

You will want to know that..

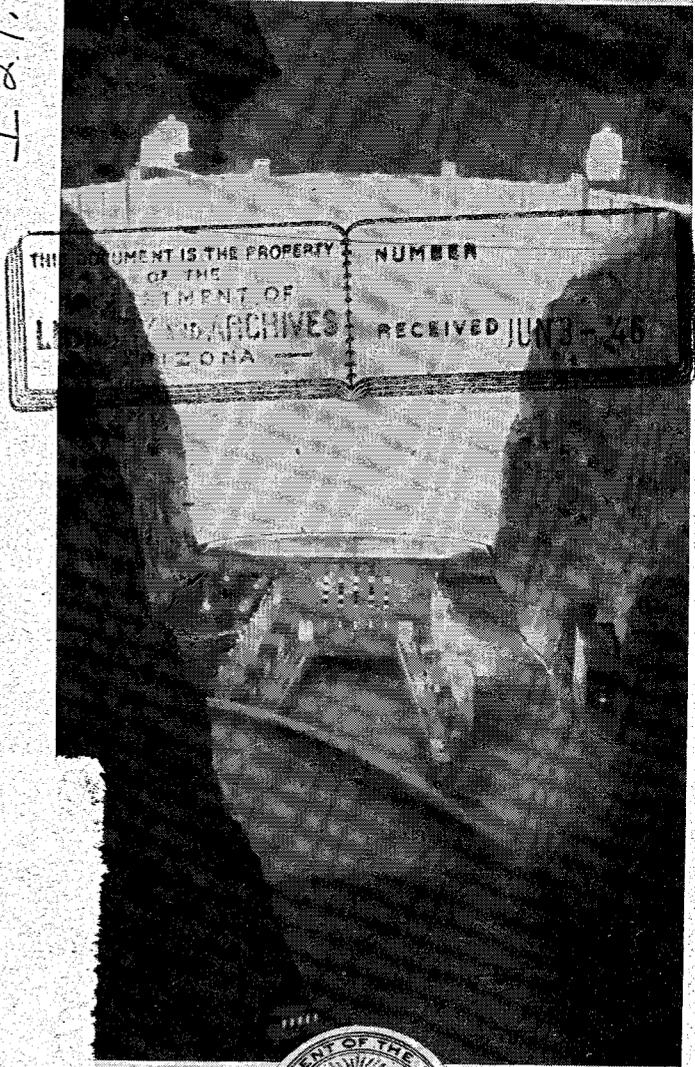
- Boulder Dam is the world's highest dam.
- Lake Mead is the world's largest reservoir.
- Boulder power plant is the world's largest.
- Elevators descend from the dam's crest, 528 feet, equal to a 44-story building.
- Maximum water pressure on the dam's base is 45,000 pounds per square foot.

If Statistics Interest You

Boulder Dam is.....	726.4 feet high.
Its crest is.....	1,244 feet long.
At top it is.....	45 feet thick.
At bottom it is.....	660 feet thick.
Concrete content of dam.....	3,250,000 cubic yards.
Lake Mead is.....	115 miles long.
Its capacity is.....	32,359,000 acre-feet.
Flood-control reserve.....	9,500,000 acre-feet.
Maximum depth.....	589 feet.
Lake Mead covers.....	146,500 acres.
Power-plant capacity.....	1,835,000 horsepower.
Large generators.....	15
Capacity of each.....	82,500 kv.-a.
Small generators.....	2
Capacity of each.....	40,000 kv.-a.
Large turbines.....	15
Each of.....	115,000 horsepower.
Small turbines.....	2
Each of.....	55,000 horsepower.
Spillways.....	2
Capacity of each.....	200,000 cu. ft. a second.
Drum gates each.....	100 by 16 feet.
Spillway tunnels.....	2
Diameter of each.....	50 feet.
Intake towers are.....	395 feet high.
Diameter of each.....	75 feet.
Capacity of outlets.....	90,000 cu. ft. a second.
Excavation totaled.....	6,480,000 cubic yards.
Steel and metal used.....	96,000,000 pounds.
Valves, gates, hoists.....	33,000,000 pounds.
Steel in penstocks.....	89,000,000 pounds.
Total concrete.....	4,360,000 cubic y

