Benner Cycles & the 9/56 year grid

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Benner Cycles & the 9/56 year grid

"The science of price cycles is yet in the cradle of its infancy. Each rising science has fought and struggled with superstition and ignorance, and in all ages no effort has been spared to blast them in the bud of their being." Samuel Benner 1875

David McMinn

Introduction

In 1875, Samuel Benner published his business and commodity price forecasts, which presented charts of cycles for a range of commodities - pig iron, corn, hogs and cotton (Benner, 1875).

His three key cycles are presented in **Diagram 1** and consist of:

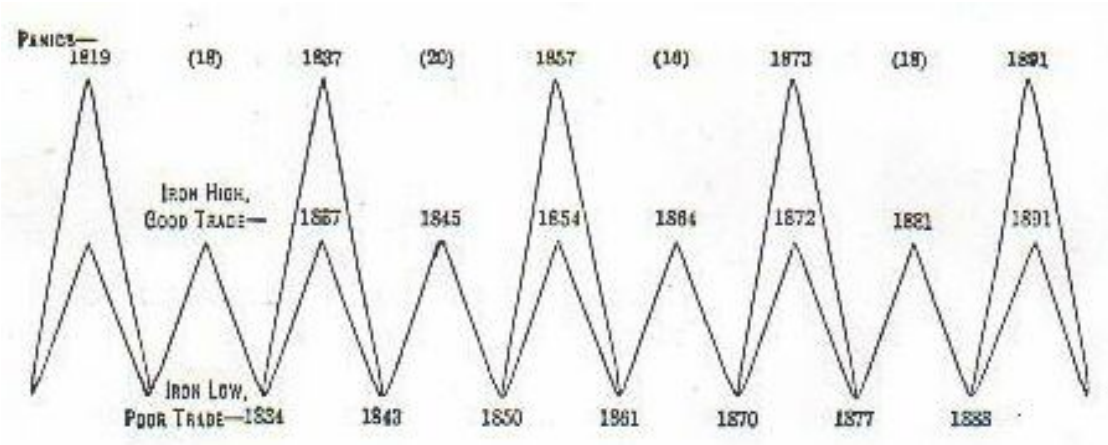
8-9-10 Year Pig Iron Price Cycle Highs repeating every 27 years (middle line).

11-9-7 Year Pig Iron Price Cycle Lows repeating every 27 years (bottom line).

16-18-20 Year Cycle with panics repeating every 54 years – **1819**, **1837**, **1857**, **1873** - (upper line).

Apparently, the diagram was originally compiled by Tritch (1872), but it was not attributed to him.

Diagram 1
THE ORIGINAL BENNER CYCLE CHART (1875).



Sources: Tritch (1872), Benner (1875).

Two follow up versions have been produced, based on Benner's 1875 original chart. In neither case was the work attributed to Benner. One of these was reprinted in the Wall Street Journal (Feb 2, 1933) *"from a chart found in an old desk in Philadelphia in 1902 that was at least 40 years old."* In 1937, Dun's Review published a *"chart found in an old desk belonging to the Overholt Distilling Co near Connelsville Pennsylvania"* in 1902. Both versions were found in old desks, in the same state and in the same year, which defied coincidence. Presumably they were variations of the same story, with only the locations being changed. According to Mogey (1991), the 1933 Wall Street Journal version *"was revised to look better during the 1929 crash and subsequent depression."* Benner viewed the pig iron price cycle as a good indicator of the overall business cycle, with lows

in the economy coinciding with lows in pig iron prices. Benner believed that *"the iron trade is the chief and ruling industry in this country, if not in the world, and as the iron industry rises or falls in the scale of prosperity, so does the general business of the country."* Pig iron production and consumption would have been very important in 19th century industrial economies, but it now only constitutes a minor component of an advanced information economy.

Dewey (1967), the Director of the Foundation for the Study of Cycles, assessed Benner's pig iron price forecasts and thought that they accurately gave "*the years in which to buy, the years in which to sell. If you had used these dates for trading, your percentage gains between 1872 and 1939 would have been 50 times your losses!"* He also regarded Benner's work as *"the most notable forecast of prices in existence."*

Interestingly, Mogey (1991) noted that "*a computer would not have seen these regular deviations. When the Foundation* [for the Study of Cycles] *tested pig iron, a 9.22 year cycle was found but not Benner's better fit."*

The 9/56 year cycle consists of a grid with intervals of 56 years on the vertical (called sequences) and multiples of 9 years on the horizontal (called subcycles). Various financial phenomena cluster with high significance in these patterns.

* Major US and Western European financial panics 1760 - 1940 (McMinn, 1986, 1993, 2021).
* Beginning and ending of US bear markets as measured by the Dow Jones Industrial Average (DJIA) 1886-2021 (McMinn, 2022).
* Major DJIA annual one day falls 1886-2021 (McMinn, 2023).

Clearly, the 9/56 year cycle plays a key role in US trading activity. Possible links between the Benner and 9/56 year cycles are to be explored in this paper.

