

FIRST McKeen car with the distinctive portole windows was Union Pacific No. 7, shown at St. Paul, Neb., in January 1910. Note conductor standing in the drop-center entrance, while intrepid engineer awaits starting signal. It would appear that there is some wasted space behind that knife-nosed front. *Union Pacific*

## McKeen Motor Car Co.

Omaha, Nebraska

**T**HE REMARKABLE McKeen motor car was at once the most publicized, most controversial and most innovative self-propelled railcar in the early period of the mode. The McKeen has often been called a glorious failure. But in many respects it was a success, and it certainly was a pioneer.

With its knife-nose front, porthole windows and rounded rear end, the torpedo-shaped McKeen seemed in the immediate post-Victorian era to be as unusual as its creator, the flamboyant William R. McKeen. The dapper, red-haired and red-bearded McKeen became something of a legend in railroad mechanical circles, not only because of his zealous promotion of the rail motorcar when the industry was still geared 100 percent to steam, but because of his close association with railroad titan Edward H. Harriman.



The dapper Mr. McKeen

Viewed in the total context of railroad technology, the McKeen car was indeed a failure. The steel body was sturdy and well-built, but the power plant was the car's undoing. Like his fellow railroad mechanical officers, McKeen was unfamiliar with internal combustion engines and he was unable to substantially improve on the crude designs of the early 1900 period—even as others were doing so.

The huge weight dictated by that crude technology and the difficulty of properly springing such a weight led to severe maintenance problems, given the light rails and rough track of the branch lines that the cars were designed to run on. The mechanical transmission which McKeen employed was especially troublesome, and the fact that McKeen stubbornly clung to this type of transmission after the advent of the General Electric gas-electric car with its electric drive was a major reason contributing to the demise of the McKeen car on the eve of World War I.

Commercially, the McKeen car was not quite a failure. Some 152 were built between 1905 and 1917, a figure which certainly placed McKeen up with the major builders. But, of that number, 89 sales were accounted for by the Harriman lines which were closely affiliated with the McKeen works, and the Harriman group (chiefly Union and Southern



**THERE** was absolutely no doubt about whose works these were near downtown Omaha, Neb. *Robert Washbush Collection*

Pacific) later purchased used McKeens from independent roads as well.

The McKeen legend starts with the windsplitter front. McKeen's idea was that the air-flow design would lessen wind resistance and enable the car to cut travel times and attract new business to the railroad branch lines. In practice, of course, the condition of branch line tracks seldom permitted more than the most moderate speeds. The design later added to the controversy surrounding the car: many claimed the rounded rear end should have been on the front and the pointed end to the rear. Wind-tunnel tests conducted in connection with the early streamlined train experiments of the early 1930s lent some credence to the theory that McKeen had streamlined his car backwards. Still later experiments done on airfoils have somewhat vindicated McKeen's theory but, unfortunately for McKeen the whole argument was academic since 50 mph was about the top speed any McKeen car could attain even on good, level track!

The legend was further enhanced by McKeen the man: stubborn, strong-willed and very forceful when going after what he wanted, McKeen aggressively promoted the manufacture and sale of his car in many ways not generally adopted until decades later. Though well educated and solidly backgrounded in the railroad mechanical technology of the day, McKeen was a born showman who wore flashy clothes, smoked big cigars and sometimes appeared at society affairs at home in Omaha (and in New York City, too) with a beautiful woman on his arm.

McKeen was a hard-sell artist in an industry more accustomed to polite suggestion. He painted his name in 20-foot-high letters on the roof of his Omaha works. He painted his demonstration cars bright red, and reproduced the same red car on his flowery letterheads. He unhesitatingly bombarded railroad presidents, big and small, with volley after volley of rapid-fire sales letters and telegrams, often following them up with personal visits. The industry knew he had Harriman behind him, and invariably McKeen was treated with deference by the railroad brass. But, except for a scattering of short line sales and token purchases by a few big lines, McKeen had to be content with building cars for the Harriman roads.

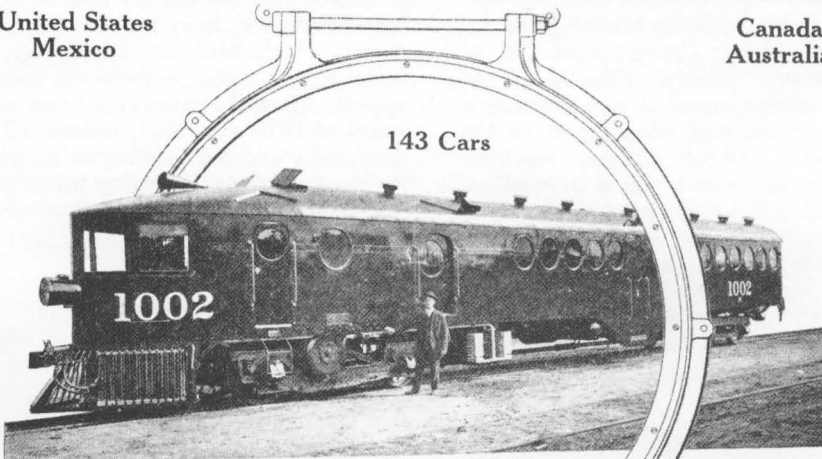
Son of a wealthy Indiana banker, McKeen was graduated from Rose Polytechnic Institute and the University of Berlin. By June 1902 he had attained the position of UP Superintendent of Motive Power and Machinery. Some-

time in 1904 he was summoned to Harriman's office in New York City to discuss Harriman's concern about the high cost and low productivity of carrying branch line passengers.

McKeen thought that a self-propelled railcar might be the answer. A practical propulsion system was a big question mark, but McKeen and associates at the Omaha shops began designing a mechanical drive car. Electric drive, which would have been more practical in the long run, was apparently ruled out simply because nobody in the UP shops knew anything about it. McKeen's agile mind turned at once to the body design. He wanted something revolutionary—and he certainly got it. He was an early

devotee of integral construction—the side members assisting the floor beams in bearing weight. The cars were to be low-slung (one to two feet lower than standard) and (although the word had not yet been invented) streamlined.

