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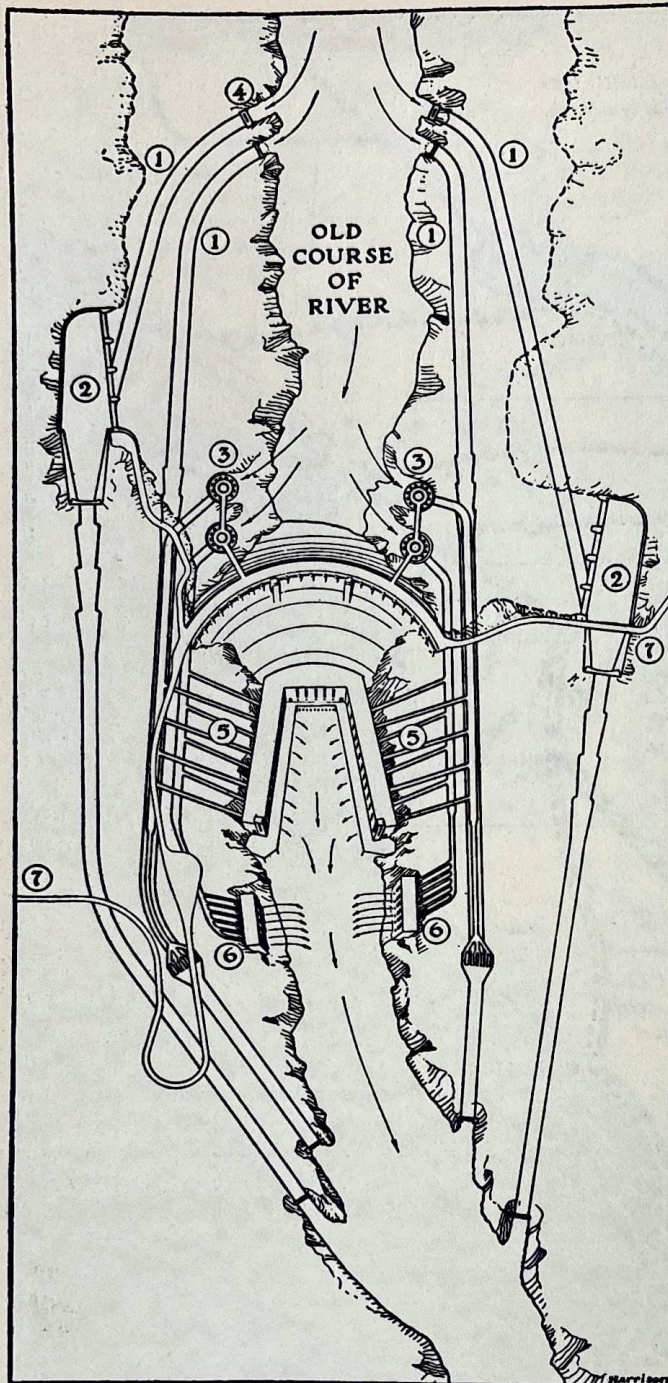


