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ANALYSIS  
1844**

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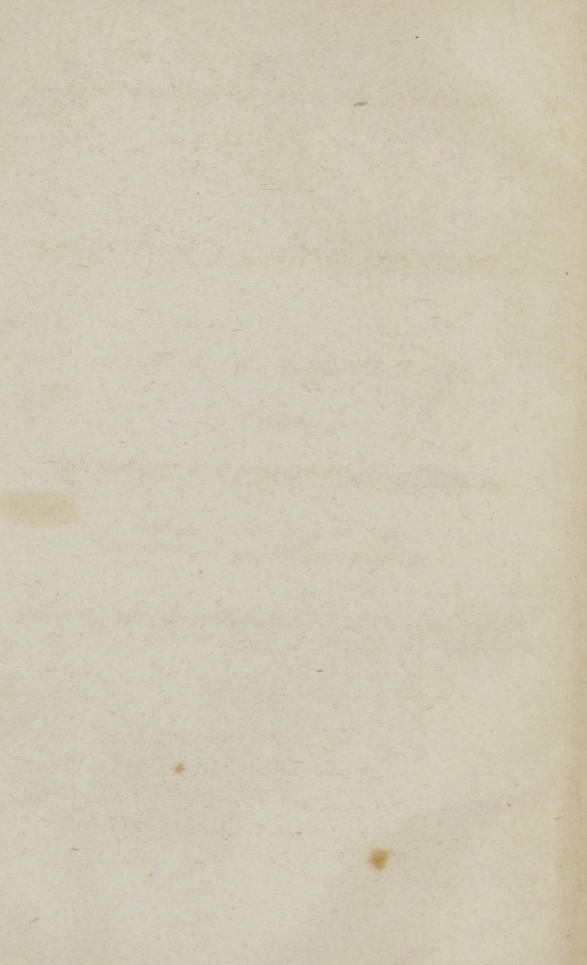
16 ANNEX

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Health Reports

No. 25289

Thos P Cushing  
Sacketts Spring  
3 August 1844



A

HISTORICAL, CHEMICAL AND THERAPEUTICAL

ANALYSIS

OF THE

PRINCIPAL MINERAL FOUNTAINS

AT

SARATOGA SPRINGS;

TOGETHER WITH

GENERAL DIRECTIONS FOR THEIR USE.

BY R. L. ALLEN, M. D.,  
RESIDENT AND CONSULTING PHYSICIAN.

“The earth is full of treasures, and he is a fool who heeds them not.”

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SARATOGA SPRINGS:

B. HULING.

NEW-YORK:

W. H. GRAHAM, 160 NASSAU-ST.

1844.

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# CONTENTS.

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	Page.
Introduction,.....	5
History of the Springs, .....	7
High Rock.....	14
High Rock Spring,.....	17
Flat Rock Spring,.....	19
Congress Spring,.....	20
Hamilton Spring,.....	27
Columbian Spring,.....	29
Putnam's Congress,.....	30
Iodine Spring,.....	32
Pavilion Fountain,.....	34
Benedict's or Red Sulphur Spring,.....	36
White Sulphur Spring,.....	38
Pharmaceutical history, .....	43
Chloride of Sodium,.....	44
Carbonate of Soda,.....	46
Carbonate of Magnesia,.....	47
Carbonate of Lime,.....	49
Carbonate of Iron,.....	51
Iodine,.....	53
Bromine,.....	54
Sulphate of Lime and Magnesia,.....	55
Carbonic Acid,.....	55
Depuration,.....	58

Bathing,.....	60
Bilious diseases,.....	62
Alterative use of the water, .....	65
Gravel,.....	66
Chronic Rheumatism,.....	66
Phagedenic ulcers,.....	67
Cutaneous diseases,.....	67
Scrofula,.....	67
Chlorosis,.....	68
Phthisis,.....	70
Geology,.....	71



## INTRODUCTION.

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IN 1833 I became a resident of this village, and an associate in business with the late and much lamented Steel ; whose high professional attainments, and many social virtues, greatly endeared him to all who employed him as a physician, or knew him as a friend.

During each subsequent year, my attention has been called particularly to the effects of these mineral waters, on the great variety of invalids, who annually visit them in pursuit of health.

As there has not been a uniform analysis made of the principal mineral fountains here since the one by Dr. Steel ; some fountains of importance having since been added, and old ones materially altered by additional and complicated tubing since the Doctor's death ; it became desirable to give them all a uniform examination. As no one appeared to do this, I have undertaken the task, and the result is

respectfully submitted to those who are particularly interested in a faithful description of the fountains most used at the present time.

Should no other result follow this investigation, it will at least enable me to prescribe them with more precision than I could otherwise have done; which will be an ample compensation for the time and expense necessarily sustained in their analysis.

The pressure of professional duties on my time has prevented me from analyzing all the mineral fountains, and must also be an apology for any imperfections in what I have accomplished.

It is intended, at a future day, to extend my investigation to the other mineral fountains in the vicinity, and to repeat the experiments on those already analyzed.

THE AUTHOR.

Saratoga Springs, June, 1844.

## ALLEN'S ANALYSIS.

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### HISTORY OF THE SPRINGS.

THE early aboriginal history of these waters is veiled in the dark obscurity of the past, without the dim light of a traditionary legend even, to perpetuate to subsequent civilization the savage notions of their mysterious origin, and healing virtues. No song is sung, no chant is heard, no symbol is designed and treasured up, by which they are to be transmitted to future time; but all is dark, silent and mysterious, as the subterranean laboratory in which they are so secretly yet copiously generated.

But Nature is unlike man. She is fully conscious of the present, and carefully mindful for the future. She truly records each event while it is present, and when through the corroding influence of time it has faded away, there remains an unerring history of the thing or event as it was, written by the sure finger of Nature, on her enduring tables of stone.

As in the transition and secondary formations of our globe, is written a description of organized and animated existence which does not now appear, but has long since passed away and received

the defacing influence of centuries upon centuries ; yet notwithstanding her minute descriptions, they are as legible as those of yesterday, and as easy of acquisition as the language of our fathers or the habits of our sires. And by raising leaf after leaf of this stupendous volume, man is enabled at the present day to read the history of the distant past ; to merge himself amidst a luxuriant garb of verdure, myriads of swarming insects, shoals of fish, flocks of birds and herds of animals, which are unknown in these degenerate days, save in the records of nature. So in the rocky pyramid which encloses and protects the High Rock spring, is written by the same unerring finger, a volume replete with its past history, and giving a clear and full description of the origin, dependencies and sequences of this primeval fountain.

This peculiar monument of stone, rising several feet above the surrounding surface, in these deep and solitary wilds, and differing so essentially from the adjacent strata of rocks, which are so boldly and imposingly elevated in its rear ; and belching from its perforated summit lively, sparkling mineral water, palatable to both man and beast, could not help exciting the curiosity and observation of these wild men of the forest.

Here the herbivorous animals of the American wilds found supplies of salt and saline water, and

the marine birds of passage would congregate, at different seasons of the year, to slake their thirst and supply themselves with those saline substances, which enter so liberally into their corporeal parts, and are so necessary to preserve their health, and fully to develop their physical proportions.

These circumstances, together with the adjacent liberal lakes, rivers and mountain streams, richly stored with fish; and the neighboring ravines filled with beaver and other kindred quadrupeds; necessarily made these plains and their vicinity the only eligible hunting grounds in the whole country, and would introduce the savage man at an early period of time, to these peculiar waters. And no sooner would his eye rest on this rock-bound fountain than he would recognize in it an anomalous specimen in nature; a pulsating rock; a breathing stone; laving its petrified shoulders with troubled water from its bosom, and with every throe respiring air, which might impart health and vigor to his stomach, but death to his lungs.

