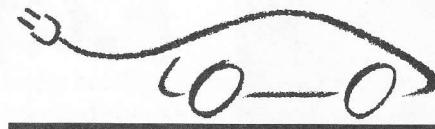


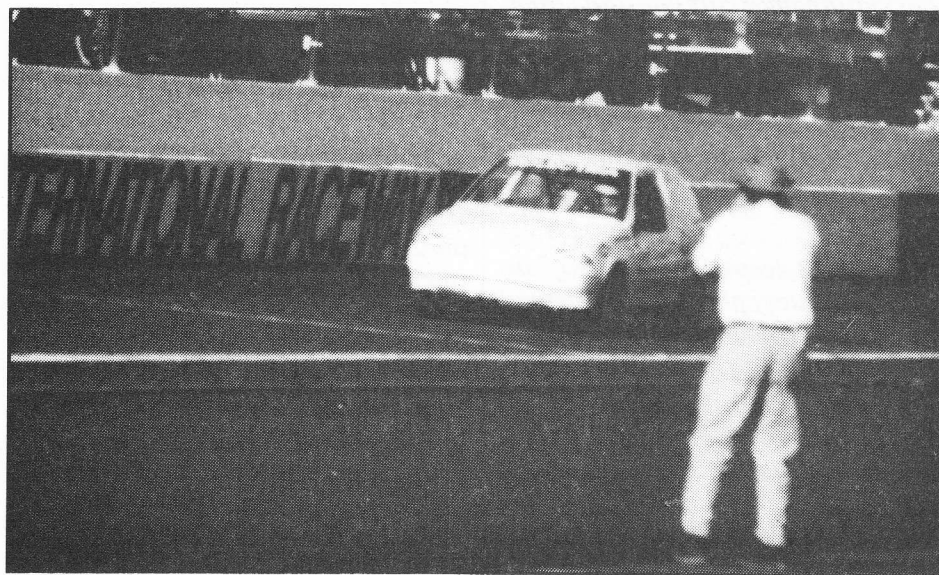
CURRENT EVENTS



June 1994

Promoting the use of electric vehicles since 1967

Vol. 26 No. 6



Ovonics/Solectria Win Aids ZEV

By Clare Bell

Solectria's recent one-two-punch finish in the Arizona Public Service Electric 500 EPRI Stock Endurance Feature will give the California Air Resources Board some real muscle to put behind their defense of ZEV. The performance of Energy Conversion Devices' Ovonics nickel-metal hydride batteries in the Solectria car should equip CARB with a good right hook in the upcoming May battle between clean air advocates and auto and oil interests.

Solectria Force RS's blitzed the EPRI Stock A race, sweeping aside competitors who relied on fast-charge pit stops. James Worden drove the winning Ovonics-powered #93 to the Stock A finish, completing 125 laps at an average 65.036 mph. #33, a Solectria Force RS driven by Travis Creswell of Crowder College, completed 116 laps at an average speed of 60.178. In a press release, Worden congratulated Art Boyt

and Crowder College for their team's excellent performance.

The two ingredients essential to the win were Solectria's brushless permanent magnet drivetrain and the Energy Conversion Devices/ Ovonics nickel-metal hydride battery pack. During the race, Worden's Force RS carried a good 30 kWhrs (as measured at the C/3 discharge rate) in 930 lbs of batteries. That battery capacity, coupled with an efficient drivetrain that pulled only 200 A in a lightweight, low frontal area Geo Metro put Worden's #93 a good 15 laps ahead of the non-Solectria competition. Crowder College's #33 came in 6 laps ahead of UC Davis's zinc-bromine Prizm. During post-race tests Solectria found that #93 could have gone another 10-15 miles. This confirms the results of testing by the California Air Resources Board, whose Solectria Force

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Students Repair Car

When the Marian Academy students saw their #48 Geo Metro crunch into the wall during Friday's student electric heat race, they probably thought that they were out of the running. Not so. Students from Agua Fria High School in Phoenix jumped in with tools, space and expertise to repair and rebuild the Canadian car. Working until 3 AM, the Phoenix students fixed bodywork, replaced electrical components and repaired cables until #48 was again ready for the track.

CE applauds the helping spirit and dedication shown by Agua Fria to the Marian Academy team. It epitomizes the real spirit, not only of the Phoenix race, but of the EV community in general. Yes, there is competition, sometimes fierce and heated, but this doesn't stop teams and individuals from lending a helping hand, or tools and parts when a car breaks down. The idea is to have all the EVs running so that

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Editor's Note

By CLARE BELL

A SLight Problem

As the EV industry moves toward lighter, higher performance cars and away from the traditional "lead sled", I see one disturbing trend. In order to lighten vehicles and increase the pack voltage to improve performance, EV manufacturers are using many small batteries instead of fewer larger ones. The small batteries are SLI's, starting, lighting and ignition units. Therein lies the problem. SLI's are not designed for repeated deep draws. Even the marine type SLI's used in many conversions do not have the heavy-duty true deep-cycle plates used in the 6 V golf cart batteries.

Some battery manufacturers have come out with true 12 deep cycle batteries, but those are still heavy. At this stage of the game, when battery plates are still being made from solid lead alloy, deep cycles means lots of lead and lots of lead equals weight.

SLI batteries are going to die earlier than deep cycles; that is the long and short of it. That is not a problem if the EV driver knows and accepts this as part of a car's maintenance costs. It is also not a problem if the EV vendor is up-front about shorter SLI battery lifetimes. However, talking about this is not easy, since customers want everything; range, performance, low maintenance AND long life.

The trend that dismays me is seeing the fate of cars that are sold to fleet customers, such as utilities. They get used for maybe nine months and then ditched in the parking lot since their performance is degrading because their batteries are dying. Did the customer know that those batteries are good for only 100-200 complete deep draws? Maybe, maybe not.