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BUREAU OF RECLAMATION



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History

FROM ITS DISCOVERY in 1540 until it was harnessed by Boulder Dam almost four centuries later, the Colorado River was America's most dangerous stream. Friendly rivers in other sections provided safe highways to lead the pioneers into the wilderness, but the surly Colorado, sulking in its canyons, could not be used. On the other hand, it could be crossed only at widely separated places along its 1,700-mile course from the Rocky Mountains to the Gulf of California.

Like other western desert streams, this giant fluctuated each year through a cycle which ran from a roaring, flood-swollen torrent when snows were melting, to a sandy-bottomed, sluggish creek during the long, dry summers and autumns.

Man's crying need for water in this thirsty West, however, caused him early to turn calculatingly upon the Colorado in an effort to devise some means to make a servant of this untamed stream.

Before Boulder Dam, whenever he tampered with the river he brought disaster upon himself. Farmers, tempted by dry, fertile desert soil in the Imperial Valley of California and near Yuma, Ariz., tapped the river for irrigation water to create vast and rich gardens. But the unregulated Colorado took its vengeance upon them. Annually it sent destructive floods and annually, by fading to a trickle, it cut off the water supply upon which their crops and their lives depended.

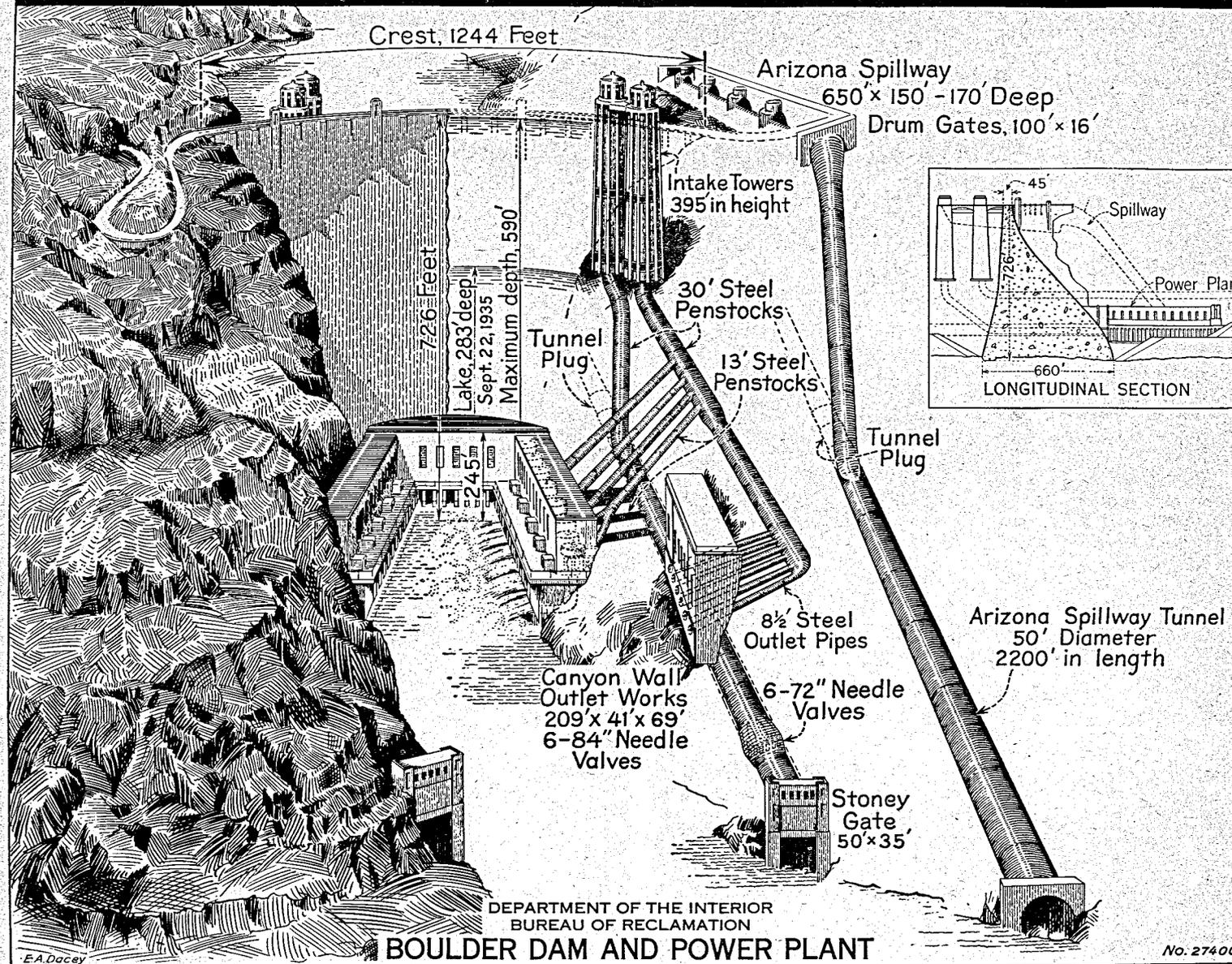
A great cry arose for control and conservation of waters of this river, the waters which were the most valuable natural resource of a vast desert empire.

