OLYMPIAN SPRINGS,

KENTUCKY.

HARRISON GILL, PROPRIETOR.

A SKETCH OF THIS FAMOUS

SUMMER RESORT,

TOGETHER WITH ANALYSES OF, AND CHEMICAL REPORT ON, ITS CELEBRATED MEDICAL WATERS, BY PROF. ROBERT PETER, OF THE KENTUCKY GEOLOGICAL SURVEY.

1881.

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OLYMPIAN SPRINGS.

The Olympian Springs are situated in Bath county, Kentucky, 2½ miles from Olympian Springs Station, on the Lexington and Big Sandy Railroad, and 15 miles from Mt. Sterling. There was a settlement at the Springs over 100 years ago. The original patent for the land, which is now in possession of the present proprietor, was issued to one Jacob Myers, dated July 7th, 1789, and signed by Beverly Randolph, Governor of the Commonwealth of Virginia, describing by metes and bounds this tract of land (then) in the county of Fayette and State of Virginia, and as a further description, adding the following words: "including a large mud-lick, with log-cabin and improvements in the mountains."

The location of the improvements remain the same. The present name was given the Springs, as also to Mt. Olympus, a lovely mountain near the Springs, by Henry Clay, who formerly owned the property, and in after years made it his favorite summer resort.

Smucker, in his "Life and Times of Henry Clay," page 27, says: "In 1803, while he was absent at the Olympian Springs, he was nominated and elected a member of the General Assembly of his adopted State." This was his first public promotion, and the actual beginning of his illustrious career. Then, from the same authority, page 70, we find that: "During the early part of 1823,

he became so much reduced that his life was despaired of, and he himself anticipated death. He visited the Olympian Springs, in Kentucky, etc." In a letter written by Mr. Clay to the present proprietor, dated Ashland, July 7th, 1851, but a few months prior to his death, he says: "I should be most delighted to be able to * * * again resort to a watering place at which I have passed many happy days, but I have been so much from home during the last eighteen months, that I am reluctant to leave it again."

Barracks were built here in 1812 by the U. S. Government, and it was used as a recruiting rendezvous and drilling-station, that point being selected more particularly on account of its healthfulness. Part of these buildings are still standing in a good state of preservation.

At the beginning of the late war, it was made a military post by the United States forces, and was considered a strategic point by both sides until its conclusion. The present proprietor came into possession in 1842, and has owned and controlled it since that time. He has added needful improvements, and the springs are now in good condition for the entertainment of visitors. He knows how to "keep hotel," and nothing is left undone that would add to the pleasure of his guests. The culinary department is always kept up to a high standard, and prepared to suit the taste of the most exacting epicure.

The gorgeous mountain scenery, the magnificent drives, the lovely sylvan walks, where, in days agone, "the oft-told tale" has been whispered to willing ears by many a love-sick swain, the innocent games, the social, genial society for which the place has ever been noted,

all tend to make a summer visit to the Springs a most pleasurable experience; and beside all this, those exhilirating, health-giving waters that cause even the "well" to feel "better," render it the supreme summer resort of the country.

Conveyances meet all trains at Olympian Springs Station, and convey passengers to the Springs.

The following analysis of, and comments on, the mineral waters at the Springs, is taken from Geological Survey of Kentucky, part VII, vol. V, second series:

"Mineral Waters, etc., of the Olympian Springs.

"The principal waters of these celebrated springs were qualitatively examined by the writer about the year 1848–9, and the results were published in volume III of the first series of Reports of the Geological Survey of Kentucky, pages 208–210. About ten years thereafter (in 1858–9) more extended quantitative analyses were made by him of samples of these waters, sent to his laboratory in bottles by Mr. H. Gill, the proprietor. As such analyses of the waters forwarded in bottles could not include the gases, and, moreover, were liable to accidental errors, the writer visited these springs in August last (1877), accompanied by his son Alfred M. Peter, in order to quantitatively estimate the gases in the recent waters; to evaporate a sufficient quantity on the spot to enable him to estimate their minuter saline ingredients, and to collect with care, in very clean glass-stoppered bottles, enough of the waters of the several springs for complete quantitative analyses in his laboratory in Lexington.

