This night, I found the task unusually gloomy. Frankly, I was having a moment. More than any other year, I wanted 2020 far behind. Instead, it hovered like a black cloud, promising to wreak more havoc. Fortunately, moments and clouds always pass.

Yes, 2020 packed a punch; but we must take pride in our resilience and accomplishments. Revs Institute volunteers and staff learned to Zoom, worked remotely, and found new ways to come together, six feet apart. We introduced the mobile app and virtual tour, expanding our audience worldwide. We recruited eight new volunteers, implemented a Mentor Program, launched new training, and learned what it means to be “Brand Champions.” We never gave up, navigated obstacles, and forged ahead. Our commitment to excellent standards is unwavering; and for that reason, Revs Institute will continue to thrive through these challenging times.

I am honored and excited to serve as your new Volunteer Coordinator. While no one can replace Susan Kuehne, I can assure you I will always strive to uphold the legacy she helped build. In the coming months, we will work together to ensure our world class Volunteer Program continues to engage and inspire.

In closing, I wish each of you an abundant, happy 2021! I am confident, together, we will make is so!

Whitney Herod
Revs Institute Volunteers and staff gathered together to celebrate the holiday season and the retirements of Susan Kuehne, our volunteer coordinator, and Revs Institute office manager Maureen Sherman. Both have been key contributors to the success of the museum and Revs Institute Volunteers. We are both sad to see them leave and wish them each a wonderful and fulfilling retirement. The Naples Florida weather cooperated by providing us with a sunny day.

Volunteers were asked to bring canned goods and non-perishable items as a donation for the St. Mathew's House Holiday Food Drive. The International Auto Buggy was bought out to act as a receptacle for food collected. Canned goods items filled the horseless carriage to the brim from our generous group of volunteers and staff.

A fine lunch from Jason’s Deli was enjoyed by volunteers and staff alike. After which we all gathered round for a surprise sing-along with all the volunteers serenading the honored guests with the Beatles’ *When I’m Sixty Four*. This brought a smile to all present. Clearly, the effort was appreciated by Susan and Maureen.

Our volunteer chairman, Mark Koestner, presented Susan, from a properly measured 6 foot distance, a tribute book with the collected best wishes of the volunteers below their picture as a remembrance. Susan was also presented with a bound copy of past *Tappet Clatter* issues. Mark said we are ready to accept Susan’s application to be a volunteer any time she is ready.

Scott George presented several significant Miles Collier Collections cars as a tribute. First out was the 1896 Panhard et Levassor. The crowd gather to watch its lengthy startup procedure. As the guests backed up to make room, the early car brought its blazing speed to bear in the museum’s north parking lot. Top speed is about equivalent to a leisurely run.
Festive Fuel Up… continued

December 16, 2020

(Continued from page 2)

Next up was the 1930 Bugatti Type 35 B Grand Prix. This Targa Florio car, piloted by Louis Chiron, has lost none of its tough, purposeful sound. The bark of its supercharged straight 8 engine announced it was as ready to race as it was some 90 years ago.

The third demonstration was the 1969 Porsche 917 PA. The monstrous flat-12 engine bellowed its presence from the four exhaust outlets.

It was a fitting Revs Institute tribute to a couple of wonderful people.

By Joe Ryan

This section is devoted to questions about the Miles Collier Collections cars or cars of the same period. Some of the questions might be a bit obscure or tricky. Test your collection knowledge and have fun!

1. What kind of car did Henry Ford’s wife drive?
2. Where was Briggs Cunningham Born?
3. Who drove the 1895 Paris-Bordeaux-Paris race single-handedly?

The answers are posted later in the issue.
The status of Emeritus is awarded to volunteers with a long history of service but whose lifestyle and schedule no longer afford them the opportunity to contribute the required hours necessary to maintain membership.

Scott George and Susan Kuehne surprised volunteers George Meyer and Paul Kierstein with Emeritus Awards. Help planning the surprise came from Gail Meyer and Juli Kierstein. Neither Paul nor George knew what was planned. Mr. Collier was kind enough to include a special note of recognition to each to go along with the letter of congratulations.

