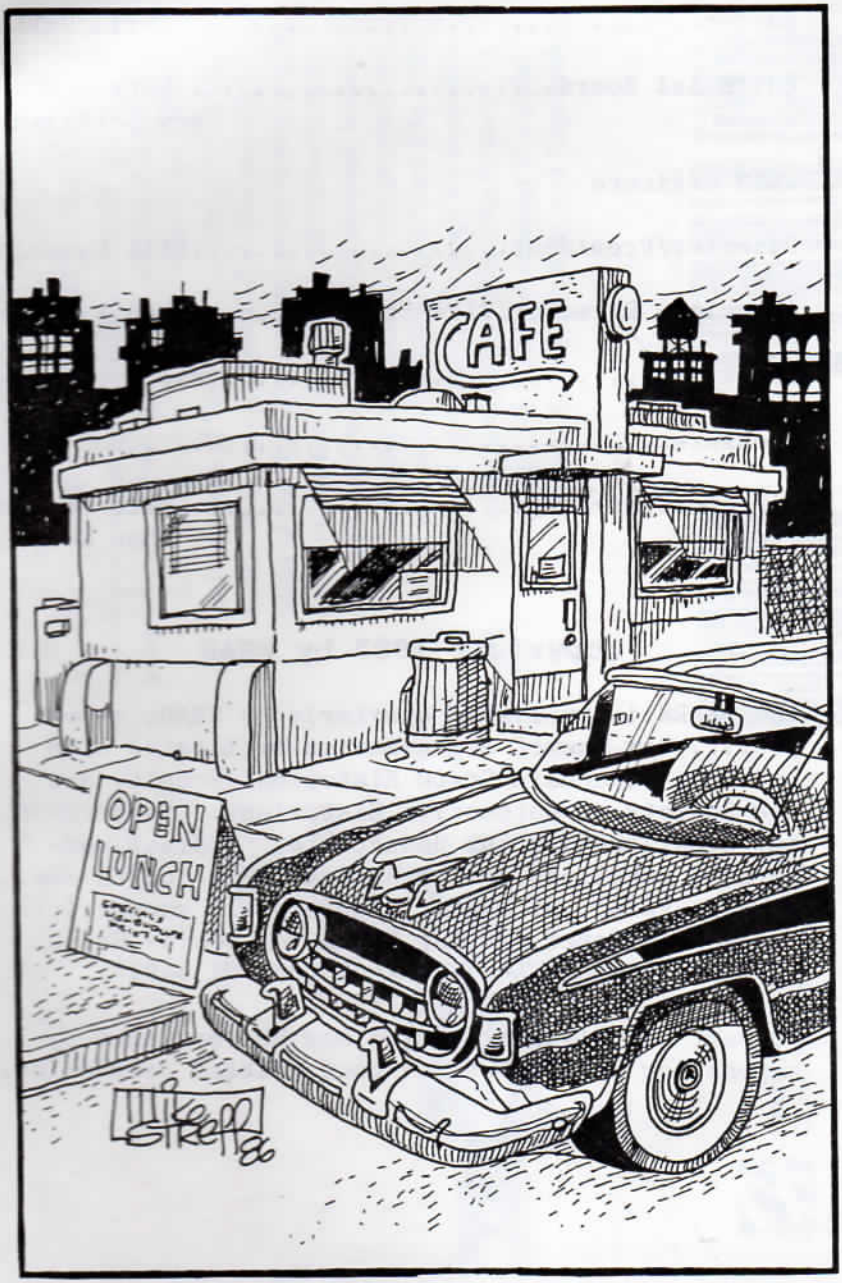
SPARK 28/29



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DIRECTOR'S MESSAGE

Among the many advantages in belonging to the Society of Automotive Historians is the ability to tap an immense reservoir of automotive history possessed individually and collectively by the membership. Equally significant is the fact that almost 90% of this reservoir can be tapped without cost. Most members of the Society have extensive libraries. In addition, quite a few have prodigious memories, and, in all cases, are willing to share their knowledge.

The latest SAH membership directory states this concept quite succinctly. "The combined knowledge and archival collections of the membership represents the world's largest body of automotive lore. Camaraderie and sharing of knowledge among members is a vital key to the continuing exploration and discovery in automotive history. This membership directory lists fields of interest among members and is revised and updated periodically."

One has only to refer to the Index of the directory to find the names of members who can supply information on almost every facet of automotive history whether it be biographical, by make of car, by time period or geographical location.

A further example of this willingness to share is the help and advice given to visitors to SAH headquarters at Hershey in the fall or at stands manned by members of affiliated chapters. During the past year the Wisconsin Chapter has answered hundreds of questions from its tent or booth at Iola, Hartford and Osceola. Most of the credit goes to our WSAH treasurer, Bob Gary, who is one

of those persons with a prodigious memory and who is a fine example of dedication to the cause. No matter how remote the make, Bob or someone in the organization can furnish the information you are looking for!

Bill Cameron

EDITORIAL NOTES

If it seems like a long time since you saw the last SPARK, that's because it is. The good news is that in the time that's passed we've had the time and gathered enough material to put out our first double issue ever.

The variety of notes, news and articles that follow cover our more or less ideal mix of contemporary issues, auto history and comments on historic preservation. Not the least of the above are Ray Besasie's comments on his part in Wisconsin's automotive history. These comments were made last spring when Besasie appeared as the special guest at our annual meeting (held at Brooks Stevens' museum). To our knowledge, no other magazine has yet run a full length article on Ray Besasie, so what you read here is something of a scoop.

* * *

On another front we've had a number of letters from long-time WSAH member Wally Wray containing a point here and a point there worthy of printing.

Problem is those bits and pieces never lent themselves to full-story treatment. A dilemma. Dilemma solved. Will consider them here and now.

In one letter, Wally writes: "What's your policy regarding reprinting stuff from other publications? Any guess how other publications and authors feel about having their stuff reprinted in a small organization's magazine or newsletter? Do they normally charge? How much should be changed in a manuscript before submitting it to another publication without running into problems with the original publication's 'exclusivity understood by cashing this check' policies?"

The answers: In general terms my policy on reprinting is to run that which I think WSAH members will find of interest in the SPARK and which they are unlikely to have seen elsewhere and which I am able to obtain both the author's and the publisher's permission to reprint without charge. Simple. Exceptions? Yes there will be exceptions to the above, but they will be few and far between. Usually authors and publications love to have their stuff reprinted; anywhere. It's good publicity. When others ask permission to reprint SPARK articles, I tell them it's okay with me and WSAH, and provide the author's address so they can check with him or her as well. Anytime someone wants to charge you to reprint something of theirs, it's time to reconsider. SPARK does not pay for material reprinted in its pages. Credit, however, is and should be given to both author and publication. Finally, you don't, as a rule, change or edit an article for reprint purposes. On the other hand, if you're an author trying to make double the bucks on an article that's already appeared one place,

you may not be talking reprint. "Exclusivity understood by cashing this check" policies are tacky and most often unnecessary. Trying to pass off a rehash as something new and fresh is also tacky.

That's the short of it. If there is additional interest in reprinting as a topic, or if anyone would care to make additional remarks, we can devote additional space in another issue.

In another letter, Wally mentions another member's comment that "it's just as demanding to do stuff for the SPARK as for anything else, but the pay isn't as good." Personally, I make time to do stuff free for SPARK and other publications (in spite of an extremely busy schedule) because of the unique rewards each of those experiences offer. Contributions to the SPARK are always welcome.

We'll end on that note. Wally and others have made a number of additional comments and suggestions on writing and publishing in their correspondence. Look for more in future issues of the SPARK.

* * *

In the meantime consider sending in your thoughts on writing, publishing, the automobile, history, whatever. You're among friends who want to know what you're thinking.

