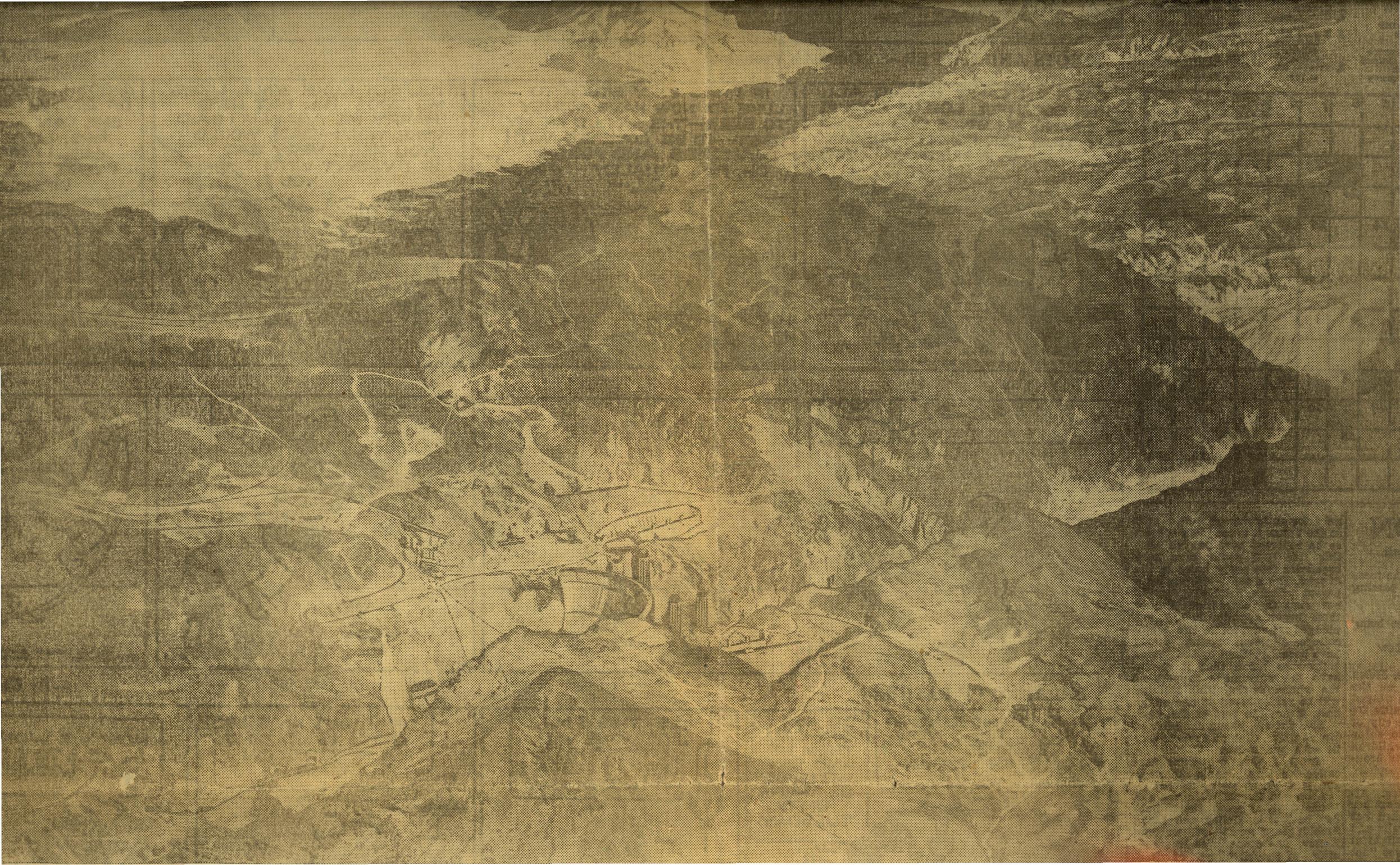


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BOULDER DAM

GREATEST COLLECTION of "BIGGESTS"



IN the land of the fabled "Seven Cities of Cibola," where courageous Spanish explorers unsuccessfully sought yellow gold 400 years ago, modern engineers, equally as brave, are rushing to completion a mighty monument to a more precious substance—white gold.