George moved to Chesterfield, Missouri several years ago but still manages to find time to ID images for our Library and Archives. In addition to being our official volunteer photographer, Paul works at Revs three days each week conducting research for both staff and outside researchers, and is always ready to lead a pop up tour for VIPs or fill in for an open docent tour.

Both George and Paul have contributed countless hours of their time sharing the history of the automobile and its impact on society with our museum guests and auto enthusiasts. Congratulations to both George and Paul! We know they will continue to do so and will continue to contribute their talents to our volunteer program.
If you are a single entry, please contact Mark Koestner to be paired up with another team. We do not want you to miss out on this fun event!
The 1938 race to the death on the Autobahn

“Until one of them is vanquished”

By Brian Lanoway

Eighty-three years ago this month, on the morning of January 28th 1938, in a hastily arranged rematch on a wintery stretch of the Autobahn, two titans battled for the world’s land-speed record for the last time. It was a repeated clash that would once again pit Mercedes-Benz and Rudolf Caracciola against Auto Union and Bernd Rosemeyer; a competition to break through the one-month-old record of 406.321 kilometers per hour; a rivalry that Caracciola himself would later characterize as ‘two armored monsters racing against each other, until one of them was vanquished’. A challenge which only one would survive.

Two of the greatest rivals of the day

Rudy Caracciola (KARA-chola) was considered one of the greatest German racing drivers of all time. Starting as a salesman with Mercedes in 1923, he began racing at amateur hill climbs with great success, becoming a full-time race driver in 1926. That same year, he won the German Grand Prix in a 2-litre Mercedes M72 that he borrowed from the factory. In 1931, Caracciola was the first foreigner to win the Mille Miglia in a Mercedes-Benz SSKL. Now a Mercedes-Benz team driver, Caracciola went on to win three European Championships in 1935, 1937 and 1938 in the famed Silver Arrows.

Like Gilles Villeneuve of our time, Bernd Rosemeyer was “freakishly quick” as a racing driver and abnormally brave. Starting in motorcycle racing, he achieved national fame in just three years’ time. Rosemeyer test drove for Auto Union in 1934, was offered a professional driving contract in 1935 and won the European Championship in 1936 in only his second season as a Grand Prix driver. It was said that he adapted to the demanding, rear-engined Auto Union Grand Prix car, with its formidable 520 bhp V16 engine, because he had never driven anything else. Many believed that Rosemeyer was touched by genius.

With this startling success, Rosemeyer became the darling of the German media and the Nazi party. Heinrich Himmler was so impressed with Rosemeyer’s 1936 Nürburgring victory that he made him an Obersturmführer in the SS. Although he steadfastly refused to wear the SS uniform, he was the only top German race driver to join. His celebrity relationship with the Nazi government grew to outsized proportions when he married the famous German long-distance aviator, Ely Beinhorn. They were the ideal celebrity couple of the time.

Rekordwoche: A Nazi showcase of German technical might

In October 1937, Nazi Germany decided to exploit the propaganda yield of chimeric land-speed records in their first and only “Rekordwoche”, or Record Week. The goal was to exceed the 400 kilometer per hour barrier.

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Despite being good friends, Caracciola and Rosemeyer were no-holds-barred competitors. Caracciola later said: “We did not give a second to each other. It was his wild, stormy, youth against the experience of an opponent 10 years older. He wanted to push me off the throne and I wanted to sit there a bit longer.”

Rekordwoche turned out to be an unyielding disappointment for Mercedes-Benz. Caracciola was able to achieve 379 km/h on October 25th, but their push to the record was blindsided by severe front-end lift. Three days later, Mercedes-Benz returned with the nose of the car closer to the ground and a flat bottom. This time, Caracciola was able to reach 397 km/h but he complained about a lack of traction at the rear wheels. With the engine now badly misfiring, Mercedes-Benz withdrew and returned to Stuttgart empty-handed.

In dazzling contrast, Rekordwoche was an utter triumph for Rosemeyer and Auto Union. Setting 3 world speed records and 16 class speed records, Rosemeyer became the first person to officially exceed 400 km/h on an ordinary road, reaching 406.321 km/h over the measured kilometer. Bernd Rosemeyer was now the fastest man on land and an unassailable German hero.