A. Perruccelli

Boulder Dam

A Portfolio of Watercolors
by

Stanley Wood



A GUIDE TO U.S. PUBLIC WORK NO. I

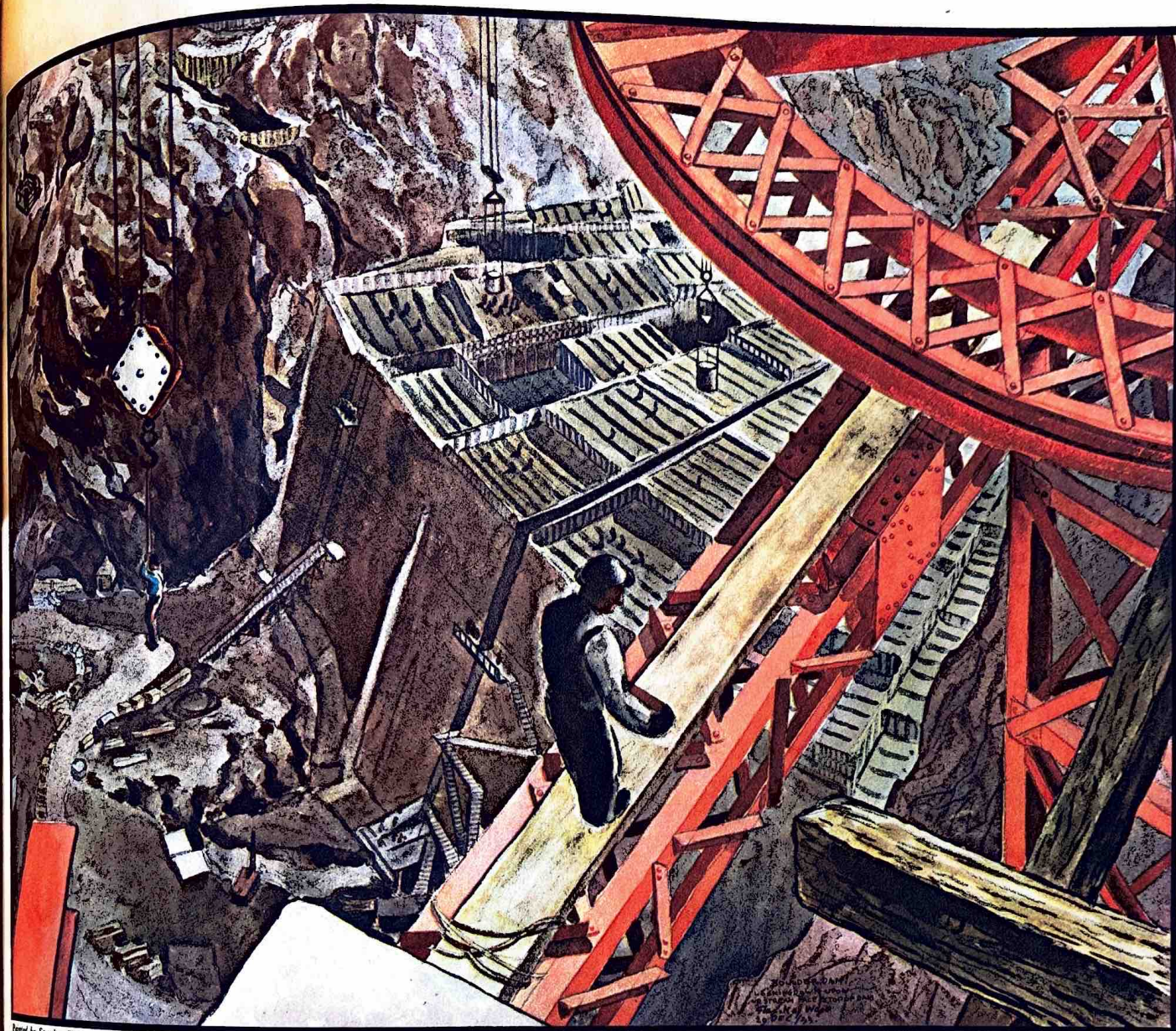
Through fifty-foot diversion tunnels (1) (which meant a total of three miles' drilling through rock) the Colorado has been switched from its ancient course. While cofferdams keep the dam site dry, 4,000 men and many machines work as you will see them working in the following pages. The permanencies that they are shaping out of this wilderness are here outlined. Through the intake towers (3) and the two inner tunnels, water will flow down the penstocks (5) to the power plant at the foot of the dam; and the excess will run off through outlets (6). The dam will impound a lake wide as the broken lines and 115 miles long; which at high water will empty through the spillways (2) and outer tunnels, capable of handling half again the Colorado's greatest recorded flood. Steel bulkheads (4), each weighing 1,500 tons, will close the upstream mouths of the diversion tunnels. From Los Angeles, a highway (left, 7) will cross the top of the dam, join the tourist road to Albuquerque. Already tourists flock to the dam site to gape at the wonders of a work half done. Within a few years, pleasure steamers will ride the waters of the largest artificial lake in the world.

THE surviving monuments of a people are the labors of her builders and of her artists. And whenever an artist records the brave and the brief day of building, he does the builders, and his people and his art, an honorable service. Out on the Colorado River, in the Black Canyon, America is working night and day, building herself a monument. The monument, as everyone knows, is more literally called Boulder Dam, the greatest engineering project of this day. These things all station readers know: that through flood control, power, irrigation (the All-American Canal, 300 miles down the river, will be part of the job), the dam will benefit the citizens of three states. That it will cost (and within five years will repay) the citizens of forty-eight states a maximum of \$100,000,000. That the dam itself will be 650 feet broad at the base, 435 feet to the crest, 730 feet tall, 325 feet taller than the next tallest: the largest the earth has known. That the powerhouse to be built on its downstream toe will breed the power of four Niaragas.

But its monumental size and its strength are not the only glories of Boulder Dam. There are also the builders: the six western contractors banded together under the name of the Six Companies, Inc. Their field boss is the hard-driving Yankee, Frank T. Crowe. Quiet, horn-rimmed Walker R. Young is field boss for the U.S. Government (which gave the Six Companies its little job); his duty it is to curb Crowe and his men and his big machines within the speed limits and specifications of safe building. The men—4,000 of them—who toil here are those migrants-of-all-trades known as "construction stiff"; they live and work like soldiers in time of war. Everyone who knows of Boulder Dam knows also that in the building of it skill and speed and courage are combined and intensified as rarely before in engineering history—and rarely enough in history of any sort. The very labor achieved effaces the laborer; now, after three years' work, they're fifteen full months ahead of a schedule that was strict in the first place; and, far sooner than anyone had reason to suspect (certainly by the spring of 1937, a full year ahead of time), the work will be finished, and the skill and speed and pride and devotion of the workers will be things of the past, and the workers themselves dispersed and forgotten. Yet not utterly forgotten. They will be remembered, if time is kind, when Boulder Dam is a mere forlorn, huge cud of stone stuck in the dry stone gut of a forgotten river. Remembered in the gray-white record of a lens. And in the skillful assemblage of colors on paper.

