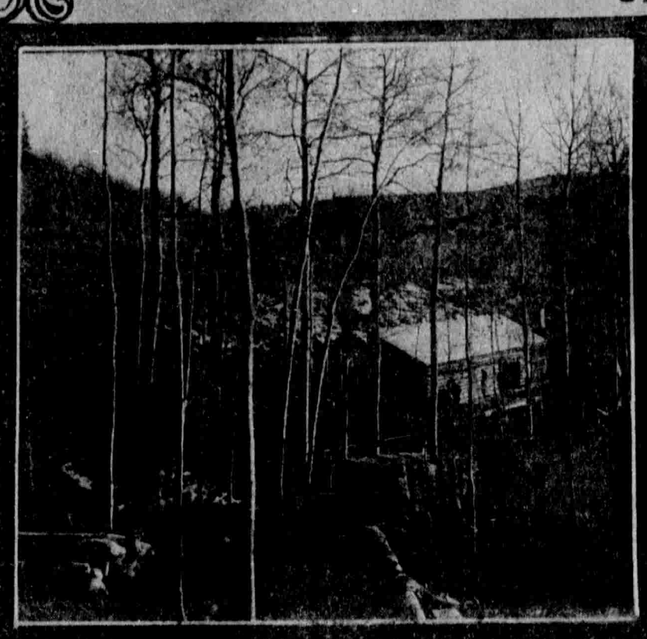
Uncle Sam's Work On the Strawberry Valley Project.

Line of Tunnel Towards Divide



Timber Tract Near Tunnel

Approach To The Tunnel.

The operations of the U. S. Reclamation service in Utah during 1906, have been confined almost exclusively to the developments in the Strawberry Valley project, the construction of which was determined upon late in the year 1905. The developments were well determined upon during the winter of 1905 and 1906, and work of construction was begun in May, 1906, as early as it was feasible to get men and teams onto the ground.

The work of greatest magnitude on the project, and the part requiring the longest time is the 20,000 foot tunnel through the rim of the great basin. This must be completed before any benefits whatever can be derived from the work. Thus it was planned to get at this work as soon as possible. The tunnel location is such that it was necessary to build 24 miles of wagon road through the Diamond Fork canyon, before any machinery or other construction materials could be delivered at the tunnel camp.

Work was commenced on this road early in May, but the heavy canyon construction required, was such that the tunnel work could not be commenced until late in August.

The road is so built that it will facilitate the hauling of the heavy machinery, materials etc., necessary to build the tunnel. No grades exceed 7 per cent and dugways, bridges, retaining walls, etc. were built substantially, to accommodate heavy loads and six to eight horse teams. This road extends from a point near Castilla Springs on the R. G. W. to the Strawberry Valley end of the tunnel, and in the near future will undoubtedly form one of the main roads into the former Uintah Indian reservation, affording, as it does, the shortest route from the western section of the reservation lands to Utah county cities.

It is a noteworthy fact that practically all of the work on this road was done by men and teams from the district which will eventually receive the additional water supply contemplated by the developments. The quality and interest of those laborers added considerably to the effectiveness of the work, and was very favorably commented upon by visiting engineers from other projects, where the labor problems of the past year have caused serious delays.

Work was begun on the portal cut of Strawberry tunnel early in August, and by Sept. 10, work on the tunnel was commenced on a small scale. The work had been advertised for bids, but none were received, and it was determined to continue the excavation under the plan of hiring laborers and purchasing equipment under government regulations.

In this way the work has progressed as well as could be expected and by the end of 1906, the tunnel will have been excavated about 400 feet. In this work as in case of the roadwork, local laborers have been employed quite extensively.

One important feature of the work done under the supervision of the government is the manner in which men are cared for, both in the matter of food and shelter and that of sanitary conditions.

Considerable work was necessary to provide the accommodations requisite for the care of the workmen, foremen and others, especially in view of the fact that the camp is at an elevation of 7,600 feet, where a rigorous climate prevails during five or six months each year.