Meanwhile, the cars gather spiderwebs while the disappointed fleet customers growl that EVs really don't work and that they will never buy one again. I know of at least two cases where this has happened and I see a bunch more coming up over the horizon.

Low weight high power batteries are great for racing, but racers burn 'em up and junk 'em. Those 100 mph runs and wheel-smoking contests in the paddock chew through more batteries than we'd like to admit.

This is in part a transition problem. We will soon have batteries that don't use a ton of lead to pack in a lot of power. But for the meantime, let's not jeopardize the reputation and future sales of EVs by not being straightforward about SLI battery life. I'm saying this to small EV converters and large companies alike.

It doesn't help our cause to have EVs sitting abandoned in fleet lots, getting sun-cracks in their dashboards. That's what happened to the Jet Escorts in the 1980s (though it was due to poor training and lack of a sense of ownership than battery life problems).

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FRONT COVER PHOTO:

Solectria Force #93 wins APS Phoenix 500.

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Mountain View, CA 94040

Electrathon Competition News

By STEVE VAN RONK

Oregon High Schools

Electron Run races were held April 9th, and 23rd reaching the third of a six rac series. The North Marion High School race in Aurora was a course .3 miles long with 8 corners, some quite sharp. The winning vehicle averaged 18.45 mph on the tight track. Oregon high school advisers say students learn more by racing than originally building the vehicles. Many schools are setting up mechanical design classes for next year to build vehicles as a classroom project. Not only do they learn about increasing performance, they are learning to be prepared for competition. One team had a flat tire half way through the race without a spare. Rather than give up, they stuffed the tire with a shredded ensolite pad and continued on to take a fourth place out of ten entries.

Disneyland Hosts Electrathon Races

From April 8-11 four Electrathon competitions were held between the L.A. Convention Center and Disneyland. Hosted by the Disneyland Clean Air Road Rally, races were held at the convention center, Santa Monica Beach, the Queen Mary, and Disneyland. The top three finishers of all racing divisions drove in a confetti parade in Disneyland's Main Street.

Calendar Of Electrathon Events

There has been no full listing of upcoming Electrathon events for two years. The events that are listed usually come too late. Good preliminary organization and wide publicity helps create safe and fun races that stimulate enthusiasm for all electric vehicle activities. We would like to inform readers of upcoming Electrathon and ultralight EV sporting events early enough to increase attendance. To do so we need your help. Please notify us of all competitions, rallies, and workshops at least two months in advance. Send information and enquiries to SolarEvolution; 105 N. 1st Ave., #125; Sandpoint, ID 83864.

Electrathon Primer Choosing A Vehicle Class

The first step to building an Electrathon is to decide the basic vehicle configuration. Currently there are two classes in use, each with their own particular assets and liabilities. The Formula Electrathon (F/E) and Formula Electrathon Experimental (F/Ex). Both classifications evolved out of Australian rules and both use the same battery limitations. Safety considerations are similar but F/Ex vehicles allow a wider range of design features. F/E vehicles tend to be more sleek and streamlined due to their competition format which is to achieve the highest possible speed during the competition, while F/Ex vehicles emphasize cornering ability, braking and acceleration to match an "autocross" style track.

F/E vehicles are more complex to build with aerodynamic bodies and they are more expensive, although a good F/E vehicle can still be built for under 2,500.00. F/Ex vehicles require more attention to brakes and wheel strength to compensate for excessive side loads of hard cornering. F/E rules require wheels in excess of 16" diameter, which can be fragile when bicycle type wheels designed for leaning in corners and support from both sides are used. F/Ex vehicles allow any type wheel including scooter wheels and light weight go-kart wheels designed for high speeds.

The different classes of vehicle prefer different tracks for best performance. F/E ve-

hicles need open tracks with gradual corners and smooth surfaces to reach speed. This usually requires a professional track or a big parking lot. The current F/E speed record was set on a velodrome. F/Ex tracks can be almost any surface with 1/4 miles or more available. This simplicity enables F/Ex competitors to organize competitions without sponsors and long term advance planning which has made it a favorite for high schools and teams far from an organized Electrathon racing association.

The choice of vehicle type often comes down to what kind of racing can be organized in your own neighborhood. After determining which vehicle class you wish to run, the next consideration is the chassis configuration, which will be considered in the next issue.

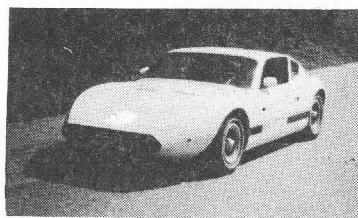
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Tested Batteries Now Available

EAA's fledgling battery test service now has gotten off the ground with 9 batteries that have been characterized by Paul Easley on his load bench. These 9 are now available for EV owners with older packs who need a battery to match what they've got. Thanks to Paul Easley, who donated the test time and the load bench. Thanks also to Jim Phillips of Trojan Battery, who arranged to pick up the batteries in San Jose and have them trucked to Lodi.

Bat.#	Bat. Type & Term	Sp. Gr.	V.B.T.	V.E.T	A.hrs	KW	CH EFF
1-1	US-2400-P6	1275.00	6.40	4.40	195.00	1.17	0.39
1-2	US-2400-P6	1270.00 1260.00 1250.00	6.30	4.40	131.00	0.79	0.32
1-3	US-2400-P6	1275.00 1250.00 1250.00	6.40	4.40	150.00	0.90	0.45
1-4	US-2400-P6	1270.00 1250.00 1275.00	6.40	4.40	120.00	0.72	0.36
1-5	US-2400	1250.00 1260.00 1250.00	6.40	4.40	150.00	0.90	0.50
1-6	US-2400-P6	1270.00	6.40	4.40	175.00	1.05	0.52
1-7	US-2400-P6	1265.00	6.40	4.40	140.00	0.84	0.42
2-1	US-2400-F6	1300.00 1275.00 1280.00	6.50	4.40	207.00	1.24	0.49
2-2	US-2300-P6	1275.00	6.40	4.40	187.00	1.12	0.45

V.B.T = Voltage before test, V.E.T = voltage at end of test. P= round post style, F= L-shaped lug. Please note the charge efficiency column. This is a good indicator of remaining battery life. New batteries run in the .60 - .70 range while batteries below .35 are considered unacceptable. Batteries were discharged at a 25 Amp rate.

