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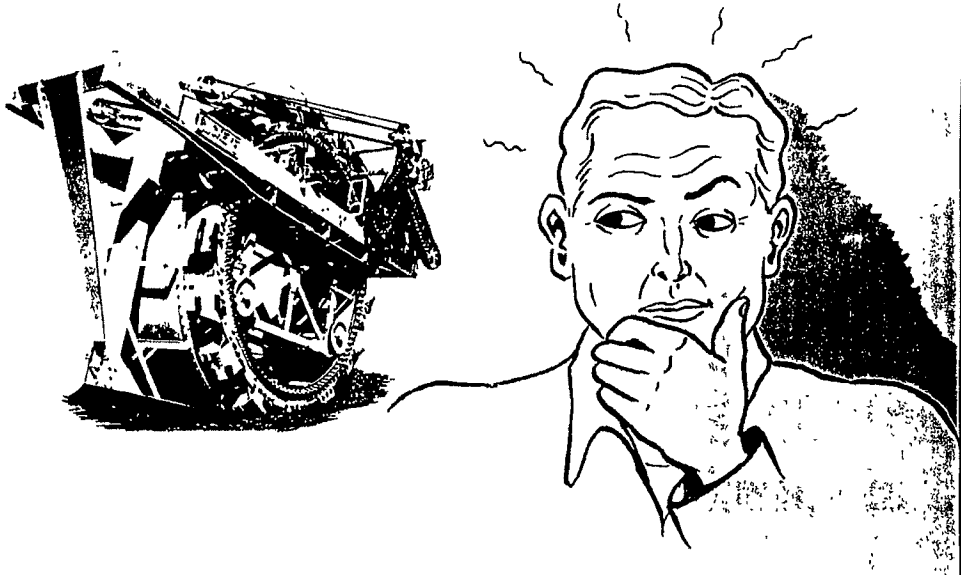
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April '50

BE CAREFUL!

THIS MACHINE DOES THE JOB...

YOU DO THE THINKING



Yes, we marvel at the amazing work of modern machines . . . we say "they can almost think."

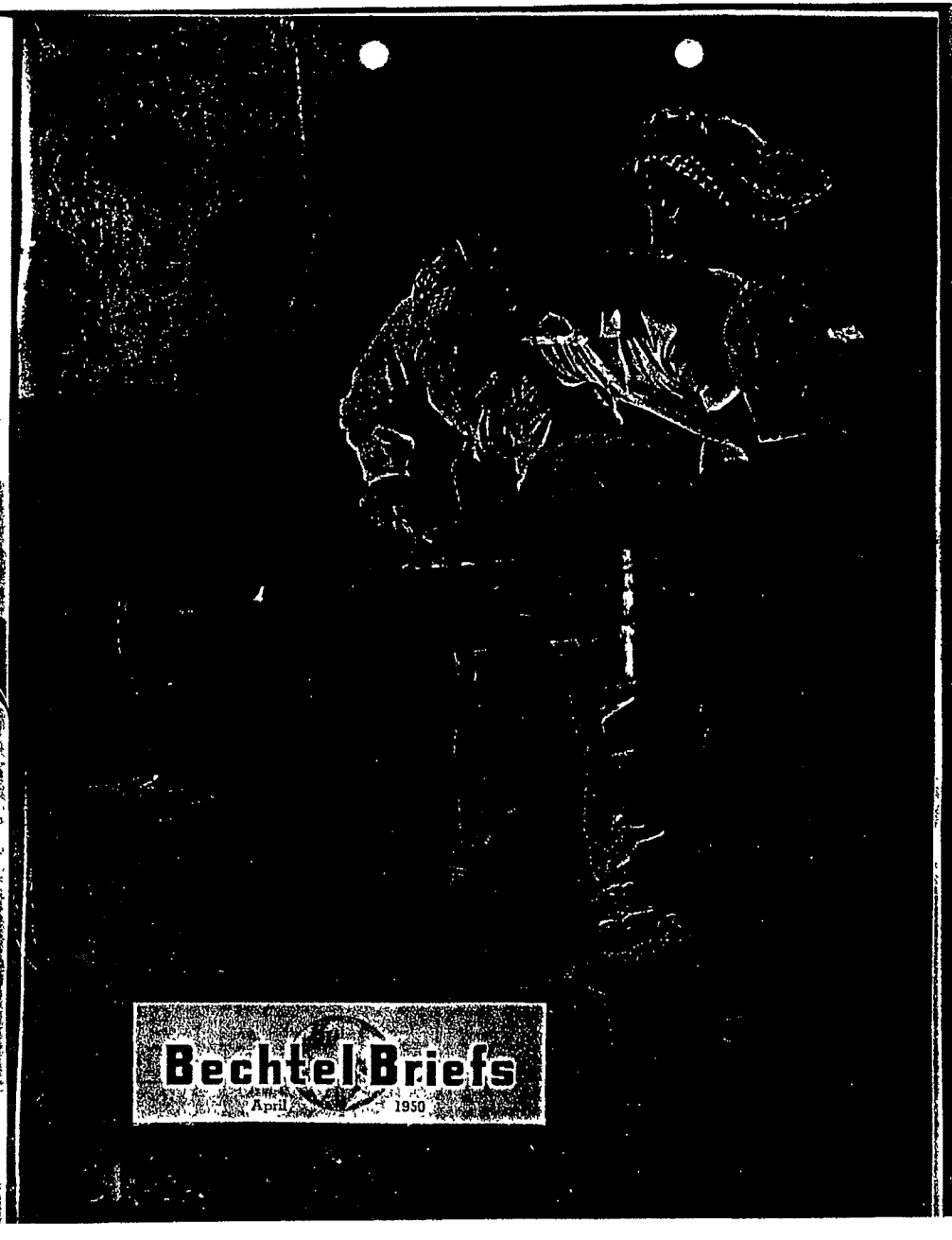
But they can't think. That's why Machine accidents occur . . . unless the men who operate them do the thinking.

