THE JOURNAL
OF THE SOCIETY OF AUTOMOTIVE HISTORIANS, INC.

July-August 1982 ISSUE NUMBER 79

Editorial

It took a lot of research, but founding member G. Marshall Naul has given us an excellent history of the Syracuse, N.Y. built Moyer automobile.

Please take notice of the items on our annual meeting and auction. This is your Journal, is there anything you would like to see added/deleted? Should we continue the factory photograph section or eliminate it? Let me have your comments.

Walt Gosden

Automobile Quarterly Special Offer:

The latest issue of Automobile Quarterly has an excellent article on Cugnot by SAH member Griffith Borgeson. Since the Cugnot is the symbol of the SAH, A.Q. has made a special offer to the SAH membership.

Automobile Quarterly magazine will make available to SAH members only who do not currently subscribe to the magazine, Volume 20, Number 1—featuring Griff Borgeson's revealing story on Cugnot—for half the newsstand price of $12.95. That's $6.50, plus $1.50 for shipping and handling. Order by mail or phone. Major credit cards accepted. Send order to Automobile Quarterly Publications, SAH Cugnot Desk, 245 West Main Street, Kutztown, Pennsylvania 19530. Or phone credit card order: (215) 683-8352.

SAH Annual Meeting and Banquet/Auction. Friday, October 8, 1982; cash bar - 6 p.m.; dinner - 7:30 p.m., the Marriott Inn, I-283 and Route 441, Harrisburg, Pa. Details to be furnished in a later mailing.

Hershey 82

The society will have a hospitality tent in the flea market of the AACA annual Fall meet in Hershey, Pa. October 6-9, 1982. Refreshments will be available for members. Location of space is not known at this time but will be listed in the directory under the name of our treasurer, George Ward.

SAH Auction

Howard Applegate will serve as auctioneer at our annual meeting in October in Harrisburg, Pa. We will need donations from the membership; to make this a success all contributions of literature prior to 1959, books, magazines and related ephemera should be sent to Bob Lichty SAH, c/o Old Cars Weekly, 700 E. State Street, Iola, WI. 54954.

1911 Model A touring car in front of main entrance of the factory. The sign attached to the running board shows the Moyer logo as used for horse-drawn vehicles, but apparently not used on the Moyer automobiles.

FYI by C B

SAH letterheads, embossed with the Cugnot logo and imprinted "The Society of Automotive Historians Inc." and envelopes imprinted "The Society of Automotive Historians Inc.", are available to members in quantities of 500 for a cost of $57.25, plus shipping charges. If desired, a member's name and address will also be imprinted on the letterhead and envelope for an additional cost of $42.00. This service will become available only if we receive orders from at least 20 members. Please contact William S. Jackson, P.O. Box C, Hummelstown, PA 17036, for additional particulars.

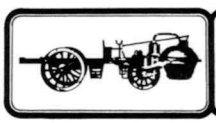
Please notify Charles Betts, 2105 Stackhouse Dr., Yardley, PA 19067, if you plan to change your address.

Memorabilia, in the form of models and scrapbooks, from the collection of the late Lawson Diggett, an artisan and self-appointed chronicler of Ormond Beach's past auto racing history, is now on display in the Halifax Historical Society Museum, 128 Orange Ave., P.O. Box 5051, Daytona Beach, FL 32018.

Certain letters, forwarded to me from the Society's headquarters in Detroit, never cease to amaze and interest me. One in particular, written by a librarian on the West coast, wanted to know how did American streets and roads come to have traffic driving on the right rather than on the left, as in England and some other parts of the world? This letter goes on to explain that driving on the left may have originated as a result of the knights carrying their swords on the right side, leading them to joust and ride on the left. That makes sense — but that still doesn't answer the question why we in America drive on the right. What are your thoughts on this one?

Oakland Information

A newly formed chapter of the national club for Pontiac collectors centers its attention on the Oakland motor car. Organized as part of the Pontiac-Oakland Club International, the All-American Oakland Chapter is temporarily headquartered at 120 Mill Street, Iola, WI 54945 (Att: John Gunnell). The AAO Chapter publishes 12 newsletters per year. Members are scattered across the country, but hopes are to ultimately organize a once-a-year gathering in conjunction with POCI's annual convention. Meanwhile, the thrust of the chapter is the newsletter which contains historical and technical information as well as ads for parts. Chapter dues are $5 and prior membership in the Pontiac-Oakland Club International is mandatory. However, the chapter will provide one-year subscriptions to the newsletter to non-members at the same $5 until such point that chapter memberships match the monthly print run. SAH members who want to receive the All American Oakland Chapter newsletter (12 issues) can send checks for $5, to cover subscription, in care of the chapter at the above address.



