Daniel C. Jackling and Kennecott: A Mining Entrepreneur’s Adjustment to Corporate Bureaucracy

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On 13 March 1956, Daniel Cowan Jackling died at 86 at his Woodside, California, estate. During his professional career he had participated in the transformation of the mining industry. He held a special place in the pantheon of American mining engineers, because, in 1899, he became one of the first metallurgists to advocate the open-pit mining of low-grade, porphyry coppers. Ultimately, his vision, persistence, and personal conviction would create the world’s greatest man-made crater of his era, the Bingham Canyon copper pit. Although a legendary figure in his younger days, this engineer, metallurgist, innovator, and successful corporate executive lived for so long that his distinctive accomplishments became obscured by the passage of time. His obituary in the April 1956 issue of the Engineering and Mining Journal described Jackling as a “noted mining engineer,” and concluded that “he was credited with the first successful exploitation of low grade copper deposits by open pit mining.”

Born in the village of Hudson, in Bates County, Missouri, on 14 August 1869, Daniel Jackling was the son of an English immigrant of the same name. His father died shortly after his birth and his mother, Lydia Jane Dunn, died two years later in 1871. He was raised by his mother’s sister, Mrs. J. T. Cowan, who added her own married name to her nephew’s given and family names. J. T. Cowan, his uncle, had been a minister and farmer, and later became a building contractor. Daniel was raised in rural Missouri and grew up in poverty. Although he was occasion-
year at the Missouri State Normal School. Exhibiting an aptitude for science and mathematics, he transferred to the Missouri School of Mines in Rolla, where he studied metallurgy and from which he graduated in 1892. Jackling later recalled that he had saved enough money while a farmhand to pay for his first two years of college education, but then had to work at odd jobs during his third year. In his last year he became "Assistant to the Professor of Chemistry and Metallurgy" at Rolla.

When his mentor died unexpectedly in the summer of 1892, Jackling was temporarily appointed Assistant Professor of Chemistry and Metallurgy. He later recalled that he had earned forty to fifty dollars per month, but still had to scrimp and save to meet his expenses. During the Christmas holidays of 1893, he decided to head west to the mines, packed his cardboard suitcase, and boarded a train for Colorado. He began his mining career in January 1894 in Cripple Creek, Colorado, then a booming gold camp that had replaced rival Leadville in the popular imagination. In the late nineteenth century, America's expanding mining industry provided an avenue by which young geologists and metallurgists like Jackling and Herbert Hoover—Jackling's contemporary and another young orphan—could obtain fame and fortune.

While in Cripple Creek, the young miner, mill hand and eventual metallurgist met Spencer Penrose and Charles M. MacNeill. These acquaintances, mine operators and investors, later provided him with the financial support to develop the Bingham Canyon open pit mine envisioned in his famous report of 1899. Initially, however, Jackling left Cripple Creek in 1896 and joined the staff of "Captain" Joseph R. De Lamar at the Golden Gate mill in Mercur, Utah. While Jackling worked in Mercur, De Lamar became interested in the Bingham Canyon porphyry copper properties of "Colonel" Enos A. Wall. In 1899 De Lamar took an option on Wall's property, and commissioned Jackling and Robert C. Gemmell to report on these low-grade copper deposits.

Following an earlier suggestion by Victor Clement, the Jackling-Gemmell report recom-
mended that the Bingham Canyon deposits be mined by open-cast or open-pit methods employing steam shovels, which had been successfully introduced into Minnesota's Mesabi range. The report concluded that 2 percent copper could be mined profitably if the operation were developed on a massive scale. It recommended stripping the overburden and removing both ore and waste on railroad cars. Jackling, as metallurgist, was responsible for the metallurgical portion of the report. He advocated establishing a great concentrating plant near the Garfield Beach, where adequate water would be available. A rail spur would carry the ore the fifteen miles from Bingham Canyon to the mill.

