

4.

Robert S. Crawford and the Crawford Bicycle Company and Its Successors

By Gary W. Sanderson, Verona, New Jersey, USA.



Figure 2. Portrait (drawing) of Robert S. Crawford by an unknown artist.

and principle owner, Robert S. Crawford [Figure 2]. This paper tells the story of how Mr. Crawford came to be an important participant in the American bicycle industry of the 1890s, his role in the American bicycle industry in the 1890s, and briefly, what he did after leaving this industry in the first years of the 20th Century.

The Beginnings

Robert S. Crawford was born in 1846 in Gettysburg, Pennsylvania,¹ and moved to Washington, D.C., with his half-brother George D. Crawford, in 1873.² It is believed that the two young men worked at the U.S. Government's Bureau of Printing and Engraving. George is listed as a clerk in *Boyd's 1873 Directory for the City of Washington, D.C.*, while Robert is listed as an engineer. An authoritative report has it that Robert apprenticed



Figure 1a. An 1895 advertisement for Sager bicycle saddles showing genteel people out for a spin on their bicycles having stopped for conversation with friends. Note the “scorcher” in the background who is outside of ‘acceptability’ for the genteel people.

Crawford bicycles were made by the Crawford Manufacturing Company, founded in 1891 in Hagerstown, Maryland. Crawford bicycles were one of the ten major brands of safety bicycles in the United States of America during the decade of the 1890s when safety bicycles first came into the market place. The first safety bicycles were invented in the mid to late 1880s and pneumatic tires were invented in the late 1880s to make the new safety bicycles more comfortable to ride. The combination of these spectacular inventions enabled the blooming of latent social forces that existed in society [Figures 1a, 1b, 1c, & 1d], with a resultant boom in bicycle sales that climaxed in 1896. This boom led to an overly enthusiastic growth in the production of bicycles in the early 1890s, followed by a sharp decline in the price of bicycles after

1896. This brought about climactic changes in the American bicycle market that had dramatic effects on the Crawford Manufacturing Company and its founder,



Figure 1d. World Championship Bicycle Races held in Chicago, Illinois, in August 1893. The large crowd present to view this event was typical for bicycle races in the 1880s through the 1920s.



Figure 1b. A “New Woman” out for a bicycle ride in the country by herself. The rider stops for a drink of water astounding the farm family that stands by looking at the lady cyclist: The father of the family appears to be thinking, “What is this world coming to with young ladies traveling out into the country alone by themselves.” The mother of the family is annoyed at the audacity of the cyclist, and the daughter is thinking, “I wish I was free to do what the cyclist is doing.” (A painting by Edward Lamson Henry. *The New Woman*, 1892)

in the Bureau’s machine shops thereby gaining a foundation for a career in engineering.³ In 1877 Robert and George are listed in the Washington, D.C., Directory as being employed by R.S. Crawford & Co., and an advertisement in the Directory stated that this company operated as “Dealers in Wood and Coal” [Figure 3].⁴ While not a highly technological endeavor, this enterprise is perhaps evidence for the entrepreneurial inclinations of these brothers. Robert is not listed in the Washington, D.C., Directory after 1877 until he reappears in the 1890 Directory with his employment listed as “bicycles” (details given below).⁵ Robert was off to bigger and better things as we will see below, while George continues to be listed as employed by Crawford & Co. until 1880, after which he is again listed as a clerk working at the U.S. Bureau of Printing and Engraving. Apparently, regular employment by the government was more attractive to George than being a wood and coal merchant.

Robert left Washington, D.C., in 1878, and went to Glasgow, Scotland, where he stayed until returning to Washington, D.C., in 1888. When in Glasgow, Robert was employed by “The Anchor Line”

(a steamship company) as an engineer on a ship plying between New York and Glasgow [Figure 4], and he became associated in some way with the Howe Machine Company, Ltd. that manufactured sewing machines and bicycles in Glasgow. The Howe Mfg. Co. was well known in the 1880s for its high wheel tricycles [Figure 5a], and keeping up

