles, were cough, hoarseness, or complete aphonia, which continued in two cases for two weeks; also diarrhœa, ophthalmy, a bad taste in the mouth, a defect or excess of appetite, and a fever, which in some instances was of the intermitting kind, but which in more assumed the more dangerous form of the typhus mitior.

Two cases of internal dropsy of the brain followed them. One was evidently excited by a fall. They both ended fatally.

During the prevalence of the disease I observed several persons (who had had the measles, and who were closely confined to the rooms of persons ill with them) to be affected with a slight cough, sore throat, and even sores in the mouth. I find a similar fact taken notice of by Dr. Quier.

But I observed further, many children to be affected by a fever, cough, and all the other symptoms of the measles which have been mentioned, except a general eruption, for in some there was a trifling efflorescence about the neck and breast. I observed the same thing in 1773 and 1783. In my note book I find the following account of the appearance of this disease in children in the year 1773. "The measles appeared in March; a catarrh (for by that name I then called it) appeared at the same time, and was often mistaken for them, the symptoms being nearly the same in both. In the catarrh there was in some instances a trifling eruption. A lax often attended it, and some who had it had an extremely sore mouth."

I was the more struck with this disease, from finding it was taken notice of by Dr. Sydenham. He calls it a morbillous fever. I likewise find an account of it in the 2d article of the 5th volume of the Edinburgh Medical Essays. The words of the author, who is anonymous, are as follow. "During this measly season, several persons, who never had the measles, had all the symptoms of measles, which went off in a few days without any eruptions. The same persons had the measles months or years afterwards." Is this disease a common fever, marked by the reigning epidemic, and produced in the same manner, and by the same causes, as the variolous fever described by Dr. Sydenham, which he says prevailed at the same time with the small-pox? I think it is not. My reasons for this opinion are as follow.

1. I never saw it affect any but children, in the degree that has been mentioned, and such only as had never had the measles.

2. It affected whole families at the same time. It proved fatal to one of three children whom it affected on the same day.

3. It terminated in a pulmonary consumption in a boy of ten years old, with all the symptoms

which attend that disease when it follows the regular measles.

4. It affected a child in one family, on the same day that two other members of the same family were affected by the genuine measles.

5. It appeared on the usual days of the genuine measles, from the time the persons affected by it were exposed to its contagion. And,

6. It communicated the disease in one family, in the usual time in which the disease is taken from the genuine measles.

The measles, then, appear to follow the analogy of the small-pox, which affects so superficially as to be taken a second time, and which produce on persons who have had them what are called the nurse pock. They follow likewise the analogy of another disease, viz. the scarlatina anginosa. In the account of the epidemic for 1773, published in the third volume of the Edinburgh Medical Essays, we are told, that such patients as had previously had the scarlet fever without sore throats, took the sore throat, and had no eruption, while those who had previously had the sore throat had a scarlet erup-

tion, but the throat remained free from the distemper. All other persons who were affected had both.

From these facts, I have taken the liberty of calling it the *internal measles*, to distinguish it from those which are *external*. I think the discovery of this new state of this disease of some application to practice.

1. It will lead us to be cautious in declaring any disease to be the external measles, in which there is not a general eruption. From my ignorance of this, I have been led to commit several mistakes, which were dishonourable to the profession. I was called, during the prevalence of the measles in the above-named season, to visit a girl of twelve years old, with an eruption on the skin. I called it the measles. The mother told me it was impossible, for that I had in 1783 attended her for the same disease. I suspect the anonymous author before-mentioned has fallen into the same error. He adds to the account before quoted the following words. "Others who had undergone the measles formerly, had *at this time* a fever of the erysipelatous kind, with eruptions like to which nettles cause, and all the *previous* and concomitant symptoms of the measles, from the beginning to the end of the disease."

2. If inoculation, or any other mode of lessening the violence of the disease, should be adopted, it will be of consequence to know what persons are secure from the attacks of it, and who are still exposed to it.

I shall now add a short account of my method of treating this disease.

