EEVC NEWSLETTER

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Peter Cleaveland, Editor **Vol 16 No 7**
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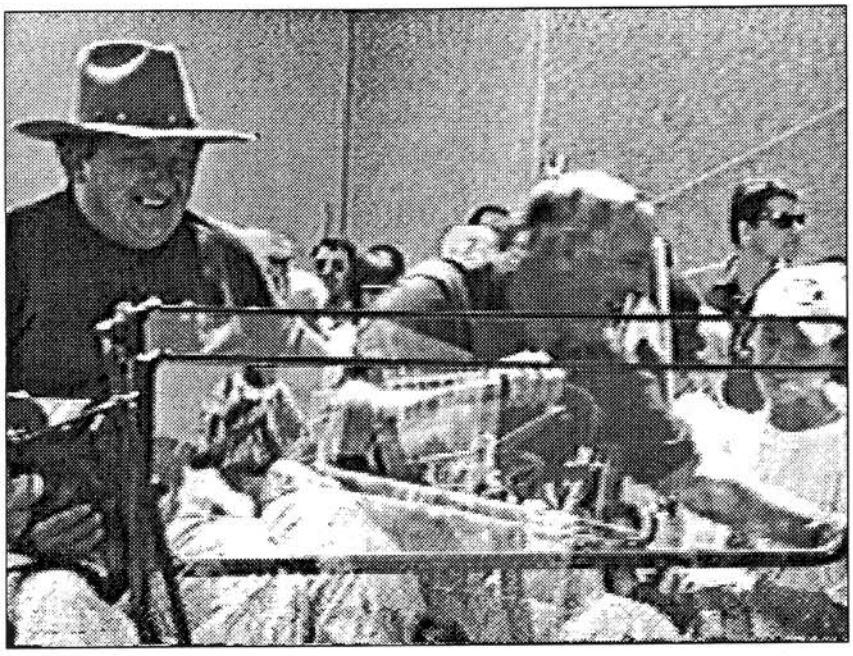
President: Oliver Perry, 5 Old Stagecoach Turn
Shamong, NJ 08088, (609) 268-0944

RAY CARR MAKES IT TO ATLANTIC CITY

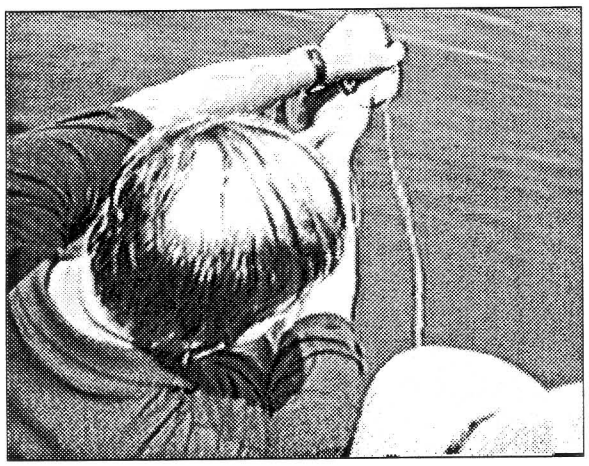


Ray Carr and crew Chief Mike Wyka (with hat) arrive to a tumultuous welcome at Harrah's Marina casino after their cross-country trip in the 1912 Baker

Ray Carr, who set out from Astoria, Oregon on May 27 in his restored 1912 Baker, reached Atlantic City, NJ on schedule. Just before noon on July 3 he and crew chief Mike Wyka pulled onto the boardwalk at Harrah's Marina Casino and drove slowly and triumphantly though a crowd of well-wishers, relatives, press people, Harrah's employees, and others to complete his 3400-mile trip.

After the requisite handshakes and speeches, Ray and Mike proceeded to the edge of the pier, where they poured a silver flask of Pacific Ocean water into the Atlantic.

The ride across the country had covered eleven states, and had been a true adventure. Ray had to put up with rain, wind, hail, scorching sun, and even a late-season snowstorm to complete the trip. The average day's travel was 89.5 miles, with usually two stops for quick charges. One day the car actually went 85.6 miles on a charge, and 160 miles in a day. Not bad for an old car. And not bad for a set of twelve 6-V Exide modules.



