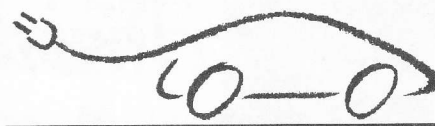


CURRENT EVENTS



November/December 1993

Promoting the use of electric vehicles since 1967

Vol. 25 No. 6

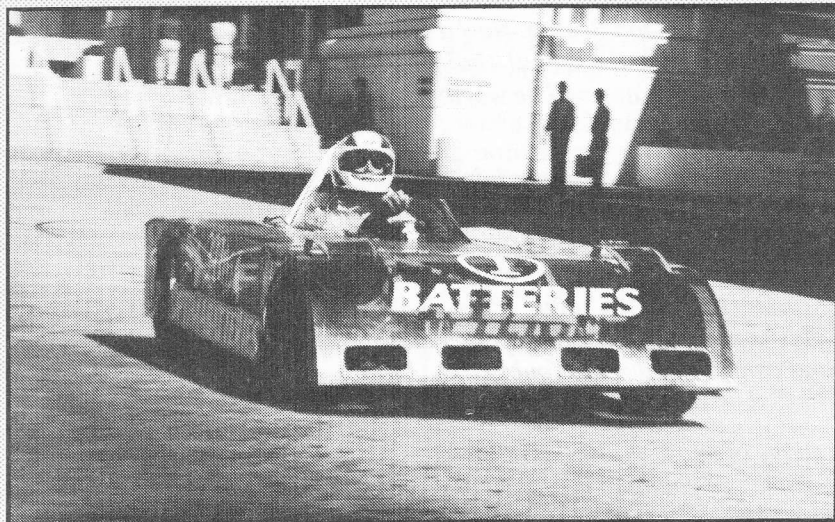


Photo credit: Bob Schneeveis

Phoenix car wins WESCON—SnoWhite at Moscone Center.

High Voltage Recognition at WESCON '93

By Clare Bell

EAA's presentation of the EV Showcase and first-ever EV Technical Session was so successful that EVs will be included in future WESCONs. Stan Skokan, organizer of all the EV events at the annual huge electronics trade show, says that WESCON's Board of Directors and IEEE (Institute of Electronics Engineers) have asked EAA to participate on an on-going basis.

For the three days of the show (9/27-9/30/93), twenty-eight meticulously prepped Showcase EVs sparkled under the spotlights on the plush carpeting in Moscone Center South. Cars came from major automakers (Ford's EcoStar), small conversion companies and individuals. The racing section featured Ed Rannberg's Electric Land-Speed Record rocket along with Bob Schneeveis' electrathon vehicles and SnoWhite. IEEE members and other electronics industry

professionals (an estimated 50,000) circled the cars, gathered literature and asked intelligent questions. As Mike Slominski of Peninsula Chapter put it, "I didn't get one question about putting a windmill up on the roof to power the car."

The papers presented in the EV Technical Session on Thursday 9/30 were worthy of the historical first EVent. The outstanding good news for EVs is that the new Electrosources Horizon battery (presented by Bill Craven) seems to be a good match-up for Norvik Technology's (Jiri Nor) MinutCharger smart fast-charge system. The high power acceptance capacity of the Horizon design (about 3x that of standard lead acid 6 volt traction batteries) appears ideal for the Norvik MinutCharger's method of

Continued on page 5

What's Up? Chapter News

By Ruth Shipley

THE STRENGTH OF EAA IS IN THE INDIVIDUALS AND THE CHAPTERS. Truer words were never said, yet the national organization and CE in particular have been slow in taking heed. This year-end issue is the right time and place to give recognition to the accomplishments of the various chapters and affiliated organizations. Thanks also to Bruce Brooks for the quote from his candidate statement.

Chapter Liaison Ruth M. Shipley has put together a comprehensive round-up of what the EAA chapters have been up to in '93. Clare Bell picked up some of the tag ends that didn't get to Ruth on time.

At the most recent count we have 33 chapters, including the newborn Albuquerque (NM), Kern County (CA), New York State, Chico (CA) and Indiananapolis (IN).