As a result of the Jackling-Gemmell Report, De Lamar retained a quarter interest in the Wall properties, but did not implement the suggestions of his engineers. Although Wall, De Lamar or their agents approached various capitalists, financiers, and mining scouts during the next four years, young Dan Jackling was the first to find the financial support necessary to implement his plan to strip mine Bingham Canyon and concentrate its low-grade, porphyry copper at Garfield.

In 1901 he returned to Colorado as a consulting metallurgist for the United States Reduction and Refining Company, controlled by his friends MacNeill and Penrose. He persuaded them to examine the Utah property and then to purchase a controlling interest in it by combining De Lamar's quarter interest with Wall's two quarters. On 1 June 1903, Jackling and his partners—MacNeill, Spencer Penrose, and R. A. F. Penrose—celebrated the completion of negotiations, and three days later incorporated the half million dollar Utah Copper Company in Colorado.

While Jackling's personal faith in the Bingham porphyry had persuaded experienced mining speculators to gamble on his theories about the applicability of mass concentration to low-grade copper deposits, he was poor and later recalled that he mortgaged everything to obtain a small interest.

[In] the organization of the various copper producing industries I was a part so essential that I necessarily had an interest, but none of my associates, includ-
ing those to whom you refer [the Guggenheims, who helped underwrite the 1905 reorganization of Utah Copper], have ever “carried” anything for me, even at the first instance, in the organizing of Utah Copper, where I had a five percent interest, I pledged everything I had in the way of collateral to carry it, and paid interest on the money I borrowed to do so. 8

Dan Jackling was placed in charge of operations at Bingham Canyon and immediately began constructing the Utah Copper Company’s experimental concentrator at Copperton in lower Bingham Canyon. The Copperton mill was fitted with secondhand equipment belonging to the United States Reduction and Refining Company, but it soon verified both the accuracy of the sampling reports and the applicability of Jackling’s mass concentration scheme. Though designed as but an experimental facility and intermediate stopgap until the projected Magna mill at Garfield was completed, the Copperton mill operated continuously from 1904 until 1910. Leonard Arrington and Gary Hansen, historians of Bingham Canyon, describe the Copperton facility as the “training school for those who would later operate the larger mill at Magna.” 9

In 1904 the Utah Copper Company was reorganized and incorporated as a New Jersey firm. While the Copperton mill had demonstrated the validity of the Jackling-Gemmell report, the firm desperately needed additional capital to build its Garfield concentrator and to inaugurate steamshovel mining in Bingham Canyon. The success of Jackling’s ideas at Bingham Canyon was assured when the Guggenheim Exploration Company decided in 1905 to underwrite the planned expansion of the Utah Copper Company. The Guggenheims obtained a twenty-year contract to smelt Utah Copper ores at their proposed American Smelting and Refining Company (ASARCO) smelter at Garfield, and appointed Guggenheim Exploration Company engineers as managing directors of the Utah Copper Company. In return the Guggenheims bought 232,000 shares of Utah Copper stock and underwrote a $3 million bond issue. 10

For the next decade the Guggenheims expanded their influence over the affairs of Utah Copper. In 1910 the Guggenheims successfully combined their Utah Copper holdings with those of the neighboring Boston Consolidated Mining Company and of the Nevada Consolidated Copper Corporation, which operated a porphyry mine in Ely, Nevada. The result of these mergers was to give Utah Copper effective control over the major copper deposits in Bingham Canyon and to limit, if not eliminate entirely, the prospect of legal suits against Utah Copper’s exploitation of the porphyry deposits. Though initially subordinate to the
Guggenheims' managing directors, Daniel Jackling continued to operate the Bingham Canyon mine and concentrators, selected his own associates to manage operations, and became successively managing director, vice president, and finally president of the Utah Copper Company.11