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OF THE SOCIETY OF AUTOMOTIVE HISTORIANS, INC.

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SAH
Statement of Financial Position as of 3/31/82
(Unaudited)

Assets		
General Fund		
Checking accounts - Maryland National Bank	$6,307.27	
Savings account - Maryland National Bank	3,531.46	
Deposit a/c 1982 banquet	250.00	
Deposit a/c postage	202.86	$10,291.59
Awards Endowment Fund		
Price Prime Reserve Fund		632.78
Publications Endowment Fund		
Price Prime Reserve Fund		13,390.96
James J. Bradley Memorial Fund		
Price Prime Reserve Fund	$2,819.26	
Cash	100.00	2,919.26
Total Assets		**$27,234.59**
Liabilities		
Liabilities		$ -0-
Net Worth - Fund Equities		
General Fund		10,291.59
Awards Endowment Fund		632.78
Publications Endowment Fund		13,390.96
Bradley Memorial Fund		2,919.26
Total Liabilities and Net Worth		**$27,234.59**

General Fund

Income		
1982 Dues*	$4,028.47	
Sale of publications	30.00	
Interest	49.63	
Contributions	25.00	$4,133.10

*Net after loss on foreign exchange - $11.53

Expense		
Printing	$259.65	
Typesetting and layout	601.50	
Postage and mail service	953.19	
Telephone	12.49	
Xerox	58.69	
Corporate expense	10.00	$1,895.52
Net Income		**$2,237.58**
Awards Endowment Fund		
Income: Interest	$20.08	
Expense: None	-0-	
Net Income		**$20.08**
Publications Endowment Fund		
Income: Interest	$424.98	
Expense: None	-0-	
Net Income		**$424.98**
James J. Bradley Memorial Fund		
Income: Interest	$85.48	
Expense: None	-0-	
Net Income		**$85.48**

Statement of Income and Expense
for the period ended 3/31/82
(Unaudited)

Letters

From: *Keith Marvin, P.O. Box 839, Troy, N.Y. 12181.* The March-April JOURNAL arrived yesterday and I found it to be a most interesting issue.

Re: the "Mystery Photograph" on the bottom of Page 7, it will interest you to know that this picture was also published as a mystery photo in the November-December issue of ANTIQUE AUTOMOBILE on the inside of the front cover. I can positively identify only two of the cars shown. The one on the front left with the curious horizontally-ribbed radiator is a 1904 Berg. The surrey in the right-hand lineup is a 1903 or 1904 Winton.

The location is the community of Ardsley-on-Hudson, in New York's Westchester County. I would judge the time as around 1905 or 1906.

When Bill Bomgardner ran the picture, he didn't know where it was taken and asked me if I could figure it out. I couldn't, but shortly afterward, he received a letter from a gentleman named Dexter Kale who heads the public relations department of Herco, Inc., in Hershey, Pa. It appears that Mr. Kale recognized the location immediately. I quote from Bill Bomgardner's letter to me dated December 16th, 1980.

"He (Mr. Kale) remembers that from when he was a young boy and he told me that Jay Gould and Cornelius Vanderbilt would have some get-togethers at the Ardsley-on-Hudson Country Club which they built and used as an entertainment ground. They apparently had motorcades leading from downtown New York and driving to the Ardsley Country Club. Apparently it was a millionaires' playground. Dexter feels that one of the cars in the photograph would contain Jay Gould and Cornelius Vanderbilt, but, of course, we would have no idea which one. He did not know the automobiles involved but he did know the location."

From: *Cornelius W. Hauck, 8400 Summerhouse Rd., Cincinnati, Ohio 45243.* Further on your Mystery Photo #2 in the December issue: While scanning THE HORSELESS AGE for news on National's racing results, I spotted a different picture of the same car in the October 27, 1909, issue, in coverage of the New York-Atlanta Good Roads Tour which began at New York on October 25. This car, which you'll note carries the number "4" on the hood banner, is listed as a **Thomas** entered by a Colonel John J. Woodside of Atlanta.

From: *David Brownell, Box 196, Bennington, Vt. 05201.* Here's my stab at identifying the group of mystery cars in issue #77 of The Journal: From the left of the photo: 1904 Berg, two 1905 Thomas Flyers, right background is a Pierce Great Arrow, car with fixed top is a 1904 Winton, ahead of the Winton is a Stevens-Duryea Model L and the three cars in the foreground have me stumped.

From: *Fred Roe, 837 Winter St., Holliston, Mass. 01746.* The mystery car in issue #78 is a Disbrow, which was made in only one body style but two chassis sizes in 1917-18. They were shown at the New York and Boston salons with Wisconsin engines. Total production was twenty or a few more, and before the end one or two of them sported genuine Duesenberg engines. Jerry Gebby and the late Karl Kizer remember these. Of course Louis Disbrow the racing driver was the producer, and at the same time he was the Crane-Simplex dealer in Cleveland Ohio.

