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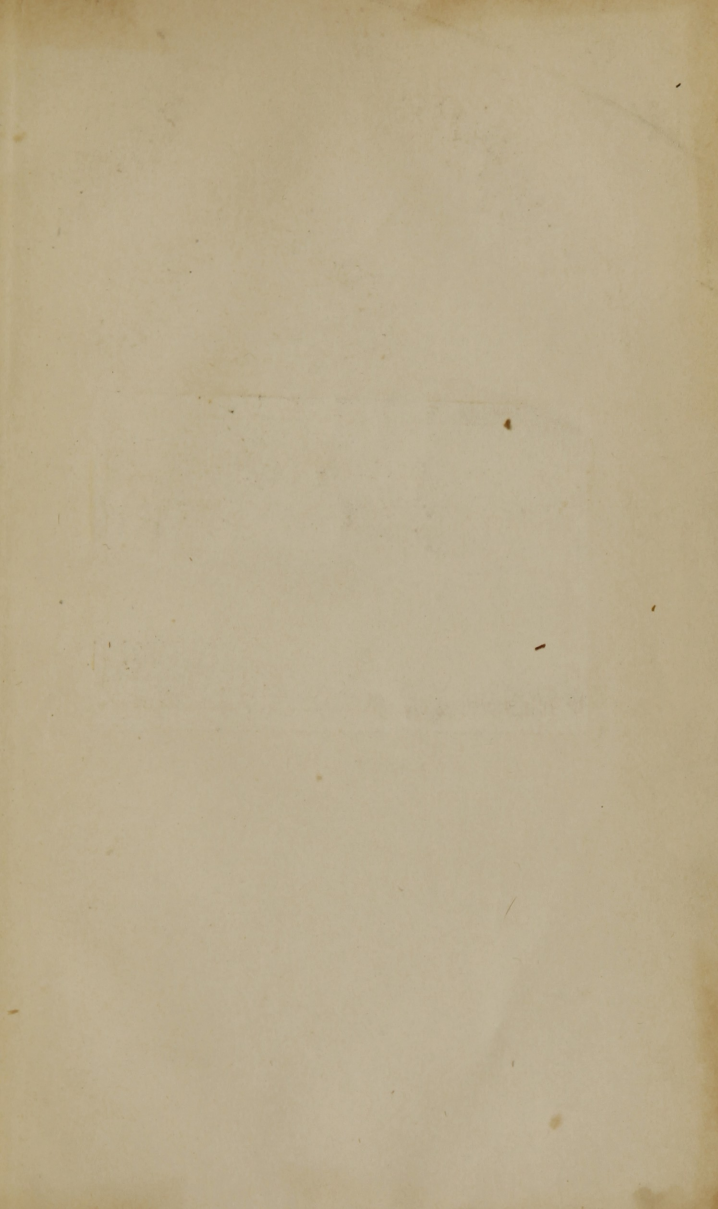
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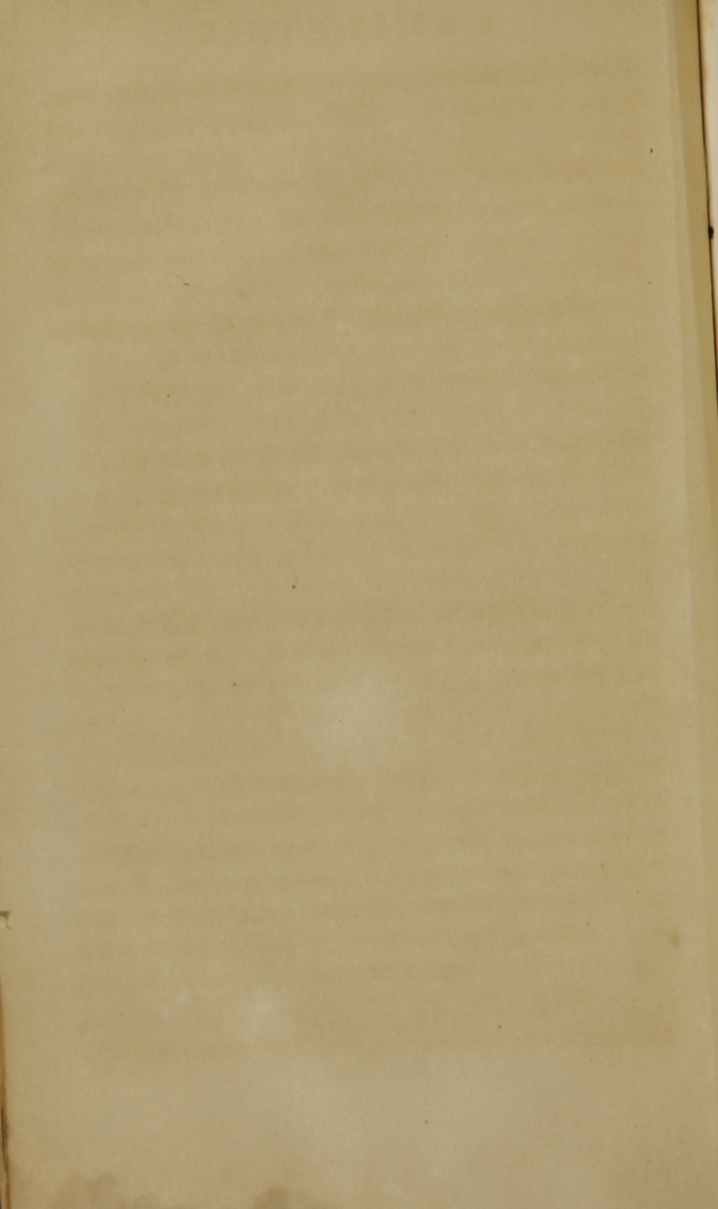
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A BRIEF NOTICE

OF A

PORTION OF A WORK BY WILLIAM BURKE,

ENTITLED

"THE MINERAL SPRINGS OF WESTERN VIRGINIA."

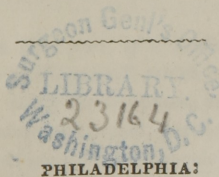
WITH

PRELIMINARY REMARKS ON THE RELATIVE  
VIRTUES OF THE SALINE AND  
GASEOUS CONTENTS OF THE

WHITE SULPHUR WATER.

BY JOHN J. MOORMAN, M. D.

RESIDENT PHYSICIAN AT THE WHITE SULPHUR SPRINGS.



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A BRYAN NOYCE  
OF A  
PORTION OF A WORK BY WILLIAM BERRY  
LIMITED  
"THE MINERAL SPRINGS OF WESTERN VIRGINIA"

WITH  
PRELIMINARY BY THE ALLEGHIAN  
AND  
EFFECTS  
WHITE SULPHUR WATER.  
BY JOHN J. WOODMAN, M.D.  
FACULTY OF THE UNIVERSITY OF CHICAGO

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## CHAPTER\*

### *On the relative virtues of the Saline and Gaseous contents of the WHITE SULPHUR WATER.*

SPECULATION has existed as to the relative efficacy of the different component parts of the White Sulphur Water in the cure of disease, and while some have supposed that its *gaseous contents* are essential to its sanative virtues, others, and we think the best informed observers, attribute its medicinal virtues mainly to its *solid* or *saline contents*. To the latter opinion the able Professor of Natural Philosophy in the University of Virginia, who has carefully examined the water, and other distinguished chemists and physicians, decidedly incline.

It certainly is a question of no little interest to the valetudinarian, whether he should use this water

\* *This CHAPTER is a part of a work in manuscript, on the "Mineral Springs of Virginia," which has been lying by us for some time nearly ready for the press, and which would have been published before this period, but for our desire to procure accurate drawings of some of the more celebrated watering places, and to obtain more specific information in relation to the composition and medical effects of some of the mineral waters in Eastern Virginia.*

fresh as it flows from the spring, and abounding in all its stimulating gas; or whether he should use it after it has *partially* or *entirely* parted with this gas. To this subject we have, for the last several years, devoted the most laborious and particular attention, having instituted, with great care, various and diversified experiments, in order to establish something like definite and positive conclusions.

Although the value of this water in what is usually termed its *non-stimulating form*, or, in other words, when deprived of its gas, has long been known to many who are familiar with its use, it was not until the last few years that it was commonly used from choice, after it had been long removed from the spring, or from any cause had parted with its gaseous contents; an opinion, the correctness of which had never been examined, prevailed in the minds of many, that in losing its gas, it lost its strength and efficacy.