The sequences in the 9/56 year cycle have been numbered from 01 to 56, with 1761, 1817, 1873, 1929, 1985 being designated Sequence 01, 1762, 1818, 1874, 1930, 1986 as Sequence 02 and so forth (McMinn, 2021). The year of best fit has been adopted in the various tables and a Chi Square test has been applied where appropriate in the text.

9/56 Year Cycle

The 54 year cycle arises from panics every 16, 18, 20 years (upper line **Diagram 1**). According to Benner (1875), *"it takes panics 54 years in their order to make a revolution or to return to the same order"*. The key years of 1819, 1837, 1857 and 1873 all were found in the 9/56 year layout in **Table 1**. This grid comprised 18% of the complete 9/56 year cycle, yet it accounted for 50% of the 30 major crises listed by Kindleberger (Appendix B 1996) for the 1760-1940 period (McMinn, 2021).

Table 1
THE 9/56 YEAR GRID & FINANCIAL CRISES
Year beginning March 1

Sq 32	Sq 41	Sq 50	Sq 03	Sq 12	Sq 21	Sq 30	Sq 39	Sq 48	Sq 01
			1763	1772	1781	1790	1799	1808	1817
1792	1801	1810	**1819**	1828	**1837**	1846	1855	1864	**1873**
1848	**1857**	1866	1875	1884	1893	1902	1911	1920	1929
1904	1913	1922	1931	1940	1949	1958	1967	1976	1985
1960	1969	1978	1987	1996	2005	2014	2023		
2016									

Years highlighted in **red** fall in Benner's 54 year panic cycle.

Pig iron price highs during good years took place every 8, 9, 10 years accoding to Benner (middle line **Diagram 1**). The peak years in 1810, 1837 and 1864 are found in **Table 1**, while the remaining highs show up in another sector of the complete 9/56 year grid (see **Table 2**).

Table 2
THE 9/56 YEAR GRID &
BENNER'S 8-9-10 YEAR CYCLE OF PIG IRON PRICE HIGHS

Sq 02	Sq 11	Sq 20	Sq 29	Sq 38	Sq 47	Sq 56	Sq 09
					1807	1816	1825
1818	**1827**	1836	**1845**	**1854**	1863	**1872**	**1881**
1874	1883	1892	1901	1910	1919	1928	1937
1930	1939	1948	1957	1966	1975	1984	1993
1986	1995	2004	2013				

Years denoted in **red** fall in Benner's 8-9-10 year cycle of pig iron price highs.

The time frame on the vertical columns may be increased from one to two years, thereby creating a 'double sequence' pattern. All years in Benner's 8-9-10 year cycle of pig iron price highs appeared in **Table 3**, which represented 32% of the complete 9/56 year grid. A strong double sequence effect also was observed for US and Western European financial crises between 1760 and 1940 (McMinn, 2021).

Table 3
THE 9/56 YEAR GRID & THE 8-9-10 YEAR CYCLE OF PIG IRON PRICE HIGHS
A DOUBLE SEQUENCE EFFECT
Two years beginning January 1

Sq 49	Sq 02	Sq 11	Sq 20	Sq 29	Sq 38	Sq 47	Sq 56	Sq 09
						1807	1816	1825
1809 **1810**	**1818**	**1827**	1836 **1837**	**1845**	**1854**	1863 **1864**	**1872**	**1881**
1865	1874	1883	1892	1901	1910	1919	1928	1937
1921	1930	1939	1948	1957	1966	1975	1984	1993
1977	1986	1995	2004	2013				

Years denoted in **red** fall in Benner's 8-9-10 year cycle of pig iron price highs.

Pig iron price lows occurred every 11, 9, 7 years (bottom line **Diagram 1**) and repeated every 27 years. The low years all fell in the 9/56 year grid in **Table 4**, representing 25% of the complete 9/56 year grid.

Table 4
THE 9/56 YEAR GRID &
BENNER'S 11-9-7 YEAR CYCLE OF PIG IRON PRICE LOWS
Calendar years

Sq 56	Sq 09	Sq 18	Sq 27	Sq 36	Sq 45	Sq 54	Sq 07	Sq 16	Sq 25	Sq 34	Sq 43	Sq 52	Sq 05
											1803	1812	1821
					1805	1814	**1823**	1832	1841	**1850**	1859	1868	**1877**
1816	1825	**1834**	**1843**	1852	**1861**	**1870**	1879	**1888**	**1897**	1906	1915	1924	1933
1872	1881	1890	1899	1908	1917	1926	1935	1944	1953	1962	1971	1980	1989
1928	1937	1946	1955	1964	1973	1982	1991	2000	2009	2018			
1984	1993	2002	2011	2020									

The 56 year sequences are separated by an interval of 9 years.
Years in Benner's cycle of pig iron price lows have been highlighted in **red**.

Overall, each of Benner's cycles clustered within patterns of the 9/56 year cycle.

