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Contributions from the Chemical Laboratory of The University of Minnesota

W. C. Smith

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J. A. Dodge

C. F. Sidener

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*Contributions from the Chemical Laboratory of The University of Minnesota.*ANALYSIS OF A SAMPLE OF MANKATO CEMENT ROCK—*W. C. Smith.*

Insoluble in HCl., 19.22 per cent.

Composition of insol. part:

Silica, SiO ₂ ,	13.30 per cent.
Alumina Al ₂ O ₃ ,	3.87 " "
Peroxide of iron Fe ₂ O ₃ ,	trace
Lime CaO,	"
Magnesia, MgO,	"
Loss,	2.05 per cent.

 19.22

Composition of part soluble in HCl.

Calcium carbonate Ca CO ₃ ,	48.74 per cent.
Magnesium carbonate Mg CO ₃ ,	29.27 " "
Peroxide of iron, Fe ₂ O ₃ ,	1.52 " "
Alumina, Al ₂ O ₃ ,	.30 " "
Potassium oxide, K ₂ O,	.26 " "
Sodium oxide, Na ₂ O,	.25 " "
Phosphoric anhydride, P ₂ O ₅ ,	.14 " "
Silica, SiO ₂ ,	.09 " "

 80.57
*April 8th, 1890.*ANALYSIS OF A MARL FROM NEAR GLADSTONE, MICH.—*Peter Christianson.*

Calcium carbonate	96.96.
Magnesium carbonate	1.68.
Calcium combined with silica	.015.
Magnesium combined with silica	.010.
Silica	.401.
Ferric oxide	.257.
Alumina	.668.
Traces of potash, soda, phosphoric acid and organic matter.	

This marl forms a bed, having an area of over 100 acres and a depth of from 2 to 14 feet. It occurs near the northwest shore of lake Michigan, about seven miles from the head of Little Bay de Noc, on the west side of White Fish river. As a rule it is covered with a thin layer of vegetable mold, but at some places it appears at the surface.

April 8, 1890.

ANALYSIS OF A SAMPLE OF WATER FROM "THE GIANT SPRING,"
MONTANA.—*J. A. Dodge.*

(1.) General characteristics: water perfectly clear, bright and colorless; odorless and palatable.

(2.) Mineral analysis:

Calcium sulphate,	241.	parts	per	million.
Calcium carbonate,	75.	"	"	"
Magnesium carbonate,	86.	"	"	"
Sodium chloride,	9.5	"	"	"
Potassium salts,		traces.		
Lithium salts,		traces.		
Total,		411.5	parts	per million.

(3.) Organic analysis:

Free ammonia,	0.01	parts	per	million.
Albuminoid ammonia,		none.		
Nitrates,		none.		
Nitrites,		none.		
Permanganate test,		very	slight	reduction.

The residue from evaporation of this water on a large watch glass showed remarkable whiteness and purity. Rhombohedral crystals of calcite or dolomite were visible to the unaided eye. With a microscope crystals of gypsum were plainly seen, showing twin and stellar forms.

May 5th, 1891.

ANALYSIS OF A SAMPLE OF WATER FROM AN ARTESIAN WELL AT
DEVIL'S LAKE, NORTH DAKOTA.—*J. A. Dodge.*

1. General characteristics:

Colorless, odorless; taste brackish
Reaction alkaline.

2. Mineral analysis:

Sodium sulphate,	1623.	parts	per	million.
Sodium chloride,	1483.	"	"	"
Sodium carbonate,	705.	"	"	"
Potassium carbonate,	79.	"	"	"
Lithium carbonate	11.5	"	"	"
Magnesium carbonate,	17.3	"	"	"
Calcium carbonate,	26.8	"	"	"
Ferrous carbonate,	0.5.	"	"	"
Silica,	9.6.	"	"	"
Borates,		traces.		
Bromides,		traces.		
Total,		3955.7	parts	per million.

The depth of this well was stated at about 1500 feet. The strata passed through were as follows: Black soil two feet, blue clay 18 feet, bluish shale 1,400 feet, conglomerate, three feet. Immediately below this shale a small flow of water was reached. The drill then passed into quicksand nearly white and very fine. This was penetrated about 15 feet. The sand came up the pipe with the water. The pressure of outflow is light, but a stream about two inches in diameter constantly flows.

May 5, 1891.

ANALYSES OF SEVEN SAMPLES OF EFFLORESCENCE FOUND ON RED
PRESSED BRICK.—*C. F. Sidener.*

SAMPLE No. 1.—From College of Mechanic Arts building
State University, Minneapolis, Minn.

Sodium sulphate,	90.1 per cent.
Calcium sulphate,	1.4 "
Water,	8.5 "
	<hr/>
	100.0

Location—damp.
Coating—thick

SAMPLE No. 2.—From Union Station, Saint Paul, Minn.

Magnesium sulphate,	78.57 per cent.
Magnesium carbonate,	4.64 "
Water,	16.79 "
	<hr/>
	100.00

Location—damp.
Coating—thick

SAMPLE No. 3.—From brick wall at northeast corner of
Court house block, Saint Paul, Minn.

Magnesium sulphate,	21.42 per cent.
Potassium sulphate,	15.68 "
Sodium sulphate,	57.37 "
Sodium carbonate,	2.14 "
Water,	3.21 "
	<hr/>
	99.82

Location—damp.
Coating—thick

SAMPLE No. 4.—From Nos. 141 and 143 Lyndale Ave. North, Minneapolis, Minn.

Calcium sulphate—mainly.
Magnesium sulphate—trace.
Sodium sulphate—trace.
Location—damp.
Coating—medium
Mortar—red.
Backing—red brick, laid in red mortar.

SAMPLE No. 5.—From corner of 5th Ave. and 14th St. South, Minneapolis, Minnesota.

Calcium sulphate—mainly.
Magnesium sulphate—considerable.
Sodium sulphate—trace.
Location—damp.
Coating—thick.
Mortar—red.
Backing—red brick, laid in red mortar.

SAMPLE No. 6.—From Union Station, Minneapolis, Minn.

Magnesium sulphate—mainly.
Sodium sulphate—trace.
Location—damp.
Coating—very thick.
Mortar—red.
Backing—yellow brick, laid in white mortar.

SAMPLE No. 7.—From a brick left exposed to the action of the atmosphere for about six months.

Magnesium sulphate—mainly.
Sodium sulphate—trace.
Location—dry.
Coating—very thin.

May 5th, 1891.