Having settled at the "White," as the resident physician of the place, it became alike our duty and our interest to investigate the character and operations of its waters under every possible form and modification in which they could be presented. In the pursuit of this duty, we resolved to take no opinion upon "trust," but carefully to examine and investigate for ourselves. A prominent question immediately presented itself for inquiry, involving the



relative merits which the *solid* and *gaseous* ingredients of the water possess as remedial agents. It would be tedious, and, to many, uninteresting, to detail the several steps and multiplied experiments which led us to conclusions upon the subject, satisfactory to our own mind, and upon which we have established certain practical principles in the use of the water, which have enabled us to prescribe it, especially for nervous and excitable patients, with far greater success than heretofore. It is sufficient for our purpose at present, to state, that while we freely admit that the *sulphuretted hydrogen gas*, which abounds in the water, is an active *nervine stimulant*, and therefore may be a most potent agent in some cases, we are fully impressed with the belief that either in its *direct* or *indirect* effects, we must look *mainly* to the *solid contents* of the water for its *alterative* power as well as for its activity manifested in its operations through the different emunctories of the human body.

Whether the efficacy of the solid contents of this water be owing to the specific character of any one, or to all of the *thirteen different salts* of which it is composed, and which exist in the water in the most minute form of subdivision, and in this condition enter the circulation, and course through the whole system, applying themselves appropriately to diseased tissues; or, whether its efficacy depends upon the *evolution* of sulphuretted hydrogen gas *after the*

*water has reached the stomach*, is a matter of curious and interesting inquiry.

The distinguished chemist, Mr. Augustine A. Hays, of Rocksbury, after having bestowed much pains in analysing the white sulphur water, and in studying its peculiar character, comes to the following conclusions as to the source of its medicinal power. After describing, at considerable length, a certain matter which he found to abound in the water, and which he terms "*organic matter*," in the course of which he says, it "differs essentially from the organic matter of some thermal waters," he proceeds to say, "In contact with earthy sulphates, at a moderate temperature, it produces hydro-sulphuric acid, *and to this source, that acid contained in the water may be traced*. This substance does not rapidly attract oxygen from the atmosphere, and from colored compounds, as some other organic compounds do,—*the medicinal properties of this water are probably due to the action of this organic substance*. The hydro-sulphuric acid resulting from its natural action, is one of the most active substances within the reach of physicians. *There are chemical reasons for supposing that, after the water has reached the stomach, similar changes, accompanied by the production of hydro-sulphuric acid, takes place.*"

Before Mr. Hays had communicated the above opinion, growing out of his chemical examinations,

we had again and again been much interested with certain phenomena which we have termed the *secondary formation* of gas in the white sulphur water. Instances had frequently been reported to us of the water having been put into bottles after it had *lost its gas entirely*, being void both of taste and smell, and yet, after these bottles were kept for some days in a warm situation, and then opened, the water appeared equally strong of the hydro-sulphuric acid, as it is found to be fresh at the fountain.

In a shipment of this water to *Calcutta*, some years since, the "transporting company" had the water bottled in Boston, from barrels that had been filled at the spring six months before. This water, although *tasteless and inodorous*, when put into the bottles at Boston, was found, on its arrival at *Calcutta*, so strongly impregnated with the hydro-sulphuric acid gas as to render it necessary, under the direction of an intelligent gentleman of Boston, (who had witnessed this secondary formation of gas before,) to uncork the bottles for some time before using, that the excess of gas might escape.

We had also known that in the process of *thawing* sulphur water in a warm room, that had been previously frozen, sulphuretted hydrogen gas is evolved; for although the ice has neither the taste nor smell of sulphur, a strong smell of sulphuretted hydrogen gas is manifest as the ice is returning to water.



We had often observed that individuals who drank the water entirely *stale*, and void alike of *taste* and *smell*, were as liable to have eructations of sulphuretted hydrogen gas as those who drank the water fresh at the fountain. These, and other facts connected with the peculiar operations and effects of this water when used in its ungasous form,—operations and effects which we cannot here with propriety refer to, but all going to prove the *secondary* formation of gas under certain circumstances,—had, in our investigations of this water, interested us exceedingly, and consequently, we were not a little pleased that Mr. Hays' chemical examinations so fully sustained the opinions we had been led to entertain from our personal observations.

The interesting opinion of this distinguished chemist, in connection with the numerous proofs, derived from analogy and observation, of the *secondary* formation of sulphuretted hydrogen gas in this water, would seem to be well calculated to harmonize the opinion advanced by us of the equal efficacy of the water when deprived of its gas, with the sentiment entertained by some, that the hydrogen gas is essential to its sanative operations.

The phenomena of a *secondary formation* of sulphuretted hydrogen gas in mineral waters, has not, that we are aware of, been noticed before; it certainly has not in relation to the white sulphur water,

and we sincerely hope that medical gentlemen generally, who may have occasion to use the water, will direct a careful attention to this singular fact. For ourselves, we promise still further to investigate this interesting subject, and may, at some subsequent period, lay the results of such investigation before the medical public.

Our investigation of the relative virtues of the gaseous and saline contents of this water, have fully satisfied us that the physician, in making up his judgment as to the best method of administering it in particular cases, may always properly moot the propriety of using it either *fresh* as it flows from the spring, *deprived of its gas*, or with *modified quantities*. He should bear in mind that there are cases in which it is preferable that the water should be used *stale*, and entirely free from its gas, and that by depriving it in *whole* or in *part* of its hydrogen gas, which is its stimulating principle, he can graduate that amount of stimulus to the system which it may demand, and this, in most cases, without lessening the *actively operative* or *alterative* effects of the water.

For some patients, the white sulphur water, as it flows from the spring, is too *stimulating*, and hence, before the *non-stimulating* method of using it was introduced, many such patients annually left the Spring,—either without giving the water a trial,

or actually rendered worse by its stimulating influence. This class of persons can now use the water *when deprived of its gas*, not only with impunity, but often with the happiest results. Numerous cures, effected by the use of the water for the last three or four years, have been in that class of patients by whom the water, *fresh at the spring*, could not have been used without injury. The cases of Mr. Morton, of Mississippi, and of J. L. Jernagan, Esq., reported at large in a pamphlet published in 1841, are pertinent examples of such cases.

In the case of many nervous persons, and especially those whose *brain* is prone to undue excitement, we have often found it necessary, either by *freezing* or *heating* the water, to throw off its gas completely, before it could be tolerated by the system; and some of the happiest results that we have ever witnessed from the use of the water, have been achieved by it after being thus *prepared*. The cases of Mrs. H., of Georgia, and of Mr. B., of Massachusetts, the one afflicted with disease of the stomach and chest; the other with chronic inflammation of the brain, are instances, among scores of others, that might be referred to. But this is not all. With the view of guarding effectually against any errors that might arise from a defect in our own observations, we procured the assistance of several physicians, and other intelligent gentlemen, all of whom were familiar with the operations and effects of the water when drank



fresh at the spring, and who, with the view of testing the facts we have mentioned, used it themselves, and gave it to others, after it had been long removed from the spring, and to all appearances *parted with its gas*; and with the same results that they had previously experienced in their own persons, or witnessed in others, from like quantities of the *fresh water*, abounding in its gas.

Our object in prescribing white sulphur water has been to pursue a discriminating or *pathological* practice. We regard it as an active and potent *medicine*, and believe that, like all such medicines, it should be used with a wise reference to the nature of the case, and the state of the system. We must not be understood as advancing the opinion, that the white sulphur water is always to be preferred after the escape of its gas. We entertain no such opinion; on the contrary, for a large class of visitors to that watering place, we think it preferable that they should avail themselves of the use of the water either at, or recently removed from the fountain, and as it naturally abounds in sulphuretted hydrogen gas. There are other cases in which the exciting influence of the gas can only be borne *in a more limited degree*, and, for such, we permit its *partial escape* before using the water; while in a numerous class of cases, (and especially on first commencing the use of the water,) we esteem it indispensable to its quick and beneficial operations, that its *uncombined gas*, which gives *taste and smell*, should have escaped.

In recommending the white sulphur, then, to the use of the invalid, we esteem it quite as necessary to investigate the manner of using, as relates to its *fresh* or *stale* quality, as we do in reference to its dose, or the times of administering it; and for neither would we lay down positive and absolute rules in advance; for each case must, in the nature of things, to a great extent give rules for its own government.

A BRIEF NOTICE  
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PORTION OF A WORK BY WILLIAM BURKE,  
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"THE MINERAL SPRINGS OF WESTERN VIRGINIA."

DURING the past summer, and after the preceding chapter upon the relative medicinal virtues of the gaseous and saline contents of the white sulphur water had been completed, an opportunity was afforded us of examining a little volume, then recently published, by Mr. William Burke, the Proprietor of the Red Sulphur Springs, entitled, the "Mineral Springs of Western Virginia."

In this work, the author has arraigned us before the public in a manner so unjust, and at the same time so virulent, that however reluctant we may be to enter the arena of controversy, we feel that he has left us no alternative. In the defence, however, of our character as a man, and of our views as a physician, we shall endeavor to curb those angry feelings which malignant aspersions are so well calculated to arouse; content to inflict no wound more severe than will follow the recoil of a futile effort to effect a sinister and selfish end.

