



Transcript for

AUTOMOTIVE DESIGN ORAL HISTORY PROJECT

INTERVIEW WITH GORDON BUEHRIG, 1984

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NOTE TO READERS

This PDF-format version of the Gordon Buehrig interview transcript was created from a Word document, created in turn from the transcript available on the *Automobile in American Life and Society* Web site (<http://www.autolife.umd.umich.edu>).

The Automotive Design Oral History Project, Accession 91.1.1673, consists of over 120 interviews with designers and engineers conducted by David Crippen of The Henry Ford during the 1980s. For more information, please contact staff at the Benson Ford Research Center (research.center@thehenryford.org).

Staff of the Benson Ford Research Center
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AUTOMOTIVE DESIGN ORAL HISTORY PROJECT

The Reminiscences of Gordon Buehrig

Reminiscence from the 1989 Interview with Gordon Buehrig. Automotive Design Oral History, Accession 1673. Benson Ford Research Center. The Henry Ford.

The oral reminiscence is the result of a series of interviews with Gordon Buehrig by David R. Crippen during the month of July, 1984, in Grosse Pointe Woods, Michigan. These interviews were held under the auspices of the Edsel B. Ford Design History Center, Archives & Library Collections, The Edison Institute.

The questioning was primarily in the form of topics suggested to Mr. Buehrig concerning his career. No editorial insertions have been made other than the brief synopsis of the interviewee's career activities.

The language of the narrative is entirely that of the interviewee. He has reviewed and corrected the manuscript and by his signature below indicated that it is a correct copy of his reminiscences.

This transcript and the recorded tapes are deposited in the Archives at The Edison Institute with the understanding that they may be used by qualified researchers for scholarly purposes. The undersigned does hereby release to The Edison Institute all literary rights to this interview.

-Gordon Buehrig

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This is Dave Crippen in Grosse Pointe Woods (Michigan). We are continuing our series of interviews with seminal designers--automotive and industrial designers--those that have influenced the course of the industry, and today we are talking with Gordon Buehrig who is well known to all as a great influence on the course of automotive design. We are going to ask Mr. Buehrig to tell of his career and his experiences in his own way starting with his earliest influences.

A: My career started sixty years ago in Wayne, Michigan, at the Gotfredson Body Plant which was building bodies at that time for Wills- Saint Claire, Peerless and Jewett, and at that time all automobile bodies were wood frame with either steel or aluminum paneling. The automobile industry--the body business--which, of course, is the only part I know about is the body end of it. The tooling was a very inexpensive process--very straightforward, and it was a process inherited from the carriage business, and we're indebted to the foreigners from Europe, mainly from Germany and England and Russia and so on where they were building--where the carriage industry had flourished, and then the carriage industry got pretty well going in America,

and Cincinnati was at one time sort of the carriage industry headquarters of America. But when the automobile started, the automobile pioneers were primarily engineers--chassis men, and so they turned to the custom body or to the carriage builders to come up with bodies for them. So, the process at

Gotfredson, which I'll describe very briefly.

There are still Gotfredsons living in Grosse Pointe. They were in the truck business, and then they opened up this body shop in Wayne, Michigan, and I went in as an apprentice. I was twenty years old at the time, and I won't go into the details of body drafting, but body surface development is a old

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art which is somewhat similar to the lofting of boat hulls or aircraft work, but it was a direct descendent from the carriage business. So, they would design--the designer would come up with certain empirical lines, and from that the surfaces would be developed. Well, from the body surface, after that has been described, then the body engineer would lay in the woodwork, and the body draftsmen included every joint and every screw and everything was all shown there. So, these pieces of wood had to be milled so that they would fit exactly under the skin. That was what we would do in the body shop--in the sample body shop--we would actually build a sample body framework directly off the body draft. And when that was finished, it would be put together just the way a finished a body would be put together except that we: would not use any glue. We'd put the screws in and screw the whole thing together, and then that was a final checkout for the body framework. After that was done, the body framework parts were all given names and part numbers. The body then was disassembled, and each part was marked with its part number and was shellacked and put in the tool room. That was our tooling, so they would build at Gotfredson, maybe a run of three or four hundred bodies at a time. The problem would be one of space, of putting the parts, because they would set up a machine to mill a certain one of the body components, and they would run off, say 400 parts, and those would be stacked on dollies and set aside, and then that same machine would be set up to run another part, so you had to run all the parts on the body--say for a run of 400 units--and then as soon as the part was set up, then the master part was put back in the tool room. Though, when you got enough--400 parts of every part of the body---then they

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would move those over and put them into the assembly jig and frame up that many bodies. Well, obviously, this was pretty inexpensive, and I think that maybe \$30,000 or \$40,000 was enough money to tool up the framework, and body panels were reasonably simple in those days, and the body was usually designed with belt mouldings to cover the joints between the panels, and these mouldings were--here was where a designer had a little bit of leeway. He could put the moulding where he thought it looked the best, and the exterior panels would be so designed, and then they would be drilled and nailed right on to the wood framework, and then the moulding, which was

usually about 1/8 of an inch thick--aluminum--that would be drilled with a special kind of bit that brought up a burr around the hole, and so then that would be nailed down and that would cover the joints between the sheetmetal panels. The nail would be driven in pretty well, and then you would hammer the burr down over the top of it, and then file it off, and that gave you the smooth finish which would hide where the nail was. That was the process, and so, in those days we had a lot of automobile companies. I think there were--if my memory serves me right--95 automobile companies that showed in the auto show in 1924. The reason there were so many of them was it required very little money to get into the automobile business. There were a number of companies building engines Lycoming in Williamsport , Pennsylvania , and there was Continental Engines in Detroit , and I think there were one or two other engine companies, and then there was Warner Gear that made transmissions for a lot of different cars. Columbia Axle built axles, and the--I can't think of the name of them [A.O. Smith]--a company up in Milwaukee that made the frames for most

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all of the cars. They're still in business. So, if an entrepreneur had a few thousand dollars, then an engineer and an idea for a new car, he could pick components off the shelf, so to speak, from the industry and put together a fairly reasonable automobile, and these were called assembled cars, and there were many, many of them. One that comes to mind was the Jordan car in Cleveland which had a--I believe it had a Continental engine. But, then there were some body companies. We had Briggs Body Company in Detroit , and we had the C. R. Wilson Body Company and the Murray Body Company. And, as I mentioned, Gotfredson Body Company. So, someone, an entrepreneur with a new automobile idea, could have a small factory and ship in all these components including the bodies, and he was in the automobile business! Then, around 19, oh, in the early Thirties, the trend was toward all-steel bodies which was a step forward in one respect in that if you could afford the tooling costs, you could produce a body at less cost. The problem was in the early all-steel bodies that they were very tinny sounding, and so the first ones were for trucks where it didn't matter how much noise was in the car, and I think at that time Ford was building their open cars which rattled, of course, in all-steel bodies and their commercial cars. But their closed cars were all still wood framework with steel panels because you had the sound of quality when you would slam the door. At that time, Henry Ford had extensive holdings in the upper peninsula around Iron Mountain of thousands of acres of timber because he wanted to be sure that he never ran out of wood for the wood frames of bodies. Fisher Body had a similar commitment of forestry. I believe it was in North Carolina or somewhere where they had--see the wood that

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we used primarily was hard maple. The custom bodies were made usually of ash which was a stronger material than maple but really not as nice to work with as the maple for production cars. At that time, Henry Ford, who was very cost conscious, designed the crates for components that he would buy on the outside if he were buying axles or something of that sort, he would design the crates and specify the material that those crates would be made out of. When they came in, the crates were taken apart and used for floor boards, and so, anyway, at any point in history of the automobile industry you work with what knowledge is available at the time, and the

knowledge that was not available in the early days of all-steel bodies was the manner of silencing the steel panels. So, working with the chemical companies, they finally came up with materials that would be sprayed on the inner panels of the steel bodies, and through this method we finally got all-steel bodies that sounded like quality cars and virtually all automobiles now are built that way. But, the catch is that to build a body of that type in today's market, we're talking instead of \$40,000 or \$50,000 to tool a body, we're about \$200,000,000, and so the advent of the all-steel body combined with the Great Depression that started in 1929, wiped out most of the smaller automobile companies. So, when the investment got larger, then the gamble was so much greater that the companies could afford to spend a lot more money in the design and development of a prototype body because it was very important that they be right when they got their car on the market. This was when they started building full-size, clay models to check out design. Prior to that, they were built to the geometric layout of the body draft, and the first time you saw it

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in full size was on a prototype body. My first four years in the automobile industry was in apprenticeship and in engineering, and I had gone from Gotfredson Body over to the Dietrich Body Company in Detroit. Ray Dietrich had a fine, custom-body shop here, and from there to Packard. I was working at Packard in body engineering. This would go around about 1927 and, perhaps, early '28. Harley Earl had been brought to Detroit from California to do some design work for Cadillac, and over there, with the help of Ralph Pew, did the original LaSalle car which was a styling--very exciting car when it came out. As a result of that, Harley Earl was moved over to the General Motors Building. He had a little office on the tenth floor, and he started a design department for all of General Motors, and he called it Art and Colour. I was playing tennis one day with a friend of mine who was a draftsman working for Harley, and he suggested I talk to him, and I went over, and by taking a reduction in salary, I went from Packard to get my first experience in a design department. And, at that time, we were building models in full-size clay. We were importing the clay from Germany, and the clay that is used by--in the automobile industry is entirely different from clay used by sculptors. It's a material that is sensitive to heat, and at normal room temperatures is very hard, and at about 105 ° is quite soft and pliable. At that time, we would take these blocks of clay and put them in buckets of boiling water and heat them up and then pull out this hot clay and push it on to the armature. This didn't last very long until they built some electric ovens, and the whole process became very sophisticated, General Motors, through some connection --I don't know how they worked it out--but they found a

relevant Manufacturing Company. They were able to duplicate the clay from Germany, and that company is still in business and supplies all the clay for the industry and has ever since. So, John Lutz was an old German fellow who--in fact, most of the people--the trades people--in Fisher Body and at General Motors at that time were Germans. They used to say that they spoke German in Fisher Body as much as they spoke English. Anyway, John Lutz was a clay modeler, and I was anxious to learn how to do it, so he let me fool around with the shaping of one of the fenders, and I was pretty proud of it, and then he said, "I could do better with an axe," and he probably could. Anyway, we were building the... designing the pregnant Buick at that time, and the only part of it that actually was where I had an influence was that I did design the instrument panel for the '29 Buick, and from there I went with Stutz in Indianapolis, mainly to make more money and to be the head of the design department at Stutz. But Stutz was sort of on its way out.