The ordinary lumber bunk houses, common to construction camps would not suffice for the conditions, nor could we depend on the normal running stream for a water supply. It was realized that a high class of laborers could only be kept by proper accommodations. Therefore great care was exercised in building the permanent camp to be used during the three or four years that the work is likely to continue.

A water system has been installed to convey the water for camp from springs, the latter being covered to protect them from the rigorous climate. The bunk houses are small, each affording accommodations for eight men, all are supplied with facilities to make them comfortable in all particulars. A large room is available to the camp for reading, conversation, games, etc., and all in all the comfort of the workmen is a matter of favorable comment throughout the entire force.

An excellent telephone service is available connecting with the toll lines at Spanish Fork, and mail reaches the camp every other day.

There is probably nothing so effective in determining the efficiency of laborers as the accommodations afforded and to this feature we attribute the fact that our force is of the character that it is.

With the project actually in construction, the Association of Farmers, of course, much encouraged, and a few who expressed doubt as to the outcome of the undertaking are getting fewer each day. The cities in the district to be benefited are already feeling the effects of the work in added prosperity especially in business affairs and land values, and yet the work is hardly begun. I shall expect that one more year of the developments will convince the last skeptic of the valley that the scheme is safe, and that the original promoters exercised mature judgment when they urged a co-operative effort to make the project one of the most attractive of all the government projects.

GEO. L. SWENDSEN,
Engineer in Charge of Utah Construction.

The Year's Sunshine *and* Storm, and Last Winter's Mystifying Fog.

A STUDY of the climatology for the year reveals some interesting features as gleaned from the records of the local United States weather bureau. During January, the snow storms were fairly heavy and well distributed, the heaviest being in Rich and adjacent counties; and the mean temperature of the state was 25.3 degrees or 1.1 degree below the normal. The highest was 70 at Plateau, and 39 below zero at Strawberry valley.

February was the cloudiest month on record, with heavy storms of rain, sleet and snow and high winds, and a mean temperature of 3.5 degrees above the normal.

March was another abnormally clouded month, which reduced the daily temperature, and the precipitation exceeded all previous records, being 3.14 inches, or 1.42 above the normal. Gales with velocity of 60 miles an hour visited Salt Lake and Modena during the middle of the month. A high temperature, 86 degrees obtained at Grayson on the 31st.

During April nearly every rain storm was followed by unusually low temperatures, and well distributed rain and snow storms occurred frequently. The mean temperature was only .6 degree below the normal, while the rainfall was nearly one inch above the normal, the heaviest fall was at Payson, being 4.57 inches. May averaged abnormally cold, windy and wet, with a mean temperature of 2.2 degrees below the normal. There were numerous frosts in the central and northern parts of the state, but at Thistle the mercury rose to 96 degrees on the 21st, while the lowest was 13 degrees at Kelton on the 10th.

June was cool with cloud and frost early in the month. But this was followed by warm weather that melted the snows and flooded lowlands through the state. There were killing frosts during the last 10 days, with snowy weather in the mountain districts. The mean temperature was 3.5 degrees below the normal, the highest being 106 degrees at Rockville, on the 23rd, and the lowest 22 degrees at Soldier Summit on the 24th. The precipitation was .26 of an inch above the normal.

July showed up with cool fair weather, but abnormal cloudiness and an unusually sultry atmosphere. A new record of thunder storm frequency was established, local thunder storms occurring daily in some localities. The mean temperature was but 1 degree below the normal, with highest at St. George, 110 degrees on the 6th, and the lowest 26, degrees, at Coyote on the 1st. The average precipitation was .08 of an inch above the normal, though at Tropic 2.99 inches fell.

August showed cool weather in the beginning, with warm nights following with cool frosty nights in the mountains. Thunder showers were general during the early part, and heavy rains and damaging floods were general over the state later, the average precipitation being nearly twice the greatest previous average for August. The northern part of the state caught it the worst. The mean temperature was .7 degree below the normal, and the highest, 105 degrees, at Fillmore on the 10th, and the lowest was at Coyote on the 28th. The average precipitation was 2.09 inches or 1.25 inch above the normal. The greatest amount was 4.57 at Morgan.