That the public may be enabled more readily to appreciate the merits of the issue between Mr. Burke and ourselves, we deem it better at once to lay before them a few prominent facts—which facts, we believe, will not only afford a key to the controversy, but shed much light upon the motives by which Mr. Burke has been actuated in dragging us before the public, at the expense alike of justice and the common courtesies of life.

*In the first place*, he and ourselves are entire strangers to each other, and have had no intercourse which could possibly have engendered the slightest degree of personal hostility. *In the second place*, Mr. Burke is the *Proprietor* of the *Red Sulphur Springs*, the water of which, he contends, is not only destitute of stimulating properties, but even *sedative* in its effects; a peculiarity, whether real or imaginary, upon which rests solely, or in an eminent degree, its medicinal reputation. *Thirdly*; it is generally admitted that the white sulphur water, in its natural state, and as recently taken from the spring, is decidedly *stimulant*; and further, that its stimulating effects depend upon the sulphuretted hydrogen gas contained therein. *Fourthly*; it is well known that the sulphuretted hydrogen gas, or stimulating constituent of the recent white sulphur water, escapes upon suffering that water to stand for some hours in an open vessel, or is driven off by heating it. And *fifthly*; it follows, from what has been said



relative to the stimulating effects of the gas, its escape, &c., that if the medicinal properties of this water reside mainly in its saline ingredients, by suffering its gas to escape, the water may be so modified as to adapt it to those cases wherein a stimulant is contra-indicated, and in which the aperient and alterative effects of the water would prove essentially beneficial.

If, in connection with what has been said above, the reader will take into consideration the further fact that, in times past, many valetudinarians were in the habit of leaving the White Sulphur Springs because of its stimulating property—and for that reason alone—to seek relief at the “Red,” he will have, we believe, a clew by which he may readily be conducted to the source whence Mr. Burke’s assault, upon what he is pleased to term *our theory*, has emanated. Suppose, for a moment, that “our theory” be correct, and that indisputable facts can be adduced, sufficient, in number and character, to show that the water in its modified form, and divested of its stimulating property, retains not only its aperient but its alterative agency, and thus becomes adapted to those cases wherein, but for its stimulating character, it would, in its natural state, have been indicated,—what then becomes of the patronage which the “Red” once received from cases of this class? Can any one suppose that, under such circumstances, a preference would be given to the Red Sulphur?

The idea, to one acquainted with the relative alternative value of the respective springs, is preposterous; and those not familiar with the subject may readily infer, from the extreme sensitiveness of the "Proprietor of the Red," that he regards the grounds of alarm as by no means trivial.

The reader of Mr. Burke's book can scarcely have failed to observe the striking incongruity existing between the title page and the general character of the work; and whilst he observes, no doubt will, with ourselves, admire the shrewd sagacity which the parent has manifested in introducing his offspring to the world. A good name not unfrequently gains a reception, when the true character of its possessor could not have obtained an audience; and no doubt the author has found a work, *purporting* to be a treatise upon the mineral springs of Virginia, a much more saleable article than he would have found the same work had he endorsed thereon, as he appropriately might, "*An elaborate puff of a second-rate Mineral Spring, by the Proprietor thereof; with brief, and sometimes disparaging notices of other watering places.*"

After having carefully examined the work of Mr. Burke, and maturely reflected upon its general character, we are forced to the conclusion that the attack which he has made upon ourselves should be regarded in no other light than as incidental to the

general scheme—as a mere tributary towards the accomplishment of the end for which his book was written. What was that end? To elevate in public estimation the medicinal virtues of the Red Sulphur Springs. Our humble self and our “theory” stood in his way, and must be removed. The obstacle thus opposed may have been trivial, yet its suppression was deemed necessary. How was it to be accomplished? To charge our “theory” with injuring his Spring would not answer,—his motives might then have been suspected; he assumes a virtue not his own; he hearkens to the dictates of “duty,” and impelled by the irresistible spirit of philanthropy, steps forward to the rescue. Over the deluded victims of our “theory” he stretches the broad ægis of his protection, dispels the darkness that envelopes them, and rejoices in the hope that they will yet quaff the waters of *his* health-giving fountain.

We have heretofore alluded only in general terms to the attack made upon us by Mr. Burke; but preferring that he should speak for himself, we quote from his work, pages 107-8: “Feeling deeply the great value of this water (*the white sulphur*) to the public, and solicitous that its fame may not be even temporarily affected, we feel it a duty we owe to the worthy proprietors of the fountain, as well as to the community at large, to notice a theory which has been lately sought to be established respecting it, and which, if true, renders it liable to be successfully imi-



tated by any one who can mix with common water the different portions of saline matter discovered by its analysis. We allude to a theory set forth in a pamphlet by Dr. J. J. Moorman, resident physician at the Spring. We disclaim any intention of affecting the interest of Dr. Moorman. He is personally unknown to us. But since we have undertaken to present our views on these mineral waters, we feel morally bound not to sanction, by our silence, a theory fraught, we believe, with injury to the reputation of this justly popular water, and with cruel injustice to poor invalids who seek benefit from its use. In the discussion of this subject, we will not impugn Dr. M.'s motives in propagating this doctrine. With these we have nothing to do."

And again, pages 112-13: "We understand the theory in question originated in the following manner: Dr. M., some years ago, entered into an arrangement with Mr. Calwell for transporting the water. It was attempted in bottles, but that was found too expensive, and the *idea* of barrelling was adopted. But here was a difficulty—the gas would escape. What was to be done? Why it must be shown that the gas was of no use; nay, that it was a detriment, and, like 'toddy or wine,' an active nervine stimulant. It became necessary to prove that the water was better without gas than with it; and accordingly Dr. M. recommends to his patients to let it stand in an open vessel twelve or eighteen hours before use.



Dr. M. tells you that it is a common practice to pursue this plan at the Spring ; but we regret to perceive he has not the candor to acknowledge that *he* introduced the practice ; and that no such practice was known from the days of Adam until the days of Dr. M.”

From these two quotations, it will be perceived, that while Mr. Burke, on page 108, disclaims all intention of impugning our motives in propagating the doctrine to which he objects,—yet upon pages 112 and 113, while giving what he “understands” to be the origin of the theory in question, he does the very thing which he had disclaimed all intention of doing, and that in a manner but little creditable to his frankness and ingenuousness. Fortunately, we have it in our power to show, that the “idea of barrelling” was not an after thought ;—that it was not only contemplated, but specified in the original and only contract ever entered into between Mr. Calwell and ourselves relative to the transportation of the white sulphur water, and consequently that what Mr. B. “*understands*” to be so and so—IS NOT so ; and that inasmuch as his *facts* are overthrown, his deductions must fall to the ground. We would call the attention of our readers to the following letter from Wm. B. Calwell, Esq., a gentleman whose statement we presume Mr. Burke will hardly gainsay.

WHITE SULPHUR SPRINGS, Aug. 10, 1842.

Dear Sir,—I have read the note you handed me a few days ago. I have no objection to the publication of the *original* and *only*

contract between us, for the transportation of the white sulphur water; or to state in so many words *that it does provide in the first instance*, for transporting and vending the same both in *barrels* and bottles.

I am, respectfully, your obedient servant,

WM. B. CALWELL.

To Dr. Moorman.

*Present.*

Having thus, we conceive, removed the basis of Mr. B.'s most direct assault upon the probity of our motives, we will proceed to examine the various objections which he urges to what he terms *our* "theory," and hope to be able to satisfy the public that our practice, and the views promulgated by us, have not only an honest origin, but are sanctioned by experience, and are entirely consonant to well established pathological and therapeutical principles.

But, before we proceed farther with this part of our subject, we would respectfully call the attention of the public to the respective positions occupied by Mr. B. and ourselves, relative to the White Sulphur Springs. He is the *proprietor* of a would-be rival watering place; we the Resident Physician at the White Sulphur. Which, under the circumstances, we would ask, is likely to feel the deepest interest in the reputation of that water? Again, which is the most likely to understand the character and peculiarities of the white sulphur water? Mr. B., we believe, visited that watering place once, some nineteen or twenty years since, and probably remained a few

days; with ourselves, the *modus operandi* of the water, both in its natural and modified form, at the the spring and abroad, and its applicability to disease, in its almost innumerable forms, has been for years a subject of continued investigation and study. Under these circumstances, will the public regard us as guilty of presumption in supposing ourselves to be better acquainted with the therapeutic agency of the water, whether in its natural or modified forms, than Mr. Burke?