The high-toned superstition of the red man would, from the first moment of inspiration, rivet his mind permanently to this stony monument. He would behold its beauty with pleasure, and could meditate on the splendid phenomenon with deep reverence to the Great Spirit for such an inestimable gift. Their laborious exercise in the chase,

their diet of fresh meat, and the earnest demand on the part of their systems for salts to supply the economy of their own bodies, would cause such a zest and relish to their potations from the fountain, as cannot be realized by any man with his acquired tastes and appetites, incident to the higher state of civilization. And under such imposing circumstances, the mineral waters would soon become the sole beverage of the hunter in a state of health, and his great and almost only remedy in disease.

In the twofold capacity of a luxury in health and a cure or a palliation in sickness and disease, it would very soon enlist their most rigorous observation and indefatigable scrutiny. And they would thereby be enabled to judge with precision of its remedial abilities, and could prescribe it with utility and comfort to their fellows, who might be laboring under the wasting influence of disease.

But the year 1767 formed a new era in the history of these fountains. It introduced them with many of their savage uses to the whites, whose spirit of contention and enterprise had caused a general survey of the American wilds, and planted military posts and primary settlements along the shores of the principal lakes, and the banks of the main rivers of the country. During this year Sir William Johnson, of revolutionary memory, became a subject of disease, and a participator in

pure savage hospitality and skill in the remedial use of the water. Being beyond the reach of common means of relief, and unable to relieve himself, he applied to his red friends for counsel and assistance. They advised the water of the High Rock spring, as the means within their reach and knowledge, best calculated to furnish the required aid. And as was customary with them, they carried out their precepts in their practice. They placed him upon a litter, and bore him upon their shoulders from Johnstown, Montgomery county, via Ballston lake to the High Rock fountain—thereby giving the very best evidence in their power, of their knowledge of, and confidence in the prescription which they had made their white friend. And there at the fountain head, they administered to him the sparkling water from the Rock, to his perfect relief and cure.\*

From Johnson the knowledge of his cure was communicated to all the surrounding settlements of whites; who in turn visited the spring and used it as a remedial agent with corresponding success. From the time of Johnson's celebrated visit, these springs have been annually visited by the wise, the curious, the diseased, and the fashionable—every year increasing the number of strangers above that which preceded it—until it has become one of

\* Steel's Analysis.

the most celebrated and fashionable watering places on the globe.

During the first quarter of a century after the discovery of these waters by the whites, it is true, they were known to differ very essentially from the common water of the country. Their cathartic and diuretic effects had been repeatedly realized, personal experience had often tested their remedial agencies; and as by one voice, all who had known them acknowledged their great therapeutical powers. But why they exerted their sanative influences over their diseased organs, and gave them health for disease, buoyancy of spirits for dejection of mind, vigor for debility, they knew just as little as they did about the pathological state present in the cases which were cured, or failed of relief when the water had been used. But as soon as they began to be prescribed by the regular physicians, it became obligatory on them to examine thoroughly into their chemical composition, and the grade and kind of diseases applicable to their administration.

The first advance of this kind which was made, was by Samuel L. Mitchill of New-York, who demonstrated the existence of carbonic acid as a constituent of these mineral waters. This demonstration was made in 1787.\* Six years subsequent to

\* Steel's Analysis, p. 40.



this discovery, Valentine Seaman of New-York city, a gentleman of high professional attainments and great worth, confirmed the experiment of Mitchill, and proved in addition the existence of carbonate of lime, magnesia, soda, iron, and chloride of sodium, and published a small work treating of the mineral waters of Ballston and Saratoga.\*

Some twenty-three years subsequent to Seaman's publication, William Mead of Philadelphia re-analyzed these waters, and also published a work on the same.

In 1817, John H. Steel analyzed the waters of Ballston and Saratoga, and discovered the presence of Iodine. He also published the results of his analysis, which was an able work, and caused the Doctor great labor; but by so doing he rendered the public an essential service. About the same time Dr. Usher of Hartford also discovered the existence of Iodine in these waters, and published the discovery in the American Journal, No. 1, Vol. 16.

This substance was and still is considered as a most happy constituent of the water, and accounts for remedial effects produced by their use, which previously could not be explained.

\* Valentine Seaman's Analysis of Ballston and Saratoga mineral waters.

In 1830, A. A. Hays of New-Haven proved the existence of Potash and Bromine in the water of Congress spring.

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## HIGH ROCK.

THIS Rock is the greatest curiosity of our section, because it is entirely unique. To it we are to look for the primeval history of mineral water in this valley.

In the pages of this natural volume we are referred to a period of time when no other mineral fountain made its appearance here ; when the water within the rock rose to the top, and overflowed its summit ; when day after day, and year after year, rich and copious depositions of carbonated earths were made from the mineral water before it finally passed for ever away into the valley beneath ; when a subterranean pressure vastly superior to what now exists, was present ; when water richly laden with gases and minerals, free and combined, were bursting like the thermal springs of Iceland into light, and like them struggling to be free ; when the phenomena existed which formed this beautiful specimen of calcareous tufa ; these and vastly more are only to be found in this

volume of stone, formed by the unerring hand of Nature.

As the rock increased in height, the pressure in the interior of the fountain increased also; and when the column of water which composes the subterranean spring had been elevated to the height of the rock, the pressure became so great that the walls which had previously confined the fountain gave way, a new outlet was made, a new mineral fountain was produced, and the water in the original spring immediately fell to the height of the new fountain.

This new spring, I doubt not, was the Flat Rock. About the mouth of it a calcareous deposition is found, in all essentials similar to the High Rock stone, but from causes operating on as well as under the surface of the earth, many outlets were formed, by which the mineral water passed from its general reservoir, and the many mineral fountains existing in this valley, for the space of some twenty miles in extent, became subsequently established.

And the reason I would give for believing the Flat Rock fountain to be the second one formed, is that a rock is found about its mouth in all essentials resembling the High Rock, and that no other fountain, in the whole length of the valley, has produced any thing like it; while the waters of the

several springs hold such substances in common as compose these two stones.

And in this peculiar curbing, Nature has given us a perfect sample of a tube for securing the mineral water from the fresh about it, and to conduct it securely from all intrusion above the surface of the ground.

The circumference of the High Rock at the surface of the ground is twenty-five feet.

Circumference at the top, two feet eight inches.

Diameter of the opening in its top, ten inches.

Distance from the top of the rock to the water within, is two feet eleven inches.

Hight of the column of water within the rock above the surface of the ground, one foot.

Depth of the fountain, ten feet.

One hundred grains furnished the following substances on analysis :

Carbonate of Lime,	grs. 41.000
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Carbonate of Magnesia,	30.166
------------------------	--------

Carbonate of Iron,	13.501
--------------------	--------

Silex and Alumina,	15,333
--------------------	--------

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100.000

These substances vary very materially in different parts of the rock.

## HIGH ROCK SPRING.

THIS spring was, beyond a question, the primeval fountain, and the one mainly used by the aborigines. The other springs, if they existed during the early savage settlements about them, would have been less pure, have contained more fresh water, have been more incorporated with the vegetable mould and decaying foliage of the forest than this; for it is so admirably secured by Nature against every thing foreign to it. This fountain receives its name from the peculiar stone which encloses its mouth.

To this fountain the Indian resorted for relief when laboring under disease. Here he brought his sick friends, and by the use of the water relieved them from disease.

For many years after its introduction to the white man, it was the great source of health to the afflicted among them, even as much as it had before been to their savage neighbors; and it still retains its strength and early purity.

Perhaps there is no mineral fountain either here or at Ballston, which has been so uniform in every particular as this. Nature did for it what man, from necessity, has been compelled to do for the other fountains here, viz. carefully to tube it. And while the artificial tubes, and various other im-

provements which from time to time have been made about the other fountains, have uniformly been subject to decay, and were almost annually to be renovated, or the several springs would have been lost; this spring, having had Nature for its architect, needed no repairs.

It is an excellent tonic water, and as an alterative to be taken during the day in small quantities, it is a very valuable spring; and many invalids every year since it was first visited by Sir William Johnson, can bear testimony to its remedial powers. And at the present day it would be much more used than it is, were the large hotels of the village situated nearer to it.