A surprise winter rematch
Stung by their defeat, Mercedes-Benz made an astonishing announcement only one month later that it would not wait until the following October for a second Rekordwoche. Instead, it received special permission to run another attempt in January 1938 on the same stretch of the Autobahn. Auto Union - always the underdog and never on the best of terms with the Nazi government - was compelled to reply.

Rosemeyer was not impressed but his wife, Ely, was incensed. With the 1937 racing season complete and the October Record Week done, the couple were looking forward to a restful winter with their new son, also named Bernd, just born on November 12th.
The 1938 race to the death on the Autobahn

…..continued

(Continued from page 7)

The 1938 W125-based record car

For the January run, Mercedes Benz created a new ‘Stromlinienwagen’ derived from the 1937 Mercedes-Benz W125. It was a product of the wind tunnel and had a drag coefficient of 0.157. The aerodynamic body even included full wheel fairings and a belly pan.

The car was propelled by the latest version of the company’s 5.6-liter V12 engine. Two Roots blowers boosted its output to 736 hp at 5800 rpm. To eliminate the front-end lift encountered at 400 km/h, Rudolf Uhlenhaut reduced the frontal area and inlet flow resistance. Because of the short distances involved, engine cooling was now handled by a conventional W125 radiator embedded in a chest filled with water and ice.

The 1938 Auto Union Wagen 2

The car selected by Auto Union for the January run was the rear-engined Wagen 2, driven by Rosemeyer in the 1937 record runs. Even though the car had been extensively tested and was highly reliable, its body was completely redesigned for the January run. The car now had new modular upper and lower fairings and lower center ‘miniskirts.’ The windshield cowling was changed to a more enveloping shape. Even though it wasn’t completely understood at the time, the lower fairing and skirts may have approximated the ground effects achieved 40 years later by the Lotus 49.

Using a 1:2.5 scale model, hurried wind tunnel tests were carried out in late December 1937 and in the second week of January 1938, just eleven days before the run. The wind tunnel tests forecast a speed potential of 447 km/h but identified a marked increase in side-wind sensitivity. In fact, just a six-degree deviation from the straight-ahead was found to be unrecoverable.

For the upcoming January run, the Auto Union V16 engine was enlarged to 6.5L capacity to produce 560 hp. The biggest change was that the engine also used ice cooling without a radiator (although the radiator was kept in place, likely for weight distribution).

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Ongoing analysis showed that the new upper fairings had moved the center of pressure (CP) forward while the addition of the heavy ice tank at the rear of the car moved the center of gravity (CG) further to the rear. A CP forward of the CG would amplify the effects of a cross-wind. A normal car would have the CP behind the CG, which would allow the car to self-correct in a side wind.

The fatal morning of Friday, January 28th
The start for the January 1938 run was near the 2 km mark of the Frankfurt-Darmstadt Autobahn. The finish line for the measured 1 km run was at 8.6 km while the measured mile was the 9.3 km mark. The cars had to make a return run within a certain time for any record to be valid, with the average of two times giving the end result.

In his 1961 autobiography, *A Racing Car Driver’s World*, Caracciola described his run early that morning:

> It was dark when I arrived. The road was absolutely white, and the pines shimmered in the moonlight… It was very cold, so cold that a cloud of vapor accompanied every word. There stood the car, enormous, hugging the ground, a crouching monster on four wheels. The wheels seemed to have disappeared into the body; it looked like a white whale. It was impossible to take a corner with this armored beast. It could only shoot straight ahead like a projectile.

> I decided to wait for the hoarfrost to thaw; to start earlier would be an insane risk.

> By eight o’clock the frost had evaporated. I climbed into the car.

> The mechanics pushed the car, running alongside until the motor started…I put on speed, and more speed. The road before me seemed to shrink, becoming narrower and narrower, till it was a slender white ribbon. The trees on either side merged into a solid black wall.

> The flag – the finish…I let the car roll and come to a stop. For the length of a cigarette I did nothing. At last, a man came running up. “It’s a record Mr. Caracciola! An average of 427 kilometers per hour.”