Chris Halla

A LETTER FROM THE ASSOCIATE DIRECTOR

(EDITOR'S NOTE: Over a year ago, when Ken Nimocks first became Associate Director of WSAH, he wrote the following letter. A year-plus may be a long time to hold something before running it, but the appropriate space and time never seemed to present itself. Until now that is .... CH.)

Hooo boy! Was I embarrassed! My friends and work associates consider me a walking automotive encyclopedia, but I knew after my very first WSAH meeting that within our group my automotive knowledge is nothing more than average. Like many others in the group, I live and breathe anything automotive. Until a few years ago, however, I had concerned myself with the specifications of vehicles and only gave passing notice to the history of the people and places behind them. By the time I interviewed Robert E. Kissel for an Old Cars Weekly article about his family--not the cars they built--and after reading such things as David Lewis' "Ford Country" in Cars & Parts for some time, I had found that the historical is every bit as appealing as the technical.

As a sideline, I do auto trim work which, on a restoration, often requires studying photographs and specifications of a particular interior. So what do I end up doing? While restoring the seats and convertible top on a Mercedes, I immersed myself in the history of Benz and Daimler. Jaguar work took me through Swallow, SS and Lister, while a Ferrari top plunged me into the background of Enzo's products. Finally, I joined WSAH, and now I are an automotive historian? Back to the red face.

At a meeting in Rockford, IL, I was voted in as Associate Director to take over for Bob Lichty. While I am honored and enthusiastic to be a WSAH officer, I'll have to admit that my knowledge of Wisconsin's automotive history is practically nil. So it was, that shortly after that meeting I was paging through a book, Wisconsin Highways 1835-1945, and came across an illustration captioned: "A picture of the first automotive highway vehicle in the United States; Invented and operated in 1871 by Doctor J.W. Carhart of Racine." There was no mention of this vehicle in the text, nor in any of about 15 encyclopedia type auto books that I referred to. The only reference to be found was on a Fifties poster listing over 2000 vehicle names that simply gave me, "Carhart 1871." I had several thoughts. Is this one of the vehicles from the Green Bay to Madison race? (Yes, I had heard of that!) Is this the same sort of thing as Selden's patent application vehicle? Cugnot and Trevithick are in all the books, why not Carhart? So, I decided to turn to an expert and fired off a letter to WSAH Director Bill Cameron.

Bill must have wondered if I'd been sleeping in class, but he graciously replied by filling me in on the Carhart and the Spark name. He even included several copies of previous issues of the SPARK. Bill took care not to make me feel foolish. I did anyway; especially when I took a close look at our logo and realized that, from a different angle, I had a picture of the Carhart right in front of me all the time!

Now, because of all I've learned from this expe-

rience, I have some thoughts and suggestions. When I joined WSAH, even though many members made me feel welcome at those first few meetings, I had the impression that I was the only one in the group that didn't know what we are all about. I had (and still have) little information on the Chapter's formation, how many members we have and who they are, and what our purpose is. After reading all the SPARK back issues that were made available to me, it appears that defining a purpose and acquiring and retaining members have been constant concerns. I believe these concerns are interrelated, and I offer the following suggestions:

1) A Statement of Purpose to appear in every issue of the SPARK. This would be very brief, but would include the date of organization as well as the present mention of our affiliation with SAH and the State Historical Society of Wisconsin. I realize that our members have various reasons for staying with the group; my original purpose, for example, was to further my writing efforts, while fellowship, Wisconsin history, or just car crazy may be valid reasons as well. Prospective or new members may get the impression that they must be writers or historians to fit in and won't stay with the Chapter; a well defined Statement of Purpose would let everyone know that their membership, no matter what their interests, is important. Publication in the SPARK would ensure us that even the newest members could feel informed, rather than like an outsider. With a little input, a Statement could be rough-drafted in a matter of minutes at one of our meetings.

2) A sentence to appear in every issue of the

SPARK about the origin of our logo and the title of our publication. Or, is it better that each new member be left in the dark until they research these two items as an initiation?

3) A list of members names, addresses, occupations and interests, updated yearly for members and given to new members upon joining. The national SAH membership list doesn't necessarily tell us who are members of our Chapter.

4) A list of Wisconsin-built vehicles to be given to each new member and to members, like myself, who joined WSAH after the list was initially distributed.

I really think that these few items will enable us to approach prospective members with "Here's what we're all about" and "Here's what you get." People absolutely have to know what an organization is about, and what it will do for them, before they join. And when they do know, chances are they'll be active and faithful members.

Ken Nimocks

JEFFERY HELP WANTED

WSAH Members,

I am curious if you might have any information on the Wisconsin built Jeffery automobiles and more specifically the 1917 Model 472-2 roadsters? I am trying to restore this type of car and have had

very little luck in finding any pictures of the roadster, especially one with the top in the raised position.

I have a fair collection of literature on the 1916 and 1917 four and six-cylinder models and some earlier Jeffery items. However, none of my info shows much on the roadsters.

Best regards,

Jeff Francis
184 South Pennsylvania
Denver, CO 80209

FIRE SALE MAY BE IN ORDER FOR PIRSCH

(And other comments on Wisconsin's auto related industries)

By David Pfankuchen

(EDITOR'S NOTE: In December I discovered Corporate Report Wisconsin magazine and therein David Pfankuchen's excellent column on the "Southeast" corner of our state. Since the column in that issue dealt with areas of interest to WSAH members, it is reprinted in its entirety here. The following then is: Reprinted with the kind permission of Corporate Report Wisconsin, Milwaukee, and its editor, Doug Weaver. CH.)

Peter Pirsch & Sons Co., a privately-owned manufacturer of fire engines, may be going down in flames. A Marquette University law professor is sifting through the ashes to see if the operation can be salvaged.

Here's a chronology of events surrounding the Kenosha company's filing for bankruptcy:

Sept. 11: Pirsch officials close the plant indefinitely at the end of the work day, citing a strike over layoff procedures by Local 88 of the International Association of Independent Unions.

Sept. 12-14: Officers of the M&I Bank of Racine arrange to have nine driveable fire trucks and an American La France fire engine removed from the plant. The rigs are stashed for safekeeping in an industrial building on Racine's south side.

Sept. 24: The bank files a foreclosure suit in Kenosha County court, claiming Pirsch owes it nearly $2.5 million on a loan borrowed against a mortgage. The bank asks that the plant be sold to satisfy the loan.

Pirsch already faced other creditor lawsuits seeking $2.1 million, including $1.2 million sought by the city of Racine. The city says it made down-payments of $254,684 for three fire trucks ordered in 1985 and 1986, but hasn't received any trucks or a refund.

Sept. 30: Pirsch files a Chapter 11 bankruptcy petition in the federal bankruptcy court in Milwaukee. It offers a preliminary estimate of $8 million in debts and $6 million in assets. Under

Chapter 11, a company is protected from creditor lawsuits while it tries to work out a plan for paying them.

Oct. 2: Bankruptcy judge Charles Clevert declines to let the plant reopen, as requested by Pirsch's president, W. Andrew Sale. Clevert also denies Sale access to Pirsch's working capital.

Sale owns 52 percent of the company. His mother, Betty Even, who lives in Virginia, owns 22 percent, according to testimony at the hearing.

Oct. 14: Ralph Anzivino, a law professor at Marquette, is named a trustee for the company and as such, will help determine whether it should be reorganized and reopened.

Before closing, Pirsch had 115 employees. It was founded in 1857.

* * *

Problems continue to mount for troubled Twin Disc Inc. in Racine.

In August, it closed its plant in Rockford, Ill., leaving the two Racine plants as its only U.S. manufacturing facilities.

Early in October, it cut 40 salaried employees from its Racine payroll, leaving about 500 employees with jobs.

Twin Disc lost $3.7 million in the fiscal year ended June 30 and an additional $1.6 million in the first quarter of the current fiscal year.

