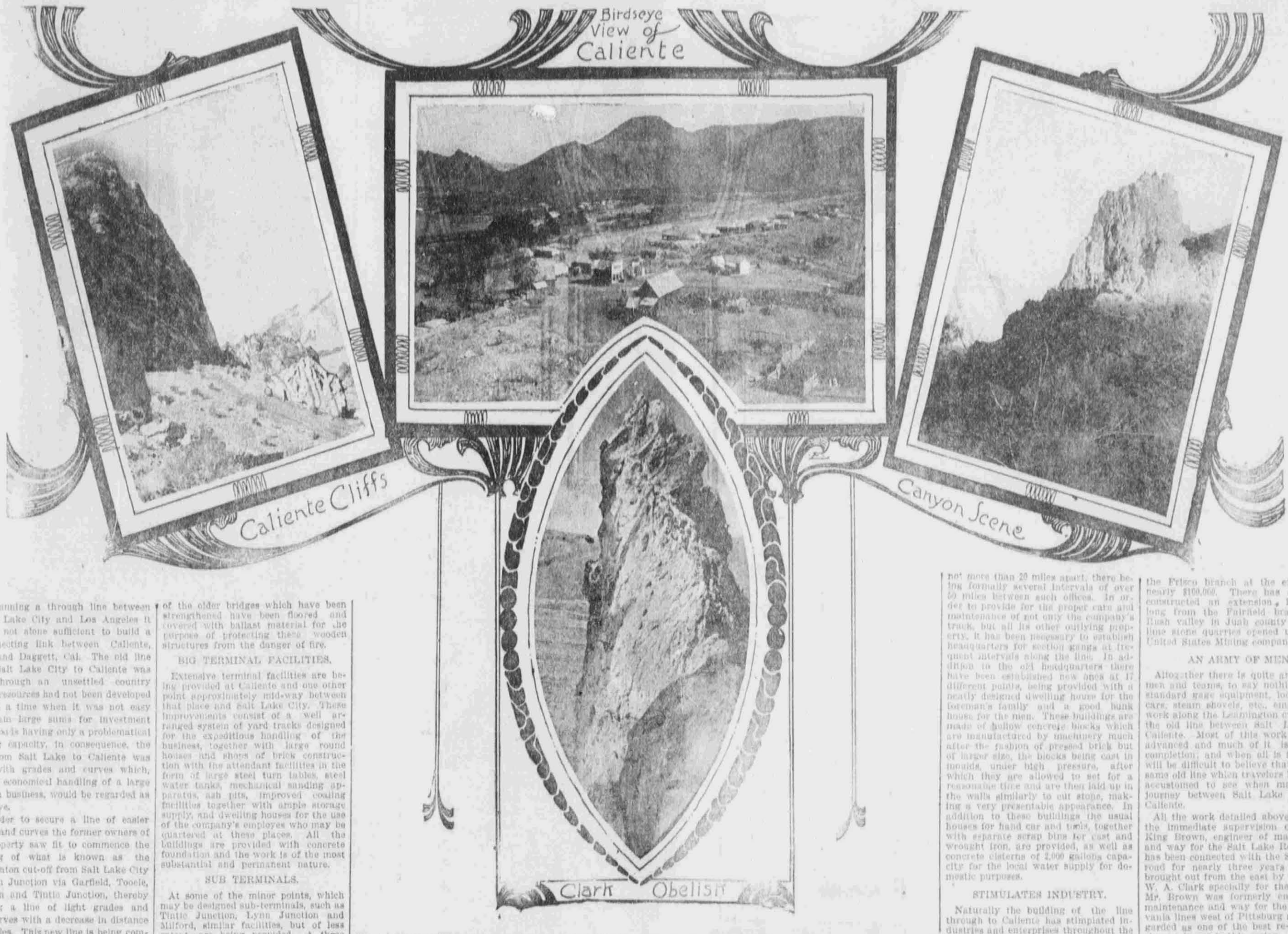
Construction Story of The Salt Lake Route.



