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A History of Mining Machinery Manufacture in Colorado*

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Man is forever seeking speed and short-cuts in his desire to produce from the minerals of the earth commodities which may provide him with more comfortable modes of living. The visitor to the Colorado School of Mines campus at Golden, Colorado, sees there a large *arastra*,[1] or quartz crusher, an example of man's primitive efforts to speed up one step in the process of extracting minerals from the ores which bear them. True, the speed of the *arastra*, similar in design to the pharmacist's mortar and pestle, is only suited to the "man to whom a day is as a thousand years, or vice-versa,"[2] but the realization that machines, no matter how crude, increase productive capacity and create more ease in the process spurs the inventive mind to design constantly better tools of manufacture.

This thesis is written to show the part various men and companies have played in Colorado in producing tools for the mining industry, so that mining methods might advance here in spite of great distances from Eastern centers of manufacture or inadequacies of such equipment for the peculiarities of Colorado mines.

Much of this story is forever lost because of the large number of its characters who have died without setting down in writing, or relating to friends and relatives, the incidents of their lives which frame the nineteenth century portion of this picture.

Thomas B. Stearns, founder of the Stearns-Roger Manufacturing Company, once said, "The man who tries to build heavy machinery in Denver must possess an excessive amount of courage and more than a spark of the gambler's spirit."[3]

*This was written as a Master's thesis in History at the University of Denver.—Ed.

[1]Or *arrastre*.

[2]*History of Clear Creek and Boulder Valleys, Colorado* (O. L. Baskin & Co., 1880), 211.

[3]Interview with Mr. Gilbert Denton of Vulcan Iron Works, July 7, 1947.

If Denver ever has been, or approached being, the mining machinery capital of the world, it has been through the courage and gambler's luck, and also a great amount of vision, of Colorado pioneer manufacturers like John W. Nesmith, J. George Leyner, Charles and Edwin Hendrie, Henry Bolthoff, William H. Leonard, George Stroehle, Peter and William McFarlane, Eben Smith, Gilbert Denton, James W. Jackson, A. G. Langford, Frank Shepard, Francis M. Davis, Thomas B. Stearns and many others.

Historians have thus far failed to recount the part played in Colorado history by those whose efforts have surmounted, and are continuing to surmount, obstacle after obstacle to place Denver, and the state of Colorado, among the top world producers of mining machinery. The early obstacles of great distances, without railroads, from the sources of coal and iron have been overcome,[4] but in their stead stands the spectre of exorbitant freight rates established by the railroads for transport both of raw materials to, and export of machinery from Colorado factories. More remarkable, therefore, is the story of Colorado's mining machinery manufacture, which finds its roots within the year following the Jackson and Gregory discoveries and the Pikes Peak Gold Rush.

The First Two Decades, 1860-1880

In spite of difficulties, humble shanties called iron works and machine shops appeared in Colorado as early as 1860. Miners and others were at hand, in giving orders for engines, pumps, crushers, mills, drills, concentrators, etc., to represent personally their particular ideas and needs, make changes at will, and even to superintend the construction of the desired machinery, if necessary.

A foundry and machine shop was established on half a block of Larimer Street, just south of Cherry Creek, in 1860, by Messrs. Fraser and Scoville. They manufactured various kinds of castings and machinery adapted to the wants of the mining sectors in that day.[5] In December of that year the works were purchased by Joseph M. Marshall (famous for coal diggings near the present town of Marshall). Raw material for the Marshall machine shop was largely old machinery which had been wagoned across the plains but never used. In 1862, he sold the shops to three men, A. G. Langford, William L. Lee, and Milo Lee, who immediately moved the company to Black Hawk, and founded the Black Hawk Foundry and Machine Shop. Active manager of this foundry and machine shop was John W. Nesmith, who, along with Langford,

[4]Anthracite coal from Pittsburg, had to be hauled by wagon from St. Joseph, Missouri, or Atchison, Kansas, after its railroad journey, 600 miles to Denver; and thence over the mountains to Black Hawk or Central City, paying a freightage of 15-25 cents per pound, or $300-500 per ton—in addition to railroad charges.

[5]Reports of Denver Board of Trade, 1880, p. 44.

plays the prominent role in the story of the Colorado Iron Works. This company dates its origin from 1860 on the continuity of this shop which Langford had originally brought from Denver.

In nearby Central City had sprung up in 1861 a mining machinery concern which was to furnish a great part of the equipment used in the early mining camps of Colorado, built by Hendrie and Butler, but known to the machinery world as Hendrie and Bolthoff. (Parts of this old foundry and machine shop still stand on Eureka

HENDRIE AND BOLTHOFF'S CENTRAL CITY FOUNDRY, 1861

Oldest Foundry and Machine Shop in the State.

Street in Central City, bearing witness to the age of mining machinery manufacture in the state.) John Butler, it seems, was associated with the foundry only about a year, and facts concerning him are unknown to any present employee of the company.[6]

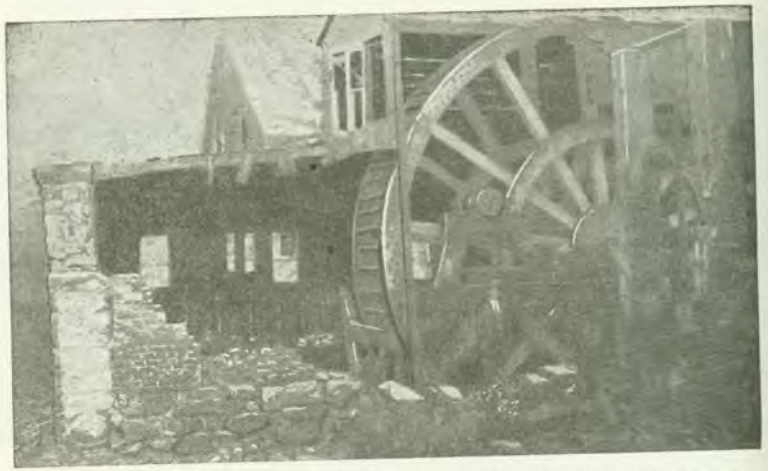
Hendrie and Bolthoff in Central City, and Langford and Company in Black Hawk could not meet the entire local demands for machinery, and in 1865 George Stroehle established the Stroehle Machinery and Supply Company in Black Hawk, a company which is still in existence today, with shops in Black Hawk and Idaho Springs, and controlled by John and Fred Stroehle, sons of the founder.[7]

Still within the first decade of the history of Gregory Gulch a foundry and machine shop was established in Central City by Peter and W. O. McFarlane, known as W. O. McFarlane and Company. These two brothers were to chart an illustrious path in Colo-

[6]Interview with Mr. R. W. Hanington, July 6, 1947.

[7]The shops at both Idaho Springs and Black Hawk are large and well-equipped. Mining is not particularly flourishing there today. (Interviews with John and Fred Stroehle.)

rado mining machinery manufacture, with successful companies not only in Central City, from 1869 on, but also in Denver. There the brothers were to divide interests, forming two large companies: McFarlane and Company, with its huge shops at 33rd and Blake, founded by W. O. McFarlane, and in existence from 1892 to 1910; and the McFarlane-Eggers Company of 2763 Blake Street, led by Peter McFarlane and sons, and today managed by Fred McFarlane.



BOLTHOFF WATER WHEEL AT CENTRAL CITY IN THE 1860s

James W. Jackson, of Paducah, Kentucky, was one of the earliest pioneers in establishing machine shops in Denver. His shops, built in 1870, on Ninth Street, occupying a 125-foot frontage on the block between Larimer and Lawrence Streets, was one of the largest establishments of the kind west of the Missouri River. In addition to the general manufacture of mining machinery, Jackson designed and constructed steam engines of various types to furnish power for mining, smelting, and milling operations. Although the name of the company was the Denver Foundry and Machine Shop, the shops were better known as "Jackson's of West Denver."[8] Jackson's business was a financial success,[9] and his confidence in Denver as a future manufacturing center was great. In 1879 alone he put up eleven smelters in eleven mining districts.[10] To meet the demands of his business, Jackson constructed new shops at 1734 Fifteenth Street, in 1880. For twelve years he conducted business there; but in 1892 a good business offer from W. O. McFarlane of

[8] *Rocky Mountain News*, Jan. 1, 1878, p. 5, c. 8.

[9] It is interesting to note that stock, materials and work were on a strictly cash basis. *News*, Nov. 21, 1872, p. 4, c. 4.

[10] *Rocky Mountain News*, Jan. 1, 1880, p. 17, c. 4.

Central City caused Jackson to sell the business and shops. McFarlane operated these shops until 1898, when his volume of business demanded larger works, which he installed at Thirty-third and Blake Streets, and which have subsequently been the home of the William A. Box Iron Works, and the Silver Engineering Company. I like to think through the continuity of the story from the little start of Jackson in 1870 to the present large scale productions of Mr. Harold Silver.

A. G. Langford and John W. Nesmith, who had engineered manufactures in the Black Hawk Foundry and Machine Shops sold out their interests in 1875 to Silas Bertenshaw, who had established a record as one of the best molders in the Gregory district.[11] He and his foreman, Alonzo Smith, continued the manufacturing of stamp mills, hoisting machinery, and Cornish pumps, and from 1878 to 1880 manufactured in Golden as well as in Black Hawk. Bertenshaw was the inventor of the Gilpin County "Gilt-Edge" Concentrator, one of the best types of gravity concentrators in the milling of ores. Hendrie and Bolthoff sold the "Gilt-Edge" to mining districts throughout the United States.

Langford meanwhile came back to Denver, and interested three other men, F. J. Ebert, Samuel S. Davidson and Wilbur R. Havens, in organizing the Colorado Iron Works, December 17, 1875, thus carrying the Langford name further into the history of mining machinery manufacture. In 1879 Nesmith returned to association with Langford, becoming superintendent of the company. With their Larimer Street shops burned out by a devastating fire in August, 1881, the Colorado Iron Works rebuilt on a large scale at Thirty-third and Wynkoop Streets under the leadership of Nelson Hallock, then president, and Nesmith, who became president of the company in 1886.

Shortly after Langford established the Colorado Iron Works, two other mining concerns began operations in Denver. Francis M. Davis, as junior partner with A. M. Ensminger, operated at Eighth and Larimer Streets after 1876 a large and successful foundry and machine shop,[12] engaged in the manufacture of hoists, engines, Cornish pumps and boilers. This company was known at first as Ensminger and Davis, but Ensminger retired from the partnership March 15, 1881, and John Smith became junior partner to Davis. The company then operated under the name, Denver Foundry and Machine Company until June 29, 1891, when it was incorporated as the F. M. Davis Iron Works. Davis retained control until two years before his death in 1912. The company was

[11] *Rocky Mountain News*, Jan. 1, 1880, p. 12, c. 3.

[12] *Denver Republican*, Mar. 16, 1881, p. 4.

dissolved as the F. M. Davis Iron Works, December 15, 1916, and the equipment and business sold to a short-lived company, the Plains Iron Works.

April 1, 1878, Arthur Hendey and H. H. Meyer organized the Excelsior Foundry and Machine Shops on a site on Sixteenth Street, just below the Colorado Central Railroad Depot. Fine gears for mills, and other mining machinery were constructed in the shops, much of it new in design, since both men were inventors of note.[13] Meyer invented a valve for steam engines which resulted in great savings and safety in operation. Crushing and concentrating machinery received a great deal of attention from Hendey, and his concentrating table was popular in the years preceding the Wilfley Table. The company was incorporated May 31, 1884, as Hendey and Meyer Engineering Company. The following year new shops were constructed at Thirtieth and Blake Streets. Ten years later, in 1895, the business and plant of Hendey and Meyer were acquired by the Denver Engineering Works.

Hendrie Brothers and Bolthoff, who had established an enviable manufacturing business in Central City, incorporated with their Denver branch on June 11, 1878, as Hendrie and Bolthoff Manufacturing Company. They sold their Central City Eureka Street foundry to McFarlane and Company, and in 1879 moved the business to Denver. Although retaining the name, "manufacturing," in the title of the company, the organizational activities have since that date revolved largely around supply for other manufacturing concerns rather than their own.