* * *

Remember the Avanti, the sporty luxury car designed by Raymond Loewy that survived the demise of Studebaker Corp. in the 1960s? Avanti lived on in the hands of a private company until that firm went bankrupt last April.

Well, Avanti is back. It's being produced by the new Avanti Motor Corp., which hopes to build 250 cars a year.

We mention all this because a Racine dealership, Schaefer Pontiac-Saab, has the exclusive Wisconsin franchise to sell the fiberglass car.

SHSW MEMBERSHIP DISCOUNT

Since it hasn't been mentioned in over a year the present seemed a most appropriate time to remind WSAH members that our organization is an affiliate of the State Historical Society of Wisconsin and, as such, you are entitled to join SHSW at a discounted rate.

Individual SHSW membership is $12.50 (discounted from $15.00); Family membership is $15.00 (discounted from $20.00). To join send your check, your name and your address, along with a statement that you are a Wisconsin Society of Automotive Historians member to: The State Historical Society of Wisconsin, 816 State Street, Madison, WI 53706.

And coming up for SHSW members and members of affiliated societies ....

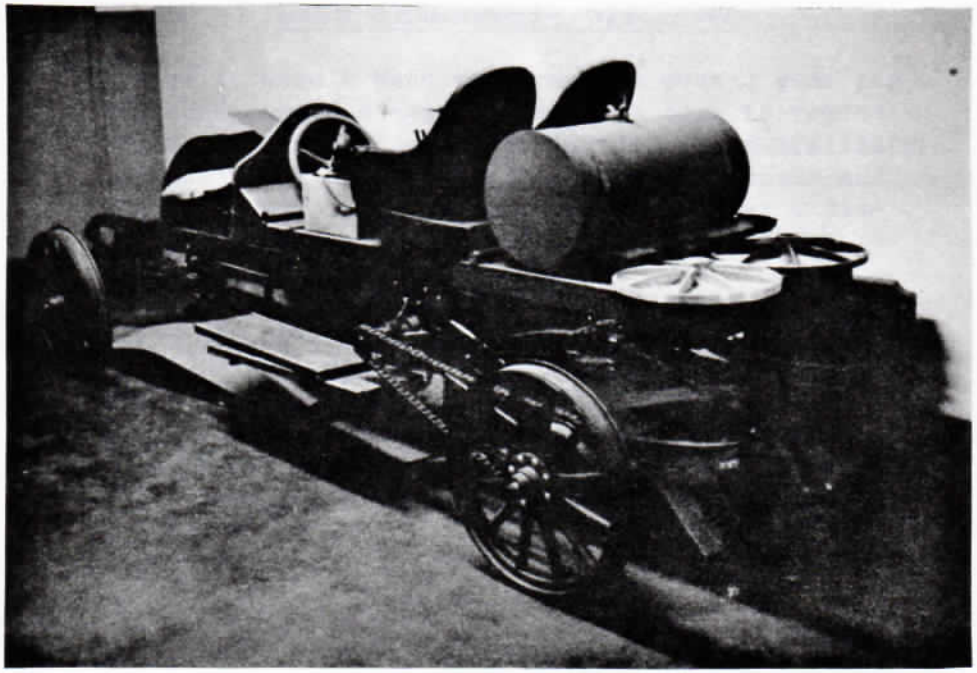
Turn winter thoughts to summer at this year's State Historical Society Founders Day. The history of the development of major league baseball in Wisconsin highlights the program Thursday, February 19, 1987 at Milwaukee's Marc Plaza Hotel. Featured speaker Milwaukee Brewers president Allan H. "Bud" Selig will describe the city's efforts to attract a major league team after the Braves departed for Atlanta in 1965. For information about Founders Day contact Connie Meir at the address above.

THE PETREL: 1908-1911

By Ezra Billings

Automotive history is peppered with mechanical footnotes. And Wisconsin is responsible for more than its share of them. Such is the Petrel. Most folks probably never even heard of the short-lived, Locomobile-like machine. In fact, the information I can present here is little more than a sketch; with the hope that some other observer of the automotive scene can tell more.

I can tell you that the subject came to my attention via SPARK editor, Chris Halla, who had been sent the photo reproduced here with a newspaper clipping, and asked me to look into it. (Unfortunately the photo and clipping arrived in his hands anonymously so the sender didn't provide much additional help.)



Anyway, it seems that this fellow, name of George W. Smith Jr., president and chief executive officer of Stowell Industries, Inc., sometime around April 1986, purchased one of few remaining Petrels from its San Angelo, TX owner for the purpose of displaying it at his company's Filer & Stowell plant at 147 E. Becher Street in Milwaukee. Seems like a good idea to me. Especially since, for a time, the Petrel was manufactured by Filer & Stowell.

Manufacture of the Petrel was begun in 1908 by the Petrel Motor Car Company. The car was, I'm told, distinguished by its Waite friction drive transmission. The latter was the brainchild of Harry Waite of Wauwatosa, who as far as I can tell was distinguished himself for little else. For that matter, the Waite friction drive transmission isn't exactly in common household usage either.

The Petrel's engine was produced by Beaver Motor Company. For a short period it was put together in a Kenosha typewriter company, but mostly assembly was handled by W.S. Seaman Company, a Milwaukee builder of furniture and telephone booths, in a building that eventually became the American Motors Corporation body plant.

Unfortunately, the Petrel, aka the "stormy" Petrel, met with hard times. My suspicion is that hard times for this machine started real early on. To keep a short story short, the Petrel Motor Car Company went bankrupt in late 1909 or early 1910

and dragged Beaver Motor Company down with it. Both were subsequently purchased by Filer & Stowell.

Which is approximately where we came in. And which explains why a high powered guy like George Smith Jr. wants to make his Petrel the centerpiece of what sounds like a very interesting Stowell Industries historical exhibit.

Anyone who has additional information on the Petrel or who feels capable of making any particularly intelligent guesses on the subject is invited and encouraged to write me in care of Chris Halla, 1455 W. Prospect Avenue, Appleton, WI 54914.

A TALK WITH RAY BESASIE

(EDITOR'S NOTE: The name of Ray Besasie is a familiar one to students of Wisconsin's automotive heritage. Besasie played a part not only in the development and enhancement of turbocharging and the production of Brooks Stevens' early Excaliburs, but also, as he tells it, such little known items as spiral jet gas savers. Besasie spoke to WSAH members at our last mid-winter meeting. Following is much of what Besasie had to say.

Since this is a direct transcription from tapes made on the scene it lacks the finish of a polished article, and small parts of Besasie's talk, as well as several comments from WSAH mem-

bers, are missing. Furthermore, it should be recognized that this was an informal, unrehearsed presentation of recollections, unaided by notes, from a man who was recognized as a force in things automotive during his most active years. If a fact is occasionally misplaced, a date or two off by a tad, it is to be expected and forgiven. Finally, I would also ask your forgiveness for misspellings and such, as some names and locations given are outside my personal experience.

Among those WSAH members in attendance during Besasie's talk, presented at the Brooks Stevens Museum, were Brooks Stevens himself and Bob Gary, who drove on Stevens racing team some years back. Wherever possible their specific comments are noted. CH.)

Ray Besasie: I got an idea, went quickly to the cashier and asked her for a piece of paper. I scribbled a little drawing of what came to my mind and the following morning, I couldn't wait to get to the shop. I made two of them and called them the spiral jet gas saver. I made a fortune out of it. I no sooner finished both of them when Joe Gentilly came into the shop: "Say, Besasie, my LaSalle eats an awful lot of gas. What can you do for it?"

"Joe, I've got an idea," I said, "and it won't cost you anything. I'll put two of them in your car for nothing."

I lifted the carburetor and dropped these two

spiral jets down into the port. I got through with him and the Chief of Police of Milwaukee came in and he had a Chrysler. I put one in his car. Throughout the week I made a half-dozen installations; all for nothing, with the understanding that after a week or so, they would give me a report on it. The first to come in was Joe Gentilly.

