EEVC NEWSLETTER

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THE OLYMPIAN EARNS ITS RIGHTFUL RECOGNITION

Oliver Perry

To all of you who have been faithful supporters of the old reliable 1986 Ford Escort, Tour de Sol car number 16, "The Olympian," we say, "finally!" (See: Paul Kydd's summary of this year's Tour de Sol entry.)

I to r: Paul Kydd, Partnerships 1, Dan Carson a student at Burlington County Community College, Jack Braun, Professor of Physics at BCC and Tom Molnar, Auto Technology Coordinator at Burlington County Institute of Technology.

Finally, after years of finishing the battery car category of the Tour competition in the top four, (frequently as high as second) the car was proclaimed the winner of the division.

As to whether or not the car deserved to be crowned number one this year, or ever crowned number one, it is a matter of opinion. No, the car was never perceived as the best in any particular category. Nor was it ever perceived as an exciting glimpse into the future! I guess it was always viewed as just another old reliable Ford that Henry made available at a reasonable price. It worked. It worked well and always finished. True every year we had some tough challenges to overcome to ready the car for the Tour. Yes, we usually had a few little bugs to deal with during tech testing, but they were always solved. And, the car was considered overweight, but all that lead gave it very good acceleration and distance.

For years I drove the car anywhere within a 60-70 mile range at highway speeds with

Sitting under NESEA tent watching the range day event, at the start and finish line of the various distance loops, far left: Tom Houck professor of electronics at Burlington County College, member of the Burlington County Electechs, has been one of the Olympian electronic technicians and student team supervisors for several years, middle: Cameron Johnson, State of New Jersey, works in the capitol administration offices in Trenton, in projects related to energy and environment, one of our Olympian team supporters from our early years. far right EEVC club member Mike Skelly, member NESEA board, director of his own environmental organization, and long time supporter of the Olympian.

no problems. Several years ago I drove the car up the New Jersey Turnpike to Woodbridge, a distance of over 60 miles. It kept up with traffic and was a pleasure to drive. We displayed the car at a NESEA event in Newark. I plugged in to my son's electric stove outlet and drove the car back home again with energy to spare.

When Ben Fratto (a student of mine at Cinnaminson High School responsible for entering the vehicle in our first competitive Tour de Sol venture) and I named the car "The Olympian," we gave it a name that was

Cameron Johnson's husband waving the Tour de Sol flag at the range day start and finish line.

suitable. The car has lived up to its name. An Olympian always finishes. We are thankful to the American Tour de Sol for this year's award, for the years of opportunities to demonstrate what a Bob Batson electric conversion can do, to our sponsors, and to all you who always believed in the Olympian.

Left to right: Kydd, EEVC member; Lavinia Forbes, BCC student; Jacques Snijders, BCC student; Ryan Gibney, BCC student; Aria Farhad-Giarousi, BCC student; Eric Crane, BCC student; and Jack Braun professor of physics, BCC.

left to right: Tom Mulnar BCIT auto instructor; Ollie Perry, EEVC president holding winning check for $750 and winning plaque; and Paul Kydd, EEVC member responsible for the lithium battery pack seen behind the grill of the Escort.

Burlington County Earth Day

June 11 The Burlington County Electech team displayed the Olympian and the Burlington County College Cougar at the annual Burlington County Earth Day activities held at the historic Smithville Mansion outside of Mt. Holly, New Jersey. Both cars

Ben Fratto in his Chevy S-10 electric pick-up truck

drew significant attention from what had to be one of the largest Earth Day crowds in recent memory. For an hour or more I had a friend park their Prius on our site. The Prius drew even more attention. Ben Fratto joined us with his newly acquired Chevy S-10 electric pick-up truck. Ben recently purchased it (used) from someone in Connecticut. Presently Ben is using one of the old Lester 144 volt chargers that we used as a back up charger for the Olympian. Mike Deliso has helped him nurse it along.

At the end of the day everyone gathered at Professor Jack Braun's home, less than a mile away, for an end of school year picnic. We celebrated the Olympian's Tour victory and the first electric powered movement of the Cougar. Jack drove it for his first time, backing it off the tow dolly and parking it under a tree. Hey, it actually worked!