So at the end of two decades of manufacture, Colorado boasted "McFarlane and Company" in Central City; "Stroehle Machinery Company" and the "Black Hawk Foundry and Machine Shop" of Silas Bertenshaw in Black Hawk; and the Colorado Iron Works, Hendrie and Bolthoff Manufacturing and Supply Company, F. M. Davis Iron Works, Hendey and Meyer Engineering Company, and Jackson's Denver Foundry and Machine Shop in the capital city.

The Middle Period, 1880-1907

The next two decades were to produce an equal number of mining machinery concerns. Development of Leadville and Cripple Creek mining districts were to create new demands for equipment similar to those made by the discoveries of the "sixties."

Spurred with the hope of lucrative Leadville contracts, H. N. Kennedy, C. E. Kennedy, and M. A. Dolan in 1879 organized a partnership known as the C. E. Kennedy Company. The partnership, at 307 Fifteenth Street, did not last long, with its dissolution

[13]Interview with Frank Shepard, June 14, 1946.

coming September 20, 1881.[14] C. E. Kennedy alone remained in the business as agent for drills, compressors, hoists and wire rope, and in 1883 took as his partner, Charles B. Pierce, incorporating under the name, Kennedy-Pierce Company. They were located at Seventeenth and Blake Streets; moved in 1890 to the building now occupied by Hendrie and Bolthoff at Seventeenth and Wynkoop; and then in 1893 returned to their Blake Street offices.[15] Through the sale of the business to Robert and John Cary (sales manager for Kennedy-Pierce in 1893), the company became the predecessor of the Mine and Smelter Supply Company, formed in 1895.

Another company seeking to derive profits from the Leadville mining boom of the 1880s was Stearns-Roger and Company, founded in 1885 as the T. B. Stearns Company, and re-organized two years later under the present name, Stearns-Roger Manufacturing Company. Shops were constructed in Leadville, with business offices in Denver, but in 1891 the main shops were moved to Pueblo, where a small shop of the company had been in operation since 1889. Stearns hoped to facilitate use of iron and fuel from the nearby Colorado Fuel and Iron Company. Stearns-Roger remained a large Pueblo enterprise until the floods of 1921 completely destroyed the plant. The company's history does not end with this catastrophe, however, as new ventures began in Denver with the organization of the General Iron Works, and its Stearns-Roger management.

Colorado-made steam and compressed air operated drills did not enter the manufacturing picture until the last decade of the nineteenth century. Great names in its story are J. George Leyner, a native of Georgetown, Colorado,[16] and Daniel Waugh, of whom more will be written later. Leyner as a youth had worked in Colorado mines, specifically at Silver Plume, where he studied the faults of hand operated drills under the old "single" and "double-jack" methods, also the failures of the first steam-operated drills to alleviate the dust danger to the miner. Leyner invented a compressed-air-driven hammer drill, which rotated in the hole, thus speeding up the drilling process. Another improvement he added was the introduction of holes in the head of the drill so that a stream of water could be injected, and the dust allayed. Offices and small shops were established at Eighteenth and Blake Streets, although the principal Leyner shops were located in Littleton, Colorado. His drills, compressors and hoisting equipment took top prizes in the St. Louis World Exposition of 1904. His death in an

[14]*Rocky Mountain News*, Sept. 22, 1881, p. 1.

[15]Letter sent by Mr. John Leschen of St. Louis, Missouri, in 1939, to Mr. A. E. Seep, concerning the early history of the Kennedy-Pierce Company.

[16]Note that Leyner is the first Colorado-born manufacturer of mining machinery.

auto accident in 1921 cut short the history of the J. George Leyner Company, whose interests were then sold to an Eastern manufacturer, Ingersoll-Rand.

"Founded in 1891" graces the windows of the Vulcan Iron Works at 1423 Stout Street; and its founder, Mr. Gilbert Denton, Sr., may daily be found behind his desk in this office, despite his advanced years. Mr. Denton, along with Mr. Frank Shepard, now of the Denver Equipment Company, alone remain of the important nineteenth century names in the industry. Incorporation of his business was completed in 1894, with D. C. West and J. M. Latham as partners. This company, which specialized in mine cages and hoisting engines, operated shops at 1709 Blake Street from 1894 until 1910, in which year they moved to new shops at the east end of the Colfax Viaduct—these latter shops still owned by the company, but not used since 1924. Vulcan Iron Works joined the plan for the General Iron Works in 1921 as a charter member.

Also organized in 1891, and incorporated February 18, 1895, was the Queen City Foundry at Fourth and Wazee Streets. Manufacture of Blake Crushers, flanges and fittings, machinery castings, and mining car wheels were the company's objectives.[17] The business was owned and operated by the five Cordingly brothers. Although it was brought into charter association with the General Iron Works in 1921, the company did not long remain in business after that, selling its interests to the Vulcan Iron Works in 1924. The panic of 1893 caused a general exodus of population from Leadville. Among those were Robert J. Cary and John Cary, who became associated with the Kennedy-Pierce Company in Denver. The Leadville interests of that company had produced an acquaintance of the brothers with its activities. In 1895 the two Cary brothers, with Eben Smith (a mine operator of great note for forty-five years, thirty-five of them in Colorado), Frank L. Smith, and John Y. Oliver, joined interests to form the Mine and Smelter Supply Company, buying out the Kennedy-Pierce concern. Eben Smith served as president until 1901, when he sold his shares to Joseph Seep of Pennsylvania. Seep got control in 1904 also of the stock held by the Cary brothers. Biggest boon to the company was the acquisition of manufacturing rights to the Wilfley Concentrating Table, and the association of its inventor, A. R. Wilfley, as consulting engineer and director of the Mine and Smelter Supply Company from 1905 until his death in 1927. The improvement of ore treatment was made possible by the invention in 1912 of the Marcy Ball Mill by a Salt Lake manager of the company, Frank E. Marcy. This, added to Marcy's 1917 Rod Mill, gave Mine and Smelter the best possible marketing items in the field of mining machinery.

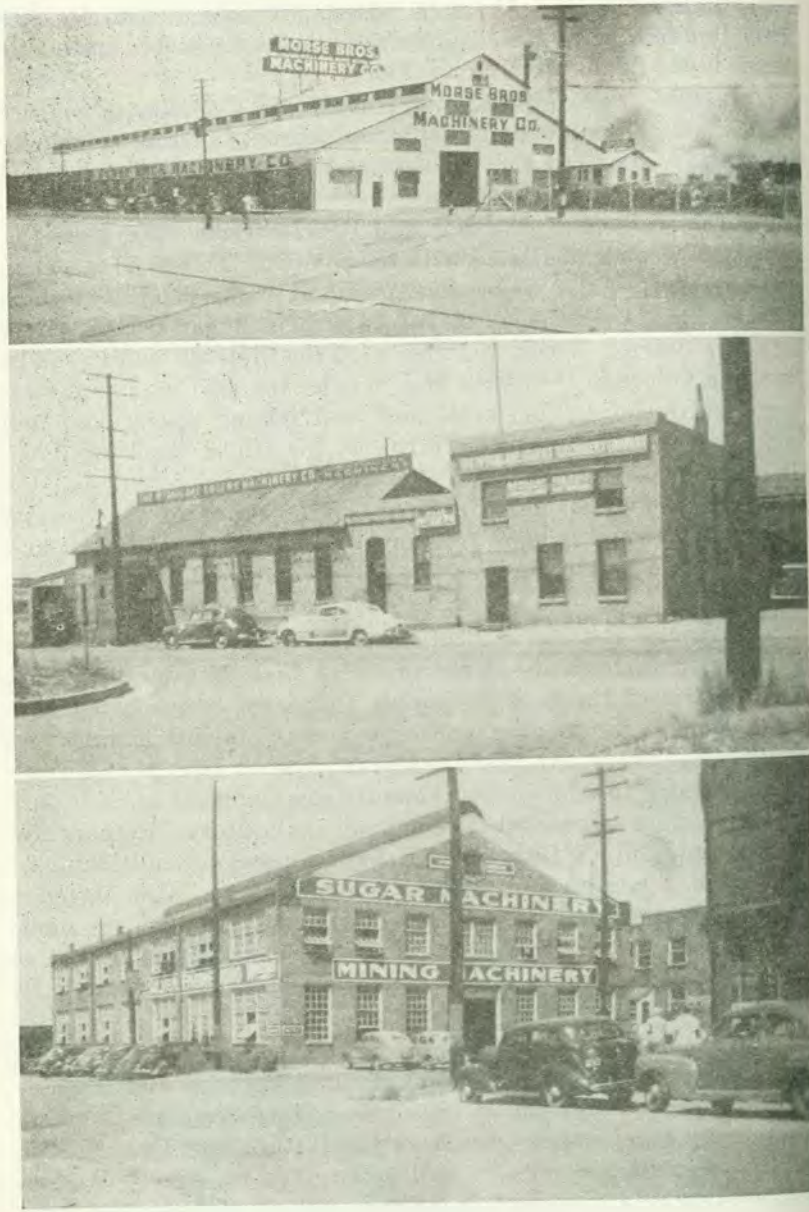
[17] *A Bulletin of the Industries of Colorado*, 1896, p. 116.

In 1895 the Denver Engineering Works Company, a concern which had been engaged in the manufacture of mining machinery since 1876, acquired the business and plant of the Hendey and Meyer Engineering Company. For twenty-six years they continued operations at Thirtieth and Blake Streets. Mr. Frank E. Shepard became associated with the company in 1895 as mechanical engineer. Later he became president of the company, which post he held at the time of its sale to Stearns-Roger in 1923. Denver Engineering Works manufactured the first ball and rod mills made in Colorado;[18] was the first to enter the field in manufacturing electric hoists for metal and coal mining operations; and manufactured the smelting furnaces for Globe Smelting Company in Denver, Arkansas Valley Smelter in Leadville, and the Mapimi Smelter in Mexico. In the organization of the General Iron Works this company was one of the charter members, and after that consolidation its shops at Thirtieth and Blake were no longer used.

Although the Morse Brothers Machinery Company was incorporated in 1898, its origin preceded that date by two years in the form of the S. & H. Supply Company, which acted as a sales agency for Denver concerns manufacturing mining and milling machinery. In 1898 the Morse brothers, George and Bradbury, decided to add the manufacture of equipment to their supply lines, and reorganized the company as the Morse Brothers Machinery and Supply Company. Rebuilding and reconditioning of all types of mining and electric equipment have also played a part in the company's fifty years of activity. In 1936 the name of the organization was changed. Mr. Max Grimes serves as president of the Morse Brothers Machinery Company under its present schedule of new machinery.

In the extreme southwestern part of the state, in the city of Durango, was established in 1900, the Ball Foundry and Machine Works, operated by John R. Ball. Most important item of manufacture by this company has been the Little Giant Duplex Mill, which regrinds products by ball mills. The machine pulverizes the ore into whatever mesh is desired, without classification. Today the company does not find too much demand for its product, in the light of growing popularity of chemical concentration of ores.

[18] Interview with Mr. Frank Shepard, June 14, 1946.



MACHINERY SHOPS IN DENVER

Upper: Morse Brothers Machinery Company Building.
Middle: McFarlane-Eggers Machinery Company.
Lower: Home of W. O. McFarlane Works, 1892-1910; William A. Box Iron Works, 1910-1933; Silver Engineering Works since 1933.

One type of mining machinery heretofore not mentioned in production in Colorado was the ore car for mines. At the turn of the century Charles S. Card, a Denver machinist, decided that it was time some one built a mine car that would give service instead of continually demanding it through repair. For this purpose he organized the C. S. Card Iron Works on January 2, 1900. In 1901 he set to work to make modifications upon those in use, but before he finished in the following year, he had invented an entirely original type of roller bearing mine car wheel with a solid cap.[19] Sales agents of the company soon had convinced miners throughout the region of the value of the Card Mine Car. A plant was constructed at Sixteenth and Alcott Streets for the construction, not only of these cars, but also of other mine conveying and haulage machinery.

In building the Moffat Tunnel contractors were at first doubtful if Card cars compared favorably with those of Eastern manufacture, with which they had had favorable experience, but they bought a few Card Mine Cars. Later they ordered more, and by the time the job was completed, Card cars were largely those in use, or else the cars of others were using the Card mine car wheel.[20] The company is still in the mine car business on Sixteenth Street, with Mr. W. H. Bachman in charge of the management.