I said, "Joe, how did that idea work?"

"Gee, Besasie, I don't know what you did to that car, it doesn't eat any gas at all!"

But you see the trick to the whole thing was, his car needed some plugs and points. It was so out of tune that it barely ran and just the addition of plugs and points tripled the mileage. Anyway, throughout those next two weeks or so, I made a few dozen installations. One of them in particular was for the foreman at H.O. Stencil Tire Company. He turned out to be one of my biggest salesmen. He could sell you anything. Well, in the course of the next two months, during which time I developed blisters, bleeding blisters, from working the tin shears...I was cutting them by hand...I thought, I'm going to give the job to my sons. They were going to Lincoln High School then. So, sure enough, I called them all together and I said, "I've got a job for you, and I'm going to pay you a nickel each for every one you make."

My son, Freddie, said "A nickel, dad?"

"Yes, a nickel. A whole nickel." I showed them how to make it. I went away and left them with a supply of stock; must have been about 7:00 in the

evening. I came into the house through the rear entrance and I heard a voice say, "Wait awhile. Wait awhile, don't open the door or you'll knock everything over." A moment later the doors opened up and to my astonished eyes both of my kitchen tables were heaped full. My son, Freddie, who was with the Journal, smart in a way, knew if I saw all those gas savers he'd have to bring the price down to 3¢ or so. And he pointed his finger at me and said, "Don't forget now, a nickel." I advertised in the Milwaukee Journal, I even had a radio spot; Gene Raymond. But two months later the thrill was gone. With me it's building one. Who wants to build a second one, whether it's an automobile or an airplane. The thrill is in building one and completing that one and I got sick of it. No matter how much money I made, it never interested me at all.

I used to come in at night through the rear door entrance with my pockets just loaded with money, and I'd stand in the center of my kitchen and let the money all fall out. Then I'd sit down in a chair and burst out laughing. The first time I did that my wife thought I'd blown my cork. "What happened?"

"Nothing happened," I said, "but look at the money. What are we going to do with all this money?" That's when a dollar was a dollar; not today.

Anyway, one morning my daughter came up to me and she said, "Dad, we're sorry to tell you but we're not going to make any more gas savers. Look at our hands, they're all bleeding ...."

To heck with the gas savers; I've made enough

money out of the idea anyway. I got back to the shop and my office girl introduced me to a gentleman that was waiting there. "Besasie," he said, "I've been following your progress with that spiral jet gas saver and I'd like to buy it." Right at that moment, gentlemen, he could have had the idea for nothing. I had no patent on it and I was sick of making them anyway. He said, "What do you want for the idea?" I've been smart in some ways, dumb as hell in others.

I said, "What will you give me for it?"

He said, "Tell you what, Besasie, I'll give you $2,000 and a 10 percent royalty on every one."

I said, "That's a deal."

He said, "Fine, come down to my office and pick up your check and we'll sign an agreement." Which I did. I used that $2,000 to take a trip down to Florida, and I forgot about the idea. I never went back to collect any royalty. I figured he had enough time trying to make a living out of the idea and it was about 10 years later, in 1950-something, times were getting a little slack and I thought I'd come out with that same spiral jet again, but it was impossible because through the intervening years the manufacturers of the automobiles made the intake manifolds so low in order to get a low profile to the hood and there was no intake manifold to speak of below the carburetor. The gas just dumped itself and spread out so there was no room for the spiral jet. But I made a lot of money on the idea. I sold them for $1.98. They only cost me a dime to make. How can you lose money?

Well, turbocharging, like a rocket car...I've dabbled with all of them. I built my first turbocharger back in 1935. I even got a business card that a party sent to me from the West Coast with my name on it and it goes back to 1936. Turbocharging is a wonderful item, but it has its certain applications; in some respects it stinks. The lag that you get when you step on a throttle, especially when you open it suddenly, doesn't pay for all the fussing around and trouble that occurs. For instance, the present one that's popular and that's used on a great many cars, I wouldn't really give you two cents for it. The only time it starts super charging is if you are in excess of 30 mph and you tramp on the throttle. The pressure in the intake manifold will rise above atmosphere, and that is the only time that you can say the engine is supercharged. At all other times you're running a normally aspirated engine. You can be going 50, 60, 70 mph and as long as that throttle is partially closed, you're not supercharging that engine. It's there as a stand-by. The type of charger that I made rotated on ball bearings and the friction load was so little you could go ahead and pull to the curb and people would stop and say, you left your engine running. You could hear the turbo winding down.

Comment: Where did you get the impeller? Did you make the mechanism?

Besasie: I made everything. In fact I showed Allis Chalmers how to weld the turbo blades they were using for the B-29. And it was a turbine blade that was used on the cream separator. The

entire turbine was formally first adapted to a cream separator. I still have some of the blades. When Professor Moss who claims he invented it...one thing I want to tell you gentlemen is that you don't invent anything. All you do when you go through life you improve on somebody's else's work. You don't invent anything. I've got a book at home dealing with the history of the Cadillac car, and my 1914 Cadillac is pictured there. There's quite a write-up on it. In going over the history of the Cadillac car, nothing that the Cadillac people put into that car was original.

For instance the two-speed rear axle, two ringers, two pinions, one revolving inside the other with an electric shift, I had a car like that; I got pictures of it. While the car was wonderful, that 1914 Cadillac was my laboratory on wheels and it took me where I wanted to go with a terrific speed of 40 mph. Although one day after experimenting with it, I took it out on the road, somewhere south of Milwaukee and on a straight stretch there, I don't know what happened to the car, it got its second wind and started to go like hell, and the speedometer started to hum around 70-75 mph, an unheard of speed in that Cadillac, with those big 37x5 tires. Did you ever have one of them explode on you? When one of those tires blew out, brother, it blew out! The inner tube carried 100 pounds of air. The trouble with those old time cars is they had a rim and if it wasn't locked perfectly, the rim would come loose. I had one come off in the shop. I was revving up the engine on a 1918 Cadillac and I'm sitting in the front seat and I'm revving up the engine. I had

just come back from the Indianapolis 500 and as a rule I raced every Tom, Dick, Harry and his brother and for some reason this engine had a particular miss at around 60 mph, so I wanted to get rid of the miss, so I'm sitting in the car, put on the throttle, one wheel jacked up. Now what happens when you raise one wheel? The speed of the other wheel doubles due to the differential. I'm watching the speedometer. The speedometer was air driven at the time. My 1914 Cadillac and the later models had the speedometer cable, as it came from the front wheel, ran a little air pump. John Mansville made that speedometer and the rotation (like a miniature blower) it would blow a jet of air against the dial. That's the way John Mansville speedometers worked. When I wanted to trick someone I took the speedometer head and plotted a hole on the opposite side. What I could do by putting the screwdrive under the dash, it would fall into the head of the screw and by turning the screw I would increase the flow of air against the dial. I could make that speedometer run wild! Anytime I had a honey with me and they wanted to know how fast the car could go, I could be moving 20 mph and the speedometer would be moving 50.

Turbocharging is a thing that's here to stay. First of all, it's giving work to a lot of people and that's the main thing. There's a difference between the supercharger that I made and the one that is being made by Air Research. (There's another company that's making it.) They use both the impeller and the turbin run on one shaft. Their exhaust gases have to be controlled as far as the temperature is concerned. You cannot run

the exhaust temperature from the port up against the turbine; you'll burn up. So you run it at a point until the exhaust temperature drops, which means a long length of conduit manifolding. They plot that on the Indianapolis jobs or any job that uses a turbo and they come to a point (they've got heat indicators) to where the gas temperature drops to around 1300-1400 degrees. I used to run 1700 degrees. The turbine would glow red hot. It would frighten you, especially if you opened the hood at night and you'd see the glow of that red hot turbin housing.

Comment: Where did you have them manufactured? Were they made out of high nickle alloy?

