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REPORT
OF
Prof. G. F. BARKER,
OF YALE COLLEGE,
UPON THE
Siderite Mineral Springs,
OF MANCHESTER, Ct.

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SIDERITE SPRINGS.

The existence of Mineral Springs on the old Wyllys farm at Manchester, has long been known to the people of that vicinity; and the knowledge of the healing virtue of their waters, and their value as a remedial agent dates back over half a century.

For some unaccountable reason the development of their wonderful properties and a complete chemical analysis of their ingredients, has not been attempted until the present time.

These Springs were first brought to the attention of one of the present proprietors about a year and a half ago, who, impressed with their value, and their beautiful surroundings, procured an analysis of their waters by one of the best analytical chemists in the country. As the result of this investigation we are enabled to present to the public, backed by the opinions of the highest chemical authorities, the finest Chalybeate Water yet discovered, and a most invaluable specific for a long train of disorders which have in a measure baffled the skill of our most able physicians.

The town of Manchester, in Hartford County, is situated on the line of the Hartford, Providence & Fiskill Railroad, soon to be merged in the Boston, Hartford & Erie

Railroad, and to become the great thoroughfare between New England and the West.

About midway between New York and Boston, and nine miles east from the city of Hartford; it is one of the finest and most wealthy towns in the State of Connecticut.

It is studded all over with manufactories of every description, which its extensive water power has stimulated, and it is the seat of the largest silk manufactory in this country. Abounding in beautiful drives and varied scenery, it is pronounced a charming place by all who visit it.

The country in the immediate vicinity of the Springs, is wonderfully beautiful and romantic, and it is here that nature has been most lavish of her charms.

It would appear that knowing the subtle power of these waters, she had sought to bestow upon the surroundings such wondrous grace and beauty, that the mind in contemplation of them, should unite with their virtues in restoring health and vigor to the body.

Situated on very high ground, the air is pure, cool, and delightful, while from the Company's grounds, the view is indiscribably grand. To the north, seventy miles away, yet in full view, stand Mts. Tom and Holyoke; to the south, thirty miles, the high bluffs below Meriden, and across to the west, twenty-five miles distant, the Talcott mountain range.

The whole Connecticut valley between these points lies spread out before the eye, with a full view of the cities of Hartford and Springfield, the towns of Windsor, Windsor Locks, Warehouse Point and Manchester, in one unbroken landscape.

On one side of the ground is a large reservoir, from which flows a beautiful stream skirting the entire grounds, and then dashing down the rocks, sixty-five feet, forming one of the most beautiful cascades imaginable.

We but echo the words of all who have visited this place, when we say that for beauty and variety of attractions, it is unsurpassed in the New England States.

As proof of the great medicinal value of the waters, we first submit the following report, and analysis of Professor GEO. F. BARKER, M. D., of Yale College.

*To The Siderite Spring Company
of Manchester, Conn.*

GENTLEMEN:

I have the honor of submitting to you herewith, my report upon the remarkable Chalybeate Mineral Springs, found upon your property in the town of Manchester.

Respectfully Yours,
GEO. F. BARKER.

New Haven, July 14th, 1869

REPORT.

1. LOCATION.

The Siderite Springs are situated in the town of Manchester, Hartford County, Conn., and were discovered about fifty years ago, having been exposed by a freshet, which swept away a portion of the bank of the stream near them, thus uncovering the Springs, which up to that time had flowed unperceived, into the brook.

2. GEOLOGY.

The valley of the Connecticut, as is well known, rests upon a rocky bed of red sandstone of Triassic age. This red sand stone fills what was once a much larger valley; it thus forms a bed or trough, extending from Long Island Sound nearly to the northern borders of Massachusetts, and whose average width is twenty miles. During a subsidence of the valley in the geologic past, numerous longitudinal cracks or fissures were made in the red sand-stone, through which in a molten state came up the trap so uniformly

associated with it, and which forms so striking a feature in the American Triassic landscape. In this valley, most of the prominent elevations are of trap rock. Beginning with East and West Rocks near New Haven, we pass northward to the Hanging Hills of Meriden, and thence to Mounts Tom and Holyoke, all of which are composed of this dolerite rock, which flowed through the fissures in the sand-stone as a melted mass, and spread over the underlying rock, which was thus baked and consolidated.