An Englishman of inventive talent, William A. Box, came to Colorado in 1896. He bought an interest with Frank Dillon in the Dillon-Box Machine Shop in 1902. This company was located at Nineteenth and Blake Streets, now the site of the Windsor Dairy. Box designed rock drills, electric hoists, and even fire signals for the Denver Fire Department. By 1910, he had dissolved his partnership with Dillon, and re-organized the company as the William A. Box Iron Works, with use of the large McFarlane factories at Thirty-third and Blake Streets.

From 1918 until his death in 1931, Box turned out many successful machines, best known of which was his electric "Leadville Hoist." This business became the property of Mr. Fred Roberts in 1933, and is today the Silver Engineering Company. Mr. Harold Silver, its president, is not engaged in mining machinery manufacture, but rather in the production of sugar beet machinery, some plans for which Box had introduced.

History of the Dorr Classifier sets the stage for the real history of the Dorr Company, begun in 1904 in the Black Hills, and moved to Denver in 1907 by its inventor and owner, Mr. John Van Norstrand Dorr. The company was then known as the Dorr

[19] *Colo. Manufacturer and Consumer*, Aug. 1926, p. 21.
[20] *Rocky Mountain News*, Apr. 4, 1927, p. 9.

Cyanide Machinery Company. Dorr Agitators and Thickeners, together with the classifier, brought world-wide markets for Dorr products. In 1912 agencies were established in London and Australia for distribution of these machines. Mr. E. C. Reybold, at present in charge of Denver offices of the company, left his position with Hendrie and Bolthoff in 1905, and has been associated with the Dorr Company since that date. In 1931 the company merged with the Oliver Company of Canada, which made possible a still greater outlet in that country for Colorado-made mining machinery.

One of the machinists of the old Hendey and Meyer Engineering Company was Daniel S. Waugh, a man with real concern about the faults in rock drills in use in Colorado at the end of the nineteenth century. A spot was found in 1906 in which his inventive genius could make itself felt. Entering the employ of the F. M. Iler Rock Drill Manufacturing Company, which had been in existence since 1905, Waugh designed the drill which has become famous the world over as the "Waugh" drill, today a trademarked name. The Iler Company was not strong financially; but William H. Leonard, a young man who had prospered in the Cripple Creek mining boom appeared in Denver in 1906, and became interested in purchasing the Iler concern, which he did in that year. Through his natural executive ability and a thorough understanding of mining problems learned at Cripple Creek, he, together with Waugh and his inventions, produced an unbeatable combination which served as the basis of organization of the Denver Rock Drill Manufacturing Company, incorporated January 12, 1907. Its offices and shops at Eighteenth and Blake Streets quickly proved inadequate, and by 1910 the company was established in its present location between Franklin and Williams Streets, and between Thirty-ninth and Fortieth Avenues. Expansion in number of buildings at this site has been continual.

"Waugh" rock drills were modified as new types were needed by mines and miners, not only in Colorado and western United States, but also on the South African Rand, in Mexico, South America, Australia and Canada. June 30, 1927, saw the consummation of a merger of the Denver Rock Drill and the Gardner Governor Company of Quincy, Illinois, manufacturers of governors and compressors. Under its new name the Gardner-Denver Company, the Denver plant has continued a Colorado concern, and has retained manufacture of its "Waugh" drills and other mining machinery. Death brought an end, June 29, 1947, to the illustrious career of the man who had for forty years guided the destinies of the company, W. H. Leonard.

Since 1907

From 1907 until 1921 there were no new mining machinery concerns organized in the state. Those already in existence found the years profitable, and marked with expansion, particularly during the period of World War I. Four of these companies, Box Iron Works, Vulcan Iron Works, Queen City Foundry, and Shaw Iron Works organized the Denver Ordnance Company for the purpose of handling government contracts, especially in the construction of marine engines. William A. Box served as president of this group, which disbanded upon completion of the war in 1918.

An act of nature was indirectly responsible for the organization of Denver's multi-million dollar company for cooperative manufacture of mining machinery, the General Iron Works. The Arkansas River flood of 1921, which wreaked much havoc on the city of Pueblo, completely destroyed the Stearns-Roger Manufacturing Company plant, which had been located there since 1889.

Mr. T. A. Dickson, president of Colorado Iron Works in Denver saw that Stearns-Roger would inevitably rebuild its business in Denver, adding to the keen competition and price cutting among Denver concerns which had already brought such a decrease in business that some plants were forced to close in the recessionary period after the war. He therefore proposed to Thomas B. Stearns of Stearns-Roger, Harvey Cordingly of the Queen City Foundry, Frank Shepard of Denver Engineering Works, and Mr. Gilbert Denton of Vulcan Iron Works that they eliminate this cut-throat competition by the creation of a plan for combined manufacture of the designs of engineering divisions of each of the five companies.

Much time had to be spent in preparing the structure of such a company, and solving the many problems contingent to the cooperation of the five independent corporations within such a program. Equipment, executives and mechanics of the five contributing members were brought within the organization of the General Iron Works, and each company was given permanent representatives on the board of directors of the cooperative enterprise. Stock of the company was to be owned by the various companies whose work was to be manufactured at its plant. Manufacture would be on a cost basis for the members, each of which retained its own sales, engineering, and financial departments. The General Iron Works would be primarily a manufacturing unit, and thus could devote all time to the production end of the business, leaving sales, collections and other matters to the companies which were its stockholders.

Incorporation of this new-type enterprise was completed September 30, 1921. While the cooperative plan was being put to the test, operations were carried on in rented shops (usually those of the contributing members, but operated by General Iron Works), while the shops of General Iron Works were in the process of construction at 600 West Bates Avenue, in Englewood. This plant was completed in October, 1924. Facilities of the shops were believed to be for about 250 employees, but by 1927 employees totalled 600. Depression years greatly cut into that number; but the demand for work from the company during World War II was so great that its employment totals passed the one thousand mark.[21]

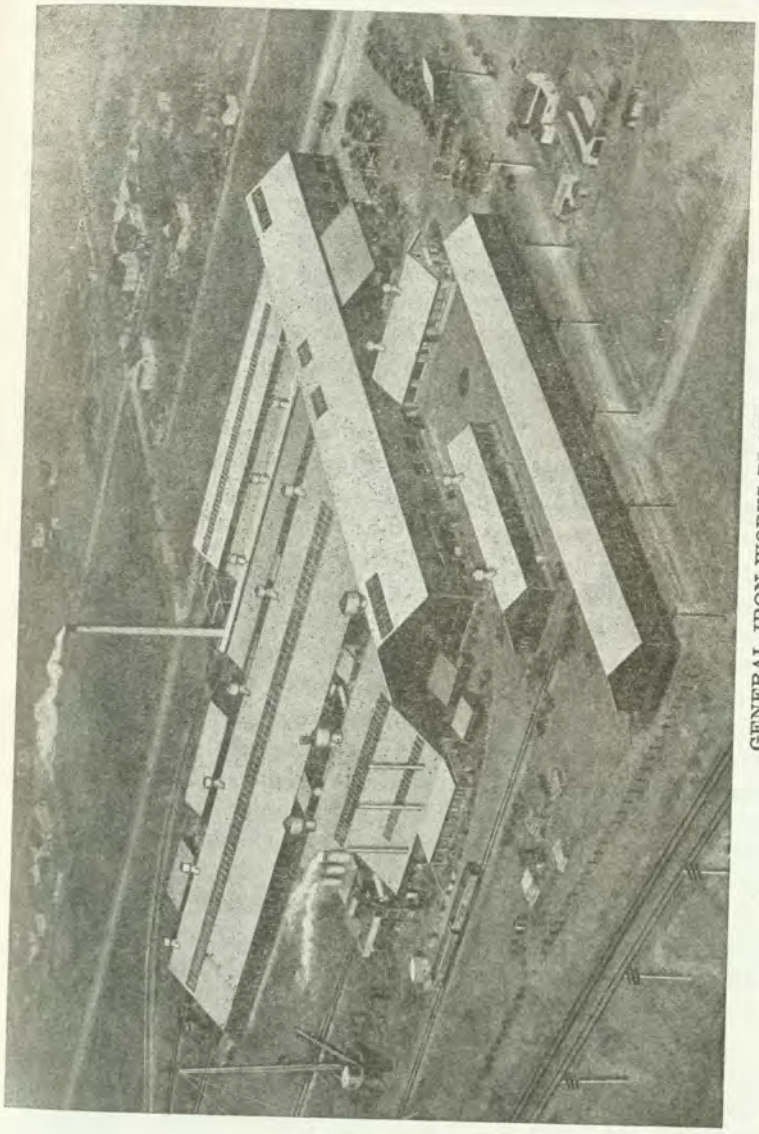
That the enterprise was successful financially showed itself even before the completion of the plant in 1924, for in that year goods produced brought in $500,000; and two years later production figures stood at $1,500,000.[22]

Dissolution of two member companies, Queen City Foundry and Denver Engineering Works, in 1924, left the General Iron Works with but three sustaining members; however, two other large mining machinery concerns participate indirectly in the manufacturing successes of the company: The Dorr Company, designer of huge flotation equipment, working through Stearns-Roger Company, gets most of its local work done at General Iron Works; Mine and Smelter Supply, contracting through Vulcan Iron Works, receives from General Iron Works the finished product of its designers of concentrating tables, ball mills and flotation equipment. It is not unusual to see a Colorado Iron Works hoist sitting next to a Stearns-Roger Chemical Plant or a Vulcan mine cage on the floor of General Iron Works factory, such is the variety of equipment produced and the number of companies for whom they manufacture.

The years since the organization of the General Iron Works have seen the establishment of two new companies designed to manufacture mining machinery, the Denver Equipment Company, incorporated February 9, 1927, and A. R. Wilfley and Sons, January 28, 1928.

The Denver Equipment Company in its offices at Seventeenth and Market Streets, designs flotation machines which eliminate the loss of 10-30 per cent of the metals through old milling processes.[23] It was discovered that if ores were ground to a fine mesh pulp and vigorously agitated in a mixture of water, air and chemical reagents, the tiny mineral particles would at-

[21] Interview with Mr. T. A. Dickson, July 17, 1947.
[22] *Rocky Mountain News*, Apr. 25, 1927, p. 76, c. 1.
[23] *Time*, Apr. 12, 1947, pp. 37-38.



GENERAL IRON WORKS PLANT

tach themselves to the bubbles and float to the top, while the rock remained behind—even though metals such as platinum, gold, lead and copper are far heavier than water.

Activities of the company have generally been directed by A. C. Daman and Frank E. Briber.[24] In 1934, Frank Shepard, former head of Denver Engineering Works and superintendent of Denver's United States Mint from 1923-1933, was called to the employ of the Denver Equipment Company, and has given them invaluable advice through the wealth of his experiences with his old company. Denver Equipment machinery has found sales markets in mining districts throughout the world.

A. R. Wilfley and Sons was organized by George and Elmer Wilfley, two sons of A. R. Wilfley, whose concentrating table and engineering genius were associated with Mine and Smelter Supply Company from 1905 until his death in 1927.

Chief products of this Wilfley company are the sand, acid and slurry centrifugal pumps, result of some twenty years of research by the Wilfley brothers. Offices of the Wilfley Company are in the Denham Building at Eighteenth and California Streets. Manufacture of the pumps and other items of mining machinery is carried on largely by the McFarlane-Eggers Company of 2763 Blake Street. One passing through the famous old mining town of Kokomo, not far from Leadville and the Climax Molybdenum mining districts, finds buildings and signs reminding one of the part played there by the Wilfley family and its corporation.

Some thirty concerns have entered this eighty-seven-year-old story of the efforts of many Colorado pioneers and a few twentieth century engineers and industrialists to create in Denver and the state's mining districts an industry for which Colorado's natural mineral gifts and Denver's location as a marketing center seemed aptly suited.

Although Chambers of Commerce have continually "Plugged" Denver's quantitative leadership in the manufacture of mining machinery, statistics[25] show that Eastern and California manufacturers have been able to manufacture and sell in somewhat larger quantities. We have seen that discriminatory railroad rates have helped to check the possibility of our leadership. However, the qualitative leadership of Colorado-made mining machinery, particularly for the needs of our state and regional mines, stands unchallenged. Proximity to testing grounds guarantees actual experimentation of equipment under natural conditions before

[24] *Deco Trefoil*, Aug., 1937, p. 3.
[25] Industrial Yearbooks. 1880, 1900, 1924, 1930.

manufacture and distribution on a large scale. It can justifiably be said that there is no mining country on earth where Denver-made mining machinery has not at some time been used. This is seen in the far-flung sales staffs of Denver's leading mining machinery manufacturers of today.