"SAFETY" MEANS "SAVINGS"

BECHTEL

BECHTEL CORPORATION

LOS ANGELES SAN FRANCISCO TULSA NEW YORK



Bechtel Briefs

April 1950

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A BUILDER & HIS FAMILY

By ROBERT L. INGRAM

CHAPTER NINE

His election to the Presidency of A.G.C. was reminiscent of the old story about John Alden, Miles Standish and the courtship of Priscilla. Dad campaigned vigorously in behalf of another man—and was amazed when the membership turned the tables and made him the overwhelming choice for President. Later he had the satisfaction of seeing this office ably filled by another westerner, his friend and associate Henry J. Kaiser. First, W. A. Bechtel and then Henry Kaiser gave A.G.C. the vigorous early-day leadership under which some of its greatest strides were made.

1934-38: Parker Dam

Dad's last venture was the San Francisco-Oakland Bay Bridge job. He did not live to see it built. But the sons who Gilbert Darwin charged to carry on, and their associates in Bridge Builders, Inc., saw it through. At about the time of the first Bay Bridge contract and before Hoover Dam was completed, Six Companies obtained a contract to construct Parker Dam, 155 miles down the Colorado. Parker was a major undertaking in its own right, but the vast work in Black Canyon and the dramatics of matching engineering wits against the winds and tides of San Francisco Bay tended to overshadow its importance. Frank Crowe straddled both Hoover and Parker as top construction man, with Perry Yates on the job down at Parker as his good right arm. Parker was built under subcontract by J. F. Shea Co., Inc., between 1931 and 1938 to impound waters for the Los Angeles Aqueduct, and as a source of power. It is three hundred twenty feet high, eight hundred fifty-six feet long at the crest.

1933-'36: Big feet for the world's largest bridge

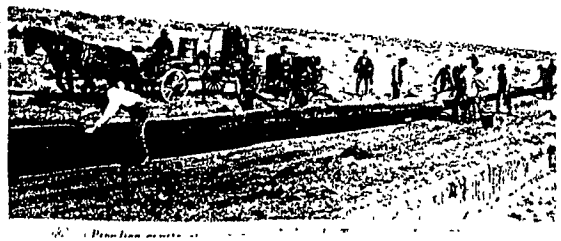
Bridge Builders Inc., received two contracts on the Bay Bridge—one for the pier foundations of the East Bay cantilever span, the other for painting the entire structure from shore to shore. Steve was a prime mover in this joint venture, which marked the introduction of eastern firms into the group on an active basis. The work was covered well by inviting in three outstanding organizations, on underwater construction, pile driving, and steel work. Missouri Valley Bridge and Iron Co., and Drave Corporation of Pittsburgh furnished the men who put the caissons down, and a New York firm, Raymond Concrete Pile Company, built the cofferdams. The Bechtel service was in the field of management and administration; Steve was Vice President of Bridge Builders, Inc., and Bill Waste was Administrative Manager.

The Bay Bridge brought the men of Six Companies Inc., into direct competition. Transbay Construction Co., which included Morrison-Knudsen, MacDonald & Kahn, Shea, and Pacific Bridge, bid spiritedly against their former (and later) Bechtel and Kaiser partners, who were members of Bridge Builders. The latter firm, as noted, was awarded the East Bay piers and the painting job; Transbay Construction got the piers for the western crossing. The rivalry grew as the work progressed. Transbay set their lowest pier depth at minus two hundred forty-six feet, to make it the world's deepest. But Carl B. Jensen, now Drave's President and then Bridge Builders' General Superintendent, quickly revised his depth figure for Pier E-4 (near Yerba Buena Island on the east crossing) from minus two hundred forty two feet to minus two hundred forty-seven feet—and Bridge Builders had the satisfaction of setting the deepest bridge footing in the world.