IN planning a through line between Salt Lake City and Los Angeles it was not alone sufficient to build a connecting link between Caliente, Nev., and Daggett, Cal. The old line from Salt Lake City to Caliente was built through an unsettled country whose resources had not been developed and at a time when it was not easy to obtain large sums for investment in railroads having only a problematical earning capacity, in consequence, the line from Salt Lake to Caliente was built with grades and curves which, for the economical handling of a large through business, would be regarded as excessive.

In order to secure a line of easier grades and curves the former owners of the property saw fit to commence the building of what is known as the Leamginton cut-off from Salt Lake City to Lynn Junction via Garfield, Tooele, Stockton and Tintic Junction, thereby securing a line of light grades and easy curves with a decrease in distance of 16 miles. This new line is being completed and put in condition to handle through business, the chief item of expense being in ballasting it, together with its various passing sidings each 3,000 feet in length, showing a total of 110 miles of track ballasted during the last four months of the current year.

The ballast for this work has been obtained from nature's wonderful deposit in the form of a natural dam lying across Rush valley between Stockton and the old station "Terminus" which was at the end of the narrow gage running west and south from Salt Lake City before the building of the Leamington cut-off.

FROM LYNN TO CALIENTE.

From Lynn Junction south to Caliente the roadbed of the old line was unusually narrow, ranging from 7 to 10 feet only in width. In order that good track might be maintained, and that the roadbed might retain the ballast incident to putting the track in good condition it was necessary to widen this to the standard of 18 feet on embankments and 20 feet in cuts. This work is being vigorously prosecuted and by the end of this year should be completed over a distance of 164 miles, in connection with which all excessive grades of minor importance which would affect the movement of trains have been reduced, so that this portion of the line will be considerably improved, having a maximum grade west bound of .6 of 1 per cent. The curvature on this portoin of the line is also very light and well distributed.

TO AVOID HEAVY GRADES.

Several changes of line are being made in order to avoid excessive grades on the old line. One of these, in the southern part of Iron county, requires the building of 11 miles of new line, reducing the grade to the maximum above named. Another in Millard county is under way, involving changes of line and grade for a distance of nine miles. There is still another in the northern part of Millard county which will be undertaken as soon as the surveys are completed, which will probably be before this writing goes to press.

NEW STEEL RAILS.

Much of the old line south of Lynn Junction was laid with light rail, the greater portion of it being only 52 pounds to the yard, first laid over 20 years ago. This light rail is all being replaced with 75 pound steel and eventually the entire line will be relaid in the same manner, probably with rail of a still larger section. While doing this all decayed and unserviceable ties are replaced and the ties throughout are provided with heavy tie plates, an economical and serviceable appliance wherever soft wood is used.

MANY SIDINGS NECESSARY.

In order to provide for the expeditious movement of trains it was necessary to build many additional passing sidings and for this purpose the standard length of 3,000 feet was determined, with the side tracks spaced, as near as may be, five miles apart. For this purpose some 45 new side tracks have been built between Salt Lake and Caliente. Over long sections of the old line there were but few sidings and in some cases they were spaced as much as 20 miles apart, and were of insufficient length, many of them being not over 1,800 feet with some only 1,260 feet in length.

OLD BRIDGES INADEQUATE.

The old bridges were generally inadequate to carry the increasing weights of engines and car-loads. This has required strengthening many of the old structures and in numerous cases the building of new bridges. In all there have been some 25 bridges entirely rebuilt in the last few months. The design for these provides solid floors with the ballast carried continuously over the bridge. This is in accordance with the best practise and gives better riding and safer track than can be had with the usual design. All of the older bridges which have been strengthened have been floored and covered with ballast material for the purpose of protecting these wooden structures from the danger of fire.

BIG TERMINAL FACILITIES.

Extensive terminal facilities are being provided at Caliente and one other point approximately mid-way between that place and Salt Lake City. These improvements consist of a well arranged system of yard tracks designed for the expeditious handling of the business, together with large round houses and shops of brick construction with the attendant facilities in the form of large steel turn tables, steel water tanks, mechanical sanding apparatus, ash pits, improved coaling facilities together with ample storage supply, and dwelling houses for the use of the company's employes who may be quartered at these places. All the buildings are provided with concrete foundation and the work is of the most substantial and permanent nature.