Agitation for action increased, and in 1922 representatives of the Federal Government and of the seven States in the Colorado River Basin met in Santa Fe, N. Mex., to draft a compact for the division of the waters of the Colorado River.

In 1928 the Congress passed the Swing-Johnson bill authorizing the Boulder Canyon Project; by 1930 it had been ratified by the required six of the seven States, and construction was begun by the Bureau of Reclamation in 1931. In 5 years Boulder Dam was complete, and man had won his victory.

The Colorado River now is a useful and reliable friend to the people of the Southwest. Floods cannot pass the dam, which saves the floodwaters and uses them by generation of electricity to turn factory wheels hundreds of miles away, and to provide an unvarying supply of domestic and irrigation water for rural and urban communities from Los Angeles, Calif., to Yuma, Ariz.

How Boulder Dam Works...



THIS DRAWING shows how Boulder Dam works. The Nevada wall of Black Canyon of the Colorado River is shown solid, but the Arizona wall has been cut away to reveal the intake towers, the spillway, the penstock pipes, and outlet works. Inside the Nevada wall of the canyon a similar set of diversion works has been placed. Principal dimensions are shown.

The powerhouse, here shown dwarfed in the bottom of the canyon, is two city blocks long

and as high as a 20-story building. Twelve units rated at 82,500 kilovolt-amperes, one at 40,000, and two 3,000 kilovolt-ampere station service units, bring the present installed capacity to 1,036,000 kilovolt-amperes—the largest electric plant in the world. Space is available for installing three more 82,500 and one 40,000 kilovolt-ampere units, which will raise the capacity to 1,323,500 kilovolt-amperes.

The tunnels originally used to divert the

Colorado River around the dam site during the period when Boulder Dam was under construction, now are used in the penstock and outlet system for the greater part of their lengths. They have been plugged upstream from the points at which the continuously useful outlets enter them, as can be seen in the drawing.

A roadway across the crest of the dam for an important link in the transcontinental way systems.

Achievements

THE ACHIEVEMENTS OF BOULDER DAM run the scale in the field of water conservation from flood control to provision of a valuable wild-waterfowl refuge. In regulating the treacherous Colorado River, Boulder Dam has changed its character entirely for 565 miles from the lower end of Grand Canyon to its mouth at the northern tip of the Gulf of California.