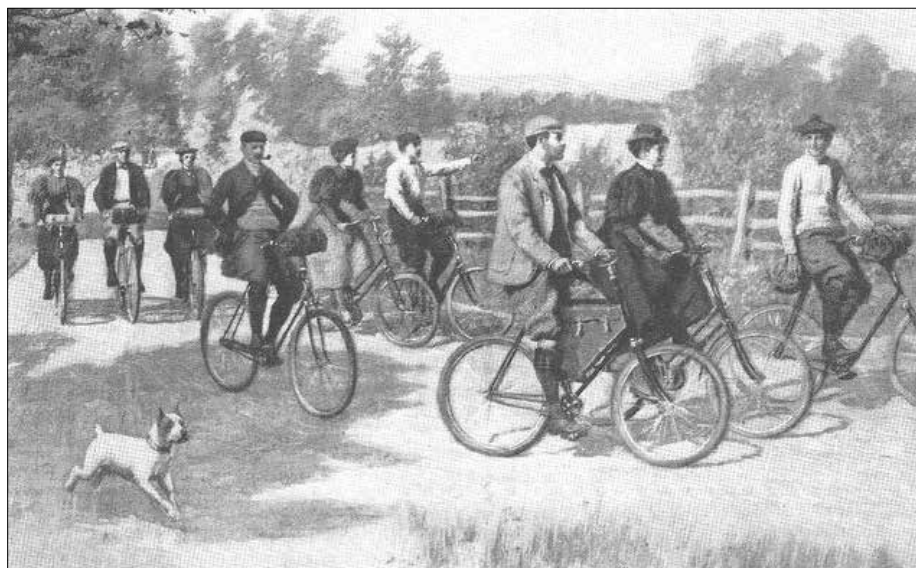


Figure 1c. A group of genteel people using their bicycles to escape from their city environment by riding out into the countryside.

with the times, this company moved on to manufacture and market safety bicycles in the 1890s [Figure 5b]. It is not clear how Robert divided his time in Glasgow, but the scant record indicates that in addition to working for the Anchor Steamship Co., he improved his engineering qualifications at the Mechanical Engineering School of Glasgow, Scotland (now The University of Glasgow), and he learned how to manufacture bicycles through involvement with the Howe Manufacturing Company. Robert’s success in the bicycle business in subsequent years suggests that his years in Glasgow were wisely spent improving his skills as a mechanical engineer and obtaining a detailed knowledge of bicycle manufacturing.

Robert returned to Washington, D.C., in 1888⁶ where he set up a bicycle manufacturing shop and began advertising his products [Figure 6]. During this time in Washington, D.C., Robert was granted a U.S. patent for “Bicycle Bearings” [Figure 7], indicating that he was actively developing bicycles and improvements in parts for bicycles. It is interesting to note that the evidence found indicates that Robert’s efforts were directed only towards safety bicycles: there is no evidence that he was involved with ordinary bicycles in any meaningful way. No records were found to indicate how successful Robert was in this business, but he was successful enough to convince some investors to go in with him to set up the Crawford Manufacturing Company and to build a factory in Hagerstown, Maryland.

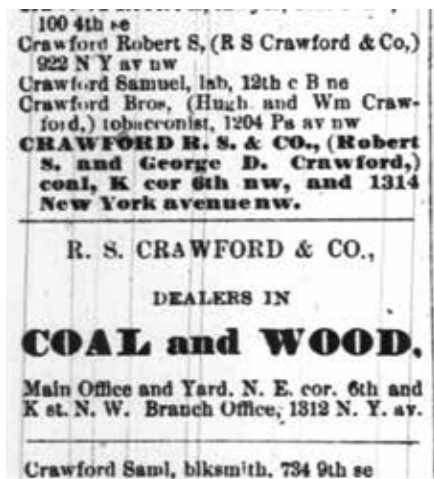


Figure 3. Excerpt from Boyd's Directory for Washington, D.C., for 1877, p. 218, showing entries for George D. and Robert S. Crawford, plus an advertisement for Crawford & Company, Dealers in Wood & Coal.