Many hundred families came through the disease without the help of a physician. But in many cases it was attended with peculiar danger, and in some with death. I think it was much more fatal than in the years 1773 and 1783, probably owing to the variable weather in the winter, and the coldness and dampness of the succeeding spring. Dr. Huxham says, he once saw the measles attended with peculiar mortality, during a late cold and damp spring in England. It was much more fatal (*cæteris paribus*) to adults than to young people.

The remedies I used were,

1. *Bleeding*, in all cases where great pain and cough, with a hard pulse attended. In some I found it necessary to repeat this remedy. But I met with many cases in which it was forbidden by

the weakness of the pulse, and by other marks of a feeble action in the blood-vessels.

2. *Vomits*. These were very useful in removing a nausea; they likewise favoured the eruption of the measles.

3. *Demulcent and diluting drinks*. These were barley water, bran, and flaxseed tea, dried cherry and raw apple water, also beverage, and cider and water. The last drink I found to be the most agreeable to my patients of any that have been mentioned.

4. *Blisters* to the neck, sides, and extremities, according to the symptoms. They were useful in every stage of the disease.

5. *Opiates*. These were given not only at night, but in small doses during the day, when a troublesome cough or diarrhœa attended.

6. Where a catarrhal fever ensued, I used bleeding and blisters. In those cases in which this fever terminated in an intermittent, or in a mild typhus fever, I gave the bark with evident advantage. In that case of measles, formerly mentioned, which was accompanied by symptoms of cynanche trache-

alis, I gave calomel with the happiest effects. In the admission of *fresh air* I observed a medium as to its temperature, and accommodated it to the degrees of action in the system. In different parts of the country, in Pennsylvania and New-Jersey, I heard with great pleasure of the *cold air* being used as freely and as successfully in this disease, as in the inflammatory small-pox. The same people who were so much benefited by *cool air*, I was informed, drank plentifully of cold water during every stage of the fever. One thing in favour of this country practice deserves to be mentioned, and that is, evident advantages arose in all the cases which I attended, from patients leaving their beds in the febrile state of this disease. But this was practised only by those in whom inflammatory diathesis prevailed, for these alone had strength enough to bear it.

The convalescent state of this disease required particular attention.

1. *A diarrhoea* often continued to be troublesome after other symptoms had abated. I relieved it by opiates and demulcent drinks. Bleeding has been recommended for it, but I did not find it necessary in a single case.

2. An *ophthalmia* which sometimes attended, yielded to astringent collyria and blisters.

3. Where a cough or fever followed so slight as not to require bleeding, I advised a milk and vegetable diet, country air, and moderate warmth; for whatever might have been the relation of the lungs in the beginning of the disease to cold air, they were now evidently too much debilitated to bear it.

4. It is a common practice to prescribe purges after the measles. After the asthenic state of this disease they certainly do harm. In all cases, the effects of them may be better obviated by diet, full or low, suitable clothing, and gentle exercise, or country air. I omitted them in several cases, and no eruption or disease of any kind followed their disuse.

I shall only add to this account of the measles, that in several families, I saw evident advantages from preparing the body for the reception of the contagion, by means of a vegetable diet.

AN ACCOUNT
OF
THE INFLUENZA,
AS IT APPEARED
IN PHILADELPHIA,

In the Autumn of 1789, in the Spring of 1790, and in the
Winter of 1791.

VOL. II.

3 K

AN ACCOUNT, &c.

THE latter end of the month of August, in the summer of 1789, was so very cool that fires became agreeable. The month of September was cool, dry, and pleasant. During the whole of this month, and for some days before it began, and after it ended, there had been no rain. In the beginning of October, a number of the members of the first congress, that had assembled in New-York, under the present national government, arrived in Philadelphia, much indisposed with colds. They ascribed them to the fatigue and night air to which they had been exposed in travelling in the public stages; but from the number of persons who were affected, from the uniformity of their complaints, and from the rapidity with which it spread through our city, it soon became evident that it was the

disease so well known of late years by the name of the influenza.