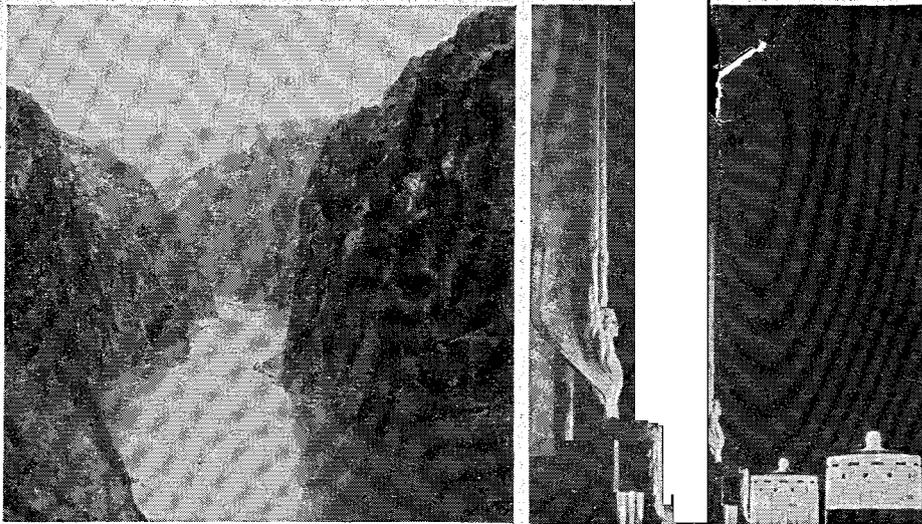
The farmers in the Imperial and Yuma Valleys and elsewhere along this stretch of the river now are provided with a steady and trustworthy supply for the irrigation upon which they rely. The domestic water supply of 13 cities, 250 miles west of the Colorado River on the southern California coastal plain in the vicinity of Los Angeles, is being augmented through the Metropolitan Water District's aqueduct as a result of construction of Boulder Dam. The floods which once raged through Black Canyon, pouring a destructive force against the communities far downstream, now are halted here by Boulder Dam and the water saved for use. Navigation is possible through the magnificent canyons 115 miles above Boulder Dam, and navigation has been improved on the lower river. A new recreational area of major importance has been created by Boulder Dam and Lake Mead in an area which formerly was forbidding and unvisited. The dam and the lake now are visited by half a million people a year. The lake is stocked with fish, and already it rivals the most popular national park as a tourist and sportsman's attraction. As a wild-fowl refuge the lake assumes new importance, since it is on one of the major migration fly ways and offers a haven for waterfowl in a vast area where none previously existed.

Boulder Dam traps the muddy, silt-laden waters which pour through Grand Canyon and releases them settled and clear.

In the 3 years following Pearl Harbor, over 18 billion kilowatt-hours of electricity were generated. More than half of this energy went to plants producing implements of war. Now that the war is over, energy will again flow to factories, mines, and farms, and will serve to enhance the civilian economy of the great Southwest. Revenue from the sale of this energy will repay to the United States Treasury the entire cost of the project.

While power is a byproduct of the dam, the fact that Boulder Dam has made available much cheap energy is important to the future welfare of the whole Southwest.

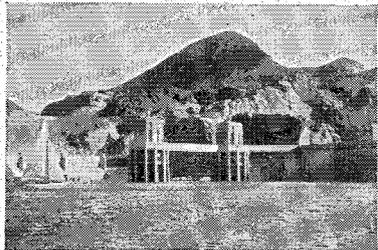
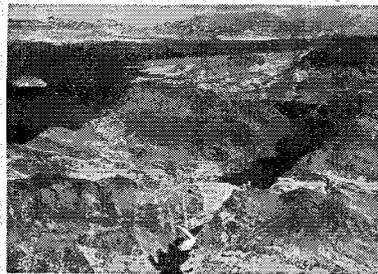
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Black Canyon in 1930