The Crawford Manufacturing Company

The Crawford Mfg. Co. was legally incorporated and capitalized at \$50,000 in 1891. The incorporators were Robert S. Crawford, S. Milford Schindel, and George T. Updegraff, of Hagerstown, Maryland; James B. Lamble of Washington, D.C.; and William Byer of Gettysburg, Pennsylvania.⁸ The primary objective of the Crawford Mfg. Co. was to manufacture bicycles (i.e., safety bicycles), for which the market was beginning to boom. Critical to the initial success of this entrepreneurial undertaking was the grant of a parcel of land by The Land

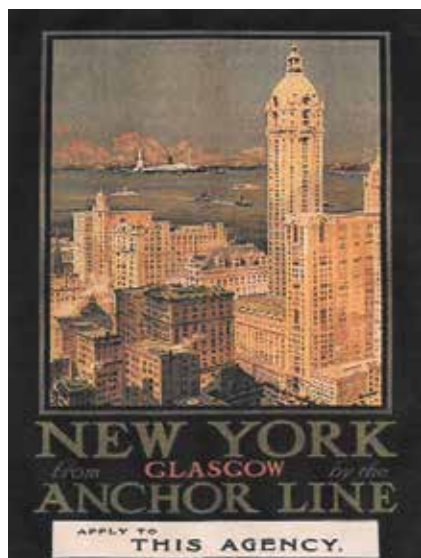


Figure 4. A poster from the 1870s for the Anchor Steamship Line that plied regularly between Glasgow, Scotland, and New York City, USA.



Figure 5a. An 1880s advertising poster for Howe Tricycles made by the Howe Manufacturing Company in Glasgow, Scotland.

Improvement Co. of Hagerstown, Maryland, to the newly formed company in the newly formed Corbett's Addition on the south edge of town on which to build a factory for the purpose of manufacturing wheels (bicycles).⁹ It is noteworthy that Messrs. Crawford & Co. of Washington, D.C., had made an offer in 1890 to the City of Alexandria, Virginia, to move its factory from Washington to Alexandria and employ 50 hands for at least 5 years. This offer was conditioned on Alexandria giving Crawford & Co. land for their factory with the stipulation that ownership of the land would be transferred totally to Crawford & Co. at the end of the five-year period. However, Alexandria turned this offer down.¹⁰

It is virtually certain that Robert chose to settle his company in Hagerstown because of the inducements granted to him by the city and its adherents that were dedicated to promoting the city's growth.¹¹ Also, the very active group of bicyclists in and around Hagerstown was certainly an attractive feature of the town. Proof that the Hagerstown Bicycle Club was a big and strong club was their success in getting the 1887 National Wheelmen Meet to be held in Hagerstown. [Figure 8]

Wasting no time and true to his commitment to the city of Hagerstown, it was reported in April 1891 that a factory had been built, that 70 men were already



Figure 5b. An 1890s advertising poster for Howe Safety bicycles made by the Howe Manufacturing Company in Glasgow, Scotland.

employed and another 30 men would be needed in the near future as production requirements were rising. In addition, several (railroad) carloads of bicycles had been manufactured and shipped, and a carload of new manufacturing machinery had been received.¹² Robert sailed for England on September 10,



Figure 6: Ad for bicycles made by Crawford & Co. in Evening Star (Washington, D.C.), January 2, 1890, p. 6; Jan. 3, 1890, p. 7; June 17, 1890, p. 7; June 26, 1890; July 14, 1890, p. 7; July 14, 1890, p. 7; July 16, 1890, p. 7; July 17, 1890, p. 6; July 30, 1890, p. 6; Aug. 5, 1890, p. 6.

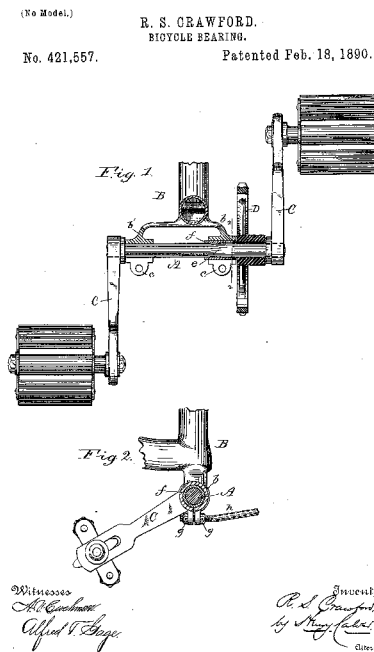


Figure 7. U.S. Patent No. 421,557 (February 18, 1890) for "Bicycle Bearing", granted to Robert S. Crawford.