"The hydrogen sulphide was estimated in the recent waters at the springs, by the volumetric process, with the

use of a decinormal iodine solution, &c., and the carbonic acid, thrown down in a measured quantity of the waters, by an ammoniacal solution of barium chloride, was separated and weighed at the laboratory.

"The Sulphur Waters of the Olympian Springs.

"No. 1,984—'SALT SULPHUR WATER.' Well at the saloon, near the main house or hotel. The water is raised by a pump in the well, which is eight to ten feet deep. The spring is said to yield about two hundred and seventy gallons per hour. The temperature of the water was found to be 56° F., when that of the atmosphere was 75° F. The water forms a slightly yellowish or ochreous incrustation on the glass tumblers used at the well. It exhibits a slightly alkaline reaction.

"No. 1,985—'BLACK SULPHUR WATER.' From an open well, about a quarter of a mile nearly south of the main house, in the bottom ground, just at the foot of the hill. The water is confined in a barrel without heads, sunk into the ground. The temperature of the water in the barrel was 57° F. Its sediment is nearly black, and it exhibits a slightly alkaline reaction.

"These waters, and particularly those of the salt sulphur well, are applicable to the treatment of a great variety of chronic diseases, under judicious medical advice, combining, as they do, saline, alkaline, and chalybeate properties, with those of the hydrogen sulphide, and the bromides and iodides. They are found to be diuretic, diaphoretic, tonic, and alterative, when used internally, not usually exerting much aperient action; and when employed in the bath, for which purpose the salt sulphur is used exclusively, they are valuable in the treatment of cutaneous affections, &c.

"The very small proportions of barium, strontium, aluminum, and lithium compounds, together with those of boracic and phosphoric acids, which were detected in this

☞Analysis of "Salt Sulphur Water" No. 1984 and "Black Sulphur Water" No. 1985, made by Prof. Robert Peter, Chemist of the Kentucky Geological Survey. See page 19 of his report, part vii, vol. v, second series:

In 1000 parts of the water.

	No. 1984.	No. 1985.
Hydrogen sulphide gas	0.0011	0.0012
Carbonic acid gas (CO_2)	0.2400	.2781
Lime carbonate	0.1975	0.0158
Magnesia carbonate	.0506	.0046
Baryta carbonate	.0128	.....
Strontia carbonate	.0045	.....
Iron carbonate	.0025	.0024
Alumina	.0006	.....
Manganese carbonate and phosphoric acid	traces.	traces.
Lime sulphate	.0083	.0061
Potash sulphate	.....	.0031
Soda sulphate	.....	.0025
Soda carbonate	traces	not est.	.3247
Calcium chloride	.0213	.....
Magnesium chloride	.1089	.....
Sodium chloride	4.8997	.1208
Potassium chloride	.0355	.....
Lithium chloride	.0008	trace.
Sodium bromide	.0166	.....
Sodium iodide and sulphide	trace.	trace.
Boracic acid	trace.	trace.
Silica	.0232	.0124
Traces of organic matter and loss	.0340	.0164
Total saline matters in 1000 parts	5.4168	0.5088
Specific gravity of the water	1.004	not est.

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recent re-examination of these waters, interesting as their discovery may be to the philosopher, cannot be supposed to exert much influence in their medicinal action, yet, doubtless, they are not without effect.

"Since the detection of barium and strontium compounds in these waters containing sulphates, the attention of the writer was drawn to a recent communication of M. Dieulafait to the Academy of Science of Paris, as to the very general presence of strontium carbonate or sulphate in the sea waters, as well as in limestone, gypsum, and the fossil remains of the mollusca, and saline mineral waters generally. According to his statement, only forty-four out of eight hundred of such waters, &c., failed to show distinct evidence of the presence of strontium.