Winged Figures

SCENES ON LAKE MEAD



LAKE MEAD

Named for the late Dr. Elwood Mead, Commissioner of Reclamation from 1924 to 1936, Lake Mead is the tremendous reservoir created by Boulder Dam in the canyons of the Colorado River. It provides an avenue of easy access to stretches of the river which had been visited by only half a dozen daring expeditions before the dam was built. It opens to all, magnificent vistas of some of the world's most amazing canyons—Boulder Canyon, Travertine Canyon, Iceberg Canyon, and the lower and previously unvisited end of Grand Canyon. Colorful and impressive, at points along the lake, cliffs tower a mile overhead.

Lake Mead is a popular boating and bathing resort, as well as a fisherman's paradise. It is used also, from time to time, by miners who freight their ore in barges from isolated mines far up the river to rail and highway connections at Boulder Dam. It is administered as a recreational area by the National Park Service.

DOMESTIC WATER

Clustered on the coastal plain of California are many cities, including Los Angeles, that are sorely in need of additional domestic water. Thirteen of these organized a Metropolitan Water District and have built an aqueduct 250 miles long to tap the Colorado River at Parker Dam, 150 miles below Boulder Dam. Water diverted through this \$220,000,000 aqueduct is available and useful only because Boulder Dam has regulated and harnessed the Colorado River.

The aqueduct assures Southern California a safe water supply for almost double its present population.

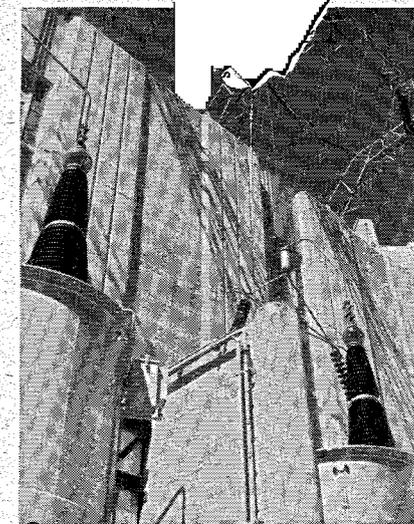
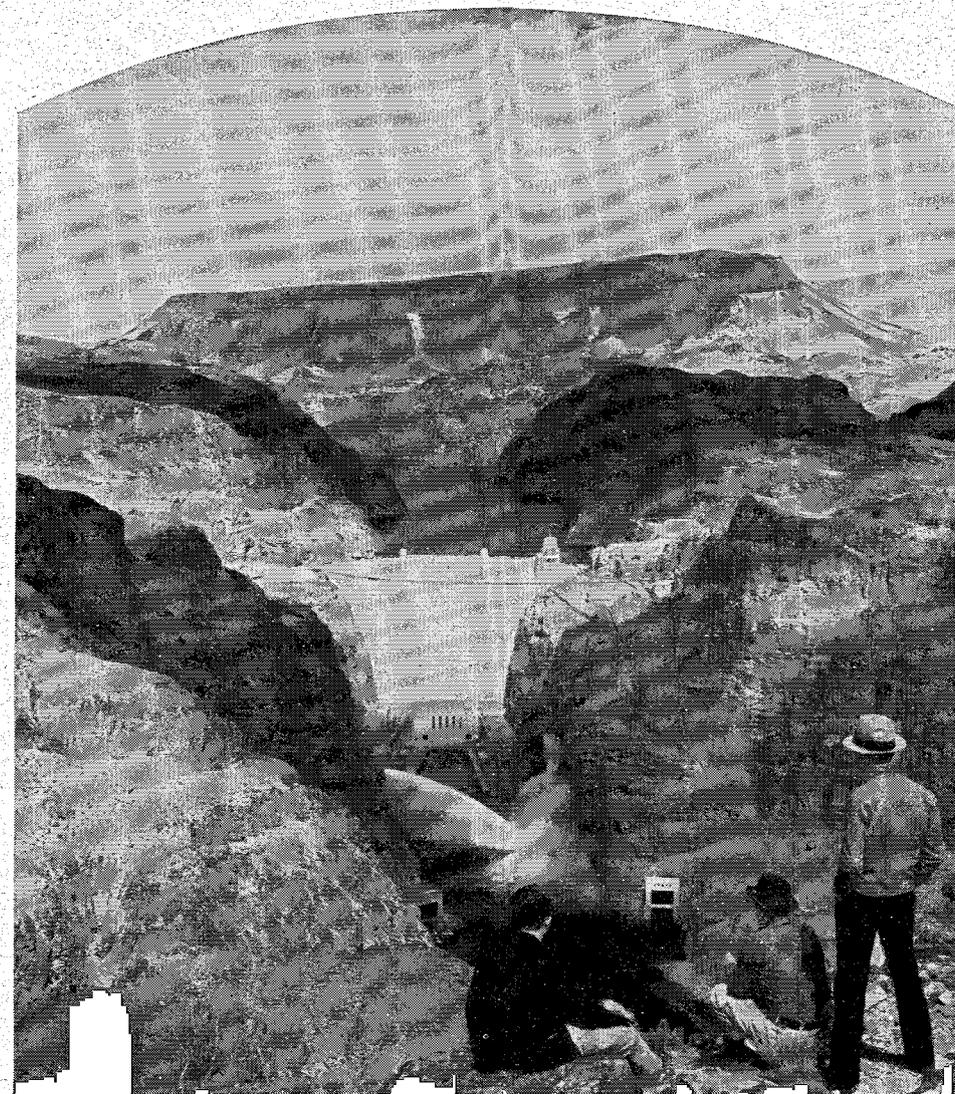
SYMBOLIC OF BOULDER DAM, the Figures of the Republic are poised with upraised wings near the flagpole in the Nevada safety island at the west end of Boulder Dam. The base of the flagpole group is a terrazzo paving which stirs the imagination. Here, in bronze, are set the major stars of the heavens in their exact positions at the moment Boulder Dam was dedicated. In ages to come, this design will date Boulder Dam and will tell a great deal about us and our times to the student who studies it.