The watercolors on the following pages are the work of Stanley Wood of Carmel, California. Stanley Wood is one of many able American artists who are not widely known; whose work is highly thought of by those who know it; who are extremely faithful to their work; who are extremely poor. But Mr. Wood is also one of 2,532 artists to whom, since November, the Public Works of Art Project (set up by a \$1,039,000 grant from the Civil Works Administration) has given a couple of months' work. And the craftsmen's wages (\$26.50 to \$42.50 a week), in the embellishment of public buildings and public works and parks the country over. And that as the artists know, is of great significance. For here, they know and gratefully have said, is no mere relief measure, but America's (almost the world's) first official recognition of the artist as a useful member of society. Here, for the first time, a democracy has turned its attention to the challenge of its art and to the support of its artists. Here in fact is a challenge to the American artist to prove what needs no proving: his place and his worth in the world.

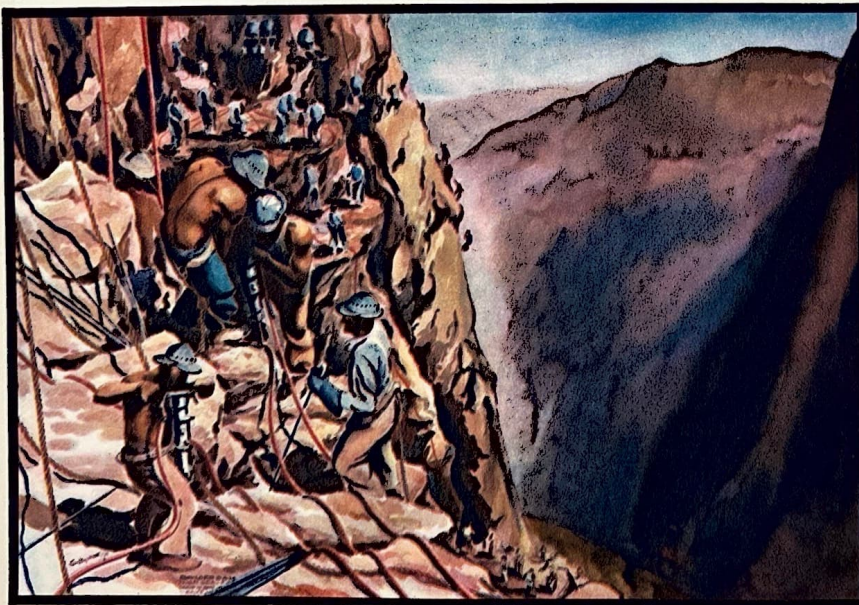
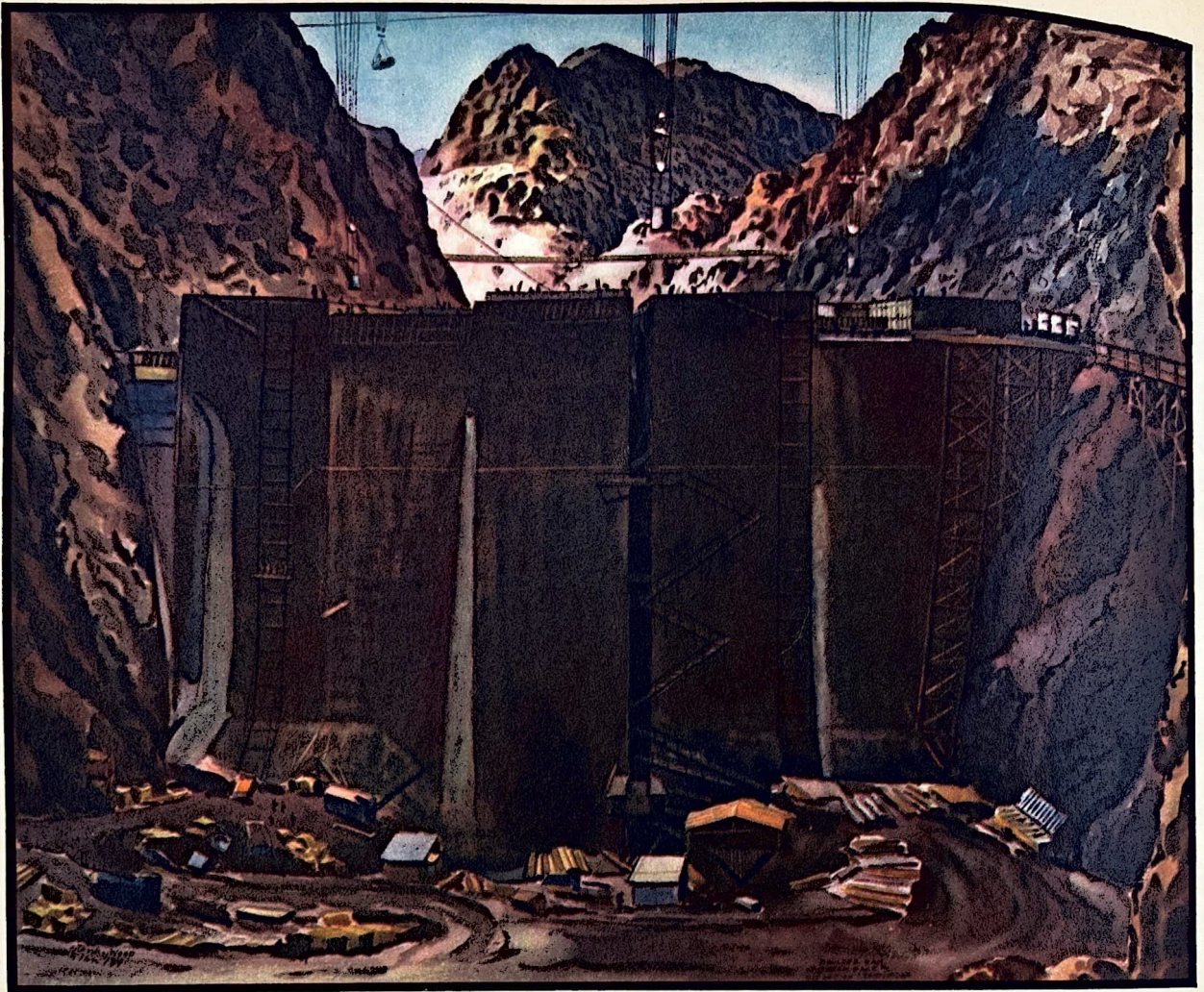
Mr. Wood's appointment as "state artist" on the Boulder Dam project was one of the PWAP's least conventional and most richly stimulating assignments. His work is an exciting and quietly moving record of America busy at her best: let it also speak for the PWAP, which should (and may not) become an institution; and for his fellow artists, whose careers are governed by luck. Let it show what, for less than a pittance, an artist can do for a people that respects and supports him.