With regard to the origin of what Mr. B. terms *our* "theory," we must be permitted to say, that the practice of using the white sulphur water after the escape of its gas, whatever may be the merits or demerits of that practice, did not originate with us, as Mr. B. asserts. Gentlemen of the highest respectability, residing in the vicinity of the White Sulphur, had been in the habit of using in their families the *barrelled* water for many years before we became, in any way, connected with that watering place. Of this fact Mr. Burke must have been aware, as the letters of Dr. Thomas Creigh, Dr. Hugh Wilson, Henry Erskine, Esq., John Mays, Esq., James Frazer, Esq., The Hon. Ballard Smith, and others, *were before him in the pamphlet from which he quotes*, at the time he penned his offensive charge. These gentlemen all bear testimony, not only that the *ungaseous* water had been long used from the

barrel, but also to its *equal efficacy* when thus used.

Dr. Creigh states, that he has “been in the habit of advising persons to use the white sulphur water that had been *long kept in barrels*; and having carefully observed its effects upon such, can safely state, that its medicinal properties are not deteriorated by being thus kept. On the contrary, those salutary *alterative* impressions, for which the water has been so long distinguished, are most happily displayed from the use of the barrelled water.”

Dr. *Wilson* states, that he has known it to be used “after being *kept in barrels* for twelve months, and after it appeared to have parted with all or most of its volatile properties, and that *it acted as promptly and efficiently* as when used at the spring.”

*Henry Erskine*, Esq., has used the barrelled water regularly in his family for “many years,” and says: “*We have found the water in every respect as efficacious* when thus used, as when taken fresh from the fountain itself.”

*John Mays*, Esq., has used it from the barrel “for *upwards of thirty years*,” and states, that the water thus used, “in all its *sensible operations* and *permanent effects upon the system*, is quite as active and efficient as when drunk fresh at the fountain.”



*James Frazer, Esq.*, says: "I resided at the White Sulphur Springs from the year 1810 to the fall of 1819; during that time the water was used by myself and family fresh from the fountain. Since that time we have been in the habit of using it in *barrels*, and we find *no difference in its medicinal qualities or effects.*"

The Hon. *Ballard Smith* has used the *barrelled* water in his family, and his "experience authorizes the expression of the opinion, that its efficacy *is not lessened* by being confined in the barrel, but *rather increased*, as he generally found it took a *less quantity, after having remained in the barrel* for two or three weeks, to produce the cathartic effect, than when used at the fountain."

Such is the character of the testimony *that was before Mr. Burke* when he penned the assertion, that we "introduced the practice" of using the ungasous white sulphur water. Notwithstanding the conclusive refutation of such an assertion, which was *then in his own hands*, he had the hardihood to make an assault upon our "candor" for not having acknowledged that we originated the "practice."

We could wish, indeed, that we were entitled to the merit of originating a practice which has benefitted the afflicted in the same ratio that it has extended the applicability of a valuable mineral water; but, al-

though we are not entitled to the merit of originating the practice, we enjoy the pleasure of believing that we have done the public some service, by our efforts to systematize and to promulgate its advantages to the world.

We have now concluded what we designed to say in reference to Mr. Burke's personal assault upon us, and exhibited *testimony* deemed sufficient to disprove the correctness of his charges, and proceed, with as much brevity as possible, to examine the *arguments* urged by him for the overthrow of *our* "theory." Before we do this, however, we wish to say a few words in reference to the *medical reasons* which influence us to vary our prescriptions in the use of white sulphur water. We shall do this more briefly, and perhaps more distinctly, by *supposing cases*, adapted to the use of the water in its different forms.

Such explanation of our opinions is rendered the more necessary by the injustice which Mr. B. has perpetrated towards us; in endeavoring to induce the belief that *we* entirely deny and repudiate the efficacy of the sulphuretted hydrogen gas as a therapeutic agent, and by asserting, as he virtually does, that we attempt to "prove that the water is better without its gas than with it."

Such opinions have never been either held or expressed by us, except with a qualification having reference to particular cases.

The great value of the white sulphur water as a therapeutical agent to a large class of persons who visit that celebrated fountain, is a fact alike unquestioned and unquestionable. That in its natural condition, as it flows from the bosom of the earth, it is happily adapted to numerous cases of disease, is a truth established by upwards of sixty years' experience, as well as fully sustained by the numerous cures that are constantly occurring. The great value of the water, then, fresh as it flows from the fountain, and abounding in its gas, is a truth, so far as we know, that is unassailed, and which, *we* believe, is unassailable. Nevertheless, that there are many cases in which the gas is not beneficial in the amount in which it exists in the fresh water, is a fact which our experience enables us to assert with the utmost confidence. That the water in such cases, therefore, is "better without its gas than with it," follows as effect follows cause. But we never have contended that the water, *per se*, and without reference to cases, should always be preferred without its gas. We have not based our practice upon any such exclusive views; nor have we ever denied the value of the agency of the gas in appropriate cases. Our opinion of the relative importance of the saline and gaseous contents of the water has been often expressed, and always with this qualification: that the "medicinal properties of the white sulphur water reside *mainly* in its solid contents." We never contended, or attempted to "prove," that its medicinal virtues reside *exclu-*



*sively* in its solid contents; and it is scarcely candid in Mr. B. to form a theory for us, that he may have the pleasure of combatting it. The public, we are sure, will accord to us the right to *define our own positions*, and we now briefly recapitulate them.

We, then, regard the *solid contents* of the white sulphur water, either in its direct or indirect influences, as the *main* agency in the medicinal efficacy of the water. Whether the efficacy of the salts of the water be owing to their absorption into the system as such, or whether it depends upon the *secondary formation* of hydrosulphuric acid gas in the stomach, or whether it ought to be ascribed to the combination of these different agencies, we leave for others more fond of speculation to decide. We have heretofore been satisfied with the *knowledge* of the efficacy of the solid contents, without much theorizing to explain the *why* and *wherefore*.

But, it may be asked, If the gas does good in the state of a *secondary formation* in the stomach, would not a larger quantity, taken with the fresh water, do more good? We reply, that this by no means follows in that class of cases for which we specially advise the ungasous water; for our only objection to the fresh water in such cases is, that it has *too much gas*. Admitting, then, as we do, that the gas may exert an influence, we allege that in nervous and excitable cases, the quantity is not only better



adapted to the system, but that any given quantity, under a secondary formation, excites the system less, from its gradual formation in the stomach, than if suddenly received in volume into that viscus.

Do we, because we recommend the ungaseous water in *particular cases*, repudiate and disallow all medicinal agency of the gas as a general principle? Not at all. We simply contend that for the treatment of certain cases, there is more of the stimulating gas in the fresh water than such cases can bear with advantage or impunity; and that its excessive excitation in such cases would be prejudicial instead of beneficial.

But do we find it necessary thus to guard the amount of gas for every water drinker? or do we erect a bed of *Procrustes*, and oblige every man to conform to its length? By no means. A. arrives at the Springs, not much debilitated by disease, and with a firm, nervous, and muscular system; there is no excessive excitability in his case, and neither his cerebral, nervous, or vascular system is particularly prone to be affected by stimulants or exciting medicines. We advise him to use the water *as it flows from the fountain*, and if he should, contrary to expectations, find that it stimulates him unpleasantly, to set it by for a while before using.

B. calls for advice as to the manner of using the

water ;—his *temperament*, and the state of his cerebral, nervous, and vascular system is the opposite of A.'s,—his physical energies have been prostrated by disease ; his nerves are *unstrung*, and, like his brain, prone to be painfully affected by stimulants or exciting medicines. We advise him to use the water after it has, either *partially* or *entirely*, parted with its gas, that is, after it has been set by for twelve or eighteen hours, as the delicacy and excitability of his system demand.

The following extract of a letter from Charles Keen, Esq., so happily represents the different effects we daily witness, from the use of the water in its ungaseous state, that we insert it in elucidation of our own views.

“DEAR SIR,—When I first came to the Springs I commenced using the water *fresh at the fountain*, but was compelled to discontinue it, in consequence of its *stimulating effects upon my system* ; producing at the same time, *headache, dryness and burning in the skin, with constipation of the bowels*. I then had recourse to it brought to my room in an open vessel, and let it remain until its gas had partially escaped, before I drank it. The use of it in this way *produced the most desirable results*, and in a reasonable time did much to restore me to health, having been previously afflicted with disease of the liver and stomach, with a symptomatic affection of the lungs.

CHARLES KEEN.

In cases of inflammation of the *parenchyma* of the brain, and in other highly excitable conditions

of the cerebral or nervous system, we have the water more carefully prepared, either by heating or freezing it. We have a case at this time under treatment, in the person of Mrs. F., in which there is such an extreme susceptibility of the brain, that absolute derangement for several hours was the consequence, in several instances, of taking two glasses of the water fresh from the spring; although she bears with impunity, and is improving rapidly, under the *prepared* water.