Battery 2-1 appears to be a good one, performing within 13 amp-hours of its nominal rating.

EAA members who need batteries or have ones to donate, please contact Paul Easley in Lodi at 209-368-6279. There will be a small charge (\$10 or so) for these used batteries.

We'd like to test some Trojans as well, so anyone discarding a pack with those, please contact Paul.

CE urges the various EAA chapters to set up something like this in their areas.
—CB

EVs Hit SJ News

The San Jose Mercury News pro filed San Jose chapter members Bruce Brooks and Dorothy Bradley in a May 1st article by auto editor Matt Nauman, who attended SJ's chapter meeting. The Mercury News also listed EAA's 800 number. A photo of Brooks' '73 Karmann Ghia electric graced the center back page.

The WE'RE-IT Womens' Electric Racing Team and their #6 Rabbit were the subjects of a Mercury photo-essay piece on April 20, written by Janet Rae-Dupree with pictures by Lucy S. Williams. This is a real turnaround for the Mercury and CE welcomes it!

Students

Continued from page 1

everyone is a winner, even if only one car can cross the finish first under the checkered flag.

Maybe EAA national or Phoenix Chapter should have an EV "Good Sam" award. If so, Agua Fria's students and instructors should be first in line. Kudos to the Canadian team for not letting the setback discourage them. Also to Tim Considine, who took #48's wheel in the Sunday High School Electric Feature, subbing in for the Canadian driver.
—CB

Editorial

Continued from page 2

I don't think EV customers are going to penalize vendors for informing customers that part of the trade-off for having a lighter, more powerful car is more frequent battery replacement. (The cost of sealed marine 12V deep cycles keeps dropping, so that expense is getting to be less of a problem.) Or, as an alternative, not doing as many complete deep discharges. Your customers will be grateful to you for them avoid such pitfalls and helping them to keep their EVs on the road.



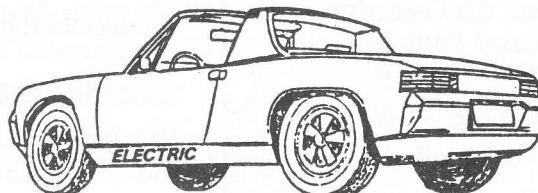
WHY DID THE CHICKEN CROSS THE ROAD? TO GET ON THE ELECTRIC CAR BANDWAGON.

And, my oh my, is the bandwagon crowded! Suddenly, lots of folks are selling electric car components. They have a broad range of experience, too. Why, there's lions, and tigers, and bears! Butchers, and bakers, and candlestick makers!

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Ovonics

Continued from page 1

Tech spec on Ovonics Nickel-Metal Hydride batteries

2 strings in parallel at 120 V
10 modules of 10 cells in each string
Cell capacity of 125 Amphr at C/3
discharge rate
Cell voltage 1.2 V
Energy density - 70 Whrs/kgm
Specific Power - over 200 watts/liter
Pack energy - 30 kWhr at C/3 rate
Peak power - 70 kW
Pack weight - 930 lbs.

with Ovonics nickel-metal hydride batteries went 170 mi at 50 mph.

Next up for Solectria is the American Tour de Sol, the national solar and electric vehicle championship. Solectria has won the ATdeS for 5 years in a row and expects to continue its winning tradition. However the Force might have some real competition from Crowder College or the University of California at Davis, who fielded the Zinc Flow-equipped Prizm "Endura" that took 3rd in the Phoenix race and recently won the American Commuter class of the Disneyland Clean Air Road Rally.

Worden's record-breaking run comes at a critical time since CARB, under fire by oil and auto interests, is reviewing its ZEV mandate. Solectria's performance justifies CARB's stand that EV technology is ready. Maybe Solectria should bring their Ovonics/Solectria RS car to LA and run continuously around the block while the meeting is in session. (Or U.C. Davis should bring their Zinc Flow-equipped Prizm "Endura" and do the same. With the car's range, they should be able to drive it from UC Davis to LA!) All CARB members would have to do to counter the claims of anti-ZEV forces would be to point out the window.
—CB

Electric 500 Results

March 18-20, 1994, Phoenix, AZ

Electric Stock A and B Stock Heat Race

—Cancelled by weather.

Electric Stock A and B Feature

- 1st - James Worden, Boston, MA, #93, 1993 Solectria Force (125 laps)
- 2nd - Travis Creswell, Crowder College, #33, Solectria Force (116 laps)
- 3rd - David Swan, U. C. Davis, #15, Geo Prizm (111 laps)
- 4th - Tom Sneva, Paradise Valley, AZ, #90, Ford Probe (105 laps)

Open 3 Class Heat race

- 1st - Tim Moser, Los Angeles, CA, #1, Empirical Engineering "SnoWhite"
- 2nd - Bill Roe, Phoenix, AZ, #11, Brawner/Lola/Exide EX-11 Indycar
- 3rd - Gene Cosmano, Phoenix, AZ, #10, Formula Lightning
- 4th - Mario DiMarco, #77

Open 3 Class Endurance Feature

- 1st - Bill Roe, #1, EX-11 Indycar
- 2nd - Tim Moser, #1, SnoWhite
- 3rd - Tony Dibb, #69
- 4th - Mario DiMarco, #77

Open 2 Class Heat

- 1st - Clark Beasley, Torrance, CA, #40, 1993 Cloud Custom 3-wheel
- 2nd - Rick Doran, 1994 Cloud Custom 3-wheel
- 3rd - Yasuo Muramatsu, Japan, #0, 1994 Segou (Formula Jr.)