In a symbolic gesture, Ray and Mike pour a silver flask of Pacific Ocean water into the Atlantic.

Interestingly, the only equipment problems he had were with today's technology. An oil line on the generator brought along for charging failed several times, there were problems with the high-rate charger, the Curtis PMC controller tucked under the seat of the Baker overheated several times (until better heat sinking was added), and the

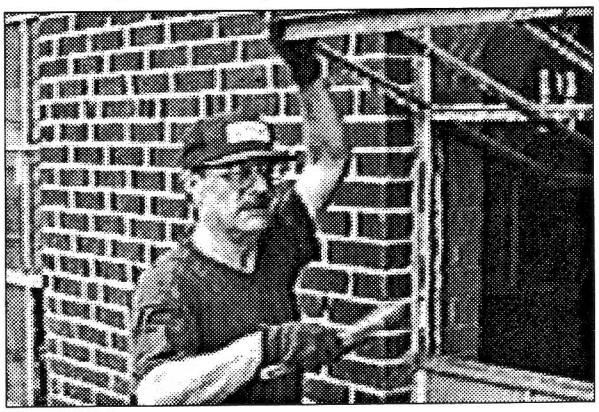
The club was invirted to show some antique vehicles at Harrah's, and responded with the 1919 Detroit and the 1915 CT bus from the Boyertown Museum.

accessory battery was found discharged. The Baker itself never missed a beat, suffering only from some squeaking from the wheel spokes after driving in the rain, a small tear in the antique upholstery, and the loss of some wheel weights. On top of that the batteries installed at the start of the trip lasted the whole time with no problems and didn't even take any water, despite being charged several times a day at high rates and run flat more times than not.

CLEAN UP, PAINT UP, FIX UP

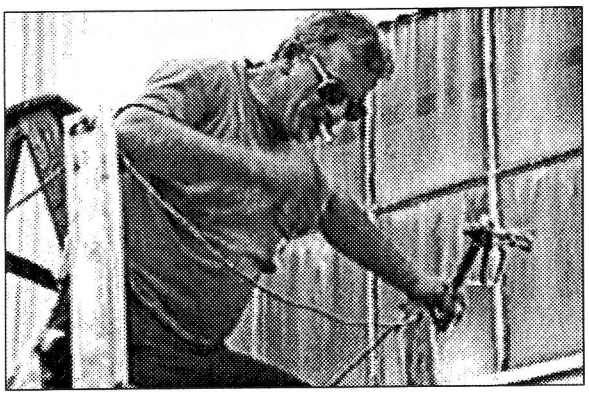
On June 24 a contingent of EEVC members arrived at the old factory building in Boyertown for a fix-up party. The museum plans eventually to make that building into its new home, and some labor was badly needed. Dan Carlin, Guy Davis, Dave Patterson, your editor, and several others (sorry, we forgot to note down all the names) joined Ken Wells, museum director, and Paul Hafer, president of the Hafer foundation and founder of the museum, to do some cleaning and repairs.

Large amounts of material were carried up to the old mezzanine level, then everyone set to work scraping paint, replacing broken window panes, and painting.



Vice President Dave Patterson gets into surface preparation the old fashioned way–by hand.

The painting operation was quite a sight. Dan stood with a paint prayer in a box carried by the forklift. When that didn't go high enough, the forklift was put on the museum's rollback to gain an additional four feet. The winch on the rollback grunted, then the cable snapped. Undeterred, Dan



Dan Carlin shows how to paint high places.

drove the forklift up the sloping bed of the truck. It's a good thing that all this was volunteer labor, because OSHA would probably not have been pleased. Then again, some people will try anything...

Things were going along very well, but slowed down when the motor-driven paint sprayer packed it in. Another problem surfaced when the fork lift was taken off the rollback: Part of the rollback jammed and bent when the bed went back. Since the rollback would be needed the next day to transport vehicles to the Schuylkill Canal Association's Canal Day celebration, it was imperative to fix it right away. Several hours of cutting, welding, and beating with a sledgehammer got everything back in order, but there was a certain delay in getting home that night.

Part of the crew reassembled on Saturday, July 8, and had another go at the cleanup. This time the paint sprayer kept working, and all but a few spots too high to reach without a cherry picker truck were hit. Maybe now the neighbors (and others) will see that the renovation plans are serious.