Continued on page 6

FEATURES

Runzheimer Survey Results..	4
Keith Crock Award	8
Membership Team	9
Charge in Palo Alto	9
Wescon Media Coverage	10
DMV Follow-up Letter	14
Election Results	15
'93 EAA Fellow Awards	16
Short Circuits	23



Passing the Torch

By Clare Bell

By the time you read this editorial, the 1993 Board of Directors election will be over and EAA will have a new 11-member board. The last issue listed candidates from EAA chapters and affiliated organizations all over the US, including Seattle, Denver, Phoenix, Salt Lake City, San Diego and Boston. Now a national organization will have a national board. There will be logistical challenges in making this work, but the new energy and ideas generated will be worth the effort.

The face of EAA is changing, as anyone can see by looking at last issue's candidate photos. A strong revival of interest in EVs, kicked off by the 1991 Mideast War and growing environmental awareness, brought a wave of new or newly active members. EAA is seeing more people who are not traditional EAA types (male, engineering or technical background, hobbyist-tinkerer). Women, high school students, members of various ethnic groups and communities, non-technical people etc. are appearing in growing numbers and contributing skills (publicity, marketing, organizing) that EAA needs but has lacked.

EAA is seeing the fruit of the last two years in the shape of the Technical Assistants (T/As) to the Board and the Chapter Presidents. Some are young in years, others young at heart, but all are active, visionary and dedicated. Now they are taking the next step up to Board membership. The torch is passing to fresh hands.

In celebrating the transition, let's also salute the hands that have carried the same torch now for a quarter of a century. John Newell and Bill Palmer co-founded EAA along with Walter Laski. With a gentlemanly touch and grace under pressure, Bill Palmer has served as Board Chair through difficult times. John has served repeatedly on the Board and in many chapter offices. Together John and Lydia Newell have been "Mr. and Mrs. EAA" and their Belmont address a center for inquiries and membership information. For their dedication, Bill Palmer and the Newells received '93 EAA Fellow Awards at the WESCON '93 EAA Board Meeting.

As the dust settles on the aftermath of the election, we'll celebrate those into whose hands the torch has been passed and honor those who have passed it.

Their hands put the first modern electric cars on the road in the 60's and 70's. Their minds kept the ideas alive during the dry years of the late 80's and their inspiration ignited and instructed the new people who came along in the resurgence of the 90's.

A while back I ran across a quote that seems appropriate. It said, "You can tell the pioneers by all the arrows in their backs". Between wrestling with early electric car technology and enduring the public's skeptical and often derisive attitude, the early EAA members have collected enough arrows to be known as pioneers. We hope now that they will take their reward; pleasure in watching more and better EVs take to the road as the EV movement continues to grow.

Pioneers, stand up, arrows and all. We wouldn't be here without you.

—CB

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If you would like to submit an article for Current Events—the preferred form is on a floppy disk, formatted for DOS (Ascii Format) along with a printed copy of the article. Also include camera-ready photos or graphics or include TIF formatted files with your copy. **The deadline for articles is the 1st of the month. Articles submitted after the 1st of each month will be retained for future issues of Current Events.** Contact Clare Bell, Managing Editor for further information.

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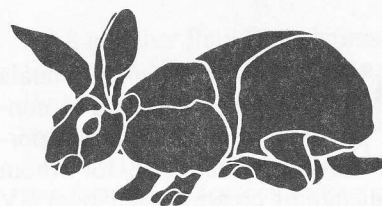
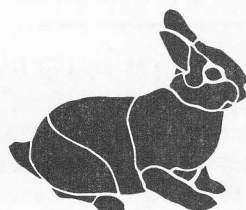
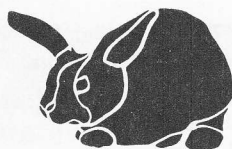
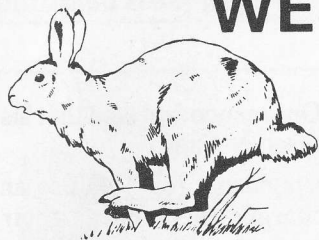
Membership & Address Changes

For information on new membership or change of address, please send your requests to:

EAA Membership
Hal & June Munro
2710 St. Gile Lane
Mountain View, CA 94040

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THEY SAY THAT IMITATION IS THE SINCEREST FORM OF FLATTERY. WE'RE SINCERELY FLATTERED.



CONVERSION COMPONENTS. In 1979, Electro Automotive began supplying components for EV conversions. Today, there are more aspiring component suppliers than there are aspiring actors in Hollywood.