Forecasting Accuracy

According to Benner, financial panics take place every 16-18-20 years, giving a 54 year series – 1819, 1837, 1857 and 1873. After this, the cycle became less accurate (see **Table 5**). Successively adding 54 years to 1837, 1857, 1873 gave several years, of which only 1981 experienced a major US crisis. In contrast, successively adding 56 years to 1819, 1837, 1857 and 1873 would have correctly anticipated major panics in 1893, 1929 and 1931. Benner assumed a panic cycle of 54 years rather than the superior alternative of 56 years. Surprisingly, Benner and the 56 year cycles were both good indicators of US recessions during the 20th century. The 56 year cycle correctly aligned with recessions until 1980 (no downturns were recorded in 1985, **1987** or 2005), while the Benner Cycle gave false predictions in 1965 and 1999. In 2019, a sharp, deep recession occurred a little later than expected commencing in early 2020.

Table 5
FORECASTING ACCURACY OF THE BENNER & 56 YEAR CYCLES

Benner Cycle (a)		**56 Year Cycle (b)**	
Series	**US Crisis**	**Series**	**US Crisis**
1819	Panic	**1819**	Panic
1837	Panic (May 10)	**1837**	Panic (May 10)
1857	US banking panic (Oct 13)	**1857**	NY banking panic (Oct 13)
1873	Black Friday (Sep 19)	**1873**	Black Friday (Sep 19)
1891	7/1890-5/1891 recession	1875	1873-1877 depression
1911	Antitrust crisis 1/1910-1/1912 recession	**1893**	Black Wednesday (Jul 26) 1/1893-6/1894 depression
1927	10/1926-11/1927 recession	1913	1913-1914 war panics 1/1913-12/1914 recession
1945	Ending of WWII 2/1945-10/1945 recession	**1929**	Black Monday (Oct 28) 8/1929-3/1933 depression
1965	No impact	**1931**	Great Depression 8/1929-3/1933
1981	Tight Fed monetary policy 7/1981-11/1982 recession	1949	Recession 11/1948-10/1949
1999	No impact	1969	Recession 12/1969-11/1970
2019	Corona virus crisis (c) 2/2020-4/20 recession	**1985**	US$ crisis
2035	????	**1987**	Black Monday (Oct 19)
		2005	No impact
		2025	????

(a) 54 years was added successively to each of the panic years in Benner's original cycle – 1819, 1837, 1857 and 1873.
(b) 56 years was added successively to each of the panic years in Benner's original cycle - 1819, 1837, 1857 and 1873.
(c) A deep recession commenced slightly later than envisaged in February 2020.
Major crisis years listed by Kindleberger (Appendix B, 1996) denoted in **bold.**

Dewey (1967) considered the true length of Benner's pig iron price cycle to be 9.2 years and thus his *"forecast got off the track by one year every five waves. By 1939 his projection was no longer usable."* Adding a year to the five most recent years in the Benner extrapolation would have given a subcycle of US crises.

	Benner	Add one yr		US Crisis
	1945	+ 1	1946	Stock market panic (Sep)
+ 20	1965	+ 1	1966	Credit crunch (Aug)
+ 16	1981	+ 1	**1982**	Mexican debt crisis (Aug)
+ 18	1999	+ 1	2000	After Greenspan Bubble
+ 20	2019	+ 1	2020	Corona virus panic (Mar)

Benner Cycles & Historical Panics

A variation of Benner's 11-9-7 year cycle was established by McMinn (2006) in patterns of US and Western European panics (see **Table 6**).

Table 6
The 11-9-7 YEAR PANIC CYCLE 1815-1930

Series	Year	Sq	US & Wn European Panics
	1819	Sq 03	US panic
+ 11	1830	Sq 14	French panic. July Revolution
+ 9	1839	Sq 23	US banking panic (Oct 9)
+ 7	1846	Sq 30	No impact
+ 11	**1857**	Sq 41	US banking panic (Oct 13) European panics (Oct - Nov)
+ 9	**1866**	Sq 50	UK Black Friday (May 11)
+ 7	**1873**	Sq 01	Austrian Black Friday (May 9) US Black Friday (Sep 19)
+ 11	1884	Sq 12	US panic (May 14)
+ 9	**1893**	Sq 21	US Black Wednesday (Jul 26)
+ 7	1900	Sq 30	No impact
+ 11	1911	Sq 39	German panic (Sep). Morocco crisis
+ 9	**1920**	Sq 48	US and UK crisis. After Inflation
+ 7	1927	Sq 55	German Black Friday (May 13)

Major crisis years listed by Kindleberger (Appendix B, 1996) denoted in **bold.**
Source: McMinn (2006).

McMinn (2006) also presented two 16-20-20 year panic cycles (see **Table 7**), being close variations of Benner's original 16-18-20 year cycle. All years in these cycles appeared in **Table 1**.