SUB TERMINALS.

At some of the minor points, which may be designed sub-terminals, such as Tintic Junction, Lynn Junction and Milford, similar facilities, but of less extent, are being provided. A three stall brick engine house has been erected at Tintic Junction, where all the other necessaries are provided in the way of coal, and sanding facilities. Several new dwellings have been erected at this place. Similar facilities will be provided at Lynn Junction and Milford. There will also be additional facilities for coaling at other points, Stockton and Modena with some point on the old line, probably Payson.

FOR QUICK COALING.

For the quick coaling of engines large locomotive steam cranes with orangepeel buckets, working from an elevated trestle over a pile of storage coal, are provided together with movable coal pockets which the orangepeel bucket will keep filled in readiness for use, alongside which the locomotives will come and take a full supply of coal quickly.

GOOD WATER SUPPLY.

In this region abundant supplies of water fit for locomotive boiler use are a valuable acquisition and a necessity to the operation of the railroad. Fortunately it has been practicable to secure such a supply, approximately every 20 miles over the whole line between Salt Lake and Caliente. These waters are all of fair quality and several of them are excellent. Some are from springs, flowing by gravity through pipe lines of greater or less length to the water station. Others are from deep wells and require pumping while one water station is supplied from an artesion well a little over 200 feet in depth, the water flowing directly into the tank.

A DOZEN NEW WATER TANKS.

A dozen new water tanks are being erected, each of which stands 37 feet above the track and has a capacity of 70,000 gallons, the construction being concrete foundations with a steel tank carried on cast iron supporting columns. The several stations which are located on the desert where the wind supply is abundant, are equipped with 60-foot towers supporting 25-foot wind mill wheels operating deep well or surface pumps of large capacity. These plants are each provided with auxiliary power in the form of an 8-horse power gasoline engine which will be used only at such times as the wind fails to pump the requisite amount of water. The foundations of the wind mill towers, pump pits and gasoline tank pits are of concrete. Many of these storage tanks of 70,000 gallons capacity are replacing old wooden tubs of from 10,000 to 14,000 gallons capacity only.

STORM CHANNELS.

Considerable work has been done in providing for the roadway permanent protection against damage by water from cloudbursts or extraordinary rainfall. This consists in diverting drainage by means of artificial channels and in protecting the slopes of embankments by thoroughly rip-rapping them with stone of suitable size.

TELEGRAPHIC OFFICES.

Telegraph offices are being provided not more than 20 miles apart, there being formally several intervals of over 50 miles between such offices. In order to provide for the proper care and maintenance of not only the company's track, but all its other outlying property, it has been necessary to establish headquarters for section gangs at frequent intervals along the line. In addition to the old headquarters there have been established new ones at 17 different points, being provided with a neatly designed dwelling house for the foreman's family and a good bunk house for the men. These buildings are made of hollow concrete blocks which are manufactured by machinery much after the fashion of pressed brick but of larger size, the blocks being cast in moulds, under high pressure, after which they are allowed to set for a reasonable time and are then laid up in the walls similarly to cut stone, making a very presentable appearance. In addition to these buildings the usual houses for hand car and tools, together with separate scrap bins for cast and wrought iron, are provided, as well as concrete cisterns of 2,000 gallons capacity for the local water supply for domestic purposes.

STIMULATES INDUSTRY.

Naturally the building of the line through to Caliente has stimpiated industries and enterprises throughout the territory reached by the old line. This has made necessary the building of new depots at several points, as well as stock yards and other freight facilities in the way of tracks, etc., for the handling of local business. It has also resulted in the establishing of several new postoffices at outlying points where mail is exchanged without stopping trains through the medium of mail cranes set alongside the main track.

MINING AND STONE PROPERTIES.

There have also been new mining and stone properties developed. The first of these in importance is the opening up of the Cactus mine at the town of Newhouse in Beaver county seven miles west of Frisco, the former terminus of the old line from Salt Lake. This has required the building of an extension of the Frisco branch at the expense of nearly $100,000. There has also been constructed an extension, 1½ miles long from the Fairfield branch near Rush valley in Juab county to new lime stone quarries opened up by the United States Mining company.

