



Going to Sea by Rail

GREAT SALT LAKE CUT-OFF

30 Miles *from*
Shore *to* Shore



Ogden Route



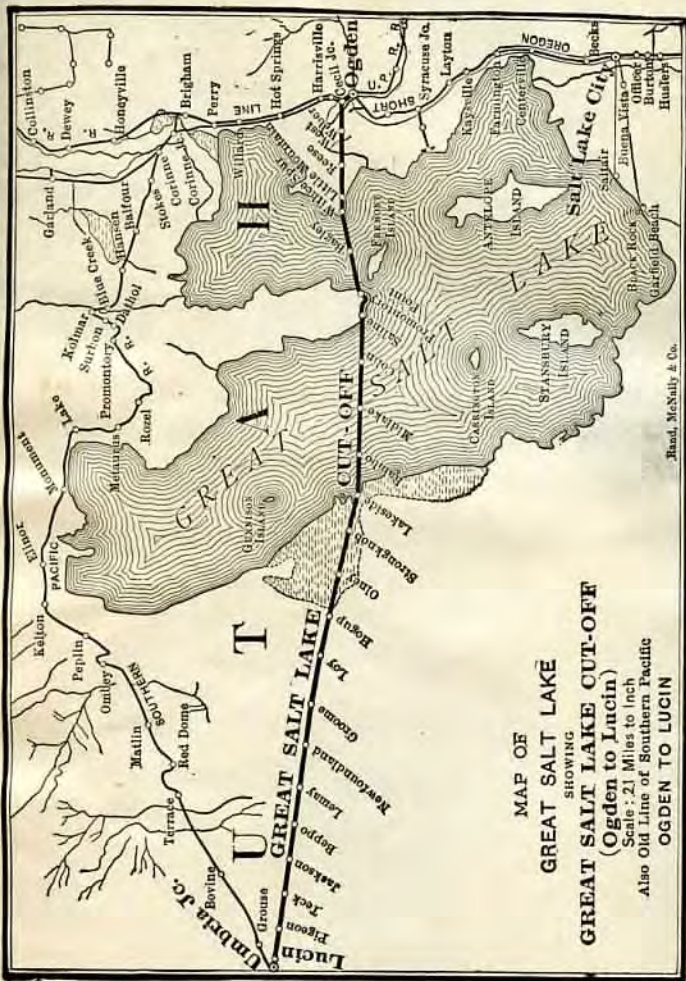
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30 Miles *from*
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MAP OF
GREAT SALT LAKE
 SHOWING
GREAT SALT LAKE CUT-OFF
 (Ogden to Lucin)
 Scale: 2 1/2 Miles to Inch
 Also Old Line of Southern Pacific
OGDEN TO LUCIN

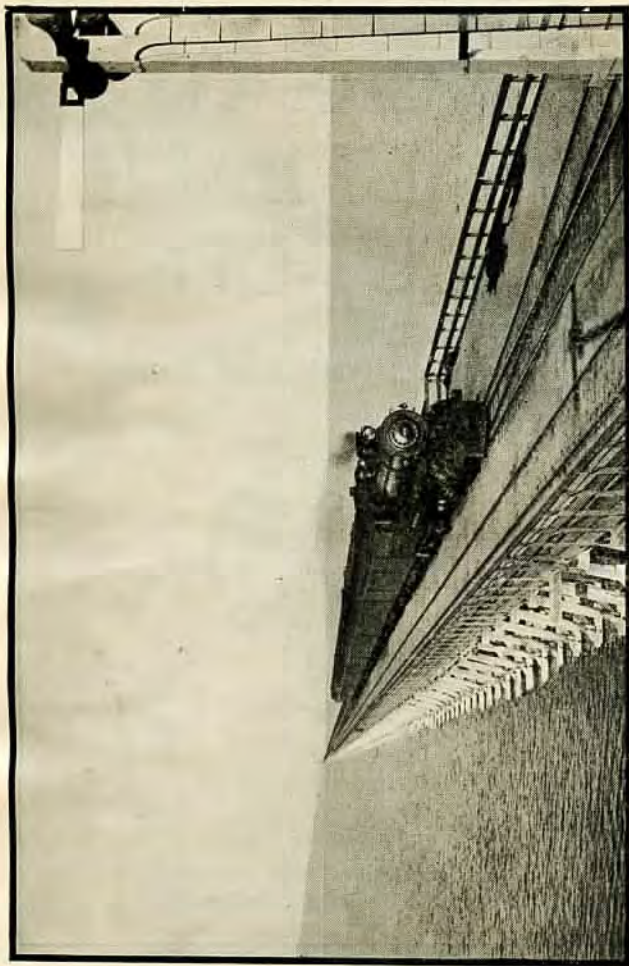
Reed, McNelly & Co.