In graduating the amount of stimulus, or if the gaseous theorist please, the amount of medical material to the wants of the system—in other words, varying our prescription, to suit the case, are we departing from a scientific and approved system of practice? What would be thought of the science of a medical man, who invariably used, either the same medicine, or, the same dose of any medicine, without regard to the peculiarities or constitution of his patients? Just what ought to be thought of us, or any one else, who would direct so potent an agent as white sulphur water to be used alike in every variety of constitution and disease.

A popular error, in relation to mineral waters, is that they exert a sort of mysterious influence on the system;—and that, as nature has elaborated them in the bowels of the earth, they are, therefore, formed in the best possible manner for the cure of disease.

This opinion is not more reasonable than it would be to suppose that nature has formed *antimony* in the best possible form, for the cure of disease, although we know, that in this form, under the administration of the celebrated Basil Valentine, it slew all the *monks* in his cloister.

Like all other remedial agents, potent mineral waters produce certain *effects* upon the animal economy, and these effects will be beneficial or injurious, as the remedy is properly or improperly employed. For instance, C., who is nervous, delicate, and excitable,—and is affected with functional derangement of the organs, requires to receive, for a certain time, the influence of a mineral water,—which, while it acts as an aperient upon his bowels, enters his circulation,—courses through his system and *alters* his deranged organs; being at the same time so bland and unstimulating in its general effects, as not to arouse any one, or a series of organs into undue excitement and rebellion against the common good. Such a remedy is found in the *stale* and *un-gaseous* white sulphur water.

D. requires the very same effects to be exerted upon his diseased organs,—but he is of very different temperament and constitution. His brain and nerves are prone to no unnatural excitement, and he is unaffected with the thousand physical sensibilities to which C. is subject. D. may take the white sulphur



water with impunity and advantage, in any manner most agreeable to him. In his case its exciting gas constitutes no objection to its use. The good effects of the water, so differently used by C. and D. will be the same, *because the difference in their cases makes the difference in the use of the remedy.*

Having, as we trust, made our "theory" and the principles of our practice, as relates to the white sulphur water, intelligible to every reader, we recur to the arguments of Mr. Burke designed to overthrow our opinions; and if we do not succeed in showing the absurdity of his several positions, then will we have fallen far short of the opportunity which he presents for doing so.

(Mr. Burke, page 113.) "We have already shown that, in mere saline matter, the white sulphur is immeasurably below Saratoga; and hence the conclusion is inevitable, according to Dr. M., that Saratoga is immeasurably superior to the white sulphur. Nay, it is known to Dr. M. that the white is below the salt sulphur in saline matter; and does he therefore imply that the former is superior to the latter? Would he directly concede this? No: yet it is plainly deducible from his theory. But the absurdity of the proposition is self-evident, when the reader reflects that, if true, the great white sulphur water is no better than may be made by any apothecary's apprentice behind his counter."

Now we ask any individual who has read even the *horn book* of medicine: nay, we appeal to the common sense of every individual to say, how the fact that the Saratoga is immeasurably superior to the white sulphur in the amount of its saline matter, can prove that it is immeasurably superior as a medicinal agent; when not only the different saline matters of the two waters are totally dissimilar, but the relative proportions of such as they hold in common are totally and entirely different. Yet Mr. B. assures his readers that such a conclusion is plainly deducible from our "theory." Our author must pardon us, for really such a proposition, embodied in a book that purports to be *semi-medical* at least, is too futile for sober criticism. He had quite as well tell us that an ounce of table salt must be immeasurably superior to ten grains of calomel, because it contains a great deal more solid matter, forgetting that there is no similarity whatever in the solid matter of the two.

The same reasoning that proves the futility of his proposition, as relates to the Saratoga, is applicable to the salt sulphur, because the salts in the two waters are not the same, nor are their relative proportions or combinations the same.

"But," says Mr. B., "the absurdity of the proposition is self-evident, when the reader reflects that, if true, the great white sulphur is no better than may

be made by any apothecary's apprentice behind his counter." We have certainly no disposition to have a discussion with Mr. B. on *logic*, yet for the life of us we cannot see how the fact, (admitting it to be so,) that white sulphur water could conveniently be manufactured, would render the absurdity of our theory "self-evident." We will presently show how self-evident it is, upon Mr. Burke's own premises, that his *gaseous* theory is absurd; and how exceedingly precarious is the value of his Red Sulphur Springs under such theory.

But first: Is it true, admitting the correctness of our theory, (even as improperly represented by Mr. B.,) that "every apothecary's apprentice" may make white sulphur water? This idea is a favorite with our author. At page 107 he says, if our "theory" be true, it renders the white sulphur water "liable to be successfully imitated by any one who can mix, with common water, the different portions of saline matter discovered by its analysis." And in a letter to us of the 26th July, 1841, he says: "If your theory be correct, as soon as the relative quantities of the different saline ingredients are discovered, every soda shop in the United States can successfully rival the great white sulphur." Now, in justice to Mr. Burke's intelligence, of which we make a respectable estimate, we are unwilling to suppose that he is so uninformed in the history of chemical manipulations, as not to know that the utmost per-



fection to which that science has progressed, has hitherto been insufficient to enable chemists to *analyse and recombine* mineral waters. Does he not know that the ablest chemists have again and again attempted, but in vain, “successfully to imitate” the mineral waters of Europe? If he be familiar with these facts—and he speaks of chemistry as a very familiar thing—it is marvellous enough that he should assert, without qualification, that an apothecary’s apprentice could do that which a Lavoisier and a Sir Humphrey Davy never could have accomplished.

But if Mr. B.’s “apothecary’s apprentice” could overcome this difficulty in chemistry, and actually succeed in combining all the *known* salts of the white sulphur water, what would he do with that very material substance, abundantly found in the water called by the chemists “*organic matter*”—a substance peculiar to the water itself, and not even having a name in chemical nomenclature? Here is surely a difficulty which neither the “apprentice” nor he of the “soda shop” could surmount.

It is plainly deducible, from all that Mr. B. has written on the subject, that *he* attributes the efficacy of sulphur waters *mainly*, if not *entirely*, to their sulphuretted hydrogen gas.

In his letter to us, before noticed, he says, *the Red*



*Sulphur* "is ALTOGETHER a gaseous water, containing scarcely an appreciable quantity of saline matter." Now, as sulphuretted hydrogen gas can very conveniently be made, even by the "apothecary's apprentice behind his counter," it follows, as an inevitable conclusion, from his own premises as applied to us, that *his* theory is "self-evidently absurd." Not only so; "every soda shop in the United States can successfully rival" the Red Sulphur Springs. Will Mr. Burke admit this? We presume not; and yet the conclusion is inevitable from his premises.

To show the unprofessional reader, how easy it is to *manufacture sulphuretted hydrogen gas*, and consequently, how easy it would be, agreeably to Mr. B.'s theory, and his express declaration as to the "ALTOGETHER gaseous character" of his own water, to have a red sulphur fountain in every neighborhood in which there might be a case to demand its use, we annex the following receipt for making sulphuretted hydrogen gas, which we copy from a standard work on chemistry:

"To obtain *sulphuretted hydrogen gas*, melt together, in a crucible, three parts, by weight, of iron filings and one of sulphur; reduce the mass to powder, and put it with a little water into a glass vessel with two mouths; lute one end of a crooked glass tube into one of these mouths, and let the extremity of

the tube pass under a glass in a pneumatic trough, the jar being inverted and full of water. Then pour diluted muriatic acid through the other mouth of the vessel, which must immediately be closed up. *Sulphuretted hydrogen gas* will now be disengaged in abundance, and flow into the glass jar, displacing the water."

"Recently boiled water," says Turner in his Chemistry, "absorbs its own volume of sulphuretted hydrogen, and *acquires* the peculiar *taste* and *odor* of sulphurous springs."

Will Mr. B. favor the public with a *recipe* equally simple, and equally in the power of the keeper of the "soda shop," and of the "apothecary's apprentice," for combining the *saline ingredients* that abound in the white sulphur water?

Our readers will now see from whose theory, Mr. Burke's or ours, sulphur springs are in the greater danger of being "successfully imitated."

Mr. Burke proceeds, page 114: "But we will prove to a demonstration, that the positions taken by Dr. M. are in direct opposition to all experience, and to the discoveries of science. Dr. M. says it is generally admitted that the "medicinal properties of the white sulphur water reside mainly in its

solid contents." Now, we assert that no such thing is admitted ; but just the contrary ?