"On examining Liebig's analysis of the celebrated *Kaiserquelle* (Emperor well), at Aix-la-Chapelle, in Rhenish Prussia, one of the most noted waters of Europe, and an early resort of the Romans, a remarkable resemblance in general composition may be seen between this and the salt sulphur water of the Olympian Springs, as the following comparative table shows :

	Salt Sulphur Water of Olympian Springs.	Water of Emperor Well, Aix-la-Chapelle.
Lime carbonate	0.1975	0.1580
Magnesia carbonate	.0506	.0510
Barytia carbonate	.0128	.....
Strontia carbonate	.0045	.0002
Iron carbonate	.0025	.0096
Alumina	.0006	traces.
Manganese, phosphoric acid	traces.	
Lime sulphate	.0083	traces.
Potash sulphate	.....	.1540
Soda sulphate	.....	.2830
Soda carbonate	traces.	.6500
Lithia carbonate	.....	.0003
Lithium chloride	.0008	.....
Calcium chloride	.0213	.....
Magnesium chloride	.1089	.....
Sodium chloride	4.8997	2.6390
Potassium chloride	.0355	.....
Sodium bromide	.0166	.0036
Magnesium bromide	.....	.0006
Sodium sulphide	traces.	.0195
Sodium iodide	traces.	traces.
Boracic acid	traces.	.....
Silica	.0232	.0661
Organic matters, etc.	.0340	.0752
Total saline matters in 1,000 parts	5.4168	4.1020
Temperature	56° F.	131° F.

"The Aix-la-Chapelle are hot springs, and the water contains more alkaline sulphates and carbonates, with less of chlorides and bromides than our salt sulphur water; but the general resemblance of their chemical composition is close, especially as they contain nearly the same gaseous ingredients.

"One object in view in the re-examination of the Olympian Spring waters was to ascertain whether their

proportion of saline matters had been diminished in the lapse of nearly twenty years since the first analyses were made by the writer. It is interesting to see that no notable change in this repect has occurred. (*See vol. 4 p. 69, Reports Geological Survey of Kentucky, first series.*) The slight apparent difference being probably due to less perfect drying of the total saline matter in the former analyses.

"Chalybeate Mineral Waters of the Olympian Springs.

"No. 1,987—'MAIN CHALYBEATE SPRING; in a valley, about half a mile north of the main building, Olympian Springs.'

"The water runs, over a wooden gutter, out of the ferruginous magnesian limestone, which lies under the Devonian shale at the base of the hill, about four feet above the bed of the so-called 'Chalybeate Branch,' which runs into Mud Lick. The spring yields about three litres of water per minute (*i. e.*, somewhat more than three quarts). The temperature of the water is 54° Fahrenheit. It deposits a sediment in its channel of outflow, which is of a ferruginous-brown color. The water as it flows out of its source, is remarkably clear, but exposure to the air, by the removal of carbonic acid and the substitution of oxygen, converts the dissolved iron carbonate into the hydrated peroxide, which is insoluble in water.

"The dried *ferruginous sediment*, on analysis, was found to contain about 65 per cent. of *iron peroxide*, about 20 per cent. of *soluble silica*, with notable proportionso of *lime* and *magnesia carbonates*, and traces of *manganese, phosphoric* and *apocrenic acids*. Hydrosulphuric acid did not detect the presence of arsenic or any metal of that group.

"No. 1,988—'CHALYBEATE SPRING, flowing out of a crevice in the ferruginous magnesian limestone in the bed of the Chalybeate Branch, about sixty yards above the main chalybeate spring above described.'

"It deposits a ferruginous sediment in the bed of the branch of a light brownish-orange color.

COMPOSITION OF THESE OLYMPIAN SPRING CHALYBEATE WATERS.

In the 1,000 parts.