After the picnic some of us gathered around the Cougar and watched Jack demonstrate the lever principle. Unfortunately while attempting to back the Cougar on the tow dolly one of the Cougar wheels jumped off the dolly and created a dismal ending to the day. Jack's lever finally gave way to pure manpower in lifting the Cougar back onto the dolly. However, a few days later Paul Kydd and his gang really got the Cougar running well on electric power. All is well that ends well.

The Cougar

Students at BCC began converting a Cougar to electric power several years ago. The students who began the project graduated. Although the students had completed the conversion, the car never actually worked.

Ryan Gibney, Burlington County College (BCC) student sitting in the Cougar

Professor Jack Braun has been anxious to get the Cougar running. Paul Kydd, with Tom Molnar and BCIT students, and Jack Braun took the electric motor out, re-aligned it, restructured a number of components, and basically re-did the whole project. Paul made the comment that he really appreciated how well the Olympian was put together after getting under the hood of the Cougar. The team attempted to ready the Cougar for the Electric Drags at Hagerstown, Md. on last June 4. But, when Friday June 2nd arrived it was not ready.

As indicated above, most of the bugs have now been taken out of the Cougar and it is running well. The Cougar has the same motor (nine inch Advanced DC) that the Olympian has, GNB advanced sealed lead acid batteries, and a Zilla controller.

THE OLYMPIAN WINS THE TOUR (FINALLY)
Paul H. Kydd

The Olympian, a 1986 Ford Escort converted to electric power with components and help from EVA, was declared the winner of the Battery Electric Vehicle Division of the 2006 Tour de Sol at Saratoga Springs, NY, on May 14, 2006. This was the 18th Tour, a competitive event showcasing alternative transportation technologies, which is sponsored by the North East Sustainable Energy Association (NESEA) of Greenfield, MA.

The car was originally converted in 1996 and has been entered in almost every Tour since then, placing as high as second, but never first. The win this year was due to the use of a revolutionary compound battery combining the power and low cost of lead-acid technology with the range of modern lithium-ion batteries. The car and part of the Burlington County Electechs team are shown in the photo on page 1. Left to right the members are: Paul Kydd, Partnerships 1, Dan Carson a student at Burlington County Community College, Jack Braun, Professor of Physics at BCC and Tom Molnar, Auto Technology Coordinator at Burlington County Institute of Technology. Missing is Ollie Perry, the long time champion of the Olympian.

The Ford Escort is somewhat unsuitable as a conversion because of its low gross vehicle

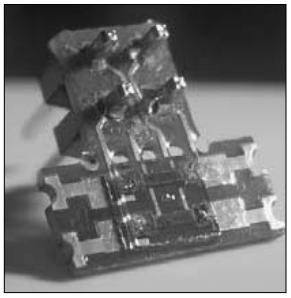
weight. The car has been driven in regular commuting service with twenty-four group 24 lead acid batteries from our sponsor GNB Industrial Division of Exide. It had acceptable performance and range, even in winter, but was seriously overweight. Substituting the lithium batteries from Partnerships 1 for fourteen of the GNBs took 600 lb out of the car. We thought we were home free, but the manufacturer's plate showed a gross vehicle weight of 3140 and the Tour measured our weight at 3100 empty. We didn't have a 40 lb driver, but got a dispensation to run based on the fact that the Olympian's rear suspension and brakes had been beefed up, and that it had been competing for ten years without any failures.

We passed the rest of the technical inspection, acceleration, braking and hill climb with successful, but unspectacular results. The next day was a road rally over a 32 mile course to the former GE rocket engine test facility at Malta, NY. This was a severe test because of some wicked hills near the finish. We had demonstrated the required fifty mile range to enter the Tour, but that was on the flat in New Jersey. The real world of upstate New York was a challenge, but we made it. Others didn't and some didn't try. The eight mile run back up Route 9 to Saratoga was uneventful. The compound battery performed very well, much to many people's surprise. We were dubbed "the Myth Busters" for showing that different battery types can be run together and charged together.

Friday was the big event, the range, efficiency, emissions trial in which the objective was to complete as many laps of a medium and a short course as possible. We started flawlessly with a fourteen mile loop, but our drivers got distracted and went off the course into the boonies the second time around. The boonies were also hills and after 30 miles, a bunch of fuses blew in the lithium battery and things came to a halt. After a long search for the car, and a frantic replacement of the fuses, we were off again at the very end of the allotted five hours and managed to tack on an additional ten miles.