From: *Alex Welter, 130, av. de la liberte, 4602 Differdance - Niedercorn, Grand Duchy of Luxemburg.* I recently bought an oldtimer which might be very rare. It is a 'ZBROJOVKA Z5 ¼ dated from 1936.

I already tried to find, in several books, something about this car and found nothing. Therefore, I'm writing you with the hope you could help. I do not want to begin restoration until I get enough information. I'm looking for historical and technical information. Any technical information would be very valuable as the engine is completely apart.

The information listed on the car is:

ČESKOSLOVENSKÁ	ZBROJOVKA A. S.
Typ: Z5	Zdvih: 90
Počet	Rok
Válcu	Výr: 1936
Hp: 40	Obsah: 147
Výr.C: 7330	Kg: 1130
Vrtáni: 72	
Výr.Č: 5-3327	
Motoru	

It is a two place cabriolet.

(*Editor's Note:* This letter was sent to Dave Brownell who forwarded it on to us to see if the membership of the SAH could come up with any details of this obscure make.)

From: *Nelson Bolan, 2120 N.E. 42 Street, Lighthouse Point, Fla. 33064.* During the years I have accumulated some catalogs and ads as I suppose most of us have done. One thing is still a mystery to me, however. For some reason, catalogs have a tremendous value compared to ads. Both are just as old as the cars themselves. Examples of both show beautiful art work and photography and imagination. The catalogs were normally free for the asking to anyone who could get into a showroom. Magazines had to be purchased, unless you cleaned out doctors and dentists offices. Purchase price of a new magazine, normally containing several ads, was usually pocket change unless you went in for the "Fortune" type. Ads were limited in size to the particular magazine's dimensions whereas there were no limits to the size and shape of catalogs.

One thing I have never seen in a catalog but often seen in ads, is an endorsement. During late 1930's Chrysler Corporation used movie and radio stars to endorse their Dodge and DeSoto cars. Clark Gable, Claudette Colbert, Eddie Cantor, Carole Lombard, Walt Disney, and others were used. Al Jolson and Ruby Keeler, who were married (to each other) at the time, endorsed a Buick. Probably the most unusual endorsement I have ever seen is the one where a future President of the United States endorsed a car.

In case you don't know about this ad I will give only one hint: He is no longer living, which rules out Messers Nixon, Ford, Carter, and Reagan. Since the automobile "business" as such came into existance during the McKinley administration, it would obviously be someone who served since McKinley was first elected in 1896 and re-elected in 1900; then came Theodore Roosevelt, William Howard Taft, Woodrow Wilson, Warren G. Harding, Calvin Coolidge, Herbert Hoover, Franklin D. Roosevelt, Harry S. Truman, Dwight D. Eisenhower, John F. Kennedy, and Lyndon Johnson (the rest are still living). Obviously the person was well known when he allowed his name to be used or the auto maker would not have wanted to use his name. None of the men who lived in the White House in this century was poor enough to have needed whatever he received as compensation for the use of his name.

Can anyone who thinks catalogs are the only paper to have and that ads aren't worth the effort come up with a catalog equal to this? If so, I would like to hear about it.

Research Column

Wanted: Information on the Staver Carriage Co., Chicago. This company produced an automobile for years of 1907 to 1914. The car was often listed as a STAVER-CHICAGO. From what few facts I have in my possesion, it would seem that 1911, may have been their peak year for cars. They produced a line of quality carriages for many years previous to that. Joseph Hosey, Box 35, Burlington, IL 60109.

Information needed on the coachbuilding firm of Christian A. Roos of The Hague, Netherlands. Anything that you could send me would be greatly appreciated. David M. King, 5 Brouwer Lane, Rockville Centre, New York 11570.

Want any information on the life and work of Edward "Ned" Blakely, particularly his work on the development of the SEARS hi wheelers, and final years in life in Darien, Conn. Joel Braverman, 3470 Princeton Dr. South, Wantagh, New York 11793.

Book Review

"Clutches Through the Years", published in Italian "La Frisione Nel Tempo" with an accompanying English translation of the text and titles, 103 p, color enhanced illustrations. First volume of a series on the history of vehicle components commissioned by Valeo S.P.A., the Italian member of the French International Ferodo (originally brake lining) Group which recently assumed the Valeo badge and lays claim to being the largest clutch manufacturer in the world.

This is an important book to every automotive historian whose interests go deeper than sculptured sheet metal. In the Preamble, the author states that the Centennial History of the motor vehicle cannot be written until the histories of each of the components has been researched and written. He recognizes the limitations of this initial work and envisions it as a catalyst for research on clutch history as well as research on other components.