The red sand-stone rests upon rocks which are crystalline or metamorphic, and which crop out on both sides of the valley. On leaving the sand-stone, therefore, whether the traveler passes to the east or to the west from the river, he enters at once this metamorphic region. The Siderite Springs are situated on the line of junction of the red sand-stone, with the crystalline granitic gneiss which underlies it. This gneiss is rather coarsely crystalline in texture, is reddish in color, and dips toward the west at an angle of from 40° to 45° . The red sand-stone comes to the surface about three quarters of a mile west from the Springs, but it undoubtedly exists much nearer. Several years ago, a thin vein of copper ore was detected traversing the granite about a quarter of a mile below the Springs. This ore was a nearly pure sulphide; but, although a few hundred pounds were obtained for a smelting experiment on a large scale, yet

the yield of the vein was so inconsiderable, that the enterprise was soon after abandoned as unprofitable. At present both the Siderite Springs issue from a thin bed of ochreous clay, resting upon the granite, and undoubtedly derived from its decomposition. It is hence probable that on following either Spring back, it would be found to originate in the granitic gneiss itself.

3. YIELD OF THE SPRINGS.

Both the Siderite Springs yield about the same quantity of water, this quantity being constant for all seasons of the year; a fact which proves that their source lies too deep to be affected by external changes. Though the means of collecting the water, when the Springs were visited on the 29th of June last, were quite inadequate, the quantity flowing from each Spring was estimated at not far from three to five gallons per minute.

4. CHARACTER OF THE WATER.

The water afforded by both Springs is of the variety well known as chalybeate; that is, containing iron. This fact was first observed very early in the history of the Springs, by the deep, black color which it gave to tea, when drawn with it. It is

obvious enough now to the most casual observer, by the extensive ochreous deposit about the mouth of the Springs; a deposit which has cemented the gravel bed over which it flows, into a sort of ferruginous conglomerate. On the day just mentioned, the temperature of the water as it issued from the Springs was 44° F.; the temperature of the adjoining brook being 70° F. This temperature of the spring is said to be constant the year round. As taken fresh from the springs, the water is clear and sparkling; but if allowed to stand exposed to the air for a few hours, a pellicle forms on its surface, and in the course of twenty-four hours, brown flocks of ferric hydrate are deposited. If, however, the water be bottled at once at the Springs and securely corked, it may be preserved clear and transparent for an indefinite period. The taste of the water is agreeable and decidedly styptic, owing to the iron which it contains; it has also a slight odor and taste of sulphydric acid. As already intimated, the Springs are two in number; but though the character of the water which flows from each of them is quite similar in composition, yet the upper of the two has evidently passed over less of the ferruginous matter on the way to the surface, and it is therefore not as strong a chalybeate Spring as the lower one.

5. CHEMICAL ANALYSIS.

After filtering the water of the lower Spring, to remove mechanical impurities accidentally present, it was carefully analyzed. The results in the following table are arranged in two columns, the first of which gives the number of grains of each constituent in one United States standard gallon, (231 cubic inches); the second gives the number of parts in 1,000,000 of the water, to facilitate comparison.

	GRAINS.	PARTS IN 1,000,000.
Chloride of Sodium, . . .	0.628,	10.766.
Sulphate of Sodium, . . .	0.495,	8.486.
Bicarbonate of Calcium, . .	2.106,	36.105.
Sulphate of Calcium, . . .	0.311,	5.332.
Bicarbonate of Magnesium,	0.267,	4.577.
Bicarbonate of Iron, . . .	10.125,	173.583.
Silica, & Insoluble Matter,	1.153,	19.767.
Organic & Volatile Matter,	3.687,	63.210.
Total Solids,	18.772.	321.826.
Carbonic Gas,	8.08	cubic inches.
Sulphydric Acid Gas, traces.		

A simple glance at these figures is sufficient to show upon what substances the water of the Springs are dependent for their

valuable properties. It is obviously the large amount of iron which this water contains, which is the chief cause of the marvelous cures it is said to have performed. But the remarkable thing which we notice, is not so much the absolute amount of iron present in one gallon of the water, though this is worthy of note, being surpassed by no Spring in this country; it is the relatively large amount present when compared with the other constituents. More than one half the total solid residue of this water is bicarbonate of iron; a fact which at once places the Siderite Springs among the finest chalybeates of the world. Among other springs of this character, may be mentioned the English waters of Tunbridge Wells, — which more nearly resembles the Siderite water than any other recorded, — which contains 7.61 grains of solid matter to the gallon, of which 2.22 grains are ferric oxide; and of Cheltenham, which with a total residue of 1,180 grains, has 12.8 grains of oxide of iron. Among celebrated American chalybeates, may be noted the Anderson Spring of Bedford, Penn., whose amount of carbonate of iron is 5 grains, the total residue of one gallon being 120 grains; and the Sans Souci Spring at Ballston, N. Y., which contains 6 grains carbonate of iron, the total residue being 247 grains.