In September there was a deficiency in average temperature. The highest occurred almost simultaneously over the state on the 6th, the average or mean for the month being .7 below the normal. The highest temperature was at Hite, 99 degrees on the 6th. Considerable snow fell in the mountains, and the heaviest precipitation was 3.49 inches at Parowan.

October enjoyed unusually favorable weather in the first and last parts of the month, while the middle part had warm days, cold nights with killing frosts. Dry weather prevailed in nearly all sections, and practically no precipitation occurred until the latter half of the month, when rain and snow were general with hail and sleet at scattered points. The mean temperature was .1 degre abov the normal. The highest temperature was 98 degrees, at Thistle on the 1st, and 9th, and the lowest was 6 degrees at Strawberry valley on the 23rd and 24th. The average precipitation was .5 of an inch above the normal, the greatest amount being 2.49 inches at Ibapah.

November was characterized over the state by a pronounced excess of precipitation, and a slight temperature deficiency. During the early part of the month temperatures averaged from normal to 20 degrees above, but towards the close, temperature means of 20 degrees below were recorded. Rainstorms were frequent early in the month, with snowstorms in the latter, so that the northern mountains were covered with snow. A wind storm of 75 miles extreme velocity swept over the state on the 15th, with five minute velocities of 66 miles per hour were noted, the highest of record since the establishment of the Salt Lake office of the weather bureau. But little damage was done, owing to absence of gusts and squalls.

Probably the most destructive windstorm that ever visited the Salt Lake valley occurred Saturday and Sunday, Oct. 20 and 21. From its inception, at 10 o'clock Saturday night, the unsteady northeast storm-wind continued until early Sunday afternoon, extreme velocities of a mile a minute recurring at frequent intervals throughout nearly all of the 14 hours.

The greatest damage occurred from Salt Lake City to Ogden, and from the mountains to the lake. Sunday morning's daylight brightened a cloudy sky and revealed a scene of great destruction. The damage by the tempest was mostly done in the three hours just preceding daylight when the wind was highest, momentary velocities evidently being much higher than the mile-a-minute rate. Many hundreds of gigantic shade trees carrying tons of dirt were prostrated across the streets amid tangles of live electric wires and broken poles.

Thousands of window panes were broken, and dozens of large buildings were unroofed while many smaller ones were tumbled over or collapsed. The large liberty statue surmounting the magnificent City and County building was bent far to the westward, and a lower statue, "Justice," was dashed to the pavement and destroyed. Some passenger coaches and box cars were blown from the railroad tracks in the vicinity of Bountiful and Farmington, and an entire freight train except the engine was overturned near Centerville. Many miles of telegraph and telephone poles the interurban districts were greatly damaged.

DESTRUCTION IN OGDEN.

In Ogden and the smaller towns along the lake more than half of the buildings were damaged and the streets were strewn with wreckage. The force of the wind was greatest in clearly-marked swaths of greater destruction that stretched out across the cities and the valley from the outlets of the canyons. While temperatures over the worst stricken district ranged from 20 degrees to freezing during the storm it is remarkably fortunate that there was virtually no snowfall during the storm.

The storm was felt over all the state, but in greatly diminished force outside of the Salt Lake valley, the principal features being the cold winds and the snow. Herds of unprotected stock on the bleak ranges were driver away by the blizzard, many being scattered and lost. Further incalculable injury was done to the farmers of the state in general by the intense cold, though a few reports indicate help rather than harm from the snow-storm.

Injury and death were sparsely scattered throughout the storm-swept district, caused by accident and exposure, but considering the property destruction and the general severity of the storm, casualties and human suffering were remarkably uncommon. The weather maps of Saturday and Monday, before and after the storm, respectively, showed an immense high air pressure area advancing over the northern Rocky mountains, with an exceedingly steep baric gradient to the southward into a deep atmospheric low pressure area over the southern plateau. Under these very favorable circumstances, the air from the high flowed into the low at great speed.