The Chairman of Valeo prefaces the work with a noteworthy comment — one which the machinery designer appreciates being voiced and one which perhaps underlies the dedication of both those who labor to restore and preserve the designs of past decades and those who equally strive to record the history of their creation — "A mechanical product has its own beauty when it plays its role with style just as a work of art has when it moves the beholder."

Clutch mechanisms of the earliest vehicles of Benz, Daimler, Maybach and DeDion are specially illustrated and described, as are the early inventions of Worly and Wilson Pilcher. Representative clutches of the several types of friction clutches that eventually found favor are described, as are examples of electro-magnetic, centrifugal-friction and hydraulic (coupling) clutching.

The operation of the single-plate clutch is described in considerable detail. Your reviewer's experience has been that very few people have a good understanding of clutch function and that a lack of instructional material has been responsible. "Clutches Through The Years" is a big forward step in that regard, that chapter being somewhat of a bonus over and above the basic historical documentation.

The reader must recognize that this publication is sponsored by a commercial house. I would commend, rather than criticize, the fact that only about the last 13 designs addressed, out of a total of 53, are in-house products.

Difficulty will be experienced in relating a specific design to the calendar. Progression of time with succeeding pages is infered; it is obviously non-linear and subsequent editions will hopefully provide a correlation. For the present edition, a title prefixed with "European" would be appropriate.

Without question, an international history of clutches should include the domestic designs in such significant vehicles as the Ford Quadricycle, Duryea and Haynes, as well as the precedent-setting designs of Howard Marmon and Ernest Wemp for Long Mfg. (Borg & Beck).

I can recommend it to my fellow historians. I look forward to subsequent volumes on related components.

George Hanley

(Editor's Note: SAH Member George Hanley designed clutches for Long Mfg. Div. of Borg-Warner in the late 1940s; some are still in production today. George is a Professional Engineer now in Private Practice.)

DUESENBERG: THE PURSUIT OF PERFECTION, by Fred Roe. 286 pp., more than 550 photographs. Hardbound. 9⅞" x 7½". ISBN 090 1564 32X. Dalton Watson Ltd., London. Available in the US from Motorbooks International, P.O. Box 2, Osceola, Wis., or order direct by calling 1-800-826-6600. $59.95.

This book will without the shadow of a doubt go down in automotive histories as one of the finest bits of coverage yet accorded to a given make of car. Written by an authority of the marque, it tells the story of the great car and its builder in a matter-of-fact, yet informative way, completely and to the point and devoid of the furbelows which have tended to mar so many otherwise fine histories. The history of the Duesenberg isn't really all that complicated but there are several phases to the tale and Fred Roe has somehow managed to keep them all in perfect balance.

Briefly, it may be said that DUESENBERG: PURSUIT OF PERFECTION comprises an even dozen chapters, for the most part short ones. Where the beauty of the volume lies is in its balance between the text, the photos, many of them never before published in previous books or articles, and the captions.

The story of the car and its destinies begins, quite naturally, with the Duesenberg brothers, their emigration to the United States, and their early life. Following are the stories of the Mason-Maytag days in Iowa, racing cars and their engines, the Rochester-Duesenberg engine and the cars which used it and the Model A. More racing and the introduction of the supercharger then takes the reader into the Cord era plus two excellent studies - beautifully illustrated - of the closed and open J, SJ, SSJ and JN cars, concluding with racing, record runs and revivals from 1930 to the present.

After reading this book the first time the thought came to me that we are indeed fortunate to have as much really great material on such a car readily available and to be found primarily in two massive studies on the subject, J.L. Elbert's DUESENBERG: THE MIGHTIEST AMERICAN MOTOR CAR (published by Dan R. Post more than 30 years ago) and now, Fred Roe's book. The Elbert work is happily still in print and, like the new one, replete with every aspect surrounding the car. The beautiful part of all this is that the Roe work contains a great deal which was not covered by the previous book and since there weren't all that many Duesenberg cars produced in its 18-year history, the reader can get a pretty fair idea of exactly what the make was all about.

All told, in DUESENBERG: THE PURSUIT OF PERFECTION, we have some 56 photos relating to the Model A - the largest collection, I think, even assembled on this car in one place; some 350 on the J, SJ, SSJ and JN cars and four on the interim Model X of which perhaps a dozen cars were completed. There are also numerous pictures of the racing cars, the early Masons and Maytags and a sprinking of automobiles employing the Rochester-Duesenberg engine at one time or another such as Argonne, Biddle, ReVere, Roamer and Wolverine Special.