They had a man by the name of Colonel E.S. Gorrell, who was president of the company, and a man by the name of Fredric E. Muskovics, who was chairman of the board. When I got there, Stutz had just come out with a new model which was designed--bodies were designed and built by LeBaron in Detroit, which was a division of the Briggs Company. It was an ordinary bit of design work. It was not bad, but their roadster and their touring car or phaeton were not very well designed. They had a slooped-down door that was rather poorly worked out, so about all I got done at Stutz was to redesign that door and the cowling. Oh yes, another thing was that the windshield on that car was a folding-type windshield which was quite popular in those

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days, and it was held in the up or down position by a friction nut on the--hand-operated or hand-knurled knob on the end which would hold the windshield in the up position or the down position. Well, while I was still at General Motors I bought a '29 Buick--a Buick Roadster--and it had the same arrangement. The car was not fast by today's standard, but it would do 70 miles an hour, and at 70 miles an hour with the windshield down, it would suddenly flop up in your face. So, at Stutz, I redesigned the windshield by having two centers--one for the axis of the windshield, and then I put a tapered pin that would fasten in with two notches--one notch would hold it in the down position and one notch in the up position. So, by--and this didn't take an awful lot of strength either because once it was in there, it was locked in because of these notches, so the new Stutz windshield did not flop up at high speed.

Q: Was this Stutz roadster still the famous Bearcat?

A: No. No. The Bearcat was actually earlier than that. Anyway, the only other thing I did at Stutz was that in the LeMans race in France, a man by the name of Brisson, I believe it was, had come in second or third with a Stutz car, and he wanted three new cars built for the next year's race. And, this was a very exciting assignment. They took the small Stutz Blackhawk chassis and put the large Stutz engine in it, and they put a positive displacement supercharger out in front of the radiator similar to the arrangement that most people are familiar with on the Mercedes. My assignment on it was to design the body, and, in that particular year in the LeMans race, the car had to be built with fenders and, of course, headlights because it's a 244 hour race, and it had to have a four-passenger body. The body specifications were

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quite complete for the front seat--not so much for the rear seat--so I made the rear seat quite small, and the body was to be built by the Weymann Body Company in Indianapolis which was a branch of the Weymann Body Company of England where they built bodies that were covered with chicken wire and then padding and then with a fabric covering which made a very fine body and a very lightweight body. So, the problem was to design the wood framework and the body because you were very limited on compound curvature when you were working with stretched fabric. But, anyway, the cars were built and sent to France, and that was a rather exciting thing for me to do. But, about that time I heard that Duesenberg was looking for a designer, and so around the time of the Indianapolis race in 1929, I moved over to Duesenberg as their body designer. The situation at Duesenberg when I moved there was that the Model J Duesenberg was

already in production. In fact, between my jobs at General Motors and Stutz, I had made a trip to New York as a sort of a vacation and attended the fine car show at the salon at the Commodore Hotel, and this was the introduction, of the Model J Duesenberg, and they had a LeBaron Phaeton and a Murphy Convertible Roadster, and I presume other models, but those were the two that struck my eye. Of course, they were the hit of the auto show.

Q: What year was this?

A: This would have been in '28. So, of course, I was so enthused about that automobile, and then about six months later here I was the body designer for them. But the Duesenberg company, which was at that time part of the Cord Corporation, and Fred Duesenberg had been employed at the vice president and chief engineer. His brother, Augie

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Duesenberg, was not connected with the company. Augie had a little race car shop across the street from the Duesenberg plant and continued his activity in auto racing. But, anyway, the Duesenberg Company did not build bodies. This was not unusual. This would be like Rolls-Royce or most any of the fine foreign companies. They'd just build chassis, and the custom body firms built the bodies. At that time there were some very fine custom body firms in the United States . There was the Willoughby Company, the Judkins Company at Merrimack, Massachusetts, and there was the Brunn Company in, I believe in Buffalo, and then there was the Durham Body in Rosemont, Pennsylvania, the Murphy Body Company in Pasadena, California, the C. P. Kimball Body Company in Chicago, and Locke--I forget where, Locke, I believe was in Rochester. And, there were--Waterhouse was another one too--a very fine custom body firm. So, in organizing the introduction of the car, Harold Ames, who was a vice president in charge of sales--at that time E. L. Cord was president of the company, but I never saw him at that time. Anyway, Ames did what would be the normal thing to do was to go to the custom body firms and have them design a line of bodies for his new chassis. This, of course, was before the stockmarket crash, and I think that Ames was conservative in his purchase of bodies in that he would only buy maybe ten of a kind, whereas the custom body business for Lincoln or Packard--they would usually buy a hundred. But, Ames bought, we'll say, ten bodies of a type, and in the case of the Murphy body roadster--that was a very popular model, and they built many of those. And, the LeBaron Phaeton also; but the other bodies, we had a little too many of them, and also we had two wheelbases--one was 1142k" and the other 153P--and in

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ordering frames from the A. O. Smith Company (that's the company I couldn't think of a little while ago), we got more of the short wheelbase--1421" wheelbase--and, so the five-passenger bodies were supposed to be fitted onto the 142j" wheelbase, and the longer wheelbase for the seven-passenger town cars and things of that sort. Well, the problem that we had in selling the Duesenberg was it was, of course, a very high-priced car (\$8500 for the chassis alone) and our bodies--the average Duesenberg at that time was selling from \$12,000 to \$14,000 complete. The problem was this, that a custom body company in those days had certain inherent characteristics.

If you were knowledgeable about car bodies, you could usually look--seeing a car in an auto show you could tell whether the body was built by LeBaron or built by Willoughby or built by Judkins. They all had their individual hardware that they used for everything, and they also had sweeps--a certain roof sweep or a certain body turn under. The bodies cross section would be-- and the body engineer, regardless of where somebody had put the

design mouldings or things of that sort, he still would get that body roof panel sweep down, and that was the roof line, and he'd get a turn under body side sweep, and that was the side sweep. So, of course, a body built by one body company for Lincoln would be of exactly the same quality as they would build that body for Duesenberg, and because of this built-in similarity that a company had in making their bodies, a body on a Duesenberg built by Brunn, we'll say and designed by Brunn was very, very similar to one done by Brunn for Lincoln. So, in the auto shows customers would look at the Duesenberg and see a Brunn body town car at \$15,000, see the same body on a Lincoln for probably \$6,000, and

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the Lincoln car was, as far as manufacturing precision was concerned,

equal to the Duesenberg. And, they'd go and look at a Pierce-Arrow and see the Brunn town car on a Pierce-Arrow and the same body, and that one might be priced at \$8,000. But, here is Duesenberg at \$15,000. A lot of owners in the luxury car market had chauffeurs, and they were primarily interested in comfort and in design detail and so forth, but the one thing that Duesenberg had that the others didn't have, was a top speed of probably 20 miles an hour more than the rest of them. So, this appealed to the sporting individual who liked to drive his own car and might buy a LeBaron phaeton and plan to drive it himself because of the thrill of driving at a 100 miles an hour or better. But to the person buying a town car, that didn't mean anything. The chauffeur was going to be driving it, and they wanted quiet comfort. So, this caused a big problem in the sale of Duesenberg cars, and so that was the reason that, I think, Ames was interested in having individual designs. Now, if I

had been the illustrator type of designer and would merely make sketches-- outside sketches--of the design of a car, and we would have sent it to a custom body company, we would not have solved the problem, because the body engineer would still use the same sweeps, and the contours would be the same, and it would still look like a body from Durham or LeBaron or what have you. However, having had four years of training in engineering, I was able to make body drafts, and I'd make these in a small scale, and the body draft--I'd make a design and show it to Ames and get his approval, and then I would lay it out as a body draft, and on the body draft I showed the empirical lines. In the side elevation, the plan view and the end views, the cross sections and so forth. I

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seldom attempted to show construction because these body companies knew how to build things, but we wanted the exterior surface to be individual. So, the bodies that I designed that were built by different body companies, when those were shown in the auto show, they were unique.

You couldn't get those bodies on a Lincoln or a Pierce-Arrow, and so they sold real well. The problem was that Ames had a backlog of these old bodies still in the warehouse. See, the way the custom body business worked was that a company would buy--and in our case maybe ten bodies; in the case of Packard, a hundred bodies--and those bodies would be stored at the body builder. Then, the salesman, in Denver or Chicago or whatever, would get an order for that car and would get the customer to select colors and interior trim. The bodies were always completed and stored in a prime coat of paint and muslin-covered upholstery. So, when the order would come in, they would send a chassis to the body company. The body company then would take a body out of storage and paint it and trim it to the customers specifications and deck it on the chassis, and a custom body could be available by that manner in about a month's time, and that was the real backbone of the custom body business. There were occasional one-off bodies, and at Duesenberg, we had a few occasions where we built one or maybe two or three cars. So, the stockmarket crash, not only put a lot of small companies out of business, but it also hampered the sale of Duesenbergs. Not everyone lost all their money in the stock market, and those that had money wanted to retain their chauffeurs, and yet they didn't want to drive in a car as ostentatious as a Duesenberg, especially with people standing in bread lines. So, this very much hampered the sale of Duesenberg cars. In fact, during that period, Ford Motor had their Model A car in production

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and were able to sell quite a lot of Model A Town Cars, and that was just a product of the time because here a wealthy person could keep his chauffeur on the payroll, and yet driving around town in a Model A Town Car was certainly not the same as driving around in a Duesenberg. While I was at Duesenberg, I wasn't making much money, but one of the fringe benefits I had was that I did get to drive the automobiles, and I was single at the time, and we usually had some--quite often we'd have some occasion for a car to be driven to Chicago for a customer or maybe a car up there to be picked up and brought back to the factory for service.

Q: Where was Duesenberg based?

A: Indianapolis on West Washington Street . So, I would ask Ames if he had anything going to Chicago , so I would have an expense account and I could drive a Duesenberg to Chicago on Friday evening and turn it in on Sunday and take a train back to Indianapolis . In the meantime, I could impress my girlfriends in Chicago or my friends that I had. up there. But, anyway, it was always fun to be able to drive a Duesenberg, and I had no idea that I would ever be able to afford one, but I wanted a custom-body car, and when the Model A Ford came out in 1929--well, it was 1930 model that I bought--I visualized redesigning that body and making it into a custom car, so I traded my Buick Roadster in and bought a Ford Victoria (I think that's what they called it--the two passenger convertible). Before I got delivery of it, I had made a full-size body draft of it--what I wanted to do--and made arrangements with Augie Duesenberg at his race car shop to build the body for me. I drove the car from the dealership out to Augie's place, and first thing we did was take the body off the chassis. Then, we cut the body back of the body B

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post, which is the back of the door, and that rumble seat (all that

area), we threw that away and kept the body frame sills, and we mounted the body back on the chassis 4# inches aft of its normal location. Then, we built a dummy cowl, or extended cowl, so that the fire wall was moved forward into its normal location in relation to the engine. Then I had to build a new engine hood which was 41 inches longer than the regular engine hood. Then the back of the body was all new, framed in wood, and paneled in aluminum, and it extended just a little bit beyond the rear axle, and then I had a large trunk on the back, and on the inside I had a single seat facing the center. The passenger seat was built so it would fold forward so that you could get into that rear, one-passenger, enclosed rumble seat. It was a blind quarter convertible--beautiful thing. I lowered the--cut the windshield down to the top of the upper hinge on the door, and that I think was 31 inches. So, the body was 31 lower than the regular Ford. At that time the Weyman Body Company was going out of business, and I bought some of their hides of leather for \$5 a hide, and when Augie was through with it, we moved it across the street to the Duesenberg plant where they allowed me to have it painted and trimmed by the head trimmer and the head painter at Duesenberg. We did have a good paint and trim shop. So, the quality of the car was equal to the Duesenberg, and I had drove that car almost 100,000 miles, and I finally sold it in Auburn later on when Mr. Ames told me he thought I should drive a company car. I regretted that all my life, and I tried many times to find it. It was written up in the Ford Times magazine, and about three or four years ago a friend of mine by the name of Bob Ahmanson in California --I made some