1891, to survey bicycle manufacturing operations in Coventry, Birmingham, and other places in Great Britain where bicycle manufacturing was taking place, to purchase equipment for the Crawford Manufacturing Company's operations in Hagerstown.¹³ It was reported that Robert purchased \$6,000 worth of manufacturing tools and equipment on this trip and that by the end of 1891 the Crawford Mfg. Co. planned on turning out about 2,500 bicycles.¹⁴ The Crawford Company was certainly off to a fast start.

Over the next few years, Robert would enlarge the factory until it was one of the largest bicycle factories in the country [Figure 9]. He arranged to have a spur of



Figure 9. The Crawford Manufacturing Company factory in Hagerstown after 1895 from the back cover of *The Crawford Bicycle Catalog* for 1904.



Figure 8. A group photo of members of *The League of American Wheelmen* assembled in the Hagerstown (Maryland) town square during the League's 1888 National L.A.W. Meet.

the local railroad line built to run along the north side of his factory to expedite shipments in and out of the factory, and he enlarged the operation through the purchase of additional land and other nearby factories.¹⁵

Characteristics of Crawford Bicycles and Acceptance in Marketplace

From the beginning of the manufacturing of Crawford Bicycles in 1891, the stated purpose was to produce bicycles of high quality at reasonable prices. Crawford bicycles competed well with other high-quality bicycles, but they were always priced at the low end of the prices being asked for other first quality bicycles like Columbia (Pope Mfg. Co., Hartford, Connecticut), Victor (Overman

Wheel Works, Chicopee Falls, Massachusetts), Crescent (Western Wheel Works, Chicago, Illinois), and Rambler (Gormully & Jeffery, Chicago, Illinois). Characteristically, ads for Crawford bicycles said something like, "If you want a medium-priced wheel that will stand hard use, see our line before buying"¹⁶, or as was printed on the Crawford Mfg. Co. letterhead, "Medium and High Grade Bicycles" [Figure 10]. Crawford bicycles were advertised and sold all across the country and in other countries as well [Figures 11a, 11b, 11c, & 11d].

Pneumatic Tired Buggies

Robert announced in 1894 that he was going to build pneumatic tired buggies.¹⁷ On January 24, 1895, The Crawford Wheel and Gear Co. was incorporated with capital stock of \$100,000 with the objective of carrying out "the manufacture of buggies, wagons, ball bearing axles, pneumatic tire wheels, tubular running gear, and all the component and necessary parts used in the construction of pneumatic tire wheels, wagons, and buggies." An addition was made to the Crawford Mfg. Co. factory in Hagerstown to accommodate this new company's operations with ten men and six machines at work in this enterprise.¹⁸

To promote Crawford bicycles and to explore the market for the Crawford Pneumatic Tired Buggy that Robert had developed, Robert, his family, and the Mayor of Hagerstown, K.L. Kenly;



Figure 10. The letterhead of The Crawford Manufacturing Company in Hagerstown, Maryland, that existed from 1891 to 1899. Note the depiction of the Crawford Company's factory on the left side of this letterhead with the railroad running along the back side of the factory rendering it easy to receive goods (i.e., raw materials) and to ship out finished products (i.e., bicycles).

went on an extensive trip by train to the west coast of the USA from which they returned on August 15, 1895. The first stop on this trip was Chicago, then on to Seattle, from there down the Pacific coast to San Francisco and Los Angeles, and finally back home to Hagerstown, via Salt Lake City, Utah, and Pike's Peak, Colorado. It was found that Crawford bicycles were very well thought of on the west coast and there was considerable interest in the Crawford pneumatic tired buggies with wheels running on ball bearings.¹⁹

While the Crawford Wheel and Gear Co. was used for forays into the manufacture of lightweight buggies with



Figure 11a. One of the first advertisements for Crawford Bicycles after founding the Crawford Manufacturing Co. in 1891 and commencement of manufacturing in Hagerstown, Maryland (U.S.A.) in 1892 (*The Bearings: The Cycling Authority*, Vol. VIII, No. 2, April 5, 1895).

wheels running on ball bearings,²⁰ it was also used to build other special vehicles such as a buggy powered by an electric motor running on batteries,²¹ and special lightweight bicycles.²² Small sales of these machines were reported, but they did not materialize into viable businesses, and the Crawford Wheel and Gear Co. was formally deconstructed in 1898.²³ All of this inventive activity is further evidence of Robert's creative and energetic approach to his business.