After an annunciation like the above, every reader of Mr. B.'s book would expect to meet with some stern, well ascertained, and generally admitted facts, so directly opposed to our "theory" as to demolish it in toto; or, at least, with some clear, close, and appropriate reasoning, so convincing to the understanding, as to amount to a *probable demonstration*. But what must be his surprise, on reading further, to find that Mr. B.'s "demonstration" has no direct reference to the subject under discussion;—and would not approximate to a demonstration if it had. His "demonstration" is this, and nothing more ;—that Professor Hare, in speaking of sulphuretted hydrogen, said, that the "celebrated sulphur springs of Virginia, are indebted for their *odor* and *mainly* for their efficacy, to this compound ;" which he informs us is composed of "one atom of hydrogen and one atom of sulphur." Now, let it be borne in mind that Professor Hare was not speaking of the White Sulphur Springs, specially, when he made this declaration. We know, indeed, that that distinguished gentleman has never chemically examined that water ; if he had, we would entertain great confidence in the results of his chemical investigations;—but still he would be bound to prefer the *experience* of the physician to the *theoretical opinion* of the chemist. It is the business of the latter to ascertain



the chemical qualities of a substance,—and of the former to ascertain its medical powers and applicability.

Professor *Wm. B. Rodgers*, of the University of Virginia, who has devoted much time to the investigation of this, and other mineral waters, in the state, and who must be admitted to be the best chemical authority upon the subject, says, in a letter addressed to us in 1838, “Though I am disposed to ascribe some of the efficacy of the water to the sulphuretted hydrogen, I believe that the *saline ingredients* have a *large share* in the production of its remedial effects.” Again, in a letter to Wm. B. Calwell, Esq., in 1839, which is now before us, Professor *Rodgers* makes the following remarks :

“I have found, by an examination of the water, after having been kept in a closely sealed bottle for three years, that no alteration had occurred in its saline ingredients, and but a small portion of its gaseous matter had escaped ;—and further, it is my impression, that by bottling and transportation, its medicinal value will not be impaired. *I am not inclined to ascribe much power to the GASES IN ANY OF OUR SPRINGS.*”

Now, we do not claim that the declaration of Professor *Rodgers*, that he is “not inclined to *ascribe*



*much power to the gases in any of our mineral springs,*" amounts to a "demonstration" of the correctness of our theory ; but it surely does amount to high testimony in proof of its correctness, and effectually neutralizes Mr. B.'s "demonstration," so called.

But we have not yet done with this subject. Let us for a moment look into the reasonableness of our ascribing medicinal efficiency to the saline matter of mineral waters, and inquire what the most distinguished physicians have thought on this subject.

Why should it be thought "unscientific," or unreasonable to believe that the medicinal virtues of the white sulphur water reside *mainly* in its saline contents ? or, that these contents should be actively *alterative* ? The analysis of the water shows it to be composed of several of the more active alteratives of the *Materia Medica* ; and this alone would seem to settle the question of its alterative power. To what medicine, next to mercury, do we look as the most certain alterative ? In the mineral kingdom, to *iodine* certainly ;—this we have in the white sulphur water. Sulphur too, is a powerful alterative. This we have in the form of *precipitated* sulphur. We have also its combinations in the active forms of sulphate of lime, sulph. magnesia, sulph. soda, and

sulph. hyd. sodium. We, also, there find various carbonates and chlorides, all more or less alterative in their character. These alterative salts exist in the water in the most minute form of subdivision that can be conceived, or, in other words, in solution ;— they are absorbed into the mass of the circulation, course through the whole system, applying themselves as appropriate agents to diseased organs and tissues.

Professor *Mütter*, of Philadelphia, when speaking of the different ingredients of mineral waters, says, “ It is generally admitted, I believe, that when absorbed and conveyed through the economy, they have the property of changing the consistence as well as the composition of our fluids, thereby accomplishing what is called an *alterative action*.”

Dr. *John Bell*, confessedly the standard authority in the United States, on such subjects, in his admirable work on “ Baths and Mineral Waters,” bears the following emphatic testimony to the virtues of the saline ingredients in mineral waters. “ When taken into the stomach or intestines (mineral waters) have a double operation, the one common, and generally uniform, depending on their basis, or their pure watery vehicle ; the other proper and peculiar, *being the effect of their saline or mineral substances held in solution*.” The same author continues to remark, “ that the small proportion of foreign ingredients in

mineral waters, compared with the quantity of the same substances prescribed in medical practice, has created surprise in the minds of some, and incredulity in others, at the alleged efficacy of the former, when the latter, in so much larger doses, has been attended with comparatively trifling results. In reply to this it is only necessary to remind my readers of a few tolerably familiar principles in physiology and therapeutics. First, we know that the action of many remedial agents, chiefly of the stimulant and narcotic tribes, is primarily and almost exclusively exerted on the stomach, and by sympathy on the rest of the system. Solids, vegetable and metallic, in small bulk, and taken without much dilution, are nearly equally local, in their first effects, with the additional application to the surface of the intestines, but in either case their action is diffused by the same law of sympathy. In the second place, as the whole mucous surface of the stomach and intestines has this great sensibility to the impression of ingesta of every kind, especially those of a remedial nature, it is very obvious that the sensations produced by these means will be active, and their diffusion through the system by nervous agency or sympathy prompt and general, in proportion to the extent of the surface acted on. Now, mineral waters taken usually in considerable quantity, so as to fill the stomach, and pass promptly into the intestines, are so applied to these parts, as to enable their *saline* and *metallic* ingredients to act on almost the entire surface of the



digestive tube, and of course to produce all the effects which we could desire from such ingredients; effects not to be expected from them, even though in larger quantities, when applied but to a few points, or limited extent of surface. Finally, the experiments of late years have most satisfactorily established the fact of the *absorption* of various substances, nutritious and medicinal, and above all, fluids, by the veins of the stomach and intestines, as well as by the lacteals, without, in many cases, those substances losing their distinctive character:—nay further, that the peculiar and specific action and effects of the various agents, are as operative when injected into the veins as when taken into the stomach.

It is then hardly necessary, after such preliminaries, to draw the inference in which most readers will have anticipated me; namely, that the absorption of the mineral water, drunk in large quantities, must be prompt and abundant,—and consequently that the *different ingredients of which the fluid was the menstruum, being thus thrown into the circulation*, will produce varied and decisive results, such as could not be expected from any other mode of administration.”

Dr. Bell, after laying down the positions we have just quoted, makes this additional reflection upon the subject, which we most heartily commend to



such as form hasty theories and opinions, as to the virtues of mineral waters; and we will add, as to the virtues of the *different ingredients* of mineral waters, "*that it is only by multiplied facts, that is, by experience of its use, that we can speak positively of its virtues.*"

Had the "Proprietor of the Red Sulphur" such experience in the use of the white sulphur water? Had he any experience at all in its use, when he boldly stepped forward to assert positions which, as we have now abundantly shown, are clearly and triumphantly refuted by the standard authorities upon the subject?

But if any should think proper to dissent from the distinguished gentlemen just quoted, and to regard the saline ingredients as inefficient, while all power is ascribed to the gas; we would respectfully ask such, how we are to account for the efficacy of the numerous *saline* and other waters which contain no sulphuretted hydrogen gas, and many of them no gas at all different from common water? How, upon this exclusive gaseous theory, are we to account for the celebrity of the Seidlitz, in Bohemia, or Cheltenham, Tunbridge, Brighton, or Bath, in England, or Harrodsburg or Saratoga in the United States?

To contend that the saline ingredients of a mineral water may not be *alterative*, especially a water so

rich in alterative salts as the white sulphur, is to close the eyes against the most obvious truths, and to disallow and repudiate well established principles in medical philosophy. Hence, it will be seen that it is Mr. Burke's theory, not ours, that is in "direct opposition to all experience and the discoveries of science."

But Mr. B. denies that it has been generally admitted, that the "medicinal properties of the white sulphur water reside *mainly* in its solid contents." We re-affirm the proposition, and deny that it can be shown from facts, and not by mere assertion, that "just the contrary" is admitted. We certainly have never seen any thing written on the relative virtues of the gaseous and saline contents of this water, until the appearance of Mr. Burke's book, that did not, either directly or by inference, concede the controlling influence to its solid contents; and if Mr. B. had examined the testimony on this subject contained in our pamphlet, which was in his hands, he would scarcely have hazarded so direct a negative to our assertion.

(Mr. Burke continues, page 115,) "But Dr. M. asserts that sulphuretted hydrogen is a *nervine stimulant*. We beg leave to quote Dr. Armstrong on this subject."

Mr. B.'s readers will feel surprised on perusing his quotation from Dr. Armstrong, which immediately follows the above annunciation, and occupies four pages of his book, not to find a single sentiment or

syllable in reference to sulphuretted hydrogen as a nervine stimulant. Why, therefore, Mr. B. stated the question, and referred to Dr. Armstrong in connection with it, we are at a loss to know.