Painted by Stanley Wood under the Public Works of Art Project

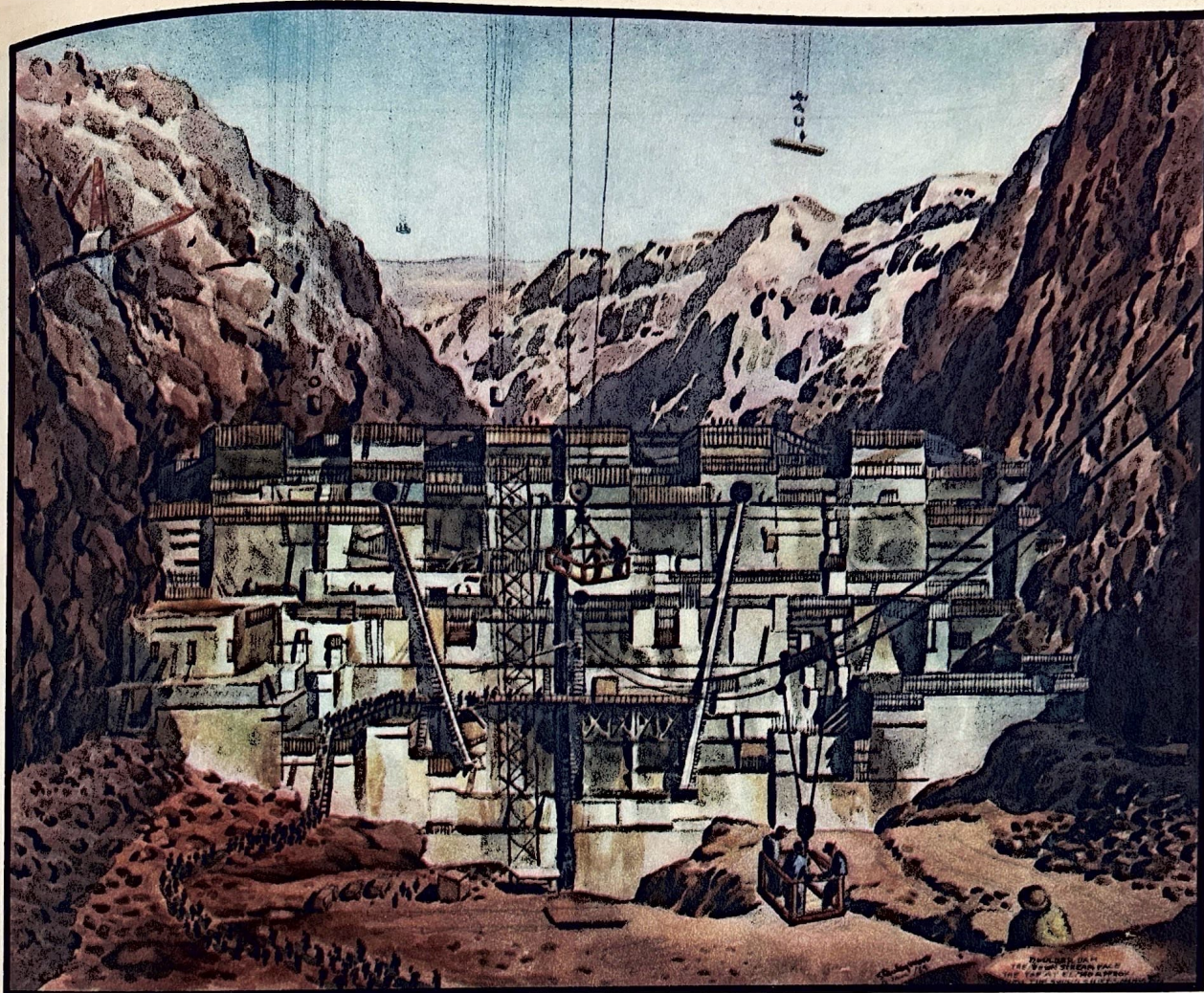
Knee-High to Its Future

... and steadily, by night and day, standing taller—behold the great dam and the builders who hover it. They started pouring concrete deep into bedrock last June. Already well over 300 of its ultimate 730 feet tall, the finished dam will balk two full years' flow of the Colorado River: water enough to cover the state of Connecticut to a depth of ten feet if you like; water which will make good crops in three states and fine lawns in Los Angeles and invisible, blue jittering power in many a southwestern home and tram and factory. Here you see the smooth upstream face, the square-celled and upbuilt crest. For greatest strength in this tall dam, for best control in quality and state of material, for greatest speed, they pour the concrete in these square forms (several at a time, in different parts of the structure), in five-foot lifts. So the completed dam will be a single mass of tall, interlocked columns, like an enormously high-built honeycomb. The whole dam will comprise 3,400,000 cubic yards of concrete (enough to rear a column two miles high, a hundred feet square); and toward that bulk the men and the stooping buckets build an average 6,600 cubic yards a day; from Sunday to Sunday raise the dam an average of eight feet.



Suicide for Profit

... isn't quite the title for the watercolor to the left, but it does serve to suggest (a) that the life of the high-scaler is dangerous (all work around a dam has its dangers) and (b) that these mountaineers are not mountaineers for danger's sheer delight. They get, in fact, \$5 a day, a dollar more than the ordinary "stiffs." None of them are mountain goats by blood or by training but they're picked men, proud of their special valor. They never work at night. Like most of their fellows, they're glad enough to wear the Hard Boiled Hats their employers furnish them for protection against falling stones. Before they set to work, Mr. Walker R. Young, the government's traffic cop, checker, and general supervisor for the whole project has dropped out of the sky on a rope to mark off their little job: which is to slant across the throat of the cliff like a necklace of bats, drilling and blasting and chipping their foothold from under them. So far the high-scalers have shaved 200,000 cubic yards from the walls of the canyon. And so far, despite hard hats, a field hospital, and all precautions, eighty-two men (only one, be it said, to every 250,000 man-hours of work) have given up their lives to their monument.



Like Janus, the Dam Has Two Faces