(To Be Continued.)

Engineer Walk of the Denver & Rio Grande

Mr. & Mrs. James Rose Harvey

William Walk of Pueblo, Colorado, is still a railroad man despite the fact that he was retired by the Denver & Rio Grande Railroad in 1923, having completed forty years, four months and fourteen days of service with that road. He grew up with the railroads in Colorado, he likes to talk about railroading, and he has a first-hand knowledge of every phase of the work, from section-hand to master mechanic. Perhaps that is why, in all the 3,000,000 miles he estimates that he has traveled over the Rio Grande road, he never had "a wheel off the track or a serious accident."

Engineer Walk came from a railroading family; his father was master mechanic for the Missouri Pacific when William was but a small lad and it was in the cab of his father's engine that he first acquired his love for the railroads, as he watched the sparks fly from the tea-kettle smoke-stack which he remembers as "almost as big as the engine itself." His father was careful to explain to his small son that the smoke-stack was shaped thus, to minimize the danger of prairie fires; wood-burning engines threw out sparks at an alarming rate, and although a screen placed in the wide mouth of the stack served to catch the most of them, still the prairies and forests were often set on fire by an engine of that period.

William was born in Lexington, Missouri, on April 4, 1863. When his father came west in 1872, William's mother decided to remain in the family home in Missouri and keep the children in school—there were seven boys and one girl. He started very early to learn a trade, that of saddle and harness-maker, but the constant leaning against the bench caused the youngster to develop a chronic pain in his side. His father, learning of his ill health, sent a pass for Bill to come to Colorado, thinking the change of climate might benefit him. The train ride was such a delight that William remembers every incident as if it were but yesterday. The trip from Kansas City took three days and two nights, the frequent stops for fuel and water, herds of buffalo

obstructing the track, the narrow uncomfortable coaches with small window space, the sparks, cinders and smoke, constituted no hardship to the young traveler. The elder Walk met Bill at the depot in Denver and took him to consult Dr. R. G. Buckingham, a personal friend. Dr. Buckingham, who had come across the plains in 1863, now enjoyed a large and lucrative practice; he was one of the pioneers who helped build Denver, having organized and served as first president of the Denver Medical Association in 1874, president of the school board District No. 1,

WILLIAM WALK IN 1888

mayor of Denver, and instigator of the deaf mute bill.[1] He gave William Walk a clean bill of health, telling him all he needed was a change of occupation, with plenty of exercise in the open air. He naturally turned to railroading.

In 1870 General Palmer had launched the Denver and Rio Grande Company, Congress having granted the right-of-way through public lands. The Union Contract Company began, at Denver, construction of a narrow gauge system in March, 1871; by Oct. 21, 1871, 70 miles had been built to Colorado City. The railroad reached Pueblo, 118 miles from Denver, June 15, 1872, and the first excursion train, drawn by the locomotive "Ouray," arrived there July 2nd of that year. In 1872 the line was extended 38 miles to the coal mines near Canon City and in 1874 reached Canon City itself. In 1877, when General Palmer, accompanied by his chief engineer, J. A. McMurtrie, made a trip to Oro (later to become the silver bonanza camp, called Leadville), it was decided to extend the narrow gauge railway to that new

[1]Frank Hall, *History of Colorado*, IV, 376.

camp without delay. Men were sent also to begin work on a line through Raton Pass into New Mexico, but the Denver & Rio Grande men arrived just 30 minutes after a force of Atchison, Topeka & Santa Fe graders had set to work. The Santa Fe men were equipped with Winchesters, so the Denver & Rio Grande crew decided not to build any railroads in that vicinity. Then began the famous Royal Gorge war. After peace was concluded the Denver & Rio Grande, which had built to Alamosa in July, 1878, was extended to Espanola, N. M., 120 miles south of Alamosa, only 34 miles from Santa Fe, Dec. 31, 1880. The wonderful road through the Royal Gorge to Leadville was completed July 20, 1880. The end of another track was steadily pushed ahead, reaching Durango July 27, 1881. One year later it was extended to Silverton. On Dec. 19, 1882, a line was completed into Grand Junction. June 1, 1883, the narrow gauge Denver & Rio Grande reached Ogden, Utah, over Marshall Pass, and through the Black Canyon of the Gunnison. Mr. Walk helped to build the major part of these lines, working on the road between Pueblo and Salida, the roads to Malta and Leadville, as well as the line to Salt Lake.

Of the Royal Gorge War Walk says: "In 1879 both the Santa Fe and Rio Grande men met in the gorge armed to the teeth. The Denver & Rio Grande built eleven forts between Canon City and the Twentieth mile post; these forts were manned by 190 men. The Santa Fe sent a large, well-armed band to clear opposition from the canyon but, as the Denver & Rio Grande occupied commanding positions, they never even attempted to force their way through. Arsenals were maintained by both sides and the siege kept up for months; it was a noisy but bloodless war, most of the warriors using blanks. At the Twentieth mile post James R. DeRemer, Assistant Chief Engineer of the Denver & Rio Grande, lettered *'Dead-Line'* on a tie and placed it across the railroad grade. The Santa Fe men never quite got up the nerve to cross it. At about the same time the Supreme Court of the United States decided in favor of the Denver & Rio Grande, so the war was ended. This historic tie for a long time hung between two trees at Texas Creek station where passengers on the new line viewed it with interest, and a number of the rock forts still stand in the canyon, silent reminders of the determined war waged for right-of-way."

William Walk gave the following account of his experiences while working on the road into Leadville: "We would build awhile, then run out of materials and have to wait for more rails and ties. Leadville was a rip-roaring place and of course we all got interested in prospecting, so during these lay-offs from the

railroad, I dabbled in mining a bit. My partner and I were successful in locating the Yankee Doodle Mine. I disposed of my interest at once for $10,000 but my partner held on for a while longer and realized $50,000 for his share.

"While working on the line at Leadville mountain fever laid me low. They rushed me to the old Colorado Coal and Iron hospital at Abriendo, where all I got to eat for eight days was toast and egg-nogs. Those egg-nogs cured me of any liking I might have had for liquor—I never wanted to taste it again. In those days there was plenty of it, every grocery store had its barrel of whiskey at 75c a gallon, and it was mighty poor stuff, too."

One of the worst storms Walk ever experienced was while working out of Gunnison on the road through the narrow Black Canyon. The Denver & Rio Grande had seventeen engines off the track in one night during a blinding blizzard. This stretch of track was always dangerous, land-slides were so frequent it was customary to carry dynamite on every engine to blast rocks too heavy for the train crews to roll off the track. Close calls in that crooked, narrow canyon were all too frequent.

William Walk operated his first engine at the age of 18 years. He became a fireman Sept. 12, 1883, was promoted to freight engineer May 16, 1888, and passenger engineer on May 16, 1901.

Engines were Bill Walk's first love. He knew them all; he tells the following story of them: "Engines in the early days all were named. The first engine into Denver was the 'D. H. Moffat.' That locomotive sure had a record! It drew the first passenger train into Cheyenne, and later performed the same service at Salt Lake when the railroad reached that city. The Denver & Rio Grande eventually purchased it from the Union Pacific to use in hauling construction trains.

"The first engines purchased by the Denver & Rio Grande railroad were made by the Baldwin Locomotive Works of Philadelphia and brought into Denver on flat cars by the Kansas Pacific railroad. They were three sister engines called the 'Tabeguache,' the 'Shawano' and 'Montezuma.'

"The 'Ouray' was the first engine into Pueblo from Denver, in 1872 over the Denver & Rio Grande.

"The De Remer fast passenger engine No. 85 was purchased from the Baldwin Co. after the Gorge war and named in honor of assistant chief engineer De Remer.

"The later engines, like old 168 now retired and preserved as an historical monument at Colorado Springs, had numbers instead of names."

The Montezuma, the first locomotive put into service by the Denver & Rio Grande, on July 3, 1871, was 35 feet 4 inches long and weighed 12½ tons; the height of the smoke stack above the rail was 9 feet 9 inches.[2] William Walk piloted this engine for years; it was with real sorrow that he drove it over the narrow-gauge railroad for the last time and retired it to the round-house. Of the Montezuma, Walk says, "There was a sweet little engine for you; she was perfectly balanced, not top-heavy, and took the curves like a piece of tangent track, yet she never so much as spilled a drop of water from a glass set in any of the windows of the cab."

When the State Historical Society built its model of the Montezuma not one record or plan of the little engine could be found anywhere; even the Baldwin Locomotive Works no longer had its plans of the "baby engine." However, from pictures and various descriptions, the Society built so authentic a model that the only criticism William Walk could find with the finished replica was: "It ought to have a *wooden* cow-catcher. That's the way the Montezuma first came out. Later it was found impractical and changed to steel."

The first rails for the narrow gauge railroads were imported from England; they were constructed from iron, not steel, and weighed 30 pounds to the yard.[3] These later were increased up to 52 pounds and made of steel. The "Denver," the first narrow gauge passenger car built in the United States, was manufactured by the Jackson and Sharp Company of Wilmington, Delaware.[4] It was 35 feet long, 7 feet wide, 10½ feet high, and weighed 15,000 lbs. The seats were double on one side and single on the other. this arrangement being reversed in the center of the car, so that each side carried half double and half single seats—an arrangement designed to secure perfect balance of weight when the car was full. The single seats were 19 inches wide, the double seats 36 inches, the aisle 17 inches; the cars were finished in the best style. After 1871 the width of the cars was steadily increased to 8 feet and the seating capacity from 36 to 47 passengers. Of these coaches Walk says, "They were fairly comfortable, but the window space was small and the lighting poor. We could seat 36 passengers if they were not too fat."

Engineer Walk piloted all types of engines, from the 12-ton Montezuma to the 1700's; he liked the one-spot and the seven-spot the best. He covered every mile of the Denver & Rio Grande track with the exception of the branch between Howard and Calcite.

[2]Fleming, *Narrow Gauge Railways*, 39.
[3]*Ibid.*, 7.
[4]*Ibid.*, 49-50.

Most of Walk's railroading was on narrow gauge tracks. Although the Denver & Rio Grande eventually converted its main road to standard gauge, an operation completed in 1890, still the road maintained over 800 miles of narrow gauge line.

Of the early towns on the lines he traversed Walk says: "When we first built the railroad into Salida, the settlement was called South Arkansas, it was nothing but a mud hole then, now it's pretty.

"Antonito was the toughest town in the state when I first struck it in the late '70s. It was a railroad town with lots of Mexican and Indians.

"I watched Creede grow from a patch of willows to a city of thousands of people in six months. I was piloting number 241 from Wagon Wheel Gap into Creede when the mining excitement was at its height; it was downright dangerous to run an engine over that piece of track; people flocked into the region, carrying their luggage and using the right-of-way as a side-walk. I had to keep two men in the engine cab, one on either side, to watch the track ahead of the engine to see that no one was hit, for people paid absolutely no attention to the on-coming train. On the single track from the Gap to Creede, traffic became so congested that the Denver & Rio Grande placed me in charge of that section with instructions to straighten things out. When I found that I couldn't get a meal for less than $1.50 and that I was lucky to find a bed or a cot at nights, I refused to remain in wide-open Creede, but the company sent up a sleeping car and a cook and I finished the job in comfort. I was there when Bob Ford was killed, a deed for which there was absolutely no justification. Gambling and gun play was rampant. In the big gambling hall, the Denver Exchange, one night I watched Otto Floto play for and win Renfro's interest in the Sells and Renfro Circus.

"When I first came to Pueblo sunflowers and weeds covered the area now known as Union Avenue. Most of the town lay between 3rd and 4th streets on Santa Fe Avenue. Baxter's Mill stood where the Federal Building now stands, behind this mill a water wheel was built, and a ditch, known as Baxter's Ditch, ran through the Central Block site. From this source early Pueblo obtained its water supply. The first round house was located where the Union Depot now stands, the court house, first of adobe, then of brick, was just above 7th Street; Bessemer, covering the entire mesa, was a town founded and sustained by the Colorado Coal and Iron Company; it had its own government and was not incorporated into the town of Pueblo until 1894. The jail was on C Street, back of the old Western National Bank; across from the jail was Real Estate Row, which burned to the ground one night, a fire in which 'Barney the Bum' met his death. The Montgomery Opera House between Main and Santa Fe, on 7th Street, is now the Sevelle Hotel, with stucco applied over the original adobe."