Jackling became the porphyry prophet, and Utah Copper and its affiliated firms the training ground for a generation of mining engineers and metallurgists who identified and concentrated the low-grade porphyry deposits that transformed the copper mining industry. John Hays Hammond acknowledged Jackling's accomplishments when he noted: "Jackling was put in charge of operations. The adjacent property was acquired and consolidated for more efficient operation, and the striking success of Utah Copper under Jackling's able management is a matter of contemporary copper history." A. B. Parsons reported that Pope Yeatman described Jackling as "the 'Father of the Porphyries,"' and explained that he "was the leader; we, to a greater or lesser extent, followers." Jackling's accomplishments at Utah Copper brought both recognition and new responsibilities, as he assumed the presidencies of Nevada Consolidated Copper Corporation in Ely; Ray Consolidated Copper Company in Ray, Arizona; Chino Copper Company, operating a mine in Santa Rita, New Mexico; Butte and Superior Mining Company in Butte, Montana; Utah Power and Light Company, which supplied electricity to the Bingham and Garfield operations; and the Mesabi Iron Company in 1915.12

Dan Jackling was forty-six years old in 1915 and had completed the first half of a successful life as a metallurgist and mine operator. T. A. Rickard reported the extraordinary success of the Utah Copper Company. Originally capitalized at $500,000, under Jackling's leadership in its first decade of operation from 1907 to 1917, the company paid $75,770,882 in dividends and acquired $48,293,528 in working capital. Ironically, at this watershed other developments transformed Jackling's professional life and left him an embittered critic of twentieth-century mining developments.13

The trouble began in 1906, less than a year after the Guggenheims underwrote Utah Copper's expansion. Ever interested in new prospects, they invested in Alaska's Kennecott Copper Corporation and contributed to the expansion of one of the twentieth century's most successful mining conglomerates. Nine years later, Kennecott Copper Corporation was created as a holding company for the various Guggenheim copper interests and it gained a 25 percent interest in Utah Copper. Thereafter Kennecott increased its share of Utah Copper until, in 1923, it controlled 77 percent of Utah Copper Company stock. Writing in 1947, Jackling concluded that Kennecott had virtually stolen its copper mines from their original owners. He pointed to
Kennecott’s earnings from the Utah properties, which accounted for “about two-thirds of Kennecott’s entire income, whereas the exchange ratio gave former Utah stockholders less than 25% of Kennecott’s present outstanding issue.” His objections to the exchange were of no avail, since further resistance might have resulted in he and his associates being dismissed from their positions of responsibility within the Utah company.14

In the early 1930s, J. P. Morgan and Company began to assume the dominant role in Kennecott because of the economic reversals that the Guggenheims had suffered through their Chilean nitrate investments. These changes compounded Jackling’s problems; he became the remnant of an older order and a person increasingly out of step with the new directions that the Kennecott and the Morgan men followed. In 1936 Utah Copper became a Kennecott subsidiary and in 1947 it was dissolved entirely and replaced by the Utah Copper Division of Kennecott. Arrington and Hansen suggest that Jackling and his associates may have resented Kennecott’s absorption of Utah Copper, which, in fact, they did.15

Jackling believed that he had personally identified Bingham Canyon’s potential and supervised the development of its open-pit mine. He was a “self-made man,” who had developed a sense of his own importance and self-worth widely shared by his friends and professional associates in the industry. Writing in 1942, shortly after the University of Utah had awarded him an honorary Doctorate of Science, Jackling explained its significance to him. “In truth I consider this degree as outstanding in comparison with all others I have received, because it came from the scene of my greatest achievement, where those responsible for or contributing towards the award have actually witnessed the results of my efforts instead of having read or heard about them as was the case in all others.” At the conclusion of his active career he remarked immodestly that “it can be said without impressive, much less successful, contradiction that at no time in the history of the world has any man in his lifetime been responsible for such a revolutionary and widespread amplification [sic] of the economic development of any kind of natural resource.”16