Table 7
16-20-20 YEAR PANIC CYCLES 1830-2000

Series 1	Year	Sq	US Panics
	1837	Sq 21	Panic (May 10)
+ 20	**1857**	Sq 41	Banking panic (Oct 13)
+ 16	**1873**	Sq 01	Black Friday (Sep 19)
+ 20	**1893**	Sq 21	Black Wednesday (Jul 26)
+ 20	1913	Sq 41	1913-14 war panics
+ 16	**1929**	Sq 01	Black Monday (Oct 28)

+ 20	1949	Sq 21	Recession 11/1948-10/1949
+ 20	1969	Sq 41	Recession 12/1969-11/1970
+ 16	**1985**	Sq 01	US$ crisis (Sep)
	2005	Sq 21	No impact
Series 2	**Year**	**Sq**	**US & Wn European Panics**
	1772	Sq 12	British panic (Jun)
+ 20	**1792**	Sq 32	US panic (Mar 22) British panic (Jan 1793)
+ 16	1808	Sq 48	US Embargo Depression
+ 20	**1828**	Sq 12	French panic (Dec 1827)
+ 20	**1848**	Sq 32	French panic (Mar)
+ 16	**1864**	Sq 48	French panic (Jan) US panic (Apr 16-18)
+ 20	1884	Sq 12	US panic (May 14)
+ 20	1904	Sq 32	No impact
+ 16	**1920**	Sq 48	US and UK post WWI crises
Major crisis years listed by Kindleberger (Appendix B, 1996) denoted in **bold.** **Source**: McMinn (2006).			

A J Frost's Adaptations

Frost presented variations of Benner's theory (Pretcher & Frost, 1978). In his approach, DJIA peaks occurred every 8-9-10 years, with two 16-18-20 year cycles of historic lows. Frost's findings were not an extrapolation of Benner's earlier work into the 20th century, but were based on Benner's series of 8-9-10 years and 16-18-20 years. These were aligned with observed trends in the 20th century.

16-18-20 Year Cycles. According to Frost, there were two 16-18-20 year series of DJIA lows, one commencing in 1903 and another in 1913 (see **Table 8**). In both series, some DJIA lows deviated markedly from the ideal, creating a cedibility problem.

Table 8
FROST'S 16-18-20 YEAR CYCLES OF DJIA BEAR MARKET LOWS

Commencing in 1903			
Add	**54 yc**	**US Event**	**DJIA BM Low Yr ending Nov 15**
	1903	Rich Man's Panic	Nov 09, 1903
+ 18	1921	After inflation crisis	Aug 24, 1921
+ 20	1941	Pearl Harbor attack	Apr 28, 1942 5.5 months late
+ 16	1957	Sputnik scare	Oct 22, 1957
+ 18	1975	1974 oil crisis	Dec 06, 1974
+ 20	1995	Mexican debt crisis	No BM
+ 16	2011	US credit rating lowered	Sep 08, 2011 -16% correction
+ 18	2029	????	????
Commencing in 1913			
Add	**54 yc**	**US Event**	**DJIA BM Low Yr ending Oct 5**
	1913	1913-14 war crises	Nov 02, 1914 (a) 13 months late

+ 20	1933	Bank holiday (Mar 6-13)	Feb 27, 1933
+ 16	1949	Recession	Jun 13, 1949
+ 18	1967	1966 criedit crunch (Aug)	Oct 07, 1966
+ 20	1987	Black Monday (Oct 19)	Dec 03, 1987 (b) Two months late
+ 16	2003	After Tech Mania	Oct 09, 2002
+ 18	2021	Covid crisis	No impact
(a) The NYSE was closed between Jul 30, 1914 and Dec 12, 1914, due to the outbreak of WWI. Global Financial Data calculated the low to have occurred on Nov 02, 1914, based on trading outside the exchange (Durden, 2014). (b) The actual DJIA low took place on the day of the panic (Oct 19). The DJIA low after the panic happened on Dec 3, while the bear market low for the S&P 500 occurred on Dec 4. **Source:** Prechter & Frost (1978).			

By combining the two 54 year cycles in **Table 8**, a series of 10 - 8 - 12 - 8 - 8 - 8 years repeating every 54 years may be generated. This was combined with intervals of 56 years on the vertical to give the grid layout presented in **Appendix 2**. DJIA bear market lows did not fall with significance in this pattern and thus the validity of Frost's 54 year cycles is debatable.

8-9-10 Year Cycle. Frost also presented an 8-9-10 year cycle of DJIA highs (see **Table 9**), a series that was reasonably accurate and prevailed throughout the past 120 years (Pretcher and Frost, 1978). The main discrepancy was the year 1964, which failed to align with the actual high of February 1966.

Table 9
FROST'S 8-9-10 YEAR CYCLE OF DJIA HIGHS

Add	8-9-10 Yr Cycle	Peak at start of BM Yr ending Nov 15
	1892	Mar 04, 1892
+ 10	1902	Jun 17, 1901 5 months early
+ 8	1910	Nov 19, 1909
+ 9	1919	Nov 03, 1919
+ 10	1929	Sep 03, 1929
+ 8	1937	Mar 10, 1937
+ 9	1946	May 29, 1946
+ 10	1956	Apr 06, 1956
+ 8	1964	Feb 09, 1966 14 months late
+ 9	1973	Jan 11, 1973
+ 10	1983	Nov 29, 1983 -15% correction 2 weeks late
+ 8	1991	Jul 16, 1990 4 months early
+ 9	2000	Jan 14, 2000
+ 10	2010	Apr 26, 2010 -14% correction
+ 8	2018	Oct 03, 2018 -19% correction
+ 9	2027	????
Source: Prechter & Frost (1978).		