WINTER FOGS.

To the resident of the Salt Lake valley, accustomed as he is to the clear skies and bright sunshine of his intermountain home, the prevailing weather conditions during last winter appeared somewhat in the light of an enigma.

Two periods of dense cloudiness attended by constant fogs, marked the cold season. The first occurred during the latter part of January and the fore part of February. The fogs during this period were of marked density, objects at even a distance of 100 feet being often completely obscured. As the temperature during this entire period was constantly below the freezing point, the moisture with which the atmosphere was surcharged was deposited on the trees and bushes in the form of minute ice crystals, the layer attaining considerable thickness at times, the whole forming a picture as novel as it was beautiful.

Such, in brief, was the predominating weather of the winter that caused the amazement as well as discontent of the inhabitants of this valley—a condition of affairs that was all the more inexplicable to the ordinary mortal, unversed in weather lore, in view of the reports from contiguous towns more highly situated, of clear skies and bright sunshine. In this connection, a comparison between the temperature at Salt Lake City altitude, 4,300 feet) and the town of Heber, (altitude 5,606 feet), some 30 miles distant, would seem to furnish the most interesting as well as instructive contrast. At the former station the mean maximum temperature from Jan. 25, to Feb. 14, inclusive, the limits of this extraordinary period, was 30.4 degrees; the mean minimum, 23.9 degrees, making a mean daily range of 6.5 degrees. At Heber the mean maximum was 37.5 degrees; mean minimum, 6.5 degrees, giving a mean daily range of 31.0 degrees. The effect of the fog layers on the temperatures at the lower stations in impending the direct insolation by day, and correspondingly reducing the radiation by night, is strikingly noticeable in the small mean daily range. On the other hand, the large mean daily at the more elevated station illustrates in a marked manner the intense insolation and radiation peculiar to higher altitudes.

Unfortunately, no psychrometric observations are taken at Heber, and no comparison of the relative humidities during the period under discussion can therefore be made. Undoubtedly, these would show as great a contrast as the temperatures. At Salt Lake City, the mean of the daily humidity observations at 6 a. m. and 6 p. m. amounted to 89 per cent—needless to state, abnormally high even for winter.

The following is a brief explanation of the causes that produced such peculiar weather conditions: The primary cause was the stagnant condition of the atmosphere in the lower valleys, due to the high barometric pressure areas that overspread the plateau region during these periods. In "highs" the barometric gradient is usually very slight, and as a consequence there is but little wind movement.

This favors a stagnant condition of the atmosphere, in which the dust rapidly accumulates. These dust particles favor a strong radiation at night, and in consequence the air is cooled. The cooling process is also materially aided by accumulation of cold air that has been cooled by radiation on the high mountains, whence it settles into the valley bottoms by reason of its greater specific gravity, cold air always being heavier than warm air. The cold air then remains in the valleys, the wind movement not being sufficiently strong to stir it up.

There is thus a constant supply of cold air moving down into the valley where it continues to cool through radiation from the valley floor, until at last the temperature falls below the dew point, and condensation of the vapor into visible water drops results. These water particles remain suspended in the atmosphere, and thus the phenomenon of fog is produced, and the air being cooled below the freezing point, the vapor or moisture in the atmosphere condenses in the form of ice or frost upon all objects, especially trees and other foliage, presenting a typical and beautiful winter scene.

HUGE TONNAGE FROM CARBON COUNTY COAL CAMPS

THE Utah Fuel company, which is essentially the largest tax paying corporation in eastern Utah, is numbered among the biggest and most important business concerns of the state. As a coal and coke proposition, it is the greatest in this intermountain region, embracing as it does an immense acreage of developed and virgin coal-bearing lands in Carbon county.

While the Utah Fuel company is essentially a separate company, its interests are so closely interwoven with the Rio Grande Western railroad that it can be said to be a Gould corporation.