THE MOYER OF SYRACUSE

by G.M. Naul

H.A. Moyer had had years of experience in the building of vehicles before considering the manufacture of automobiles. Evidence indicates he built an experimental automobile at least as early as 1908 and prior to that date, he had spent thirty-five years as a manufacturer of carriages and wagons. (Ref. 1) Harvey Allen Moyer was born in Clay, N.Y. in 1853 and before the age of sixteen had engaged in carriage and wagon repair. In 1881 he moved to Syracuse and bought land and buildings at Wolf and Park Streets and three years later he erected another building on Salina Street. By 1903 the factory had 350 workers. He continued to manufacture carriages and wagons until 1914 by which time a total of 56,000 horse-drawn vehicles had been built. With this background in the business of manufacture, Moyer was much better suited to manufacturing of automobile components than the majority of aspiring manufacturers of the time. During the carriage era he had developed a number of manufacturing improvements including a hub-boring machine, a self-lubricating axle and a noiseless king-bolt, all of which were patented before 1900. (1,2)

The first mention of a Moyer automobile in a national publication seems to have been in Jan. 1909, stating that Moyer was experiementing with a new automobile and would begin manufacture of it if it was successful. (3) Early in 1909 it was announced that H.A. Moyer would build a factory in which to manufacture automobiles. This four-floor building, still standing, cost $50,000 and was ready for operation by Jan. 1910. (4) While there is only oblique evidence that any Moyer cars were built in 1910, it is likely those were identical with subsequent automobiles made for 1911. The first published description of cars by Moyer was in June 1911. (5)

All models of the Moyer were substantial vehicles, conservatively designed, and in the main, manufactured at the Syracuse plant. During the first two years, 1910-1911, Waukesha engines were used, but subsequent models had Moyer-designed engines which were cast in Syracuse under contract. (6) Most of the machining was done in the Moyer factory. Some of the standard parts were purchased, including Brown-Lipe transmissions, German-built Mea magnetos, Carter or Schebler carburetors, Prestolite lamps and later, USL lighting and starting equipment.

Details in the design of the Moyers show a much greater attention to detail than in the majority of cars of the period. For example, the exhaust manifolds were made in sections with slip joints to allow for expansion to prevent any thermal force acting on the twin-cylinder castings; the radiator filler neck had a removable strainer to prevent foreign particles from entering the cooling system. All Moyer-built engines had full-pressure lubrication with drilled crankshafts and tubes running external to the connecting rods to feed oil to the wrist pins. (7) (Just how advanced this system was in 1913 can be judged by the fact that as late as 1933 Chevrolet still relied on the primitive splash method for lubrication of all engine bearings.) On the Moyers, running-board brackets were suspended from the bottom frame flanges rather than from the webs, which presented a smooth and uncluttered surface to the exposed frame rails.

A feature which seems unique to Moyer cars was the internal expanding braking system on the rear wheels in which the foot-operated brake and the hand brake were concentric. The latter had the smaller diameter and was surrounded by the brake shoes and drum for the foot brake. (7) The USL generator and starter first used in 1913 were built into the flywheel.

The Moyers used what just might be the first anti-sway system in conjunction with rather unusual three-quarter elliptical rear springs. These springs were in essence semi-ellipticals connected to the upper one-quarter ellipticals by shackles rather than by the standard solid connection. Shackles were also fitted to the front end of the rear springs. The rear ends of the semi-ellipticals were outboard of the upper one-quarter elliptical springs. The unique feature consisted of a connecting bar between right and left shackles at both the front and rear of these springs. This rigid torsion system forced a spring to bend equally when the spring on the other side was deflected. Thus the rear springs were forced to act in unison, preventing swaying of the body. It is obvious that these springs must have had a lower spring constant (inches deflection per pound of load) than standard springs normally mounted. Otherwise such springs would have given a very stiff ride, as the effective spring constant was the sum of that of **both** rear springs. According to F.A. Rouse, a former Moyer owner, this springing was very effective, even with a full complement in the seven-passenger car. The spring system plus sufficient engine torque probably gave rise to the marque's motto: "All Roads Are Level To A Moyer."

Radius rods from the frame to the rear axle were also unusual as they were made of two flat spring leaves. These were bolted to the frame at the front end and at the rear were clamped between the axle and the lower spring. The manufacturer claimed this design eliminated rattles made by conventional rods and these also acted as auxilliary springs under heavy loads. The rear spring design and the radius rods were indicated as being "Pat. applied for" but patents had not been granted as late as 1914. (8)

In the catalog description of the Moyer engines, it is emphasized that the three crankshaft bearings in both the fours and sixes were not scraped but were bored to within 0.00025 inch then lapped. It is also claimed that "...The Piston, Piston Rings and Connecting Rods are all balanced to a hundredth part of an ounce, so when the motors (sic) are completely assembled, all vibration is practically eliminated." (8) A hundredth part of an ounce is equal to less than 0.3 gram. Quite frankly I am sceptical of this claim and I believe it should have read one-hundredth part of a **pound** or about 5 grams. The balancing of a mass of 5 grams would have been practical at that time but any balancing would have been on a static rather than on a dynamic basis and therefore could not have completely eliminated all vibration from a running engine.