Walk has many an interesting incident to tell in connection with his railroading experiences. One day M. W. Sample, Trustee of the Baldwin Locomotive Works, came to him with a real problem. "Bill," he said, "there are a lot of English stockholders in the Denver & Rio Grande. They want the line to buy some English engines. They even had one shipped in and want us to try it out against one of ours. Can you beat that engine in a try-out, Bill?" William Walk grinned at Sample. "There's one way to do it, Mr. Sample," he said, "set the 24 so she will carry 180 pounds of steam but show only 130 pounds on the gauge, and I'll run away from that English engine."

A crowd gathered at La Veta for the tests, Denver & Rio Grande officials, English stockholders, and railroad employees. The trains were weighed in, the engineers instructed to maintain 130 pounds of steam, and the test was on. Bill Walk describes the race: "That English engine was the queerest looking thing that ever set a wheel on the track; it looked just like two engines back together, a smoke stack at each end, and the fire box, coal box and boiler was in the middle; when the engine ahead was pulling up a mountain grade, the rear one acted as a brake. The English engine pulled out first; twenty minutes later I opened up old 241 and took out after her. I caught up with her outside Ojo, pushed her through Ojo, shoved her around Dump Mountain, and gave her a boost over La Veta pass. The next day we changed positions, when I got around Dump Mountain the English engine had not yet pulled into Ojo; I was one hour ahead of her over the pass. The Denver & Rio Grande officials found 'the Farleigh unsuited to the mountain grades' and none was purchased by the road."

One night as Walk was making his run from Salida to Pueblo over the then broad gauge track, a heavy rain storm made the going so bad that it took him 5 hours to go 24 miles. He stopped at Cotopaxi and wired Pueblo not to let No. 1 go out of Salida over the track he had just traversed. Walk watched the operator send the message and place it on file. The next week, Mr. E. T. Jeffery, President of the company, called Walk to come down to the Pueblo office. "Bill," he said, "I'm disappointed in you; you were the last one to come over that track in No. 2. Why in hell didn't you report the condition of it? Number 1 went in the river, why did you let her go out?" The chief train dispatcher, Ed Gray, denied having received Bill's telegram, although

a check-up with the depot disclosed it *had* been sent; it was discovered hanging on a hook beside Ed's desk. He was fired; after two months he requested reinstatement but Jeffery told him, "There's just one man in the system who can get you back on the pay-roll. When Bill Walk gives his O. K. you come back to work." Walk, upon being consulted, remarked tersely, "No! he hasn't got enough wrinkles in his belly yet." In six months Walk relented and asked that Ed Gray be allowed to come back to work. From that time forth Ed looked upon Walk as his only friend, not being at all popular with the other railroad employees. When Ed was seriously ill in the hospital he sent for William Walk to cheer him up. "Bill," he asked, "what do the boys think about my being sick?" Bill like a little ray of sunshine replied, "Ed, they hope you'll die and be buried face down, so that when Gabriel blows his horn you'll start digging the other way."

On Jan. 10, 1916, Walk saw smoke curling out from under the "hanging bridge," while enroute to Canon City on No. 6. He backed up and, by means of the spurt hose used to wet down the coal in the tender, he succeeded in putting out the blaze. The company had spent a fortune raising this bridge above the water level in the canyon; Bill was called into Denver by the General Manager and given another of his frequent merit marks for this deed.

High water was often encountered in the canyon; sometimes it stood 2 and 3 feet deep over the tracks. The road master, Asburn, would wade ahead with a long pole to test the track before taking the train through. The water always put out the fire in the fire-box, but usually the head of steam was enough to carry the engine through. A pile of wood was always carried high up back of the tank where it would remain dry until the flood was past, and it was needed to rekindle the fire in the fire-box of the engine.

"Do you believe in hunches?" Walk asked suddenly. "I *always* followed my hunches. E. T. Jeffery used to say he believed I could see around curves—it wasn't my eye sight but sort of a sixth sense that warned me of danger. One day, out of Salida, something said to me, "Stop! Stop! Stop!" I did. The conductor, Dave Muse of Denver, was always a bit impatient with my hunches, however he obligingly walked around the curve just ahead and came back white-faced. "Bill," he said, "if you had taken the train around that curve you'd have cracked her into six thousand tons of rock. Half of the cliff has dropped on the track."

On another occasion the same thing occurred near Spikebuck, only this time the conductor, upon walking around a curve found that a bridge had been washed out by a cloud burst.

One afternoon Walk was bringing the train down from Salida, when he saw a 15-foot wall of water coming down behind him through the Royal Gorge. He opened the throttle, tore into Canon City and wired the Pueblo office that high water was coming down the Arkansas. The warning enabled many people to leave their homes and reach safety before the flood hit that city.

Walk was offered a number of good positions while with the road, but preferred to operate an engine; he disliked executive work. At one time he was sent to inspect motors for the Baldwin Locomotive Company, at a salary of $235 per month, but felt the old call of the throttle and the open track. For a year he held the position of master mechanic for the system, but would not accept a permanent appointment.

He married Eva C. Miles in 1888; she died 18 months later at the age of 21 years. In 1890 he married Cora G. Stone. The Walks had three children; Hazel C. Anderson of Denver, Mildred Lee Renolds, a teacher at Keating Junior High School in Pueblo, and George W. Walk, who is with the Rock Island out of Trenton, Missouri.

One day William was on his No. 2 run; he woke up two hours later in the hospital, having had a heart attack while at the throttle of his engine. He retired and went to Florida, where he gradually regained his health. He held a number of other positions in Pueblo—that of turnkey at the Pueblo County Jail from 1924-1926; from 1926-1930 he was Justice of the Peace for Pueblo County. Since then he has spent his winters in Florida and the summers in Pueblo looking after a number of residences he owns there.

Walk looks upon the modern huge "mallets" with disdain. He proclaims fondly, "The Montezuma, a one-spot, could outrun any of them. Why one time I was using her to pull the pay-car over the system; we had been out sixteen days, and Jim O'Conner, the pay-master, was anxious to get home. When we got to Graneros at the top of the hill, he said, "Bill, if we could only get to Pueblo in time to catch the 12:15, I could get home to Denver tonight." I said, "All right, Jim, tie yourself on!" We took the last 11 miles in nine minutes. How's that for a record?"

"No one knows what became of the Montezuma. When I took her into the round house after her last run, she probably was dismantled for parts or melted up for scrap. Too bad—she ought to have been preserved as an historical relic of early railroading in Colorado."

A Young Cowboy Detective

As told by R. E. Arnett to Ida Drumm Arnett*

"Ide," said my husband one day as he lay on the bed recovering from a severe illness, "hand me a pencil and paper, I want to write something I have never told before."

Well, I thought, what secret has he been withholding from me all these years?

"You see," he said, as I propped him up in bed and gave him the desired paper and pencil, "I was a detective once and sworn to secrecy. You know detectives have to keep their mouths shut, but now that many years have gone by and most of the characters are gone, I think I can safely tell the story."

This is what he wrote briefly and elaborated upon later by word of mouth to me:

It was in the spring of 1880 that I, a lad of eighteen years and just out of school, found myself looking for a job, preferably that of a cowboy.

My father, a pioneer cattleman of Colorado, having been one of the very first to bring stock cattle to that country, had sold off his stock and gone out of the business, for the reason that the country around my home town of Boulder had become so well settled that it was necessary for him to either sell out or move his cattle to a new location. He chose the former alternative and I was left without a job.

I had grown up in the horse and cattle business, assisting my father in "round-ups," branding cattle, riding the range, etc., and wished to continue in the business. I decided on Wyoming as a good place to make a start.

Accordingly, the first of May saw me leaving Boulder for Wyoming with my outfit. I had two saddle horses, one packed with my bedding, coffee pot, frying pan, "grub," clothing, etc.; the other one I rode.

When I reached Cheyenne, I fully expected to work for some cow outfit, and start out for myself some day. But I was told that it was too early in the season and it would be sometime before a job would be available.

While I was waiting around Cheyenne I met Millard Fillmore Leech,[1] a friend of my father's, whom I had known in my

*Mr. Arnett, who had previously written for this magazine, died in 1944, at the age of 83.—Ed.

[1]Mr. Arnett first wrote the story with a fictitious name here, but the true name was later inserted. So much time has passed since the occurrence of the events related here that we feel there is now no objection to the use of the true name.

home town. He was a member of the U. S. Secret Service and also in the employ of the Union Pacific Railroad as a detective. I did not know at that time that he held either position.

After we had talked for a while, he said, "I'll give you a job," meaning it as a joke. He had no intention of doing so. I took the offer in earnest and began to press him.

"Come up to the office," he said at last, leading the way, "and we'll talk this over.

We did talk, but he was careful not to let me in on his plans. He kept asking me questions, repeating now and then, "No, I don't think you could fill the bill."

"What bill?" I asked impatiently, not too well pleased with this statement.

Suddenly he got up and patted me on the shoulder.

"I'll think this over until tomorrow and see what I can do about it," he said.

I was at his office the next day, anxious to know his decision.

"Well, kid," he greeted me, "I think in some ways you might be all right, but it's a mighty dangerous job for a kid like you."

He went on to tell me that he was a detective and he must swear me to secrecy. Kid like, I listened to his story with great interest, thinking that it would be fun to be a detective, not realizing what I was running up against. I pleaded so hard for the job that he finally said, "Before I do anything, I'm going to write to your father and tell him about the risks you've got to take. If he says it's all right for you to go, I'll put you on." In a short time my father answered that I was my own boss and that it was up to me.

Leech explained everything to me in full detail. "There's a bunch of train robbers and horse thieves up in the northwest part of this country. They're bad ones, wanted on more than one charge. I've already sent three men up there, but they never came back—likely done away with!

"Now, here's where you come in—you're so young that they probably won't mistrust you. I've got a man cooking for this gang. He's been up there nearly three months, playing like he's deaf and dumb and spying on them. I can't seem to hear from him, and I've got to get word from him before I can do anything."

"I've started a man out with a sheep wagon and a small band of sheep to see if he can get any word from the cook. I'm going to send you out to see if you can find the sheepherder and see if he's made any progress. Should any one stop you and ask you where you're going, tell him that you've been hired to herd sheep for this man."

The next morning I took my two horses and outfit and started, following the trails which Leech had marked out for me. It was a long, lonesome ride over bare prairie. At night the coyotes and wolves howled so near my camp that I built a big fire to keep them off. Even the horses crowded up close to the blaze.

After several days on the trail I saw the sheep wagon. I had no trouble in locating the herder, who was watching the sheep a short distance away. I showed him my credentials and he told me to go into camp and cook anything I wanted.

I lost no time in unsaddling the one horse and unpacking the other, throwing the saddle under the wagon. This saddle had my cartridge belt, which held two Colts .45 and cartridges for them, and my rifle, looped over the horn. I threw my pack over it, a move which afterwards proved to be a lucky one. I stood my .45-70 Winchester rifle against the hind wheel of the wagon.

I cooked a "square meal." The herder had plenty of antelope meat, which looked pretty good to me, as I had been living on flapjacks and coffee since leaving Cheyenne.

After eating, I sat down in the shade of the wagon, my back against a wheel and waited for the herder to come in with the sheep. The day was warm, and I soon fell asleep.

Suddenly something gave me a jab in the stomach. I looked up to see a big brawny-looking man with about a two weeks' growth of beard on his face standing over me. He jabbed me again with the rifle barrel.

"You little bastard," he growled, "get up and get me something to eat—quick. Quick, I say!"

"Take that gun out of my guts and I will," I answered him.

He took the rifle away and I got busy. While I was cooking he kept pumping me about what the sheepherder and I were doing there.

"We're moving on in a few days," I replied, evading his questions the best that I could.

"Don't bring them sheep any further that way," he advised, pointing to a hill nearby. "If you do, you're liable not to have any sheep to move."

I knew what he meant.

After he had eaten, he picked up my Winchester and pumped all the cartridges out of the magazine, saying: "Have you got any more? I need them."

"No," I said, slyly glancing sidewise to see if the belt full under my pack was covered. I breathed easier when I saw that it was hidden. He finally got on his horse and started off.