The temperature of this spring was  $48^{\circ}$ , the surrounding atmosphere at 0, and its specific gravity 1007; one cubic gallon of the water, in January, 1844, gave the following ingredients on analysis:

Chloride of Sodium,	grs. 190.233
Carbonate of Magnesia,	62.100
Carbonate of Lime,	71.533
Carbonate of Soda,	18.421
Carbonate of Iron,	4.233
Hydriodate of Soda,	2.177
Silex and Alumina,	2.500
Hydro-Bromate of Potash,	"

Solid contents in one cubic gallon, 351.197

Carbonic Aid,	331.666
Atmospheric Air,	2
	—————

Gaseous contents in a gallon, 333.666

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## FLAT ROCK SPRING.

THIS fountain has been ruined for all practical purposes by the deep and liberal excavations made in order to establish the Pavilion Fountain; and in all probability cannot be again restored, but at the expense of that spring.

From the most remote civil history of the country this fountain was seen sending forth its sparkling waters, and so continued until it was trespassed on by the above mentioned excavation.

Its temperature is uniformly 48°, but its specific gravity is now but 1006, and the gas proportionally diminished. This renders its taste very insipid, and much impairs its healing virtues.

It is not used at the present time.

## CONGRESS SPRING.

THIS fountain was first discovered by a hunting party in the summer of 1792. One of this party was *John Taylor Gilman*, who then was or had been a member of the United States Congress. Gilman had a brother who was also one of the party at the time of the discovery; and the credit of first discovering this valuable spring has been awarded to them. But which of the brothers noticed it first cannot be decided at the present time, neither is it important. It was then issuing from an aperture in a calcareous rock, which faced the small stream of fresh water passing by it to the main brook of the valley. This little rivulet receives the surplus water of our Saratoga mineral springs, and passes via Owl pond, Saratoga lake and Fish creek, to the Hudson river.

The novel appearance of the spring as it flowed from the rock attracted their attention, and induced them to apply such tests of its qualities as were within their reach. After their examination they came to the conclusion that it was a very extraordinary fountain, containing all the constituents of the other mineral springs here, and perhaps other properties beside; or at least the same of the other fountains in larger or different proportions; and in



either case, it was in all probability a very extraordinary fountain. And as they believed it possessed more or less of every constituent which enters into the composition of the other mineral fountains here, they very appropriately made selection of the name that it now bears, viz.: CONGRESS SPRING. Subsequent experience has most conclusively established the truth of their conclusions, thus early and perhaps hastily formed, and the applicability of the name decided upon.

It may be said of it in much verity, that it is the Congress of the mineral fountains of this county, if not of the Union, or the world. In it are found the most important ingredients which any where enter into the composition of mineral waters, which are resorted to by invalids in pursuit of health on any portion of the globe. And no place or country is there so remote, either on this continent or the other, that it does not send representatives to partake of its beautiful and exhilarating water as it flows from the fountain.

After its discovery and early notice it rose rapidly in the estimation of the public. And possessing as it did more saline substances, a larger quantity of carbonic acid in a latent or combined state, and more of those substances only soluble in that menstruum than were present in the other mineral fountains, it was most amply qualified to sustain

the high reputation which was so early awarded to it. It has most pre-eminently done it, and I have no doubt will continue to do so, the many Saratoga powder and the many Saratoga water-makers in most of the large cities of the Union to the contrary notwithstanding.

For some years after its discovery and use, the water was only caught in tumblers as it flowed in a small stream from the fissure in the rock; and for the purpose of carrying it out from the rock an elder tube was thrust into the aperture, when the water passing through the tube, was thereby more easily obtained in the drinking vessels of the day.

Some time after this spring was discovered, Mr. Gideon Putnam, a gentleman of uncommon forecast and enterprise, and whose name is most intimately connected with the early history of the village, discovered bubbles of gas rising through the water in the brook near the rock, which gave issue to the much admired spring. Being anxious to increase this valuable water, and improve the facility for obtaining it, he turned the brook from its time-worn channel, and made a large excavation to the depth of several feet, and succeeded in striking the identical vein of mineral water which had supplied the spring issuing from the crevice in the rock. But no sooner had he done

this, than the water ceased flowing from the rock, and did not resume its exit there again until the vein had been secured at the bottom of the shaft, and the earth refilled about the tube, when the water rose within it to the altitude of the aperture in the rock, and the water made its appearance again at its original outlet. This failing of the original spring when they struck the mineral water under the channel of the rock, and its restoration again when the water rose in the tube to the height of the original outlet from the rock, convinced Mr. Putnam that he had secured the water of the Congress spring within his tube.

Although very imperfect in itself and in its adjustment, this tube was continued until the fall of 1842, nearly or quite forty years, when the spring was re-excavated by Dr. John Clarke, its present owner, to a much more liberal extent than had been previously done by Mr. Putnam. All the old logs and alluvial deposits were removed for some thirty feet about the fountain, a new tube substituted, and then most carefully and minutely packed about for many feet with red clay. In addition to this, cross ditches were made which intercept the fresh water, and convey it aside of the spring to the adjacent brook. In this way the water has been most perfectly secured from every thing foreign to it; and I think I hazard nothing in saying that the

Congress water has never been so good since it first left the rock by reason of Mr. Putnam's excavations, as it has been since the tubing by Dr. Clarke in 1842. And the evidence is that its specific gravity has increased from 1009.7 to 1012, its solid contents from 597.743 to 611.892, and its gas from 318 to 386.138 per gallon of the water. And this difference is beyond a doubt caused by the new tubing more thoroughly securing the mineral water from the fresh, which is about it upon every side, and in many places was found pressing directly into the spring through the imperfections in the old tube, and of course much diluted the mineral water, and induced many to think the Congress spring was about to fail. But its recent adjustment has completely dissipated all these fears, and it now stands not second in quality to any period of its previous history. This is fully demonstrated, both by the analysis recently made, and by the thousands who have drank of it since its readjustment, and in every respect recognized the water of the Congress spring.

This spring is one of the most important mineral fountains of our place. The amount of it bottled and sent abroad, drank at the fountain by visitants, or used by the inhabitants of the village, proves it second to no other fountain of the place, and establishes its relative value beyond all question.

As a cathartic it is very much used, and for this purpose is usually taken in the morning, and upon an empty stomach, when from one to three pints will operate copiously upon the bowels, unloading them of their fecal contents, and without increasing their debility, diminishing their strength or impairing their functions; but on the contrary increases the strength of the patient, improves his appetite, promotes his digestion and augments his general health.

It is also a most admirable diuretic, and very many are the renal diseases which are cured or materially benefitted by properly using it.

But as it is capable of doing much good, so it is also competent of doing much evil, if injudiciously used. And it should be remembered that the state of the system, at the time it is taken, very materially affects its operation. And invalids might with as much propriety demand a uniform appetite and relish for their ordinary food under all states of the system, as to demand that the Congress water should always taste the same, and produce precisely the same effects, without regarding the state of the body as to disease or health at the time of using it. These remarks are equally applicable to all the fountains.

The water of this fountain is the heaviest of all our mineral waters. Its solid constituents weigh

more, and its carbonic acid in a *latent* state is also rather more per gallon than either of the other fountains. But the other springs contain more *uncombined* gas than this, and without being able to make the distinction, many persons have been led to suppose the other fountains were the strongest.

One cubic gallon of this water gave on analysis in February, 1844, the following results:

Chloride of Sodium,	grs. 390.246
Hydriodate of Soda and Bro-	
mide of Potassium,	6.000
Carbonate of Soda,	9.213
Carbonate of Magnesia,	100.981
Carbonate of Lime,	103.416
Carbonate of Iron,	1.000
Silex and Alumina,	1.036
	<hr/>
Solid contents of one cubic gallon of the water,	611.892
Carbonic Acid,	386.188
Atmospheric Air,	3.261
	<hr/>
Gaseous contents of a gallon,	389.449

## HAMILTON SPRING.

THIS fountain, situate in the rear of Congress Hall, and a few rods northeast of Congress spring, was first discovered and tubed by Gideon Putnam, Esq. and afterwards re-tubed and brought to its present agreeable condition by Dr. Clarke. For the last twenty years it has been much used as an alterative ; for this purpose it was a favorite spring with the late Dr. Steel—and also as a cathartic in very weak and feeble stomachs, and where the Congress had proved too active and exhausting, even in small doses, this water would succeed like a charm.