A RIDE IN AN IMPACT
Ed Kreibick

I recently had the chance to drive one of the prototype GM Impacts at a meeting of the SAE (Society of Automotive Engineers) at the Mack World Headquarters in Allentown, PA. The vehicle I drove is part of the Test Drive program that is offered to private individuals within 30 miles of Harrisburg, PA.

A GM Impact was available for test drives at the SAE meeting in Allentown

The body of the vehicle was well styled, very clean, with no noticeable flaws or rough areas. Under the hood all you saw was the water cooled power inverter, changing dc from the 26 on-board batteries to three-phase ac to power the 137 hp electric motor. The interior was simple, but very neatly done–typically GM style. The car seats two very comfortably with a small trunk for groceries in the rear.

I found the car very simple to drive. A numerical code is punched in so the vehicle would start, then you shift into drive and step on the accelerator. It has a slight bit of drift built in to make it feel like a gas car and avoid jerky starts. The acceleration was very smooth, and the power seemed to be nonstop, even though there was no shifting as with a gas-powered automatic. The acceleration was the best of any electric automobile that I have driven. I reached 45 mph in one block from a dead stop, going up a slight incline. Although I felt the bumps I hit (the roads are not perfect in Allentown), but I felt it was acceptable for a car this size.

Although the GM monitors with the car could not say if GM would produce this car, it was by far the best equipped and best performing electric car that I have ever driven. I feel GM could have a hot seller, especially in congested urban areas, if this vehicle was produced and moderately priced.

STUDENT SOLAR CARS
Oliver Perry

On Sunday, June 11 more than fifty students of public and private schools from eastern Pennsylvania and New Jersey met at the Franklin Institute for the annual Philadelphia Regional Solar Sprint. This enthusiastic competition encourages middle school students to work individually or as a team to create solar-powered model cars. Each team is given a solar panel and a motor, and the rest is up to them. Students learned about engineering design, aerodynamic drag, and PV cells as they created their cars for this meet. The competition was organized by the Philadelphia Solar Energy Association (PSEA).

As the day began, cloudy skies made all of the students apprehensive. How can we race

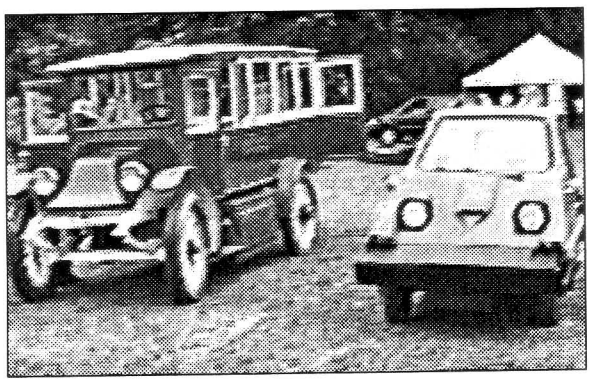
without the sun? Judges proceeded to check each car for correct specs and to rate the cars on appearance and design. Student used materials ranging from balsa wood to Styrofoam in an amazing array of ingenious designs. As the morning wore on, shafts of sunshine began to break from behind the clouds and we were able to run the double elimination heats.

There to represent the EEVC, I assisted by judging vehicles for engineering design and appearance prior to the actual race.

The EEVC will present an award for their "best overall" design to student Matthew Crozier from Pennville Middle School. Matt's design incorporated a cleverly engineered dual shaft rubber band driven transmission. A larger gear started the car quickly, and then the belt slipped to a smaller gear to run for speed. Congratulations to Matt and his teacher Mr. Gill for designing and constructing such a superb vehicle.

A DAY BY THE CANAL

On March 15 the club received an invitation to participate in the Schuylkill Canal Association's annual Canal Day celebration on the banks of the canal on Mont Clare, just across the river from Phoenixville. On June 25 Dan Carlin and your editor arrived with the 1915 CT bus and Dan's 1980 CommutaCar. The day was judged successful by all concerned, with many visitors asking questions. It was one more chance to show the flag, and according to the event organizers, we'll probably be invited back next year. This is a good opportunity for club publicity, and for as nice day in the park. Let's have a few more vehicles on display in '96.