Greatest engineering project of its kind, this colossal monument—\$165,000,000 Boulder Dam—will regulate and conserve the wild waters of the Colorado river, and will generate power almost equal to the combined output of Uncle Sam's three other mighty hydro-electric projects, Niagara, Conowingo and Muscle Shoals.

Containing 35,000,000 pounds of steel and enough cement to build a highway 2255 miles long, 20 feet wide and six inches thick, Boulder Dam rises 727 feet between the rock-walled recesses of Black Canyon, 30 miles southeast of Las Vegas, Nevada.

As thick at the base as two city blocks is this mighty "plug" on the Colorado river. And four city blocks could be laid along its crest. Only 65 feet shorter than the Woolworth building is this highest of all dams which has risen in the west.

Impressive as it is, however, the huge bulk of steel and concrete that is Boulder Dam pales somewhat in comparison to a myriad of other "big things" up there on the Colorado, where an army of men has been laboring through blistering hot days and icy cold nights for the last four years.

ONE fair visitor to the government's big project voiced the opinion of many others who have seen the dam when she said:

"After having seen the biggest pipe in the world, the biggest construction camp in the world, the biggest trailer in the world, the biggest cables in the world, the site of the biggest artificial lake in the world and so many other big things—the highest, biggest dam in the world loses some of its impressiveness."

Before construction of the dam even began, several of these "big things" took form to become part of the great medley of superlatives now known as the Boulder Dam project.

The first was erection of Boulder City, the

world's largest construction camp, to provide living facilities for the huge force of men to be engaged in construction of the dam. The average population of this city during the work was around 3000 persons, but at one time or another approximately 6000 persons resided in this unique little city.

Transformed almost overnight from raw desert to a model city, the town was the most unusual in the world, as well as the largest of its kind. Long rows of canvas and wood buildings housed the workmen, 172 to each room. Seven meals a day were served in a dining hall seating 1300 persons.

Forty per cent of the workmen employed on the project were married, and they and their families lived in individual houses which they rented from the government at from \$15 to \$50 per month. Unmarried workers were charged \$1.60 a day for meals, room and transportation to the damsite, about seven miles away.

Complete in every detail, the model city included stores, a theater, restaurants, churches, a school and a hospital. The city was built on government land at a cost of \$2,000,000. It will remain permanently for the use of industrial and tourist projects. When the town was fully occupied, the government had a light bill of \$45,000 each month. Uncle Sam pumped his own water to the city from the Colorado river.

FOLLOWING erection of this city, Six Companies, Inc., contractors for the dam, built two of the largest plants ever seen on an engineering project.

One was a screening plant which separated gravel into three sizes at the rate of 700 tons an hour. The other was a cement mixing plant which handled 450 barrels of cement every hour.

Then, to the ultimate site of Boulder Dam, was brought the greatest amount of specialized equipment ever witnessed on any construction project. This machinery included several "jumbo" drilling machines, the world's largest trailer, 11 100-ton steam locomotives, a fleet of heavy-duty trucks and some of the largest cranes and derricks ever built.

Mighty is the dam itself, but no mightier than the things from which it is created--- and this is a story of its parts

It was during boring of diversion tunnels in the walls of Black Canyon above and below the damsite that contractors designed and built the "jumbo" drilling machines. This apparatus was nothing more or less than a 10-ton truck, upon which were mounted 30 compressed air drills. Into the rocky sides of the canyon these "jumbos," unprecedented in engineering history, ate their way, followed by huge steam shovels which emptied the loose rock and gravel into trucks.

The largest trailer ever built was constructed to solve difficult transportation problems. The trailer was cushioned on 32 solid rubber tires and weighed 41 tons. Designed to carry a maximum load of 200 tons, the machine was used to haul sections of steel tubing over a tortuous mountain road from the pipe fabrication plant to the damsite.

The width of this big trailer was 22 feet and its over-all length was more than 37 feet. It required a turning radius of 100 feet, but it was so constructed that it could be towed from either end. It had 16 double wheels over which the burden was distributed, and each of the four corners was supported by two axles, each axle rolling two wheels.

STEEL pipes larger than any heretofore made are among the other "big things" to be seen at the Boulder Dam project. Several pieces were 30 feet in diameter, 22 feet long and weighed 186 tons, equalling the weight of two big locomotives.