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drawings for him. I had enough information that I could reconstruct a body draft from it, and I originally did this for Bill Harrah. Bill wanted to build one, and he bought a car, but he never got around to it--never got around to scheduling it through his shop, but Bob Almondson did build one. It was written up in a magazine not too long ago as the most beautiful Model A ever built and so forth. But, I think it's kind of significant in that as far I know this is the first time a designer took a stock car of that sort and modified it and made it into a different type of automobile. There had been a lot of speedsters built, you know, in the old days off of Model T's and so forth, but the process that I used, I think, was probably the first time that had ever been done. Around the end of 1932 business was pretty bad at Duesenberg, and there would be months going by without selling a car, and so I thought for my survival I'd better get with a stronger company. I got in touch with Howard O'Leary at General Motors to see if I could back into their Art and Colour section, and was accepted. So, I think it was in January of 1933, that I left Duesenberg, and that was the weekend that Franklin Roosevelt closed all the banks--had the bank holiday. So, I got to Detroit and started working for General Motors, and I remember, at one point, we had to go downtown to downtown Detroit to get our paychecks cashed, and Art and Colour was still part of Fisher Body at that time. So, things were actually a little bit dull at General

Motors, and, in retrospect, I'm surprised that they hired me at that time; but Harley Earl came up with an idea of having a design contest among his designers with some sort of advanced thinking. We were given a package drawing--I think it was probably about the size of a Buick--and

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we were divided up into different teams, and they were four-man teams except for me, and I was given five. The reason was that two of mine were apprentices, and so I had young John Lutz, Jr. whose father ran the clay shop, or the prototype clay work, and John was a good model builder, and the design was to be presented in a one-quarter scale model in clay. Jack Morgan was head of one of the teams, and Tom Hibbard had a team, and I think Agramonte had one--anyway, there was about six different teams. Frank Hershey had one, and I remember the model that Frank Hershey came up with had the stripes running back across the top of the hood which he later became head of the studio for Pontiac, and they had that silver streak--that was one thing that survived the design contest. Anyway, the prize for the contest was to be--the whole team would be taken to Chicago to the World's Fair and provided with a limousine and chauffeur and spending money for a week. So, anyway, Jack Morgan (Juan Ricardo Morgan), Jack won the contest, and his group got to go to Chicago. The judges for the contest were a couple of the Fisher brothers and heads of different G.M. plants, and the car that we came up with came in last. At that point in time, I was living at Alden Park Manor on Jefferson Avenue, and our design team would get together out there and we'd drink beer and work on this design. At that time, I was driving this Model A Ford which I was very proud of, and I kept the engine spotless all the time, and it took me a lot of time to keep the engine clean, so I came up with the idea of a hermetically-sealed engine compartment which would keep the engine clean and having the radiators located between the hood and the fenders. So, that was the way our model was designed, and it was a very streamlined, very unusual looking car, and I think the reason that we got last place on it was that it

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really didn't look like an automobile--it was something different. But, anyway, prior to that judging, we had a different contest where the different designers were to look at all the models and to pick their idea of the best-looking car of the group.

Q: Who had judged the earlier competition?

A: Well, the competition was ... the real competition was judged by a couple of the Fisher brothers and the heads of Buick and Pontiac and Chevrolet and so forth. But, this other was the designers themselves-- they voted. And, on that we got first place. Well, it was a pretty wild looking automobile I'll admit, but, anyhow....

Q: Can you describe it a bit?

A: Yes. It looked somewhat similar to the Cord. So, not too long after this, I had a call one day from Harold Ames in Indianapolis, and he wanted me to come down for the weekend, and so I drove down there, and he had an idea. Really, it was not too original, but at that point in time, Cadillac came out with a low-priced LaSalle which was built on an Oldsmobile chassis. Cadillac denied that it was Oldsmobile, but it was pretty well known through the industry that it was a straight Oldsmobile chassis. There was nothing wrong with that, but it had a Fleetwood

body on it, and this gave the Cadillac dealers a low-priced car, and this is the middle of the Depression. So, Ames got the idea that we could take an Auburn straight-eight chassis and come up with what he called a trick body and merchandise it. Anyway, this Auburn was a good chassis, and it was an inexpensive chassis, and Ames thought well, with a tricky body we could have a lower priced car carrying the name Duesenberg, and he wanted me to design it. Well, for an automobile designer, this is pretty exciting to have a chance to start from scratch

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and design a whole, new automobile. So, I made a sketch of a car which was pretty much what we had shown at General Motors where they gave us last place, and I was telling Ames about it, and he liked the idea, so I left General Motors and went back to Duesenberg, and we had one room sealed off in the Duesenberg plant where we were going to build this car. And, of course, Fred Duesenberg had died. Fred had been dead for about two years at this point, and, in the meantime, why they had hired Augie Duesenberg (Fred's brother).

Q: This is about 1933, 1934?

A: Yes, 1933--the latter part of 1933. So, the chassis development of this car was turned over to Augie Duesenberg, and Walter Trummel, and some of our layout draftsmen worked out this twin radiator thing, and I made a small clay model of the car and a drafting layout of it. Then, we had the body built over at Weyman Body which was still in business.

Q: Where were they located?

A: Indianapolis . And, Phil Durham was working for us as a body engineer at that time, and Phil followed the thing over at Weyman. think at this time, E. L. Cord was living on his yacht in England and pretty much lost interest in the automobile industry. He also had built himself a home in Beverly Hills , California , but his main office was in Chicago . So, this car was kept top secret. People at Duesenberg were not even allowed to see it. So, then one day they brought it out of the garage and drove it to Chicago to show it to Mr. Cord who was not interested enough to come to Indianapolis to see it. Then they locked it up again, and about this time they had the auto show in New York , and the Auburn Company came out with a completely new line of automobiles--

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the 1934 Auburn was completely new. Auburn was in rather shaky finan-

cial condition, but they had gambled because this was an all-steel body. They had gambled a lot of money on the production of this '34 Auburn which was designed by Al Leamy, and really there was nothing wrong with it, and when you see a '34 Auburn , you wonder why it didn't sell. But, it sort of bombed out at the New York auto show. The dealers didn't like it, and Harold Ames, who was my boss, of course, at Duesenberg, was down there, and coming back to Chicago on the train with Lou Manning who was chairman of the board of the Cord Corporation, Ames told Manning that he knew what was wrong with it. So, Manning said, "Well, if you know

what's wrong with it, you're the one to fix it." So, they moved Ames from Indianapolis to Auburn as executive vice president, and, of course, Ames thought that with the title of executive vice president, he could run the company. However, about the same time, Roy Faulkner, who had been president of Auburn for a number of years and had left to go with Pierce - Arrow, was brought back as president of Auburn . So, here were two men, who disliked each other intensely, had offices across the hall from each other, and had made the Auburn Automobile Company a two-headed monster that was not able to function very well. It split up the loyalty of the personnel too--Roy Faulkner was home town, and everybody knew him and liked him. Ames was an intruder from Indianapolis , and I was an Ames ' man, and also Al Leamy was still there as the designer, and he was a real fine designer. He had designed the L-29 Cord--probably one of the most beautiful cars ever built. But, I was brought in to redesign the '34 Auburn , so I had a small group, and the only input we got from Harold Ames was that

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he wanted it to have a big hood on it. He wanted the car to look power-ful. So, the only difference between the '34 Auburn and the '35 Auburn is basically the hood and radiator grille which we did in full size in clay in a couple of weeks. Ames liked it, and then it was up to Burt Cotter and Ted Allen and body engineering to put it out on drawings and to make the die models, and so the '34 Auburn came out in January, and the '35 Auburn came out in June. It was pretty successful, and Augie Duesenberg came to Auburn --he still lived in Indianapolis , but he came up there most of the year in '34 which is fifty years ago. He adapted the Switzer-Cummings supercharger to the '35 Auburn , and we had had a super- charged Duesenberg for several years, and so we copied the exposed out exhaust pipes that we had on the Duesenberg. Fred Duesenberg's initial reason for putting the outside exhaust pipes on was to get the heat out from under the hood, and Mercedes had the same problem, and they had outside exhaust pipes with a stainless steel covering, and Fred, more or less, copied the Mercedes, but he used a larger diameter tube which gave us more space between the sheaf and the inner tube. Anyway, that became the hallmark of the super-charged Duesenbergs. So, when Augie did adapt the supercharger to the Auburn , he worked with the chassis department and layout, and they copied the Duesenberg type of outside exhaust pipes on the Auburn . Then, sometime during the Summer of 1933, Ames came up with the idea that inasmuch as the '35 Auburn was already on the market, and this was months ahead of the auto show, that we should have something spectacular for the auto show. In 1933, Auburn had built a speedster that was designed by Al Lemi, and Ames asked me if I thought we could use one of those old bodies (they had about a hundred

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of them left over at Union City Body Company), and cobble up a speedster for the auto show, and, if we could, he thought that we ought to build about four of them just to show at the auto show. So, we brought one of these bodies up from Union City , and it wouldn't fit the frame of the '35 Auburn . There had been a change in the frame, so we had to alter that, and the cowlings was a little more narrow on the '33, so we had to have a special hood made. But, we decided we could use the center part of the body from the '33 speedster, and we set the new '35 Auburn radiator and grille up in the proper position which established the hood problem. From there on it

was just a matter of working in hot clay to design the fenders, and we cut the body off about a foot after the cockpit, so the whole new end--the back end of the car--was new. About three years prior to this, I had designed a couple of speedsters--boat tail speedsters--for Duesenberg, and we decided to use the design detail off the Duesenberg. So, the Auburn '35 Speedster was a copy, really, of the earlier Duesenbergs, but I think we were lucky because the Auburn turned out to have much better proportions than the Duesenberg, and it became a very pretty automobile, and it was quite a sensation at the auto shows. I've been asked to reminisce about the association I had with Fred Duesenberg. My first meeting with him was when I started working for the Company as their body designer, and I had a drawing table in one end of the engineering department, and I knew who Fred Duesenberg was, but he came in and introduced himself. He says, "I'm Mr. Duesenberg," he said, "I'm Fred Duesenberg," as though I wouldn't know who he was. But, he didn't have an office, and he didn't have a secretary. He merely had a desk in one end of the engineering depart-

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ment, and everything at Duesenberg was small. There were probably--Walter Trummel was the chief draftsman, and had about six chassis draftsmen, and we had an old-fashioned blueprint machine in there and very antiquated filing system, and a blueprint boy by the name of Oscar Hadley. Anyway, Fred was not at his desk, he was out in the plant a good deal of the time, and we got along fine, and he never indicated that he was an expert on body design, and, of course, I never indicated that I was an expert on engines. But, he was a real genius, and his brother, August Duesenberg, was not connected with the company at all at that time. Later on, after Fred died, why, Augie worked with the company. But, during the development of the Model J Duesenberg, Augie was not involved in it at all. He had a shop across the street where he built race cars.