Innovation in Bicycles

The Crawford Mfg. Co. made an effort to be a leader in the bicycle industry by developing bicycles with advanced designs: large diameter tubing, barrel hubs, a narrow tread, an original design crown fixture, etc. These advanced design features were incorporated into a limited number of "Crawford Special 1896" bicycles for special people within the company.²⁴

For unknown reasons, Crawford bicycles had the chain drive system mounted on their left side rather than on the right side, as was the standard.²⁵ [Figures 12a,



Figure 11c. Ad for the bicycles that the A.G. Spalding Co., New York City (U.S.A.), was selling as part of the newly formed American Bicycle Company (*Cosmopolitan Magazine*, Vol. XXVIII, No. 6, April 1900).



Figure 11b. Advertisement for Crawford bicycles in 1897. (*McClure's Magazine*, Vol. IX (1), May 1897, Ads p. 37).



Figure 11d. An 1896 Poster that advertised Crawford Bicycles. The scene shows a couple of cyclists relaxing with their bicycles beside a road in the countryside implying freedom to enjoy the outdoors without the discomfort and inconvenience of arduous effort.



Figure 11e. Ad by Ludwig Reitz, a retail business in Nuremberg, Germany (Franconian Messenger, March 16, 1898, No. 136, p. 6). Note that the Crawford bicycle is one of the brands of bicycles sold by this dealer.



Figure 12a. Crawford Men's Bicycle, 1897. Note that the drive train is on the cycle's left side. (Crawford Bicycle Catalog, 1897).



Figure 12b. Crawford Ladies Bicycle, 1897. Note that the drive train is on the cycle's left side. (Crawford Bicycle Catalog, 1897).



Figure 12c. Crawford Tandem Bicycle, 1897. Note that the drive train is on the right side of the tandem. (Crawford Bicycle Catalog, 1897).

12b, & 12c] There is no advantage to this arrangement, but it was different from all of Crawford's competitors, which may have been the reason for using this design. However, in 1898 the chain-wheel with the entire drive system was switched to the left side of the bicycle frame to conform to what was the industry standard. Could this have been a move to prepare for the assimilation of Crawford bicycles into an American bicycle industry that was to become much reduced in size by failure of many companies and the merger of several others?

The National Board of Trade of Cycle Manufacturers

A National Board of Trade of Cycle Manufacturers was formed in 1894 to set standards for the cycle trade and to organize such affairs as would promote the cycle trade's growth and prosperity.²⁶ Robert was involved in the formation of this organization, and he served on its Board of Directors until 1899 when this Board of Trade was dissolved for lack of support.²⁷

Civic and Political Organizations

Robert was also involved in the community as both a political and civic leader. He served as a leader in the Re-



Figure 13. Ad for the American Bicycle Company (ABC) which was formed by the joining of the strong bicycle companies in the U.S.A., and several related companies, in 1899 in an attempt to form a monopoly that could control the production of, and the prices for, bicycles. The Crawford Manufacturing Company was sold to the ABC and thereafter Crawford bicycles were sold as products of the ABC. (*The Bicycling World & Motorcycle Review*, Vo. 46 (11), December 11, 1902, p 292-293).

publican Party, and was selected to be the Chairman of the Washington County Republican Party by the party's County Central Committee.²⁸

Robert stated that the Crawford Bicycle factory might not start again after the 1896 election if McKinley, the Republican candidate for president, did not win. Crawford was criticized for this statement, but he defended himself saying that he was concerned that opposition Democratic Party candidate Bryan's stance in advocating a free silver standard would significantly slow market activity.²⁹

The YMCA (Young Men's Christian Association) in Hagerstown was about to close in 1893 because of lack of funds and limited use. To revive and save the local YMCA, Robert called a meeting

of the town's most influential people to commit time and funds to this organization that did so much to keep the town's youth occupied in sports and other healthy activities, and he was successful in these efforts.³⁰

The End of the Bicycle Boom (1896/1897) and the Formation of the American Bicycle Company (The ABC), a Monopoly (1899)

The bicycle boom of the 1890s began around 1890 with the development of safety bicycles, the design of loop frame bicycles for the convenience of ladies, and most importantly, the invention and rapid improvement of pneumatic tires for use on bicycles. These three developments had the effect of making bicycling (a) safer (headers were virtu-



Figure 14. Ad from *The Automobile*, 1907, for the "Pope-Tribune" automobile. This was the first automobile to be manufactured in what had been the factory for manufacturing Crawford bicycles, and 1903 was the first year that this automobile was available for sale.



