

Seeley Sparks

THE COPPER ERA.

Issued Thursdays.

CLIFTON, ARIZONA, SEPTEMBER 7, 1899.

Vol. 1; No 21

REPORT OF COMMITTEE.

Analysis of the Waters that Run from the Arizona Copper Co's. Plant.

August 30th, 1899.

HON. H. C. DAY, Chairman,
Board of Supervisors,
Solomonville, Arizona.

DEAR SIR:—We, the Committee appointed by the Board of Supervisors to inquire into the pollution of the San Francisco River, have now to submit the report made by Messrs. Mariner & Hoskins, Analytical Chemists, Chicago, Ill., which gives full analysis of the various samples of water examined, and also proves conclusively that nothing detrimental to the character of the water enters it from the works at Clifton.

The result reached by this eminent firm of chemists, while proceeding on purely scientific lines, confirm the views which we had already derived from personal examination of works, and also from close observation of the highly productive gardens which are watered by the water flowing therefrom.

We are, yours respectfully,
[Signed] JAMES COLQUHOUN.
[Signed] ANDREW KIMBALL.
[Signed] E. R. STAFFORD.

CHICAGO, August 4th, 1899.
HON. H. C. DAY, Chairman,
Board of Supervisors,
Solomonville, Arizona.

DEAR SIR:—As per communication from Mr. James Colquhoun, of Clifton, Ariz., we have made careful analysis of each of the samples of water sent us, with a view to determine whether the materials introduced into the river from the works of the Arizona Copper Company so contaminated the waters of the San Francisco and Gila rivers as to render it injurious to the vegetation below this company's works. We submit, on separate sheet, analysis of the waters sent us,

from which we have drawn our conclusions.

It is evident, from a study of these results, that the difficulty complained of cannot have its origin in any of the materials introduced into the water by the Arizona Copper Company. The fact that all of these waters are alkaline clearly excludes the possibility of the trouble being due to the presence of acid from the works referred to, and the most delicate tests which can be applied show a complete absence of copper in solution. Sample No. 2, however contains at the rate of 100 grains per gallon of insoluble sediment, of the following composition:

Silica	- - - -	93.40	per cent.
Iron	- - - -	2.80	" "
Lime	- - - -	.38	" "
Magnesia	- - - -	.21	" "
Sulphur	- - - -	.80	" "
Copper	- - - -	.90	" "
Undetermined	- - - -	1.51	" "

100.00 per cent.

The copper in this sediment, however, is combined, no doubt, with sulphur, at least largely, and in any event is in such condition that it is insoluble in water and is deposited with the sediment, and therefore, cannot have anything to do with the destruction of vegetation further down the river, as it, no doubt, settles out long before it reaches the irrigation canals. This sediment, we presume, is made up of the tailings from the works. It might be added that this small amount of copper in the residue, in the condition in which it is found, could not possibly be detrimental to vegetation, even if it were deposited upon the soil.

There is nothing unusual in the contents of samples No. 1, No. 2, or No. 3. No. 4, however, shows the presence of a large amount of chlorides and sulphates, and there can be no doubt but that if the water from No. 4 was used in any considerable quantity the presence of the excessive amounts of chlorides, particularly chloride of sodium [common salt] would be seriously detrimental to vegetation.

The addition of chlorides to the water of the San Francisco river, below Clifton,

as shown by analysis No. 2, has its origin, no doubt, in springs similar to the hot salt springs below Clifton.

It will be noted that the rise in the amount of sulphates in the water below Clifton, as compared with that above, is very slight, and even in the analysis of the hot salt springs water the amount of sulphates is not excessive. In fact, the small addition of sulphates, as shown by analysis of the water taken below Clifton, is probably due more to the springs referred to than to any refuse from the works of the copper company at Clifton, and, in fact, is such a relatively small amount that it can have no special significance.

We hope this will give you the information you desire in this matter, but will be glad to add any further light we can from the data at hand.

Very respectfully yours,
[Signed] MARINER & HOSKINS.

No. 1.—San Francisco River water, above Clifton, May 26th, 1899:

Silica	- - - -	2.80
Iron Oxide	- - - -	.41
Lime	- - - -	4.14
Magnesia	- - - -	.70
Soda	- - - -	7.12
Sulphuric Acid	- - - -	1.51
Chlorine	- - - -	7.35
Carbonic Acid	- - - -	.52

No. 2.—San Francisco River water, taken from Detroit Copper Mining Co's dam, below Clifton, May 25th, 1899:

Silica	- - - -	2.62
Iron Oxide	- - - -	.64
Lime	- - - -	11.38
Magnesia	- - - -	1.57
Soda	- - - -	18.39
Sulphuric Acid	- - - -	3.67
Chlorine	- - - -	24.93
Carbonic Acid	- - - -	.52

No. 3.—Gila River water, May 23rd, 1899:

Silica	- - - -	2.68
Iron Oxide	- - - -	.23
Lime	- - - -	2.27
Magnesia	- - - -	.64
Soda	- - - -	2.97
Sulphuric Acid	- - - -	3.15