"So long, kid," he said mockingly, sneering at me.

All this time I was getting pretty sore, having to wait on him hand and foot. I kept wondering how I could get even.

The dim trail, that he had taken led up the little hill and then down to the creek on the other side. I came near doing a foolish stunt. I grabbed my Winchester, filled the magazine from the hidden belt and started around the hill, intending to take a shot at him.

Just as I came around the hill I heard a shot and saw my man roll off of his horse. The next thing that I knew I was looking into the barrel of a rifle.

"Reach for the stars," came the order.

I got my hands up in a hurry, the second time that day.

"Do you want some of this?" asked the man behind the gun, meaning lead.

"Sure not," I replied. "I was out to get the same one you downed."

"All right," he said, "leave your gun there and come to me. Keep your hands up." And you bet I did.

We went down to the dead outlaw. The man who had done the shooting was a rancher. He told me that a few days before this outlaw had stolen the fine stallion which he had been riding, from his ranch. He had followed, hoping to shoot him off the stolen horse, but had never been able to get close enough.

"It won't do to leave his body here," said the rancher. "If we do, his gang will find it and clean you two out. You and the sheepherder are liable to be found hanging from a tree."

I agreed.

The outlaw wore two beautiful pearl handle Colts .45. One had three notches and the other four, showing that he had killed seven men. I wanted those guns.

"That won't do," said the ranchman, firmly. "The rest of the gang are bound to miss him, and if they ever found those guns on you, they'd riddle you with lead!"

"Now you help put him on the horse, and I'll take him about three miles and dump him off a cliff, where nobody will ever find him. I'll wrap the guns in a saddle blanket and put 'em in a fork of the nearby tree. When you get ready to leave the country you can pick 'em up."

He told me the location of the place. I thought that I could find it, so I helped put the dead man on the horse.

"His gang's holdout is over the hills in a little park," the rancher added as he was ready to leave. "They're bad hombres. You'd better be careful or they'll get you!"

He rode off and I sat down to think. I didn't know, from that first day's experiences, whether I wanted to be a detective or not. But I decided that as long as I was in it, I'd stick it out.

When the sheepherder came in that night, I told him what had happened; we talked things over. He had seen several of the outlaw gang riding over the country, but had not been able to get any word from the cook, who was playing deaf and dumb.

Finally we decided to move the sheep camp over as near the outlaw "holeup" as we dared, thinking that we might stand a better chance of getting the news we wanted. When I left Cheyenne, Leech gave me one-half of the three spot of diamonds, which I sewed in the band of my trousers. He told me that when I met the deaf and dumb cook, whom I'd know because he wrote all conversation, that I was to ask if he wore diamonds. In this way he would know I was to be trusted and that I was sent out to get information.

Some days after I arrived, a man rode up to where we were herding the sheep and keeping on the lookout for the deaf and dumb cook. This man pulled out a tablet and commenced to write. Here was our man!

"Who are you?" he wrote.

"Do you wear diamonds?" I immediately scrawled back.

"Yes," he wrote, "but I don't care to talk for I have broken myself of that." We matched our three spot of diamonds, although that was not necessary now.

He wrote further, explaining that he was supposed to keep the camp in meat and that this hunting trip was his excuse for being away. His other words had vital importance.

"They're planning to hold up the U. P. train soon."

He described the place where the holdup would be. I was not long in locating the spot. We were then about forty miles—one day's ride—from the railroad. We immediately decided that I should ride to the railroad and stop the first train. We carried small American flags, the only signal which the U. P. engineers honored.

A few days before the time set for the robbery, I rode to the railroad and met the train, which stopped promptly at my signal. A slatted platform was lowered and I loaded my horse into the baggage car and soon found myself in Cheyenne, where I instantly communicated my information to Leech.

He was well pleased and soon rounded up his six men and their horses. The railroad company had an express car, coupled in with a passenger train, for men and horses, making it easy for us to cover great distances quickly. We got off about four miles from where the holdups were going to camp.

The night before the holdup we waited until midnight, when we thought that they'd all be asleep, and then surrounded them. We ran off their horses and waited for daylight.

At the first sign of dawn they got wind of us. The shooting started and there was some pretty hot work for a few minutes. We wounded two of them and did such a lot of fast shooting that they soon ran up the white flag. None of our boys was hit.

"Come out—one at a time—with your hands up!" ordered Leech.

They threw down their guns and surrendered. We soon had them handcuffed and on the train for Cheyenne, where they were tried and sentenced to long terms in Leavenworth. They swore that if they'd known we were so few, they'd have finished shooting it out with us.

No sooner had the first gang been sent to the penitentiary than we had another job thrust on our hands. Another gang that couldn't be located! Leech sent the man who had played the deaf and dumb cook and me out to see if we couldn't find them.

We were riding along peacefully the second morning, in the direction of the country where we found the first gang, when we were ambushed. We evidently had not got all of them, and the rest were out for blood. They commenced firing in front and off to one side of us as we rode through some thick brush.

Our horses whirled around quickly, and I rolled off into the bush, while my partner lay down flat on his stomach in the trail. The shots came closer and closer to me, but fortunately I was hidden behind a big log. I returned their fire with rifle and gun, having only the smoke from their guns to aim at. The bullets cut all around me, knocking off pieces of brush and showering them down on me.

After a while one of their horses broke loose and ran up over a little hill. Finally the men rode out, both on one horse, spurring him into a run. I continued to fire, but don't know whether I hit either of them. As soon as I thought it was safe to come out, I went to my partner who hadn't moved. I thought that he was lying quietly so as not to get hit. But when I turned him over I saw a big lot of blood in his middle. He'd been shot through the stomach at the first volley! I thought he was dead.

I rounded up the horses and by hard work managed to lift my dead partner over the saddle on his stomach, head down, tying him securely, and started for the railroad, leading his horse slowly and carefully. By the time I got to a little station, he began to show signs of life.

I turned the horses over to the station agent and as the train was just pulling in, we placed the injured man in the baggage car and I rode with him into Cheyenne, where I rushed him to the hospital.

He suffered along for several months, but finally recovered. However, he never had the ability to carry on as before.

Leech was more determined than ever to chase down the gang. He started three other men and me out on the trail. We found trace of the outlaws and chased them for about two weeks.

They were shrewd devils, tying rags around their horses' hoofs and even going so far as to nail the shoes on backwards, thus making it look as though the horses were going in the opposite direction from which they were traveling.

We gained on them. We got so near that one morning about nine o'clock we rode up on their last night's camp. The fire was still smouldering. Unfortunately, there had been a big rain the night before, causing us to miss the trail that crossed a creek nearby. The water was so muddy that we had to ride up and down the stream for a long distance looking for it, only to miss finding where they had come out of the water.

We scouted around for a couple of days, but finally concluded that we had chased them far enough and that we'd let them go. I've often wondered why they didn't ambush us. They had plenty of good chances to knock us off.

We returned to Cheyenne and reported. Leech was not satisfied. He said that we would have to use some other means of running them down.

He hired a blacksmith; fitted him out with tools, a team, supplies of all kinds and lumber to put up a shack. He hired me to go along and pose as the blacksmith's son. The scheme was for us to locate a homestead at the forks of the two trails, right in the heart of the district that was overrun by a gang of horse thieves and cattle rustlers. We were sure that this was the same gang.

We reached the place and put up the shack, fitting it up for a blacksmith shop. One day two of the rustlers rode up and looked us over. They asked a lot of questions and finally had their horses shod. After that they came by quite often, stopping to talk nearly every time.

Most of all I wanted to locate their "hang out." I kept asking where I could find some good fishing.

"You come with me for a couple of days, and I'll show you some real fishing," the boss of their outfit said to me one day.

I saddled up my horse and started out with them, but not without some pretty serious thinking. If they suspected me the least bit, I wouldn't come back! A few miles out we left the main trail and cut off to the right.

All at once we came to a sunken valley that had a nice little stream running through it. It was the best hidden place I've ever seen, and the most beautiful. A man could ride all day over the prairie in that vicinity and, if he didn't know right where it was, would miss it.

Everything went smoothly, and the fishing was great. I caught plenty of native trout, measuring all the way from ten to eighteen inches in length. When I had caught all I wanted, I went back to my partner. I made three fishing trips to the "holdout," sizing things up and keeping my ears and eyes wide open all the time. I had to map out the entire campaign, and I didn't want any slip-ups.

In the first place there was the wife of the boss of the outfit. I didn't want to harm her. I noticed that she was the first one to get up in the morning and that she always went to a dugout in the hillside a short distance from the cabin to get grub for breakfast.

Finally I sent word to Leech to come on. He showed up with six well armed men, and we rode to the little park in the dead of night. We had four rustlers besides the woman to look out for.

When Leech found out that there was a woman in the outfit, he gave strict orders that she wasn't to be harmed unless it was in defense of our own lives.

I told him about her going to the dugout on the hillside each morning before breakfast.

"You hide near that dugout and, when you see her go in, sneak up and shut the door. Then we'll start shooting to draw the attention of the men in the cabin."

It was about midnight when we reached the place. We surrounded the cabin, hiding behind the trees that grew in great numbers everywhere. I was behind the dugout long before daylight.

When it got light, I began to get restless for fear the woman would not show up in time. But it wasn't long until she came out of the cabin. My heart came right up into my throat as she

unlocked the dugout door. Then she went in, and I slipped around, closed the door and locked it! I fired my rifle as a signal for the others to know that I was through with my job. The rustlers rushed out of the cabin to see what the trouble was and the battle commenced. After a lot of shooting we wounded one man and the others ran up a white flag.

Leech called, "Come out one at a time with your hands up!" They came as directed and were handcuffed. When I opened the door of the dugout to let the woman out, she lit on me, scratching and biting me like a wildcat. The only thing I could do to keep her off and yet not hurt her, was to throw my arms around her and hold her up tight. This brought a laugh from Leech and his men, and from that day to this I was known as "Kid the Lover."

The boss of the rustlers turned out to be an eastern doctor who had gone wrong for some reason or other. The woman was his wife.

After his trial he served two years in prison. He then went east and built up a wonderful practice. He corresponded with Leech, strangely enough, and always mentioned in his letters that his wife sent her love to "Kid the Lover."

This last episode cleaned out the robbers in that part of the country and left me without a job. I concluded that I had had enough of detective life and that cowpunching would be mighty tame sport after man-hunting, but far preferable.

Leech's parting words were "Good bye, young man. You have done a good job. Better keep out of Wyoming for a while. They may be looking for a young fellow like you."

I returned home after this last adventure. So far as I know the pearl handle "six-guns" with the seven notches are still hanging in the tree where the rancher took them off the dead outlaw.

Indian Raids in Colorado, 1875

A. R. Ross*

After the Indians had burned the range on which I was located on the Fort Morgan Flats and Arickaree, my stock were scattered badly. I gathered those not too far away and moved them up the Platte in the Big Bend country closer to civilization.

There were a few straggling Indians when I left across from Fremont's Orchard, now Orchard, but the cowboys had them

*Mr. Ross, of Fort Collins, has contributed articles to previous issues of this magazine.—Ed,

pretty well trained to stay away from the camps and not come too close to the riders on the range, or else. Bullets would be dropped close enough to make them face the other way, expecting other bullets to follow much closer the next time. Clinging to the sides of their horse, they would disappear in a cloud of dust.

Soon after I had located with my parents on their homestead, my sister and her small child arrived at the ranch one day very excited, and reported an Indian raid on the lower Platte. Her husband had sent her to us to be out of danger. She also reported the Indians were stealing the range horses.

My brother-in-law had a fine bunch of horses on the open range and sent word by my sister for me to come as soon as possible and help him get them out of the raider's reach. I felt that if the Indians had taken a certain trail across the sandhills, they already had them, but my sister said her husband, Johnny Frazier, had warned me not to take that cutoff through the sandhills in the bend of the river as it would be unsafe for a lone rider. He had directed me to go to Greeley and accompany the stage which would be 30 miles longer ride. He told me to ride the best horse I had and not forget my side arms. He had arranged to meet me at Green City where the settlers had been collecting for protection. His ranch was three miles farther down the river.