AUTOMOTIVE GAUGES. In 1987, while other suppliers were offering fragile panel meters and hard-to-read digital and LED gauges, Electro Automotive brought automotive quality gauges to electric cars. We went to a quality gauge maker, Westberg Manufacturing, and had gauges custom-built for an EV application. Now the 2-inch round gauge is the gauge of choice. (Then we redesigned the face for better readability.)

"CONVERT IT" HOW-TO MANUAL. In 1988, Electro Automotive introduced the first step-by-step how-to manual for the home mechanic. Today, every component supplier has a manual. Many of them use "Convert It". Others wrote their own—after they read ours. (The new, greatly expanded third edition of "Convert It" will be released in October, 1993. The benchmark has just moved up.)

ON-SITE CONVERSION DEMONSTRATION. In 1991, at the Clean Air Revival, Electro Automotive did a complete top shelf conversion in three days as a public demonstration. Now every event has to have an on-site conversion demonstration. (However, none have driven away completed in three days.)

TAX CREDITS. In 1991, Electro Automotive discovered there were tax exemptions and credits available to buyers of "certified" conversion kits. When we contacted the authorities about getting our kits certified, we further discovered that no one had written a certification procedure. Our legal counsel spent several weeks working closely with the authorities to prod the certification procedure into existence, and to insure that it was reality-based. Our Basic Kit was the first in the state to receive tax credit certification. (Once we did all the groundwork, it was easy for all the other suppliers to get their kits certified as well.)

NUTS & BOLTS VIDEOS. In 1991, Electro Automotive introduced "The EV Components Primer", the first technical EV video. Now there are almost as many aspiring video makers as there are Electro Automotive videos titles. (Almost, but not quite.)

TECHNICIAN TRAINING. In 1991, Electro Automotive offered the first hands-on training program for professional mechanics who want to do commercial conversions. Now the industry is full of "training programs". (Ah, but who trained the trainers?)

BOLT-IN KITS. In 1992, Electro Automotive introduced the first complete bolt-in custom model-specific conversion kit: the Voltsrabbit™. (Cute name, isn't it?) Absolutely no design, fabrication, or welding necessary. Now there are "bolt-in" kits popping up everywhere. (None of them are as complete as the Voltsrabbit™.)

Well, we're really very flattered. And we urge the public to look at the choices and compare. Then ask the question all our competitors ask about Electro Automotive:

WHAT WILL THEY THINK OF NEXT?



For info, send SASE to:

ELECTRO AUTOMOTIVE
POB 1113-EAA
FELTON, CA 95018

Survey Results — Runzheimer

by Kraig Rodenbeck, Runzheimer International

Over the years certain individuals have remained committed to non-polluting, quiet electric transportation. Many are hobbyists, for whom the challenge of creating their own EV is the motivating force. Others are simply looking for a different way to help reduce air pollution and the politics associated with dependence on foreign oil.

These individuals are you, the members of the Electric Auto Association. You are on the cutting edge of the American EV movement. In learning how EVs can become part of US alternate-fuel transportation, there is no better source than you, the people who have used EVs for years.

This article summarizes the results of a survey of Current EVents subscribers undertaken by Runzheimer International, a management consulting company specializing in transportation, travel and living costs. This survey was done in conjunction with Solar Electric Engineering and EAA.

We thank Gary Starr of Solar Electric Engineering and Paul Brasch of the EAA for their support and assistance throughout this effort. Most importantly, we thank the 227 of you who responded to our questionnaire, plus another 61 who are not currently driving an EV, but took the time to voice their support. You have our sincerest appreciation.

Key Findings

Respondents were asked to list basic information about their EV. Several indicated that they owned more than one EV, including one fleet manager who listed vans, autos, pickups, trolleys and more. Roughly 3/4 (74.8%) listed an auto as their primary EV.

While most EVs in our sample were originally built in 1982 or before, they were purchased by our respondents largely since 1990 (64.5%). Thus while EVs have existed for many years, their popularity plus the rate of conversion of gasoline models to EVs has increased only recently.

Over 3/4 (75.8%) of EVs owned by our respondents are retrofits, converted to electric drive from internal combustion. This reflects the dominance of retrofitters in the fledgling EV industry. Many retrofits are homemade.

A sizable number (41.4%) of respondents consider their EV to be their primary vehicle. A majority (58.6%) say their EV is a secondary vehicle.