Formula Lightning

- 1st - Mike McGovern, #9
- 2nd - Gene Cosmano, #2
- 3rd - Mac Demere, #1

College Hybrid

- 1st - Ted Bohn, #110
- 2nd - Wong/Mahr, #33
- 3rd - Hanno Sander, #100

High School Electric Stock

- 1st - K. Brack, Farmington, N.M., #96, '76 Datsun 280 Z
- 2nd - Burton Gabrial, Port Townsend, WA, #77, Mazda RX-7
- 3rd - J. Hall Jr., Agua Fria

High School Events - Phoenix

The focus this year was on the high school electric stock races; the heat races and the range feature. The starting grid for Friday's 25 lap 30 min heat was determined by a Thursday morning draw.

Friday Heat

After 5 laps, the top contenders were #17, Mike Tibben from Camelback High in an '85 Chevy S-10, #68, Ted Jones for Cortez High in a '78 Fiat X-19, Phoenix, #93, Mike Hartrumph, from Marcos de Niza in Tempe, AZ, driving a '78 Datsun pickup, and #18, Gene Cosmano, driving for Chaparral High of Scottsdale in last year's entry, a '65 Corvair.

Officials yellow-flagged the race when 48, a Geo Metro from Marian Academy, Ontario, Canada hit the turn 3 wall. Driver Peter Skalnicky was unhurt, but shaken. Cosmano in the Chaparral Corvair came to the lead early and held it until Cortez' Fiat X1-9 passed the Corvair on lap 22. Jeremy Platt, in #99 Chevy Chevette, came up to take third and then scooted past Cosmano and Jones just in time to run across the finish when the race was checkered, but he was still one lap down on the leaders. #50, David Hildreth in a Mercury Lynx followed suit in front of Cortez' Fiat. Official finish order was 1st, #68, Cortez, 2nd, #18, Chaparral, 3rd, #99, St. Johns.

Friday Range Event

In Friday's 1 hour Electric Car Range Event, high school EVs were paced at 55 mph by a pace car. As the pace car lapped lagging cars, they got black-flagged and had to drop out. By laps 36-43 cars were dropping like Raid-sprayed flies

After lap 46, car #23, Bill Cheesebourg driving Palos Verde High's 1980 VW Rabbit was the only one left on track. He completed 54 laps in 60 min, 24 sec behind the pace car.

Sat 1st heat

Saturday's first high school heat race saw an early leader come to grief. Burning up the track at 68.380 mph during the first lap, #6, Justin Krier of Snowflake High, ran too wide and high, kissing Turn 2 wall. Yellow flags waved as the Snowflake #6 car was flatbedded off the track with a crunched rear quarter panel.

By Lap 2, the Palos Verde Rabbit, driven by Bill Cheesebourg, held the lead. The flag went to green on lap 10, allowing #68, Ted Jones, in the Cortez High Fiat X1-9, to grab the lead on the front straight on lap 13.

#96, a scorpion-bedecked '76 Datsun 280Z with Farmington High's Kristopher Brack at the wheel, moved up to 2nd on the 14th lap, putting Cheesebourg in 3rd.

Brack had the race-fastest speed of 69.191 on his 17th lap. #40, Mark Wasco of Sunnyside came up to 3rd on lap 18 with his '78 Chevy LUV pickup, putting #23, Cheesebourg, into 4th.

On the 19th lap, Brack's Datsun passed #68, Jones' Fiat, between turns 3 and 4 to take first, completing 22 laps in 30 min. Final finish order was 1st, #96, Farmington, 2nd #68, Cortez, 3rd, #59, Central.

2nd Sat Heat

Leaders after completion of 1st lap: #17, Mike Tibben, S-10 (Camelback), #00 Marvin Hall (Cortez) '82 Ford Escort, #33, Maurice John, 1983 Ford Escort. Fast lap early in the race was #50, David

Hildreth (Camelback) in an '81 Mercury Lynx at 63.322 mph.

Rain caused a yellow flag on 3rd lap. Leaders at that point were #3, Jim Hall Jr. (Agua Fria) in '82 VW Rabbit, #00 Marvin Hall (Cortez), in Ford Escort, #19, Randy Salo (Shadow Mountain) in '73 Porsche 914. Cortez felt that their Ford Escort, may not have gotten completely charged. #00 was last year's stock Electric winner.