After a hasty preparation, I was on the back of a rangey bay we called "Sure Enough Charley," who was chomping the rowel in his spad bit eager to be off. I told my folks I did not expect to see any Indians, only the one in front of the cigar store in Greeley, and I was off for a long ride on the endless plains and sandhills. I was very much surprised when I reached Greeley and saw so many riders all armed, and a stage loaded with men and guns. I began to think maybe there was something to this Indian story after all. The stage started out down the old river trail at a swift trot with riders all around it. After a few miles, riders took positions in front and rear while others rode in tall grass along the stream. We soon met settlers coming up the old overland trail with their families in lumber wagons, whipping their teams into a run. At the speed they were driving, we expected to see Indians close behind. They never slackened their speed when they met us. Any information we received from them was on the run and that was very little. They were scared green and their only thought was to get out of the lower Platte country, and they were losing no time.

In a few miles of travel, the scouts along the river reported finding a dead Indian lying on his blanket in the grass with his rifle by his side. His horse picketed close by had been shot

through the head. He had been wounded and evidence showed he had been left by his tribesmen to recuperate and follow or shoot his horse and ride off to the Happy Hunting Ground as the case might be. His rifle, blanket, and picket rope were loaded on the stage and we hurried on down the river. We took the trail again with more serious thoughts on our minds. Even a dead Indian cast a shade of gloom over strong men and to a boy the thought seemed gruesome.

Our next place of anxiety was an old landmark called Eagle's Nest, a high cliff close to the river bank giving none too much room for a wagon to pass. It was a typical place for an ambush. Scout riders were sent ahead to see if it was safe to proceed. When they reported it O. K. we all increased our speed and passed through the narrow space at a fast trot.

We were now very close to Green City, a city on the plains that was founded in 1871 and existed only a few years. Deerfield was built close to the site of old Green City. When we reached the town it was in a state of panic. Men, women and children were walking the streets all excited, and some women were crying. The Indians and their depredations was all that could be heard. The stage was three hours late and the sun was getting low in the western sky. When I met Johnny, I saw he was very nervous. He asked me what I thought about starting out so late to get the horses and if I thought we could locate them before dark and get back to Green City that night. "Yes, I think we can," I said, "if they have not already been located by the raiders, who I think are a long way off now."

I had ridden my horse all day with very little feed and no rest, but thought him good for 35 miles more of not too hard riding. Johnny said he had a fresh horse and would take most of the hard riding. I mounted "Sure Enough Charley" feeling that the odds were against us. As we rode away we looked back and saw the crowd gazing after us as we went riding away into the desolate sandhills to rescue a bunch of saddle horses. We followed the Indians' trail as far as Fremont's Orchard. There our trail led south to the Muddy Creek, where we expected to find our horses. We were sure now we would find them there since the Indians had not left the river at that point but had continued their raids farther down. No doubt they would take the trail across the sandhills to the Republican River in Nebraska.

A short ride brought us in plain sight of Johnny's horses feeding peacefully in the tall grass quiet and contented. The sun was getting very close to the top of the Rockies by the time we circled the horses, took the count, and headed for the Platte River. We urged the bunch to a gallop until we came to the

river a few miles below Johnny's ranch. There the animals gave us a lot of trouble and we were glad to get them to the ranch and into the corral and our saddle horses in the barn by dark. We decided we would stay until morning and protect ourselves through the night and guard the horses as best we could. I was a tired hombre, having been in the saddle all day and I wondered if Charley felt any worse than I did. After we had eaten a lunch in the ranch cabin, we went outside and sat down on the doorstep facing the barn, Johnny with his gun across his knees. The moon had risen in the eastern sky and now we could see plainly the barn and corrals. As we sat quiet and tense, a figure stepped out of the barn door and started moving slowly toward the house. Johnny whispered, "That's a man and I'm going to halt him." The figure stopped at the sound of his voice for a few seconds and then started to walk again toward us. Johnny quickly placed his gun to his shoulder and said, "I'll halt him again and if he doesn't make himself known I'll shoot." "What a chance that person was taking before that needle gun in the hands of a man of unerring aim, who never pulled the trigger until his bead was perfect," I thought to myself. In another moment I got a view of the object from my position a little to one side, and shouted, "Hold your fire, Johnny, that's a horse." It is an undisputed fact that the straight front view of a horse at night can be easily mistaken for a man. It was my tired saddle horse, "Sure Enough Charley," coming to the drinking trough at the house. I shuddered as I walked up to him and took hold of the broken end of his halter rope when I thought how near he came to being murdered. Johnny said, "Somebody is in that barn or Charley would never have broken loose. He doesn't pull back. One of us will take him back and tie him in his stall. I'll give you your choice, kid. If you go, I'll cover you with the rifle, or you can do the same with me." I replied, "Johnny you are a good shot, 'here goes nothing,' but don't shoot until you're sure it is an Indian you are drawing a bead on, and not me. I have no feathers on my cap." I had very little fear as I led Charley back to the barn and into the stall where I found the other part of the rope and tied them together. That job completed, I suddenly realized that I did not want to turn my back on what might be a tomahawk, or hunting knife, in the hand of a savage in the darkness of that barn, so I decided to back out with my six shooter in my hand. I was still backing when I reached the door. When outside I stepped around the corner of the barn and took a second to look toward the house where I could dimly see Johnny standing, true to his promise, with his rifle to his shoulder. I slowly raised my hand and ended

in a military salute so he would know it was me. I had no fear now of a bullet from his needle gun, so slowly began to walk toward him, glancing repeatedly back to the barn. When Johnny lowered his rifle, I said, "Where is your Indian?" He replied, "He's still in that barn." "If so," I said, "he's a dirty coward," for he could have had my scalp right now and not half tried. We parleyed a little about driving to Green City by moonlight, but decided it was safer to stay where we were till daylight. We were in a sod house and could defend ourselves. If we started the horses out, they could easily be stampeded by the Indians and we would have lost the bunch, so we took turns circling the corrals and stable. The horses were restless and walking around all night. We kept close watch for fear they would break out. When we lowered the corral bars at daybreak, the range horses were nervous and still looking for trouble, and left the ranch in a high run headed for the sandhills. We had to do some fast and hard riding before they were pointed toward Green City so near and yet so far away in all our trouble

It was clearly evident what the raiders were after. They wanted better horses as many good range horses were missing. They were not on a revengeful mission but God pity anyone caught between them and a good saddle horse. When we arrived in Green City, we had a full count of Johnny's range horses and considered ourselves lucky. Our friends were surprised to see us come back so soon with our foretops on and apparently none the worse for the trip. Very few people were killed in these raids, and when there was loss of life, a good saddle horse was the cause. The Indians never attacked the roundups but once they caused a stampede and got riders on the run, but the cowboys soon rallied and it was just too bad for the Indian that didn't ride a fast horse. Many funny stories were reported about that stampede but the cowboys came out winners in the end.

At one time I remember a Mr. Tracy, a cattleman on the north side, had a crew of men at the roundup. They started to drive a bunch of beef steers to Julesburg, the nearest shipping point on the railroad, and were cut off from the main roundup. A band of Indians killed three of the four cowboys. The foreman was riding a fast horse and outdistanced them and got away. They wanted that horse bad enough to cross the Platte at a bend in the river, expecting to head him off, but he left them all in the dust. The red men would risk a lot to get a fast horse.

I have no record of their return by the South Platte trail or elsewhere. They were headed for the Republican River in Nebraska. A friend, who took my place to care for a bunch of cattle on the Republican, was killed by that band of raiders. He

was reckless enough to take a dare that he could ride that range without arms. He won the bet but never returned to collect his money. He and his horse were found a mile from camp. If he had been armed and had been riding a fast horse, he would have reached camp safely.

Thus ends the story of the last Indian raids on the South Platte River.

Surveying for the Moffat Railroad*

E. T. Bollinger

Art Weston gives us a short sketch which we shall include here: "Toward fall of 1903, a small party under R. B. Parker ran a survey from the east side across the pass for a tunnel approximately 6 miles in length. As I remember it this tunnel would have been a little higher in elevation and consequently a little shorter than the one now in use. Mr. Meredith, who was Division Engineer in charge of all work west of the Range, had selected a point for the West Portal. This was in Jim Creek, perhaps half a mile from Idlewild. He asked me to meet the Parker party on a certain afternoon and show them this point, which I did. Their line missed it about 500 feet, so they afterward calculated a line to hit it but I think when they ran this later they again missed our point.

"As Mr. Dietrick and all our party were absent (being in Fraser Canyon where they were each month to look after some construction work going on there) except myself and our cook, Joe Galloway, I had the Parker party of five men spend the night at our camp. They walked back ten miles across the Range the next forenoon, and carried their instruments. Such a walk, or rather climb, over Rollins Pass was not unusual in those days. I once carried a transit 20 miles in one day. However, no work was started on either the 'short' or the 'long' tunnel."

"About the beginning of the winter (1903) we moved our camp to a very picturesque little park in Fraser Canyon. The contracting firm of Dumphy & Nelson (Pat Dumphy and Sam Nelson) were grading the route through the canyon and there were two short tunnels there. Mr. Dietrick had selected the camp site and when we arrived he asked me how I liked it. I replied that it was very pretty but I did not like all those rock fragments scattered around the snow (there was about 20 inches of snow). These had come from shooting a cut in rock directly across the river, which cut was being worked by a gang of Swede 'station men.' Billie (Wm. Dietrick) replied that the Swedes were shooting the

*Continued from the preceding number.—Ed.

cut too hard in order to throw some of the rock into the river instead of hauling it out into the hills and that he had ordered them to stop this practice.

"Well, one cold morning about a week later one of the Swedes came across the river on the ice while we were eating breakfast in our cook tent, which had been pitched near the river bank, and told us that they were letting off a 'little shot' which might throw a few spalls across the river, so we better get outside and watch out. Well they lighted the fuse and I timed it. When 20 minutes had elapsed I knew it was a deep shot (fuse burned one foot per minute), so I began yelling at our men to get back in the timber. Well it was a big one, which threw tons of rock in the river. One boulder about the size of a bale of hay went through the cook tent and plenty of small ones through the bunk tent. Only one small one came through the 'office tent,' which I had placed as far from the river as possible without getting it on the steep mountain slope.

"Mr. Dietrick was angry at the 'dumb Swedes' and told them they would have to get us a new cook tent as ours was ruined, so they all went on a sitdown strike. This was compromised by Dumphy and Nelson furnishing us a tent they happened to have in storage.

"As we had completed the location of the line through the canyon and the party was only looking after the construction work, Dietrick had no further use for a draftsman (which was my position). I was transferred to the locating party under John J. Argo."

J. J. Argo's second diary, that fortunately has been preserved, is inscribed "Beginning May 21, 1905." It is the story of the camp at the upper end of "Gore's Canyon."[1]

The third major obstacle that the road had to overcome was Gore canyon. The only way to pass this canyon was to go over the Gore Range. Numerous surveys were run and satisfactory grades were developed in routes that went up the Troublesome before reaching Kremmling and on over to the Gore and down to Toponas.

[1]Some idea of the paraphernalia survey parties were equipped with is found in this list of things sent to Charles Mitton August 30, 1902:

1 hand level
¼ box pencil erasers
2 dozen assorted No. 3 and No. 5 H. Kohenoor Pencils
1 Pt. bottle writing fluid
1 box thumb tacks (likely more than a dozen in the box)
1 doz. level books
½ roll plate B. tracing paper
1 doz. pay roll blanks
1 time book
Gurley level and rod

H. A. Sumner advised against these routes as the rise in elevation was twice that which occurred by going down the Gore and climbing Conger Mesa and Egeria Canyon.[2]

An even more important reason H. A. Sumner gave was that going down the Gore would make possible the building of a cutoff to the Rio Grande. Since the Moffat money was running low, Moffat recognized that his road would be invaluable as a cutoff, providing the tunnel was built. It was further recognized that the Yampa coal fields would have a Western outlet over this cut off, if the line to Salt Lake was never completed.

However, rock slides in the Gore made this route a poor choice, as all operating officials agree. But this route did make possible the Rio Grande Cutoff.

To survey the Gore was a problem. Hoklas understands that the first survey in 1884 was run by use of boats. One man lost his life near Burns.

T. J. Milner must have run a preliminary survey in the winter of 1901-02. He speaks of sending men down on the ice and securing a map with ten foot contours by use of ropes held by men on top of the cliffs, while the surveyor with the end of the rope around him walked the face of the cliff.