Besasie: Yes, high stainless steel. I searched America. In fact, I even went to Europe trying to get some metals that would stand 1800 degrees. I was actually running 1800 degrees on my turbos. When I look back to my experiments in developing that blower, I'd stand that engine coupled to a dynamometer of 500 horsepower, and I'd stand right alongside of the turbo housing, and I would look, with the throttle wide open--that's the way you take a run--I'd look right into the turbine housing and see everything a white hot mass of metal. It never dawned on me what would happen if some of them would let go. And some of them did let go on some of my test runs around the country. I've seen death a dozen and one times. I had one turbine wheel explode right at the continental divide. Grocery man was with me. Joe DiMotto. It was during the winter and we were

going to the West Coast. I'm climbing this awful grade with a wide open throttle and about six inches of snow on the highway; Highway 66--this was 1947--when all of a sudden there was a crash. The steering wheel just jarred loose. The car dove to one side and we almost went over the cliff. I brought the car to a stop. My friend, Joe DiMotto, said, "What happened compadre?"

I told him the turbine exploded. I was expecting that. That turbine wheel had gone 170,000 miles, and that's a long time. Turbines when they run hot like that have a growth point. If I take a piece of metal and I heat it to a certain degree, say red hot, then I let it cool off, that piece of metal will never go back to its original size. That's why all jet engines have an enormous amount of clearance from the tip of the blade to the housing to allow for this growth in metal. It's just like the old time coal stove, where you heat it up--put red hot coals in there--and after a period of time the cover will not fit the opening to the stove. The metal has grown. You can't stop it from growing. I used to run experiments with my micrometers, heat up a piece of metal, let it cool off to room temperature, then mike it. After a dozen heatings, I found a difference of maybe a quarter of a thousandth. Now you continue that day after day and eventually the tips of the blades will hit the housing. At Waukesha Motor on a 300 horsepower gas engine, the blades had grown to the point they touched the housing, and fortunately I didn't give them much clearance. When that turbine wheel shattered it stayed right there. It just locked itself. It had no place to go because it had no clearance for the pieces to fly out.

Comment: With your turbines, how did you cool the bearings on either side of the turbine wheel? How did you cool and lubricate the bearings to keep them from frying?

Besasie: Well, in testing the speed of the turbine ... I had an order to build a supercharger for the Nordberg Engineering Company and they told me that after the turbine was all machined, it had to be balanced; to take it to a man in Racine. He lived on the outskirts of the town. When I got there it was in the evening. "Oh sure," he said, "give me that wheel and I'll balance it for you." And how do you think he balanced it? He used his fingernails. He'd get the turbine up to speed with an air jet and then he'd put his finger on the shaft and any unbalanced force would give him a different feeling on his fingernail.

Well, I balanced mine with my own equipment out of an Atwater Kent radio. You're looking at a man who was born in poverty, and I've had to make due. There was no way of getting it. For instance, I wanted to find the answer to a formula in running a dynamometer test and I went all over the city; School of Engineering. Nobody knew anything about what I was talking about. At the Milwaukee School of Engineering the head instructor said, "Besasie, we teach the pupils, but we don't get that deep into it." So, what the future is going to bring in the way of turbocharging is improvements right along. Actually, a turbocharger could revolutionize the automotive industry ... it all depends on the metalurgist ....

You watch a race at Indianapolis or anywhere and they're all coupled to this turbo. Every one carries the turbo a certain distance away from the exhaust port. And, no two are the same. Every hot rodder has his own idea on how to run it. Some of them will go ahead and be the daredevil. They'll run it close to the ports, and as a result they're the first ones to break down with a blown unit. There is a big future in turbocharging. I used to say to myself, why turbocharge an engine? I've got pictures of a 1932 Pierce Arrow that carried the world's first turbocharger, and with that unit. I traveled all over America. I drove that car up the Big Horn mountains when they were building the roads, and I had no business on the highway ....

I've been called a nut and a crackpot by some of the best engineers in the country. I remember being in the research department at General Motors, and all they told me is "keep working Besasie, eventually you'll hit the nail on the head. What are you working for?"

"Well, I'm trying to get the supercharging pressure much higher than the exhaust back pressure." I'd ask to see the turbocharger because an engine is nothing else but a pump and if you increase the exhaust back pressure, there won't be any flow of gas going into the cylinders, so you strike a balance between there, and with the right type of cam timing and valve opening and closing, I've doubled the engine horsepower. The Ford V-8, the small one--when that came out a gentleman from Milwaukee, Mr. Jack Ground, his father ran an automobile agency on Oakland Avenue, he wanted me to super-

charge his boat engine. "But, before you do that," he said, "I want you to run a dynamometer test." This was right after the war. I was on 4th and Vine Street then, and I said "That will cost you $200 to run that test." "Go ahead," he said. So I had $5000, which was a lot of money in those days, in a dynamometer, so I made the adaptions of the water hangers and all that and on a fateful day, at 9:00 in the morning, I made my first run with this V-8 engine using my blower and the cam I purchased. A friend of mine came in, a Mr. Dayhart, president of the Royal Radio Stores, and he said, "What are you doing, Ray?"

"Well, I'm going to run a dynamometer test on this engine. Now, you stand by that wall over there." I started the engine under a full load right away. Ran like that for about 10 minutes, and I'm watching a big dial Toledo scale, and it gave me the pounds pull. Lifted that old dial scale, watched the tachometer, and I'm really thrilled with the horsepower I'm getting. But, I forgot one thing. I forgot to put a limit switch on that dynamometer, that when it reached a certain rpm, it would shut off the engine. Boy, am I getting the horsepower on this. Where is it coming from? I had the engine on about 3/4 throttle and actually the room on 4th and Vine Street (or the shop) was just quivering. The racket that that engine was making. So I went up to the dynamometer throttle and I opened it wide open, and I watched that dial scale move up. Anyway, it doubled the horsepower, but a man is never satisfied. I should have quit right then and there, but I'm standing right alongside of the linkage. It's a big heavy dynometer and I thought I'd give it the last bit. That's all I remember. I do remember

having the sensation of flying through the air, and I slammed up against the wall and I fell down on the work bench and rolled to the floor. The dynamometer is still turning the wreckage of the motor; 500 horsepower unit and I crawled on my hands and knees and I jerked the battery wire and I stood up. Mr. Dayhart, man about 60, is stupefied.

"God, Besasie, am I glad you're alive." There was no need to call the fire department or a police ambulance. They heard the explosion. They were coming. Sections of that dynamometer and the wheel blew out a foot and a half thick wall and landed a block away on 3rd Street. One piece caught me here and another here and that's what slid me into the wall. But that in turn saved my life because if the part of that wheel hadn't hit the heavy part of that dynamometer it would have sheared my leg off. As it is, the linkage killed the speed of that flying particle saving my life. Well, the ambulance came and when I came to I was somewhere on 18th or 19th and Wells Street. I opened my eyes and there are two big burly cops sitting there. I said, "What happened?"

"I don't know," said one cop, "you were in some kind of explosion." The minute he said explosion, my dynamometer flashed in front of my eyes. "Oh," I said, "the dynamometer." Well, they picked metal out of my system all below the belt line. Nothing serious, and my friends, Mr. Dayhart stayed at the hospital all the time. He took me home. For the next 10 days I lived in my bedroom. I was in shock. My wife and family told me that I was a bowl of jello for the next 10 days, and through my shattered mind always came to mind

where in the world am I going to get another dynamometer? Ten days later I called my son Freddie and asked him to drive me to the War Assets Corporation on 3rd Street (the Schlitz Building) as they had some dynamometers for sale. He took me over there but, unfortunately, they didn't have any. So I stayed without a dynamometer.

Bob Gary: Mr. Besasie, it was back in 1952 or '53, and I was a student at Marquette, and my roommate, Bill Raft, was reading a book on how to hop up your Chevrolet. In that book there was mention of turbocharging by Mr. Besasie. So he and I went to your shop--was that on Asher Street--that rang a bell before.