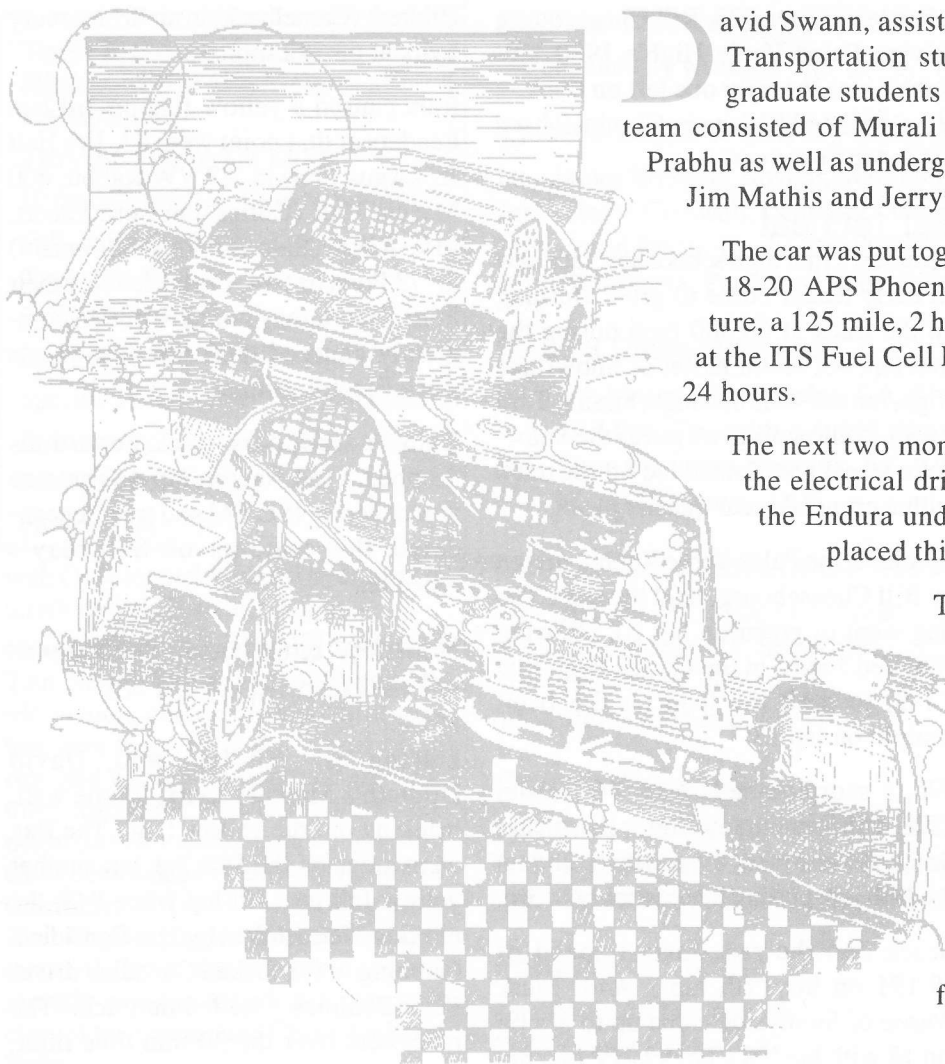
Rain and slippery track conditions dropped a red flag on lap 4. The race was called at 4:05 PM and weather canceled the remains of Saturday's schedule.

Sunday Electric Feature - 40 km (25 laps) 30 min race

During the 7th lap, #50, David Hildreth's Mercury Lynx, hit the wall, bringing out the yellow flag. The flag went green on the 14th lap, but another yellow fell on 14th lap when #48, the red Geo Metro driven by Tim Considine, (subbing in for shaken Canadian driver Peter Skalnicky) stalled on track. The race went over the 30 min time limit, but the cars were allowed five green laps.

A white flag (last lap) came out for #96, Kristofer Brack, on his 21st lap. #96 Datsun won it, completing 22 laps. Brack started on the outside of the 15th row, a long way back. Official finish order is 1st, Brack, Farmington, 2nd, Gabriel, Port Townsend, WA, 3rd J. Hall Jr., Cortez.

UCD "Endura" Wins Clean Air Road Rally



David Swann, assistant director of the UC Davis Institute for Transportation studies, headed up a team of engineering graduate students who designed and built the Endura. The team consisted of Murali Arikara, Blake Dickinson and Manohar Prabhu as well as undergraduate John Lee. Community volunteers Jim Mathis and Jerry Benson assisted the crew.

The car was put together fast in order to compete in the March 18-20 APS Phoenix Electric 500 Stock A Endurance feature, a 125 mile, 2 hour race. A stock 1994 Geo Prizm arrived at the ITS Fuel Cell Lab on 1/19/94 and was stripped down in 24 hours.

The next two months were spent installing and debugging the electrical drivetrain and battery system. On 3/12/94, the Endura underwent its first road test and on 3/20/94 placed third in the APS 500.

The Endura proved its capabilities when it won the 1994 Disneyland Clean Air Road Rally, beating natural gas and hybrid electric vehicles.

The three day rally included tests of acceleration, handling and endurance). Endura accumulated 690 points out of a possible 700.

Endura's next challenge is the May 21-27 American Tour de Sol. (Information from U.C. Davis ITS Press release)

UC Davis Institute of Transportation Studies "Endura"

- Curb weight: 3,102 lb (1410 kg), 48% front, 52% rear
- Range: 175 miles at 50 mph (280 km at 80 km/hr)
160 miles recorded in LA traffic
- Top speed: 80 mph Motor 3-phase AC induction, water-cooled, 65 HP
- Controller: Hughes AC/DC Inverter, water-cooled
- Batteries: "Zinc Flow" (Zinc-bromine) by PowerCell
- Capacity: 35 kWhrs (at c/3 discharge rate) Recharge time 5 hrs
- Chargers: Hughes Magna Charge Inductive Paddle