The elliptical emblem of graceful design was made of cloissone enamel. The different enamel colors were separated by brass dikes before firing and after firing, the enamel was ground and polished, exposing the three colors bordered by brass strips. The background was white with Royal blue around the edge of the ellipse and the letters were red.

The steering wheel spider or spokes were of brass and the mark of the carriage maker was evident in the all-wood bodies.

Moyer automobiles were the product of one man, H.A. Moyer, and this is quite evident in the available catalogs which were written for the most part in the first person singular. Furthermore, in none of the catalogs, the most "official" publications available, is there any reference to any "Company" nor to "Incorporated". The organization which built these automobiles is given as: "H.A. Moyer, Syracuse, N.Y.".

The Models

The sorting out of the several models made by Moyer is other than simple. Descriptions given in the motoring press were inconsistant in some cases and a couple of the models carried the same designation despite changes from the previous year.

The 1911 models were designated A and B. Model B was carried over into 1912 and 1913, despite an engine change from the 1911 model. There also is some confusion as to the body types offered in each year, as in one of the 1913 catalogs are photos of roadsters but under description of body types available, there is no reference to two-seaters.

The accompanying table shows the various alphabetical models and the years they were produced along with the more important mechanical specifications. Where differences have occurred, the manufacturer's catalogs are assumed to be the more accurate.

There was a single reference to possible light sixes which Moyer was to build for 1916, but such models were never built. (9)

Production

The account of the Moyer in **Antique Automobile** for March-April 1972 states "...Total production is thought to be between 400 and 500 cars." These figures are not greatly different from the following estimates based on Moyers registered in the years 1912-1915.

A search of New England automobile registration lists has yielded 49 unambiguous serial numbers which, added to three extant cars given a total of 52 Moyer serial numbers. (10) The smallest numerical example is 28 and the largest is 393. From this data it is possible to estimate the total production as follows:

$$p = (d)+1$$

where p is the estimated production, n is the total number of serial numbers and d is the numerical difference between the smallest and largest. So,

$$p = (393-28) +1 = 380$$

This value is based solely on the available numbers. However, if the initial or first serial number is assumed to be 11, then the estimated production becomes

$$p = (d)+1 = 390$$

and if the first Moyer was numbered "1", then the estimated total becomes 400. (11)

$$\frac{n+1}{n-1}$$

$$\frac{52+1}{52-1}$$

$$\frac{n+1}{n}$$

Fortunately there are sufficient serial numbers available and well distributed, along with the accompanying taxable horsepower, to allow an estimate to be made of the production of the several models:

Year	Model	Tax. HP	Estimated Production
1911	A,B	28	177
1912	B,C	32	177
1912	D	38	9
1913-5	G	48	36
		Total	399

The above total agrees closely with the earlier estimates of total production. The only reference to Moyer production states "...Moyer cars were produced during 1911 to the number of about 150." (12) This figure is not greatly different from the calculated 177, above.

The search for Moyer automobiles registered in New England entailed sifting through about 50,000 vehicle registrations for 1912-1915. Surprisingly, nearly 12% of Moyer production was registered in Mass. and Conn. Of the 49 New England cars, 28 were registered within fifty miles of Norwalk, Conn. Further searching revealed that the dealer responsible for these sales must have been O.H. Banks Co. of Norwalk. This company had three Moyers registered in 1915 as "livery cars" or taxis. The other known Moyer dealer is listed as A.J. Forbush who was termed the "local dealer" when Moyers were exhibited at the 1912 Boston Automobile Show, the first showing outside Syracuse. (12)

Harvey E. Moyer of Central Square, N.Y., grandson of H.A., knows of the existance of six Moyers, plus one he owns and one owned by his son. Eight survivors out of a total of 400 is 2% which is a very high percentage considering that nearly seventy years has passed since the last Moyer was built. Analysis of modern automobiles has shown that a survival of about 1% is expected after only 18 years. (13). The 2% after nearly seventy years is a tribute either to careful maintenance or to the basic quality of the Moyers, or both.