> I waved my thanks and then I was off again. This time I stepped harder on the gas, right from the beginning. A wind had sprung up, just a faint morning breeze, but I could feel it trying to push the car to the right while I bucked it with the wheel.

> Again the road constricted to a narrow, white band with overpasses that seemed like small, black holes, and at the speed I was going I had to steer accurately to pass through them.

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But even before the brain quite grasped what was to be done, the car had already streaked on. I couldn’t understand that my brain should be slower than the speed of my car.

Out in the open again there was the struggle against the resisting air currents. Then, the starting line once more - the flag. I took my foot off the gas but I could not brake. The rubber on the tires was so thin that the slightest braking pressure would have ripped them and the result would have been unthinkable.

I let the car roll for almost three kilometers and then I was back to where I had started. Nuebauer was the first at the car, breaming and shouting excitedly: “Four thirty-seven, Rudy. Record! You want to do one more?”

I shook my head, no.

The Mercedes-Benz team then drove back to the nearby Park Hotel to savor their success over a leisurely breakfast. Suddenly, Neubaurer was called to the telephone and came back in a high state of excitement: “The Auto Union gang is out there! With their record car. With Rosemeyer and the whole bunch. They’re on their way to the Autobahn. Come on, hurry, we’ve got to be there. I’m sure they want to smash our record before the noon edition.”

Reluctant at first to go, Caracciola said:

We drove out again. This time, the starting place was black with people. Reporters were there, sports enthusiasts, spectators. The wind had increased and, in driving along, I noticed how restlessly the tree tops were moving.

When we arrived Rosemeyer was already sitting in his car, surrounded by a crowd. I pushed my way through and held out my hand to him…. I felt momentary dread. I wanted to tell him that it was perhaps too windy, that he should try it in the morning instead.

Impatient to start and likely driven by the noon press deadline, Rosemeyer started his first run in the Auto Union streamliner at 11 AM. Rather than conducting the planned shakedown run without the radical and untried new fairings, he decided to start with everything in place in the high-speed configuration.

Although he made better speed than his October 1937 record run, Rosemeyer’s first run was a little slow. On his second return run the Auto Union reached a speed of 429.9 km/h. As the engine in the streamliner had not yet reached optimum temperature in the wintery temperatures, he decided to try again. The honor of the company was at stake.
This time, the radiator inlets on the car were closed a bit more and the driver-controlled floor air outlets were closed, reducing the airflow under the car. Any inlet air flow could now only presumably escape from the small openings in the engine bay and the windshield gap around the driver’s head.

Just after 11:46 AM, one and a half minutes into the third run, after passing the 1 km marker at a speed of 429.6 km/h, tragedy struck and Rosemeyer’s Auto Union moved left onto the grass beside the roadway, returned in a slide, rolled over and disintegrated in a series of somersaults.

A later reconstruction of the accident revealed evidence of braking by the left rear wheel before it hit the grass. Then both right wheels rose off the ground, losing any downforce from the possible ground effect as the air escaped from the underbody. The right wheels never touched the roadway again. They were both intact on the wreck.

For the next 48 meters, the car widened its angle of skid. Rosemeyer could have counter-steered, an intuitive move for a racing driver, or he may have been startled by the loss of his windshield canopy early in the accident sequence, but there was only limited steering angle available because of the front wheel fairings. Just one second after the start of the skid, the left front wheel collapsed and the car, now at an angle of about 50 degrees from its initial direction, left the ground pivoting on the damaged wheel.

After two somersaults, the now-bare chassis slid and stopped, upside down, on the banks of the overpass, 473 meters from the start of the skid. Bernd Rosemeyer was ejected from the cockpit during the second somersault. His unmarked body was found in the woods 23 meters from the edge of the roadway. The whole accident sequence was over in just three seconds after the start of the skid.

From Caracciola again:

The wind had become even stronger. Once more Rosemeyer got ready for the start. And then he was off on a second run. We sat in the car and waited and waited…..

Suddenly there was a movement in the crowd. A few people began running down the road, then they were all running. I rolled down the car window. “What’s happened?” I shouted at a boy who was running by. “Rosemeyer has crashed”, he shouted back and ran on.
The 1938 race to the death on the Autobahn

…..continued

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We remained behind alone. “I don’t want to go there,” I said. “Neither do I,” Brauchitsch muttered. And, after a while, he added: “Why? Was this necessary?” I didn’t answer but I felt as if I was staring into an abyss that had suddenly opened up. Indeed, why?