At the top of the opposite page: casting its quiet shadow, the bland, featureless upstream face, whose simple duty it will be to hold a river back. Probably it will be brought safely above flood level and will begin to store water late this summer, almost two years ahead of schedule. The eight-foot slot left open down the middle is, like a number of things in this vicinity, rather new to dam building: it can stand an under ghastry heat. Each pouring of concrete must be thoroughly firm before the next may surmount it. But concrete, in hardening, breeds great internal heat, seals out cold. Left to itself it would take the great structure through with seams and scars. So, a little way downstream, pipes run through the slot, four of them to each ten feet of concrete height; and continuously they feed cold water through a 300-mile vein of one-inch pipe, laid solid throughout the dam. In due time the slot will be filled. Its walls, toothed like a giant saw, are designed to snug as more tightly as time goes on: this onetime rift will be as tight as the strongest part of the wall. The pale streaks to left and right of the slot are waste water, for new concrete must be moistened without as well as chilled within. Those things on the crest which seem to be gnats, busy against the declining sunlight, are men at work. Above: this fantastic mass of planes and terraces, which might be the

Hanging Gardens or a Viennese apartment house, is merely the downstream face of the dam. The powerhouse will be built solid upon the mass and its roof will rise flush with this present height—about 225 feet. The two round holes near the top, to left and right of the slot in the middle, will be ends of radial inspection galleries which will connect the power plant with elevators climbing 500 feet to the top of the dam. The diagonals sloping from these holes are lumber chutes for discarded forms. In the immediate foreground, on the skip, three passengers are on their way from the top of the lower cofferdam to the slot. The skip beyond, in the center, is controlled by one of Six Companies' five high-lines strung from brink to brink of the canyon, over 700 feet up. The little army of men advancing on the dam is the Swing shift, which comes on at 3:00 P.M. to replace the day shift; and in turn, under a floodlighted midnight, to be relieved by the gentlemen of the Graveyard shift (11:00 P.M. to 7:00 A.M.) who leave six miles behind, in their neat bungalows at Boulder City, what the "construction stiff" calls their graveyard widows. Watch well, in all these pictures, the anonymous "construction stiff," for he is America's actual builder and unsung hero; and he's a man you'll hardly see the like of outside America in this time. Possibly he and the Roman legionary who built an aqueduct in France and a wall in Britain have more in common with each other than with any soldier-workman-adventurer of any time between; and probably neither would especially care for the comparison.