Black Canyon, where Boulder Dam is situated, the dam and the powerhouse, and Lake Mead challenge the photographer, whether amateur or profes-

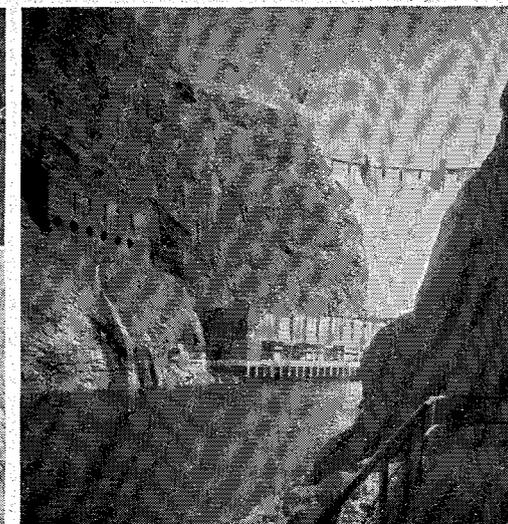
sional. Many unusual shots present themselves, like the two shown here, one made at night of the Figures of the Republic, and the other of the exterior of the Nevada wing of the powerhouse, looking up.

Lake Mead, it is interesting to note, rapidly is gaining fame as a sporty fishing spot, and many excellent catches of bass have rewarded the angler who likes his water expansive and his scenery magnificent.

Visitors are welcomed at Boulder Dam by guides provided at the dam by the Bureau of Reclamation and at the boat landing on Lake Mead by rangers of the National Park Service.