Q: This is in Indianapolis ?

A: Indianapolis, yes, out on West Washington Street. The company didn't build bodies. All the bodies were built by custom body

firms; however, we did have a paint shop and a trim shop, and this could be used to repaint and retrim some custom bodies, or it could be--sometimes the bodies would come in from the body builders in the white and would be put on the chassis and finished there at the plant. Anyway, Fred loved to work on the drafting board, and he had arthritis in his hands, and he was in pain all the time when he was working on the board, but after I'd been there about a year, he invited me to move out to his home. I rented the third floor of his home and became, more or less, a member of the family. His son, Denny Duesenberg, at that time, was in high school, and it was a funny set up at the Duesenberg Company.

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Harold Ames was sales manager and president of the Company, and he had a Duesenberg company car that he used all the time. Pearl Watson was the factory manager, and they supplied him with a company car, and the plant superintendent was a fellow by the name of Camel, and

they supplied him with a car, but they never supplied Fred Duesenberg with an automobile. Fred had an old Model A Duesenberg that he used as his personal car; which is interesting in that not too long ago someone was talking about a certain car--Model J Duesenberg--and they said, "That was Fred Duesenberg's car," and I said, "Well, that's impossible. He never had a Model J Duesenberg." Anyway, Fred was a genius as an engineer--incredibly smart on metallurgy, and he would--his experience with the race cars had taught him how to design things for extreme lightness and yet be strong enough to stand up for a 500-mile race. I remember one instance where Mr. Ray Day from the Ray Day Piston Company was there, and he was telling me that when the aluminum connecting rods were designed that their engineers had run stress analysis

on them, and, in theory, they would break, but they didn't break, and Fred worked on a design and had them cast these connecting rods in lead, and then he had some files, and he would just sit there at his desk and file this connecting rod until it looked right, and then when it looked right to him, he turned it over to Walter Trummel and said, "Well, this is it, draw it up," and that was the way it was done. But, he just had a sixth sense of design, and, of course, the Model J Duesenberg, which was really a masterpiece of design, was 420 cubic inches, and I think it was 4k strokes--something like that--and yet it would wind up to better than 5,000 rpm and still hang together. So, I'm not a chassis engineer, and

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I can't really elaborate on his design work, but he was a straight-forward man. I remember when the 12-cylinder Auburn engine came out (that was designed by Lycoming), a fellow by the name of Bill Baster was the chief engineer, and when those first engines came out, they didn't produce the horsepower that was expected of them, so Mr. Cord sent an engine down to Fred Duesenberg and asked him to see if he could get some more horsepower out of it, and Fred worked on it for a couple of weeks, and I was living at his home at that time, and he had a drafting room in his home. He worked mainly in the manifold section of the engine. In two or three weeks time he had this engine producing a lot more horsepower, and it was through the redesign of the intake manifold mainly. Then, Fred took a couple of weeks off and went fishing. He was performance-minded. I remember one time they had an engine--a race car engine--and it had eight carburetors on it, and they had it on a block-- on a dynamometer arrangement. It was a pretty crude dynamometer, but it was the best they had. But, anyway, they were working at night, and he had all the lights turned out, and he was tuning each carburetor by the color of the flame coming out of the exhaust port. But, this was typical of his direct approach to doing things. Its too bad that he was killed when he was--I mean, he died as a result of an accident when he was, I believe, 55 years old.

Q: An automobile accident?

A: In an automobile accident. He had been in the East and was bringing a car home from the New York office. He stopped in Philadelphia and spent the night with a friend of his by the name of--spent the night at the home of John Warren Watson who built the

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Watson stabilizers, and some years after Fred's death, I was at his home, and John told me that before Fred left that morning--the next morning--in this Murphy bodied Duesenberg car, he went out with him and he said that the tires had a lot of miles on them, and he told Fred, he said, "You shouldn't drive that car with those slick tires." But, Fred did anyway, and that may have been one of the reasons that later on Fred lost control of the car in the mountains and had an accident which put him in the hospital, and then he died a couple of weeks later from pneumonia. Fred was very active in the Society of Automotive Engineers, and he was well liked and well respected by everybody in the engineering society. I remember one remark he made one day about not getting credit for something that he had done, and he said, "Well, people that worry about getting credit, never get anything done." But, when the Stutz Company was doing a new engine, a four-valve, straight-eight I believe it was--it was right when the last engine that Stutz did. They wanted to--in many respects it was somewhat like a Duesenberg engine, and Fred just bundled up a bunch of drawings--everything covering the Duesenberg engine--and sent it over to Stutz for them to use. But, that was the type of person he was.

Q: At this point, Mr. Buehrig, could you give us an overview of the Cord-Duesenberg-Auburn corporate setup in terms of Mr. Cord's participation and beyond?

A: Well, of course, I was working for Stutz at the time that Cord started the Duesenberg thing, and so I don't really know too much about that. But, there's been a lot of things written about the Duesenberg Company that are looked upon as being historically accurate, and they're

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not accurate at all. I read something the other night about--in a book put out by Albert many years ago on Duesenberg, and he said that about one out of every five Duesenbergs was actually custom built for a customer. That is not accurate at all. I think it was more like one out of a hundred at the most, because during the 43 years that I worked there as their chief body designer, there was only one occasion when we did a one-off body for a customer, and I think after I left there, that Herb Newport did one or two, maybe. To my knowledge, practically all of the Duesenberg cars were bought off the showroom floors or were duplicates of bodies that were already built, and they would just specify paint and trim, which was really the heart of the custom-body business, not only with Duesenberg but also with Packard, Pierce-Arrow, and Lincoln. The Torpedo Phaeton body that we did for Mark Lawrence was the only car during the 41 years that I was there that was actually done specifically for a customer, and then we built six more of them after that. And, another thing, I noticed that book that mentioned about Phil Durham being there as the head of the body engineering department. There was no body engineering department.

We had no reason for it. We didn't build bodies Phil Durham came there about a year after I did, and he was our body engineer, but there was no department. He had no one working for him, and his job was to travel to the body companies and sort of follow up and check their engineering and make sure that the car was done right. But, there never was a body engineering department as such. Everything was really very small. There were only--I think there were only three women

that worked there. There was a girl by the name of--I think her first name was Fran. She was a red-headed girl that was on the switchboard and also the receptionist, and she was Harold Ames'

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secretary, and I think she also wrote letters for Pearl Watson if he ever had any letters to write. And, then there was a girl by the name of Katheran Finneran that worked in the accounting department. She was secretary to the chief accountant. That was it, and then there was a Mrs. Hadley who was a bookkeeper, and that's how big the thing was. It was really very, very small. Ames had a man by the name of Vance Hall who was sales manager. He had a little office, and then we had a man by the name of Shirley Mitchell who was the travelling mechanic.

Q: The road man?

A: He would, if somebody in Denver had a Duesenberg that needed work

on it, why they would send him out there, and he would do the work right there. I can't recall the name of his boss. There was another man who was--I've got it in my diary somewhere, but I can't look it up right now. Who was the service manager.

Q: Did Mr. Cord--was he still alive at this time?

A: Oh, he was alive, but he was never around.

Q: He was never around Duesenberg?

A: No, according to Ames, Mr. Cord used to come down on Sunday, but I never saw him there.

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Q: Well, could we, thank you, could we then continue your career narrative where we left off?

A: All right. We were in 1934, I believe.

Q: Right.

A: Well, in 1934 after the '35 Auburn and the '35 Auburn Speedster designs were finished, the company finally decided to do something with the small Duesenberg design that we had worked out, and Denny Duesenberg and I brought it up to Auburn one night, but they wanted to redesign and make it a front-wheel drive, and it was going to be called a Cord, so we got started on that, and we decided to do the work in quarter-scale, clay model work. It took us several weeks to

finish this, but then Labor Day weekend I had a date with an Auburn girl and fell in love and decided to get married, and we got married in December. But, anyway, this period of say from the middle of the Summer up until December, we were very active on the new Cord project which eventually became the Model 810 and 812. The time I got married--December 22-- and left for Florida on a honeymoon, I had some Packard stock that I sold, and I spent the money in Florida on a honeymoon. But, anyway, I left Auburn feeling that everything was in great shape because we had completed the Cord design, and full-size body drafts were made on it-- finished-- and the die models were pretty well finished. We had made a clay model of the Cord Phaeton, so I thought everything was going along

fine, and the car was going to be introduced the following year which would have given us a pretty good period of time for developing the chassis and testing it and so forth. When I got back from Florida I found that while I was gone, the whole program had been scrapped.

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Q: For what reason?

A: I don't know. They never explained that to me, except that they

had ideas on how they could do it cheaper. One engineer thought that we could put the new Cord front end on the old Auburn body, which was a horrible thing. We had to build a model to prove it, and then they wanted another model made where they used the Cord body and put a conventional front end on it, and that looked even worse. Then, we did a sports car called an Auburn Gentleman Speedster which was an attempt to find a market to use up some left-over, 12-cylinder engines. So, all of these things just ate up time, and so we lost about at least six months when nothing went on on the Cord program, and then in the middle of Summer they decided to go ahead with the Cord program, and they had to have a hundred cars built by the time of the auto shows which they built by hand. And, they built one prototype car, and George Kublin drove it

to California and back. Mr. Cord was living in Beverly Hills , California , so they drove this car out and showed it to him and drove it back, and Kublin turned in his report which said that they had a problem with cooling, and they also had a transmission problem--the car would pop out of gear under low torque. But, they had no chance to change anything and still make the deadline, so they built these cars and showed them in the auto show. They didn't have transmissions in them because the transmission hadn't been redesigned yet. We showed a convertible model. The top mechanism had not been worked out, but the car had a disappearing top, so we just told the press that the top was in there, but it was a disappearing top, and the car was a sensation at the auto show, and they got lots of orders, but we were far away from

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being able to produce the car and to produce a good car, and so when the first cars came out, they still had problems with the transmission, and they had problems with cooling. It was an expensive automobile, and the competition never helped us any. They would tell their customers

that Auburn-Cord-Duesenberg was going to go out of business, and you didn't want to spend that money and buy an orphan automobile. You wouldn't be able to get service on it and so forth. So, it was rough going, but they did continue building cars in '36 and '37. They corrected some of their errors, and by the time they finished building the cars in '37, they were pretty good automobiles. They still had a few bugs in them, but they were pretty good cars. The thing that really, in my opinion, killed the company was that six-months time when nothing happened on the

Cord program. Had they not done that, we would have had a good car, I think, and the whole outcome would have been different.

Q: When was that six-month period?

A: It was the first six months in 1935.

Q: When you had a hiatus?

A: When what?

Q: When you had a lag between production.

A: Yes. From--they stopped the thing while I was in Florida between Christmas and New Year's, and I think it was the following July before they picked up the program again. They had to have cars in the show in November, I think it was.

Q: How was the Auburn division doing at that time?

A: They were doing fairly well.

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Q: Were they?

A: Yes. The '35 Auburn sold pretty well.

Q: Was this a point of your career where you decided to go elsewhere?