Daniel Jackling’s personal experiences convinced him that the only sure avenue to success came from hard work and attention to detail. These character traits, plus an intense loyalty to friends and a disposition to follow his instincts, recur throughout Jackling’s career. As early as 1913 he explained his philosophy of worth and work to his cousin, George Cowan:

The only way to get along is to get started... There never was anybody who was strong and healthy who could not find an occupation, if coupled with health and strength he had the inclination to be occupied. In other words, in this country there is an occupation for everybody commensurate in importance with his capacity to fill the place, and generally speaking his advancement will depend on his capability, and too much importance must not be given to the idea that one must have either a theoretical or technical education in the line of occupation he expects to follow.17

Both his sense of self-importance and his philosophical acceptance of the myth of the self-made man fueled Jackling’s anger and confusion in the years after 1915, when he and Utah Copper were subordinated to Kennecott and its corporate bureaucrats. Late in his life he described one former associate as the type of “organizational politician” that he had come to detest, namely “a confirmed disciple of the easiest way available to promote friendly attitudes on the part of others, with apparently no discrimination as between the real and the false.” By the late 1920s, Jackling was struggling to maintain
his personal supervision over both the Utah and Nevada Consolidated properties. In 1928 he wrote to Charles Hayden of the Hayden, Stone, and Company brokerage firm and a director of Nevada Consolidated. Jackling indicated that he had no respect for Stephen Birch, Kennecott's president, and resented attempted intrusions into Nevada Consolidated's and Utah's affairs by Birch or his subalterns. Jackling even ordered his staff to prevent Kennecott officials from obtaining confidential data on the operations of Nevada Consolidated, which Kennecott had not yet absorbed as a subsidiary. 18

When E. T. Stannard replaced Birch in the reorganizations that followed Morgan's ascendency in 1934, Jackling became even more isolated and defensive. Writing on the eve of his forced retirement from Utah Copper and Kennecott in 1942, he explained the situation as he understood it.

The cold facts of the matter are that my retirement should be more properly described as actual eviction upon the sacrificial altar of an upstart nincompoop who, by processes of lying and intrigue, has ingratiated himself into [the] use, but I do not believe into the actual confidence[.] of the money powers in New York, which now demand, and so far as I am concerned have fruitlessly so done for a long time, absolute subservience to self-seeking iniquitous prescriptions and procedures which in times past have literally robbed the original developers and stockholders of each of the four great mining industries developed[.] and for a third of a century or more operated most successfully[.] under my direction. 19

Events at Guggenheim Brothers in the late 1920s and early 1930s heightened Jackling's apprehensions about the future. Specifically, he was disturbed by the forced retirement of John K. MacGowan from the firm. In a letter of consolation to his friend he confessed himself "not sufficiently versatile to understand how things of this kind can happen so unceremoniously," and admitted to "a lingering apprehension" as to his own status within the Kennecott organization. These fears may explain why, in 1933, Jackling accepted the consolidation of Utah Copper's and Nevada Consolidated's offices into Kennecott's, and, in a meeting with Stannard, agreed to cooperate when and where appropriate and to visit Kennecott's New York office when Stannard dictated. 20

Jackling found his last eight years of active involvement in Kennecott's mining operations to be bitter and perplexing. He was undoubtedly irascible, imperious, and given to conspiratorial interpretations of events, but it must surely be ranked a great tragedy that a person who had invested so much time and effort in the copper mining industry should have left so embittered. As Jackling interpreted the issues during the 1940s, the principal difficulties were E. T. Stannard's determination to centralize operations in the New York office of the Kennecott Copper Company and to force out Jackling and his friends. 21

Writing in 1944, Jackling delineated the impracticality of Stannard's operational and organizational adjustments. He indicated that recent changes that would provide for periodic mass meetings of the operations managers at Salt Lake City would never resolve the difficulties. In his own assessment of the problems, the solution required "the reestablishment of an authoritative head of operations near the properties—one who, like myself, would be familiar with all such details and [would] devote a considerable amount of his time in seeing to it that nothing unavoidable was done at one property that would prove detrimental to another." According to Jackling, there was no "effective direction" of the mining operations, and he held little hope that any could
be restored.22