DJIA highs were plotted on a grid repeating 8-9-10 years on the horizontal and 56 years on the vertical (denoted as an 8-9-10/56 year cycle). The pattern in **Table 10** accounted for 16 of the 39 peaks since 1886, in contrast to an expected figure of about 8 (significant $p < .01$).

Table 10
THE 8-9-10/56 YEAR GRID & DJIA HIGHS 1886-2020
Year ending November 5

Sq 03		**Sq 11**		**Sq 20**		**Sq 30**		**Sq 38**		**Sq 47**	
				1892 0307	+10	1902	+8	1910 **1909** 1119	+9	**1919** 1103	+10
1931	+8	**1939** 0912 **1938** 1112	+9	1948	+10	1958	+8	**1966** 0209	+9	1975	+10
1987 0825	+8	1995	+9	2004	+10	2014	+8	2022			
Continued.....											
Sq 01		**Sq 09**		**Sq 18**		**Sq 28**		**Sq 36**		**Sq 45**	
				1890 0517	+10	1900	+8	1908	+9	1917 **1916** 1121	
1929 0903	+8	**1937** 0310	+9	**1946** 0529	+10	**1956** 0406	+8	1964	+9	**1973** 0111	
1985	+8	1993	+9	**2002** 0319	+10	2012	+8	**2020** 0213			

11-10-7 Year Cycle & DJIA Lows

From Benner's analysis, DJIA bear market lows could have been expected to follow a 11-9-7 year series, but this was not observed. However, an 11-10-7 year cycle of lows was a close variation and it aligned very well with observed patterns in the 80 years to 2000 (see **Table 11**). The 11-10-7 year series repeated every 28 years in contrast to Benner's cycles, all of which were based on 9 and its regular deviations repeating every 27 or 54 years.

Table 11
11-10-7 YEAR CYCLE OF DJIA BEAR MARKET LOWS
1890 – 2016

Add	**11-10-7 Yrs**	**US Event**	**DJIA BM Low Yr ending Nov 5**
	1893	Black Wednesday	Jul 26, 1893
+ 11	1904	1903 Rich Man's Panic	Nov 09, 1903
+ 10	1914	Outbreak of WW 1	Nov 02, 1914 (a)
+ 7	1921	After inflation crisis	Aug 24, 1921
+ 11	1932	Great Depression	Jul 07, 1932
+ 10	1942	1941 US enters WW11	Apr 28, 1942
+ 7	1949	Recession	Jun 13, 1949
+ 11	1960	Recession	Oct 25, 1960 -17% correction
+ 10	1970	Recession	May 26, 1970

+ 7	1977	Stagflation	Feb 28, 1978 Four months late
+ 11	1988	1987 Black Monday	Dec 03, 1987 (b)
+ 10	1998	Russian debt crisis	Aug 31, 1998
+ 7	2005	No event	No low
+ 11	2016	No event	No low

(a) The NYSE was closed from Jul 30, 1914 to Dec 12, 1914, due to the outbreak of WWI. Global Financial Data calculated the low to have occurred on Nov 2, 1914, based on trading outside the exchange (Durden, 2014).
(b) The actual DJIA low occurred on Oct 19, 1987 - the day of the panic. Even so, the low after the panic took place on Dec 4, 1987, closely aligning with the S&P500 bear market low on Dec 5.
Source: McMinn (2006).

A grid repeating 11-10-7 years on the horizontal and muliples of 56 years on the vertical has been presented in **Table 12**. The table contained many DJIA bear market lows, with only two notable exceptions in 1960 (a -17% correction was experienced) and 1977 (the low happened four months later on February 28, 1978). The pattern did not persist beyond 2000 as 2005 and 2016 were uneventful.

Table 12
11-10-7/56 YEAR GRID & DJIA LOWS 1886-2020
Year ending November 5

Sq 21		**Sq 32**		**Sq 42**		**Sq 49**		**Sq 04**		**Sq 14**
										1886
1893 0726	+11	1904 **1903** 1109	+10	**1914** 1102	+7	**1921** 0824	+11	**1932** 0708	+10	**1942** 0428
1949 0613	+11	**1960*** 1025	+10	**1970** 0526	+7	1977	+11	1988 **1987#** 1203	+10	**1998** 0831
2005	+11	2016	+10	2026						

* Low of a -17% correction.
# The actual DJIA low took place on the day of the panic (Oct 19). The DJIA low after the panic happened on Dec 3, while the bear market low for the S&P 500 occurred on Dec 4.
Source: McMinn (2022).

9-9-27/56 Year & 9-27/56 Year Grids

Table 13 consists of a grid repeating 9-9-27 years on the horizontal and 56 years on the vertical (denoted as a 9-9-27/56 year cycle) (McMinn, 2022). It represented 30% of the complete 9/56 year grid, but it only accounted for a mere 5% of all DJIA peaks at the beginning of a bear market (significant $p < .001$). The finding was quite remarkable and unexpected.