References: Note: numbers in parentheses, ( ), indicate page numbers.
(1) Chase, Franklin H., **Syracuse and Its Environs: A History** Vol. III, p. 213 Lewis Historical Pub. Co. New York and Chicago, 1924.
(2) Post-Standard (Syracuse, N.Y.) 5-31-1935; 10-10-1935 (no pages given).
(3) HA 1-13-09 (75).
(4) HA 12-8-09 (661).
(5) ATJ, June 1911 (152-4)
(6) Harvey E. Moyer, private communication. (*Note:* Waukesha engines were less than popular in Passenger cars, and the only other make which has been traced, to use a Waukesha engine was the very obscure Wright auto built in New Cumberland, Pa. It was a four-cylinder engine of same bore and stroke as the 1911 Moyers. See Antique Automobile, May-June 1972, (20-2).)
(7) 1913 Moyer catalog.
(8) 1914 Moyer catalog.
(9) **Motor Age,** 10-7-15 (18).
(10) **New England Auto List and Tourist** Vol. 6, No. 5, 2-3-1912; Vol. 6, No. 10, 3-9-1912; Year Book, 1913; Vol. 9, No. 8, 2-20-1915. **Connecticut Motor Vehicle Register,** June 1915. State Pub. Co., Hartford, Conn.
(11) Goodman, Leo A., "Serial Number Analysis", **Journal of the American Statistical Assn.,** Dec. 1952 (622-34). *Note:* For a fascinating account of the use of serial numbers found on captured equipment to estimate enemy production, see the same Journal for 1947, Vol. 42 (72-91): Ruggles, R. and Brodie, H., "An Empirical Approach to Economic Intelligence in World War II".
(12) **Automobile Topics,** 3-19-15 (196).
(13) Naul, G.M., "How Rare It Is!", **Special Interest Autos,** April-May 1972 (22-3)

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Walt Gosden can take credit (or blame) for suggesting that I write an account of the Moyer. The dearth of published information on this make required great dependence on the generosity of several persons. Those to whom I am greatly indebted include:
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Peter Winnewisser, Cazenovia, N.Y.

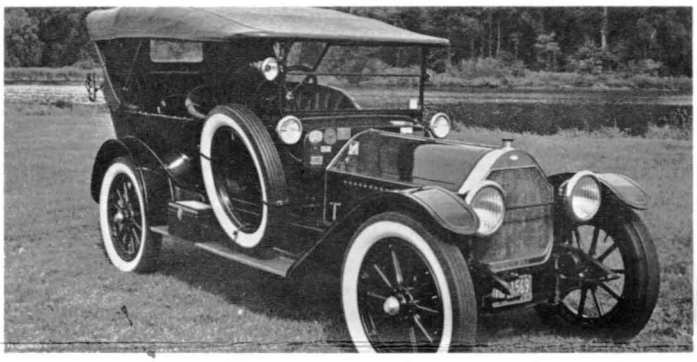
(*Editor's Note:* The photographs of the Moyer factory complex as it stands today were taken by Leonard Aquilino Jr. of Syracuse, N.Y. at the request of the editor, especially for the SAH Journal. I want to thank Len for taking the time to show us a current view of the Moyer plant.)

Specifications of Moyer Automobiles

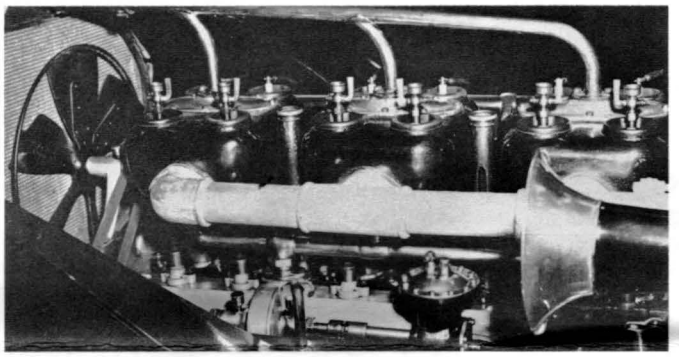
Model Year	Model	Wheel-base	Tread	Body Type	Weight	Price	Cyls.	Engine Bore	Stroke	Disp.	HP (Tax. HP)	Tires F/R
(1910)												
1911	A	116	56	5pt		$2250	4	4.25	5.0	283.7	(28.9)	
	B	116	56	5pt*			4	4.25	5.0	283.7	(28.9)	
	-	116	56	2pr		2150	4	4.25	5.0	283.7	(28.9)	
1912	B	118		5pt		2350	4	4.5	5.0	318.1	32(32.4)	34x4.0
	C	118		2pr		2200	4	4.5	5.0	318.1	32(32.4)	34x4.0
	D	121		5pt		3000	6	4.0	5.0	376.9	49(38.4)	35x4.5
1913	B,E	117		chassis		2800	4	4.5	5.0	318.1	(32.4)	34x4.0
	D,F	122		chassis		3100	6	4.0	5.0	376.9	(38.4)	35x4.5
	G	135		7pt			6	4.5	5.0	477.1	70(48.6)	35x4.5
1914	E	120	56.5	5pt	3100	2500	4	4.5	5.0	318.1	(32.4)	34x4.0
	G	135	56.5	7pt	3500	3250	6	4.5	5.0	477.1	70(48.6)	35x4.5
1915	G,H						6	4.5	5.0	477.1	70(48.6)	

*Four-door type, while Model A was without front doors.