WABCo crane and the family's pet locomotive, No. 4, about 1929.

The contract for foundations from Oakland to the island embraced building steel caissons, launching them at an Oakland dock, towing them to the pier site, then getting them down and anchored into place on the Bay bottom before building up the permanent concrete pier structures. Missouri Valley's E. H. Connor, dean of caisson men, laid out the method. Sinking the big caissons was a touchy job. They had to go down with the utmost precision, and rest exactly in the designated spot. Winds and tide had to be reckoned to a nicety; the engineers were given no margin for error in computations, and when the big minute arrived, every member of the well-rehearsed crew had to respond with split-second accuracy. Commuters still remember watching the bridge builders jockey those bulky "boxes" with the sharp cutting edges, and sinking them one by one until they bit deep into bearing surface far below the ooze of the Bay floor. Later, after steel rose into the sky and a web of wire had been woven, the decks of the ferry boats were grandstand seats for the world's biggest bridge painting job. When it was finished the great Bay Bridge in its sparkling aluminum coat was as beautiful as any masterpiece of the silversmith's art.



1934-'38: The group built dams, jetties, tunnels

The joint venture idea worked well for the extensive public works built in the thirties. It multiplied the contractors' capacity; in addition to Hoover and Parker and the Bridge, group members operating as Columbia Construction Co. built Bonneville Dam on the Columbia River, and Six Companies built the Mormon Flat Dam on the Salt River in Arizona, the Madden Dam in the Panama Canal Zone, and the Conchas Dam in New Mexico. Six Companies also built the Alameda Tunnel, the Mokelumne Aqueduct, and the Contra Costa Canal in California, and the Grand Coulee Dam Second Powerhouse in Washington. As Six Companies of California they constructed a section of the Oakland to Contra Costa County highway and did the troublesome initial work on the Broadway Low Level Tunnel. Utah-Bechtel-Morrison-Kaiser Co., completed two Colorado jobs, lining the Moffatt Water Tunnel and building Taylor Park Dam. This list, partial and not entirely chronological, covers a period of simultaneous operations extending from 1934 through 1938.



Shoring-up a bridge to withstand heavy loads. As equipment grew larger, the problems of transporting it multiplied.

Public work had been advantageous to the participating contractors. It enabled them to build well-rounded organizations and increase their resources. But even while group work of this nature was in full swing, Steve Bechtel made plans to enlarge the firm's direct service to private industry. In 1936, a subsidiary called Industrial Engineering Co. was set up to manufacture and apply Somastic Pipe Coating. Here was a straw pointing the next direction his thinking would take. His keen interest in pipe lines and pipe coating was significant, both found their major market in the petroleum industry.

The petroleum age

"Steve's vision was of energy—all types of it, but particularly of oil as a universal power source," a close associate pointed out. And his ability then to foresee the tremendous growth that has since taken place in the petroleum industry led to the conception of a new engineering and construction facility to meet its needs. As "Mr. Customer" at Hoover Dam, he had recommended a friendship formed at the University of California. The friend was John A. McCone. McCone gave promise of his brilliant later career by making an outstanding record at the University. Working closely with Reese Taylor, another college mate later President of Union Oil Company, he helped put together the Consolidated Steel Co., after working his way up in a predecessor concern. When Hoover Dam got under way Consolidated's new Maywood plant had just been completed. With a depression on, McCone faced the necessity of finding business for the new plant and lots of it. Hoover Dam was the place where the most steel was needed right then, and he convinced Steve that Consolidated had the answer.

John McCone was aided by a young man who gave the Six Companies' account close attention. Steve liked him from the moment they met. Already he had John McCone cataloged as a potential future team mate, and he also decided to keep in touch with Consolidated's up-and-coming salesman, whose name was Alden G. Roach. About a year after the completion of Hoover Dam Steve conceived a new organization to engineer and build processing plants for the oil companies. McCone helped to form it, and came in to manage it and share ownership with the Bechtel brothers. Steve continued to maintain contact with Alden Roach, who advanced steadily to the top position in Consolidated Steel, and then—in 1948—was elected President of Columbia Steel Company. The forties would be years of progress for the Bechtels, enabling them to welcome Roach into the family councils as a Director of International Bechtel, Inc., and of Industrial Indemnity. Thus two leaders from the steel industry were to pool abilities with those of their Hoover Dam customers, an association that matured in business accomplishment and lifelong friendships.

EDITOR'S NOTE

BECHTEL BRIEFS *is privileged to present in a series of installments "A Builder and His Family," written and copyrighted by Robert L. Ingram.*