GREAT SALT LAKE CUT-OFF

GOING TO SEA BY RAIL



CHAS. S. FEE
 Passenger Traffic Manager
 San Francisco, California



A SOLID WAY ACROSS THE LAKE

GREAT SALT LAKE CUT-OFF

—
GOING TO SEA BY RAIL
—

What is the Great Salt Lake Cut-Off?

The Great Salt Lake Cut-Off is a railway line of the Southern Pacific laid in an old lake bed from Lucin to Ogden, Utah, one hundred and three miles.

Part of this lake bed is dry. Part is under water. The part under water is Great Salt Lake.

The Cut-Off is as straight as the crow flies. An air line would not shorten the one hundred and three miles a third of a mile.

Why was the Great Salt Lake Cut-Off built?

To save the greater grades and curves and distance of the old line.

The old line runs around the north end of Great Salt Lake over Promontory Mountain.

The curves the new line saves would turn a train around eleven times.

The power saved in moving an average freight train, because of less grades, would lift an average man eight thousand five hundred miles. Enough power is saved in moving such a train over the shorter distance to carry a man four hundred times between New York and San Francisco.

What is the story of the railroad that went to sea?

Let us begin at the beginning.

I. The Lake That Was

Once upon a time, long ago, there was a great lake in Utah far larger than the present Great Salt Lake.

Roundabout was a lot of high land, which looked like a saucer with mountains for its rim. The snowy mountains (the Sierra Nevada) were west; the Rocky Mountains were east.

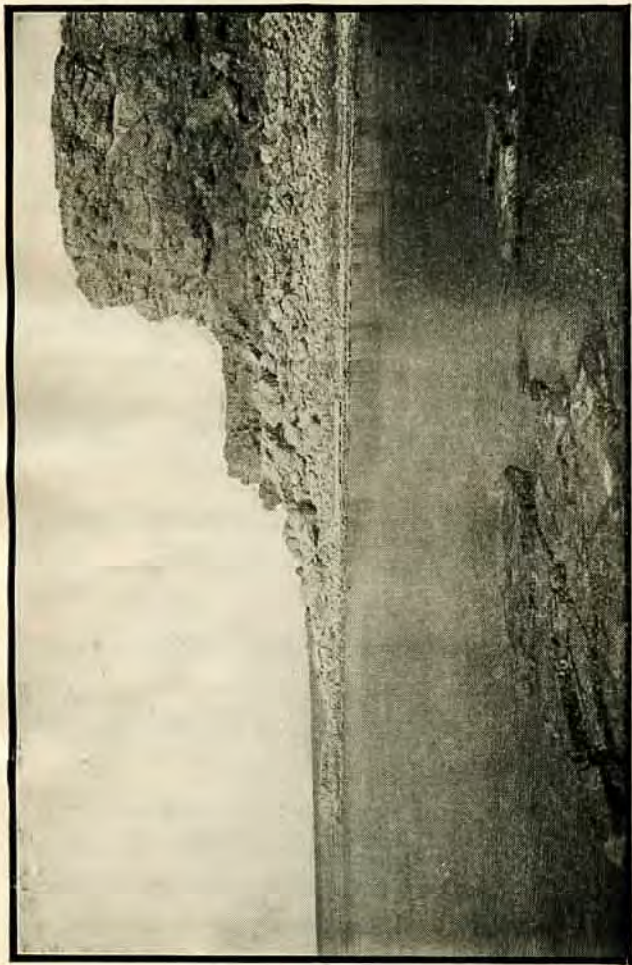
This lake was a thousand feet deep. Its surface was just a mile higher than the face of the ocean.