6. THERAPEUTIC VALUE OF THE WATER.

While it is quite certain that the proof of the efficacy of any remedial agent is to be found mainly in the effects produced by it, proofs which are by no means wanting in the present case, — yet it is clearly possible upon general principles of therapeutics, to determine the effects which the administration of a given agent will produce upon the body, before its administration. That in iron, for example, the physician finds a tonic of remarkable power, is a fact universally conceded. But beside its general tonic affects, it possesses certain others, which are peculiar and belong to it alone.

Professor Stille, in his exhaustive treatise, classes it as the most valuable of the specific tonics; he asserts that it is "a nutrient medicine, for its presence in the blood, and in the solids also, is quite as essential as the elements of ordinary food to the performance of their functions." Two effects then, are to be ascribed to iron; the one is that ordinarily designated as tonic, an excitation of the organic actions and a permanent augmentation of their strength; the other a nutrient action, the iron entering directly into the composition of the blood and tissues. In the blood, it goes to form the red corpuscles, thus increasing the oxidizing power of this fluid, and increasing the animal heat. — But while this action is true of iron in

general, it should ever be remembered that the results obtained by its use, are very greatly modified by the precise form of combination in which it is taken. Many of its salts have a powerful astringent action which renders them unfit for general use; some of them are useless, because they are insoluble in the fluids of the stomach; while in others, the substance with which the metal is combined, masks its action. The salts of iron with the organic acids seem to be in most favor now among practitioners; and this, as it is asserted, because when they are administered, the iron reaches the blood in the form of carbonate, a condition in which it is easily assimilated. Now for this very reason, the form of combination in which iron is found in the Siderite Springs, is that in which it is most valuable. It exists as carbonate, is held in perfect solution, and is, for these reasons, easily assimilated. It has been quite satisfactorily established, moreover, by practical trials, that the purely natural combination in which iron is found in chalybeate springs, is one of which the system is far more tolerant, and is also one from which beneficial effects are sooner realized. Here, with a weaker and a stronger spring, it would seem that the effects produced might be regulated with the greatest nicety and adapted to all possible conditions.

As to the special forms of disease for which the internal use of iron has been recommended, and which therefore would be par-

ticularly benefitted by the use of the Siderite Mineral Water, we may mention ANAEMIA, CHLOROSIS, MENSTRUAL IRREGULARITIES and FEMALE DISORDERS in general, HEART DISEASE, nervous affections as NEURALGIA, CHOREA or ST. VITUS DANCE, HISTERIA, HYPOCONDRIA or Mental Depression, INTERMITTENT FEVER, DYSPEPSIA, BRIGHT'S DISEASE, WORMS, CONSUMPTION, SCROFULA, CANCER, ERYSIPELAS, Scarlet Fever and General Debility, from whatever cause arising. Externally, it would doubtless be of great value in many skin diseases, in Eruptions, Ulcerated Surfaces, etc.

These results, thus foreseen by theory, are abundantly sustained by fact, as the numerous cases recorded by the Company prove. The reputation which the water holds among those who have always lived in its vicinity, and, who therefore, must often have witnessed its healing power, is a reputation which can be acquired only by genuineness and truth.

7. CONCLUSION.

In conclusion, the Siderite Spring Company of Manchester own a property of great value. Easily accessible, commanding an unsurpassed view of the Connecticut valley, soon to be laid out with care and taste as a summer resort; they have also a chalybeate water, second to none in the United States in its quality, and one which cannot fail to prove in years to come what years gone by have found it, a remedial agent of the greatest value.

NOTE.

Although this water has not been used until quite recently, except by those in the immediate vicinity of the Springs, we could fill pages with testimonials from eminent physicians, and those who have been entirely cured, or greatly benefitted by it, but deem it needless.

The foregoing report and analysis of Prof. BARKER, a regular practitioner of medicine, and acknowledged to be one of the very best analytical chemists in the country, ought to be sufficient evidence in the minds of the most skeptical, of the great superiority of this water, in the treatment of the many diseases enumerated, over that of any other spring yet discovered.

SIDERITE SPRING COMPANY,

MANCHESTER, CONN.