A: Well, when the company--the company had moved its facilities from Auburn to Connersville.

Q: Still in Indiana ?

A: Connersville , Indiana . It was an old factory that Cord picked up cheap, and according to some of the publicity, it was a very modern plant with modern equipment. That's not true. When I left there I went to the Budd Company and saw some really modern equipment, and so the equipment in Auburn was really not bad, but not compared to what you would have at the Budd

Company or Briggs Manufacturing or Fisher Body. Anyway, there was no real designing to be done. Everything had been finished; I mean all the design work of anything that ever got in production, was all done, but I had to go to Connersville, and I would come home on weekends, and it was a pretty bleak situation. So, I started looking around, and I made a connection with the Budd Company and came up and started a design department in Detroit for Budd Company.

Q: Did your ... t hat was in late 1935:

A: No, October, 1936.

Q: How did that come about?

A: You mean the Budd Company?

Q: Right. Your connection with it.

A: Well, there was a fellow by the name of Ed Diesly who was chief engineer, and I talked with him, and he said that Ed Budd, Jr. was

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interested in building a design department. I went to Philadelphia and got the job. Then we designed and built a department at Budd.

Q: They had not a formal....?

A: They hadn't had one prior to that, no. They had a chap by the name of Davenport who was a designer, but he was a wheel designer. He worked for the wheel division, Dave Davenport. So, he was not con- nected with our group at all. We started this new department in Detroit , and we were going pretty well there, and Budd was happy with what we were doing, but....

Q: You were supplying the automobile industry?

A: Oh, that was what it was for. See, the Briggs Company had a good design department, and Budd thought that was the way to get into the body busi- ness because all we were building at that time were truck bodies. We built truck bodies for Ford, and we were building truck bodies, I believe it was, for Dodge, and we were building doors for Packard. 'Now, why, I don't know, but we were building doors for Packard. So, we tried to get some business from Willys. We designed a car for them, and we designed some stuff for Ford, but the problem we had was that there was a sales manager there by the name of Alexander, and he didn't want us to be there. He was very much against our operation, and he referred to us as "Junior's Hobby Shop." Edward Budd, was Edward Budd, Jr., so he referred to us as--and he was in Philadelphia . Anyway, he referred to our shop as "Junior's Hobby Shop," and he refused to let us bring any customers in to show them what we were doing. His idea of salesmanship was to take purchasing agents on hunting trips up north and supply them with any kind of entertainment they wanted. That was the way to sell

stuff. So, I finally got mad and wrote Budd, Jr. a letter and told him I thought they were wasting my time and his money, and so that was the end of it. I got fired just like that!

Q: Really.

A: It was a foolish thing to do. I should have held out, and, eventually, I probably could have outlived Alexander, and maybe things would have worked out all right. Because, we had an ideal situation there--I had good people working with me, and we had a free rein on things to do, and Ed Budd, Jr. was happy with what we were doing, but I messed it up. Then I went into a period of depression where I tried a number of things that I don't particularly like to talk about. I went back to Auburn , and I tried to make it as an independent, industrial designer. Then, let's see, I was working for--one of my clients was the King Seeley Corporation in Ann Arbor , and I finally moved to Ann Arbor . I was still working as a consultant to them when the war happened. Then I went to San Diego and worked in the engineering department of Consolidated Aircraft. I was there for about six months, and they were much in need of engineers, so I got in touch with a friend of mine by the name of Dale Cosper who had been part of my team at Auburn and a brilliant engineer. I tried to get him to come out. Well, I found out he was working in Akron , Ohio , for the Goodyear Aircraft Company and was doing better than I was doing in California . He persuaded me to come to Akron , so I came to Akron and worked for Goodyear in descriptive drawings for aircraft assembly. Then that sort of ran out, and then I finally wound up as the mathematician for a group of tool engineers.

That was rather interesting, and then I left there, finally, and I worked

for Harold Ames at LaPorte , Indiana .

Q: Had he left the company by then?

A: Yes.

Q: Into independent design?

A: They were making aircraft sub-assemblies. Then shortly after that the war with Germany was over, but the Japanese war was still on. I ran across a friend of mine by the name of Carl Otto who was an associate of Raymond Loewy Associates, and Loewy was building up a design department at Studebaker, and he hired me to head up this group and build up a larger department, and I hired some old friends like John Rhinehart, Jack Aldrich, Bob Koto, and Virgil Exner was there. Virg had been there before I was, and Virg was my assistant, and then Lowey came out from New York one day and got mad at me and made Exner manager and made me his

assistant. Then in another period he came out and fired Exner and put me in charge. I mean, it was a funny political situation.

Q: Oh, a volatile personality to say the least.

A: Yes. So, anyway, then the fiasco of the post-war Studebaker which Exner had designed in his basement, and the full-size body was built by Budd in Philadelphia and brought out, and this was all a political scheme by the chief engineer who was trying to get rid of Loewy.

Q: Is this the Studebaker setup?

A: Yes. Then when Loewy came out and found out about it, he fired Exner. Roy Cole was the chief engineer, and then Roy hired him and started their own department out at the proving grounds, and then Loewy thought I was involved in this skulduggery, which I was not involved in it at all, but he fired me. Then I got involved in a company called the Tasco

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Company in the East. It was supposed to be the sportscar company of America and built a prototype car. We built the body down in Durham Body Company.

Q: Durham was in....?

A: Rosemont, Pennsylvania . That was a failure, but the interesting thing about it was that that was the first car that had a T Top on it. That was where I invented the T Top.

Q: This was your invention?

A: Yes. When the company folded, they owed me some money, and I said, "Well I want rights to that top." So I went ahead at my own expense and got patents on the T Top. I don't know, then the years went by, and we managed to get three meals a day, but we didn't do very well, and then finally I got this job at Ford Motor, and that was in '49, I believe it was.

Q: How did that come about, Mr. Buehrig?

A: Well, John Oswald who used to be with Auburn was the body engineer, and at that time styling was under body engineering. There was a man by the name of George Snyder who was a designer, and I was interviewed by Oswald, and then a period went by, and John said, "Well, I can't bring you in yet," and I finally found out that Snyder didn't want me in there. Anyway, finally Snyder was fired or left or something, and I came in, and they put me in charge of a studio called the body development studio. It was in this studio that the models other than the sedan were to be developed. The first project we had was

on the '52 Ford on which the sedan had been approved, and I think Joe Oros, no--I can't recall who was in charge of that studio. Anyway, they did

the two-door and the four-door sedan models, and then it was our job to design the convertible and the station wagon using maximum interchangeability with the sheetmetal from the sedan. Earle MacPherson was the vice president in charge of engineering, and....

Q: All these people had been in G.M. then, hadn't they?

A: Yes.

Q: Brought over by Ernie Breech?

A: Yes, that's right. The 1950 and '51 station wagons were financial catastrophe to the Ford Motor Company. They were built at Iron Mountain --the old wood-style station wagons. We only had one model which was a two-door, and, anyway, they wanted a new line of station wagons, and Chevrolet had come out with an imitation wooden body made out of steel. So, MacPherson told me that's what he wanted me to do, but they wanted a four-door and a two-door, but he wanted it to look like the Chevrolet model. Fortunately, he left right after that to go to Florida for a month's vacation, and while he was in Florida, we did what he asked us to do, but we also did a new line of cars in which we were more honest, and we brought out a car called the Ranch Wagon which had no wood or imitation wood on it. We had the Country Squire, I think it was. I don't remember the exact names of....

Q: That's correct.

A: That [?] people put on this, but, anyway, we came up with a series of station wagons, and those were built for the next three years, and in 1951, the Company produced 7,000 station wagons, and it went from there to 140,000 station wagons. The '51 station wagon had the reputation of being the worst car on the used car market of any car in the line. The

exact opposite was true after we came out with our new line of cars.

Then the other thing that we did in that department at that time was General Motors were building a car called a hardtop convertible which was a misnomer because it was not a convertible, but it was a hardtop coupe with convertible-type windows. They were very popular. The sales department was very unhappy that Ford didn't have a model like that because General Motors were making lots of money on it. So, we designed one for the 1952 series, and then--no, that was designed by the sedan group. The Ford studio did it--a '52 hardtop coupe. But, the dealers--this was still late '50, and the dealers were really screaming. They wanted that sooner. They wanted to know if we could have one in '51. So, John Oswald came in one day and said, "Can you take a convertible--'51 convertible--and make it into a hardtop?" Well, of course, you already had the windows for the door and the quarter window, so it's just a matter of doing the

new top for it. We did it with a band corrugated of metal up over the rear window which gave it a styling distinction. We had a quarter-scale, clay model that someone else had built of the convertible, and we brought it in to our studio and quickly transformed it into this model. It sat there for several days, and one day I came in, and it was gone. I inquired about it and found out that it had been sent out to a job shop, and there they were engineering and tooling it for production, and I later found out that George Walker, who was a consultant at that time, claimed credit for it, and he had nothing to do with it at all. So, it was shortly after that that Oswald's plan to get Walker out of the company failed, and Breech

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brought Walker in as a vice president in charge of styling and fired Oswald. At that time Emmett Judge, who was product planning at Lincoln-Mercury, offered me a raise to come over and work for him, so I did that. From then on I was never allowed back in styling for the next fourteen years.

Q: You were in product planning all that time more or less?

A: No. I got into engineering--Ford engineering--and then finally into research. The last four or five years I was head of a very, very, small group, and we were doing research into the use of plastics in Ford products, and that's where I was working when I retired.

Q: What sort of projects did you do at Ford under Emmett Judge at Lincoln-Mercury at that point?

A: One of the things that I did when I was working for Emmett Judge was an organization plan for the Mark II Continental which Doug McClure told me that when he made his pitch to the company, he used pretty much what I had written in the suggestion of the special group to do a new Continental. The company was interested in a new Continental, and they had had some very wild and very ugly suggestions on what a new Continental should look like, and then they organized the new special products division under Bill Ford. We had probably the greatest organization that Ford ever had, and it's too bad that the whole thing blew up.

Q: Can you describe that a bit in a few minutes--the special products setup?

A: Well, the special products division was in the old Trade School.

Q: On Michigan Avenue in Dearborn .

A: And, they hired John Reinhart to be the chief body designer, and Harley Copp was the chief engineer, and he offered me the job of chief

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body engineer, and I told him that, you know, that was--I had been out of body engineering for a good many years. In fact, the last time I really worked in body engineering is when they were

building wooden bodies. But, it was either a case of taking that job or not being in on the program, so he said, "Well, you'd get plenty of help," and I thought, well, I knew the basics of body engineering, so I took the job as chief body engineer. We organized this thing and got started, and one of the first engineers I hired was a chap by the name of Jess Richards. I got him from Kaiser-Fraser, and that company was folding. One of the rules we had in building up our group was that we couldn't hire anybody from Ford. We had to go to the outside for all our new help.

Q: Why was that, I wonder?