McKeen's first car, UP's M-1, was assembled in the north end of the Omaha erecting shop and was significantly smaller than all later models. Only 31 feet long and having but a single truck, the M-1 lacked the round windows adopted only a few months later. Other distinctive touches included a rear streetcar-type door, operated by a foot treadle, forced air ventilation and indirect interior lighting, at first fueled by acetylene gas.

United States  
Mexico

Canada  
Australia

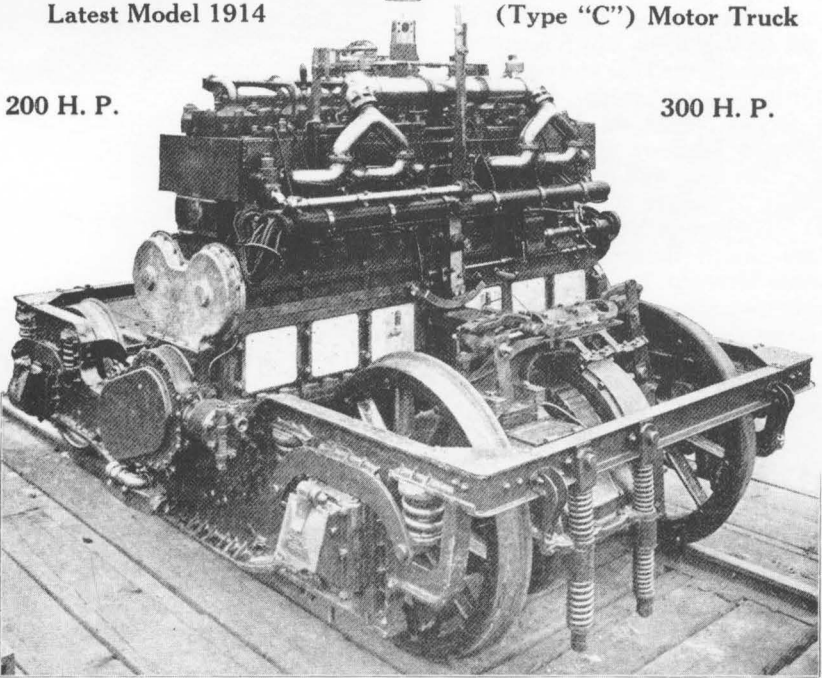
143 Cars

New York, Auburn & Lansing R.R.

**McKEEN MOTOR CAR**

Freight  
and  
Switching  
Locomotives
Construction  
and  
Line Cars

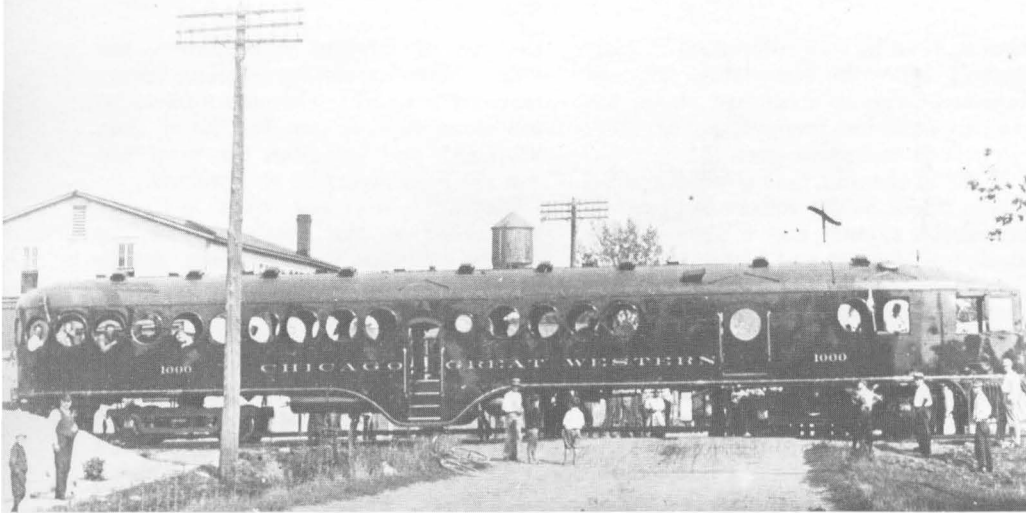
Latest Model 1914
(Type "C") Motor Truck

200 H. P.

300 H. P.

McKeen Motor Car Company, Omaha, Neb.

**CHICAGO Great Western 1000 blocked main street of tiny Withee, Wis., in 1910. Townspeople have come to gawk.**

*Louis A. Marre Collection*



The power plant was purchased and proved to be a 100-hp engine made by Standard Motor Construction Co. of New Jersey, selected because of its relative compactness. It was basically a marine engine and adapting it to the shake-rattle-and-roll railway environment proved to be a major frustration. The mechanical transmission employed an Octoroon sliding gear and friction clutch which gave two forward speeds and an intermediate position. The car was started by air on the first three of the six cylinders. Control levers were mounted vertically, and sideways to the operator.

The M-1 made its debut on the morning of March 7, 1905, on the UP's line from Omaha to Valley, Nebraska. To operate the car McKen hired Clarence Beard who had run the Burlington's internal combustion inspection car; Beard became a longtime McKen associate. Trial runs in the area consumed a month, then the car was sent to Colorado and Oregon for further trials which included pulling a standard mail car and coach up a one-third percent grade. Its first revenue service began on August 21, 1905, between Kearney and Callaway, Nebraska; this may well have been the first revenue passenger service by a rail motorcar anywhere in North America.

Troubles began immediately. Valve box gaskets blew out, motor stanchions snapped in two, the cooling and heating system clogged easily, the clutch slipped badly. The carburetor would not stay in adjustment, intake valves slipped, the gearshift would foul. It was a preview of things to come: McKen cars early developed a reputation for unreliability. At first, this was simply a case of the

primitive state of the art but, as other manufacturers later made improvements which McKen stubbornly refused to copy, the McKen car lost all appeal. After the relatively brisk sales years of 1910 and 1911, orders fell off drastically and McKen began spending much of his time answering bitter complaints from his railroad mechanical colleagues.

But in 1905 the future looked bright. The M-1 was quickly followed by the much larger M-2, dubbed "the battleship." It was double truck, 55 feet long, weighed 55,000 pounds and seated 57. Outshopped in September 1905, the M-2 had an improved air-operated clutch for its 100-hp engine; the old hand-operated clutch had broken more than one motor-man's arm! Speed on test runs reached 53 mph, partly credited to McKen's improved rear truck design which employed elliptical springs. But the trucks frequently developed hot bearings.