From the north end to the south end was as far as one end of Illinois is from the other. To sail from the east shore to the west shore would be to go as far as from New York to Albany.

It was quite a walk around the lake along its shore—as far as Chicago is from San Francisco.

The lake was a great lake, 346 miles long, 145 miles wide and 2,250 miles around. It was almost as large as Lake Michigan and much deeper.

The first man who wrote much about it was Captain Bonneville, in 1831. He saw the marks high on the cliffs where the waves once dashed. Of course, you know who



CLIFFS SHOW ANCIENT WATER LEVEL

Captain Bonneville was. Washington Irving has written about his wonderful adventures in the West.

So the lake that once was has been named Lake Bonneville.

No doubt it was a fine sight. But no one ever saw it, for it was all in the long, long ago, before the time of Adam and Eve and the Garden of Eden.

II. The Lake That Turned to Salt

Once a river ran from Lake Bonneville to the Pacific Ocean.

This river ran north through Red Rock Pass into the Snake River, and the Snake River runs into the Columbia and the Columbia runs to the sea. Then the place where Salt Lake City now is was nine hundred feet under water.

But by and by there was less rain. Maybe, too, the summers were warmer.

Lake Bonneville grew smaller and smaller till it was no larger than Lake Erie. No

stream now ran from it, for its surface was lower than the pass to the north.

Now, if you pour water into a pan and set it out into the warm sunshine, by and by the water will be gone. It will have evaporated. But if there were ever so little salt in the water, the salt will still be in the pan after the water is gone.

If you kept on pouring in water as fast as it evaporated, after a while you would have quite salty water in the pan, for there would be more and more salt left there to make it so.

So it was with Lake Bonneville. The rivers that ran into it had a very little salt in them—you could never taste it. So long as a river ran out of Lake Bonneville it carried this away as fast as it came in. But when no river flowed from it and the water went up in the air by evaporation, the salt remained.

By and by Lake Bonneville grew very salty.

Time went on. The seasons grew more dry until one hot summer Lake Bonneville was no longer a lake of water, but just a lake of salt.

III. Great Salt Lake as It Is

No one knows how long Lake Bonneville was dry. In the rainy season, no doubt, one could always have found a place to wade.

Another change came. The seasons grew colder. The water did not evaporate so fast. Perhaps more rain fell, and the rivers that ran into the saucer grew larger.

Anyway a new lake came where the old one had been—perhaps, like Topsy, it “just grow’d.”

It was not so large as Lake Bonneville and maybe from the beginning it was a very little salty, for the old salt bed of Lake Bonneville might not have been all covered over with earth. At present this lake is very salty and it is called Great Salt Lake.



SALT FROM THIS INLAND SEA

Great Salt Lake covers two thousand square miles, is seventy-five miles long, thirty-one miles wide and, in the deepest places, thirty feet deep. If its bottom were level it would be fifteen feet deep everywhere.

It is the most salty sea on earth except the Dead Sea. In every five pounds of the water is one pound of salts, of which thirteen ounces are common salt.

You remember about the Nantucket skipper who could tell where he was by the taste of the earth the lead brought up, and the joke the sailors played on him.

The people who know things can do more than that. They can tell how old Great Salt Lake is by tasting the water.

One of them, who was hired by the United States says that Great Salt Lake is at least 23,000 years old. He says this because it would take the streams from the mountains that long to carry enough salt to the lake to make it as salty as it now is.