But does Mr. B. mean to assert that sulphuretted hydrogen gas is not a stimulant? Such is evidently his intention, but he does not venture upon the proof. We assert that it is a stimulant, and an *active nervine stimulant*, and the fact that it is so is well known to every individual of nervous susceptibility, who has used sulphur water abounding in this gas. Who, thus circumstanced, has not experienced from its use, headache and general nervous excitement, followed often by drowsiness, such as we witness from an opiate?

*Turner*, in his *Chemistry*, now the text-book in some of our medical schools, makes the following remarks upon the qualities of sulphuretted hydrogen gas: (page 244,) "Sulphuretted hydrogen is very injurious to animal life. According to the experiments of Dupuytren and Thenard, the presence of 1.1500th of sulphuretted hydrogen in air, is instantly fatal to a small bird; 1.800th killed a middle sized dog, and a horse died in an atmosphere which contained 1.150th of its volume." The sulphuretted hydrogen in the White Sulphur Spring is speedily fatal to all animals when immersed in the water, even for a short time; frogs survive but a few mo-

ments after being put in the spring; fish, in two minutes after their immersion in the water, manifest entire derangement, with great distress, and uniformly die in less than three minutes. These fatal effects of this article are the result, we are aware, of inhaling it into the lungs, and not of its reception into the stomach; but must there not be an *active* and, consequently, a *stimulating* effect in the operation of an agent so potent in its influences? We consider sulphuretted hydrogen gas as unquestionably a nerve stimulant as opium: but we know, that like opium, it sometimes produces secondary effects upon the economy which are relatively sedative. But because opium produces those secondary effects, do we come to the conclusion that opium is not a stimulant? We could do so with the same propriety that we can urge that sulphuretted hydrogen gas is not a stimulant.

(Mr. Burke continues, page 118,) "Whilst he (Dr. M.) asserts that the water is as good, nay, better, without its gas, he tells us that it is the gas alone which imparts to the white sulphur water its sulphuric smell and taste. He (Dr. M.) recognizes the presence of sulphur in no other form in the water—he acknowledges that the gas escapes wholly by exposure to the air, and yet he recommends as sulphur water, that which is no more the same article it once was, than any plain well water that may be obtained in the same geological district."



Here is a tissue, so broadly and so palpably misrepresenting our opinions, and so obviously calculated to mislead in relation thereto, that we cannot pass it over without correction. Now we never have asserted, as a *general principle*, that the white sulphur water is "better" without its gas. We believe it better only in such cases as we have heretofore designated in this review. We do assert that it is the "*gas alone*" which imparts to the water its *sulphuric smell and taste*. Does Mr. B. mean to deny this? With the slightest acquaintance with the subject, we are persuaded he will not do so. But, says Mr. B., we recognize "the presence of sulphur in no other form in the water." Now is this really true, that we "*do not recognize the presence of sulphur in any other form in the water,*" but in that of its gas? Let our recorded sentiments speak on this subject. In our pamphlet, from which Mr. B. quotes our opinions upon other subjects, is to be seen, standing out in bold relief, the following *analysis* of the white sulphur water by Professor Rodgers, and which we publish in that pamphlet as the authority upon which we rely.

(Pamphlet, page 10.) "The solid matter procured by evaporation of 100 cubic inches of the white sulphur water, when dried at  $212^{\circ}$ , weighs 63.35 grains. This consists of

<i>Sulphate of Lime,</i>	Chloride of Calcium,
<i>Sulphate of Magnesia,</i>	Per Oxyde of Iron,
<i>Sulphate of Soda,</i>	Phosphate of Lime,
Carbonate of Lime,	Sulph. Hydrate of Sodium,
Carbonate of Magnesia,	Organic Matter,
Chloride of Magnesium,	PRECIPITATED SULPHUR,
Chloride of Sodium,	Iodine.

The gaseous matter consists of  
 Sulphuretted Hydrogen, Nitrogen,  
 Carbonic Acid, Oxygen.

Here it will be perceived, that in addition to the *sulphuretted* gas, *three different sulphates*, and PRECIPITATED *sulphur* itself is "recognized."

If the above exhibit of testimony, so direct and conclusive, convicts Mr. B. of misrepresenting our opinions upon this important subject, then his *classic* allusion to the "half loaf" which immediately follows, must fall to the ground, and his candor as an annotator must fall with it.

*Requiescat in pace.*

Mr. Burke concludes his review of our opinions by noticing in the following most extraordinary manner, the *testimony* which we exhibited in proof of the correctness of *our* "theory." The necessity of getting clear of the force of that testimony before he could shake the firmness of our positions, was clearly

perceived by him: and as he could not assail the respectability of the gentlemen testifying, he very modestly attempts to do away their testimony by asserting that they did not understand the subject on which they were testifying: that they did not know the difference between two plain English words: that forsooth they had mistaken *aperient* for alterative. Hear him!

(Mr. Burke, page 119.) “Before we quit this subject, we desire to say a word respecting the certificates given by gentlemen, many of whom we know and respect, to Dr. Moorman. They no doubt believed what they stated to be correct. They meant to state that the *aperient* quality of the water was not impaired by the loss of its gas, but probably increased, in which we perfectly agree with them: but those of them who have used the word *alterative*, have probably used it as synonymous with mildly purgative, and have therefore said more than they intended.”

Intelligent, literary gentlemen, several of them physicians of high character, “meant to state” the opposite of what they did state! Can our author be in sober earnest in making such a declaration in relation to such gentlemen? And does he for a moment suppose that the public will accord to him a better understanding of what those gentlemen “meant to state,” than they possessed themselves? But

it is passing strange that any doubts should have lingered in the mind of our author as to what was "meant to be stated," after reading the following paragraph which occurs in Dr. Johnston's\* letter, which constitutes a portion of the testimony which he had under review :—"Its course of action, says Dr. Johnston, at the Springs each summer was as follows :—A few glasses before breakfast always acted freely on the BOWELS; before dinner, and at night, when I always drank it freely, its action was that of a diuretic,—a tonic and ALTERATIVE action were *plainly* and *sensibly felt*, although of course not so sensibly exhibited. *When I resumed the use of the water in November, precisely the same results obtained, following the same order.*"

Here, it will be perceived, this intelligent physician draws a clear line of distinction between the action of the water upon the *bowels* and its *alterative* action, leaving not even a loop upon which to hang a doubt as relates to what he "meant to state."

Mr. B., in the paragraph just quoted from his book, *fully admits the fact*, that the APERIENT quality of the white sulphur water is *increased* by the loss of its gas. This is an important admission on the part of the "Proprietor of the Red." For many years *we* have contended for the increase of the *aperient*

\* See Dr. Johnston's letter published entire in pamphlet, p. 6.



quality of this water after its gas has escaped: this opinion, with us, is the result of long and careful observation: the public are now convinced of its correctness, and Mr. B. is only keeping pace with public sentiment by his admissions on the subject. In making this admission, however, he virtually makes another, which we suppose he did not design to do, namely, that the practice of using the *ungaseous* water must, now and then at least, be correct, because the *purgative* quality of the water is thereby increased.

Upon this admission of Mr. B. a very natural and interesting question arises: why is the water more *aperient* after it has parted with its gas? We allege that this arises chiefly from the fact that the gas in question is a *nervine stimulant*, and to some extent a soporific; and that, in virtue of these influences, it delays the purgative action of the water.

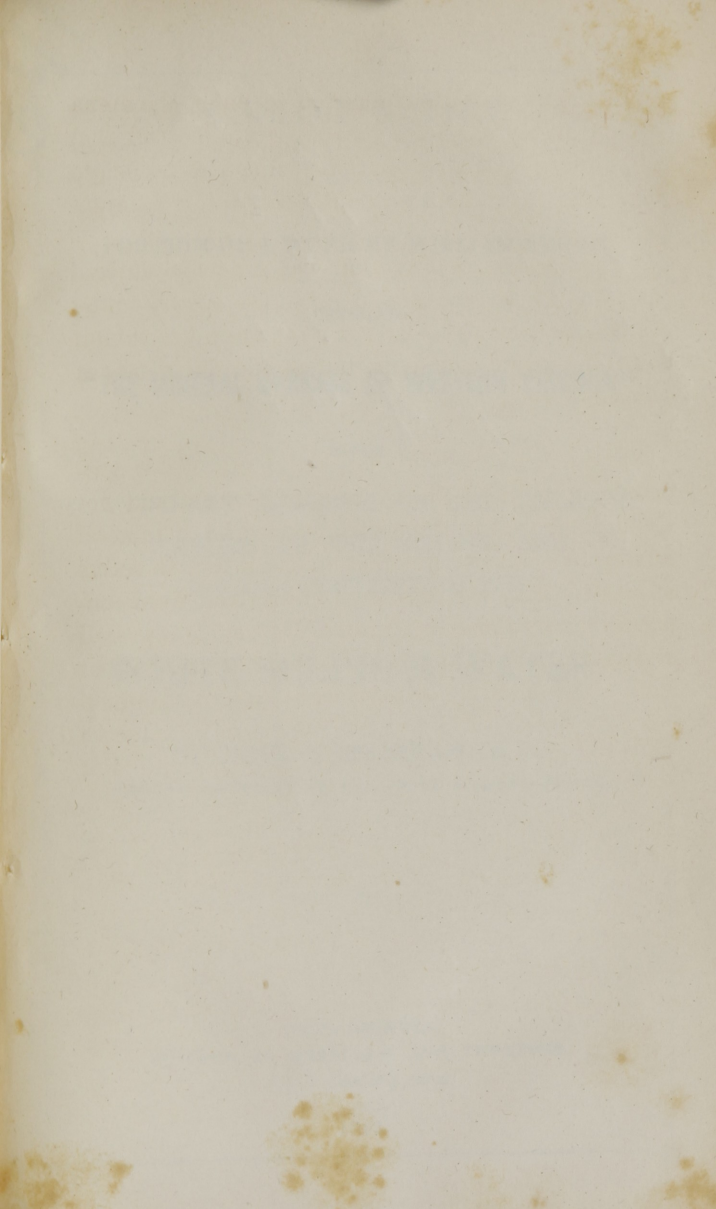
If a better explanation can be given of this interesting fact, so fully admitted by our author, we will be pleased to receive it, as we earnestly desire, in investigating the character of the water, to arrive at correct conclusions from correct premises.