Figure 15. Ad from *The Automobile*, October 5, 1905, for the "Crawford Runabout". This was first automobile made and sold by the Crawford Automobile Company, and 1905 was the first year that Crawford automobiles were available for sale.



Fig. 16a. A photograph purchased on eBay that is inscribed with a notation indicating that the men in the Figure are as follows: (r to l) Robert S. Crawford, Vice President of Union Trust Co.; Attorney Thomas H. Jones; E.S. Burke, Jr., Deputy Chairman of the Federal Reserve; Attorney A.V. Cannon; J.R. Kraus, Chairman of the Board of Union Trust Co.; Geo. M. Humphry, President of M.A. Hanna Co.. (Kraus Press Photo).

ally impossible), (b) easier (mounting a high wheel was a chore), (c) cheaper (safety bicycles were less costly than ordinary wheels), (d) more comfortable (air filled tires reduced ‘vibration’ when riding to almost nothing), and (e) ‘sociable’ (bicycles for ladies gave this gender ‘freedom’ and ladies on bicycles gave men companions when cycling). **[Figures 12a, 12b & 12c]** This has been written about by many authors – examples are in *Peddling Bicycles to America* by Epperson³¹ and my paper given at the 27th (2016) ICHC.³² The important point to make here is that the success of the bicycle industry in the early 1890s lured the industry leaders into significantly increasing the size of their operations. At the same time, many others were entering the industry with expectation of success in the rapidly expanding market that took place in the boom years of 1890 through 1896. This led to overproduction of bicycles for a market that began to contract at the end of 1896 due to changes in societal choices – name-

ly, it became less fashionable to ride bicycles because common people could now more easily afford bicycles as the bicycle manufacturers cut prices in their effort to dispose of inventories for which there was insufficient demand. So, after 1896 there was a glut of bicycles on the market, and many companies were bankrupted as a result. Companies that were financially strong enough to survive this downturn in the market nevertheless experienced serious erosion of their profits - in most cases large profits in earlier times became losses as the 1890s progressed from 1896 towards 1900.

One idea to save the major bicycle manufacturers from financial disaster in the late 1890s was the formation of a monopoly created by joining the strongest firms concerned with the manufacture of bicycles, and the critical parts of bicycles, such as saddles and tires, for the purpose of controlling the production, and the selling price, of what were becoming commodities. This idea came to be promoted, and then acted upon,

by Mr. Albert G. Spalding of the Spalding Athletic Equipment Co. of New York City. In early 1899, Mr. Spalding solicited information from all the companies that were important in the bicycle industry to determine their size and their value as perceived by the owners of these companies.³³ The Crawford Mfg. Co. was prominent among the companies selected to be part of the newly formed monopoly, and the owners of this company agreed to be acquired by, and to become part of, the monopoly that was to be called The American Bicycle Company (ABC) with a home office in New York City. The ABC was incorporated in September 1899,³⁴ and it is reported that the owners of the Crawford Mfg. Co. received \$600,000 for the company’s factory and other assets.³⁵ It was estimated that the monopoly’s companies together produced 605,000 bicycles each year and that the total demand for bicycles was about 1,000,000.³⁶

A.G. Spalding was chosen to be the President of the ABC, and Robert Craw-

ford was chosen to be one of the ABC's directors.³⁷ The story of the ABC and its organization and operation is interesting, but for the purpose of this paper on the Crawford Bicycle Company, suffice it to say that bicycles with the Crawford badge on them were mentioned in ABC announcements from 1901 until about 1904³⁸ [Figure 13] after which the discontinued line of Crawford bicycles disappeared from ABC ads.