Powerhouse



Boulder Dam in 1936

IRRIGATION

The West is arid and semiarid. Farming in the West is dependent on irrigation. Below Boulder Dam lie some of the world's most forbidding desert areas, as dry as the Sahara, recipients of 3 inches or less of rain in a year. Without the artificial application of water these areas would be totally useless. With irrigation, their rich soils and warm climates make them gardens of almost unmatched productivity.

There are, below Boulder Dam and capable of being served by it, approximately 1,900,000 acres of such lands. At present about half of this area is irrigated and in production. Large, successful irrigation projects are in operation in the Palo Verde Valley in California, about 200 miles downstream, and in the Imperial Valley in California, and in the Yuma-Gila Valleys in Arizona, 300 miles downstream. Eventually this irrigated area will be expanded. At present, however, there are no homesteads available.

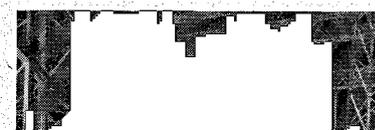
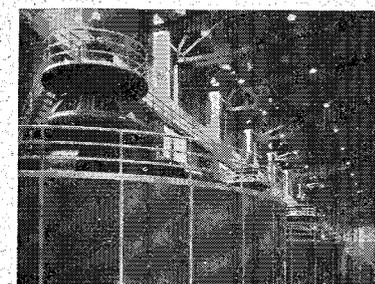
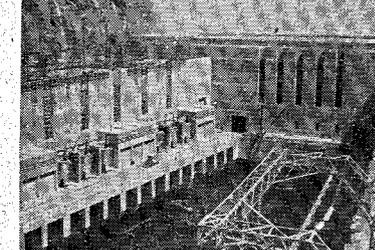
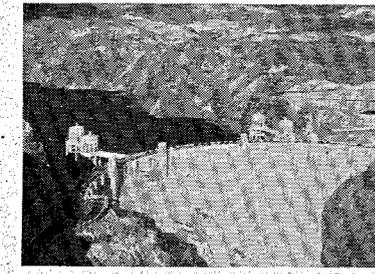
RIVER FLOW

The greatest recorded flow of the Colorado River is 240,000 cubic feet of water per second, but there are evidences that floods as great as 300,000 second-feet have been experienced.

The larger floods come each spring with the melting of snows in the mountains. In the late summer the flow may be reduced to little more than a trickle.

Records disclose that the annual average runoff of the river at Boulder Dam exceeds 15,000,000 acre-feet of water, an acre-foot being sufficient to cover an acre 1 foot deep. Lake Mead, therefore, can impound the entire average flow of the river for about 2 years, since its capacity is 32,359,000 acre-feet.

POWER FROM DAM TO FARM



CONSTRUCTION

Boulder Dam, an unequalled engineering achievement, was completed in 5 years. More than 4,000 men were employed at the site during construction, and fabrication and transportation of materials gave work to twice that many from Maine to California.

BOULDER DAM, majestic in its clean, graceful lines, stands with one shoulder against the Arizona wall and the other against the Nevada wall of Black Canyon, forever to control the wild Colorado River

The dam was constructed by the Bureau of Reclamation, and is under its general supervision. For additional or detailed information concerning the Boulder Canyon Project you may write to the Commissioner, Bureau of Reclamation, Department of the Interior, Washington 25, D. C., or to the Regional Director, Boulder City, Nev.

POWER AND WATER PAY THE BILL

CONTRACTS under the Boulder Canyon Project Act of 1928 and the Boulder Canyon Project Adjustment Act, enacted by Congress in 1940, have been entered into for the sale of Boulder power. Contracts are in force with the southern California municipalities of Los Angeles, Burbank, Glendale, and Pasadena, and with the Southern California Edison Company, Ltd., the Metropolitan Water District of Southern California, the California Electric Power Company, the State of Nevada, and the Arizona Power Authority as agent of the State of Arizona.

A contract has been signed with the Metropolitan Water District for the delivery of stored water for municipal purposes. Water-delivery contracts also have been made with the States of Nevada and Arizona, the Palo

Verde Irrigation District, the Imperial Irrigation District, the Coachella Valley County Water District, and the City of San Diego.