The range of EV purchase prices, from \$0 to \$50 K is amazing. For many, the lower dollar amounts indicate only the cost of parts necessary for a homemade conversion. The higher amounts typically reflect purchases from a certified refitter or an OEM. The average purchase price for an EV in our sample is just over \$7.5 K. The dollar amounts shown have not been converted to a standard year value.

The actual experience of EV users provides very realistic data on driving range offered by current battery technology. The mean response is 36 miles between charges. Half get 30 miles or less, half get more than 30. Most (73.1%) get between 20 and 50 miles per charge. Only five respondents get over 70 miles per charge. Note that these figures include all types of EVs. Results for autos alone may vary.

Respondents put a wide range of annual mileage on their EVs. The lowest figure reported was 10 while the highest was 25,000. The median annual mileage is 3,500 compared to 10,000 for "other" vehicle #1 and 6,000 for vehicle #2. Roughly 1/4 of the respondents put 1000 miles or less on their EVs each year. These numbers go hand in hand with the limited range of most EVs and the limited number of recharging facilities available. (or these are just show cars—CB)

Nearly all respondents (93.6%) use traditional lead-acid (wet) batteries in their EVs. Another 5.0% use sealed lead-acids and only 0.9 use NiCads. No respondents use the newer nickel-iron or nickel-metal hydride types. (Note that the type of battery listed is for the respondent's first EV, if more than one is

owned. One respondent said that his second EV used NiCads.

Most respondents (65.1%) use an on-board charger to recharge their EV batteries. A minority (28.3%) have an off-board charger while some (6.6%) have both.

Respondents typically recharge their EVs at home (85.9%). Many (27.8%) recharge at work. "Other" responses included: any 110 V outlet, at friends' or neighbors' houses' at school, at the shop, at a warehouse etc. Some don't since they have on-board photovoltaic. Quite a few gave multiple responses, indicating that charging at home and at work is possible for some EV owners.

Full recharging on 110V commonly takes 8 hours according to our respondents (28.8%). Many also listed 10 hours (17.5%) and 12 hours (15.6%) as common 110V recharge times. The average time listed was 10.13 hours.

The vast majority (84.4%) can recharge in 12 hours or less, meaning the overnight hours suffice. Over half (51.3%) can recharge in 9 hours or less, meaning that a typical work shift would be sufficient. The one respondent who listed 50 hours may have a specialized situation.

The typical 220V charging time is 8 hours (27.3%), the same as listed for 110 V. However all who charge on 220 V stated that it could be done in 16 hrs or less, with 95.5% able to do it overnight (12 hrs or less) and 83.3% during the work day (9 hours or less). The average 220 V charging time was 7.2 hours, notably less than the 10.13 hours for 110 V.

Over 2/3 (68.9%) of respondents felt that availability of centralized recharging stations would allieviate some of their concerns about refueling their EV. Still, 31% said that these stations would not impact their refueling concerns. As for coin or card operated charging stations, an overwhelming 89.3% of respondents approved of such facilities while only 10.7% rejected them.

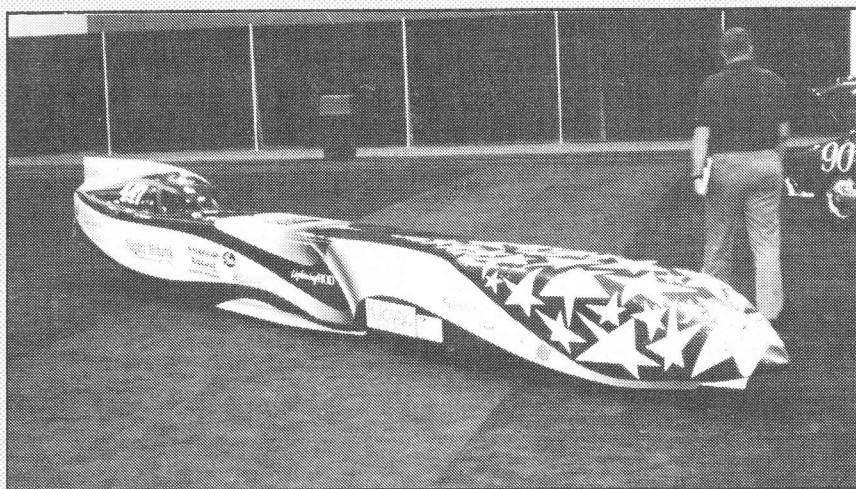


Photo credit: Bob Schneeweis

Lightning Rod, Eyeball Engineering (Ed Rannberg)—Land Speed record entry EV at Moscone C-South.

fast-charging. Both companies are aware of the possible advantages of a Horizon/MinutCharger combo and have already started talking to each other. (For more detail on both technologies, see "EV Supercharger" by Paul Brasch, Current EVents, March/April 1993, "Chrysler TEVan Proves EV Technologies" by Clare Bell, Current EVents July/Aug '93 and "1992 Symposium, Part II" by Clare Bell and Paul Brasch.)