AN ARMY OF MEN.

Altogether there is quite an army of men and teams, to say nothing of the standard gage equipment, locomotives, cars, steam shovels, etc., employed on work along the Leamington cut-off and the old line between Salt Lake and Caliente. Most of this work is well advanced and much of it is nearing completion; and when all is finished it will be difficult to believe that it is the same old line which travelers have been accustomed to see when making the journey between Salt Lake City and Caliente.

All the work detailed above is under the immediate supervision of Robert King Brown, engineer of maintenance and way for the Salt Lake Route, who has been connected with the San Pedro road for nearly three years and was brought out from the east by President W. A. Clark specially for the purpose. Mr. Brown was formerly engineer of maintenance and way for the Pennsylvania lines west of Pittsburg and is regarded as one of the best re-construction engineers in this region. The work he is now doing will remain a lasting monument to his capabilities.

Below Caliente the same standard of grade, bridges, rails and other detail prevails. Caliente is 335 miles south of Salt Lake via Juab and 321 via the Leamington cut-off. Starting from this point all construction is absolutely new.

Contracts were let from this end of the line for various stretches of grade that totaled 148.5 miles in length. From the California end of the line an equal length of construction was let. Despite the fact that at the Utah end of the line the physical difficulties in the way of rock work, cuts and fills were decidedly greater, the Utah contractors beat out the Californians by what will approximate two months. On Nov. 25 the last rail was laid at this end of the line and the contractors are now helping out the Californians. The gap which remains belongs to them and it is on their account that the line is not finished at this writing. Of the 32 miles remaining but 12 are not graded, and this stretch consists of rock work and cuts, so the indications are that it will be the middle of January before the gap is closed up and there will be continuous rails from Salt Lake to San Pedro.

HEAVIEST WORK.

Starting from Caliente, for the first 85 miles the heaviest work is encountered. While there is not a great deal to show to the layman, nevertheless there are hundreds of thousands of dollars in the track in the form of rock work, numerous bridges over the Meadow Valley wash, rip-rapping to offset cloudbursts and high water and dams off at either side of the track to divert running water during the stormy season. Through the Meadow Valley wash the maximum curvature encountered is 6 per cent, while 1 per cent represents the steepest grade.

COMMENCED BY McCARTNEY.

This work, which was commenced by Assistant Chief Engineer H. M. McCartney, was completed by Division Engineer A. L. Jones, is a splendid piece of construction throughout. Indicative of the care that has been taken to secure a solid roadbed, the specifications for the grade called for strata work—which being interpreted means that the graders did not dump the dirt and rock until the requisite height was reached and then push on but they would make the grade to the height of two or three feet for several hundred yards and when this had packed down they would return and build it up another few feet and so on until the grade was completed.

THE MOAPA FILL.

One of the heaviest propositions on the new line was the big fill at Moapa. Had the road been constructed on an economical basis this fill would not have been attempted, but the Salt Lake Route is here to stay and nothing but the best is good enough for Senator Clark and his associates. It was possible to follow the water grade down the California wash. However on looking over the situation it was argued that there was a chance of encountering washouts in the future if the water grade was followed. Accordingly surveys were made to enable the line to reach the plateau above the wash. The result was the big fill at Moapa.

The next heavy work encountered was at Vegas summit and the manner in which Mr. Jones rushed the crews was an eye-opener. Both in construction and tracklaying the men worked like beavers and established records that will stand for some time.

At present there are no stations named west of Moapa; they simply are designated by the siding number. The stations so far on the new line are Caliente, Bamberg, 8.4 miles; the starting point for the Delamar stages; Cana, 9.9 miles; Stine (Pump Station), 19.4 miles; Boyd, 14.9; Elgin, 18.9 miles; Kyle (Klerman ranch and vineyard), 25.1 miles; Leith, 30 miles; Carp, 40 miles; Vigo, 45 miles; Galt, 50 miles; Arden (Cane Springs, Huntsman), 60 miles; Guelph, 65 miles; Action, 70 miles, and Moapa, 75 miles.