Besasie: No, Van Buren Street.

Gary: We were at your shop at least on a couple of occasions. Mr. Stevens had a couple of cars in there--the original Excalibur J, I think you had just finished that, and there was an L29 Cord with fabric roof, and you were very gracious to a couple of young college kids and let us stand around, which we did, and if I could do it again, I'd be a lot smarter. I remember particularly you were talking about this turbocharger. You had it mounted on a about '47, '48 Nash Ambassador. You walked over to that thing to demonstrate how quickly the rpm's would pick up on it, and I know the hair on my neck stood right up. I thought that thing would go straight out the side of the engine, but it was a real thrilling day, and I was delight-

ed at the opportunity to come down here to reminisce with you.

Besasie: How old are you?

Gary: I'm 52. So, I was 19 or 20 at the time.

Besasie: Your age means nothing. I'm 82. I've had a lot of dreams, but fortunately I've made most of my dreams come true ....

Gary: Did you always have your shop in the back of your house in those years? Is it still there now?

Besasie: In the shop there that was where the chauffeur lived. Kept the horses downstairs, and upstairs was the hayloft. I have pictures of it. That's where I used to build my airplanes. If I could only life my life over again.

Gary: Did you ever have the opportunity to fly that plane or get it in the air?

Besasie: Yes. You know how we flew it? I sold the plane to Mr. Loveland. He lived directly across from me and he in turn sold it to another party up in Sussex. This party that bought it dismantled everything because the plane was a mass of universal joints. As you change the angle of

the wing, everything must move. It had to have slip joints all over. But I finished the plane --it was ready to fly--thank God, I never got to fly it because I had a funny idea someone would have died in it. Not that I don't have faith in my work, but it was too novel of a plane. While the engine was perfect, I used one of the three-cylinder engines that I used to build. That three-cylinder engine was a study in itself. I'm not flattering myself. All I can tell you is that at 82 years of age, I've come to the realization (and I've known that for a long time) that I'm not alone in this world. That someone is always alongside of me, guiding me, doing some of my work ...

To go back to supercharging, I've had a thrill a second, hundreds of thrills, close ones with death, exploding turbines, close ones on the highway (the highway used to be my laboratory). I didn't have a race track so every time I would supercharge a car I would take it on the road to see how fast it would go, look around for someone who wanted to race me. It's been a wonderful life. I'm sorry to see it end.

Comment: Are there any occasions where you need back pressure on some of these modern mufflers, etcetera, designed to give you a certain amount of back pressure?

Besasie: A turbocharger can work its best with zero back pressure. That's when you have the full flow of gas that's going up against the turbine blades. But, of course, that's impossible. You

just can't do it. For instance, I can show you on a power charger, power curve, I developed my greatest horsepower increases with three pounds back pressure and a 6½ pound supercharge. Now, in reality you're supercharging more in 6½ pounds. First, you make up for the loss that's already in the intake manifold. The wire drawing from the mixture, from the carburetor to the ports. For instance, you can get a depression at the valve port as high as eight inches of vacuum. Now if you supercharged at zero pressure, which means that you have zero atmospheric pressure at the valve port, you can get a tremendous gain in horsepower or just be supercharging two pounds above atmospheric, because you're making up for the eight pound loss that's already there, that two pounds above it, so in reality you're giving the engine a double life. I'll never forget when I first achieved success with the blower, in other words, when I first really got horsepower. I immediately wrote to General Motors and said, "Hallelujah, I've got it." They wrote back, or rather, they called me and they said, "Bring your supercharger up here right away to the laboratory." What did they want? Copy it?

On the Detroit expressway, I had an experience in the dark of tangling up with a guy that had a hot Ford Coupe. Me, with my foot on the throttle, in the dark, and it was supercharged at 6½ pounds with an exhaust back pressure of three pounds, showing a gain in horsepower from 73 to 110. The charts and the dynamometer curve show you. And this fellow tackles me to a race. "Okay, let's go," I said. We're on the Detroit expressway and he pulled alongside of me and me with all the assurance in the world that the

minute I'd open that throttle I'd fly away from him, which I didn't! I forgot one thing; that the clutch now wouldn't pull the load! The clutch just slipped its fool head off and all I heard from the floor boards was a loud grind and the Ford sped away leaving me with a disgusted attitude. The next day I had to test this car in front of eight engineers at General Motors, but I stayed away from full throttle. Mr. Chase was head of the Research Division and coming from a man of his intelligence I couldn't understand his asking me the question why I showed an intake ....

They gave me a nice write-up in their Detroit Journal that Besasie of Milwaukee invented, made, the first practical turbocharger. But I built many units, some of them on big diesel engines. I've got power curves there; Caterpillar D-8 engines taken at 10,000 feet in the copper mines of South America and I've often wanted to go down there and see one of those things run but you know I made, without ever looking at a Caterpillar D-8 engine, all I had were the blueprints of the exhaust porting and the intake porting. I built the unit, and it's astonishing how close I came to the pressures that I calculated.

Comment: You used the term a few minutes ago, wire drawing. Would you give me a definition on that? That's a term I've heard in steam engine practice also.

Besasie: Wire drawing is, let's say this is the carburetor, then comes your intake manifold on the

valve port over here. Now, the engine that is normally aspirated, on supercharged, will always want to take in through the port more fuel, more mixture than the carburetor can deliver. If you ran this mixture zero pressure all the way to the port you'd have a very wasteful gasoline engine. It would consume gobs of gasoline. There wouldn't be any inter-mixing and so the manufacturer designs the porting and the manifolding so there's a pressure drop, especially when you make a right angle bend. I have gotten as high as three inches vacuum, right at the bend so naturally the engine runs partly filled. It's never 100% full. As a matter of fact, it can never be 100% full unless it's supercharged, and by supercharging, all you're doing is raising the intake manifold pressure. If the engine has a pressure drop we say at the Siamese port of say six inches and a V-8 engine won't give you that. That means that at that particular point, the pressure is always three pounds less than atmospheric under full throttle. It's got to be below atmospheric because if it wouldn't be below atmospheric, the engine would run and develop the power at zero atmospheric pressure. So you see when you're supercharging you recover first what you lost due to the manifolding and then go above that. But you can get tremendous increases in horsepower.

Comment: Did you patent your turbocharging?

Besasie: I had a patent on it.

Comment: Did you ever give any thought to inner cooling because heat is such a problem?

Besasie: Well, I found out in life everything is a problem. The mere act of eating is a problem. What are you boys doing in the way of super-charging?

Comment: We're interested in hearing your experiences. The ads I used to see and the only cars I've ever seen with your blowers were Chevy's. It seemed to be so unlikely ....

Besasie: One day I had my wife up near Tucson, Arizona and there was sort of a church built up against the mountainside that had a history of a lover committing suicide at the door of the church, and when something like that happens right away a group of people want to commercialize it. So, I fell for it. I drove my X-4 car. It was on a Sunday morning and a crowd gathered around the car and a man came up to me. He said, "Say, your Besasie, aren't you? You're the man who showed General Motors it can be done."

Bob Gary: I wonder at this point if we could hear a word from you, Mr. Stevens?

Brooks Stevens: I can tell you how it started if you want, on the Excalibur J.

Besasie: Why don't you tell the boys how we stuffed the rear axle--wood chips--tried to get it across the finish line at 2:00 in the morning, in the dark.

Stevens: Dick Irish drove the first car and his brother-in-law was going to drive the second one. Hal Olrich finally got a first in Class B.

Gary: How many cars did you produce?

Stevens: We built only three cars. But that led to the current Excalibur. It has the drop doors and the fenders to start with. Ray, you're supposed to tell them how you built this. You had a wire frame, remember?