	No. 1,987	No. 1,988	
Free carbonic acid gas	0.1214	0.1269	
Iron carbonate	0.0242	0.0100	Held in solution by free carbonic acid.
Lime carbonate	.0998	.0890	
Magnesia carbonate	.0143	.0103	
Manganese carbonate	trace.	trace.	
Phosphoric acid	trace.	trace.	
Lime sulphate	.0554	.0366	
Magnesia sulphate	.1170	.0693	
Potash sulphate	.0125	.0117	
Soda sulphate		.0238	
Sodium chloride	.0308	.0060	
Magnesium chloride	.0031		
Lithium chloride	trace.	trace.	
Apocrenic acid	trace.	trace.	
Silica	.0332	.0198	
Loss	.0194	.0168	
Total saline matters in 1,000 parts of the waters	0.4097	0.2935	

"The main chalybeate spring water is in every respect very good of its kind, and may be used in all cases in which chalybeate remedies are indicated. The principal difference in composition between the two springs is, that

the main spring is more than twice as strong in iron carbonate, making it a better chalybeate remedy than the other. It also contains more sulphate of magnesia, but less sulphate of soda. They form a valuable addition to the Olympian Springs.

"As the chalybeate and other saline ingredients of these waters seem evidently to have been derived mainly from the ferruginous magnesian limestone out of which they flow, and which the waters have worn and perforated in a remarkable manner, the writer collected some of the lime- and submitted it to analysis, with the following result:

"No. 1,989—FERRUGINOUS MAGNESIAN LIMESTONE, out of which flow the chalybeate springs above described, as well as many others in this region, and which forms the bed of the Chalybeate Branch, at and near those chalybeate springs. It lies immediately under Black Devonian Shale, collected by Robert Peter.

"A crystalline-granular limestone; grey, of various tints, in the interior—generally light grey; light ferruginous or brownish-ochreous on the exterior. Adheres slightly to the tongue, and is more or less porous. The water has worn it irregularly, and in some places perforated it by enlarging the small crevices or cavities in it:

COMPOSITION, DRIED AT 212° F.

Lime carbonate	54.000
Magnesia carbonate	34.027
Iron carbonate	11.532
Phosphoric acid	.006
Potash	.143
Soda	.040
Silica	.280
Total	100.028

"The main agent in the solution of this ferruginous

limestone is, undoubtedly, the carbonic acid dissolved in the water which flows over or percolates it. The greater part of this carbonic acid is no doubt derived from the gradual decomposition of the vegetable matters on the surface of the hill at the base of which the springs and this rock are located. At present this and the neighboring hills are covered with the primeval pine forest which keeps the surface continually covered with its vegetable *debris*, which, by slow decomposition and oxidation, yields an abundance of carbonic acid to the atmospheric water which falls upon it, thus making it, what the pure water itself is not, a good solvent of the iron and other carbonates of the ferruginous magnesian limestone beneath. It appears, therefore, that the character or strength of these springs is greatly dependent on the forest growth on the surface of the hill or hills above them; and that it these woods on the hills above should be at any time cleared off, and the surface of the land deprived of its present carpet of decaying vegetable matters, the springs would measurably lose their strength and value. Another deplorable result from clearing off these woods and bringing the soil into arable culture would be, that more of the atmospheric water would run off from the surface of the hills, and less of it would sink into the depth of the soil and subsoil to feed springs; so that, if the springs were not entirely dried up, except in a rainy season, their outflow would be greatly diminished. Moreover, the beauty, salubrity, and attractiveness of this favorite sylvan watering-place depend greatly on the native pine forest which clothes the neighboring hills.

"In addition to the sulphur, salt sulphur and chalybeate waters of this locality, there are others, saline and alkaline,

of various qualities, deriving their dissolved ingredients, some from the salts of the primeval ocean under which the rocks were deposited, some from the action of the atmospheric waters and gases on the Devonian and other strata. One of the oldest known, which formerly was called a salt lick, to which the wild denizens of the forests resorted, and around which the buffaloes made their wallows, may be described as follows :

"No. 1,990—'SALT WATER from the old well at the original Salt Lick, near the remains of the old barracks of the volunteers of 1812, about one hundred to one hundred and fifty yards south from the main house.'