The Horizon will soon be produced in small quantities for beta-test. The first model, designed as a "stake in the ground" for EVs, will be a 12 V 112 Amp-hr unit, weighing 27 kg (59.4 lbs) in the shape of an elongated block with dimensions of 30" x 5" x 5". This battery will be a sealed, maintenance-free unit with a life of 800 deep discharge cycles as opposed to 400 for lead-acid. The initial cost will be \$200/kWhr, dropping to \$150/kWhr when Electrosorce and BDM start full volume production. An EV pack will cost between \$2.5K - 5.0 K, depending on the EV. Norvik now makes a 3.5 kVA onboard charger for EVs at a cost between \$2-\$4K.

More good news came from Steve Visco of Lawrence Berkeley Labs and PolyPlus Corporation. The PolyPlus lithium-polymer battery appears to be able to pack 5X more energy into a given weight than the standard lead-acid cell. At this point, Visco says, the technology is about 2 years out. The present customer cost is \$136/kWhr, but substituting sodium for lithium could drop the price to \$40/kWhr. Visco feels that an EV pack will probably be in the \$3K area. There does not appear to be any incompatibility between the Norvik MinutCharger fast-charge technology and the PolyPlus design, but the two

EAA member Paul Brasch presented his Brasch Labs Energy Monitor DC Watthour Meter as a precision instrument for measuring energy flow in and out of a battery pack. By using a toroidal ferrite Hall-effect sensor around a battery cable anywhere in the pack, the Energy Monitor performs non-contact current sensing. Combined with continuous measurement of pack voltage, the instrument provides an LED readout of true power and energy consumed. The device comes in the form of two PC boards; the sense module that slides onto the battery cable and a display module that mounts on the dash. By pre-setting the known capacity of the car in units roughly equivalent to kWhrs, the unit acts as a high precision fuel gage, down-counting as the vehicle goes along the road. The instrument was used in this way in the APS Phoenix Solar and Electric 500 and has also been tested in an EV used both as a daily driver and for 80-90 mile trips.

In the Thursday afternoon EV Panel, Steve Post of Curtis-PMC announced that that his company is stepping up to the line with a 144 V version of the ubiquitous 1221-B controller. He didn't say anything about boosting the amperage from 400, but a number of EV owners would probably like to see a unit that could handle 600, 800 or even 1000 amps. We'll need big heatsinks on that baby. Is it coming soon, Steve?

All of these developments give a big boost to EVs. Cars that are already good

"WESCON's Board of Directors and IEEE have asked EAA to participate on an ongoing-basis."

have not been as closely examined. (For more detail on the PolyPlus Li-Poly technology, see "Discovered, the Perfect EV Battery" by Paul Brasch, EAA Reprint #1.)

performers with standard lead-acids, solid-state controllers and on-board transformerless chargers would more than hold their own against the gas bug-

Continued on page 10

Chapters

Continued from page 1

Phoenix AZ

William Sowle reports that his chapter is actually renting out EVs to its members (what a good idea!). They have three cars in their rental pool and recently added an '82 Jet Industries Escort. For

The Peninsula Chapter is also the home of two regular CE contributors: Ruth M. Shipley, who writes this column, and Clare L. Bell, managing editor of CE. (My special thanks go to Clare for helping me collect all of this news!) Clare recently moved to San Francisco from

For \$60/month and their own insurance, Phoenix Chapter members can test-drive an EV for 6 months.

\$60/month and their own insurance, members can test drive an EV for six months. The chapter has its own P.O. box, voicemail service and newsletter.

Chico CA

Chico is brand new and hasn't yet had a meeting. Contact Jack Higgins at 916-891-6331 for information. Are you the same person who helped Chuck Olsen convert the 1965 Saab Model 96 that was on display? If so, Chico has one of the pioneers. Good start, Jack.