He says, too, that there are four hundred million tons of salt in the waters of Great Salt Lake.

Every three and a half years the sun draws up from the lake as much water as is now in it. But the streams flowing into the lake keep it pretty well filled just the same.

The water in the lake is so heavy that one can not sink in it. It is very nice to float in if you keep your head out of water and your feet in.

There are no fish in Great Salt Lake.

A shrimp, rarely exceeding in length one-third of an inch, lives there. He has a name longer than that — *Artemia gracilis*. Millions of his sisters and his cousins and his aunts live very well in Great Salt Lake.

Certain young flies live in the lake before they get their wings. Their family name is *Ephydra gracilis*.

Sea-gulls make their home along the shore, enjoying the "salt sea air." Thousands of pelicans have their homes on the islands of Great Salt Lake. It is said no one knows where they came from; but then does any one know where anything came from?

IV. The Great Salt Lake Cut-Off

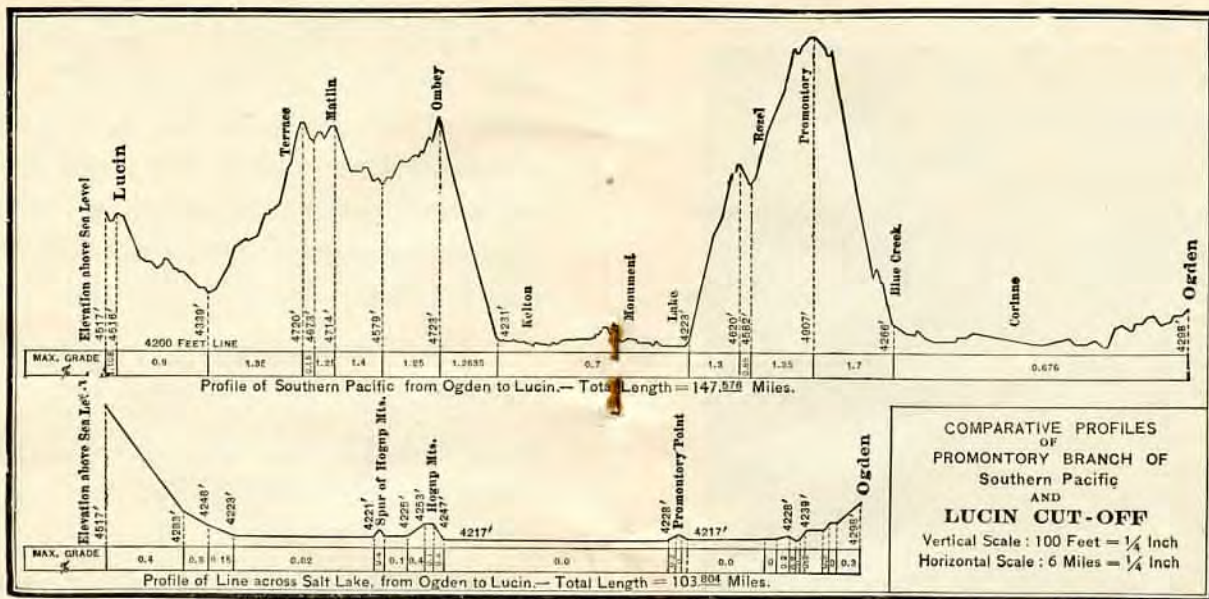
Fifty years ago and more, some very brave and able men said they would build a railroad across the country.

Then they did so.