The 1915 CT bus and Dan Carlin's 1980 CommutaCar on display at Canal Day in Mont Clare.

DON'T FORGET POCONO

Members are reminded of the club's invitation to show and run vehicles at Pocono International Raceway on July 30. As reported by Ed Kreibick in the March issue, "This year marks the 100th anniversary of organized auto racing in America (the first race was the 1895 *Times Herald* race in Chicago won by Charles Duryea), and organizers hope to locate some vintage electric race cars to display.

"All EEVC members are urged to attend with their EVs. Track officials would like a large turnout of EVs for this year's event. A number of Tour de Sol vehicles are making the trip, and you should be there too. It's always quite a thrill to drive around that 2 1/2 mile oval."

A REAL SPEEDWAGON

On June 22 the General Public Utilities companies Met-Ed/Penelec put on an EV Expo at Met-Ed's Reading, PA facilities. Guy Davis and Dan Carlin were there from the EEVC, and Ken Wells was there from the Boyertown Museum. On display were a GM Impact, a G-Van, and a UEV (Utility Electric Vehicle) from Met-Ed, plus the museum's CT bus and the Detroit electric

Elsewhere in this issue is a description by Ed Kreibick of what the Impact is like to drive. Perhaps more interesting, however, was the UEV.

The UEV was built by a consortium of Pennsylvania utilities. It's a pickup, but unlike any pickup you ever saw. Both the chassis and the body are composite. Power comes from a 75 hp Advanced DC motor, fed from a 216-V lead-acid battery pack mounted in a tunnel that runs from the motor compartment in front to just aft of the rear axle. Battery weight isn't given in the spec sheet, but Guy Davis says it's between 40% and 50% of the vehicle's 2250-lb curb weight. That 50% benchmark is becoming pretty well accepted everywhere.

With its light weight and high power, this little truck is a real mover. 0-60 speed is listed as 15 seconds, while range is 100 miles in summer and 75 miles in winter (test con-

ditions not given). Top speed is 75 mph. Energy consumption is just 0.25 kWh/mi., and payload is 800 lb. Wheelbase is 112 in., and overall length is 164 inches. Just the thing for fast light delivery.

Dan Carlin got a chance to drive the UEV, and reports that the performance seems better even than the Impact, although the Impact Dan drove may have been detuned for the demonstration. But even so, that's a pretty quick little truck.

EV RACE SET FOR THIS MONTH

The Cleveland Electric Formula Classic, to be held Saturday, July 22, will have entries from twelve universities: Case Western Reserve University, The Ohio State University, Bowling Green State University, Wright State University, West Virginia University, the General Motors Institute of Technology, Arizona State, Northern Arizona University, the University of Oklahoma, Indiana University/Purdue University at Indianapolis and the University of Notre Dame.

Notre Dame won last year, with a top speed of 103 mph.

Sponsors of the race this year include Cleveland Electric Illuminating and ABB. The winner will receive the Cleveland Electric Cup. Total purse will be $33,000, up $15,000 from last year. Cars are built to a rigid formula, with only the motor and drive train open to modification.

NEWS UPDATE

MIT wins Sunrayce 95

In a story by Charles Laszewski of the Saint Paul Pioneer Press, Minn it is reported that MIT won Sunrayce 95, coming in 18 minutes ahead of the University of Minnesota. Another perennial favorite, Mankato State, came in ninth. The story is mostly about U. of Minnesota's comeback, having finished 21st last time. And this is the first year that the University of Michigan didn't win.

The race began June 20 in Indianapolis and finished in Golden, Colorado.

Engineers look at hybrids

The July issue of *IEEE Spectrum* is devoted in large part to hybrid vehicles. *Spectrum* has a regular column called "EV Watch," and this makes their concentration on the issue even stronger.

The issue starts with a review of a book entitled *Taking Charge: The Electric Automobile in America*> The review is by well-known hybrid vehicle expert Victor Wouk. The book traces the history of EVs, and attempts to explain their decline n the early part of the century. Wouk agrees with the author on part of his conclusions, but not all. The author, for example, claims that EVs lost popularity because gasoline cars, with their greater performance and range, appealed more to men than did the slower and less troublesome EVs, which women favored. Since men made most of the car-buying decisions, the ICE cars won out. Wouk, however, insists that the major cause was the advent of the electric starter, which greatly increased the ICE car's ease of operation. Another conclusion by the author is that for EVs to become practical, a vast infrastructure of charging facilities would be needed. He then concludes (with enthusiastic agreement from Wouk) that the best short-term solution is the hybrid.