Cars M-3 to M-6 were similar to M-2 and some were tested on other roads such as Southern Pacific and the Alton. By this time McKen was getting bigger ideas. He published impressive claims about the economic (and mechanical) superiority of his car and personally penned the superlatives: the McKen was "airtight, watertight and dustproof" due to its porthole windows; it was capable of high speeds due to its

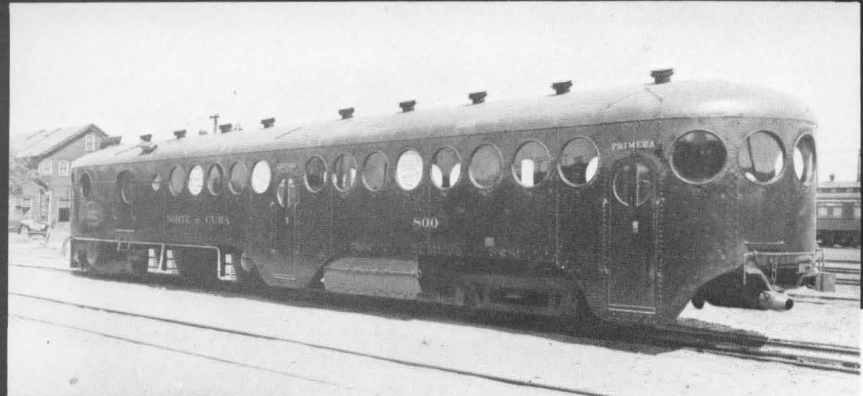


**McKEN metamorphosis:** Vintage McKen is Lakeside & Marblehead's No. 5 at Marblehead, Ohio; Union Pacific's M-29 (shown at Kearney, Neb.) was home-built with parts from unbuilt McKens.

*Both: M.D. McCarter Collection*



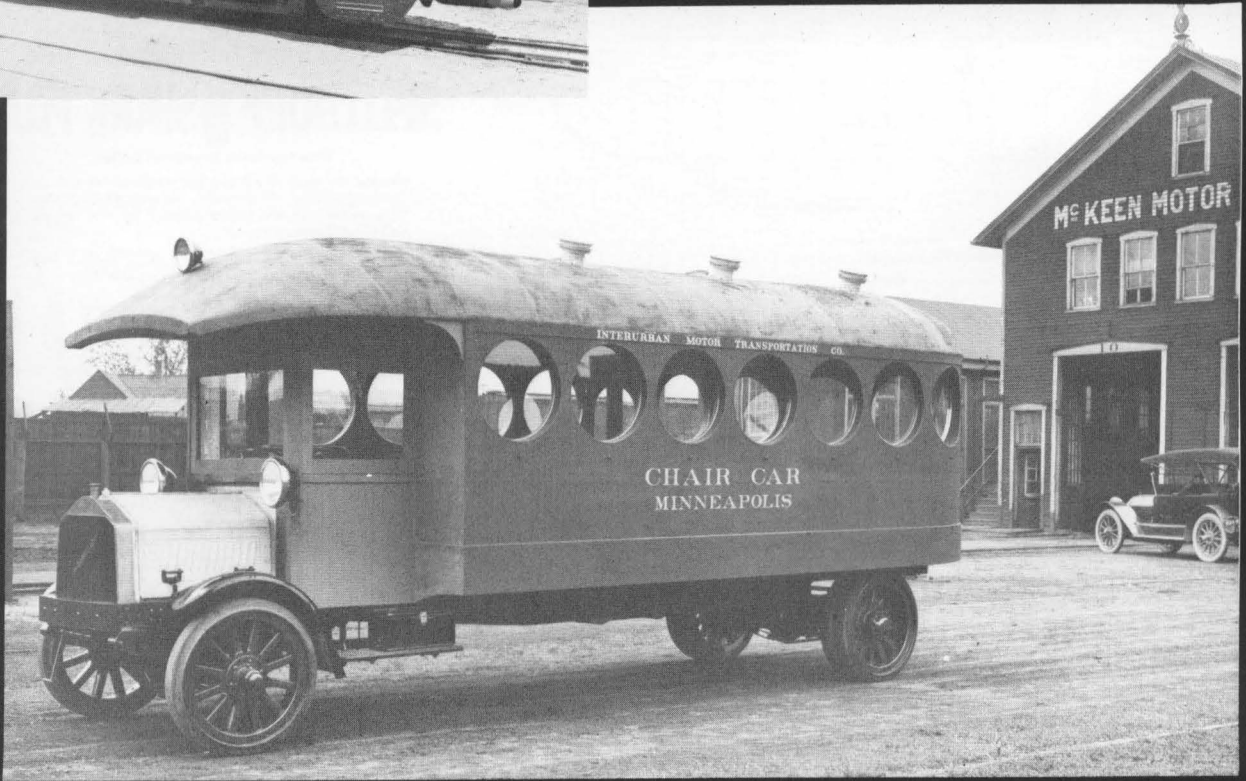
YES, there was a trolley McKeen, the Norfolk Southern's car 90, shown at the Norfolk, Va., depot in 1923 (above). *S. W. Kehl Collection*