As a diuretic, in many nephritic diseases, its use has been attended with the most happy results.

The water within the tube rises nearly to a level with the ground, and the surface of the spring is constantly agitated by a free escape of fixed air rising in alternate bubbles from the interior of the fountain. The upper portion of the tube which secures this spring appears to be imperfect, for during high water the adjacent brook sets back and its muddy water passes into the mineral spring, rendering it very turbid and uninviting. This only occurs during very heavy rains, and may be completely obviated by a proper tube.

By this fountain is situate the *Hamilton Bath-House*, an old and well conducted bathing establishment. This house is now and has been for a number of years past under the direction of Mr. Runnion Martin, who it is believed has thus far succeeded in giving very general satisfaction to those who have seen fit to favor him with their custom.

A gallon of water taken from this spring on the 1st of March, 1844, furnished me the following results :

Chloride of Sodium	grs. 290.500
Carbonate of Soda	33.500
Carbonate of Lime,	95.321
Carbonate of Magnesia,	38.000
Carbonate of Iron,	4.500
Hydriodate of Soda,	3.500
Bromide of Potash, a trace.	"
Silex and Alumina,	1.000

---

Solid contents in one cubic gallon, 466.321

Carbonic Acid,	340,777
Atmospheric Air,	2.461

---

Gaseous contents in a gallon, 343,238 cubic inches.

Temperature of the spring, 48°.



## COLUMBIAN SPRING.

THIS fountain is situate a few rods south west of the Congress spring. It is a ferruginous fountain, and contains large quantities of carbonic acid in a free state, which rises from the surface of the water in very large bubbles and causing a motion in the spring not very dissimilar to boiling water. The carbonic acid may be collected at the mouth of this spring, to any extent desirable for experimental purposes, and at any time.

This fountain contains the same constituent properties as the Congress, but differing very much in quantity. Its water is very tonic, and should be used with great caution where this kind of medicine is not decidedly indicated; but where it is clearly demanded, the large quantities of free gas, together with the iron present in it, render it a tonic water of great value in many cases of irritable stomach and weak digestive and assimilating organs. But its activity renders it important to use it with caution and subject to proper restrictions.

One gallon of the water furnished on an analysis the following ingredients:

Chloride of Sodium	grs. 270.501
Carbonate of Soda,	16.000
Carbonate of Magnesia,	45.321
Carbonate of Lime,	70.000
Carbonate of Iron,	6.000
Hydriodate of Soda,	3.000
Bromide of Potash, a trace,	-
Silex and Alumina,	1.000
	<hr/>
Solid contents in a gallon,	411.822
Carbonic Acid,	331.726
Atmospheric Air,	1.5
	<hr/>

Gaseous contents in a gallon, 333.226 cubic inches.

## PUTNAM'S CONGRESS.

THIS fountain is situate midway between Broadway and Putnam street, and nearly opposite the United States Hotel. It was discovered a long time since by Mr. Lewis Putnam, who in 1835 excavated, tubed and carefully secured it from the fresh water, and all other foreign substances about it.

It is a justly popular fountain, and is much used both by citizens and strangers, many of whom are particularly attached to it, and use it instead of the Congress, for cathartic purposes, with good success.

The water has been vended in considerable quantities every year since it has been in complete operation.

In connection with the spring is a *Bathing Establishment* second to no other in the place for commodious baths, large rooms and proper attendants. This as well as the spring is owned by Mr. Putnam, and always subject to his personal superintendence.

Temperature of this spring, 48°.

One gallon of the water furnished the following constituents on analysis :

Chloride of Sodium,	grs. 220.000
Carbonate of Soda,	15.321
Carbonate of Magnesia,	45.500
Carbonate of Lime,	70.433
Carbonate of Iron,	5.333
Hydriodate of Soda,	2.500
Bromide of Potash,	"
Silex and Alumina,	1.500

---

Solid contents in one gallon, 370.587

Carbonic Acid, 317.753

Atmospheric Air, 3.080.

---

Gaseous contents in a gallon, 320.833

## IODINE SPRING.

THIS fountain is situate in the northeast part of the village, and a few rods north and east of the High Rock.

In 1835 my attention was particularly called to the President spring, located quite near the site of the Iodine fountain. From the experiments I then made upon the water of this spring, I came to the conclusion, that if the mineral veins supplying the fountain were properly secured and protected from foreign substances, the water would in all probability bottle very well. The conclusions I had arrived at, and the reasons for them being communicated to some gentlemen of the village, they obtained a lease of the spring from Judge Walton, made a liberal excavation, secured the mineral vein by a proper wooden tube, and in it conducted the water nearly to the top of the ground. To this fountain they gave the name of Iodine spring.

Since that time it has been subject to a number of different directors, and has finally gone back into the possession of Judge Walton.

Large quantities of this water have been sold in the city of New-York, and in various towns on the sea-board as well as the interior; and some of it has been shipped to the Eastern continent. Though

comparatively a light water, it appears to be well adapted to bottling.

When taken in reasonable quantities, and subject to proper restrictions, it sits well on the stomach, without producing head-ache, as is the case with some of the other waters. It is much drunk for a morning water by the inhabitants of the village living in its vicinity; and there is no doubt of its much more general use, were it more accessible to the principal hotels and boarding houses of the village.

One gallon of the water furnished me the following ingredients on analysis :

Chloride of Sodium,	grs. 147.665
Carbonate of Magnesia,	73.348
Carbonate of Lime,	28.955
Carbonate of Soda,	3.000
Carbonate of Iron,	.900
Hydriodate of Soda,	3.566

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Solid contents in one gallon, 257.434

Carbonic Acid,	344.
Atmospheric Air,	2.5

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Gaseous contents in a gallon, 346.5

This fountain has been re-tubed since the above analysis was made, and is thought to be much im-

proved in strength, by securing one instead of two veins of mineral water, as was the case with the first tube.

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## PAVILION FOUNTAIN.

THIS truly beautiful fountain is situate in the rear of the Columbian Hotel, and a few rods south east of the Flat Rock spring. It was long since discovered, and experiments made upon the water by the late Dr. J. H. Steel. Its remoteness, however, from the bank which gave egress to the other mineral fountains in the valley, places it in the midst of a deep morass, where it makes its appearance through an alluvial deposit of some forty feet in depth. This deposit of soft alluvium made the tubing of the spring so difficult that all attempts to do it utterly failed until the year 1839. At this date it passed into the hands of Mr. D. McLaren, who braving all obstacles, at great expense of labor and time, most completely succeeded in securing the fountain, as well as bringing the deep morass about it to its highly improved condition.

This water has been much used, both at home and abroad, since 1840. The free acid of the spring is most abundant, and passes off in great quantities from the mouth of the fountain. Its wa-

ter is not so heavy as that of the Congress spring ; but the liberal quantities of free gas which is present, imparts to it, when drank, a very smart pungent taste, and induce many to think it the strongest water of the valley. They form their opinion from the effects it produces on the palate while drinking it. This smart, pungent and grateful taste, which is so characteristic of all our mineral waters here, would be enhanced by drinking them from metallic cups, instead of the glass tumblers so generally used. The reason is obvious to those who have studied the principles of galvanism.

One gallon of water taken from this fountain on the 10th January, 1844, furnished me the following constituents on analysis :

Chloride of Sodium,	grs. 183.814
Carbonate of Soda,	6.000
Carbonate of Lime,	59.593
Carbonate of Magnesia,	58.266
Carbonate of Iron,	4.133
Iodide, Sodium and Bromide	
Potassa,	2.566
Sulphate of Soda,	1.000
Alumina,	"
Silex,	1.000
	<hr/>
Solid contents of one gallon,	316.372

Carbonic Acid,	369.166
Atmospheric Air,	3.333
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Gaseous contents in a gallon,	372.499
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## BENEDICT'S SPRING.