"The water flows out in a small stream, running into Mud Lick creek. The ground about is covered with an efflorescence of salt. The water tastes like that of the salt sulphur well, but it has only a slight odor of hydrogen sulphide.

COMPOSITION OF THIS SALT WATER.

Carbonic acid gas not estimated; hydrogen sulphide, a trace. In 1,000 parts of the water.

Lime carbonate	0.1844	Held in solution by the carbonic acid.
Magnesia carbonate	.0458	
Baryta carbonate	.0099	
Strontia carbonate	.0045	
Iron and manganese carbonate, and phosphate	.0019	
Lime sulphate	.0036	
Soda corbonate	.2241	
Calcium chloride	.0152	
Magnesium chloride	.1188	
Sodium chloride	4.7121	
Potassium chloride	.0375	
Lithium chloride	trace.	
Bromine, boracic acid	trace.	
Silica	.0232	
Loss	.0130	
Total saline contents in 1,000 parts of the water	5.3940	

"This water resembles that of the salt sulphur well in the relative proportions of its common salt and other chlorides; but it is more decidedly alkaline, because of its larger proportion of carbonate of soda, and contains less of bromine and lithium compounds. Moreover, it is almost destitute of hydrogen and sodium sulphides, which give a distinctive character to the salt sulphur water. On examining volume IV of the Reports of the Geological Survey of Kentucky, first series, for the former analysis of this water, the writer finds that a transposition of the labels on the bottles in which the waters were sent to the laboratory by Mr. Gill must have occurred (see pages 71, 72), so that the label 'salt water,' &c., &c., was placed on the bottle which contained the so-called 'cooking water,' and *vice versa*. The analysis No. 803, page 72, agrees pretty well with the present in the principal ingredients and the total saline contents. This now published is of course more complete and accurate.

"The Alkaline Saline Waters of the Olympian Springs.

"No 1,991—WATER from the well at the kitchen door of the main house; about eight feet deep; yields about one hundred and thirty-five gallons per hour. The water is raised with a wooden pump.

"It is slightly alkaline in reaction, and deposits a slight ochreous sediment in the bottle. Tastes somewhat chalybeate, and smells and tastes faintly sulphurous. This water is used for all ordinary purposes of the kitchen and household, as well as for drinking.

"No. 1,992—WATER, called 'Tea Water,' from a spring or open shallow well, on the border of Mud Lick creek, about half a mile south of the main house, and above it on the stream.

"The spring is inclosed in two no-headed barrels,

placed the one on top of the other, and is about four feet deep. The water was not overflowing. Temperature of the water 62°. Reaction slightly alkaline. As there had been rain shortly before the sample of the water was obtained for analysis, it may possibly be weaker than usual.

COMPOSITION OF THESE WATERS.

In 1,000 parts of the water.

	No 1,991	No. 1,992	
Carbonic acid gas	not est.	not est.	
Hydrogen sulphide gas	a trace.	none.	
Lime carbonate	0.0556	0.0241	Held in solution by carbonic acid.
Magnesia carbonate	.0277	.0059	
Strontia carbonate or sulphate	trace.	trace.	
Iron & Manganese carbonates & phosph	.0054	.0022	
Lime sulphate	.0065	.....	
Soda sulphate	.0208	.....	
Potash sulphate	.0285	.....	
Sodium chloride	.1483	.0377	
Potassium chloride	.....	.0039	
Magnesium chloride	.0047	.....	
Soda carbonate	.5431	.4479	
Sodium sulphide	trace.	.....	
Lithia, boracic acid	trace.	trace.	
Silica and loss	.0280	.0315	
Total saline contents in 1,000 parts	0.8686	0.5532	

"Although these waters do not contain a very large proportion of saline matters, yet their alkaline and slightly chalybeate properties may make them available as diuretic, depurative, tonic, and alterative remedial agents. Many celebrated alkaline waters are not stronger in saline and gaseous contents than these.