Revenue from the sale of power and from the delivery of water under these contracts will repay all operation, maintenance, and replacement costs; amortize in 50 years from the time power-purchase contracts became operative the investment in Boulder Dam, its power plant and appurtenances, with 3 percent interest (with the exception of a 25 million dollar flood-control allocation, repayment of which is postponed until after 1987); and provide payments of \$300,000 annually to each of the States of Arizona and Nevada, as well as payment of \$500,000 annually to the Colorado River Development

fund for study and development of the Colorado River Basin.

Power generation began September 11, 1936, when President Franklin D. Roosevelt in Washington pushed a golden key starting the first generator. The initial installation of four 82,500 kilovolt-ampere generators was completed in March 1937, and power purchase contracts became operative June 1, 1937, upon announcement by the Secretary of the Interior that the project was prepared to furnish firm energy henceforth.

On June 30, 1945, construction of Boulder Dam, its power plant and appurtenances had cost \$136 million and the Government had received \$46,700,000 from the sale of power.

ALL-AMERICAN CANAL, NATION'S GREATEST, MAKES DESERT LANDS PRODUCTIVE

THE ALL-AMERICAN CANAL SYSTEM includes Imperial Dam and desilting works, the 80-mile long main All-American Canal—America's largest irrigation canal—and the 145-mile Coachella Main Canal. Although Imperial Dam is located 300 miles downstream from Boulder Dam and the great canal system serves an area in south central California, they are a part of the Boulder Canyon Project.

Built by the Bureau of Reclamation, the canal went into operation in 1940. Construction was started in late 1934, and is continuing on the Coachella Main Canal. Imperial Dam and desilting works, shown below, will divert and clarify a maximum of 15,155

cubic feet of water per second, equal to the flow of a good-sized river and enough to irrigate a million acres of land.

The All-American Canal itself, shown in the picture below, extends from Imperial Dam south to a point near the Mexican border and then swings west just north of the international boundary, extending to the western edge of the irrigated section of the Imperial Valley in southern California. This canal cuts through a ridge of sand hills 10 miles wide. The canal system, which also will deliver irrigation water to the Coachella Valley, will cost approximately 38 million dollars.

New River Channel is an ever-present reminder of

the fury of the uncontrolled Colorado River before Boulder Dam was built. New River was literally cut out of the farms and homes of people living in the Imperial Valley when the Colorado River overflowed into Salton Sea during floods in 1904-6. The picture below shows the construction of a siphon which now carries the All-American Canal across the New River Channel, just west of Calexico. The flood which created New River all but destroyed the Imperial Valley where more than 65,000 persons now make their homes.

The two bridges shown on the right below give an idea of the size of the canal. An automobile crosses

the canal on United States Highway No. 80, while a crack Southern Pacific train roars across the railroad bridge just beyond. The canal, replacing the old Imperial Canal which looped more than 50 miles through Mexico, serves the presently irrigated area in the Imperial Valley with a silt-free, reliable water supply. Approximately 523,000 acres of land can now be irrigated from the canal; of this total about 400,000 acres are in cultivation. Completion of the Coachella Main Canal, now under construction, will increase materially the area which can be served from the canal system. Future additions to the irrigated area lie in the East and West Mesas, dry desert lands adja-

cent to lands now cultivated in the Imperial Valley.

The canal runs for nearly half its length through irrigated farms, now among the most productive in the Nation but once raw desert. The checkerboard fields in the picture below produce citrus fruits, lettuce, cantaloups, flax, alfalfa, and other crops, during a 12-month growing season. Vegetables are shipped in December and January to eastern markets in refrigerated railroad cars. Housewives in New York and Chicago who are able to buy vegetables and fruits at reasonable prices "out of season" owe the varieties on their tables to such irrigated farms as these served by the All-American Canal system.