1994 World Clean Air Road Rally Results

Electric Commuter Class

Car #	Driver	Organization	Car Description	Points
15	David Swann	UC Davis	Geo Prizm - Zinc Bromine	690
16	John S. Dunning	Delco Remy	Geo Metro	545
84	Jesse James	Sunbelt Battery	Karmann Ghia	517
61	Gary Jackson	Little Guy Racing	Geo Metro	516
07	Tom Lacy	Riverside Pub Util.	Solectria Metro	476
51	Arno Huberts	Seventh Auto	Mini-Cooper	466
07	Roderick Irwin	NOPEC	Taurus SHO	441
30	Hershal Rosenbaum	CARB	VW Rabbit	437
91	Dale Riddle	Current Tech	'84 Izuzu Pickup	433
57	Steve Lough	EcoMotion	Ion-1 Custom Sportscar	419
04	Kitty Rodden	Trojan Battery	Porsche 914	416
31	Michael Slominski	Mike's Auto Care	'79 VW Rabbit	399
54	Don Bright	ElectriCar	Ford Escort	374
22	Rex Ramsey		Elbetech LeMans Racer	318
52	Bud Clark	J&B Imports	Saab Sonnet EV	315
06	Hector Carreon		'62 Austin Healy E1	312
09	Sandy Kapteyn	WE'RE-IT	VW Rabbit	301
27	Dan Parmley	Diversified Tech.	S-10 Pickup Truck	297
50	Frank Wells	Walt Disney Co.	Solar Electric	290
63	Jeremy Phillips		'80 VW Rabbit Pickup	286
53	Jim Driver	ElectriCar	ElectriCar Prizm	274
49	Susie Pucelli	Cal State Long Beach	Porsche 914	265
13	Clare Bell	Current EVents	Porsche 914	264
24	Dave Rutherford	Sou. Coast Air Qual	AC Propulsion Honda	260
20	Bill Kuehl		Fiero	251
42	Robert Hadden	Voltage, Inc.	'79 Honda Civic	248
00	Bruce Feddersen		Feddersen ELECTRICAR	244
33	Larry Sanford	Walt Disney Co.	Solar Electric Fiero	227
08	Gregory Glenn		Fiat X1-9	226
28	John Federe		'69 VW Beetle	226
29	Robert Sandoval	Walt Disney Co.	'63 Peugeot	188
32	John Sprinkle	Porsche Glocker		158
44	Chris Helmuth		VW Rabbit	38

Student Electric/ Hybrid Class

Car #	Driver	Organization	Car Description	Points
59	William Doerge	Central H.S.	VW Rabbit	413
19	Mike Golden	Shadow Mountain H.S.	'73 Porsche 914	408
43	Chelle Myrann	South Mountain H.S.	'81 Chevy Citation	294
12	Marshal Sausedo	Farmington H.S.	'76 Datsun 280 Z	287
69	Freddy Lajvardi	Carl Hayden H.S.	VW Rabbit	265
233	Thomas Banwell	Cal Poly Pomona	HEV "Ground-up" car	608
23	Michael Seal	Western Wash. U.	Nat Gas hybrid	542
100	Bailey White	Stanford U.	HEV Ford	171

Last year's champion, Jesse James of Sunbelt Battery in Tempe, AZ, did astonishingly well against difficult competition. #84 Karmann Ghia placed 3rd, showing that with the right car and the right driver, lead-acid 6V batteries can do very well. Congratulations, Jesse!

News in Brief . . .

Compiled by Ruth M. Shipley from Environmental Information Network. If this is reprinted, please credit CE and Ruth Shipley.

Ford's Ecostar Test Fleet

Twenty-six Ford Ecostars being driven and tested by eight utility companies and other fleet owners have accumulated 18,179 miles of in-use experience. The van's onboard computer logs report that the vehicle's average range is 94 miles, maximum range is 155 miles and top speed is 70 mph. One problem occurred early in the winter when road salt got into the wiring of several Ecostars and the computerized fail-safe system shut the vehicles down. Ford was able to quickly locate the problem and correct it. For more information, contact Howard Hampton at 313-390-2310 or Pam Kueber at 313-337-2456, both of Ford.

(FORD NEWS: 3/28)

Sweden Solicits Bids for EV Fleet

The Swedish Board for Industrial and Technical Development (NUTEK) is soliciting bids for a 200-vehicle contract to build a car or estate wagon and a minibus or panel van with either all-electric or hybrid electric-combustion engines by May 31. The invitation went out to carmakers in Japan, Europe and the United States. NUTEK is offering a subsidy of \$1,900 per car or estate wagon and \$3,800 per minibus or panel van for the first 1,000 that are purchased. Sixteen prototypes are expected to be chosen for road testing in 1995 and delivery will be requested in 1996.

(POWER EUROPE: 2/28)

Mitsubishi Unveils 300+ Mile Hybrid

Mitsubishi has developed a four-passenger electric hybrid car powered by a 70kW AC induction motor and driven by a 336-volt alkaline battery pack and a small gasoline-powered electric generator. Mitsubishi claims the ESR (Ecological Science Research) can travel over 300 miles at 25 mph on a flat road, and double that distance if the generator is used.

(GREEN CAR JOURNAL: 3/94)

Tokyo College's Solar EV

Students from the Tokyo Electric Engineering College under the direction of Professor Masaharu Fujinaka recently completed a successful 4,900 kilometer journey in a solar-powered EV that took them to all four of Japan's main islands via bridge and tunnel. The trip began on March 9 and lasted 27 days. Fujinaka said the vehicle performed well even in the snowy northern part of the country.

(KYODO: 4/4)

EV Charging at New L.A. Parking Garage

The Los Angeles Department of Transportation and the Community Redevelopment Agency (CRA) on March 28 opened the first Los Angeles parking garage to offer EV charging stations. The Hollywood Cherokee Garage includes 416 parking spaces, and has 4,700 square feet of retail space. The Los Angeles Department of Water and Power installed the five EV charging stations. The DWP has installed more than 70 EV charging stations throughout the Los Angeles Area. For

more information, contact Karen Patterson at 213-485-9543.

(LOS ANGELES DOT NEWS: 3/28)

Fuel Cell Engine Cost-Competitive with IC Engine

General Motors' Allison Gas Turbine Division recently gauged the cost and performance of a Proton Exchange Membrane (PEM) fuel cell engine in a Cadillac Fleetwood, a Buick Regal, a Chevrolet four-door Cavalier and a Chevrolet Lumina mini-van. Each was projected to use methanol, which would be converted by a fuel processor into a hydrogen-rich gas that would mix with oxygen to produce power.

Researchers estimate that the 60-kilowatt fuel cell engine and its fuel processing equipment could be built in quantity for about \$46 per kilowatt, or approximately \$3,000, which is similar to the cost of current IC engines. Due to the fuel cell's high energy efficiency, the car would consume only about half the energy of its ICE counterpart. For more information, contact Frank O'Donnell for Fuel Cells 2000 at 202-466-7391.