San Francisco Peninsula CA

The Peninsula Chapter exhibited EVs in many local parades and festivals this year, including Earth Day, Pacific Coast Dream Machines, San Francisco Carnival and the San Mateo County Fair. In fact, the chapter hosted the EV exhibit at Carnival, which was attended by an estimated 500,000 people.

Mike Slominski has put together a nice assortment of fund-raisers available to all chapters, including T-shirts, mugs, key tags, and name badges. The chapter has a new member/visitor packet and has submitted several ideas to the national Board, including a Spanish language version of the membership form and samples of form letters that can be sent to legislators.

San Jose, and the Peninsula Chapter welcomes her!

San Jose CA

The San Jose chapter became very active after the Persian Gulf War. Don Gillis recently sold his Jet Escort and bought a Porsche 914, which he is upgrading. Clare Bell bought Ron Rasmussen's Porsche 914, which was featured in the May-June CE (p.6), and has exhibited it in at least one parade. She also has a converted VW Baja and is converting another 914. Bruce Brooks has an electric Karmann Ghia. Other members have a converted Bradley, an electric Ford Pinto, several bicycles, a moped and a 3-wheel solar car. Chapter members participated in several Events, including the San Jose Eco Expo, San Francisco Carnival, Palo Alto Concours d'Elegance, Ben Lomond Concours and various rallies and energy fairs. Don Gillis, Bruce Brooks and Clare Bell exhibited their cars on Ron Montana's public access TV show, "Creative Encounters."

Sacramento CA

As of July, 1993, the Sacramento chapter had 160 members, and they often have 70-80 at their meetings. Chapter President, Richard Minner, is co-editor of *Why Wait for Detroit?* They produce a spiffy

newsletter and hold their meetings at the local utility, the Sacramento Municipal Utility District (SMUD). SMUD is very active in the alternative vehicle movement. The utility has an Electric Transportation Department and plans to begin leasing Mini-Elcs soon. Members were able to test drive this vehicle at their March meeting. Sacramento is also the home of Drive Electric, one of two EV dealerships in Northern California.

The chapter often invites speakers to its meetings. During 1993, members heard about flywheels, fuel cells, EV infrastructure design and R&D at SMUD. At one meeting, two Swiss EV companies, Esoro and Horlacher, discussed their R&D efforts with members. Both companies produce composite parts for railway cars and believe that composites are the future body material for EVs. They showed some very impressive videos of crash tests done on composite cars. After the meeting, they allowed members to test drive vehicles (all the while collecting "marketing data").

At least a dozen members have operating EVs. Two members are able to recharge their EVs at work. Dennis Merritt and his wife Pam recharge at the Stephen P. Teale Data Center and Ric Prestel recharges at McClellan AFB. Member Norman Gilbert was the first resident in Sacramento to have a time-of-use meter installed at his house. This allows him to recharge his car at off-peak times for 4.1 cents/kWh. He estimates it costs him \$.60 to recharge his Isuzu pickup. Dr. Dan Field drives his EV daily to Kaiser Hospital in Sacramento.

Several members participated in the first Clean Air Commute in May, 1993. It began at the state Capitol and ended at the Whole Earth Festival in Davis.

San Diego CA

Ron Larrea says his chapter has only been in existence for two years, but has

Continued on page 7

Chapters

Continued from page 6

grown substantially in the past year. They now have 80-90 members, and usually have a turnout of 30-40 at their meetings. He says they sometimes add five new members at their meetings. In 1993, they participated in Earth Day and the San Diego Car Show. Both Ron and Gary Jackson have been featured on the local news — Gary after his win at Phoenix. Ron is converting an Opel GT and Jeremy Phillips is converting a VW pickup.

The chapter often tries to invite speakers to their meetings. At their August meeting, Dr. Ed Baldwin described a ceramic capacitor he has designed that could eventually replace batteries. Dr. Baldwin said it contains a proprietary dielectric and could store 500 kJoules of power. It would weigh 67 kg and charge at 5000 volts. At their September meeting, urban planner Michael Miller showed his team's award-winning plan of an EV community. They used the city of El Cajon, and demonstrated how the city could incorporate solar charging stations, EV lanes and other EV infrastructure. The contest, called "The Electric Vehicle and the American Community", was sponsored by GM.