THIS fountain is located some three miles west of Saratoga village. It is a light water comparatively, or if we speak of the ingredients common to it and the other mineral springs of our village. But it contains in addition to its carbonic acid and carbonates, sulphuretted hydrogen; which constituent, together with its associates, entitles it to more attention than it has ever received.

The owner of this spring has hitherto permitted it to remain nearly in its natural state; but it is to be hoped that his own interest, or his duty to his fellow men, will present sufficient motives to secure this valuable spring from the surrounding fresh water, and provide conveniences for bathing and other external applications of the water. Until this is done, the invalid requiring its remedial agency must seek it at Avon, Sharon, or elsewhere; and this may not unfrequently separate a pleasant travelling party. As this spring is so near our main mineral waters, we repeat the confident hope that its



present proprietor and his particular friends will not permit another season to pass by without putting it in a condition to impart comfort and benefit to those invalids who may have occasion to visit it. Sulphureous waters are in great and successful use at the present day, and if a fountain of this description can be obtained here it will be of great convenience to strangers, and a most happy acquisition to our already justly celebrated watering place.

The water of this fountain makes its appearance through a bed of coarse gravel. The temperature of the spring was  $48^{\circ}$ , mercury in the atmosphere standing at zero. Its specific gravity was 1003.5, water being 1000, the barometer standing at 30.

One gallon of this water, in its present imperfect state, furnished the following ingredients :

Chloride of Sodium,	grs. 38.876
Carbonate of Magnesia,	17.712
Carbonate of Soda,	"
Carbonate of Lime,	14.555
Carbonate of Iron,	2.000
Silex and Alumina,	1.000

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Solid contents of one gallon, 74.143

Carbonic Acid,	77.000
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Atmospheric Air,	4.000
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Sulphuretted Hydrogen,	1.000
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Gaseous contents in a gallon,	84.000.
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## WHITE SULPHUR SPRING.

THIS spring is situated on the east side of Saratoga Lake, about half a mile south of Snake Hill. Its location is in a beautiful ravine, in the middle of which runs a fine little stream of fresh water, and a few rods east of the fountain it falls into the lake. As the ravine approximates the shore of the lake it widens a little, and the south bank particularly rises very abruptly to the height of some thirty-five or forty feet above the surface of the brook.

Within some twenty rods of the lake shore a deep niche is formed in the south bank, something in the form of a horse-shoe. The bank here is almost perpendicular with its base, but a little elevated above the brook, which is within a few feet of the main bank of the ravine. At the base of this high bank and at the centre of the horse-shoe, passes out this sulphur spring; and its course to

the brook is marked by the white sulphur which is deposited.

A little has been done to obtain the mineral water free from the fresh, but it is of no consequence. But something should be done, and at once. The spring should be carefully cleared, nicely tubed, and conveniences erected for the comfort of such invalids as may need this water in the form of baths or otherwise.

In this beautiful ravine, and a few rods east of the spring, is the most practical site for a fish pond in the country. A handsome little business might be done on the farm, and with the spring, if the right kind of a man could have control of them.

It is the duty of the owners of this spring properly to secure the fountain, if they expect to realize any additional consideration in the value of their real estate on which it is situate.

It appears that the owners of sulphur springs about our village think it enough to have fountains of this character on their farms; as if they would make their proprietors independent without an effort on their part to make them even practically accessible.

The expense of properly securing both the sulphur fountains to which I have alluded would be trivial, in proportion to the amount expended in

securing the Pavilion fountain. They should not remain as they are ; as we have no others springs of their class in this vicinity.

The temperature of this spring is 48°, barometer at 30°, and the temperature of the atmosphere at zero.

Its specific gravity is 1000.5.

Sulphuretted Hydrogen, 0.5

Atmospheric Air, 4.

Silex and Alumina, three grains to the gallon.

## PHARMACEUTICAL HISTORY.



## PHARMACEUTICAL HISTORY.

THE foregoing analysis of the mineral fountains at this place furnishes the following important list of medicinal agents, to wit: Chloride of Sodium, Carbonate of Soda, Hydriodate of Soda, Carbonate of Lime, Sulphate of Lime, Carbonate of Magnesia, Sulphate of Magnesia, Carbonate of Iron, Bromide of Potash and Sulphur. And in a gaseous state the following are to be added to the above list, viz.: Carbonic Acid and Sulphuretted Hydrogen.

In the above list of mineral substances are to be seen some of the most useful and important remedial agents known to the profession at the present day. Some of them have been well and favorably known, both in pharmacy and in the arts, for a long period of time, whilst others again have not been so completely understood until comparatively a recent date; the sanative powers of them all have now been so frequently and in such a variety of ways tested, that there is no longer any doubt of their ability to cure human diseases, to eke out human life, to mitigate human suffering, and to increase human happiness, if they are properly used.

This being true, they are of course equally com-

petent of producing vast amounts of injury if improperly indulged in. For all power, if exerted, is for good or for evil according to its direction. So that which may cure may also destroy.

*Chloride of Sodium.* A knowledge of this substance may be traced to the remotest period of antiquity, and all our knowledge of a salt is derived from it; yet notwithstanding this it is not at the present day considered as a salt, but chemists of celebrity rank it among the chlorides.

The constitution of vegetative and animated nature seems formed to suit the physical developments of the globe. And those substances which are most indispensable to the production of vegetation or animalization are most bountifully supplied, so they appear to each other as cause and effect. Such is the case with heat, light and electricity; such is the case with air, water and soils; and such is the case with minerals, acids and salts in their bearing on the developements of the vegetables and animals of the globe.

Chloride of sodium is a substance most bountifully supplied by nature, and its existence in these waters was demonstrated in 1809, by Dr. Valentine Seaman of New-York city. The ocean, seas, and lakes are most liberally supplied with it; the mineral fountains of both continents hold large



quantities in solution; while Cordova, Poland, Russia, Germany, and America furnish mountains of fossil salt, beside the many salt licks and springs in different parts of the country. Its liberal existence in the serum of the blood, in the renal excretions, in the synovial fluids, in the bony structures, and in the mucous and biliary secretions, show it to be an important ingredient in both the solids and fluids of the human body; and no doubt plays an important part in healthy digestion and assimilation of our ordinary food, accompanying it through its stages of digestion and appropriation to the uses and necessities of our bodies.

As an antiseptic this substance is the one in most common use at the present day, and its ability to preserve fish, flesh or fowl for long periods of time, is well known to the veriest tyro in domestic arts. By it animal substances of the most putrescent character may be preserved for a long period, at any altitude or latitude accessible to man. In 1805 there was a piece of beef in the Leverian Museum, London, in a most perfect state of preservation, which was a remnant of Lord Anson's stock of provisions in his voyage round the globe, between the years 1739 and 1744.

As a condiment, it is the one in most general use, and in my opinion quite as useful as any other. It forms a constituent part of every dish issuing

from the culinary apartment, is freely used by all men in the different grades of society, from the untutored savage to the highest grade of civilized life. Many animals have for it an instinctive relish.

This substance, when taken into the stomach, may act as a cathartic, a diuretic, a diaphoretic, a tonic, or antiseptic; the effects always depending upon the state of the system at the time it is taken, the quantity drank, and the other remedial agents with which it may be associated.

In its individual capacity it is capable of doing much in preventing that putrefactive process which must be more or less present in all cases of imperfect digestion; the irritating and fretting products of which are capable of imparting debility and disease to many important parts of the body. But when associated with carbonic acid and the other remedial agents found in these mineral waters, it imparts a modified action of immense power and usefulness in the cure of disease, unknown in the history of its uncombined and individual agency. It is the first salt in point of quantity found in these mineral waters.

*Carbonate of Soda.* This mineral is liberally distributed through the animal, vegetable and mineral kingdoms.

It is obtained from common salt with great fa-

cility; also from sea-water, salt lakes, mountain veins, and by incineration of marine plants.