J. J. Argo faced a tremendous task in making an accurate survey with the spring flood waters filling the canyon from bank to bank. The canyon is from one hundred to two hundred feet wide near the bottom. Argo described it thus: "The sides of the canyon are in some places ragged granite bluffs rising to the height of 3,000 feet and in other places there is coarse slide rock."[3]

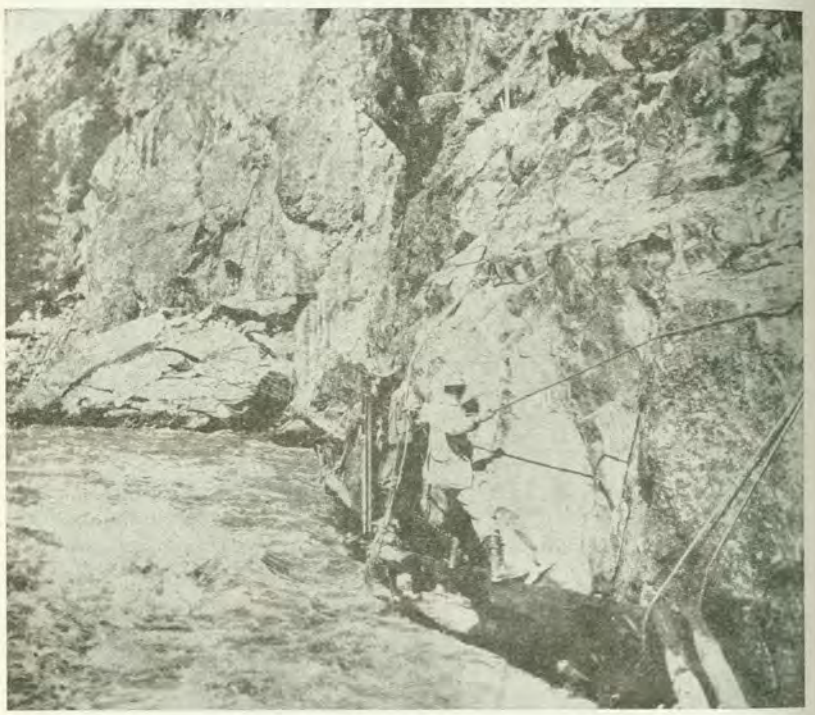
There was only one way to get down the canyon at places and that was by building bridges on the side of the cliffs. The work had been carefully planned months before. Sixteen-inch machined steel pins had been made. A man was swung over the face of the cliff by a rope. He drove these pins into the crevices of the bluff. Then logs that were six to ten inches in diameter and sixteen feet long were floated down to the spot. These logs were tied over ropes that were held by men on the top of the cliff. One end of the log would be hoisted to the proper height and a wire rope 5/8 of an inch in diameter would fasten this log to the pin. Then the man would climb out on the log and drive

[2]Ed Sunergren, Office Engineer, recalls that his father, S. P. Sunergren, helped to survey a Rio Grande narrow gauge route up Egeria Canyon where $50,000 was spent in excavation. The route was up the base of the canyon, while the Moffat line is high up the wall.

[3]Newspaper clipping regarding Milner in the Dawson Scrap-books on the subject of Moffat Railroad in the library of the State Historical Society of Colorado. Also story by Argo describing his survey.

another pin. Because pins might occasionally slip out, extra pins were driven in. On occasion holes had to be drilled in the solid granite.

Argo's diary for June 6th reads, "Built foot bridges in afternoon along bluffs. Hoklas fell in river and narrowly escaped drowning."



J. J. ARGO AND SEXTON SURVEYING IN GORE CANYON

W. I. Hoklas tells the story in more detail. "Yes, a rope from above hitched to a log, which was being brought to place on a cliff in Gore Canon, and on which I had walked out slipped off a rock or a loop slackened and let down the end of the log on which I was supported. I had learned to swim in swift water when I was a school boy (very much to the disgust of my father). By the kindness of the Lord I swam to and climbed up on a ledge, from which Argo helped me back to the replaced log.

"We then walked back to the slide rock. Argo rubbed his hands and although it was about 3 o'clock said, "I guess we will go to camp." So the men were called off the cliff and we plodded home. It was only a mile and a half or two miles, but this took about an hour's time. The cliff was about 3,000 feet high."

The next day the transit party continued to build foot bridges. Ladders built in the canyon out of slim lodge pole pines that had been peeled of their bark were used to scale many places. Trees growing on the high water line of the Colorado River afforded handy logs or slim poles as needed for this work.

Very significant are the words out of Argo's diary, "as usual we got wet."

Among the visitors to this spectacular survey was T. J. Milner, chief engineer of the Denver Tramways. His heart was still on this job. He felt welcome with J. J. Argo and Meredith, who were fast friends. Milner told the boys how he had begged Moffat to start the main range tunnel. Moffat did not feel this necessary. He considered the tunnel at that time a refinement that could be made when the road became a paying business. To Moffat, according to Gerald Hughes, Rollins Pass was simply a matter of power. Did not the Rio Grande scale such heights? James J. Hill seems to have been consulted and agreed to the idea.

With such choice gossip coming from the tent of J. J. Argo, it was worth all the hard work to survey the canyon.

Another week Sumner, with his retiring manner and his sparkle of humor, came to see "Argo's squirrels." Argo was a religious man of unquestioned character like Sumner. The boys felt that both men towered above them. On this trip was Blauvelt, Meredith and Deuel. Deuel's nature was so winsome and magnetic that men were becoming greatly attached to this man whose manners made him a little Dave Moffat.

The June weather down in the Gore was beautiful. These were nights when the camp fire song fests in the moonlight evenings were to make an impression that men would never forget.[4]

After pay day the poker games would pick up. Albert Peck, Assistant Engineer of the Rio Grande, tells how a teamster and Clyde Mitton (brother of locating engineer C. L.) played all one night keeping others awake. They fought awhile, and then worked awhile throughout the following day. Dick Holmes, the six-foot six-inch Spanish American War Veteran, who had planted the American flag first on Manila, threatened to throw the one who tried foul play into the Grand River.

[4]W. I. Hoklas recalls that others in that party were Albert Peck of the Rio Grande, Billy McFarland, now Sheriff of Routt County, Clyde Elgin of Yampa, and Elmer Hiem.

Sunday, October 22, J. J. Argo wrote in his diary that Lynn Doane Sexton and Will Uzzell had been hunting and killed two bears.

The boys talked about the bear hunt for weeks. The only thing that stopped this story was a better story of a gent among them who jammed Albert Peck's gun full of shot and blew the gun up, stole a suit of clothes of Will Uzzell and an overcoat of Jack Scanlon.

When the story was ended he was in the "big house."

When it came to moving camp, the nearby contractors were not always able to furnish the teams needed. Argo used as high as three teams on such jobs. Among the moving troubles were such things as sleds breaking down, forcing part of the load to be left where the breakdown occurred. It was not flat tires in those days, but it was trouble, nevertheless.

When the party was moved to a location near McCoy, the men had the McCoy's Hotel where they could entertain their families when they visited the men in the field. From the frequency with which J. J. Argo entertained at the hotel we have every reason to believe that this historic old stopping place was maintaining its tradition for serving the best meals. Albert Peck tells that men were charged according to their finances.

The nearest railroad to McCoy was the Rio Grande, reached by a wagon road through State Bridge and over the hill to Wolcott. As to the condition of this road we gather it was not good in spring weather from this note of Argo. "I returned from Wolcott with Mrs. Argo and the children. Weather fair, roads very bad."

Charles Leckenby tells of the stage coach days and how trying it was for the stage drivers in the spring thaw. The stage line had begun operations in 1888. This line, which first used McCoy as an overnight stop to rest the passengers going to Steamboat had as high as one hundred horses in use, when Whipple and Shaw operated the stage.

The annual Yampa pioneer day celebration of 1906 was turned into a premature celebration for the coming of the railroad on June 21 and 22. Art Weston remembers the occasion vividly:

"We located the route northwestward to Yampa and Steamboat. While we were near Yampa there was a three-day celebration, given principally in honor of the coming of the railroad. A baseball team from Hayden played a game with the Yampa boys, who proved no match for the Hayden team. So a team selected from the engineering parties (there were several in the vicinity) took the field and beat the Hayden boys very nicely. But the Hayden team not having anything to celebrate went to bed and got plenty of sleep. On the other hand the Engineers celebrated most of the night. (There were plenty of saloons at that time.) So the next day the Hayden team beat the surveyors badly."

In these days when we are endeavoring to establish security in year-round guaranteed wages by industry, we see the contrast in which the party members found themselves in that day. Winter came and men would be laid off until spring. Men would hunt the country over for jobs that would help pay back their college education. Art Weston tells of his case:

"There did not seem to be much doing on the Moffat in the winter of 1905. I went with some other Colorado men to a job in western Arkansas. This was a branch line subsidiary to the Missouri Pacific Railroad. There I caught malaria and was sent to the Company Hospital in St. Louis. When recovered I returned to Denver and, about April 1, 1906, Mr. Sumner sent me to the party under J. J. Argo, then camped near McCoy."

Twice that summer Art suffered attacks from malaria and had to be hospitalized in Yampa. Running true to the form of the brotherhood established in these parties, Argo writes, "Myself and family went to visit Mr. Weston." That afternoon the entire party went to Yampa to play ball. We judge they must have won the game this time, and all came tramping in afterward to see Art.

At one day's end this note is added, "Camp invaded by Mormon Crickets. Nobody hurt." H. A. Sumner is in the field frequently.

The memories the boys carried were pleasant, and now make fond days for them to recall.

In 1907 the unhappy Meredith died from over-exposure. H. A. Sumner had come out to the location, where work was progressing in Gore Canyon. John Daly, Bridge and Building foreman, and Pat Dumphy, the contractor, and Blauvelt were in the party. Meredith had a severe cold, when they went on this trip.

Meredith appears to be the kind of former athlete that cannot be left behind even when it was for his own good. Anyway, on this trip during the spring flood season when the water was icy cold, a gust of wind blew his hat off. He fished around for his hat with a stick and fell in off the icy rocks. He was pulled out, but pneumonia set in. They rushed him to the end of track nearby. When they could get an engine he was sent to Denver in a caboose. He died somewhere near Arrowhead.

W. I. Hoklas saved this poem, a product of a surveyor. It was popular among the boys in camp and is representative of the period:

IF

If you can swing an axe, or yield a brush hook,
Or drive a stake, or drag a chain all day,
If you can scribble "figgers" in a note book,
Or shoot a range pole half a mile away—
If you can sight a transit, or a level,
Or move a target up and down a rod—
If you fear neither man or devil,
And know yourself, and trust the living God—
If you can wade a swamp, or swim a river,
Nor fear the deep, nor yet the dizzy heights
If you can stand the cold without a shiver,
And take the Higgins ink to bed o'nights—
If you can turn a thumbscrew with your fingers,
When every digit's like a frozen thumb—
If you can work as long as daylight lingers,
And not complain, nor think you're going some—
If you can sight thru tropic heats refraction,
Or toil all day beneath a blistering sun—
If you can find a sort of satisfaction,
In knowing that you've got a job well done—
If you can be an Eskimo and nigger,
And try to be a gentleman to boot—
If you can use a "guessin' stick" to figure,
And know a coefficient from a root—
If your calculus and descriptive are forgotten,
And your Algebra "just serves you fairly well"—
If your drafting and your lettering are rotten,
And your Trautweine's always handy by, to tell—
If you can close a traverse without fudgin,
Or check a line of levels by a foot—
If you can set a slope stake just by judgin'
And never kick the tripod with your foot—
If you can climb a stoll and not feel lowly,
Nor have your head turned by an office chair—
If you can reach your judgments slowly,
And make your rulings always just and fair—
If you can give yourself and all that's in you,
And make others give their own best too—
If you can handle men of brawn and sinew,
And like the men and make them like you too—
If you can run a line where you are told,
And make it stay somewhere upon the map—
If you can read your notes when they are cold,
And know that contours mustn't ever lap—
If you can line a truss or tap a rivet,
Or make a surly foreman come across—
If you can take an order, well as give it,
And not have secret pity for the boss—
If you can't boast a college education,
Or, if you've got a sheepskin, can forget
If you can meet with triumph and disaster,
And treat them without favor, nor with fear—
You'll be a man and your own master,
But—what is more—you'll be an ENGINEER.

By Robert Isham Randolph, with apologies to Rudyard Kipling.