Table 13
THE 9-9-27/56 YEAR GRID & THE FEWEST DJIA PEAKS
Year ending November 10

Sq 21		**Sq 30**		**Sq 01**		**Sq 10**		**Sq 19**		**Sq 46**	
								1891	+27	1918	+ 9

1893	+ 9	1902	+27	**1929** 0903	+ 9	1938	+ 9	1947	+27	1974	+ 9
1949	+ 9	1958	+27	1985	+ 9	1994	+ 9	2003			
2005	+ 9	2014									
Continued.....											
Sq 55		**Sq 08**		**Sq 35**		**Sq 44**		**Sq 53**		**Sq 24**	
										1896	+ 9
				1907	+ 9	1916	+ 9	1925	+27	1952	+ 9
1927	+ 9	1936	+27	1963	+ 9	1972	+ 9	**1981** 0427	+27	2008	+ 9
1983	+ 9	1992	+27	2019							
Continued.....											
Sq 33		**Sq 42**		**Sq 13**		**Sq 22**		**Sq 31**			
						1894	+ 9	1903			
1905	+ 9	1914	+27	1941	+ 9	1950	+ 9	1959			
1961	+ 9	1970	+27	1997	+ 9	2006	+ 9	2015			
2017											
Source: McMinn (2022).											

Curiously, DJIA bear market lows were least likely to fall in a 9-27/56 year grid in **Table 14**, which only experienced four events to 2020 (significant $p < .01$). How this pattern integrates into the 11-10-7 year cycle in **Table 12** was unknown.

Table 14
9-27/56 YEAR GRID & THE FEWEST DJIA LOWS 1886-2020
Year ending June 30

Sq 48		**Sq 01**		**Sq 28**		**Sq 37**		**Sq 08**		**Sq 17**	
										1889	+27
				1900	+9	1909	+27	1936	+9	1945	+27
1920	+9	1929	+27	1956	+9	1965	+27	1992	+9	**2001** 0322	
1976	+9	1985	+27	2012	+9	2021					
Continued.....											
Sq 44		**Sq 53**		**Sq 24**		**Sq 33**		**Sq 04**		**Sq 13**	
										1885	+27
				1896	+9	1905	+27	1932	+9	1941	+27
1916	+9	1925	+27	1952	+9	1961	+27	1988 **1987** 1019	+9	1997	+27
1972	+9	1981	+27	2008	+9	2017					
Continued.....											
Sq 40		**Sq 49**		**Sq 20**		**Sq 29**		**Sq 56**		**Sq 09**	
				1892	+9	1901 **1900** 0924	+27	1928	+9	1937	
1912 **1911** 0925	+9	1921	+27	1948	+9	1957	+27	1984	+9	1993	
1968	+9	1977	+27	2004	+9	2013					
Source: McMinn (2022).											

Discussion and Conclusions

The big question arises - What activates these cycles? According to Benner, *"the cause producing the periodicity and length of these cycles may be found in our solar system." "It may be a meteorological fact that Jupiter is the ruling element in our price cycles of natural productions; while also it may be suggested that Saturn exerts an influence regulating the cycles in manufacture and trade."* Additionally, Uranus and Neptune *"may send forth an electric influence affecting Jupiter, Saturn and, in turn, the Earth." "When certain combinations are ascertained which produce one legitimate invariable manifestation from an analysis of the operations of the combined solar system, we may be enabled to discover the cause producing our price cycles and the length of their duration."* Unfortunately, there was no credible evidence supporting a planetary effect in financial activity. This option was extensively explored without success. When observed from Earth, planetary cycles are quite irregular and would never give rise to the very neat patterns found in the Benner or 9/56 year cycles.

The 9/56 year cycle correlates exceptionally well with Moon Sun cycles (McMinn, 2006). For events occurring in the same 56 year sequence, the Lunar Ascending Node (LAN) will be sited in a narrow segment of the ecliptic circle, with no exceptions (1st harmonic). Events clustering in the same 9/56 year grid will have LAN in two sectors approximately 180^{o} opposite in the ecliptic with no exceptions (1st and 2nd harmonics). For events in the same 9/56 year grid and occurring around the same time of year, apogee will be sited in three ecliptic sectors 120^{o} apart, with no exceptions (3rd harmonic). These patterns arise due to the very close alignment of several Moon Sun cycles at 9.0 and 56.0 solar years. There is also a near perfect 6th harmonic associated with LAN - Apogee angles and the ecliptic position of the Sun (McMinn, 2016). Such findings gave rise to the Moon Sun Hypothesis, in which Moon Sun tidal effects are speculated to drive financial activity. How this process actually functions remains unknown. The prevailing paradigms in finance and the sciences would dictate that weak lunisolar forces should have little or no impact on market trading. This may be completely invalid.

NB: The Moon's orbit around the Earth is inclined by about 5 degrees to the plane of the Earth's orbit around the Sun (the ecliptic). LAN is sited where the Moon crosses the ecliptic from south to north and the descending node is where the Moon crosses from north to south. The lunar nodes and apogee are important in terrestrial tides. Apogee is the point in the lunar orbit, where the Moon is the greatest distance from Earth, whereas the perigee point is the least distance.