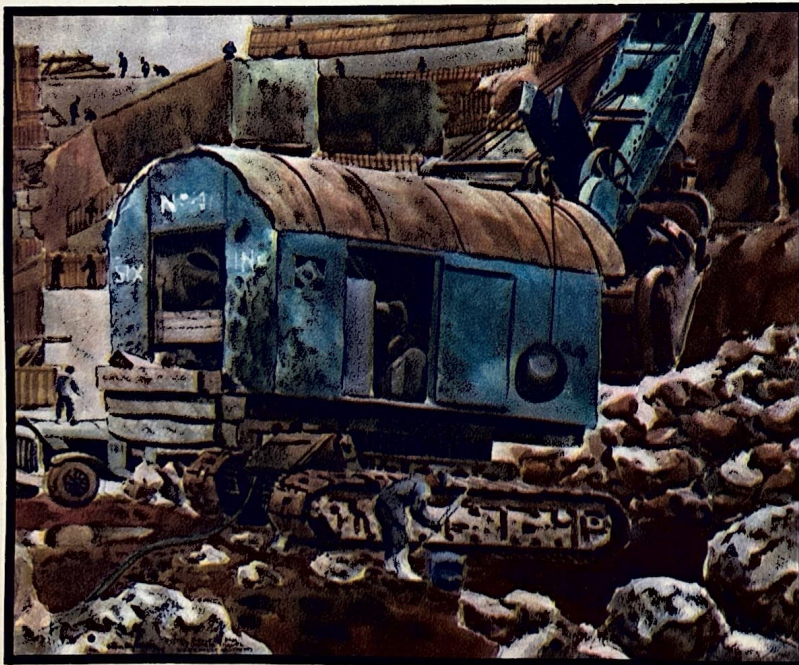
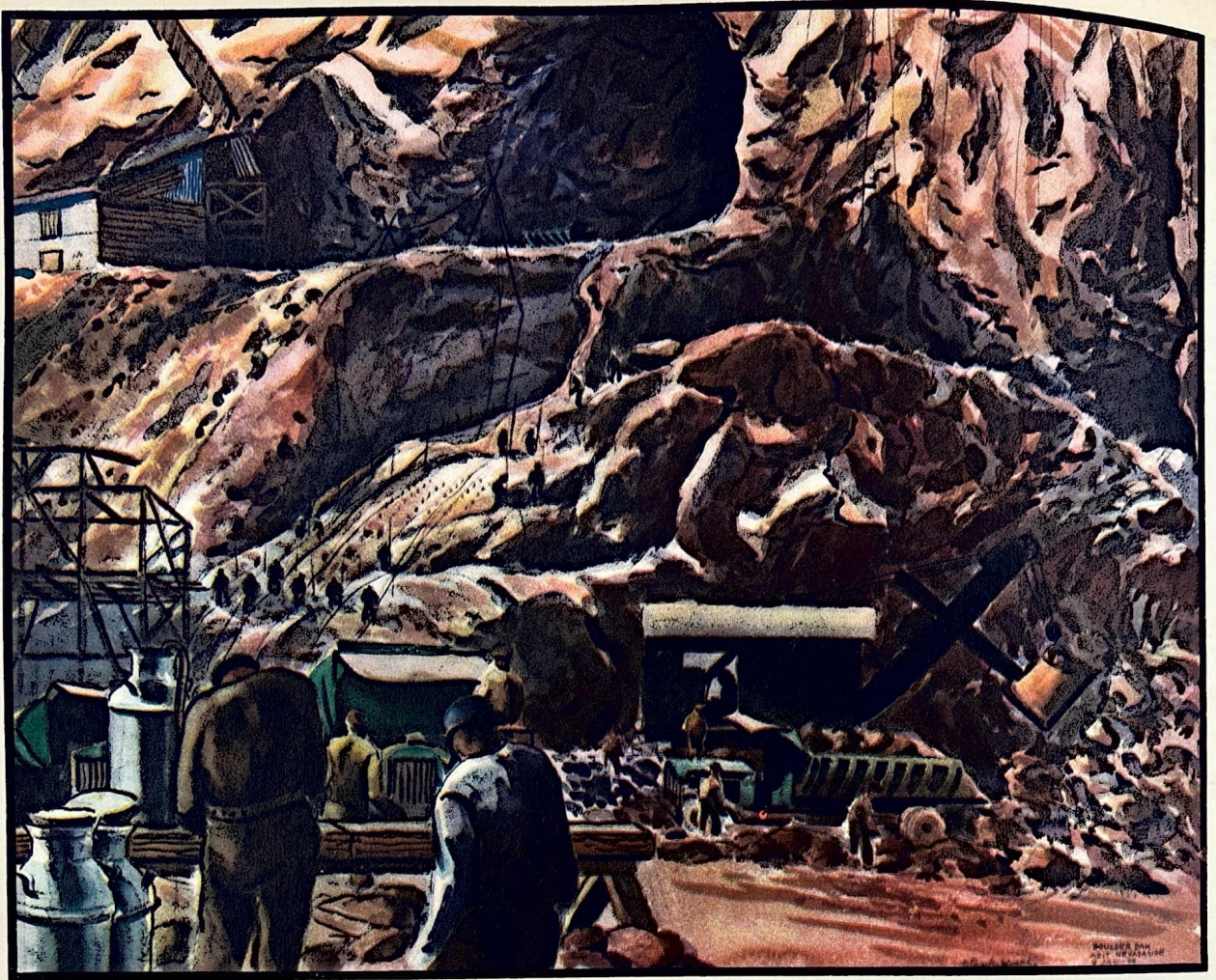