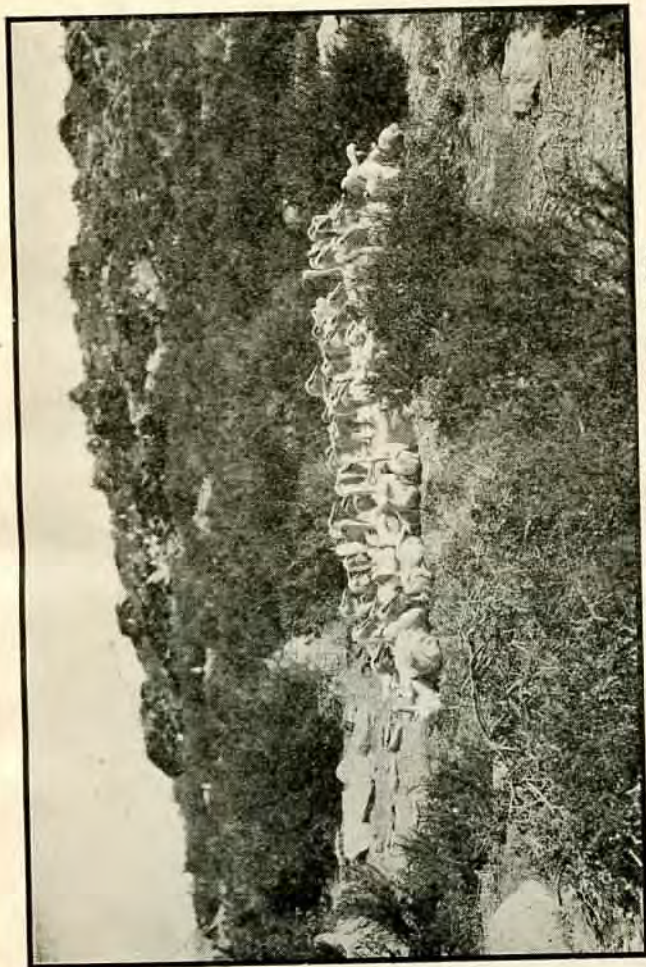
They built the Union Pacific west from Omaha and the Central Pacific (now a part of the Southern Pacific) east from San Francisco.

Today this is the central line across the continent and the story of its building is a story of heroic achievement.

In 1868 they came to the flat, broad bed of Lake Bonneville. But Great Salt Lake lay in the center and barred the way.



GOING TO SEA ON WHEELS NOT ALL "MOONSHINE"



PELICANS ON AN ISLAND IN THE LAKE

So they built the track around the lake to the north, as you may see by the map.

A third of a century later there was much more business. Engines were five times as large. Freight cars would carry five times as much weight. Where once one train ran each way a day, now sometimes a dozen each way climbed over Promontory Mountain north of Great Salt Lake.

Between Ogden and Lucin was a fine, level road bed made by Lake Bonneville.

Only Great Salt Lake, thirty feet deep and thirty miles broad, lay in the way.

And so every day trains were lifted in curves fifteen hundred and fifteen feet higher and carried forty-three miles farther than would be necessary if a road were built straight across the lake.

So the Southern Pacific railroad men looked at the old grade over the mountain and then at the level way across Great Salt Lake and they said:

"Let us build a cut-off, a straight, level line, over land, through water from Lucin to Ogden."

And they did so.

How was it done?

That is a long story—wish to hear part of it?

Word was sent to the iron furnaces and the steel mills in the East. And presently they were busy at work smelting iron ore and shaping steel for a thousand carloads of heavy rails.

Word came also to forests a thousand miles away in Oregon, California and Texas. It said that a trestle bridge twenty-three miles long was to be built.

So the lumber men began cutting down trees from a hundred to two hundred feet high. These were to make a framework of piling for the great trestle bridge.

Word came to workmen that in the waters of Great Salt Lake the railroad pathway

would be at the beginning a solid bank of earth for four and a half miles.