As with its determination to centralize decision-making in New York, Kennecott altered its labor-management policies and procedures after Jackling's departure. In 1943, Utah Copper Company first entered into labor negotiations with the International Union of Mine, Mill, and Smelter Workers—formerly the famous, or infamous, Western Federation of Miners. Since the Bingham Canyon strike of 1912, Jackling had been a consistent opponent of organized labor. When his beloved Utah Copper accepted union representation, he confided, "I suppose I should not be concerned; but, to witness the utter wreck and ruin of precepts and policies which had guided that great industry and similar ones clear of labor relationship rocks for more than forty years, I can't escape a sense of gnawing sorrow that such things should come to pass so soon following the end of my directional regime." Whatever their personal sentiments on recognizing organized labor, Kennecott's managers either had to change the company's labor policies or face increased resistance and pressure from both the unions and the national government.23

The third area of company policy that directly affected Daniel C. Jackling in his later years was Kennecott's forced retirement plan. Jackling turned seventy in 1939, and that policy offered a sure way to bring an end to his active participation in Kennecott's affairs. By May 1940, E. T. Stannard and the Kennecott hierarchy had developed a retirement program that mandated the retirements of Jackling and other older employees beginning on 1 October 1941. Although Jackling himself received a year's extension, he anticipated correctly that both his San Francisco office and the separate corporate identities of his companies would cease soon after his departure. In a memorandum to W. S. Boyd on 4 May 1940, Jackling explained the relationship that he saw between Kennecott's retirement program and the corporate reorganization that he anticipated. He concluded that "we are fairly well assured of two and a half years more of the present operating regime without much serious change in either organization or methods." Jackling was especially distressed when he could not prevail upon Stannard to exempt several long-time employees from the retirement policies in 1941. In his letter of 9 September 1941, Stannard explained to Jackling that "while we would like to accept your recommendation, our judgment is that the precedent established by doing so would be prejudicial to the future of the whole Retirement Plan.24

When Jackling explained the situation to George Hickey, one of the affected employees, he expressed his sincere regret at the Kennecott policy. Jackling indicated that while he was permitted an additional year's grace, he had been advised that he was not permitted to designate his successors, nor to make any changes in the compensation of paid employees under his authority. He confided: "That's the sad story," and concluded, "this is the most astounding culmination of events that I have ever experienced—a thing that bears no evidence of either economic or moral sense, much less the slightest conception of right, justice or decency."25

Was Daniel Jackling the victim of a corporate purge or had he simply stayed around too long? The facts suggest that both conclusions are accurate. On the one hand, Jackling had managed "his" Utah Copper Company for forty years. In that time he had become a mining celebrity. He resented the interference of those corporate bureaucrats and financiers whom he might have characterized as jackels or unprincipled exploiters. Yet it is certainly true that without their assistance and encouragement, Daniel Jackling would have remained an ordinary metallurgist or mining engineer.

Alternatively, times had changed since 1903 or 1912 or 1915. Investment bankers like the Morgans had become more concerned with stability, accountability, and profits. When the Great Depression brought Franklin Roosevelt to the
American presidency, relationships between the federal government and the mining industry also changed, most clearly so with the passage of the National Industrial Recovery Act and the National Labor Relations Act. The fights with organized labor that Dan Jackling had relished took on new connotations when strikes interrupted the regular flow of profits or threatened amicable relations between the federal government and the mining industry.

The individualism that Jackling exhibited had also become anachronistic in an era in which organizational bureaucracies managed the diverse interests of corporate conglomerates such as the Kennecott Copper Corporation. E. T. Stannard and his successors in Kennecott's corporate hierarchy had interests and responsibilities far beyond Utah Copper or San Francisco or even the United States.