A: It was just a rule that came down from on high that we couldn't hire anybody from any other part of Ford Motor. So, we got two or three people from Kaiser-Fraser which was folding up, and Jess Richards was such a brilliant engineer, that after he had been there about a week or ten days, I went into Harley Copp, and I said, "Harley, I need an assistant, and this is the man I want," and Harley said, "Well, why don't you wait a week or so and think about it." I said, "I don't have to think about it. This guy is good." Well, I was right because he later became chief body engineer at Ford Motor. So, Jess really carried the ball as far as detailed - engineering was concerned. My contributions were in the development of the car. We did it right. We did it the way it should be done. We had a new frame, and we wanted to have a good test period with the new chassis, and Bob Reganhart designed the frame, and

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we built some prototype bodies down at Hess and Eisenhart in Cincinnati, and the nearest thing I came to getting to do any kind of designing was that I got to design the cobbled cars, and this was a matter of taking the sheet metal from Lincoln and changing the proportions on it, and cobbling up these test cars, and they turned out to be real good-looking automobiles. We also built a convertible there.

Then, we developed a system of making sheet metal parts on a scale model out of plastic-- vacuum-forming process which I'd introduced to Ford back when I was in Ford styling.

Q: Was this still a relatively new technique?

A: Well, they built a whole, big department to do it. This goes back to when I was in styling at Ford--this would be in 1950--Charlie Waterhouse was my boss after Oswald, Charlie Waterhouse styling supervisor. Anyway, he was an engineer. His family owned the old Waterhouse custom and body firm. Every week they had a meeting in a conference room for the engineers--the body engineers. You had body engineers from Lincoln-Mercury and from Ford and from production engineering. The purpose of the meeting was to iron out differences in procedures for building the automobile. Lincoln-Mercury had one plan they wanted to use what they called balloon-type of assembly. Anyway, the Ford engineers and the Lincoln-Mercury engineers had two ideas about how to put the body together, and they were building the same body.

Q: And this is for what model?

A: This would have been for the '52. So, Ford always won out because they were the company that made money, and Lincoln-Mercury was the divi-

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sion that lost money. So, the Ford engineers had more clout, but, anyway, I had to go to everyone of these meetings and sit through them, and my purpose in doing that was to bring to Charlie Waterhouse's attention any deviation in the manufacturing process which would cause a change in the styling. As long as it didn't affect styling, why, it didn't matter what they did, but if it affected styling, then I had to raise my voice or bring it to Charlie's attention so something could be done about it. Henry Grebe was the chief body engineer at that time of the Ford Division.

After I left Styling to work in Product Planning, and for the next fourteen years at Ford I lived a life of frustration because my talent and training was in body design, and I was not allowed into styling....

Q: May I ask you at this point why that was so?

A: Well, it was--George Walker the Vice President who didn't want me in there. So, anyway, I did what I could, and I, fortunately, had enough engineering talent to do things that were worthwhile. One of the most important things that I got into was the use of plastics in automobiles, and I thoroughly enjoyed that. I had a very small group--about five people. We went through the whole car; and we had one criteria that we would work to, and this is we'd study a component--this was both chassis and body work. But, it had to be--if it was made in plastic, it had to be a better part. It had to be lighter, and it had to be cheaper. If it didn't fill all three things, we didn't consider it. Most of the things that have gone into plastics in the last few years were things that we did evaluate at that time. We made several test trips out in the desert. We had a--one of the drawbacks in the use of plastics at that time was that there was very little data available on

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exactly what conditions the plastic part would have to withstand.

Q: Was this in the mid-Fifties you were doing this?

A: Yes, and so--we took a Ford station wagon and rigged it up with a bunch of thermocouples. We had about 30 different points in the car where we could measure temperatures, and this was under the hood as well as on top of the cowl and several locations in the body. Another fellow and I took the car out in the desert, and we worked and established a whole background of critical temperatures. Then, typical of things that went on, somebody else at a higher salary level gave the presentation to the Society of Automotive Engineers, and that data I think is still being used.

Q: But, you didn't get any credit for that?

A: No. But, we also were going to run a test up in Bemidji , Minnesota , to find out what the critical temperatures were at the other end of the scale, and that didn't work out very well. The driver had an accident on the way, and I didn't go on the trip. I remember that after one of our trips to Arizona --I made several--we were trying to find maximum temperatures, and believe it or not, it was hotter in Detroit than it was in Arizona . We would get the weather temperature, and we'd go to different places and try to find maximum temperatures. Mostly we worked out of Phoenix where they had facilities, but then we went down to--this was on the Mark II Continental program. Wait a minute, I'm thinking of something else now. But, I remember we went down to New Orleans , and we were testing air conditioning. We would get up in the morning and go out and start a test, and before we'd finish it, it would start raining and wash out the test, and we'd try again the next day.

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So, we came back, and I made a presentation to Mike Ference who was the head of research...

Q: The scientific lab?

A: and told him that no one enjoyed test trips more than I did, but that it seemed to me that everything that we did could be done in a laboratory and done more accurately, and you'd have the same conditions every day rather than trying to depend on the weather. I don't know whether that had any effect on him, but eventually they have done that. Everything that you can create, I mean every condition you can run into in Arizona , you can duplicate in a wind tunnel with proper equipment. You have it under complete control, and it's the same thing every time. But, you'd go out to Arizona or Colorado or other places, you are sub- ject to the weather. Test trips are a lot of fun, but not as productive as they should be. I remember one thing that happened: Fred Hooven was a very good friend of mine and had a much bigger job at Ford than I did. He worked for Mike Ference. Henry Ford asked Ference--this was in 1960. He asked him to project twenty years ahead what was going to happen so that they could plan their facilities and so forth. Well, Mike was a scientist, but he had very little background in automobiles, so he asked Fred Hooven to do this thing for him. The study would go to Henry Ford under Mike's signature, but Fred would do it. Fred is an old friend of mine, and he wanted--he respected my opinion, so he--this may have been prior to 1960. Anyway, it was projecting twenty years in the future, and Fred brought it out to me and asked me to read it over the weekend and come in Monday morning and criticize it before he turned it in to Mike Ference. So, I did this, and when I turned it in on Monday

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morning, I said, you know, it was a very thorough study. I said, "I think there's one you've missed," and he said, "What's that?" I said, "You haven't said anything about the Japanese." He said, "Well, they're not building automobiles." I said, "No they're not building automobi- les, but they're building motorcycles, they're building cameras, and there's no reason why they can't build automobiles." Well, he hadn't thought of that, and I don't know whether that went into the report or not, but it was a pretty good forecast. I remember another thing that happened. This was when

I was working at the Ford Division on Plymouth Road , I think it was. Bob McNamara was head of the Ford Division at that time, and I was trying to get the company to get interested in a small car, and I finally got them to--they did buy a Volkswagon, and they boarded it. They took it apart and boarded it. So, Will Scott was the head of product planning, and Will asked me to make some sketches of future cars--layouts of various kinds. I made several with front-wheel drive--small cars, and Chalmers Goyert was my boss, and he told one day, he said, "What's all this business about front-wheel drive? Why are you doing that?" I said, "Well, it makes the best package for a small car."

He said, "Well, forget it _ Ford Motor will never build a front-wheel

drive automobile." Anyway, I was trying to get them interested in a small car. There was a man there that was--I don't recall his name, but he was pretty high in the company, and he was their crystal-ball expert. He was forecasting the future, and I went and talked to him, and I said, "Can't you give me some support on this small car program?" He said, "Well, Gordon, that's only one-half of one percent of the market. It will never go above two percent of the total market," so he said, "You might as well forget it. American's don't like small cars." So,

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the problem was they didn't pay me enough money to listen to me. Well, anyway, let's go back to--during the period when I was working in plastics--this was the last three or four years--I got to travel quite a bit to the different plastic companies. I got to know them well, and, of course, when you travel as a representative of Ford Motor Company, you always had the red-carpet treatment. You always met with the heads of the company and were treated royally. So, I got to know them all pretty well, and one year, I forget, it was about 1963 or '64, we had to turn in a budget for the following year, and I turned in a budget for \$125,000 to run my little group for the next year. I figured we had to have that much money to do anything that was important. Well, that was a cut from \$125,000 to \$25,000, so I had \$25,000 to run the department. So, we bought a Falcon, I think it was, Ford Falcon, and then I went to the different--these friends of mine in the different plastic companies, and I said, "Look, we're going to run a test trip, and if you have any new material that you don't want to talk about, but it's experimental, we'll let you have one component on the automobile, and we don't want you tell us what it is, and when the test results are in, we'll send you the test results, but there will be other companies making parts for the same car--different components--and we won't tell you what their parts are or what their tests are or how their tests turn out." So, this way it took all the expense away from us and put it on the plastic com- panies. Uniroyal built the hood, DuPont's plastics division did one door, and their elastomerics division did another door. A company in California did the deck lid. Union Carbide did one of the front fen- ders, and, I think, Monsanto did a front fender. So we had this car

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all rigged up with these plastic parts, and, as I say, I didn't know what the materials were, and I didn't want to know. I didn't want any information. All I wanted to do was run the test and then turn in the reports. So, I took the car out by myself out to Arizona and stayed in a hotel in Scottsdale , and I had some steel scales with me and things of that kind to test with. We were

testing for thermal expansion in materials for one thing. So, I ran tests between Scottsdale over to Yuma, Arizona, and up to Palm Springs and then back to Scottsdale--in that triangle I made that route several times. It was in August--the hottest part of the Summer. The temperatures well over 100° every day, and I got all the data that I wanted, and then there was one test that we really wanted to run and that was the aging of the plastics in the sun. So, there was an old boss of my mine by the name of Chase Moresey who had been in the product planning group, and Chase had left the com- pany, but he was in charge of a--or had taken over a dealership in Scottsdale--Ford dealership. So, I drove in and saw Chase, and I said, "What I'd like to do is to leave this car with you for a month and just leave it out in the sun," and I said, "You can use it or you can let people use it. It doesn't matter about that, but keep it in the sun. Don't keep it in the shade. We want to see how these plastic parts turn up, and then after a month why we'll ship it back to Detroit ." Well, about two weeks later I got a phone call from Chase Moresey, and he said that the car had been all smashed up, that a mechanic had taken it out and had a bad accident, and the car was smashed up, and I told him not to worry about it too much because that was going to be the final test anyway. We did learn a lot from that.

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Q: Did you?

A: Yes.

Q: Can you detail any of the findings that you....?

A: Well, DuPont had a process that they had a lot of faith in, and it had a basic fault, and I think that our tests there sort of proved it-- they dropped the program after that, but they had spent a lot of money on it. It was process where they would form a skin of acrylic over a painted fiberglass surface, but we got delamination in the thing. So, it sort of helped there. One program that we had was the trunk lid which--there was a man in California who had invented a process of linear alignment of fiberglass, and his company--their main business was building equipment for airports, but he also was building liners for cargo ships--for cargo airplanes, and they were using this process for that. He had been an engineer on the original DC-3 airplane. A real nice, experienced engineer, and, so, his process was expensive, but what intrigued me about it was you could build a very strong component that was extremely light, and at that period in time, Ford was interested in racing. And, in racing, stock cars the rules are pretty sloppy. The main thing it has to look like an automobile, but it--I thought we could build a Ford car by this process that would look exactly like a Ford car and probably weigh a tenth as much as far as the body was concerned. So, we built this deck lid which was spring loaded with torsion bars, and if you turned the key, the thing would flop up like a mousetrap. That never got off the ground, that program, because Ford got out of racing at that time as far as public relations were concerned, got out of racing. The program was dropped. I don't remember what else we

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gained from that program.