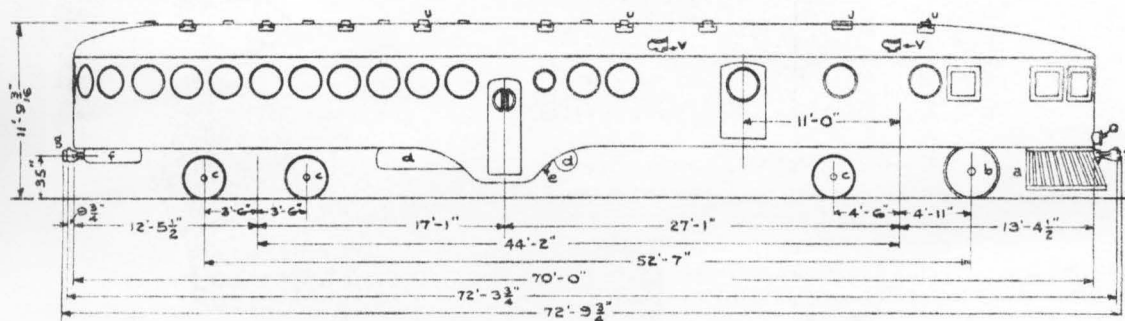
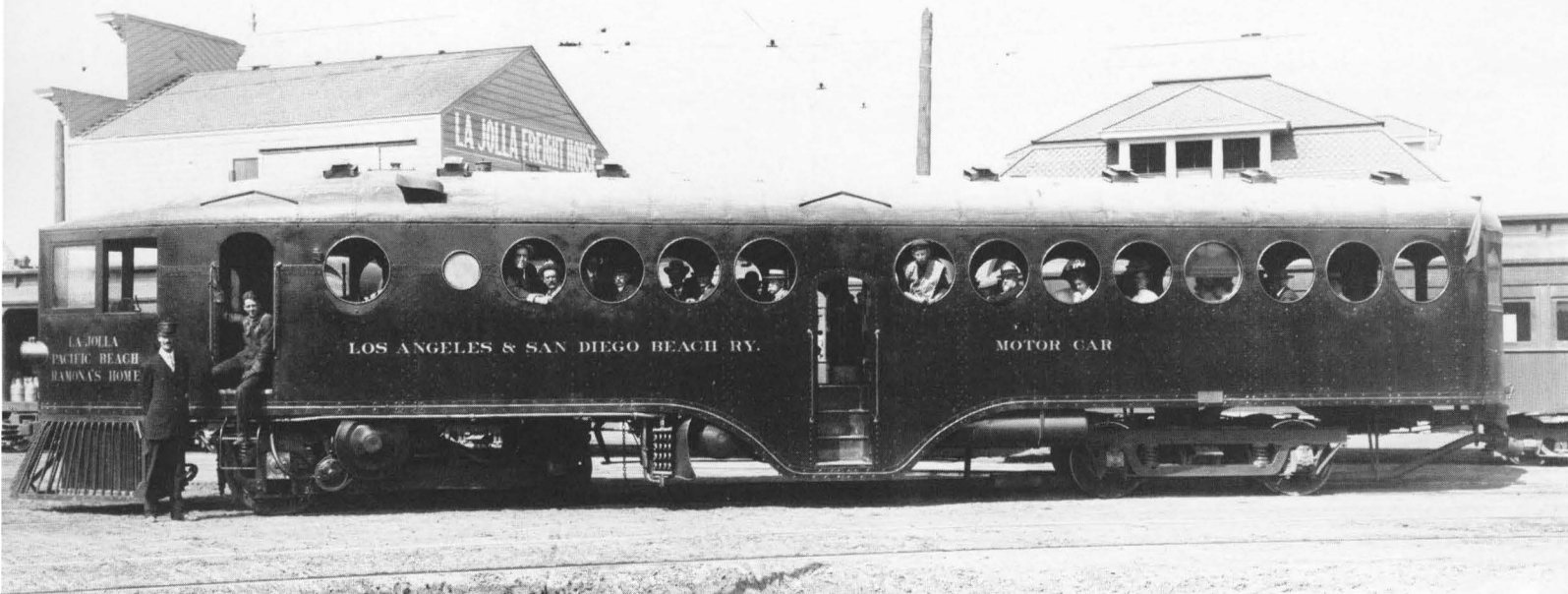


## McKeen Miscellany

ROUND rear of McKeen looked like something out of Jules Verne (above) and, how about that McKeen bus (right)?

*Washbish Collection*





EARLY line from San Diego to La Jolla used McKeens. This 1908 photo was taken at the La Jolla end of the line.

Union Title Insurance  
Collection from  
P. Allen Copeland

## The Largest Gasoline Cars in the World are fired by Splitdorf Plugs

The 300-H.P., self-propelled, McKeen gasoline rail cars are used for most difficult service in Australia, Mexico and the United States. The high efficiency of these great gasoline cars is another testimonial for



With the Green Hexagonal Jacket

Ninety per cent of all engine troubles are due to faulty ignition. Seventy-five per cent of them can be remedied at once and forever by the use of Splitdorf Plugs.

These plugs are practically indestructible, positively gas and oil tight. They are as nearly soot-proof as a plug can be. Dozens of times they have run 20,000 to 30,000 miles without ever having been cleaned.

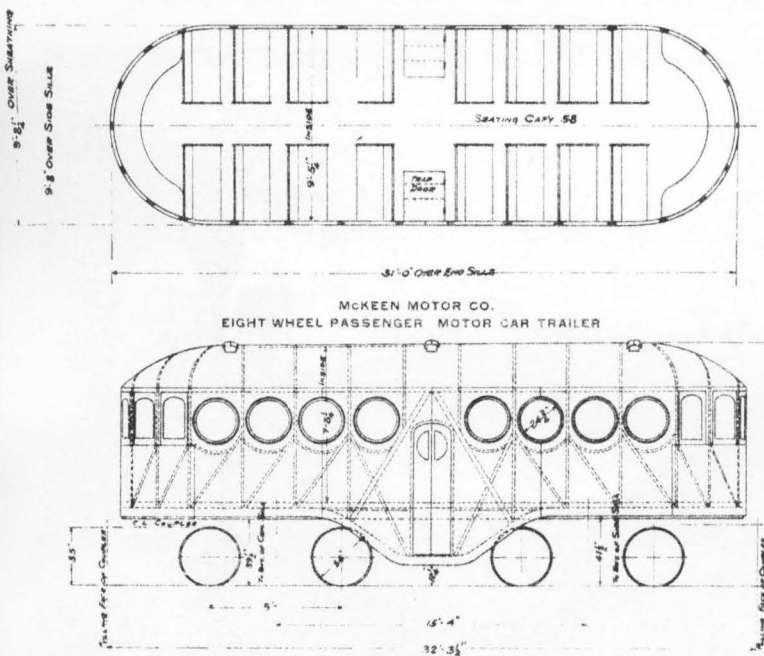
Made in all sizes and in types to suit every car, motor cycle, motor truck, motor boat, aeroplane, and stationary gasoline motor.