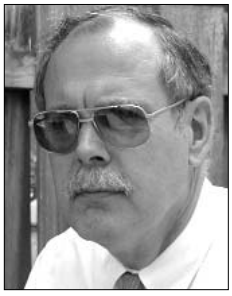
Saturday was the finale with an Autocross competition in which Tom Molnar let it all hang out with a maximum effort. In the end it was just enough. Despite our messing up the most important day of the event, we prevailed, partly by our own efforts and partly by the withdrawal of a really beautiful conversion from EV Vermont who were hammering all of us up to the autocross. After ten years of being a bridesmaid, we'll take it.

HYDROGEN SENSOR



Lead acid batteries have been used in EVs for a long time, mostly because they're readily available at reasonable cost and offer good power, if not much energy density. But flooded Pb-A batteries have some drawbacks, not the least of which is hydrogen generation. Flooded cells tend to give off H_2 when charging, especially during periodic equalization. This means the battery compartment must be vented, and preferably power-ventilated. But there's always that nagging worry about hydrogen getting into the passenger compartment. Wouldn't it be nice to have some way to detect it? There have been H_2 sensors for years, but Applied Nanotech, a subsidiary of Nano-Proprietary, Inc. in Austin, TX has come up with a sensor based on nanotechnology. The unit's electrical resistance decreases in the presence of hydrogen; accuracy is ±20% of reading — not instrumentation quality, but good enough to warn you if you're in danger of blowing up — and it works from -10 to +90°C. More information is available at www.nano-proprietary.com.

STRANGE DOINGS IN FOG CITY
By California Pete



San Francisco is justly famous for wacky events. The Halloween parade in the Castro, the city's best-known gay neighborhood, for example, is legendary, with costumes that beggar the imagination. But while Halloween is purely frivolous, there's nothing wrong with mixing frivolity with an athletic event, either.

Hence the Bay-to-Breakers run, which happened this year on May 21. Begun in 1912 as a way to help lift the city's spirits during the rebuilding from the 1906 earthquake, the 12k (7.46 mile) footrace is open to all comers — from serious racers to the wild and weird. It runs from the Embarcadero on the shore of San Francisco Bay west over some of the city's famous hills, through Golden Gate Park and ends up at Ocean Beach at the edge of the Pacific. For people actually interested in the competitive running, the course record are 33:42 for men, set in 1993 by Ismael Kirui of Kenya, and 38:22 for women, set in 2005 by Asmae Leghzaoui of Morocco.

The Bay to Breakers isn't so much a footrace as a party. With 40,000 people registered and another 22,000 unauthorized (many in both groups having done some serious imbibing before venturing out on a chilly San Francisco morning) the crowd got pretty thick. The air at the starting location, for some reason, tends to be filled with tortillas flying Frisbee-style. Then there are the costumes. This year, perhaps in commemoration of the movie, there were many runners dressed as penguins. There were also pirates, busty blonde drag queens, smelly '60s hippies, Elvis impersonators, "the German Olympic Beer-Drinking Squad, the Jamaican National Potsmoking Club" according to a story in the *San Francisco Chronicle*, other oddly-costumed organized groups, and a fair number of naked people (most, according to reports, not the sort of people you would really like to see naked).

The official results had another Kenyan, Gilbert Okari, wining the men's title at 34:20, while Tetyana Hladyr of Ukraine won for the women at 39:09. "Mayor Gavin Newsom finished in 59:04, about a minute better than he did last year," according to the *Chronicle*.

Add bands on street corners, alcohol available in every form and every location, and you get some idea of the wackiness of the whole thing. Can't wait 'til next year.

MEETINGS SUSPENDED FOR THE SUMMER

As was the case last year, club meetings will be suspended for the summer; The next meeting will be September 13.

A CALL FOR HELP

Gail Johnson, of Warminster, PA needs some help with an EV: "My EV was a conversion I had done by Dave Cloud out in Washington state. I got a couple of thousand miles on it, in between breakdowns, but I don't seem to be methodical enough to keep it running. I have little mechanical ability, but I have been able to figure out problems and have the defective part fixed, up to now.