In the human organs soda exists in the form of phosphate, lactate and choleate of soda. It is much used in pharmacy in weak and acid states of the stomach, and enters largely into the composition of the soda water of the shops; forming the grateful beverage in the warm season so much used in our principal cities.

This substance has been a long time known, and was doubtless the nitre of the scriptures, which did not agree with acids; but not the nitre of the present day, as this substance is not decomposed by common vinegar.

When taken into the stomach it is an antiacid, antilithic and resolvent, and is given in those diseases where there is a redundancy of acid in the first passages, such as gout, uric acid gravel, and certain forms of dyspepsia; also in hooping-cough and bronchocele. In the latter disease some oriental physicians have considered it more useful than iodine, which is one of the great and efficient remedies in glandular enlargements. It was discovered in these waters by Dr. Seaman in 1809.

*Carbonate of Magnesia.* This substance was discovered in the beginning of the 18th century, and was vended in the shops of Italy as a secret reme-

dy, and possessing (of course) great remedial powers, under the imposing name of Count Palmer. But in 1755 Dr. Black examined it and clearly demonstrated its chemical constitution.

It exists largely in nature, and is one of the four earths forming so considerable a portion of the crust of our planet. It is principally derived from the bitterns in salt pans after the crystallization of common salt; and Scotland, New England and Baltimore are celebrated for its manufacture.

It is sparingly soluble in water, but requires more hot than cold water for its solution. The reason of this is owing to the partial expulsion of the carbonic acid by the heat of the water, which acid renders it partially soluble in that menstruum. This gas is the one so liberally evolved from the mineral fountains of this place, and holds in solution their magnesia and other ingredients.

As a cathartic it is one very generally used in cases of weak digestion; and in cases of an acid state of the alimentary canal, it produces most salutary effects. The morbid acids of the stomach and bowels decompose the carbonate of magnesia and forming other salts of magnesia in the bowels, thereby leaving the carbonic acid in a free state in the first passages, which is most acceptable to them even in a sensitive and irritable condition of the organs.

These soothing properties render it very applicable in debilitated adults and in many diseases incident to childhood.

As a lithontriptic it has been prescribed to prevent the formation of calculus when the uric acid predominates. In diabetes also it has been highly recommended; and many well defined cases have been cured by this substance alone.

It is used as an antidote to poison by arsenic, nitric and sulphuric acids. Its existence in these waters was first defined by Valentine Seaman of New-York, in 1809.

*Carbonate of Lime.* This substance is found in the form of chalk, oolite, coral, mountain limestone, &c. forming a large proportion of the geological formation of our globe. This extensive calcareous rock is formed by the shells of animals aggregated together in great masses in the bottom of lakes, seas and oceans. What myriads of generations of these animals must have perished, that their fossil remains should have been sufficient to form the calcareous strata of our globe! yet science most conclusively proves this to have been the origin of this important geological formation.

Crystalline specimens of carbonate of lime, as aragonite and calc spar, are but the results of water saturated with carbonic acid flowing over lime-

stone rocks and dissolving a portion of these fossil relics, then escaping to other situations, where the pressure is less, when a portion of carbonic acid is set free, and all the lime which had been taken up by the now free gas passes into a crystalline form, which crystallization will depend in a measure on the degree of heat and the amount of pressure acting upon the lime at the time it passes into a that state.

As all spring and river water contains more or less of this acid, those portions which pass over limestone regions will dissolve particles of the lime equal to the amount of gas in the water. This gas is held by a very weak affinity, and a slight elevation in temperature is sufficient to disengage it from its watery diffusions. As it passes into the cavernous parts of the earth's crust it meets with various temperatures, and frequently they are sufficient to destroy these feeble affinities; the gas thus being again set at liberty, the lime is of course deposited in a solid state, forming the stalactites and stalagmites so common in the cavernous parts of our country.

This substance enters largely into the venous tissue and fluids of the human body; and like soda, when acted on by the animal acids, new substances are formed, as lactate and phosphate of lime.

These ingredients are very important substances in the animal economy, and without them the hu-

man form would be as shapeless as the body of a shrimp or the frame of a muscle.

It has been used in pharmacy to correct acidity of the digestive organs; and in their weak and relaxed state, it has given abundant proof of its tonic powers. As an external remedy and in diseases of the skin it is one of the most prompt and efficient means in possession of the profession for relief and cure.

Its existence in these waters was demonstrated in 1809, by Dr. Seaman of New-York. In point of weight it is the second substance which enters into their composition.

*Carbonate of Iron.* The date of the discovery of this substance is very uncertain; it must have been long known, as it is spoken of by Moses and other biblical writers. A knowledge of successfully manufacturing it belongs, without a doubt, to quite modern times.

Iron is the most useful metal to man, in his more elevated and enlightened state; and Nature has made it the most abundant. It is second to no other substance in importance, save only those which administer directly to the functions of animal existence. Its employment and multiplied application in the arts and sciences, mark every advance from savage life to an enlightened and ele-

vated state of society; and as gold is the type of ignorance, of selfishness, of cruelty and of national imbecility, so is iron the type of knowledge, of benevolence, of virtue and national greatness. It forms a constituent part of numerous rocks and stones, and is freely distributed through many kinds of soil. Many of the rocks are principally indebted to it for their color, and also for their density, if their specific gravity exceeds 2.5.

Iron is found in large veins in mountain ranges of primitive formation, and in detached blocks, both in Russia and America; also as a peroxide, as a magnetic oxide, as a hemetite, or in union with carbonic acid forming carbonates. With the acids it unites, forming sulphates, phosphates, arsenites, &c. It is also a constituent of the aerolites, when it is found united with nickel and chrome. Its existence in these waters, in the form of a carbonate, was demonstrated by V. Seaman in 1809.

The most able therapeutical writers of the present day give this substance the first rank among the tonic remedies furnished from the mineral kingdom.

In cancerous affections, neuralgia, chorea, chlorosis, and generally in those cases where there is a deficiency in the coloring matter of the blood, or where the energies of the system are below par, it has produced most salutary effects.



*Iodine.* This truly valuable remedial agent was first discovered by Courtois, a manufacturer of saltpetre in Paris, in the mother water of sea weeds, in the year 1812. It has since been found in many marine plants, mollusca, in sea-water, and in several mineral springs on both continents. This substance was discovered in America by Dr. William Usher, in the Congress water of Saratoga Springs, and the fact published in the American Journal, No. 1. Vol. 15. The second number of the same volume contains Steel's Analysis, giving three grains of hydriodate of soda to the gallon of water; and although Usher's discovery was first published, yet I think the credit of its discovery in America is justly due to Dr. Steel, and the first public notice of it to Dr. Usher. Dr. Steel says, "it was discovered in 1828, and published in 1829, in the American Journal of Science."

It acts with much vigor on the glandular system, greatly increasing its absorbent powers; but by a wanton abuse of it, some of the glands have been nearly or quite absorbed.

It acts upon our secretions, for it has been found in human urine, saliva, milk, and perspiration. When taken into the stomach under proper restrictions, it acts as a tonic, increasing the strength and vigor of the digestive organs, improving the appetite and increasing the general health and

flesh of the individual. In cases of a scrofulous character, whether local or general, it has been found to effect most important cures.

Externally it has been much used, both locally and generally. When used in the form of a general bath, the strength prescribed by Lugal was three grains to a gallon, which is much less in proportion than the quantity found in our mineral fountains.

*Bromine.* This remedial agent was first discovered in 1826, by Bolard, of Montpellier in France. When he detected it he was experimenting on water from salt ponds, and from its strong and unpleasant odor he was induced to name it Bromine.

It is found to exist quite uniformly in sea-water, marine vegetables and animals, and in salt and mineral springs, both in Europe and America.

In America it was first discovered by Professor Silliman of New-Haven, in the salt springs of Salina, New-York. Its existence in the mineral waters of our village was first detected by A. A. Hays, of Connecticut, in water taken from the Congress spring; and since that discovery it has been repeatedly detected in water from the other fountains of Saratoga, by different chemists.