One solitary figure came walking in our direction. Dr. Glasser, the medical officer for the Mercedes and Auto Union teams. His face was solemn. He stepped up to our car. “Dead!” he said. “He’s lying on his back in the woods, staring into the sky, and he looks as if he’s still breathing.”

Rosemeyer’s funeral was held on February 1st at Dahlem Cemetery in Berlin. It was an outsized propaganda spectacle for a national hero that could only be staged by the Nazis. Bernd Rosemeyer was only 28 years old when he died. He had only been racing cars for three years.

Post-Mortem

Although investigative journalism was unknown at the time, the German daily newspapers published eyewitness explanations and detailed analysis. Almost all hypothesized that the accident was caused by gusts of wind. After an official investigation and many signed and re-signed affidavits by Auto Union representatives, the official explanation confirmed that the accident was caused by side winds at the Mörfelden junction.

Despite the official finding, the Internet today is still full of alternate theories. Some maintain that the right side panel of the car was over-tightened, resulting in a warped and wavy surface; while others blame the open gaps at the bottom of the new upper fairings, which were blown off undamaged, early in the accident, quickly followed by the also-undamaged cockpit cover.

All make fascinating reading.

Epilogue

Ely Rosemeyer-Beinhorn remarried in 1941 and had one daughter. After WW II, she moved to Switzerland to continue her flying. She surrendered her flying license at the age of 82. In later years, she lived near Munich and died at the age of 100 in 2007. She is buried beside her husband, Bernd Rosemeyer.

Bernd Rosemeyer’s son, Bernd, who was just 10 weeks old at the time of the accident, became a physician and professor of orthopedics and sports medicine. Other than occasional participation at commemorative events that honored his father, Dr. Rosemeyer had no connection with motor racing. He died on May 31, 2020 at the age of 82.

(Continued on page 13)
Rudolf Caracciola spent WW II in Switzerland and became a Swiss national. He returned to racing after the war, but suffered severe head injuries while practicing for the 1946 Indianapolis 500. After a long recuperation, he injured his left leg when he crashed his Mercedes 300SL into a tree during a support race at the 1952 Swiss Grand Prix. His racing career was over. He died of cancer when he was just 58 in 1959.

The Auto Union factories were heavily bombed in WW II. The area came under Soviet control when it became part of East Germany. The factories were dismantled as war reparations and any racing cars found made their way east. The former Audi factory in Zwickau was restarted again in 1957 and manufactured the Trabant, showcased in the Automobility gallery in the Revs Institute.

Rudolf Caracciola’s 1938 record of 432.7 km/h remained the fastest officially-timed speed on a public road until it was broken 79 years later by Niklas Lilja in a 1,360 bhp Koenigsegg, that achieved 445.63 km/h on a closed highway in Nevada.

You can visit the small monument to Bernd Rosemeyer at Bernd-Rosemeyer-Parkplatz at the 508 kilometer marker on the A5 motorway in Germany (49°59′25″N, 8°36′11″E). Alternatively, you can pay homage to Bernd Rosemeyer by visiting the glass display case that contains his linen driving cap just to the rear of the Collection’s Mercedes-Benz W154.

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**Events Calendar**

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<th>Event</th>
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<tr>
<td>Revs Institute Re-Opens</td>
<td>TBD</td>
<td>Whitney Herod</td>
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<tr>
<td>Rally to Buckingham Farms</td>
<td>Jan 20, 2021</td>
<td>RSVP to Mark Koesnter</td>
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For a full list of daily tour groups and events, go to the ‘Calendar of Events’ on VicNet.
In earlier articles we explored the need for automobile suspensions and their reliance on springs. In the case of early cars, leaf springs. Leaf spring are not the only type of springs that can be used for this purpose. Coil springs and torsion springs, often called "torsion bars," can be used instead. While the humble leaf spring is a very useful device, not only used for springing, but also can be used to attach the axles to the automobile's frame. The downside to the leaf spring is the friction caused when multiple leaves in the spring rub together. This friction is not the best thing for a smooth and comfortable ride.