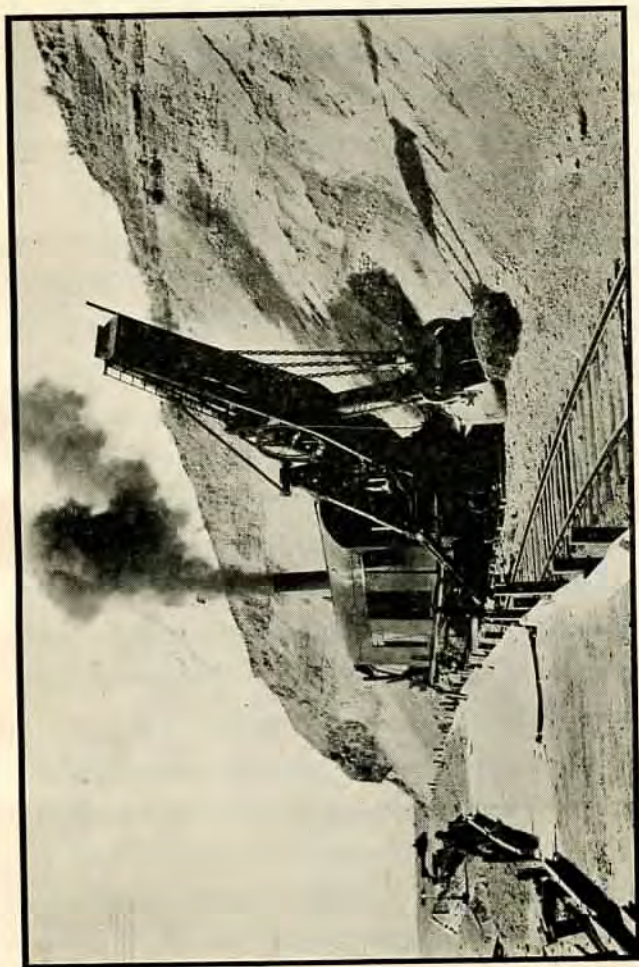
Then it was said that, of the twenty-three miles of trestle, eleven in the end were to be filled with earth.

So of the twenty-seven and a half miles through water nearly sixteen were to be a solid ridge of earth, sixteen feet wide at the top and seventeen feet above the water.

This word set to work the great steam shovels at Promontory Point where an arm of the mountain runs down into the lake. And it set them to work at Hogup Mountains, sixteen miles west of the lake shore. These mountains came up through the level cover of lake bed that Lake Bonneville left.

And the shovels became busy also at Little Mountain on the east shore of the lake.

Each shovel picked up seven tons at a scoop. Very soon trainloads of rock and



GIANTS PICKING UP TONS AT A SCOOP

dirt were ready to make a solid pathway through the water.

The chief engineer looked at the water more than thirty feet deep, then at his plans and said:

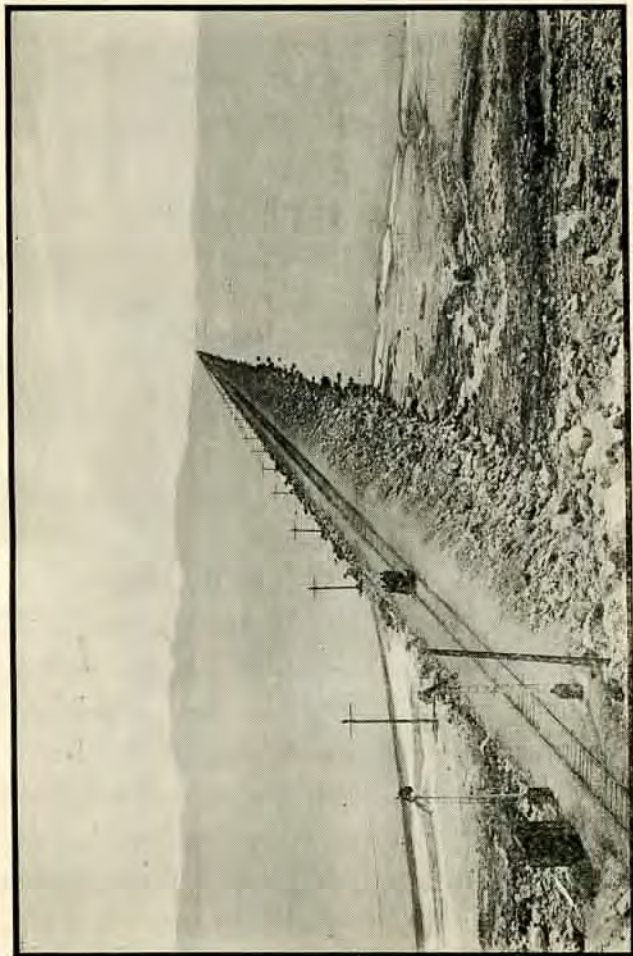
“We shall try to build a mile and a quarter of trestle a week,”—over a thousand feet for each work day.