The lead article in the issue of *Spectrum* is also by Victor Wouk. Entitled "Hybrids: Then And Now, it provides a pretty good grounding in the fundamentals and history of the hybrid, and gives some interesting information on how the choice of mission profile (long trips, short trips, the need for extensive operation in ZEV mode, etc.) affect the choice of hybrid type: series or parallel, and so on. A good article, and we recommend it.

The next article, by Brad Bates of Ford, gives the history of hybrid vehicle development at Ford. He then goes on to explain the technical challenges that face the design of any hybrid. Another well-done article.

The third article, entitled "Hybrid Electric Transit Bus Pollutes Less, Conserves Fuel," by Robert King, Kenneth Haefner, Lembit Salasoo, and Rudolph Koegl, all of General Electric, explains the authors' design of a hybrid electric transit bus to meet current and projected needs in efficiency, pollution,

and low floor height for handicapped access. Another good article.

NEW BOOKS AND LITERATURE

Carriages Without Horses: J. Frank Duryea and the Birth of the American Automobile Industry, by Richard P. Scharchburg; price: $29. Dept 2755, Society of Automotive Engineers, Inc., 400 Commonwealth Dr., Warrendale, PA 15096-0001, (412) 776-4970.

Those readers who are familiar with the Boyertown Museum of Historic Vehicles will remember that that institution has a considerable display of the products of Charles Duryea, who, after splitting with his brother J. Frank, moved to Berks County, PA and began manufacturing cars. This book spends most of its time on Frank, and claims to set the record straight on the famous "feud" between the brothers. It also asserts the claim that Frank was the engineering mind that made the first Duryea cars possible.

For those of us who are somewhat familiar with Charles, this book should be an interesting look at the other side of the family.

COMING EVENTS

Solar 95

July 15-20, Minneapolis, MN. Contact American Solar Energy Society, (303) 443-3130.

1995 Cleveland Electric Formula Classic

July 21-23. Contact Kevon Makell, (216) 447-3552

Vehicular Technology Conference

July 26-28, sponsored by the Chicago section of IEEE. Contact Wendy Rochelle, (908) 562-3870, FAX (908) 981-1769.

Electric car display and run

July 30, Pocono International Raceway. Club vehicles are needed. Contact Ed Kreibick at (215) 396-8341.

Formula Lightning race

August 16-18, Indianapolis, IN. Included will be two Formula Lightning races, an electric education and motorsports conference, and the championship awards dinner. Contact the Solar & Electric Educational Foundation, (602) 953-7715.

Powersystems World

Sept 9-15, Long Beach, CA. Call (800) 356-1550 or (805) 650-7070.

Electroexpo 95

Sept 12-14, Richmond, VA. For information write to P.O. Box 26666, Richmond, VA 23261

23rd annual SAE Truck & Bus Meeting and Exposition

November 13-15, Winston-Salem, North Carolina. For more information, contact SAE Promotions at 412-772-7131; fax, 412-776-0002.

EnV'96

January 22-23, Dearborn, MI. For information contact Rich Moizio, ESD-The Engineering Society, 2350 Green Rd., Ste. 190, Ann Arbor, MI 48105, FAX (313) 663-7835.

MEETING SCHEDULE

Meetings will be held the second Wednesday of each month. All meetings at PECo Energy's West Conshohocken gas plant on River Road, beginning at 7:00 p.m.

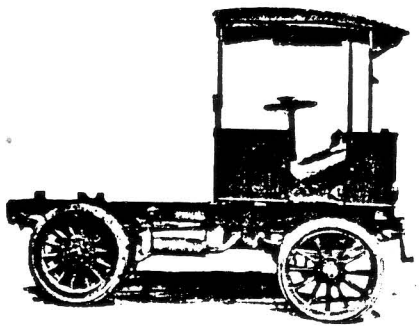
August 9

September 13

October 11

November 8

December 13



Transport Model 1918, Truck Tractor, $2750.
Transport Tractor Co., Inc., Long Isl. City, N. Y.

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