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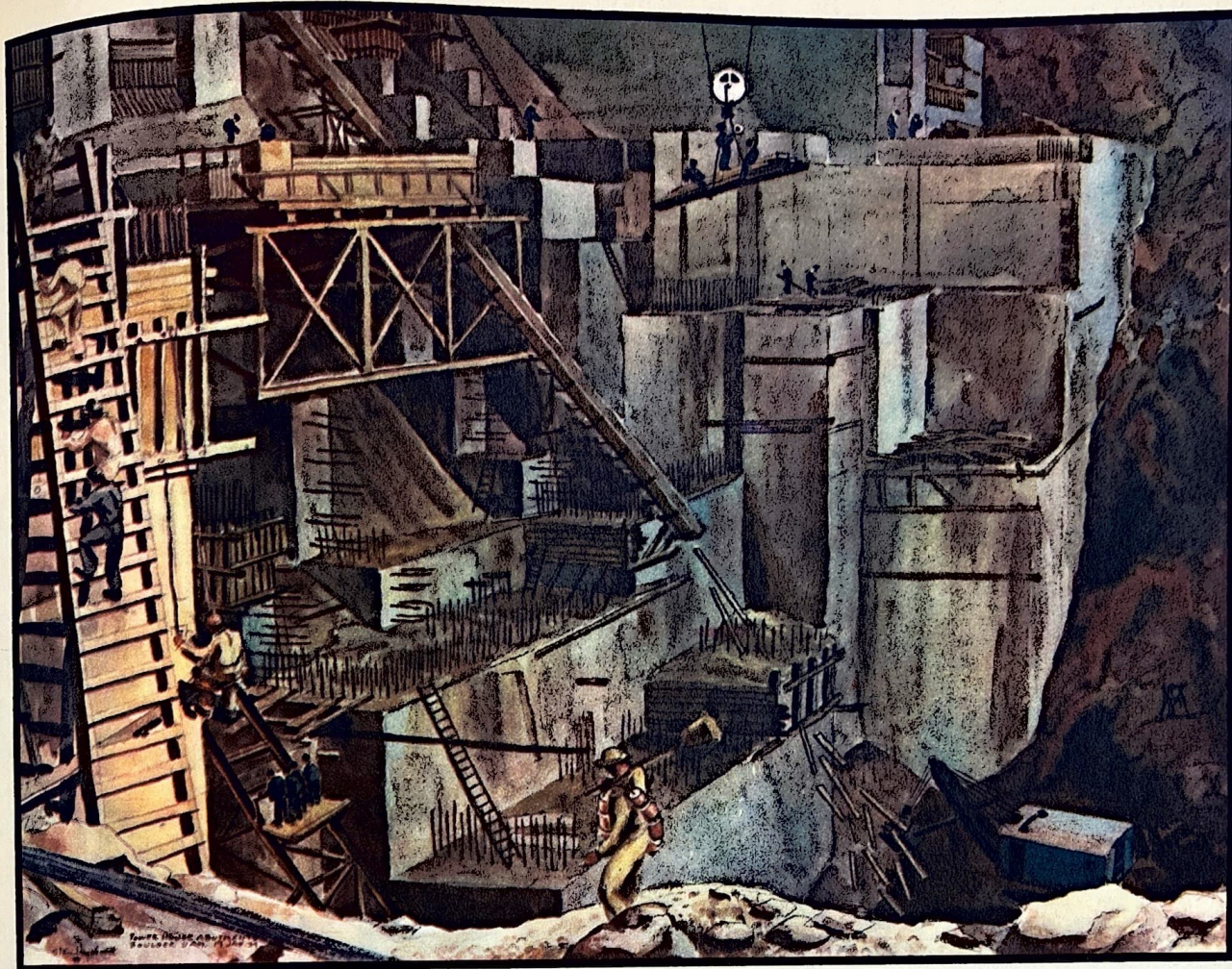
Water Entering this Turret Will Become Power

From the height of this blue intake tower (here, see the beginnings of one of four) to the depths of the pale canyon floor where the world's mightiest dynamos will await it, through steep, huge pipes as slick as glass, Colorado water will lunge like a ton of lead, gathering speed and building energy as it falls. Each intake tower will be 380 feet tall, tapering, seventy-five feet in average diameter. The almost visionary hue of the tower at this stage of its growth is the hue of steel, of which 6,500 tons must be used to reinforce this slender spire against possible earthquakes. The water intake of each tower will be controlled by two cylindrical gates, each ten feet high, thirty-two feet in diameter (suspended one near the bottom, one near the middle), inside the tower. From each tower, steep through the drilled rock, 800 feet of thirty-foot steel pipe, two and three-quarters inches thick (and so heavy that two plates of it load a freight car) will branch into four still steeper penstock pipes (thirteen feet in diameter). The fabrication of all this steel piping (the very size of it made old engineering formulas quite useless) Babcock & Wilcox is handling on the spot. It has also contracted for the task of installation. Through this penstock system, by all odds the world's largest, water will reach the turbines at the maniacal speed of 120 m.p.h., to develop thrice Muscle Shoals' capacity in power.