Gary: I'd like to pay tribute to the builder. During the time we ran those, nothing fell off of them; nothing in the body or the chassis. It all stayed together under some of the roughest conditions. They race on billiard tables today. Those roads were rough. They ran on real road courses that were built on regular public roads, and some of the airport courses were rough. Those cars stayed together. That was due to the builder. Occasionally, the engines would desert us. The first was a standard gear box, then the MG gear boxes were used; one TB and one TC.

Comment: I was wondering about some of the interesting parts about the relationship of the Excalibur between yourselves and your client, Kaiser. Most of that was handled by Edgar Kaiser, wasn't it? There was a plan, as I understand it, and it had reached the stage where a line was set up to build 2,000; semi-production. That happened about 1953-54, was it?

Stevens: Nineteen-fifty-four. They built Kaiser-Darrin cars--about 230--it was a street roadster and was supposed to be the street vehicle and race car. His sports people got into it--how many MG's did they sell? Finally, they built that sliding door thing and 253 cars were made.

This might have done for them what the Thunderbird did for Ford at the time. It was on the brink of being a prototype of the future. Louie Caruso needed something at Ford--he knew this in 1951--to get the company's image up. He had Walker design something and it was the Thunderbird. This could have been the same thing. Their fortunes were already gone. It was then how do we bail out of this? They had no money to use for engines and things like that.

* * *

Besasie: I hid that plane after it cracked up back of the Green Tree Tavern on Highway 41. That was a red letter day in my life, and that plane I took a ride with it, all alone, and it was windy, gusty, and I had no business flying. My two brothers-in-law said, "We bet you're afraid to fly it, Ray."

I said, "What are you talking about?"

"Too windy. You won't fly it today."

So I said, "Just for that I'll show you." I taxied over to the west end of the field and by gosh, just before that a pilot came down with a Ryan plane, and I asked him how the air was. "Rough as hell to 2,000 feet, calm as a billiard table above that."

So, I took a ride. By gosh if that pilot wasn't right. As I took off from the field, rough as hell, it was all over the sky, but the minute the altimeter read 2,000 feet, it calmed right down. I flew around for about ½ hour, made a landing and I made as good a landing as that Ryan did. There are people there that will testify to that. I got out of the plane and running towards me, a young fellow that I used to fly with, and he's got a big heavy set woman with him. "Ray," he said, "can I borrow the plane?"

I said, "Go fly it."

He said, "I want to take my honey for a ride."

"But," I said, "there's hardly any gas. Can't you see the bobber? It's reading empty."

"Oh," he said, "I just want to take a little hop. Right over the field and I'll land right away."

I said, "You must be crazy ... Okay, I'll loan you the plane. Take your girl for a ride, but you stick to the field here."

He disappears in a southeast direction towards the city. I didn't see or hear from him for a good half hour. Now, I built the engine and the whole plane and I knew how long it would run on a gallon of gas. The whole airport knew it was flying without gas. I rushed outside and I said, "Where, where, where?" The plane came down right in a back yard, so I and about 10 other fellows got into my caddy, on the running boards and all, rushed out across that potato field. I went across it so fast that I lost both spare tires, and I see the

plane first, and the plane is upright, and the fellow is supporting this woman. They're both a mass of blood. I said, "What happened?"

He said, "Nothing. I'll talk to you later about it. Take the girl to the hospital, I think she's dying."

So we sat the girl in the rear seat of my Cadillac --her head was on my brother-in-law's lap--and then started the wildest ride of my career, down Highway 41. When I got close to the emergency hospital on 19th and Wells Street I started to blow the horn so the attendants would be out there, and sure enough they were. They were out there with a stretcher. They took the girl in and the nurse said, "What happened here?"

I said, "She was in a plane crash and I want you to do me a favor, if you can."

"Well," she said, "if it's possible, I will. What is it?"

"Keep it out of the newspapers," I said. "Because if my wife hears a word of this, my flying career is over." She said she would do what she could. Believe it or not, she did such a remarkable job that that is the only airplane crash in the State of Wisconsin that was never listed in the newspaper. It brought the plane up completely--it was a total washup--the engine was up in the wing because it buried its nose right up in the mud and in the dark, with about 10-15 other men, chisels and hack saws, we cut the plane up into a hundred pieces, and we hid the wreckage in back of the Greentree Tavern on Highway 41 and went home. My

wife could tell there was something wrong, because it must have been about 2:00 a.m. and she asked what happened. I told her to keep her pants on--the plane was all washed up but everything was all right and she should just be thankful I'm living.

"What happened?" she asked.

"Well," I said, "it ran out of gas, that's all." Well, the next morning, after a sleepless night, I and three other fellows, including an undertaker, who happened to be along--he was the instigator of the whole trip--we all met at my shop. It was a November day. So I asked them what were we going to do?

One of them said, "I'll tell you what, Ray. This girl has no father or mother, she's penniless, so we'll have to bury her. We'll have to pay for the funeral. How much money have you got, Ray?"

I said, "I've got $2." Between all of us, we had the exhorbitant sum of $7. So we got into the car and went to the emergency hospital. The same matron was there. Recognized me right away.

She said, "Are you the owner of that plane?" She added, "I kept it out of the newspapers." I told her how wonderful I thought it was but I added we now have a problem on our hands. So she asked me what was the problem. I told her that there was no money and somebody has to bury that woman. She asked me why I thought she was dead. "Well," I said, "she must be dead. How could she survive such an accident?"

The matron said, "No, she's in her room, hollering her head off because she wanted to get out of there." We rushed upstairs and there she was, laying in bed and she was reading a True Love story magazine. "So," I said, "how are you? I'm surprised you're living." She said, "That was an awful crackup." I asked her what happened anyway? She told me they simply ran out of gas, and he tried to glide from Foxpoint into Timmerman Field, and about a mile or so from the field the plane lost all flying speed and plunged right down on her nose, which a normal plane will do. So, all I got out of that plane crash was a $20 bill. Nobody had any money; rules of the depression.

I immediately started to build a vertical take-off plane, and I got as far as building something like the Concord where the angle of attack changes. The entire plane just changes its angle. I built the plane and to this day I have to thank the Department of Commerce, which passed the law at that time--1935--that you couldn't fly an unlicensed plane unless it had a stress analysis and a fee of $2,000. Who had $2, let alone $2,000? I was spending my last dime on the plane and trying to support four kids buying hot dogs for them. So, I sold the plane to a young man who lived across the street from me and he took all the rigging off and he sold it to a party up at Sussex and it flew there for a couple of years, but with a straight wing. I guess all that rigging that I put on ... there's a hundred and one slip joints, and that was enough to scare anybody. That engine that the plane was equipped with was a study not only in human endurance but in brain power. But as I told you gentlemen before, everyone there has a God that works with him all the time. Don't ever let any-

thing stump you because with the right thinking, the right time, you can do the impossible and if building that engine, and the entire plane--because I built that plane from propeller to tail skid--was a study in one sense ignorance, because I didn't go to college, it was a study in human endurance and not taking no for an answer ... But I had a wonderful dad. I came up the hard way. I was born in the slums of Wisconsin Avenue. I never knew what a stomach full of food was. I did have a hard working father. What I didn't think of my father! I can't ever recall my father giving me a penny. When I could have used a 10¢ pair of pliers in the worst way, he'd let me shuffle along with an old broken down pair, but never give me that dime. When I wanted to go to the Milwaukee Motor School at the age of 12, the fee was $250. World War I just started so I had already made hundreds of dollars in repairing the trucks and cars for the people in the lower Third Ward. So one morning I graduated from the 8th grade. I told my mother I wanted to go to another school and it costs $250 to go. She, being the frugal Italian woman that she was, said, "What do you want from me?"

"Well, mom," I told her, "I brought you thousands of dollars. Can't you loan me $250 so I can pay my way through the school?" So she told me that if I wanted to go to that school I should go out and work for the money. So I told her I would go out and make it. The minute the war started kids were in demand--12, 13, 14 year olds--so I left the house and went down to Geary Street where the National Biscuit Company was.