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TYPICAL McKeen motor and short trailer are shown in above drawings. Rakish McKeen was depicted (right) in 1909 newspaper ad plugging spark plugs. All: Author's Collection

body design; it was simple to operate because "all the motorman has to do is look at the indicator to know which lever to move," and above all, it was an economic godsend to the hard-pressed railroads because "a locomotive requires 14 tons of fuel and 7,000 gallons of water while the McKeen car, to run the same distance, needs only 50 gallons of gasoline."

A major design change came in 1906 with introduction of the center-door car. The M-7 was also the first to sport port-hole windows which, McKeen explained, strengthened the lightweight steel body. Also, the car design had been lengthened to 70 feet to provide space for baggage and mail. (One of the shorter cars had been given a small four-wheel trailer of McKeen design to haul baggage and express.) The M-7 was used on the Erie Railroad before being returned to the UP.

Then came the M-8 which boasted the first gasoline engine designed and built by McKeen. The 200-hp power plant was patterned closely after the usual marine engine but had a McKeen-designed carburetor. The new 4.1 ratio drive had specially cast steel gears instead of bronze; straight air brakes operated on all wheels.

By late 1907 McKeen had convinced Harriman to set him up as an independent manufacturer. The rail magnate was most generous: he turned over UP's north shop complex to McKeen, arranged to buy half the stock of the new corporation and turn over the rest to McKeen, arranged interviews with railroad bigwigs the country over and even threw a swank industry reception and banquet for McKeen in New York City. Trial runs on Harriman and other lines continued apace and interest in McKeen's new product indeed ran high among railroad men in 1908. The McKeen Motor Car Co. was officially launched on July 1, 1908, with Fred Jumper, of the UP, as sales manager and 50 employees on the payroll.

Not unexpectedly, Union and Southern Pacific quickly became McKeen's best customers. The two roads purchased 33 of the first 38 cars produced in the 1905-1908 period. The first "outside" order apparently comprised two cars for the Los Angeles & San Diego Beach in 1907, a short line serving the San Diego northern suburbs which later gave way to an electric interurban. The Chicago & Northwestern ordered one car in 1909 and the Santa Fe sampled a couple of McKeens in 1910. Also that year came purchases from Rock Island (four cars) and Chicago Great Western (three).

McKeen entered the foreign market in 1911 with sale of two 5'3" gauge cars to Victorian Railways of Australia. This was followed in 1912 by an order of five



INTERIORS of McKeens were certainly distinctive. Noteworthy in Union Pacific car No. 8 was the art glass partitions flanking the drop-center entrance (above), while an early version of individual seating was used on McKeen's unusual bus (below). Said seat employed a sort of plunger (right) to dampen car's rough ride as demonstrated by stylishly attired but otherwise unidentified lady.

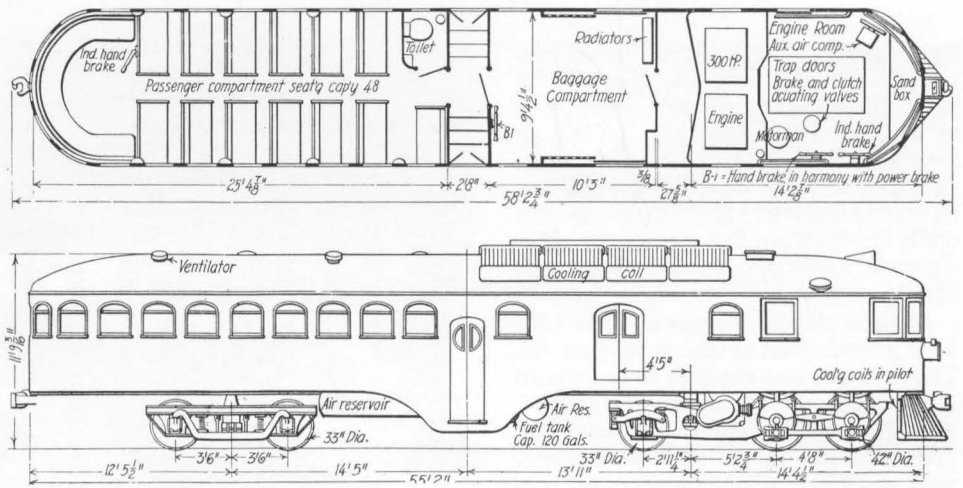
*Union Pacific;  
Washbish Collection (2)*



3'6" cars by the Queensland Government Railway also from Down Under. Later McKeen sold a single car to the Norte de Cuba, and some second-hand cars wound up in Mexico.

By 1912, McKeen was having trouble marketing his product. Orders from outside railroads were slow, and the parent lines, Union and Southern Pacific, weren't ordering at all; they had overbought in the first place and many of their McKeen cars were sitting idle. The arguments over high maintenance cost and low reliability were raging again, and a defensive McKeen hurled reams of tailored statistics at his critics (e.g., only 161 motor car failures in 21,456 trips up to August 10, 1910) in a vain attempt to rebut the complaints. Even letters to the Harriman Lines' New York offices begging for routine maintenance contracts went unacknowledged. Harriman was now dead, and McKeen's name was no longer magic in high places.

After unsuccessful attempts to build and market an industrial 0-4-0 switcher and a weedburner, McKeen built a few new cars until 1917 when the last unit was outshopped for the Army Air Service. A photo of this unit survives but its intended use is not known. One noteworthy accomplishment was production of the biggest McKeen car ever built—for the Southern Utah Railway in 1916. This car had two driving axles coupled by outside rods, and a 300-hp engine with chain drive to the axles. It replaced steam trains between Price and Hiawatha, Utah—18 miles of sharp curves and 4.92 percent grades. The 58-foot car weighed 91,000 pounds.



**MOST** powerful McKeen was 300-hp Southern Utah Railroad car (above). Chicago Great Western had McKeen cars converted into "Bluebird" pre-streamliner (below) while final version McKeen from Bluebird equipment wound up as baggage-motor and is shown at Winona, Minn., in 1949.

*A.E. Barker Collection; Louis A. Marre Collection*



The move to heavier cars had started around 1913 and included the construction of a sample 50-foot trailer so that rail motorcar trains could be operated with McKeen equipment. This approach was also taken by some individual railroads, notably the Chicago Great Western which had its three McKeens rebuilt (by EMC) into the stylish "Blue Bird" pre-streamliner. The

motor and two trailers included sleeper, lounge, buffet and coach sections. McKeen also employed factory-installed ball bearings on some units after 1913.