Given the links between the Benner and 9/56 year cycles, it may be hypothesised that both are based on lunisolar tidal effects. According to Benner (1875), "*eclipses return in the same order every eighteen years. Every eclipse within this period of eighteen years belongs to separate grids of eclipses; that is, there is but one eclipse during the eighteen years, which belong to the same grids. This periodical return was discovered by the ancients, and by this rule they were able to foretell the appearance of many of the eclipses years in advance; and by close observation through many centuries, astronomers at this day can foretell the exact hour and minute of the appearance of any or all the eclipses. Other cycles of motion in the heavens vary in their particular order of grids. Science will yet show that there is a reality in the connection between human events and the operations of nature; the causes and the laws by which they operate we are now ignorant of."*

The Benner and 9/56 year cycles correlated perfectly with the ecliptic position of LAN (see **Table 15**). These cycles yielded two patterns with LAN always falling in one sector of the ecliptic (1st harmonic) or in two sectors approximately 180° opposite in the ecliptic (1st and 2nd harmonics). (NB: E° denotes ecliptic degrees, with 000 E° being sited at the spring equinox point.)

Table 15 LAN ECLIPTIC POSITION FOR THE BENNER & 9/56 YEAR CYCLES Ecliptic position of LAN as on July 1		
		LAN E°
Benner	**16-18-20 Yr Panic Cycle**	
	1819, 1837, 1857, 1873	355-050 E°
Benner	**8-9-10 Yr Cycle - Pig Iron Price Highs**	
	1810, 1818, 1827, 1837, 1845, 1854, 1864, 1872, 1881, 1891	190-257 E° 027-071 E°
Benner	**11-9-7 Yr Cycle – Pig Iron Price Lows**	
	1816, 1823, 1834, 1843, 1850, 1861, 1870, 1877, 1888	074-122 E° 299-334 E°
McMinn	**9/56 Yr Cycle** All years in **Table 1**	150-205 E° 335-025 E°
McMinn	**16-20-20 Yr Panic Cycles**	
	1837, 1857, 1873, 1893, 1913, 1929, 1949, 1969, 1985	355-050 E°
	1772, 1792, 1808, 1828, 1848, 1864, 1884, 1904, 1920, 1940	165-230 E°
McMinn	**11-10-7 Yr Cycle of DJIA Lows**	
	1893, 1904, 1914, 1921, 1932, 1942, 1949, 1960, 1970, 1977, 1988, 1998	150-205 E° 335-025 E°
Frost	**8-9-10 Yr Cycle of DJIA Highs**	
	1892, 1902, 1910, 1919, 1929, 1937, 1946, 1956, 1964, 1973, 1983, 1991, 2000, 2010	034-115 E° 211-289 E°
Frost	**16-18-20 Yr Cycle of DJIA Lows From 1903**	
	1903, 1921, 1941, 1957, 1975, 1995, 2011	190-265 E
Frost	**16-18-20 Yr Cycle of DJIA Lows From 1913**	
	1913, 1933, 1949, 1967, 1987, 2003, 2021	355-070 E°
Abbreviation: Ecliptic degrees denoted by E°		

Benner's three key cycles all fall in restricted sectors of the 9/56 year cycle. Thus both cycles may be interrelated in some manner and arise from a common cause. As noted previously, the 9/56 year cycle correlated exceptionally well with the with the timing major financial crises (McMinn, 2021), the beginning and ending of DJIA bear markets (McMinn, 2022) and DJIA annual one day falls McMinn (2023). Benner Cycles could be linked to crises, as well as the peaks and troughs in pig iron prices Extrapolating from the panic years of 1819, 1837, 1857 and 1873, both the 54 year Benner and 56 year cycles aligned closely with the timing of US recessions during the 20th century. However, the 56 year cycle was far superior in forecasting financial panics. Additional cycles could be deciphered from US stock market trends. During the 20th century, an 8-9-10 year cycle was evident for DJIA highs at the beginning of a bear market and an 11-10-7 year cycle for the corresponding lows.

It would be very interesting to determine who was the first to produce **Diagram 1** – Tritch (1872) or

Benner (1875). Tritch compiled the diagram in 1872 and he copyrighted the diagram in 1883 and 1897, while Benner published his book in 1875. Who was the plagiarist? The cycles are commonly attributed to Benner, while Tritch is rarely mentioned.

How accurately the Benner and 9/56 year cycles will persist through the 21st century remains to be seen. All financial cycles must change over long time spans rather than remaining fixed ad infinitum. Patterns form and then breakdown into new patterns. Even so, such cycles are of great interest, as they may help explain market timing over many decades. Hopefully, further breakthroughs in cycle theory will ultimately achieve accurate financial forecasting years in advance, the Holy Grail of technical analysis.