This substance has been successfully used in diseases of the secreting and absorbing systems,

and is a more active remedy than iodine, but may be substituted for that agent in cases where that has failed of producing the effects expected from that substance.

It is found in these waters associated with potash, forming hydrobromate of potash.

Sulphate of lime and magnesia are also found in these mineral fountains, but in much less quantities than other substances of similar therapeutical powers.

*Carbonic Acid.* This is an element of immense importance to the higher states of matter, and is most liberally diffused through the mineral, vegetable and animal kingdoms in the form of carbonates or carbonic acid, free or combined. It has been found in the atmosphere in all altitudes visited by man.

The respired air of animals contains 8 or  $8\frac{1}{2}$  per cent. of carbonic acid: and notwithstanding the experiments which have been made for its detection in the large towns, they have not resulted in obtaining that additional quantity anticipated from the amount known to be produced by respiration, combustion, decomposition, and the many sources of its origin in large cities, over and above situations quite remote from the large towns.

If these experiments have been properly made,

and no doubt they were, there are other causes for its production in these remote situations, which probably have not been taken into the account, or it may be rendered inert by its facility to form new associates.

When taken upon the stomach this gas has a most grateful effect, producing important therapeutical results. It passes readily from the stomach to the kidneys, and in some kinds of gravel, as the white for instance, its use has been followed by the most happy effects.

Many very fashionable drinks would never have become so, had they not possessed large quantities of this lively and palatable gas. Such is the case in a great degree with soda water, champaign, cider, porter, and small-beer. Remove this substance from our justly celebrated mineral waters, and they will fall into disrepute at once.

It forms the most convenient and appropriate vehicle for the administration of magnesian carbonates, alkalies, sulphate of magnesia, and the saline cathartics which we possess.

By it the most sensitive and irritable stomachs may take many kinds of medicine with ease and comfort, which without it would be immediately rejected.

In these waters, it is combined with many important remedial agents, as well as being also present

in them in a free state. And diseased stomachs will receive these medicinal agents, and hail them as a luxury, when under ordinary circumstances of administration, they could not be borne for a moment.

In point of volume, this gas constitutes the first constituent in our mineral fountains, and was demonstrated to exist in them by Dr. Mitchill, in his early experiments upon them in 1787.

From the above investigation we find the constituent parts of these mineral waters are most liberally distributed through the rocks and minerals which compose the earth's crust—the soils which are most eligible to cultivation—and the vegetables which clothe our globe in beauty, and furnish animated nature with an unfailing source of nourishment; and also incorporating themselves with animal fluids and solids, and ultimately forming parts and portions of our own bodies.

With such facts as these before us, we cannot doubt their applicability to our bodies. But in conjunction with all the light which science throws about the subject, we have in addition the unerring light of long experience to settle the question, beyond all chance for cavil, that in many cases of chronic disease there is no article in the *Materia Medica*, or combination of them by the art of man, which can be substituted for these peculiar waters.

## DEPURATION.

As a depurating remedy in cases of long standing debility, and depraved general health, I know of no other remedial agent, either simple or compound, which can be compared with these mineral waters, if judiciously used and persevered in.

As a cathartic, it is pleasant to the taste, grateful to the stomach, efficient as an evacuent, and leaves the alimentary canal stronger and its functions more vigorous.

Patients whose digestive organs have been impaired by disease, enfeebled by excess, or exhausted by the toil of accumulated years, find in them an agent which will relieve the organs, without first increasing the existing debility. When taken in the morning upon an empty stomach, in a potation from a half pint to two pints, a full and copious dejection soon takes place, unloading the whole length of the digestive tube of the remnants of the previous day's *ingesta*, which is of no further use to the system, but on the contrary, may be a source of much harm. This free evacuation is copious and without pain, leaves the digestive tube at perfect freedom to exert its digestive and assimilating powers on the next portion of food presented to them. And although the dejections are free and in many instances most copious, yet no languor or debility is experienced by the patient, but on the

contrary, his appetite is increased for the next meal—even the digestive functions are greatly enhanced—the power of assimilation is increased—the ability of nutrition augmented—and additional strength is imparted to the body, and new and increased vigor to the mind.

As a diuretic, it is no less happy in its results, in cases proper for its use, than as a cathartic. For its action on the kidneys and the general renal secretions is prompt, certain, uniform, and efficient, but must be differently administered when diuretic effects are to be obtained, the quantity taken at a time should be less, and repeated at shorter intervals, and if possible, drank fresh from the fountain head.

As a diaphoretic, they are equally successful as a depurating agent. And very many cutaneous diseases find ready relief from an alterative course of them. In the cases which have resorted here for relief, and came under my personal observation, a very large proportion of them have had an exceedingly bad functional state of this large and important organ. And oftener than otherwise, if there had been any fault or error committed by their medical adviser at home, it had been in not sufficiently regarding this great depurating organ. The bowels would have been purged—the functions of the kidneys enquired after, but those of the

skin would never have been thought of either by the patient or his physician; and the skin would be found neglected, sometimes even to the expense of ordinary cleanliness.

#### BATHING.

The importance of a judicious external application of these waters, has been in my opinion much underrated by a large proportion of invalids who annually resort to these mineral fountains in pursuit of health.

And I also think this fault is not to be limited to invalids who visit these Springs for relief from diseases which refuse to yield to the ordinary remedial agents, but it is a national error. It is first too much neglected in the nursery—and this negligence but too often increases with the ripe years of our American born and educated citizens. And a change in this is most earnestly demanded, and must be brought about, or we shall become in a few generations a nation of palid invalids, with such irritable skins, from a want of bathing and proper exercise in the open air, that a change even of the electrical and humid state of the atmosphere, will throw us by neighborhoods into partial states of disease. And the noble sons and fair daughters of America, will be but as so many weather-glasses



being quite as frail, equally excitable, and as changeable as a barometer.

In some of the instances which have come under my directions and observation in the application of these mineral waters, I have thought the relief obtained was to be attributed rather to the judicious bathing daily indulged in, than to the water which was drank. But in a larger proportion of the cases, the great relief obtained was to be attributed to the mutual action of the waters internally administered and externally applied.

The effects of a cold bath in removing constipation of the bowels, is in many instances most prompt; and those who are not in the habit of watching their effects would be very much disappointed at the results of such an application in the treatment of such cases of torpor of the first passages.

I have known most copious stools produced by it alone, when the patient would require large doses of purgatives to produce an equal effect. And the results were not casual, but would be uniformly the same, if similarly applied, and the pathological state of the system remaining the same.

The warm bath is equally proper in a relaxed state of the first passages, but in some chronic cases of this kind it ought not to be admitted,

but a substitution of a tepid or a cold one, should be adopted in its stead.

#### BILIOUS DISEASES.

In those cases where the liver is making bile improper in quality or quantity, and without organic lesion being present in the viscus, these waters used as a cathartic in the morning, with such assistants over night as the case may require, produce the most happy results. But if a higher grade of arterial action is present, or if organic lesion has taken place with the organ, and an anasarca state of the extremities has supervened, then they are injurious without an exception. But it must be remembered, that extensive swellings may take place from a great variety of debilitating agents other than organic disease, and which may be relieved with great facility by a proper and timely use of these mineral waters.

In an inactive state of the bowels, when an evacuation is not obtained save at the expense of much time, or large doses of active medicines, with clay coloured stools and a dry and rough state of the skin, the cathartic mineral waters taken in the morning, an hour or two before breakfast, in proper quantities for physic, and smaller portions through the day to operate on the kidneys and the skin, will in a few days regulate the system most perfectly.

But in bilious difficulties of the above description, much relief may be obtained by proper and timely bathing. These baths should be of mineral water generally, and used in the form of a shower bath about ten o'clock in the morning.

After the bath has been indulged in, it is important that the patient should be carefully wiped dry, and the friction on the surface continued with a coarse towel or flesh brush, until the skin is warm and generally flushed.

This thorough rubbing should in most instances be done by the patient himself, for the circulation is thereby more effectually thrown upon the surface, and the congestion of the internal organs consequently more promptly relieved.