The World War I year of 1917 marked the last output by McKeen of complete cars and the firm was dissolved in 1920. The UP bought out McKeen's interest and paid his debts; McKeen reportedly came out of it a fairly wealthy man and

retired to California, where he died in 1946.

After McKeen's plant closed down, the UP, in 1927, built two additional cars (M-29 and M-30) with unused McKeen bodies. In the lore of the rail motorcar, the McKeen legend lives on quite larger than life, thanks to the striking personality of one man and his torpedo-shaped vehicle.

## McKeen

ORDER	BUILT	FOR RAILROAD	ROAD NO.	WGT.	LGTH.	SEAT	POWER PLANT	REMARKS
1	3/1905	UPRR	1	20t	31'	25	Riotti 100hp	Retired 6/1913; wooden
2	9/1905	UPRR	2	28t	56' 8"	38	Riotti 100hp	Burned 1/1915
3	11/1905	UPRR	M-3	35t	55' 2"	57	Riotti 100hp	To OSL (II) M-62 in 9/24. Rblt tlr T-52, 1925
4	12/1905	UPRR	M-4	35t	55' 2"	57	Riotti 100hp	Retired 11/1922
5	12/1905	UPRR	M-5	35t	55' 2"	38	Riotti 100hp	Retired 4/1916
6	2/1906	UPRR	M-6	35t	55' 2"	57	Riotti 100hp	Wrecked 4/1925; rblt with body 103
7	3/1906	Erie	4000	27t	55' 2"	75	Riotti 100hp	Ret to UPRR 7, then M-7
8	7/1906	UPRR	M-8	30t	55' 2"	49	200hp gasoline	To tlr T-19, 9/1924; 1st car w/McKeen eng.
9	8/1906	UPRR	M-9		55' 2"	38	100hp gasoline	Retired 11/1922; had square windows
10	7/1907	UPRR	M-10	34t	55' 2"	54	200hp gasoline	Retired 4/1934
11	7/1907	UPRR	M-11	38t	55' 2"	16	200hp gasoline	Retired 7/1942
12	8/1907	UPRR	M-12	35t	55' 2"	50	200hp gasoline	Retired 6/1940
13	9/1907	UPRR	M-13	35t	55' 2"	34	200hp gasoline	Wrecked 6/1936
14	11/1907	ICRR	111	40t	55' 2"	65	200hp gasoline	Retired 1925
	1907	Erie	4001	40t	55' 2"	75	200hp gasoline	
17	1907	LA & San Diego Beach	1	30t	55' 2"	75	200hp gasoline	
	10/1907	UPRR	M-17	40t	55' 2"	50	200hp gasoline	Retired 1940
	1907	LA & San Diego Beach	2	30t	55' 2"	75	200hp gasoline	
19	12/1907	UPRR	M-19	40t	55' 2"	48	200hp gasoline	Retired 7/1942
20	9/1908	SP	1	30t	55' 2"	75	200hp gasoline	Ex SP 20, Scr 7/1920
	1908	Pgh & Silver Creek	3 "Mary"	30t	55'	75	200hp gasoline	To Red River Lumber Co 12
	1908	CNW	1	30t	55' 2"	75	200hp gasoline	
23	8/1908	SP	3	30t	55' 2"	71	200hp gasoline	Ex SP 23, scr. 2/1923
24	8/1908	SP	5	30t	55' 2"	71	200hp gasoline	Ex SP 24, scr. 2/1923
25	8/1908	SP	7	30t	55' 2"	71	200hp gasoline	Ex SP 25, scr. 2/1923
26	8/1908	SP	9	30t	55' 2"	71	200hp gasoline	Ex SP 26, scr. 5/1923
27	8/1908	SP	11	30t	55' 2"	71	200hp gasoline	Ex SP 27, scr. 3/1915
28	8/1908	SP	13	30t	55' 2"	71	200hp gasoline	Ex SP 28, scr. 5/1923
29	9/1908	SP	15	30t	55' 2"	71	200hp gasoline	Ex SP 29, scr. 2/1923
30	9/1908	SP	17	30t	55' 2"	71	200hp gasoline	Ex SP 30, scr. 2/1923
31	12/1908	UPRR	M-20	35t	55' 2"	50	200hp gasoline	Retired 12/1944
	7/1908	San Diego Cuyamaca & Eastern	"Cuyamaca"	34t	55' 2"	75	200hp gasoline	To Yuma Valley RR, then Alaska RR
33	2/1909	SP	19	30t	55' 2"	69	200hp gasoline	Retired 11/1925
34	2/1909	SP	21	30t	55' 2"	69	200hp gasoline	Retired 6/1925
35	2/1909	SP	23	30t	55' 2"	70	200hp gasoline	Retired 5/1923
36	1909	SP	25	30t	55' 2"	69	200hp gasoline	Retired 6/1926
37	3/1909	SP	27	30t	55' 2"	69	200hp gasoline	Retired 4/1936
38	3/1909	SP	29	30t	55' 2"	69	200hp gasoline	Retired 12/1936
	1909	Northern Pacific	A-1	30t	55' 2"	40	200hp gasoline	
	2/1909	ATSF	M-100	32t	55' 2"	75	200hp gasoline	Scr. 8/1921
42	2/1909	ATSF	M-101	32t	55' 2"	75	200hp gasoline	Scr. 10/1921
	6/1909	St Jos & Gr Isl	110	32t	55' 2"	36	200hp gasoline	Retired 9/1934
43	8/1909	Erie	4002	32t	70'	64	200hp gasoline	
44	8/1909	SP	31	30t	55' 6"	69	200hp gasoline	Retired 4/1936
45	1909	SP	33	30t	55' 6"	69	200hp gasoline	Retired 6/1925