(FUEL CELLS 2000 NEWS: 4/15)

Chrysler Official Says EVs Are Impractical

Chrysler Chairman Robert Eaton told a meeting of the Executives Club of Chicago recently that EVs are still expensive and impractical. Chrysler has built a battery-powered mini-van to comply with California ZEV legislation, but rather than praise the van, Eaton said, "It costs about \$100,000

Continued on page 11

News in Brief . . .

and will only go about 70 miles before it needs recharging, and the recharging takes all night. The law can force us to build it, but it doesn't force anyone to buy it." He said he does not anticipate much consumer demand "in California, or anywhere else, for an electric that might not even get you to work and back if the traffic is heavy. Certainly not enough to justify mass production." [Doesn't he know that the Chrysler TEVan made a trip across the U.S. recently, using the Norvik fast-charging unit? — CB]

(CHICAGO TRIBUNE: 4/16)

Electrosorce Merges with Horizon

Electrosorce, Inc. (Austin, TX), developer of the Horizon(R) lead-acid battery, will merge with Horizon Battery Technologies, Inc., which is 50% owned by BDM Technologies, Inc. (McLean, VA). Operations and management of Horizon Battery Technologies will be in the hands of Electrosorce at HBTI'S production facility in San Marcos, TX. The merger will not affect research and development work funded under contract by the Electric Power Research Institute (EPRI) of Palo Alto, CA. For more information, contact Audrey T. Dearing at 512-445-6606.

(ELECTROSOURCE NEWS: 4/19)

Power Fuse for Ford Ecostar

Cooper Industries' Bussmann has developed a power fuse for the Ford Ecostar. The fuse must open within 600 milliseconds at 600 amperes at 385 volts at 0 degrees C, while Bussmann's requirements include cycling testing at 11,000 cycles at loads as high as 100

deg C. Ford is planning to test 105 sodium-sulfur battery-powered Ecostar vans and eventually will install the Bussmann power fuse in each of them. Public utilities and other businesses will test the vans. For more information, contact Bussmann at 314-394-2877.

(BATTERY & EV TECHNOLOGY: 4/94)

Electricar/ Hawaii EV Demo Project

U.S. Electricar Inc. (Sebastopol, CA) has signed a \$1.8 million contract with the Hawaii High Technology Development Corp. to provide 29 electric vehicles for demonstration and testing, as well as technical training and safety

development to the Hawaii Electric Vehicle Demonstration Project (HEVDP).

U.S. Electricar will equip 37 vehicles converted by HEVDP with advanced data acquisition devices that will monitor performance and transmit data to a conversion, service and maintenance center in Honolulu's Kaka'ako district. At the center, U.S. Electricar will train local college teachers and mechanics involved in the project to convert pickup trucks using a vehicle and drive system provided by U.S. Electricar and GM Hughes Power Control Systems.

For more information, contact U.S. Electricar, Alex Campbell, 707-829-4545

(BUSINESS WIRE: 4/22)

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Calendar of Events

- | | |
|-------------------|---|
| JUNE 19 | The Eyes of The Classics, held At The FORD estate. Classes of Antique, Indy cars, etc. Would like to invite 15 electric cars of show quality. For information, call Steve Pasteiner at (313) 852-2900. |
| JUNE 20-24 | 10th World Hydrogen Energy Conference held in Cocoa Beach, FL. call Carolyn Burby, Florida Solar Energy Center, (407) 783-0300 |
| JUNE 29 to JULY 1 | Fueling the Future: A Clean Air Transportation & Engine Show in Milwaukee, Wisconsin. Dept. of Energy is sponsoring this trade show. Call (414) 273-3070 for information. |
| JULY 8-10 | Formula Lightning support race to IndyCar Cleveland Grand Prix. Burke Lakefront Airport, Cleveland, OH. Collegiate teams competing, including exchange pit stops. Contact Kevon Makell, Centerior Energy, Cleveland, OH. Tel.447-3552 |
| JULY 15-17 | SEER is happening again! This year's SEER promises to be the biggest ever! New location: Redwood Empire State Fairgrounds in Ukiah, CA. Off of hwy 101 and appr. 100 miles North of San Francisco. Electric Vehicles, Human Powered Vehicles, Electrathons and Solar and Electric Boats. Call (707) 459-1256 Fax (707) 459-0366 |
| AUG. 4 | Carolina Vehicle Systems Consortium is having their second E.V. Conference. Guest Speakers and EV displays on University of North Carolina & Charlotte campus. Call the Transportation Studies Center for further details. (704) 547-3082 |
| AUG. 7-21 | Ener-Run III. This rally begins in Hardy, Arkansas and goes through 12 states before returning to Hardy, AR. Maybe the Clintons should enter a car. Contact Ener-Run Inc. for more information at P.O. Box 665 Hardy, AR. 72542 (501) 856-3877 |
| NOV. 18-19 | Phoenix E.A.A. Presents EV Weekend '94. Rally Ride and Drive & Scrutineering. Questions about it? Call Phil Terry (602) 243-5833 or Fax (602) 243-5812 |
| OCT. | Sustainable Transportation S\EV 94. The NorthEast Sustainable Energy Association (NESEA) will host a series of workshops and a trade show at the Ramada Hotel and Rolling Green, Andover, MA. This is the one that the big three bring cars to! Exact date not set. Contact NESEA for more info. Tel. (413) 774-6051 Fax (413) 774-6053 |
| DEC. 1-7 | EVS 12 at the Disneyland Hotel and Convention Center, in Anaheim, CA. Includes a parade, press events, expo, and conference. Display space: \$25/sq.ft. indoors and \$12/sq.ft. outdoors. Contact: SHO 167 South Antonio Road, Suite 10 Los Altos, Cal. 94022 Tel. (415) 949-2050 |

Anna Cornell, EVents Co-ordinator, 510-685-7580

Activities Coordinator Anna Cornell has complete SEER information and registration forms. The E.A.A. will have a booth at the event, and Anna would like those of you who are interested in going to SEER to volunteer some of your time at the booth. Call Anna at (510) 685-7580 for booth sign-ups and information.