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Appendix 1 DJIA BEAR MARKETS 1886-2020 ≥ -18.5% Bespoke Investment Group		
Beginning of BM	**End of BM**	**% Decline**
Dec 03, 1886*	Apr 02, 1888*	-20.1
May 17, 1890*	Dec 08, 1890*	-22.6
Mar 04, 1892*	Jul 26, 1893*	-34.6
Sep 04, 1895*	Aug 08, 1896*	(a)
Sep 10, 1897*	Mar 25, 1898*	-24.8
Sep 05, 1899*	Sep 24, 1900	-31.8
Jun 17, 1901	Nov 09, 1903	-46.1
Jan 19, 1906	Nov 15, 1907	-48.5
Nov 19, 1909	Sep 25, 1911	-27.4
Sep 30, 1912	Nov 02, 1914* (b)	-48.0
Nov 21, 1916	Dec 19, 1917	-40.3
Nov 03, 1919	Aug 24, 1921	-46.6
Mar 20, 1923*	Oct 27, 1923*	-18.6
Sep 03, 1929 (c)	Jul 08, 1932 (c)	-89.1
Feb 05, 1934	Jul 26, 1934	-22.8
Mar 10, 1937	Mar 31, 1938	-49.1
Nov 12, 1938	Apr 11, 1939	-21.7
Sep 12, 1939	Jun 10, 1940	-28.3
Nov 07, 1940	Apr 28, 1942	-32.5
May 29, 1946	Jun 13, 1949	-24.0
Apr 06, 1956*	Oct 22, 1957*	-19.4
Dec 13, 1961	Jun 26, 1962	-27.1
Feb 09, 1966	Oct 07, 1966	-25.2
Dec 03, 1968	May 26, 1970	-35.9
Jan 11, 1973	Dec 06, 1974	-45.1
Sep 21, 1976	Feb 28, 1978	-26.9
Apr 27, 1981	Aug 12, 1982	-24.1
Aug 25, 1987	Oct 19, 1987	-36.1
Jul 16, 1990	Oct 11, 1990	-21.2
Jul 17, 1998*	Aug 31, 1998*	-19.9
Jan 14, 2000	Mar 22, 2001	-19.9
May 21, 2001	Sep 21, 2001	-27.4
Mar 19, 2002	Oct 09, 2002	-31.5
Oct 09, 2007	Nov 20, 2008*	-46.7
Jan 02, 2009*	Mar 09, 2009*	-27.5
Oct 03, 2018*	Dec 24, 2018*	-18.6
Feb 12, 2020*	Mar 23, 2020*	-38.1
1930-33 Era for the DJIA (c)		
Apr 17, 1930	Dec 16, 1930	-46.4
Feb 24, 1931	Jun 02, 1931	-37.4
Jul 03, 1931	Oct 10, 1931	-44.3
Nov 09, 1931	Jan 05, 1932	-39.1

Mar 08, 1932	Jul 08, 1932	-53.6
Nov 07, 1932	Feb 27, 1933	-37.3
Jul 18, 1933	Oct 19, 1933	-22.4

* Inserted by the author.
Pre 1895 data based on the 12 Stock Average index.
A bear market is commonly defined as a DJIA decline of over -20% that was preceded by a rise of over +20%. Four near bear markets were included which registered declines between -18.5% and -19.9%. These commenced in 1923, 1956, 1998 and 2018.
(a) A percentage decline could not be calculated, as the 1895 high was based on the 12 Stock Average index and the 1896 low on the DJIA.
(b) Due to the outbreak of WWI, the NYSE was closed from July 30 to December 12, 1914, although stocks were still quoted by brokers and traded off the exchange. According to Durden (2014), Global Financial Data calculated the average of the bid and ask prices from August 24 to December 12 and found that the 1914 bottom occurred on November 2 when the DJIA hit 49.07. This has been used as the 1914 low in this paper.
(c) The DJIA decline in the early 1930s was taken as occurring from Sep 3 1929 to Jul 8, 1932, as given by most references. However, Bespoke Investment Group broke this down into several bear markets due to the extreme DJIA gyrations during this period.
Main Source. Bespoke Investment Group (2008).

Appendix 2
DJIA BEAR MARKET LOWS, THE 9/56 YEAR GRID &
FROST'S TWO 54 YEAR CYCLES BEGINNING 1903 & 1913
Year beginning November 15

Sq 30		**Sq 40**		**Sq 48**		**Sq 04**		**Sq 12**		**Sq 20**		**Sq 28**	
										1892 **1893** 0726	+ 8	1900	+10
1902 **1903** 1109	+10	1912	+ 8	1920 **1921** 0824	+12	1932	+ 8	1940	+ 8	1948 **1949** 0613	+ 8	1956 **1957** 1022	+10
1958	+10	1968	+ 8	1976	+12	1988	+ 8	1996	+ 8	2004	+ 8	2012	+10
2014	+10	2024											

Continued.....

Sq 38		**Sq 46**		**Sq 02**		**Sq 10**		**Sq 18**		**Sq 26**		**Sq 36**	
								1890 1208	+ 8	1898	+10	1908	
1910 **1911** 0925	+ 8	1918	+12	1930	+ 8	1938 **1939** 0411	+ 8	1946	+ 8	1954	+10	1964	
1966	+ 8	**1974** 1206	+12	1986 **1987** 1019	+ 8	1994	+ 8	**2002** 1009	+ 8	2010	+10	2020	
2022													