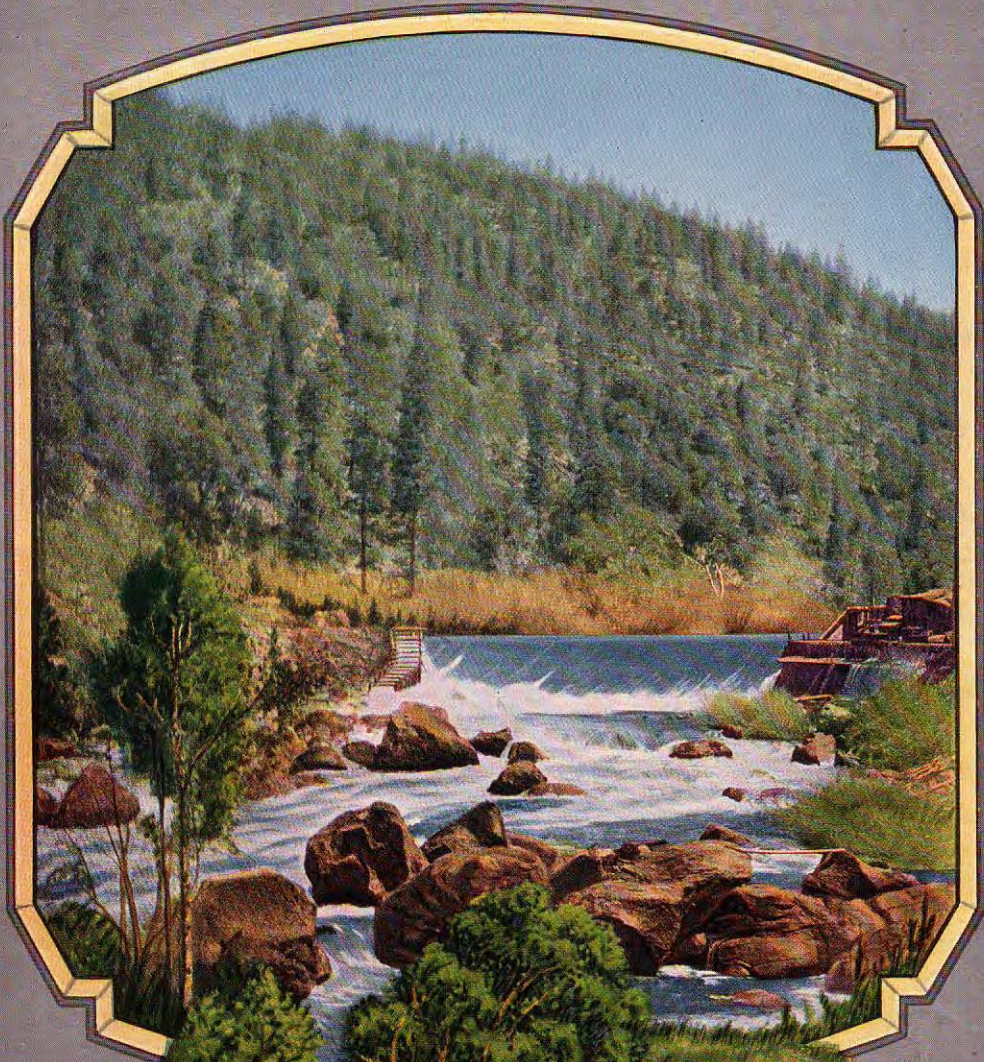


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SAND BAR DAM
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Philbrook Dam and Reservoir in the De Sabla Territory

In addition to its purchase of new properties and its prosecution of major development projects in various sections of the "Pacific Service" territory, our company has done considerable work of late in the way of reconstruction and the addition of new facilities to increase the output of some of its older hydroelectric power installations. An interesting item on the list of new facilities is the Philbrook reservoir, in de Sabla

section of the "Pacific Service" territory. This is of particular interest from the fact that the de Sabla system, comprising as it does the de Sabla and Centerville power plants on Butte creek, is one of the oldest of the "Pacific Service" chain. The Centerville power plant, together with a 16-mile transmission line to Chico and a 32-mile line to Oroville, was completed in 1900 after about twelve years of more or less leisure work on the part of the Butte County Electric Power and Lighting Company. The entire investment is reported to have been \$175,000. Later the line to Chico was continued down the Sacramento valley to Colusa, a distance of 40 miles, and an independent line was run from the powerhouse to a junction with the Chico-Colusa line. At that time the Centerville powerhouse was delivering 400 k.w. to Chico, 150 k.w. to Gridley, 100 k.w. to Colusa and about 400 k.w. to gold dredges on the Feather river, the total being less than that which today is being delivered to any one of many individual consumers.