LAST YEAR'S TONNAGE.

As an employer of labor and the disseminator of a big payroll, this company has done much in the direction of upbuilding of the state. During the past year an average of 1,724 men have been employed in the five coal camps owned. These employes have received monthly an average of $152,499.10, or an aggregate of $1,829,989.20 for the year. These men have turned out during the past 12 months 1,892,132 tons of coal and 282,195 tons of coke.

At Sunnyside 200 new coke ovens are now open and 50 new cottages constructed.

THE OUTLOOK.

The outlook is that this tonnage will be greatly increased in the future for just as soon as the Western Pacific is built there will be a big market for coal, in addition to that already existing in Utah and which at the present time takes a big percentage of the output.

WESTERN PACIFIC.

With the Western Pacific completed this railroad will consume thousands of tons of fuel for its motive power, to say nothing of that required in the mining camps and towns along the route. Then, too, there will be a big market for the coal and coke in San Francisco both for local consumption and export, all of which makes the future of the Utah Fuel company an exceedingly bright one.

TABLE OF AVERAGES.

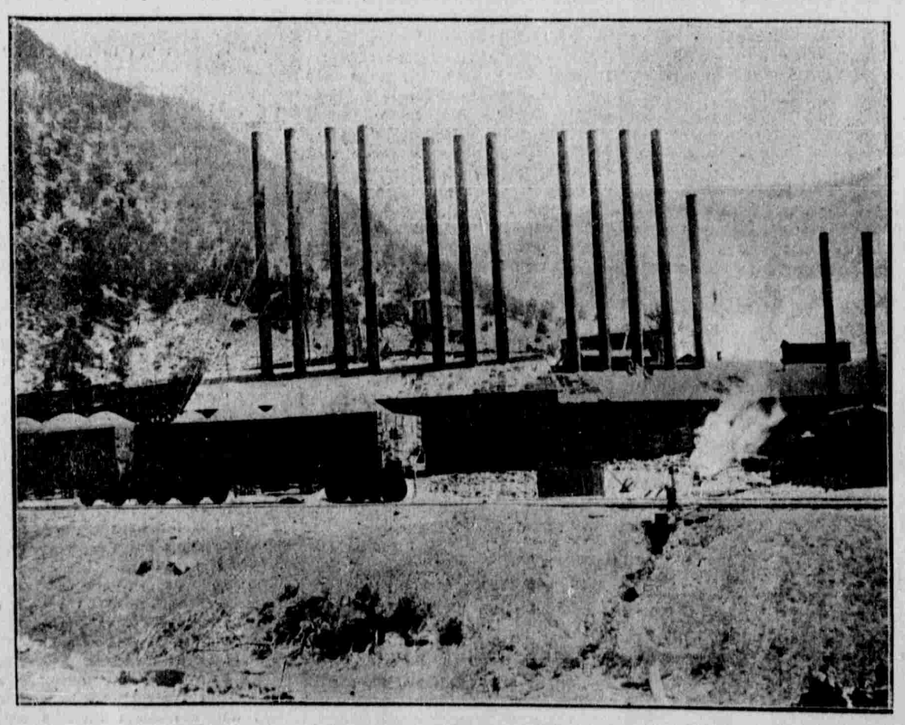
The tonnage during the past year was contributed by the respective mines in accordance with the following table, which also sets forth the average number of employes per month, the number of days each mine was worked during the year and the average monthly pay roll for the current year:

Mines.	Av. No. Emp. Per Mo.	No. Days Mine Worked.	Av. Mo. Pay Roll	Total Tons Coal Mined for Year.	Total Tons Coke Made for Year.
Winter Quarters	275	295	22,875.86	373,978	
Gastle Gate	385	301	31,473.34	331,405	89,072
Clear Creek	249	294	21,643.90	349,432	
Sunnyside	689	295	65,142.99	627,876	193,123
Somerset, Colo.	126	276	11,363.01	209,441	
Totals	1724	1,461	152,499.10	1,892,132	282,195

COKE INDUSTRY.