**On to New Ventures and Automobiles:
Robert S. Crawford and George D. Crawford go into Manufacturing Automobiles**

By 1902, the American Bicycle Company (ABC) was failing as a business (the company was losing money), and Robert S. Crawford resigned his position as a Director of the ABC.

From the time that the ABC was formed, what had been the Crawford Mfg. Co. factory in Hagerstown was virtually empty of manufacturing. In 1902 this factory was sold to the Pope Mfg. Co., and it was used from 1903 until 1907 for the manufacture of Pope-Tribune automobiles.³⁹ The demise of the Pope-Tribune automobile was in part a result of the introduction of Ford's Model N automobile, which sold for \$50 less, due to improved efficiencies in manufacturing and shipping.⁴⁰

An ad from *Motor Age* (1907) for the Pope-Tribune Model X automobile [Figure 14] is most interesting in that the car is shown at the bottom of the ad and a drawing of the Hagerstown factory is shown at the top of the ad: the factory's overall appearance had not changed since 1895 [Figure 9]. The Pope Mfg. Co. struggled on for a few years manufacturing several different automobiles in different factories around the country, but the company was not successful and it failed in 1908.

Sometime after selling his company (The Crawford Mfg. Co.) to the ABC in 1902, Robert moved to Philadelphia, and began dabbling in designing light weight frames for automobiles, and these frames had some success in racing cars.⁴¹ George Crawford stayed in Hagerstown and began to work on manufacturing automobiles in his barn. In about 1904 after 2 years in Philadelphia, Robert joined the effort, and in 1905 the Crawford brothers had their first car ready to sell. [Figure 15] A few dozen Crawford automobiles were manufac-

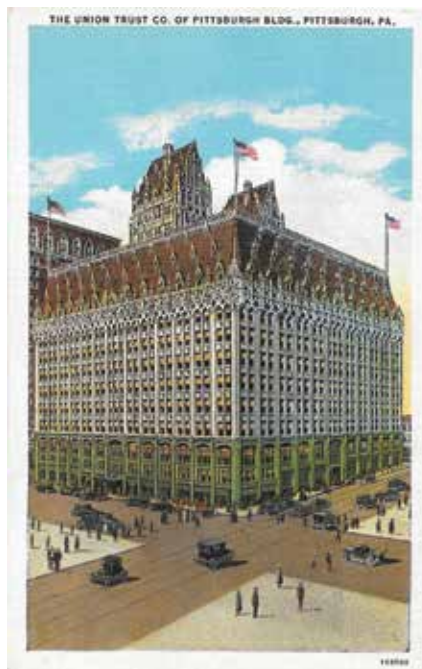


Fig. 16b. The Union Trust Co. of Pittsburgh Building in Pittsburgh, Pennsylvania. (A Postcard).

tured over the next 10 years or so, but by 1912 the company was bought out by P. Moeller, a partner in the Crawford Automobile Co. and a successful organ manufacturer, which ended the Crawford Brothers foray into the unfolding world of automobiles.

The End of the Story

When the Crawford Brothers sold the Crawford Automobile Mfg. Co. in 1912, Robert moved to Pittsburgh, Pennsylvania, and he entered into some business activity that I could not identify with certainty: However, see Figures 16a & 16b for evidence that Robert ended his days working for the Union Trust Co. of Pittsburgh. Robert died in Pittsburgh in 1916, and he was buried in Gettysburg with family around.

George remained in Hagerstown until 1938, when he moved to Glencoe, Pennsylvania to live with his son and daughter-in-law Mr. & Mrs. John Crawford. George died six months after moving to Glencoe, and he was also buried in Gettysburg. So, the story ends. ●

¹ Robert S. Crawford was born in Gettysburg, Pennsylvania, in 1849, and died at age 67 years in Pittsburgh, Pennsylvania, on October 13, 1916: *The Pittsburgh Press* (Pittsburgh, Pennsylvania), October 14, 1916, p. 7.

² *Boyd's Directory of the District of Columbia* (Washington, D.C.) for 1873, p. 149.

³ *The Antique Automobile Magazine*, Vol. 22 (2),

Spring 1958, p. 70-72, 110.