Board Highlights

March 17, 1994

The meeting was held at the Arizona Public Service Building in Phoenix, AZ. There was some general discussion prior to the meeting between the board and members of the EAA who were present representing several chapters.

The meeting was scheduled for 7:30 and was called to order at 8:00 PM by the chairman, Stan Skokan. Also present were: Harold Bell, George Gless, Lee Hemstreet, Ken Koch, Mike Slominski, Bruce Brooks. Arriving late were Anna Cornell and Clare Bell. Absent were Bob Batson and Steve Lough.

Bruce Brooks acted as recording secretary.

The minutes of the February meeting were read and approved. The agenda for the current meeting was reviewed and approved.

Committee reports

Treasurer's report — Slominski

Awards committee — Gless (included action plan)

Information Clearinghouse — Hemstreet/Koch (Ken distributed a draft of a resource list)

Membership and Events — Cornell (Anna distributed a request from SEER for review)

Newsletter — C. Bell

Records — Brooks.

Fundraising — Slominski

Harold Bell requested comments on his organizational proposals (copies distributed).

Houston Chapter requested a copy of Non-profit status letter.

Suggestion from several members to distribute more info on present and expired members to chapters (electronically if possible.)

Suggestions for BBS for EAA dialog and information distribution.

Agenda item for passing revisions to EAA By-laws was table at the recommendation of the chair since legal counsel has advised the need for further changes to comply with California Corporation Laws.

Stan Skokan described the achievements of Ed Rannberg and recommended him for the Keith Crock Award for Technical Achievement. Harold Bell made a motion to give the award to Ed Rannberg. Brooks seconded the motion. Motion passed unanimously. Award to be presented at the APS 500 Electric Race on 4/19/1994. (This was in fact done during the event).

Harold Bell recommended a thank you letter to APS for the use of their facilities.

Business meeting adjourned at 9:00 pm. The schedule for next meeting is 7:00 pm in Los Angeles area on Friday 4/8/1994.

Open discussion continued until 10:00. Topics included fundraising, chapter rebates and territories, 800 number, chapter kit content, promotion of membership and computer bulletin board for communication and dissemination of information.

There was also a business meeting during the LA Clean Air Road Rally, but since there was not a quorum present, it was turned into an informal meeting and dinner with Irv Weiss and the L.A. Chapter.

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Chapter News

Contributions to: Ruth M. Shipley 102 Brighton Rd. #3
Pacifica CA 94044 (415) 359-1541 CompuServe 73043,60
Internet 73043.60@compuserve.com

Sacramento CA

At a recent meeting, Ruth MacDougall alerted members to Chevron's campaign to convince Americans that gasoline is the best fuel for cars. Sal Calvello told members that his EV dealership, Drive Electric, would sell the Renaissance Tropica. Mark Bahlke was interviewed by the Associated Press and thinks the resulting article will be favorable. Perry Goldschein and Santos Gomez resigned their positions on the staff of the newsletter due to increasing workloads. Their input will be missed.

San Diego CA

Gary Jackson and Scott Gossler showed a video of highlights from the APS 500 race at a recent meeting, including action in the pits. Jackson also wrote an extensive review of the race in the chapter's April newsletter. Jackson and Little Guy Racing had two cars in the race. Members are petitioning San Diego Gas & Electric to install a charging station in the parking lot of the Automotive Museum, where the group meets.

San Francisco Peninsula

Members tried to get a share of the anti-pollution funds offered by the Bay Area Air Quality Management District, but discovered that our status as a non-profit association disqualified us. We will continue to seek funding for several proposals, including the development of a traveling EV exhibit and the implementation of an EV consulting service to high schools.

Central Virginia

Members exhibited at three Earth Day Events, including one at Byrd Park in Richmond attended by 15,000 people. Seven CEVA members participated in the EV Grand Prix at the Richmond International Raceway, April 28-30. Five exhibited EVs in the infield and two volunteered as course timers. In this Event, 17 high school EV teams competed in acceleration, handling, efficiency, range, speed, design and oral presentation.

Vancouver BC

Ron Halford discussed lead acid tubular plate batteries at a recent meeting. They cost more than flat plate batteries, but have a longer life and greater efficiency. Chapter members voted to spend \$12,000 of their casino money on their Electrathon project. Winston Churchill Secondary School will receive \$2,000 to build a prototype. Doug Turland seeks suggestions on where the chapter can display the 1912 Detroit Electric that they are restoring.

Member Ads

FOR SALE: 1992 Professional Conversion Ford Escort Station Wagon, with on-board charger, power brakes, heavy-duty suspension, high-pressure tires, new batteries and stereo. Portland, OR. Can deliver. \$12,000. Call (503) 331-1281.

FOR SALE: 1981 Jet Electricia (Escort), 12,500 miles. Re-furbished PMC controller, new USB 2300 battery, on board charger. \$8,500. Call (415) 964-3974.

FOR SALE: 1971 Volkswagen Squareback, brand new 96V DMV-OKed conversion. Advanced DC motor, Curtis controller, US batteries, KTA on-board charger, Electro-Auto adapter kit, DC/DC converter with gel-cel auxiliary. Great car, wrong lifestyle. Needs some interior trim. \$7000 firm. Call Joel, (415) 665-6637 or (415) 269-5192.

WANTED: Ford Pinto converted to electric, semi-finished project car OK, or reasonably priced finished car. Call (201) 839-9053 - NJ

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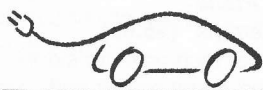
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