ORDER	BUILT	FOR RAILROAD	ROAD NO.	WGT.	LGTH.	SEAT	POWER PLANT	REMARKS
46	2/1910	SP	35	30t	55' 6"	69	200hp gasoline	Retired 11/1923
	12/1909	CRI&P	9020	30t	70'	64	200hp gasoline	Reblt. dbl-end 1/1926; Retired 2/1937
48	8/1909	Maricopa & Phoenix	1	30t	55' 6"	72	200hp gasoline	To Ariz Eastern 1, then SP 69; scr. 7/1934
49	8/1909	Maricopa & Phoenix	2	30t	55' 6"	72	200hp gasoline	To Ariz Eastern 2, then SP 70; scr. 6/1935
50	8/1909	FC de Sonora	50	30t	55'	75	200hp gasoline	To SP 50, 2/1911; scr. 1936
51	9/1909	Oregon Short Line	470	35t	70'	38	200hp gasoline	Re# M-60; to P&IN M-60; OSL M-60; Ret. 12/44
52	8/1909	Oregon SL	480	35t	70'	38	200hp gasoline	Re# M-61
	2/1909	Bel. Bay & Brit Col	2 "Kuhlshan"	40t	70'	64	200hp gasoline	To CMSTP&P 5908
54	9/1909	UPRR	M-21	40t	70'	50	200hp gasoline	Reblt., gas-elec 7/1942; Retired 1/1948
55	11/1909	UPRR	M-22	40t	70'	38	200hp gasoline	Retired 5/1945
56	8/1909	Salem Falls & West	1	34t	70'	64	200hp gasoline	To SP 67, 2/1916; Retired 1/1934
57	10/1909	St Jos & Gr Isl	111	40t	70'	48	200hp gasoline	Retired 1944
	1910	Pennsylvania	4701	34t	70'	83	200hp gasoline	
59	1/1910	St Jos & Gr Isl	112	40t	70'	38	200hp gasoline	Burned in wreck, 11/1920
	10/1910	Southern Ry	3	40t	70'		200hp gasoline	
61	11/1909	Oregon Ry & Nav	1	33t	55' 2"	38	200hp gasoline	To O-WRY&N 600, Re# M-76; Retired 7/1942
62	11/1909	Oregon & Calif	41	30t	55' 2"	62	200hp gasoline	To SP 41
63	3/1910	Oregon Ry & Nav	2	33t	55' 2"	36	200hp gasoline	To O-WRY&N 601, Re# M-77; Retired 4/1940
64	2/1910	SP	63	20t	55' 2"	75	200hp gasoline	Ex SP (08C) 42
	4/1910	Virg & Truckee	22	34t	70'		200hp gasoline	Retired 9/1945
66	5/1910	North Coast	A-2	33t	55' 2"	36	200hp gasoline	To O-WRY&N 602, Re# M-78; Retired 9/1934
	1/1911	Chas City West	51	30t	55' 2"	75	200hp gasoline	To Mont Wyo & Sou "Bear Creek"
68	7/1910	North Coast	A-1	33t	55' 2"	36	200hp gasoline	To O-WRY&N 603, Re# M-79; Retired 9/1934
69	7/1910	Ariz Eastern	4	35t	55' 2"	56	200hp gasoline	To SP 75, 1/1928; Retired 5/1931
70	1910	St Jos & Gr Isl	113	40t	70'	38	200hp gasoline	To UP M-14, 7/1917; Scr. 8/1935
71	4/1910	SP	37	35t	70'	62	200hp gasoline	Scr. 4/1936
72	4/1910	SP	39	35t	70'	62	200hp gasoline	Scr. 12/1936
73	1910	St Jos & Gr Isl	114	40t	70'	48	200hp gasoline	Burned and scr. 1912
74	3/1910	St Jos & Gr Isl	115	40t	70'	48	200hp gasoline	Burned and scr. 8/1928
75	6/1910	LA & Salt Lake	1	40t	70'	53	200hp gasoline	Re# M-100; Retired 7/1942
	7/1910	Woodstk & Sycamore	707	28t	55'	75	200hp gasoline	Sold 1914
	2/1910	Hock & Sun Creek	1	30t	55'	75	200hp gasoline	To Jamestown Westf. & NW (?)
78	9/1910	Ore Ry & Nav	3	37t	70'	44	200hp gasoline	To O-WRY&N 604, Re# M-80; Retired 6/1936
79	8/1910	Ore & Calif	65	35t	70'	86	200hp gasoline	To SP 65
	7/1910	CRI&P	9021	40t	70'	48	200hp gasoline	Wrecked 12/1911
	7/1910	CRI&P	9022	40t	70'	48	200hp gasoline	Reblt dbl-end 1925; Retired 2/1937
	1910	CRI&P	9023	40t	70'	48	200hp gasoline	Reblt dbl-end 1925; Retired 5/1937
	10/1910	CRI&P	9024	40t	70'	48	200hp gasoline	Reblt dbl-end 1925; Retired 2/1937
	10/1910	Chi Gt Western	1000	34t	70'		200hp gasoline	Re# 1004, 1928; Scr. 10/1950
	10/1910	Chi Gt Western	1001	34t	70'		200hp gasoline	Reblt 1928 tlr. 1001; Scr. 5/1945
	2/1910	Chi Gt Western	1002	34t	70'		200hp gasoline	Reblt steam car 1923, gas-elec. 1928; Re# 1000
	1910	Norfolk Sou	90	39t	70'	64	200hp gasoline	Converted to electric, 1925
88	1/1911	Ariz Eastern	3	35t	70'	80	200hp gasoline	To SP 73, 1/1928; Retired 8/1930
89	1910	Denver Lar & NW	M-2 (D)	40t	70'	38	200hp gasoline	To Gt West M-2, then UP M-5; Ret. 12/1944
90	5/1910	Buffalo Rochest & Pittsburgh	1001	38t	70'	84	200hp gasoline	To Deer River RR 1917, then Narragansett Pier 1921
	11/1910	Woodstk & Sycamore	709	28t	55'	48	200hp gasoline	To Alberta & Gt Waterways, 1914
92	12/1910	SP	43	30t	70'	62	200hp gasoline	Scr. 6/1936
93	9/1910	SP	45	30t	70'	62	200hp gasoline	Scr. 1939
94	1/1911	SP	47	30t	70'	62	200hp gasoline	Scr. 4/1936
95	1/1911	SP	49	30t	70'	62	200hp gasoline	Scr. 12/1936
96	2/1911	SP	51	30t	70'	62	200hp gasoline	Scr. 12/1936
97	2/1911	SP	53	30t	70'	62	200hp gasoline	Scr. 1/1934
98	2/1911	SP	55	30t	70'	62	200hp gasoline	Scr. 1/1934
99	2/1911	SP	57	30t	70'	62	200hp gasoline	Scr. 1/1934
100	2/1911	SP	59	30t	70'	62	200hp gasoline	Wrecked 1/1921