The symptoms which ushered in the disease were generally a hoarseness, a sore throat, a sense of weariness, chills, and a fever. After the disease was formed, it affected more or less the following parts of the body. Many complained of acute pains in the *head*. These pains were frequently fixed between the eye-balls, and, in three cases which came under my notice, they were terminated by abscesses in the frontal sinus, which discharged themselves through the nose. The pain in one of these cases, before the rupture of the abscess, was so exquisite that my patient informed me that he felt as if he should lose his reason. Many complained of a great itching in the *eye-lids*. In some, the eye-lids were swelled. In others, a copious effusion of water took place from the *eyes*; and in a few, there was a true ophthalmia. Many complained of great pains in one *ear*, and some of pains in both *ears*. In some, these pains terminated in abscesses, which discharged for some days a bloody or purulent matter. In others, there was a swelling behind each ear, without a suppuration.—*Sneezing* was a universal symptom. In some, it occurred not less than fifty times in a day. The matter discharged from the nose was so acrid as to

inflammation of the nostrils and the upper lip, in such a manner as to bring on swellings, sores, and scabs in many people. In some, the nose discharged drops, and in a few, streams of blood, to the amount in one case, of twenty ounces. In many cases it was so much obstructed, as to render breathing through it difficult. In some, there was a total defect of *taste*. In others, there was a bad taste in the mouth, which frequently continued through the whole course of the disease. In some, there was a want of *appetite*. In others, it was perfectly natural. Some complained of a soreness in their mouths, as if they had been inflamed by holding pepper in them. Some had *swelled jaws*, and many complained of the *tooth-ach*. I saw only one case in which the disease produced a *coma*.

Many were affected with pains in the *breast* and *sides*. A difficulty of breathing attended in some, and a *cough* was universal. Sometimes this cough alternated with a pain in the *head*. Sometimes it preceded this pain, and sometimes it followed it. It was at all times distressing. In some instances, it resembled the chin-cough. One person expired in a fit of coughing, and many persons spat blood in consequence of its violence. I saw several patients in whom the disease affected the trachea chiefly, producing great difficulty of breathing,

and, in one case, a suppression of the voice, and I heard of another in which the disease, by falling on the trachea, produced a cynanche trachealis. In most of the cases which terminated fatally, the patients died of pneumonia notha.

The *stomach* was sometimes affected by nausea and vomiting; but this was far from being a universal symptom.

I met with four cases in which the whole force of the disease fell upon the *bowels*, and went off in a diarrhœa; but in general the bowels were regular or costive.

The *limbs* were affected with such acute pains as to be mistaken for the rheumatism, or for the break-bone fever of 1780. The pains were most acute in the back and thighs.

Profuse sweats appeared in many over the whole body in the beginning, but without affording any relief. It was in some instances accompanied by erysipelatous, and in four cases which came to my knowledge, it was followed by miliary eruptions.

The *pulse* was sometimes tense and quick, but seldom full. In a great majority of those whom I visited it was quick, weak, and soft.

There was no appearance in the urine different from what is common in all fevers.

The disease had evident remissions, and the fever seldom continued above three or four days; but the cough, and some other troublesome symptoms, sometimes continued two or three weeks.

In a few persons, the fever terminated in a tedious and dangerous typhus.

In several pregnant women it produced uterine hemorrhages and abortions.

It affected adults of both sexes alike. A few old people escaped it. It passed by children under eight years old with a few exceptions. Out of five and thirty maniacs in the Pennsylvania hospital, but three were affected by it. No profession or occupation escaped it. The smell of tar and tobacco did not preserve the persons who worked in them from the disease, nor did the use of tobacco, in snuff, smoking, or chewing, afford a security against it.*

* Mr. Howard informs us that the use of tobacco is not a preservative against the plague, as has formerly been supposed; of course that apology for the use of an offensive weed should not be admitted.

Even previous and existing diseases did not protect patients from it. It insinuated into sick chambers, and blended itself with every species of chronic complaint.

It was remarkable that persons who worked in the open air, such as sailors, and 'long-shore-men, (to use a mercantile epithet) had it much worse than tradesmen who worked within doors. A body of surveyors, in the eastern woods of Pennsylvania, suffered extremely from it. Even the vigour of constitution which is imparted by the savage life did not mitigate its violence. Mr. Andrew Ellicott, the geographer of the United States, informed me that he was a witness of its affecting the Indians in the neighbourhood of Niagara with peculiar force. The cough which attended this disease was so new and so irritating a complaint among them, that they ascribed it to witchcraft.