Dan Jackling did not make the transition into a modern corporate manager, but no one expected him to do so. He played a crucial role in the identification and exploitation of low-grade copper deposits both in the United States and abroad. He received the adulation of three generations of mining engineers and metallurgists, and was honored in 1954 in a special ceremony that placed his statue in the Utah Capitol Building. His life had been one that possessed both extraordinary successes and more than a little irony as he struggled to restrain his own aging. By the time that he died in 1956, he had out-lived most of his contemporaries and many of the men who learned copper mining and metallurgy at Bingham Canyon.

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Notes:

2. Copy, [Daniel C. Jackling] to Captain Percival Jackling in Lloyds Bank House, Kent, England, dated San Francisco, 30 Jan. 1920; and Memo, H. P. Scully to Andrew F. Burke, [n.p.], 5 Nov. 1957, in Box 1, File 4: Genealogy; and "Register," p. 3; copy, [Jackling] to Burt B. Brewster, 24 June 1943 and 13 July 1943, San Francisco, Box 3, File 2: Brewster; in Daniel C. Jackling Papers M93, Division of Special Collections, Stanford University Library (hereafter: Jackling Papers). Jackling listed his mother's death as having occurred in 1871 whereas the Scully to Burke memo listed it as 1872.


16. Copy, [Jackling] to Ed [E. W. Engelmann], San Francisco, 18 June 1942, Box 1, File 5: Health & Retirement; copy, [Jackling] to Burt B. Brewster, San Francisco, 30 Oct. 1942, Box 3, File 2: Brewster; Jackling Papers. Eugene McAuliffe and A. B. Parsons, old acquaintances of Jackling, confirmed his status in the mining community. McAuliffe said that "he had something that few are blessed with, and he went far from a zero start," and Parsons replied: "Yes Mr. Jackling was really quite a distinguished individual." McAuliffe to Parsons, Omaha, Neb., 18 Apr. 1956, and Parsons to McAuliffe, Oakland, Cal., 2 May 1956, in Box 2, Correspondence 1905-1963, A. B. Parsons Collection 2007, American Heritage Center, University of Wyoming, Laramie.

17. Copy, [Jackling] to George Cowan, c/o J. T. Cowan, Eastbound, 26 Jan. 1913; see also: copy, Jackling to Mrs. J. T. Cowan, en route San Francisco to Salt Lake City, 3 Dec. 1913; both in Box 3, File 8: Cowan, Jackling Papers. Late in his life Jackling commented upon a former associate whom he characterized as "agreeable and really a right-thinking and acting person—really capable in his profession, but... never had the initiative or apparently the incentive to accomplish much really worth while." Copy, Jackling to A. J. Maclean, San Francisco, 16 Apr. 1945, Box 9, File 8: Maclean, Jackling Papers.


19. Copy, [Jackling] to Burt B. Brewster, San Francisco, Calif., 2 Sep. 1942, Box 3, File 3: Brewster; see also: [Jackling] to Louis S. Cates, San Francisco, 2 May 1944, Box 3, File 7: Cates; Jackling Papers. In the latter letter Jackling explained that he had learned that Medley G. B. Whelpley would retire, as "there is no future for him in his present associations—the Guggenheims having lost or given away their previously dominating position in the mining industries in which they have been so long a virtually controlling factor." Jackling reported that while he had assumed previously that Whelpley "had ingratiated himself with Morgan influences," this news proved him wrong.


22. Copy, [Jackling] to A. J. Maclean, San Francisco, 26 Oct. 1944 and 31 Oct. 1944, Box 9, File 8: Maclean, Jackling Papers. In his second letter Jackling recounts: "You will recall that I told Stannard and his sponsors repeatedly that his scheme of reorganization 'would result in disorganization that all concerned would have reason to regret if they had intelligence enough to recognize the errors of their ways.'"


25. Copy, [Jackling] to George [Hickey], San Francisco, 16 Sep. 1941, Box 1, File 5: Health & Retirement; Jackling Papers.