Q: It certainly was one of the very early production experiments.

A: Yes. Well, another thing that happened was that about six months before I retired--I did take early retirement because I was--because as soon as I saw that I had enough money to live on, I wanted to retire. I was in California, and I visited Mr. Tink Adams, who ran the Art Centre College of Design, I went out to see him, and he said--I told him I was thinking about retiring, and he said, "Would you like to come out and teach a course in plastics?" And, I said, "Well, I don't know." He said, "Well, we want our product designers to have a basic knowledge of the use of plastics and the different materials that are on the market, and we don't want them to become plastic experts, we just want them to know--be knowledgeable about the materials and where to use them and where to get information when they are working on a plastic product." And, he said, "Do you think you could get your friends in the plastics industry to underwrite your program? Why don't you talk to them," and he said, "This would be the proposition, he said, "[I would] like to have four companies that would contribute \$5,000 a year to Art Centre, and half of that will be your salary." So, I would get \$10,000, and I would work one day a week giving this course. But, he said, "You ought to impress on them that that's not the end of their obligation. They have to send lecturers out to lecture to our class and present their materials; so this would be a two-way street because then when these fellows graduate, they will be familiar with the products--the different plastic products--of these four companies." So, I did this. I went to different companies, and I didn't hear from anybody for a few weeks,

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and finally I got a call one day from a fellow by the name of Shaw who was sales manager at DuPont. I can't think of his first name right now. He lives out in Carefree, Arizona, now. Anyway, Shaw called me, and he said, "Gordon," he said, "we're going to go with you." He said, "On your first major presentation to us," he said, "I never heard of the school, but," he said, "we like you, and," he said, "we decided that just that--we owed it to you--we would check into it." So, he said, "We did, and when we found out that 67% of the personnel in Detroit in styling came from this school," he said, "we decided to do it." So, after that I got in touch with the other companies, and they all went along, and so I had a five-year contract out there to teach this course in plastics. That brought me up to 1970.

Q: Before we leave your Ford career, did you have any input into the Continental program while you were there at Lincoln-Mercury?

A: You mean the Mark II?

Q: Yes, the Mark II.

A: Oh yes, sure.

Q: I'm not sure we've talked too much about that program.

A: Well, I had eight project engineers. Each one was assigned to a different part of the car. A fellow by the name of Pulleyblank

who had the windshield/cowl area; Mitch Wayne was--I had Mitch Wayne in charge of the plastic prototype program; and Morrey Fordice was in charge of trim; and I just can't recall all of them. Anyway, building the Mark II Continental was a problem for purchasing because the regular suppliers of Ford Motor were not interested in building parts for the

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Mark II because it was very small production, so we had to get new sources. Under Mitch Wayne, I had this--I had him in charge of it--we built a 3/8 scale model of the car, and then we made a plaster cast of that, and from this plaster we produced all of the exterior parts of the car in vacuum-formed plastic. So, here were parts that were easy to handle--I mean, like a front fender would be maybe two feet long, very light in weight. We photographed all these parts, and then we also had the inner panels, like the inner panels for the doors and the inner panels for the hood all this on the assemblies, and all of this in the small size. Then we photographed all these parts, and we had orthographic drawings made of each one which gave the overall dimension of the part and a picture of the part. This was used by purchasing in sourcing because they could--instead of sending out what we used to call a bed sheet, which would be a drawing as long as this room, and it would take a great deal of study to try to figure out what you wanted to know. The basic information for estimating the cost of that part, estimating the cost of tooling, and everything was shown in this picture book of these plastic parts. I remember the plant manager told me one day, he said, "That scale model of yours is worth \$50,000 to me tomorrow." They also had to plan their factory, and here on a man's desk were all the parts in a size that you could recognize and use and yet for planning purposes, everything was done in that size. I remember that the first time we did that was back when I was in the styling group at Ford. This would be in 1950, and we had these engineering meetings that I referred to--that I had to go earlier--and they had a--they were working on a windshield for the Lincoln, and they brought in a section of the

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windshield pillar which was about a foot and a half high--and it was made up of about six or seven pieces of steel. It was heavy, and, of course, would scratch the mahogany table if you weren't very careful with it, and they passed this thing around and discussed it. But, the problem was that by the time they got that, they'd change their mind, and the thing was obsolete. So, the pattern was--the whole thing was obsolete before they got it. So, I went to Grebe, and I said, "Why don't you make those parts out of plastic?" He'd never thought of it, so I said, "Let me borrow this part." So, I took it home, and I took it apart, and I got in touch with a friend of mine who was a vice president of U.S. Royal, and we had the--we got the wooden patterns that they had used for hammer forms for making these steel parts. I got those wooden patterns and shipped them to Chicago, and then I went over to Chicago with a man from U.S. Rubber and with head of our shop, and we made all the parts in about a half an hour and brought them home, and I put them together in my garage and took them in the next day and showed them this part. Well, they were so impressed with this that they set up a plant in the Rouge plant to go to plastic parts for prototypes, and then, of course, we used it to a great extent on the Mark II Continental.

Q: Which, of course, was all new and needed that kind of approach.

A: Yes.

Q: Can you put together for us briefly a verbal picture of the whole team on the Mark II? You were in body engineering, largely, and what the other end of it? Who was in charge of the so-called exterior design?

A: John Reinhart.

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A: John Reinhart. Bob Thomas was assistant to John, and he had Charlie Phaneuf in there, and we brought some students back from Art Centre to work there through the Summer on clay modeling.

Q: What about Harley Copp, was he involved?

A: Copp was chief engineer and a brilliant guy. Doug McClure was sales manager, and his father was the head surgeon at Henry Ford Hospital .

Q: Dr. McClure, of course.

A: Yes. Anyway, Doug was a nice guy, and then there was a product planning guy--I can't think of his name.

Q: Tom Case wasn't involved in that, was he?

A: No.

Q: No, he wasn't.

A: No. I can't remember who was the chief draftsman--body draftsman--you know, for production drafting. I can't remember the name of the purchasing agent either. I should remember that. We had a wonderful group, though. It was the most dedicated group of people you ever saw, and I remember the esprit de corps was just fantastic. I remember one secretary came in one day and she said, "Mr. Buehrig." I said, "What." She said, "I was coming in," and she said, "you know what? Mr. Ford opened the door for me!" That made her day.

Q: Of course. Well, this was, in large part, due to William Clay Ford's interest and enthusiasm.

A: Oh, he was wonderful. Yes, he was great. I remember one time we had a blackboard drawing of a four-door model, and Harold Ames was in

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town, and Harold had told me that he wanted to have the first Mark II in Chicago . So....

Q: He was your old associate from the Duesenberg days?

A: Yes. So, I got permission to bring him in and show him the cars. Here's a man who was head of Duesenberg and certainly knows that market, and I think it would be worthwhile to let him--and we can trust him and let him see this thing and get his opinion. And, he saw this four-door sedan job, and he said, "Well, that's the one to build. Forget the other one." Then, they decided they were going to build a model like that, and it was going to have a partition in the back so it would be a chauffeur-driven car. So, they had an advertising company in New York working on a name. They wanted a special name for this model. So, we'd have a meeting every Monday morning in Bill Ford's conference room. So, this one day we went in there, and Bill had this big, elaborate brochure that had come out of New York with a whole bunch of names for this model if we built the four-door. Bill said, "Personally, I don't like any of the names." And, they were wild, and they'd have all this esoteric blabber about the reason why that was a good name. I said, "Why don't you call it the Berline." Well, actually, we were asked to come back the next Monday with a name, so I came in, and I said, "Call it a Berline." They said, "That's sounds good. Where did you get that name." I said, "That's what it happens to be." A Berline is a limousine--a small limousine--without the pop-up seats in the back, and it's also--the front end is trimmed the same as the back end in broadcloth rather than having the front end trimmed in leather and the back in broadcloth as regular limos were. I said, "That's called the

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Berline." Well, that's what they were going to call it. They'd never heard of the name.

Q: That harks back to the coach tradition, does it not?

A: Sure, sure. But, you know, the advertising people now they get completely away from the real historic names of cars. I mean, they'll call a four-door sedan a town car, you know, and they just have no conscience at all about using old custom-body terms on cars that it doesn't fit at all.

Q: This tremendous esprit de corps was, however, somewhat outside the mainstream of company politics and production, was it not?

A: Oh yes. They called us the "Country Club Group". I remember one time we were experimenting with a convertible, and so we had a Packard convertible, and we had a Mercedes convertible, and we'd go to the Dearborn Inn for lunch, and we'd ride over with the top down. Well, evidently some jealous people high up in the company were worried that we were having too much fun at our work, and so the ruling came through that we could never go over to the Dearborn Inn anymore with the top down because it looked like we were enjoying our work too much. And, you know; the Secretaries used to bring in--they'd make up sandwiches and stuff and bring in, and we'd have a picnic lunch outdoors. And, we were the only group in Ford Motor where we had girls on our bowling team, and we had girls on our golf team.

Q: Really?

A: Yes. We included the girls in everything.

Q: Good. Was this the old Trade School or was it a newer division?

A: No, this was the Trade School.

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Q: Trade School, yes.

A: And, we had a lot of fun.

Q: You shared quarters there for a time with the beginnings of the Edsel group, did you not?

A: No, I don't think so.

Q: No?

A: I don't know. I never was involved with the Edsel at all. That was Emmett Judge.

Q: Right, yes. Dick Krafve.

A: Dick Krafve, yeah.

Q: You later had a headquarters down the street in--the divisional headquarters was erected, was it not, the Continental Division?

A: Yes.

Q: In Allen Park , I think just over the line in Allen Park , as I recall.

A: Yes. On the freeway, yeah.

Q: So, there was a degree of jealousy and animosity directed toward the division in a sense.

A: Well, here was the problem. You had MacPherson with hundreds of engineers, and styling with hundreds of people over there, and here was

this little handful of people, and if we turned out an outstanding automobile, why it might make the other groups look bad.

Q: And, you did turn out an outstanding automobile--relatively so.

A: Well, as far as engineering and design, yes.

Q: Where did it flounder? What happened?

A: One of the things that Harley Copp wanted to do was to have each

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project engineer be responsible for that part of the car, when the cars were being built, these guys were supposed to be out there watching to see that that part of the car was built right. Morrey Fordice, for instance (in charge in trim), if he found something wasn't right, he could stop the line. Pulley Blank if he saw the welds were not correct on welding up this thing, he could stop the line. Of course, our thought was we wanted to build the best car in the world. This was our ambition, and I remember when we were writing specifications for plating, and I put through some specs, and I got a call from the purchasing department, and they said, "This is ridiculous." I said, "You can get plating this good." "Yeah, but it's going to be terribly expensive." I said, "Yes." They said, "Do you know that your specifications are above Cadillac?" I said, "We're not building a Cadillac," and this was the attitude, you know. Then, they brought in a production man from Mercury--Mercury quality was the worst in the industry at that time. They brought this production man in from Mercury to build our car! Once it got--once they got excited about it, they wanted to make money out of it. The original thought was that we were going to build the finest car in the world; and, if we made money, that would fine; if we broke even, that would be fine; even if we lost money, it would be fine. We still wanted to establish the finest car in the world, and we knew that with the small production that, even if you made money, it wasn't going to make enough money to mean anything to Ford Motor Company So, really, our goal was more or less to break even, but to really to build a fine automobile. Then, they put this man in from Mercury, and the idea was let's get the cars out; let's get the money coming in. They

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were just not--they didn't have that quality. That was what killed it.