It proved most fatal on the sea-shore of the United States.

Many people who had recovered, were affected a second time with all the symptoms of the disease. I met with a woman, who after recovering from it in Philadelphia, took it a second time in New-York, and a third time upon her return to Philadelphia.

Many thousand people had the disease, who were not confined to their houses, but transacted business as usual out of doors. A perpetual coughing was heard in every street of the city. Buying and selling were rendered tedious by the coughing of the farmer and the citizen who met in market places. It even rendered divine service scarcely intelligible in the churches.

A few persons who were exposed to the disease escaped it, and some had it so lightly as scarcely to be sensible of it. Of the persons who were confined to their houses, not a fourth part of them kept their beds.

It proved fatal (with few exceptions) only to old people, and to persons who had been previously debilitated by consumptive complaints. It likewise carried off several hard drinkers. It terminated in asthma in three persons whose cases came under my notice, and in pulmonary consumption, in many more. I met with an instance in a lady, who was much relieved of a chronic complaint in her liver; and I heard of another instance of a clergyman whose general health was much improved by a severe attack of this disease.

It was not wholly confined to the human species.

It affected two cats, two house-dogs, and one horse, within the sphere of my observations. One of the dogs disturbed his mistress so much by coughing at night, that she gave him ten drops of laudanum for several nights, which perfectly composed him. One of the cats had a vomiting with her cough. The horse breathed as if he had been affected by the cynanche trachealis.

The scarlatina anginosa, which prevailed during the summer, disappeared after the first of October; but appeared again after the influenza left the city. Nor was the remitting fever seen during the prevalence of the reigning epidemic.

I inoculated about twenty children for the small-pox during this prevalence of the influenza, and never saw that disease exhibit a more favourable appearance.

In the treatment of the influenza I was governed by the state of the system. Where inflammatory diathesis discovered itself by a full or tense pulse, or where great difficulty of breathing occurred, and the pulse was low and weak in the beginning of the disease, I ordered moderate bleeding. In a

few cases in which the symptoms of pneumony attended, I bled a second time with advantage. In all these instances of inflammatory affection, I gave the usual antiphlogistic medicines. I found that vomits did not terminate the disease, as they often do a common catarrh, in the course of a day, or of a few hours.

In cases where no inflammatory action appeared in the system, I prescribed cordial drinks and diet, and forbade every kind of evacuation. I saw several instances of persons who had languished for a week or two with the disease, who were suddenly cured by eating a hearty meal, or by drinking half a pint of wine, or a pint of warm punch. In all these cases of weak action in the blood-vessels, liquid laudanum gave great relief, not only by suspending the cough, but by easing the pains in the bones.

I met with a case of an old lady who was suddenly and perfectly cured of her cough by a fright.

The duration of this epidemic in our city was about six weeks. It spread from New-York and Philadelphia in all directions, and in the course of a few months pervaded every state in the union. It was carried from the United States to several of

the West-India islands. It prevailed in the island of Grenada in the month of November, 1789, and it was heard of in the course of the ensuing winter in the Spanish settlements in South-America.

The following winter was unusually mild, inso-much that the navigation of the Delaware was not interrupted during the whole season, only from the 7th to the 24th of February. The weather on the 3d and 4th days of March was very cold, and on the 8th and 9th days of the same month, the mercury in Fahrenheit's thermometer stood at 4° at 7 o'clock in the morning. On the 10th and 11th, there fell a deep snow. The weather during the remaining part of the month was cold, rainy, and variable. It continued to be variable during the month of April. About the middle of the month there fell an unusual quantity of rain. The showers which fell on the night of the 17th will long be connected in the memories of the citizens of Philadelphia with the time of the death of the celebrated Dr. Franklin. Several pleurisies appeared during this month; also a few cases of measles. In the last week of the month the influenza made its appearance. It was brought to the city from New-England, and affected, in its course, all the intermediate states. Its symptoms were nearly the same as they were in the preceding autumn, but in many people it put on some new appearances. Several