A growing industry connected with the mining of coal by the Utah Fuel company is the manufacture of coke, which is extensively utilized by the smelters of Utah, Montana and contiguous states.

While there are 450 coke ovens in operation at Sunnyside and 202 at Castle Gate, this accommodation has proved to be inadequate to meet the growing demands of the trade. One hundred and fifty new coke ovens have been recently constructed, and as soon as the new disintegrating plant at Sunnyside is erected, these also will be placed in commission.



SUNNY SIDE POWER HOUSE

Under new conditions the plant is to be enlarged. Two new boilers have been installed and additional machinery for generating electric power put into operation.

NEW WATER SYSTEM.

In this connection a new water system has been established at Sunnyside this year, at no small expense; a large pump has been placed in commission at Range creek, five miles distant from the camp, which supplies Sunnyside with water for culinary purposes, and also furnishes the much needed additional supply required in the operation of the new coke ovens.

MODERN COTTAGES.

Among the improvements inaugurated by this company has been the erection of a number of commodious modern cottages for the use of its employes, a welcome change to the usual run of make-shift cabins usually associated with coal mining camps in the west.

COMPANY HOSPITALS.

Another innovation which has been instituted by the company during the past three years has been the erection of company hospitals, and the system whereby each employe by paying a small assessment monthly is entitled to medical and surgical treatment for himself and medical treatment for the members of his family.

Of these hospitals there are four, which were built by the Utah Fuel company. The establishment at Castle Gate is under the charge of Dr. Neher; that at Clear Creek, Dr. Allerson; at Winter Quarters, Dr. E. B. Eisgreen, and the one at Sunnyside is under the administration of Dr. A. W. Dowd.

The system has proved to be a success, and the coal diggers, together with their wives and families, appreciate the boon.

COMPANY STORES.

When it comes to food, clothing, groceries and luxuries, the Wasatch Store company, which is an offshoot of the Utah Fuel company, supplies all the wants of the employes. With stores at each of the camps carrying big stocks of goods equal to those of large cities and a credit system, none has to go outside of the limits of the camp to secure his supplies, whether it be blasting powder or silks and ribbons.

LOCATION OF MINES.

The camps operated by the Utah Fuel company are scattered and cover considerable territory in Carbon county.

The Winter Quarters mines of the Utah Fuel company are located in Winter Quarters canyon, Scofield, about 16 miles from Colton, on the Rio Grande Western railway. No. 1 mine is one of the oldest in the state. The Clear Creek mine is situated up Main creek, about seven miles from the town of Scofield. The Castle Gate mines are situated at Castle Gate, 108 miles south of Salt Lake City, on the Rio Grande Western railway. In Carbon county. The Sunnyside mines are located on the Sunnyside branch of the Rio Grande Western, 16 miles east of Mounds, in Whitemore canyon, Carbon county. Here the company has opened up three mines, the vein being from 7 to 7½ feet thick.

COMPANY OFFICERS.

E. T. Jeffery, president, New York.

C. H. Schlacks, vice president, Denver, Colo.

Stephen Little, secretary, New York.

Jesse White, treasurer, New York.

W. F. Colton, assistant treasurer, Salt Lake, Utah.

W. O. Williams, auditor, Salt Lake, Utah.

H. G. Williams, general manager, Salt Lake, Utah.

W. B. Williams, general superintendent, Castle Gate, Utah.

W. D. MacLean, purchasing and sales agent, Salt Lake, Utah.

W. J. Elwood, mine superintendent, Sunnyside, Utah.

Wm. Forrester, mine superintendent, Castle Gate, Utah.

T. J. Parmley, mine superintendent, Winter Quarters, Utah.

Thos. Bell, mine superintendent, Clear Creek, Utah.

Gus. Goodart, mine superintendent, Somerset, Colorado.

J. R. Fleming, coke oven superintendent, Sunnyside and Castle Gate, Utah.