In some of the above cases, I have known such an active state of the kidneys or skin to exist, that almost all the fluids of any and every description which the system could receive, would be passed directly from the body by the agency of the renal organs on the exudents of the skin. And notwithstanding large quantities of mineral water had been taken by the patient, yet his constipation would continue to be more and more difficult to overcome, the inconvenience of a torpidity of the bowels so much aggravated, and the long and unpleasant train of morbid actions incident to a diabetic state of the system, or profuse sweats

superadded to his former sufferings by the very course resorted to for relief.

This state of the system is easily overcome by proper medicine taken over night, followed in the morning by cathartic mineral water, together with bathing and friction to the skin.

Another state of constipation with biliary derangements I have frequently seen here, which cannot be overcome by mineral water alone, or by scarcely any other physic, without first evacuating the adhesive mucous contents of the stomach, by a proper emetic. This adhesive slime seems to be so redundant, that the stomach is unaffected by cathartic remedies; but after this has been effectually dislodged, then small quantities of Congress water, if taken in the morning, and upon an empty stomach, will produce a full, free, and copious effect.

Other cases again, may have a little general excitement, which will be so much enhanced by the carbonic acid, that it becomes necessary to expel it from the water before it is taken. This is usually accomplished by setting the water in the lodging room over night, or by immersing it in warm water in the morning just before using it, which will ensure its cathartic effects by expelling the carbonic gas.

## ALTERATIVE USE OF THE WATER.

When the cathartic effects are obtained from the use of the water, many people seem to think the work is completed, and they of course demand to be well—when in truth, they have taken but one step out of the many towards a permanent cure. They have unloaded the first passages of ill prepared, feculent matter by an antiseptic physic. But this has passed through the system by the bowels, and scarcely any of it has entered into the system proper, or passed the secretive organs and become a part of the circulating fluids of the body or associated with the nourishment of the same. This is only to be done by small potations taken repeatedly through the day: and in most instances these draughts should be taken from the more tonic fountains of the village, as the Columbian, Hamilton, or High Rock springs.

The quantity of water taken in this way, should be small at first, say  $\frac{1}{4}$  of a tumbler to delicate females, and others in proportion, and repeated every hour or two throughout the day, and gradually increased in quantity until the maximum amount the system can dispose of properly, has been taken by the patient.

In this way an alterative course is obtained, which may change the whole secretions of the

body, a very important point to be obtained in most aberrations from health.

These small alterative potations should be drunk at the fountains when the water is as perfect as it is possible to obtain it.

#### GRAVEL.

In gravelly states of the bladder, many well attested cases might be produced where the patients have been completely cured by the waters from these mineral fountains.

They should be drunk in such quantities, and with such repetition as will ensure a copious diuretic effect, when large quantities of sand and frequently small calculi will be discharged with the urine. This effect is frequently much assisted by the use of the warm bath, which in a large part of the cases, will increase the ultimate discharge from the kidneys.

And even in cases where there was evidently organic lesion of the bladder present, the free use of mineral water seemed to furnish more relief than any other remedy which had been used, although the patient had been subject to the directions of our first medical men in the large cities.

#### CHRONIC RHEUMATISM.

This formidable disease has been repeatedly cured by a liberal use of the water taken as a ca-

chartic in the morning, as an alterative through the day, and externally applied in the form of a bath, cold and fresh from one of the mineral fountains.

## PHAGEDENIC SORES.

In ill conditioned ulcers of the above character these mineral waters have been found invaluable; and in most instances need to be both internally and externally used. The external application should be generally and locally prescribed—when in a short time, the ulcers will change their whole aspect and begin to heal.

## CUTANEOUS DISEASES.

This class of diseases is very numerous, and in many cases much complication attends their pathology. But those diseased states of the skin depending upon morbid secretions, or a local habitation in the skin itself, derive signal benefit by a proper course of the drinking of, and bathing in these waters.

## SCROFULA.

This strumous state of the system finds great relief from the use of the mineral waters of Saratoga.

Those laboring under it, should drink the water in the morning as an aperient—take it as alterative in conjunction with alterative doses of iodine or bromine through the day, and bathe in it regularly

every day, unless some particular reason for the contrary should be present.

In these cases, the external application is highly important. The bromine and iodine exist in sufficient quantities in these waters, to sensibly affect such cases, when applied generally to the surface: and even amount to a similar degree of strength with the baths of this character which have been used with so much success in the south of Europe.

The temperature and repetition of the baths in these difficulties must depend upon the general health of the patient, the state of the weather, and the season of the year when they are used.

#### CHLOROSIS.

This disease and many other kindred difficulties, are much benefitted by a judicious course of drinking and bathing in these mineral waters.

But I have known some patients much injured by attempting to practise a course of diet, medicine and exercise, according to some popular directions which may be very proper in other cases, but not necessary in all—as for instance, early rising, long walks, deep draughts of cold water: and all this is to be accomplished before breakfast by females, who for years have not risen in the morning until the breakfast hour; never had been accustomed to walk any considerable distance at any time of the



twenty-four hours; and whose stomachs are extremely irritable, and their general health feeble. For such patients to leave a warm bed, subject themselves to the difference of temperature between it and the morning air about the fountain, and drench their stomachs with large potations of cold mineral water, then return to the hotel, and add to all the rest a full meal of stimulating food, because this happens to be endured without positive and immediate sickness by some Amazon belle! By these remarks, I am not to be understood as being opposed to early rising, exercising in the morning air, and drinking the waters at the several fountains; but I mean to be understood, as saying, that every person who visits these fountains in pursuit of health, cannot rise at the same hour in the morning; take a walk of the same length; drink the same number of tumblers of cold water; and eat the same kinds of food, and to the same extent, with precisely the same results. I mean that every person's exercise should be measured by his ability to perform: his food, by his power to digest and assimilate: his rising in the morning, and the amount of water drank; where, and at what temperature, should depend upon the effects produced, rather than the popular opinion of some very good, wise, and fashionable old matron, who knows all about the waters, because she has been here before with

a very fashionable party, and drank it by rule; left her home in good health, but returned to it again sick and diseased.

#### PHTHISIS.

Much has been said of late, about the beneficial effects of these waters in this disease. But I have yet to learn that they have ever been of use in such cases. And with those who have thought and wrote to the contrary, I would beg most respectfully to differ. I have never seen a case, where I thought there was even a degree of palliation produced by a use of the water, but on the contrary, always injurious, increasing all the alarming symptoms of this most formidable disease.

I have also known many coughs and pains about the pectoral regions, most promptly and effectually cured by drinking these mineral waters; but the cough and pectoral pains were dependent upon a diseased action in one or more of the digestive and assimilating organs, and not on that pathological state of the lungs which produces phthisis pulmonalis.

My advice to all who are laboring under the corroding influence of this disease, is not to drink of any one of our mineral fountains recently or remotely discovered and brought into notice.

## GEOLOGICAL.

<i>Primitive Rock.</i>	<i>Names.</i>	<i>Where located.</i>
	Granite,	Palmertown Mountains.
	Scienite,	Providence, Kayaderoseras Mountain.
	Gneiss,	Palmertown Mountain.
	Mica Slate,	Fitch's Mills, Greenfield.
	Steatite,	Moreau, Corinth, Greenfield.
	Granular Limestone,	Palmertown Mountains.
	Pudding Stone,	Greenfield.
	Quartzose,	Hadley Falls.
	Metiferous Rocks,	Greenfield.
	Argelaceous Slate,	Ballston and Saratoga.
	Gray Wacke,	Saratoga and Stillwater.
	Siliceous Sandstone,	Galway and Greenfield.
	Calcareous Sandstone,	Galway, Greenfield, Corinth, Fish House.
	Compact Limestone,	Glen's Falls, Moreau.
	“	“
	Oolite,	Milton, Galway, and Saratoga Springs. Greenfield.
<i>Secondary Formation.</i>		

Gebrüder Debes in Bremen  
E. Debes 146 Bremer Str.  
1855

Med. Hist,

WZ

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1844

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