persons who were affected by it had symptoms of madness, one of whom destroyed himself by jumping out of a window. Some had no cough, but very acute pains in the back and head. It was remarked that those who had the disease chiefly in the breast the last year, complained now chiefly of their heads, while those whose heads were affected formerly, now complained chiefly of their breasts. In many it put on the type of an intermitting fever. Several complained of constant chills, or constant sweats; and some were much alarmed by an uncommon blue and dark colour in their hands. I saw one case of ischuria, another of an acute pain in the rectum, a third of anasarca, and a fourth of a palsy in the tongue and arms; all of which appeared to be anomalous symptoms of the influenza. Sneezing, and pains in the ears and frontal sinus, were less common now than they were in the fall; but a pain in the eye-balls was a universal symptom. Some had a pain in the one eye only, and a few had sore eyes, and swellings in the face. Many women who had it, were affected by an irregular appearance of the catamenia. In two persons whom I saw, the cough was incessant for three days, nor could it be composed by any other remedy than plentiful bleeding. A patient of Dr. Samuel Duffield informed me, after his recovery, that he had had no other symptom of the disease than

an efflorescence on his skin, and a large swelling in his groin, which terminated in a tedious abscess.

The prisoners in the jail who had it in the autumn, escaped it this spring.

During the prevalence of this disease, I saw no sign of any other epidemic.

It declined sensibly about the first week in June, and after the 12th day of this month I was not called to a single patient in it.

The remedies for it were the same as were used in the fall.

I used bleeding in several cases on the second, third, and fourth days of the disease, where it had appeared to be improper in its first stage. The cases which required bleeding were far from being general. I saw two instances of syncope of an alarming nature, after the loss of ten ounces of blood; and I heard of one instance of a boy who died in half an hour after this evacuation.

I remarked that purges of all kinds worked more violently than usual in this disease.

The convalescence from it was very slow, and a general languor appeared to pervade the citizens for several weeks after it left the city.

The month of December, 1790, was extremely and uniformly cold. In the beginning of the month of January, 1791, the weather moderated, and continued to be pleasant till the 17th, on which day the navigation of the Delaware, which had been completely obstructed by the ice, was opened so as to admit of the arrival of several vessels. During the month of December many people complained of *colds*; but they were ascribed wholly to the weather. In January four or five persons in a family were affected by colds at the same time; which created a suspicion of a return of the influenza. This suspicion was soon confirmed by accounts of its prevailing in the neighbouring counties of Chester and Montgomery, in Pennsylvania, and in the distant states of Virginia and Rhode-Island. It did not affect near so generally as in the two former times of appearance. There was no difference in the method of treating it. While the common inflammatory diseases of the winter bore the lancet as usual, it was remarked that patients who were attacked by the influenza, did not bear bleeding in a greater proportion, or in a larger

quantity, than in the two former times of its appearance in the city.

I shall conclude this account of the influenza by the following observations:

1. It exists independently of the sensible qualities of the air, and in all kinds of weather. Dr. Patrick Russel has proved the plague to be equally independent of the influence of the sensible qualities of the atmosphere, to a certain degree.

2. The influenza passes with the utmost rapidity through a country, and affects the greatest number of people, in a given time, of any disease in the world.

3. It appears from the histories of it which are upon record, that neither climate, nor the different states of society, have produced any *material* change in the disease. This will appear from comparing the account I have given, with the histories of it which have lately been given by Dr. Grey, Dr. Hamilton, Dr. A. Fothergill, Mr. Chisholm, and other modern physicians. It appears further, that even time itself has not been able materially to change the type of this disease. This is evident, from comparing modern accounts of it with those

which have been handed down to us by ancient physicians.

I have hinted in a former essay at the *diminutives* of certain diseases. There is a state of influenza, which is less violent and more local, than that which has been described. It generally prevails in the winter season. It seems to originate from a morbid matter, generated in crowded and heated churches, and other assemblies of the people. I have seen a cold, or influenza, frequently universal in Philadelphia, which I have distinctly traced to this source. It would seem as if the same species of diseases resembled pictures, and that while some of them partook of the deep and vivid nature of mosaic work, others appeared like the feeble and transient impressions of water colours.



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