Into the Home Stretch

... in steady stride, come Boulder's builders, man and machine. Their last great hulk of work will be the building of the powerhouse. *Above:* clearing the ground on the Nevada side. One of Six Companies' huge electric shovels yawns up its three-and-one-half-cubic-yard mouthful of rubble, yaws it into one of Six Companies' specially created seventeen-ton trucks. Jackhammer men drill the rock for further blasting, further rubble. The shed in the background is Six Companies' refrigeration plant. The water cans and the canteen boys in the foreground bear witness to the fact that dam work (broiling throughout the summer at a midnight-to-midnight average of 90° Fahrenheit) is sufficiently hot work all seasons through. *To the left:* from the Nevada side of the shovel, which still earnestly licks the landscape clean, we see the powerhouse foundations rising on the Arizona side of the river bed. Downstream, from the downstream base of the dam, the U-shaped plant will extend its two 575-foot wings

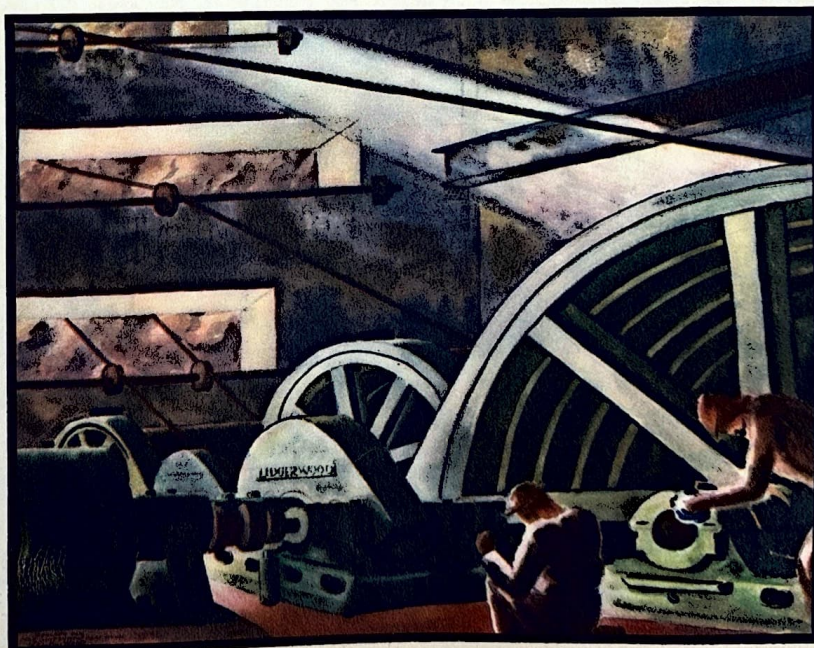


Looking Down the Nose

... of the dam, we see once more the powerhouse location, the buggish and casually heroic men who build out of ancient desolation so great a monument. By their request Mr. Wood presents, in the foreground, the useful citizen with the broom and the odd red necklace. He is Alabam, the broken-down old miner who sweeps out and supervises the latrines and who carries his simple supplies around his neck.

Puppet Master

Throughout these paintings Mr. Wood has used, as a constant motif, the deliberate aerial dance of men and buckets, steel and timbers, dizzily strung above the chasm. The puppet masters are such huge drums as these, bowling about their axles in the hoist houses. From this room the permanent government high-line, five times the strongest ever installed (it took a test load of 165 tons), spans the chasm.



Mixing Plant: a Dam's Strength Predigested

In the big machines here shown, the small dusts and the broken rock and the water, which (reinforced by 18,500,000 tons of structural steel) are the whole 3,400,000 cubic yards of the dam's bulk, are mauled and mated and made competent against eternity in a mixing time of only two and one-half minutes to the sixteen-ton batch. Tests of uniformity, strength, low heat in setting are made continually. From batchers (on the floor above our picture) the material lapses through immense revolving hoppers (each holding about four cubic yards) the material through the hoppers on the middle floor into the four-ton buckets (designed by Boss Frank Crowe, each holds eight cubic yards, sixteen tons) on the pausing train below. The train in turn carries the concrete along the high face of the canyon: whence, on cables, the buckets make their slow, blind dive into the chasm, directed inch by inch by men with telephones, one on the dam below, one high beside the train. The mixing plant keeps seven trains constantly busy.