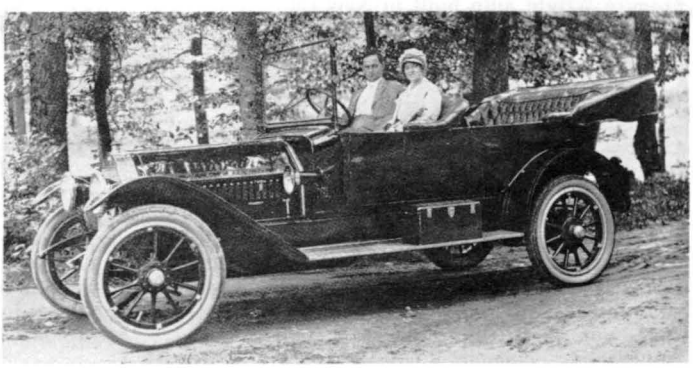
Note: All engines were T-head. Compressed-air starting was provided for 1912, but the make is unknown. For 1913 and after, USL starting and lighting was used.



1914 seven-passenger touring car, Model G, previously owned by F.A. Rouse.

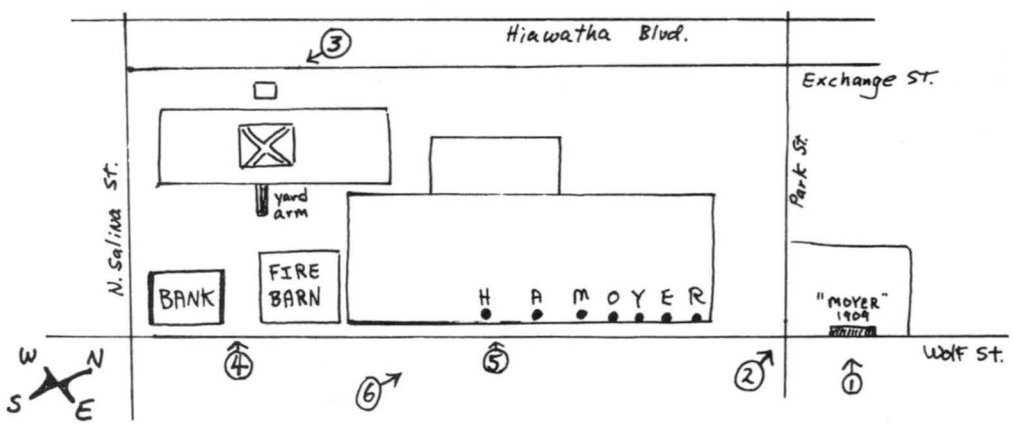


Left side of the engine, Model G.



Another seven-passenger touring, Model G. Purportedly the last Moyer built.

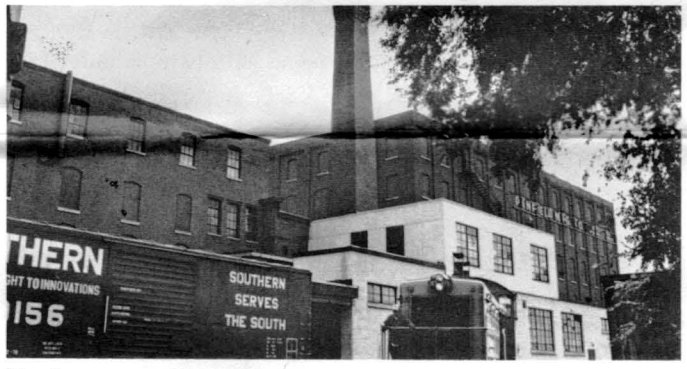
Artist's concept of the factory, ca. 1912.



Notes on the Moyer Factory by Len Aquilino Jr. on the Moyer factory there were/are eight spires on top of the building, lettered 'HA MOYER' and on the Park Street side "1895". The numbers in the diagram correspond with the numbers on the photographs.

No. 1

No. 2



No. 3

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No. 5

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Mystery Photograph: Member Paul A. Shubsachs of Manchester, England sends us the charming photograph of the lady driver with her companion in a magnificent Edwardian motor car. Question is, what make of car and what year?

Factory Photograph: The "Sports Special" is a 1934-35 Morris 1016, that featured an L head 6 cylinder engine with twin carburetors. Photograph from the collection of the editor.

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