In June, 1902, trainloads of steel rails reached the lake.

In July came the first piles. Many of them were so long that three cars had to be chained together as one to carry them.

In the meantime, the railroad had gone to sea in earnest. It built a stern wheel steamboat, the “Promontory,” and to this added seven tugs and many smaller boats.

These carried supplies and messages. They gathered in the logs that had been scattered by occasional storms. When the coat of salt the water gave them got in the way of the machinery, the boats were docked and washed off with steam.



SOLID TRACK. MODERN USE FOR AN OLD LAKE BED

Now, the lake became alive.

Three thousand men were at work. At night men worked in the gravel pits by electric light. In the cold of winter and the heat of summer there was no stopping. Steadily the great pathway grew. Each day the pile drivers made hundreds of yards. Each day the pit men loaded hundreds of cars of gravel—sometimes four hundred cars.

It was an army at work in a salt desert. Sixteen hundred and eighty tons of fresh water were used each day. All of it was brought many miles by train—some eighty miles, some one hundred and thirty miles.

More piles came. All told 38,256 trees were cut down to make piles for the great trestle. A forest of two square miles was transplanted into Great Salt Lake.

Placed end to end these piles would make a great tree that, fallen, would reach from Chicago to Buffalo.

And once, for five days, one after another, the piles were driven so fast that the trestle grew at the rate of 1,140 feet per day.

At such a rate, in the working lifetime of the chief engineer he could build a trestle from New York to San Francisco.

On November 13, 1903, the track from the east and the track from the west were joined in the center of the lake.

The great bridge across the lake is now a solid path, except for twelve miles.

If no one told you else, you would not know these twelve miles were on a trestle.

Every fifteen feet five piles are driven in a row crosswise to the track.

They are fastened together on their sides with heavy timbers, four inches and eight inches thick.

Across their tops and joining them together is a heavy beam eighteen feet long and a foot square.

Connecting this beam with the next set of piles fifteen feet away are eleven heavy

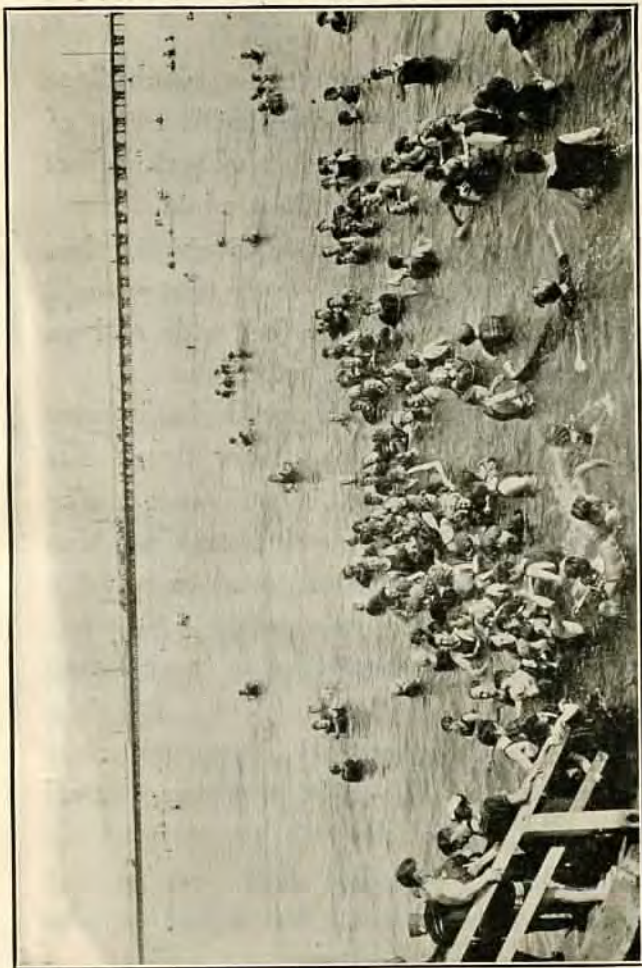
timbers (stringers) laid lengthwise with the track.