"Unfortunately, last April (2005) I was driving to church on a Sunday morning when the electric motor started to rev way too fast. I wasn't smart enough to cut power with the cutoff switch, and the electric motor tore itself apart. I believe the controller, which I had just had fixed, was part of the problem, but it could have been a sticky throttle.

"I know I need to replace the motor, have the controller looked at, and check the throttle. But I'm getting in way over my head. I have stayed in good telephone contact with the guys in Washington, but I need some local help. I'd love to get volunteer help, but would be willing to pay.

"I am anxious to get this baby running again. I spent most of last year getting elected to the Board of Supervisors in Warminster, Bucks County, so I have a lot of local visibility. If I could start driving my EV in parades, to township meetings, etc., it would greatly help spread the EV gospel.

"Can you spread the word and see if you can find anyone who would be willing to help me? I'm not looking for money, just some time and expertise."

Anyone who can help is urged to give Gail a call at (215) 443-9515, FAX: (215) 443-9641, or to GJohnson@jfactuarial.com.

HAVE YOU SEEN THE MOVIE?

The feature film "Who Killed the Electric Car" has been released to theatres, to generally good reviews. It details the history of the EV-1 and the (ultimately successful) efforts of GM and others to get rid of it. Check you local movie listings and go see it — and tell your friends to do the same.

Incidentally, the June issue of *Motor Age* carried an interview with GM CEO Rick Wagoner; when asked what his worst decision had been, he replied "Axing the EV1 electric-car program and not putting the right

resources into hybrids. It didn't affect profitability, but it did affect image." Adding to the pain of EVers everywhere is the decision at the Smithsonian's Museum of American History to take the EV1 it had on display and put it in permanent storage. The museum denies any pressure from GM, but who knows?

WIND AND SOLAR MARCHING ON

While petroleum prices continue to escalate, driven by a combination of ever-increasing demand in the U.S. and China as well as speculation attendant upon the world situation (fighting in the Mid East, damage to oil facilities in Nigeria and increasing willingness by Venezuelan president Hugo Chavez to play the petroleum card) it's nice to see clean alternate energy moving ahead.

A new solar cell factory

On June 21 Nanosolar Inc., a developer of solar power technology based in Palo Alto, CA announced that it had raised more than $75 million in new funding (bringing its total cash position to more than $100 million) and plans to build what it says will be the world's largest solar cell factory.

The company said it plans to use the money to begin large-scale production of its photovoltaic solar power technology at a new factory in the San Francisco Bay area with the capacity to produce 200 million solar cells, or 430 megawatts of electricity, each year. The company also plans to build an assembly plant in Berlin that could produce more than 1 million solar panels annually.

Big wind in Texas

On May 11 AP reported that plans were under way for what was billed as the nation's largest offshore wind farm off South Padre Island, TX in the Gulf of Mexico. The installation would have as many as 170 turbines, each measuring 400 feet, and capable of generating 500 MW of power when it opens in five years. Environmentalists have expressed concern that migrating birds would be killed by the turbines, but Superior Renewable Energy, the company that will build and operate the project, believes the number will be manageable.

More wind in Hawaii

On June 5 GE Energy announced that it would be supplying wind turbine technology to a 21 MW wind farm to be built on the South Point of the island of Hawaii (the "Big Island"). GE will supply 14 of its 1.5-megawatt wind turbines for the Pakini Nui Wind Project, which will generate power for customers of the Hawaiian Electric Light Company (HELCO), a subsidiary of the Hawaiian Electric Company. GE will also supervise installation and perform the initial start-up of the machines. Project completion is expected by March, 2007.

COMING EVENTS

Hydrogen 2006

Sept 11-13, Vancouver, BC. Contact Doug Sanborn, 207-781-9618, dsanborn@intertechusa.com, www.intertechusa.com

AltWheels — Alternative Transportation Festival

Sept 22-24, Boston, MA. Contact A. Sander, 800-510-6484, sanderalison@ aol.com, www.altwheels.org

Convergence 2006

October 16-18, 20, Detroit, MI. Check www.sae.org.

Hybrid Vehicle Technologies Symposium - 2007

February 7-8,2007, San Diego. Check SAE at www.sae.org.

MEETING SCHEDULE

Meetings are held in Room 35, Plymouth-Whitemarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m.

September 13

October 11

November 8

December 13