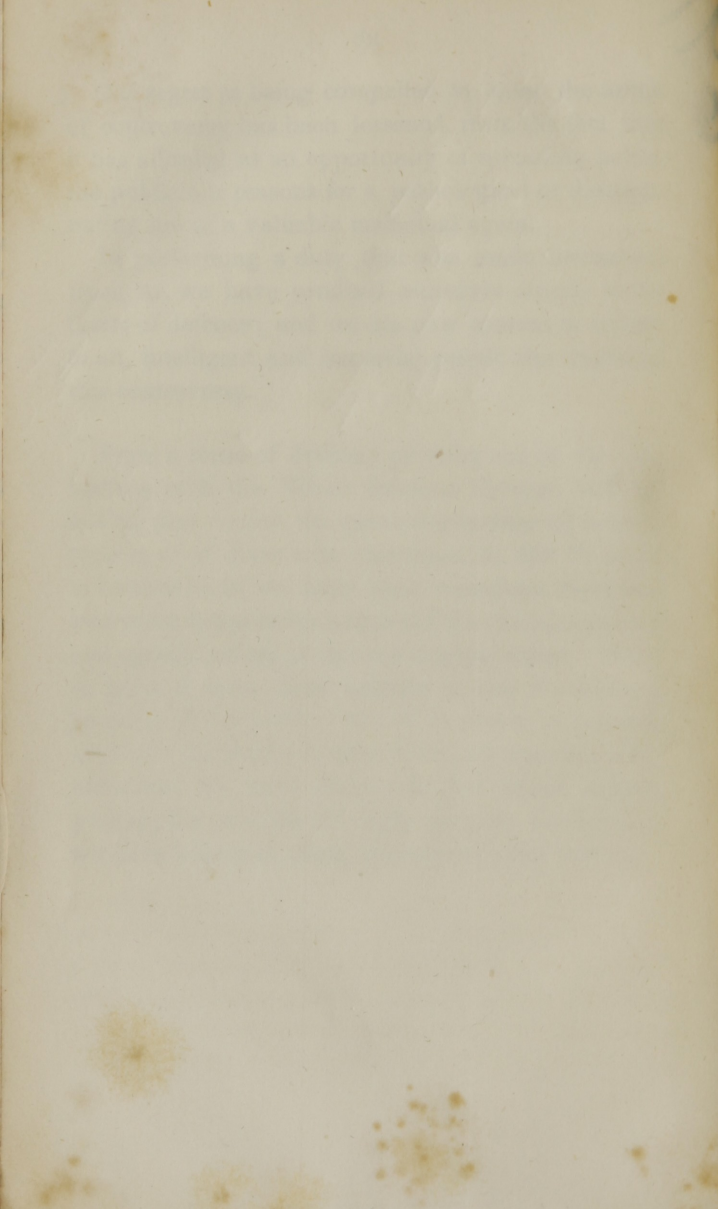
We have thus concluded all that we have thought necessary to say in relation to Mr. Burke's attack upon us as a man and a physician;—an attack as unprovoked as it was illiberal and unjust.

Our regret at being compelled to enter the arena of controversy has been lessened, from the fact that it has afforded us an opportunity of spreading before the public our reasons for a pathological or discriminating use of a valuable medicinal agent.

In performing a duty that was made incumbent upon us, we have confined ourselves strictly to the limits of defence; and we are now content to submit to an intelligent and impartial public the merits of this controversy.

From a sense of delicacy growing out of our connection with the White Sulphur Springs, and not feeling that we are the peculiar guardian of mineral waters, or of those who visit them, as Mr. B. seems to believe he is, we have been restrained from controverting his peculiar notions of the *modus operandi* and specific effects of the *red sulphur water*. What *he* has said upon these subjects is now the common property of the public; and of its merits or demerits we leave the public to form their own opinion. For ourselves, we have done with the whole subject, perhaps for ever, for we have as little fondness, as we have leisure or talent, for controversial writing.







A BRIEF NOTICE

OF A

PORTION OF A WORK BY WILLIAM BURKE,

ENTITLED

"THE MINERAL SPRINGS OF WESTERN VIRGINIA."

WITH

PRELIMINARY REMARKS ON THE RELATIVE  
VIRTUES OF THE SALINE AND  
GASEOUS CONTENTS OF THE

WHITE SULPHUR WATER.

BY JOHN J. MOORMAN, M. D.

RESIDENT PHYSICIAN AT THE WHITE SULPHUR SPRINGS.

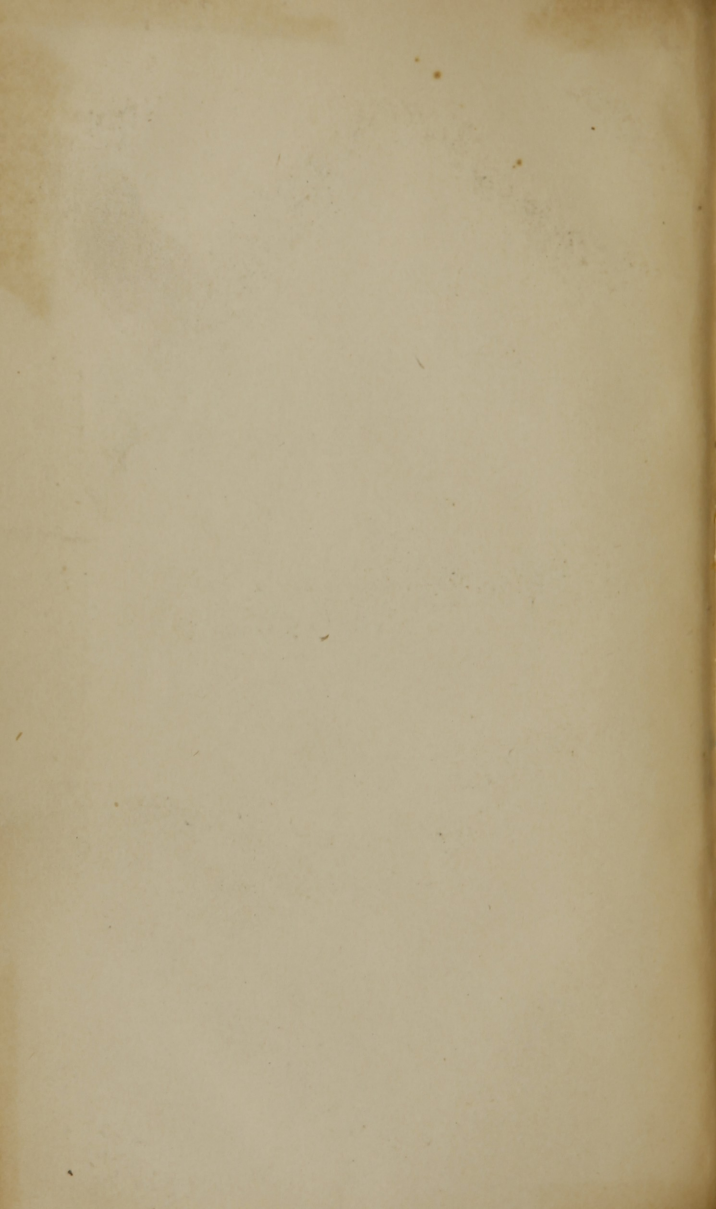
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