ORDER	BUILT	FOR RAILROAD	ROAD NO.	WGT.	LGTH.	SEAT	POWER PLANT	REMARKS
101	3/1911	SP	61	30t	70'	62	200hp gasoline	Scr. 1/1939
	4/1911	Sand Springs Ry	1	40t	70'	38	200hp gasoline	To Riviera Beach & Wn. 101, 1912
103	1911	Sand Springs Ry	2	40t	70"	38	200hp gasoline	To Midland Valley, 1916
104	1911	ATSF	M-103	42t	70'	77	200hp gasoline	To SA&AP 301, 3/1922; then 501; then T&NO 1007
105	1911	ATSF	M-102	42t	70'	85	200hp gasoline	To UPRR M-25, 10/1922; Retired 12/1944
106	5/1913	Ore Wsh Ry & Nav	607	37t	70'	52	200hp gasoline	Re# M-83; Retired 7/1942
107	1911	Denver Lar & NW	M-1 (C)	40t	70'	38	200hp gasoline	To Gt Western M-1 then UP (2nd) M-4
	7/1911	Woodstk & Sycamore	711	26t	55'	75	200hp gasoline	Sold 1914; later to Alb Gt Waterways, 1951
	5/1911	Ann Arbor	1	35t	70'	83	200hp gasoline	Arched windows
	6/1911	Ann Arbor	2	35t	70'	83	200hp gasoline	Arched windows
	6/1911	Ann Arbor	3	35t	70'	83	200hp gasoline	Arched windows
	8/1911	Ann Arbor	4	35t	70'	83	200hp gasoline	Arched windows
	7/1911	Ann Arbor	5	35t	70'	83	200hp gasoline	Arched windows
	1911	Jamest Chat & L Erie	1	30t	55'		200hp gasoline	Sold to line in Missouri
115	7/1911	Oregon SL	490	37t	70'	70	200hp gasoline	Re# M-62, to UP M-15, 10/1917
116	7/1911	Oregon SL	491	40t	70'	38	200hp gasoline	Re# M-63, to UP M-16, 10/1917
117	8/1911	Oregon SL	492	43t	70'	50	200hp gasoline	Re# M-64, Retired 8/1937
118	9/1911	Oregon SL	493	40t	70'	38	200hp gasoline	Re# M-65, to UP M-18, 10/1917
119	6/1911	Ore Wsh Ry & Nav	605	35t	70'	44	200hp gasoline	Re# M-81, Retired 6/1936
120	9/1911	Ore Wsh Ry & Nav	606	37t	70'	44	200hp gasoline	Re# M-82, Retired 8/1940
121	10/1911	Saratoga & Encampment	M-1	40t	70'	30	Samet 150hp	To UPRR 2nd M-9, Retired 5/1945
122	6/1923	UPRR	M-26	38t	70'	48	200hp gasoline	Used; ex-?; to LA & SL M-101, 1925
	6/1911	Victoria Rys (Aus)	1		70'	73	200hp gasoline	5' 3" gauge; made tlr
	6/1911	Victoria Rys (Aus)	2		70'	73	200hp gasoline	5' 3" gauge; made tlr
	1911	Peoples Elect	1		70'		200hp gasoline	Muskogee OK
127	1912	Tenn Ky & Nor	7		70'		200hp gasoline	Arched windows
	1912	Soo Line	1	38t	70'	84	200hp gasoline	To Minnesota Western 1
	1912	Queensland Govt Rys (Aus)	M-1	30t	59' 2"	69	200hp gasoline	3' 6" gauge
	1912	Queensland Govt	M-2	30t	59'	69	200hp gasoline	3' 6" gauge
	1912	Queensland Govt	M-3	30t	59'	69	200hp gasoline	3' 6" gauge
	1912	Queensland Govt	M-4	30t	59'	69	200hp gasoline	3' 6" gauge
	1912	Queensland Govt	M-5	30t	59'	69	200hp gasoline	3' 6" gauge
	1912	Weatherford, Mineral Wells & Nor	7	37t	70'	105	200hp gasoline	
	1912	Weatherford, Mineral Wells & Nor	8	37t	70'	105	200hp gasoline	
136	1913	Bessemer & LE	1	33t	55'	48	200hp gasoline	Retired 1916, Scrapped 1927
	6/1913	Mpls Northern	"Anoka"	35t	55'	36	200hp gasoline	To UPRR M-28, 1923; Retired 7/1942
137	6/1913	Mpls Northern	"Minneapolis"	35t	55'	50	200hp gasoline	To UPRR M-27, 1923
	1913	Morgan's La RR&S	1001	39t	70'	20	200hp gasoline	To T&NO 1001; Scr. 12/1920
	1913	Morgan's La RR&S	1002	39t	70'	20	200hp gasoline	To T&NO 1002; Scr. 4/1935
	1913	Galveston Harrisburg & S Antno	1003	39t	70'	20	200hp gasoline	To T&NO 1003, Scr. 10/1929
	1913	GH&SA	1004	39t	70'	20	200hp gasoline	To T&NO 1004, Scr. 4/1931
	1913	Houston & Tex Cent	1005	39t	70'	20	200hp gasoline	To T&NO 1005, Scr. 11/1929
	1914	Arkansas NW	100	39t	55'		200hp gasoline	To SLSF
	1914	Butler County	10	30t	55'		200hp gasoline	To trailer 1924 (#33) to SL-SF
148	1914	People's Electric	2			70	200hp gasoline	Muskogee, Okla.
	5/1915	UPRR	M-23	37t	70'	Bag.	300hp gasoline	Rblt gas-elec 1929; Ret. 4/1947
	1914	Cent NY Sou	101	37t	70'		200hp gasoline	Scr. 1925
	1914	Cent NY Sou	102	37t	70'		200hp gasoline	Scr. 1925
	1916	Norte de Cuba	800		70'		200hp gasoline	Rear & cen ent
153	1916	Southern Utah	100	45½t	58' 3"		300hp gasoline	6 wheel front truck
	12/1917	UPRR	M-24		70'	Bag.	300hp gasoline	Wrecked 5/1948, rblt gas-el 1929
	1917	Army Air Svc	1		70'	Bag.	200hp gasoline	Flat front