More than 88,000,000 pounds of steel plate were used in making 14,500 feet of pipe for the project. Ranging from 30 to eight feet in diameter, most of the pipe was used for main conduits which will lead water from the intake towers above the dam to the powerhouse and to the outlet works regulating valves below the barrier.

As the size of the pipes was too great to

permit shipment by railroad, they were fabricated at a plant built by the contractor on the rocky slopes above the canyon about one mile from the site of the dam. One piece of 30-foot diameter pipe approximately 12 feet long was made from three steel plates, each about 32 feet long and 12 feet wide, the largest that could be rolled with existing steel equipment.

The biggest cables in the world were used during construction of the dam to send workmen and supplies across the deep canyon. Three and one-half inches in diameter, six cables were anchored in 50-foot tunnels on the sides of Black Canyon and carried a capacity load of 150 tons. The pull on each anchorage with a maximum load at the center of the canyon was estimated to be at least 2,000,000 pounds.

Two spillways, each of which passes 200,000 cubic feet of water per second, vie for honors with the other "big things" on the Boulder Dam project. They are 650 feet long and 150 feet wide. A big battleship could be floated in each of these huge spillways.

Cofferdams above and below the site of Boulder Dam were the largest ever built. One was 750 feet thick at the base, 480 feet wide, 98 feet high and 70 feet thick at the crest. The other was 500 feet thick at the base, 66 feet high and 50 feet thick at the crest. Costing \$23,000,000, both were constructed of rolled *earth* protected by concrete slabs, with gravel foundations 18 feet below the river bed.

TO change the river's course, leaving the damsite dry so that the foundation excavation could be made, four of the world's largest diversion tunnels were bored at the scene of the project. The four tunnels, each 56 feet in diameter, have a total length of about 3.1 miles, and required the removal of 1,500,000 cubic yards of rock.

What will eventually be the world's largest artificial lake already is forming behind Boulder Dam. When filled, it will measure 115 miles in length, and will range from a few hundred feet to eight miles in width.

In this great lake will be stored 26,000,000 acre feet of beneficial water, or enough to cover the state of Connecticut to a depth of 10 feet. In area, the lake will be 145,000 acres.

Equipment to be installed in the power-

house at Boulder Dam, which will produce between 1,000,000 and 1,200,000 horsepower, calls for some of the largest machinery ever built. Principal items include 12 85,000-horsepower hydraulic turbines, 12 11x10-foot balanced valves, 12 75,000 kilovolt-ampere generators, 36 25,000 kilovolt-ampere transformers, four 250-ton cranes, switchboard and control apparatus larger than any heretofore made, and a completely equipped machine shop.

In addition to all these "big things" surrounding Boulder Dam, the big mass of concrete again pales in comparison to three other gigantic projects now under way nearby.

These are the \$220,000,000 Colorado river aqueduct, which will carry Boulder Dam water to Southern California, the \$38,000,000 All-American canal, which will end the threat of drouth and flood to Imperial Valley with the aid of Boulder Dam, and the world's largest power transmission line, costing \$22,800,000, which will carry power from the dam to Southern California.

TWO hundred and forty-one miles long, the Colorado river aqueduct includes the construction of a 330-foot diversion dam 150 miles below Boulder Dam, 86 miles of tunnel through rock-ribbed mountains, 55 miles of covered conduit, 24 miles of pressure line, and 75 miles of lined canal over the desert.

An army of men, nearly 4000 at times, is at work on the aqueduct. Boring of 23 tunnels between the Colorado river and Riverside, Calif., is the biggest single job on the project.

The most notable of these tunnels is a 13-mile bore through a towering peak near Palm Springs. Already completed, this tunnel required the excavation of 750,000 cubic yards of solid rock.

Start of construction on Parker Dam, the aqueduct's \$13,500,000 diversion barrier near Parker, Ariz., resulted in a brief and comical water "war" between the states of California and Arizona which was ironed out only after California got a federal injunction against Arizona.

Construction of the 80-mile All-American canal was ordered in the same bill which provided for the erection of Boulder Dam. The canal will supply irrigation and domestic water to the nation's half-million-acre vegetable garden in Imperial Valley, developing the largest irrigated area in the world, and will save residents of the valley millions of dollars which previously have been spent in elimination of silt.