Q: You wanted a limited production, prestige automobile?

A: Well, I wouldn't say limited production. You'd build as many as you could that people wanted to buy, but try to build the finest automobile you could build regardless of cost. I mean, like putting in a stainless steel exhaust system for instance. We wanted a car that you could drive for say 25,000 miles before anything would happen to it. It could have been done. We could have built a car that well. I remember one time I went over to the Dearborn Inn with some group, and there was a Continental sitting there--a Mark II Continental--and a Volkswagen, and I made the

comment, I said, "If we had built this thing as well as they build a Volkswagon, we'd still be in business." I pointed out that the fits were better on the Volkswagon than they were on the Mark II Continental. So, it's a shame because--a lot of us got hurt by this whole program, but probably Bill Ford got hurt more than any of us because he was dedicated. He wanted to build the finest car in the world, and we all felt that way.

Q: Partly as a memorial to his father, do you think?

A: No, I think Bill Ford was a perfectionist, and he just wanted a prestige automobile. He wanted the finest car in the world, and we could have done it, if they'd left us alone.

Q: Without going in too much detail into personalities, what was--the first year it came out, and it was a critical success--the 1956--and the '57 was an improved model, as much as you could under the circumstances, then what happened?

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A: I don't really know. I really don't remember this part.

Q: But there obviously were forces in the company that were working for your demise.

A: I got out of it and moved into another area. Jess Richards really was so much smarter than I was as far as body engineering was concerned that once a car was in production, he was really the chief body engineer. I'm glad that--I mean--I don't know, he may have been hurt by it too, but he finally, at least, came to the top as chief body engineer at Ford Motor. And, I see Jess quite often, and he's a wonderful guy, but I'm disappointed in him that he doesn't care anything about automobiles any more. He just seems to have lost interest in automobiles. He likes to travel and take it easy and enjoy retirement, but, I don't know, I'm so crazy about automobiles that retirement doesn't diminish my interest in cars at all.

Q: We left you in 1970 with your decision to retire from Ford.

A: I retired in 1965.

Q: '65!

A: Yes, 1965 I retired, and then I taught school at Art Centre from '65 to '70, and then my wife died, and I remarried and moved back to Grosse Pointe.

Q: And have you been effectively retired since that? Was that your last professional affiliation?

A: Oh, I've done some consulting work, and we did this car called the Buehrig Automobile a couple years ago.

Q: Tell us about that could you?

A: Well, it was a well-meaning thing that didn't turn out well. Dick

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Kughn, who is a very brilliant man and very wealthy, was over at our house one night, and I had this model of a car that I'd made in my basement. It was made from a Corvette, and he said, "Well, let's build it." So, we started a company, and he wanted me to run the company, and I said, "No, I didn't want to do that." I recommended a fellow to do it, which Dick hired, and that didn't turn out very well. He got fired, and then things dragged on, and then finally they did build one. And, we built three of them.

Q: Did you?

A: Yes.

Q: Can you describe it?

A: Well, they were shown in the auto show, but it was for that speciality market. Beautiful car, I'm proud of it, but it didn't sell, and the reason was that the price was \$135,000 a copy, and we originally thought it was going to be about \$60,000, and I think that it would have sold well at \$80,000, but \$135,000 was ridiculous, plus the fact that at that time....

Q: What year was that by the way?

A: A couple of years ago there'd been very little testing on the car. It wasn't a thoroughly--they built three prototypes really, and were not really....

Q: Three drivable prototypes?

A: Drivable prototypes, yes, and they still have them.

Q: Do they still exist?

A: Oh yes.

Q: Do you have one?

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A: Oh no.

Q: Would you want to have one?

A: Well, they're worth too much money, really. He lost a lot of money on it. It's too bad, but it was--and I don't want to criticize Dick. He meant well, and it was--he had a restoration shop

where he restored cars for himself, and he knew that end of the business, but he thought we could build production cars, and you can't do it that way. I was always strong to get some outside company to build the whole car for us, but I was never able to convince him that was the way to go, so we finally wound up with a product which we displayed with a price of \$135,000 for a Corvette.

Q: Basically, a Corvette.

A: And, there was a man in Florida by the name of Phillips who built a car very similar to it starting with a Corvette and going through the same process that we did, and the only difference between his car and ours was that mine was an original design, and his was an imitation Mercedes. But, he was able to sell that at \$60,000. Then he sold a lot of them at \$60,000.

Q: Did he? What do you think of the custom-car market in recent year--say things like the McLaren--the personal custom cars? Have you watched those fairly closely?

A: Not too well.

Q: Or the Bricklin?

A: There was a company in Florida that I visited last year that was building a car, and they're quite successful. I can't remember it is the--Zimmer I think--and this Mr. Zimmer is a pretty smart automobile

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man. I mean, when we left there, I told my wife, I said, "I think there's another E. L. Cord." He's a brilliant man. I don't like his car particularly well. It's too garish. I don't like cars that are overdone with too much chrome and too much imitation, outside exhaust pipes and things of that sort which are rather sickening.

Q: Simply gingerbread.

A: Yes. That type of thing, but he's doing all right with it. He's selling them.

Q: What do you think of these rather extravagant things like the Excalibur and others of that type?

A: Well, that's Brooks Stevens. He's done real well with that.

Q: Has he?

A: Yes, Brooks has done--and it's a quality a product. He's done a good job. He has--I think his sons--a couple of sons--that run that business now. They've done very well.

Q: Have they? Then there are people locally like Bill Schmidt who takes, I think he takes...

A: Cadillac, yes.

Q: Cadillacs and extends them, and....

A: I've seen that. I don't know how well Bill's done with that. He's just down the street here. I know of one that he sold in Detroit . I don't know of others.

Q: Other than the Buehrig, have you been involved personally with any other design operations in the last ten years or so?

A: No. I've been a consultant to Franklin Mint for the last couple of years.

Q: Oh really. That must have been fun.

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A: Yes, that's...

Q: Working on their series of antique car models.

A: Yes. It's been a nice association, but that's really the only consulting work that I'm doing at the present time.

Q: From a perspective of roughly about sixty years in the business, if I were to ask you what your design philosophy is over the long haul, could you characterize that without too much difficulty?

A: Well, I think that this old cliché of form follows function is my theory of design. I mean, I follow that, but you have to analyze function, and if you are beholden to a wind tunnel, then you have to figure that the function of the car is just to make something that goes through the air with the least amount of resistance, but that's not really the whole function of an automobile. I think that if you want to a design form to follow function, then the first function that--the most important function, is to design something that people are going to buy, and it's to have style, it's got to have some artistic characteristics about that is going to make somebody want to buy it over the competition. And, another function of the car, it's got to carry people in comfort from point A to point B. The function of things in the car--the instrument panel and the steering wheel--everything should be comfortable for the driver and no mysteries about it. So, there's a lot of functions other than just pushing that thing through the air. So, I think it's wrong to sacrifice anything just for aerodynamics. Aerodynamics are important, but they have to be given their proper balance of importance.

Q: Do you get the impression that the aerodynamics concept--obviously not a new one in automotive design--was sort of happenstance because of the fuel crunch of the mid-Seventies?

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A: Partly, yes. See, the problem is that the--the government's a big problem. They came through with the CAFE ruling where we had to produce a--all of our cars had to have average gas consumption, and this gas consumption was higher than the cars they were producing by quite a bit, so the companies were forced to build cars that would get more miles per gallon, and there's only certain things you can do to make a car run farther on a gallon of gasoline. You can make it smaller, you can make it lighter, and you can maybe improve the efficiency of the engine and the drive line, and you may be able to improve the tires, or you can give it an aerodynamic shape. What the companies did, they did all these things. They made them smaller, they made them lighter, they did all these things, but from a merchandising standpoint, the one thing they decided was something they could sell was aerodynamics. They couldn't come out and advertise, "Look, we made the car two feet shorter and six inches narrower and 500 pounds lighter." That wouldn't sell. But, they did all these things, but then they came out and made a lot of noise about aerodynamics which is legitimate in that respect. The aerodynamics help improve the gas mileage, but also making the car smaller and all these other things also help improve the gas mileage.

Q: So, the coefficient of drag becomes the magic--the word at that time?

A: It's the one thing they could merchandise. Advertising people could do something with it. But, the thing that's happened, I think, is that they've gone a little bit overboard and given the aerodynamics more importance than they should. I think you're going to have to get away from that, otherwise everything is going to look alike.

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Q: You touched upon an important point in terms of driver comfort. They've finally codified that under a fancy term called ergonomics.

A: Yes.

Q: But, it really goes back to the old sense of pleasing the driver and making it easy for him for drive and convenient for him to drive.

A: I remember back--you know who Oscar is? Oscar is the dummy.

Q: Yes.

A: Well, in the development of the dummy, this is interesting, many years ago--and this was a subject that we took up in the Society of Automotive Engineers--and there was a professor from--I think his name was Lay--from the University of Michigan who was head of the automotive engineering at the University of Michigan. He was on our committee.

Fred Matthei, and I don't remember who all, but, anyway, Rudy Schonitzer, and I were a member of the committee. So, we were developing this dummy--this Oscar--and the data that we had went back to the--I think it was the Franco-Prussian War--and this is the days of Napoleon, and armies travelled overland, and they not only travelled overland, they had to carry all their equipment with them, not only a gun, but they had a knapsack, and they had a whole bunch of stuff. In typical German fashion, they took a scientific approach to it. They took dead soldiers and froze them and cut them up and weighed all the parts, and by doing this, they were able to design the equipment that a man had to carry so that he could travel farther in a day and still be alive if he didn't get shot. So, anyway, this is where we got the data for Oscar.

Q: That's marvelous.

A: Another thing that's funny that goes way back. For many many

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years, in fact during the classic era, the standard wheel track was 56 inches, and that was the width of streetcar tracks too. You could ride on streetcar tracks in those [days]. It was interesting where that 56 inches came from. It goes !back to the Roman days, and in Rome the tra- vel was by chariot, and the width of two horses that fasten up to a chariot--between their backbones, it was 56 inches between the backbone of one horse and the backbone of another. Then, the horses would tra- vel, and the wheels would follow in the path made by the horses' hoofs, so the wheel track on the old chariots were what was carried over and still is being used today.

Q: Well, that's very good. Well, on the whole, you've had a happy and productive career I suspect.

A: I've had a lot of fun. I never made any money, but I've had a lot of fun.

Q: Isn't that the main thing? You've made some contribution, obviously.

A: Yes.

Q: And, you're keeping your hand in with your interest in automobiles and occasional consulting.

A: I don't lose interest in cars, that's for sure.

Q: Well, thank you Mr. Buehrig. You've been very helpful.

END

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