Above these stringers is a plank floor three inches thick. Above that is a coat of asphalt, then a foot or more of rock ballast in which the track and rails are laid.

The floor of the trestle is sixteen feet wide, and the lumber above the piling would make a board-walk four feet wide and an inch thick from Boston to Buffalo.

The cut-off from Lucin to Ogden is more nearly level than an ordinary floor. For thirty-six miles there is no grade. For thirty miles more the grade is so slight that an average person would need to travel a half mile to rise his own height. Nowhere is the grade over five inches to the hundred feet.

Just now the track is above the water thirteen feet. The solid way has cut off one north arm of the lake into which Bear River flows. This has made that part of the lake so fresh that it has frozen over in



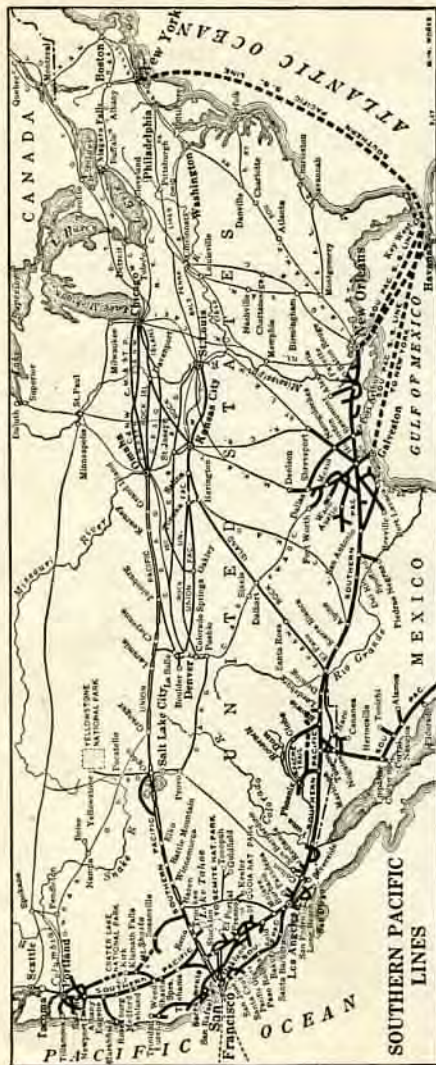
BATHING IN GREAT SALT LAKE.

winter, though the more salty water on the other side of the track never freezes.

Riding over it is like traveling in a flying machine, 'twixt air and water.

Great Salt Lake is the most wonderful of American lakes and the trip across it the most wonderful of lake journeys.

Every day in the year the Southern Pacific's Ogden Route trains to and from San Francisco, the "Overland Limited," "Pacific Limited" and "San Francisco Limited," take their passengers across the strange old bed of Lake Bonneville and the silent and beautiful sea of Great Salt Lake,— a delightful and unique experience and one of the scenic features which make the Ogden Route so enjoyable.



By the expenditure of millions the Southern Pacific has been made the safest railroad in the United States. There are 3415 miles of Southern Pacific road protected by Automatic Electric Block Signals.

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