Philbrook dam under construction. Note unusual type of earth-moving machine in right background. In the foreground is a Fordson tractor, with sheep-foot tampers attached.

In 1903, another power development organization entered the Butte creek territory, the Bay Counties Power Company, a consolidation of the Nevada County and Yuba Electric Power Companies and whose hydroelectric systems included the recently constructed Colgate plant on the middle fork of the Yuba. A subsidiary company, Valley Counties Power Company, was formed and arrangements made for the purchase by it of the water system of the Cherokee Mining Company, and the properties of the Butte County Power Company. The Cherokee system consisted principally of the head dam in Butte creek and the old Cherokee canal, the upper portion of which is now known as Butte canal. In 1903 the de Sabla power plant was constructed and the water from Butte creek, after flowing through the upper portion of the Cherokee canal, was diverted and dropped 1531 feet to the de Sabla powerhouse and again diverted into the Centerville canal for use through a 577-foot head to Centerville powerhouse. Subsequently the Hendricks canal, about 20

miles in length, was constructed to bring water from the west branch of the Feather river to these power houses. Other improvements to the system were made from time to time. Today de Sabla power plant is rated at 17,426 horsepower generating capacity, and Centerville at 8,579.



Finished crest of dam, showing rubble-facing on the upstream side.

In 1907 the Bay Counties Power Company became the property of the California Gas and Electric Corporation, which later passed to the control and ownership of Pacific Gas and Electric Company. In 1917 "Pacific Service" purchased the properties of the Oro Electric Company and among the properties was the Philbrook reservoir site. This is located on Philbrook creek, a tributary of the west branch of the north fork of Feather river in the northeast corner of Butte county, at an elevation of about 5,400 feet. Construction of a dam at this location was first undertaken in 1908 by predecessors of the Oro Electric Corporation. A heavy storm during the winter of 1908 partially destroyed the incompletd structure, and work on the project was abandoned.

The drainage area which furnishes the water supply for the de Sabla and Centerville plants is largely of lava formation and furnishes a well-regulated runoff. Large storage reservoirs, therefore, are unnecessary for the regulation of stream flows. This condition, while not as perfect as it is in the Pit river area, is not to be found in the region around and about the Sierra Nevada summit, where granite takes the place of lava. There has, however, occurred in the past years a deficiency of water during the low flow season. The only storage on the system prior to the construction of the Philbrook dam was afforded by the Round Valley reservoir, having a capacity of about 1285 acre-feet of water. Of late years a constantly growing population and consequent development of the natural resources of the region have brought about an in-

creased demand for service, and in order to provide a more constant water supply throughout the year our company's engineers, in 1926, undertook the completion of the project.

Actual work was started June 21st of that year. An ancient glacial moraine which had resulted in two shoulders reaching nearly across the valley from both sides, left only a relatively narrow gap that must be filled in order to create storage in the basin above it. Beneath the surface soil in this gap a comparatively impervious layer of clay was found which served as a water seal to prevent the penetration of water under the dam. The dam is an earth-rolled structure about 90 feet high and 850 feet long, with suitable upstream and downstream slopes. The total yardage of material placed in this structure and in a small secondary dam was 169,000 cubic yards. The project was completed by the first of November, 1926. This remarkable progress was accomplished through the use of an unusual amount and variety of earth-moving equipment, the total value of which amounted to over \$150,000. The work was performed by the Kaiser Paving Company, contractors.

Philbrook reservoir is of 5040 acre-feet capacity. This water will normally be used during the fall months when it is most valuable and will increase the annual output of the de Sabla and Centerville plants by approximately 6,250,000 kilowatt-hours.

Subsequent to its use by the company for power generation, the water enters Butte creek and becomes available for irrigation of ranches east of Chico.