- ⁴ *Boyd's Directory of the District of Columbia for 1877*, p. 218.
- ⁵ *Boyd's Directory of the District of Columbia for 1890*, p. 55 and p. 320.
- ⁶ See EN iii.
- ⁷ U.S. Patent No. 421,557 (February 18, 1890) for "Bicycle Bearing", granted to Robert S. Crawford.
- ⁸ *The Herald and Torch Light* (Hagerstown, Maryland), May 21, 1891, p. 3.
- ⁹ *The Herald and Torch Light* (Hagerstown, Maryland), Aug. 21, 1890, p. 3; *The Evening Star* (Washington, D.C.), Aug. 22, 1890, p. 6.
- ¹⁰ *The Evening Star* (Washington, D.C.), June 28, 1890, p. 3.
- ¹¹ See EN 10.
- ¹² *The Herald and Torch Light* (Hagerstown, Maryland), April 16, 1891, p. 3. 13Ibid, Sept. 17, 1891, p. 3.
- ¹³ Ibid, Sept. 17, 1891, p. 3. 14Ibid, Nov. 12, 1891, p. 3.
- ¹⁴ Ibid, Nov. 12, 1891, p. 3.
- ¹⁵ Ibid, May 4, 1893, p. 4; Sept. 27, 1894, p. 8; Oct. 25, 1894, p. 6; May 11, 1895, p. 7; etc.
- ¹⁶ An ad in *Bearings*, *The Cycling Authority*, Aug. 11, 1893.
- ¹⁷ *The Herald and Torch Light* (Hagerstown, Maryland), Oct. 25, 1894, p. 6.
- ¹⁸ Ibid, January 24, 1895, p. 8.
- ¹⁹ Ibid, August 15, 1895, p. 2.
- ²⁰ See EN xviii.
- ²¹ *The Herald and Torch Light* (Hagerstown, Maryland), October 31, 1895, p. 7.
- ²² Ibid, Sept. 5, 1895, p. 8.
- ²³ *The Baltimore Sun* (Baltimore, MD), March 29, 1898, p. 8.
- ²⁴ See EN xxii.
- ²⁵ See the catalogs for Crawford Bicycles for 1893, 1894, 1895, 1896, & 1897.
- ²⁶ *The Wheel and Cycling Trade Review*, Vol. XXII (13), November 10, 1898, p. 13.
- ²⁷ *The Mail* (Hagerstown, MD), February 3, 1899, p. 8.
- ²⁸ *The Herald and Torch Light* (Hagerstown, Maryland), October 3, 1895, p. 4. 29*The Evening Star* (Washington, D.C.), October 17, 1896, p. 2.
- ²⁹ *The Evening Star* (Washington, D.C.), October 17, 1896, p. 2.
- ³⁰ *The Herald and Torch Light* (Hagerstown, Maryland), April 13, 1893, p. 8.
- ³¹ Bruce D. Epperson (2010), *Peddling Bicycles to America*, 294 pp. (McFarland & Co., Inc.: Jefferson, North Carolina).
- ³² Gary W. Sanderson: *The Gormully and Jeffery Manufacturing Company and Its Founders*, *Cycle History* 26 (2016), pp. 218-229 (FFCT: Paris).
- ³³ *The Wheel and Cycling Trade Review*, Vol. XXIII (6), March 23, 1899, p. 15-17; Vol. XXIII (15), May 25, 1899, p. 9.
- ³⁴ Ibid, Vol. XXIV (3), August 31, 1899, p. 9.
- ³⁵ Marvin F. Studebaker (1956), "Hagerstown, Maryland, put America on Wheels", *The Antique Automobile Magazine*, Vol. 22 (2), Spring 1958, p. 70-73, 110.
- ³⁶ *The Wheel and Cycling Trade Review*, Vol. XXIII (19), June 22, 1899, p. 7 & 8.
- ³⁷ *The Wheel and Cycling Trade Review*, Vol. XXIII (26), August 10, 1899, p. 9.
- ³⁸ *The Bicycling World*, Vol. XLIV (10), Dec. 5, 1901.
- ³⁹ EN xxxiii; Rector R. Seal (1958), *Maryland Automobile History*, p. 20-23 (Adam Press, Baltimore).
- ⁴⁰ Stephen B. Goddard (2000), *Colonel Albert Pope and His American Dream Machine*, p. 192 (McFarland & Company, Jefferson, North Carolina).
- ⁴¹ Light weight frames for racing cars.