I saw a sign that said "Boy Wanted." I rushed

right in and the woman asked what I wanted so I told her from the sign that they were looking for a boy. She asked how old I was. So I told her I was 16. She said, "You look kind of small to be 16, but" she said, "we do need kids so go talk to the floor lady." I went upstairs, and boy did I get an education, especially in the way of sex.

I approached a woman who was dressed all in white and she asked what I wanted. "Do you want the job?" I replied, "Yes." So she told me to go wash my hands so I went to the washroom where they had circular faucets. I scrubbed my hands real good, went back. She looked at them, but they were not good enough. She told me to go wash them again. I did. So she told me to get in line where the rest of the people were and do what they're doing.

Now, all my life living in the Third Ward I had a craving for marshmallow pecan cookies. Do you know what it is to stand in front of a window with your tongue hanging out and a nice box of cookies is on the other side? I went to a corner and they had cigar boxes, heavy ones. I squeezed my way in between two people. The marshmallow pecans were moving along on a tray. All you did was take a pecan and stick it in the middle of the cookie. Boy, how I wanted to eat one! Everyone was eating as many as they were putting down. It took me about an hour to get up enough courage to eat a pecan. I worked there for 2½ months. I still was short $50 for the required $250. So, to get $50 more I asked the floor lady if I could clean the marshmallow machines at night. She said it was okay and that it would pay more money.

So at night when the place was empty I would get a steam nozzle and clean all the marshmallow machines. At the end of two months I had the $250. And what a glad day that was! I walked up Prospect Avenue from the lower Third Ward with $250. There's a school there now, the Belleview Garage. The backyard used to be our testing spot for car motors. I went in there and the man asked what I wanted, so I said I wanted to join the school. "Have you got $250?" I told him I did. So, I started my schooling there, but it didn't do me any good. I knew more than the instructors! I learned nothing. I graduated in eight weeks and I got a hundred in my examination and I walked from Belleview to the lower Third Ward where I lived carrying my diploma. Boy, was I proud of that roll of paper! I'm a mechanic now. On my way I crossed Wisconsin Avenue. The Frit Motor Car Company used to be on the corner, and a mechanic was working on an Olds Eight and I watched him for a moment. He was working on a distributor cap. I had never worked on anything like that. As a matter of fact, while this mechanic was working on it, I was wondering what was inside the distributor, but I got the job of putting on the first four-wheel brakes in Milwaukee.

Comment: What kind of car or truck?

Besasie: On the Olds. GM shipped to Frit Motor Car Company on the Avenue the complete set-up. The axle. Everything. Now, it took some brainy guy to put it on the stock automobile, and the job was given to me, and I'll never forget the day I

tried it across from Cass Street. Scooted across the garage. And it stopped. I almost went out of the windshield. I told this story to my kids many times over. They would never believe me. As a matter of fact, the kids think I'm too hair brained.

Comment: What year was this?

Besasie: 1918.

Comment: We didn't get four-wheel brakes until 1925.

Besasie: GM was experimenting. The kids said, "Oh dad, you and your stories that you put on the first four-wheel brakes!" But one day, many years later my son Freddie (he'll vouch for it) bought himself a Rambler, and he had trouble with the rear hub splitting so the company refused to make good on it. I told my son we'd go down and have a new hub put on. So I got into the service department and I told them what I wanted done. I told them to put on a new hub.

A man listening to the conversation said to me, "Say, you're Ray Besasie, aren't you?"

I said, "What about it?"

He responded, "You're the man who put the four-wheel brakes on the Oldsmobile!" He said, "I was foreman then."

My son Freddie said, "By gosh, you were right, dad."

* * *

You take the four-barrel carburetor. I believe that I made the first one by mounting two model 97's back to back. It worked wonderfully! Progressive linkage. I conceived the idea one time. You're never first. You think you invented some new idea when you've finished. And all of a sudden in Australia somewhere, or some far out corner of the world, there's some fellow that did the same damn thing you did.

I conceived the idea of making a steam generator, wrapped in a chamber around the exhaust pipe and the steam would build up there. It would be ejected right in the center of the carburetor. The idea was wonderful. On a cross country run, there wasn't a speck of carbon forming in that combustion chamber. I started to produce them, but then the freezing problem you couldn't lick. And here I have a book on ancient discoveries at home, but I'll be darned if some young fellow didn't think of the same thing. Made them and sold them in production.

You're never first. And I've always said, ever since I was a young kid, all you do is improve someone else's work. Same way in aviation. Pratt & Whitney, the Wasp people racked their brains for years in trying to devise a valve system that would take up the clearance between a cold cylinder and a warm cylinder, and I solved it. And I flew two years with the idea. I mounted each rocker arm on each cylinder on bushings that as you revolved,

the rocker arm would come down and take up the clearance. It was all controlled by a master cam on the dashboard. As a matter of fact, on the fatal day that the Sonny Boy made it's last flight I thought the reason that the plane stopped (took a hold again) stopped, and it kept on doing it, the plane descending all the time till the trees were almost scrapping my rear end. I was right over Valhalla Cemetary. Those tombstones did not look very inviting with a dead engine. Anyway, the plane came down, almost touched the trees and then for some reason I can't explain, (I've always believed in some of the supernatural things in life--things we can't account for) all of a sudden the plane made a right hand bank, flew parallel with Highway 45 and made a perfect landing right in back of Wisconsin Gas & Light Company .... What had happened, because we all do foolish things, I had mounted both mag needles on one common ground wire. The one ground wire running through the aluminum chaffed its way through the insulation, and when it shorted, it killed both mags, and the engine stopped. The minute the torque was gone, the engine would move a slight bit in its mounting, and the engine would start again. How stupid we all are ....

LOCAL HISTORY WORKSHOPS

Each year the State Historical Society of Wisconsin, in league with affiliated societies, puts on a number of excellent and super reasonably priced workshops. This year's series of local history workshops will offer members of affiliated societies opportunities to improve their skills in historical research, caring for museum collections, raising funds, designing newsletters and operating museum gift shops. All of the workshops are taught by staff members of the State Historical Society of Wisconsin and two of the workshops in Madison will take special advantage of the facilities of the State Historical Society.

Each workshop topic is a full day session and individuals will be able to participate in only one workshop. Enrollment is limited, so please register early.

The workshops are scheduled at each location for 9:00 a.m.-3:30 p.m. Coffee and rolls will be served by the hosting institution from 8:30-9:00 a.m. Lunch will be on your own, with a list of nearby local restaurants provided to workshop participants.

With the exception of "Advanced Fund Raising," the workshop topics offered in Waupaca and Hayward are different from those offered in Madison. Check the titles and locations carefully to be certain that you enroll in the workshop of your choice at the proper location. Registrants will receive travel directions in the mail.

The fee for each workshop is $4. (Yes, $4!) Workshop titles and locations are as follows:

WAUPACA:	Caring for Museum Collections	
3/7/87	Designing Newsletters, Brochures and Posters	
	Advanced Fund Raising	
HAYWARD:	Caring for Museum Collections	
3/28/87	Designing Newsletters, Brochures and Posters	
	Advanced Fund Raising	
MADISON:	Using the Research Collection of the State Historical Society	
4/11/87	Managing the Small Museum Gift Shop	
	Advanced Fund Raising	

To register for any of the workshops send your name, address, phone and WSAH member status, along with your check to: Ms. Connie Meier, State Historical Society of Wisconsin, 816 State Street, Madison, WI 53706. Registration should be made at least five days prior to the date of the workshop you wish to attend.

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This issue's cover is by Michael Streff, an Ohio artist with mysterious ties to our Badger State. Mike, as you might guess, has a particular fondness for cars manufactured in Wisconsin's southeast corner.