Enter the torsion spring. A torsion spring is a bar of spring steel that takes the place of the leaf spring. The bar is fixed solidly to the auto's frame on one end and to the suspension on the other end. As the suspension compresses, the bar is twisted. The bar then springs back to position exactly like the leaf spring. This provides the springing function with no friction. The torsion bar does not adequately support the axle so additional bars and links must be added to complete the suspension.

The familiar coil spring is simply the same bar used to make torsion springs wound in a cylindrical or conical shape. The coil spring, in an auto suspension, must also be supported and located at both the axles and the frame. Additional links and bars are also needed to locate the axle with these springs. As with torsion springs, there is no friction to disturb the soft, smooth ride.

In the early part of the 20th century, creating long, uniform bars of high strength spring steel wire became feasible and economical. This allowed the manufacture of both coil and torsion springs in economical volumes. The use of torsion springs worked their way into such autos as the 1934 Citroën Traction Avant and the earliest prototype designs of the VW Beetle. Across the pond, torsion springs were used in the 1934 Hudson Terraplane. Marques like Packard and Chrysler were well known for their use of torsion suspension springs starting in the late 1940's.
Coil springs started being used in suspensions in the same timeframe. The 1934 LaSalle uses coil springs in the front suspension. The 1939 Buick chassis under Briggs Cunningham’s creation, the Bu-Merc, has coil springs clearly visible at all four corners. This car also has a torsion spring between the right and left side front suspension to reduce the car from leaning in corners. Used this way, that torsion spring is known as an anti-roll bar, anti-sway bar, stabilizer bar or also swaybar. All four names are appropriate and used interchangeably.

This evolution of the motorcar to improve the ride also hastened the use of the hydraulic shock absorber. The disadvantage of both coil and torsion springs is that suspensions must include some sort of damper to control the bumps. Friction dampers would just add the very characteristics these springs were designed to remove so hydraulic dampers started to appear on cars about the same time. A very early example of a hydraulic tubular shock absorber can be seen applied to the 1914 Simplex in the Vitesse Gallery of Revs Institute.

TAPPET TRIVIA

And now, the answers...

1. What kind of car did Henry Ford’s wife drive? **Answer:** Not a Model T. She drove a Detroit Electric! Miles Collier Collections has a Detroit Electric but it is not on display.
2. Where was Briggs Cunningham Born? **Answer:** Cincinnati, Ohio
3. Who drove the 1895 Paris-Bordeaux-Paris race single-handedly? **Answer:** Émile Levassor. He drove 745 miles in just under 49 hours. His epic drive was the talk of the Continent.
Remembering Bob Lamson
September 15, 1948 - December 6, 2020

Bob Lamson lost his battle with cancer and passed away on December 6th. Bob joined our volunteer program in December 2015 and was one of our most talented, dedicated, energetic, and enthusiastic Station Guides.

Logging close to 1,000 hours during his time here at Revs, Bob preferred to work the morning shift; usually twice a week. Affectionately called “Bentley Bob” by his fellow volunteers because of his favorite ride, he brought his extensive knowledge of meaningful cars to Revs and could always be counted on to share a story and a smile with our guests.

Bob and his wife Chrissy divided their time between their southern home here in Naples and their northern home in Minnesota; where Bob had a very successful real estate business. Bob was a discriminating collector of fine motor vehicles, owning many different marques including Aston Martin, Bentley, Ferrari, Buick, Corvette, Pontiac (GTO), MG and Triumph along with several Harley Davidsons. Bob regularly attended concours events at Pebble Beach, Amelia Island, Monterey, and Palm Beach; and during his travels never missed a chance to watch the cars run at the historic races.

Bob inherited his love for cars from his grandfather and father and sharing that passion with our museum guests was his gift. He will be missed by all of us at the Revs Institute.

Donations on Bob’s behalf can be made to Habitat for Humanity.

Revs Institute Pictures
Adopt-A-Car Program
Available Adopt-A-Car Automobiles and Engines

To adopt a car or engine, contact:
Brian Lanoway
Adopt-A-Car Chair