Silicon Valley CA

SV is the founding EAA Chapter. This year, Paul Brasch turned over leadership to Stan Skokan, who also masterminded the EVents at WESCON '93. Nevertheless, Silicon Valley members also managed to participate in EVents including the 1993 APS Phoenix Solar and Electric 500, two San Jose Velodrome Electrathon races, parades in Mountain View and Redwood City, Pacific Coast Dream Machines (Pacifica), the prestigious Palo Alto Stanford (by invitation only) Concours d'Elegance, San Francisco Carnival, the East Bay Chapter's Haward Art and Wine Festival EV Rally, the San Jose Eco Expo and other ecology fairs, demos and EVents too numerous to list.

The crowning achievement this year was the EV Showcase and Technical Sessions. This was an absolutely monstrous job taken on by Stan Skokan, with able help from Paul Brasch and East Bay Chapter President Anna Cornell. Stan did an absolutely stupendous job (WESCON wants us back) and CE hopes that he was rewarded in part by the accolades and the banquets (how much rubber chicken and Roloids did you have to swallow, Stan?) We only hope that next year's WESCON EV organizer can follow in his shoes (He's NOT going to do it for '94).

Florida

Steve McCrea says the South Florida chapter has focused all its time and money on the annual Sun Rally hosted by the Florida Solar Energy Center. The next Rally will be in January, 1994. Interested members should contact Bill Young at 407-269-4609 or 407-783-0300. The chapter is also working on the 3rd edition of *Why Wait for Detroit?*, which Steve says he will begin compiling in June 1994. Keep sending him contributions! His address is 1402 East Las Olas Blvd. #904, Ft. Lauderdale FL 33301. They will also begin compiling an EV Encyclopedia in December 1994.

South Florida is working on the 3rd edition of "Why Wait for Detroit?"

New England MA

This is Bob Batson's chapter, and as readers of CE know, Bob ran for the EAA Board of Directors and won a seat. Now we'll have truly national representation and more incentive to get out there for the East Coast EVents. Together Bob Batson and Nancy Hazard of the NorthEast Sustainable Energy Associa-

tion (NESEA) make the prestigious Solar and Electric Vehicle Symposium happen each year. As well as being the founder and president of EAA New England, Bob runs Electric Vehicles of America, Inc. Maynard, MA.

EVA has been an EV component supplier since 1988. In April 1992, EVA initiated marketing activities aimed toward electric utilities and commercial businesses. EVA specializes in small truck EV conversions. EVA's conversion facility in Maynard has of three garage bays, retail store and offices. EVA has the capability to convert approximately 100 vehicles/year.

Between publications, media publicity and awards, Bob has a whole chapter's worth of accomplishments all by himself, but there are others. Who else in New England has been active? Inquiring minds at CE need to know!

North Bay Area CA

The North Bay chapter is small, but its five active members drive EVs daily or on a regular basis. In the past year they have toured Solar Electric (an EV dealership in Northern California), held picnics and converted cars. Preston McCoy is selling his 850 Spyder Fiat

conversion and plans to convert a Honda Civic or VW Rabbit. Andy Clary is converting a Chevette. They occasionally hold conversion workshops. They often invite speakers to their meetings and have heard about fuel cells, EV instrumentation, controllers and chargers.

Continued on page 12

Paul Brasch Wins Keith Crock Award

by Clare Bell and Bruce Brooks



Photo credit: Schneeveis/Cornell

Paul Brasch as Master of Ceremonies at Wescon '93.

At the WESCON '93 EV Panel, Paul Brasch was presented with the Keith Crock Award for Technical Excellence for his development of the Brasch Labs DC Watthour Meter Energy Monitor. In his acceptance speech, Paul said that the award meant a lot to him, as he had known Keith Crock as a personal friend as well as an EV pioneer.

Until now, most hobbyist cars have had only amp and volt meters, which haven't met the real need. Paul described a reliable energy flow measurement instrument that really tells the driver how much is going in and out of the batteries (see WESCON '93 article for technical details.)

Not only did Paul contribute his own engineering know-how to EVs, he helped catalyze developments that are now yielding real EV hardware. As editor/reporter for *Current EVents*, he covered the first APS Solar and Electric 500 race. He spread the word about Goodyear's low rolling resistance tires and poked the company into selling to the EV market.

The Electrosources Horizon Battery, the PolyPlus and Valence lithium-polymer technology, and the Norvik MinutCharger were new to the WESCON '93 EV Technical Session attendees who were not EAA members. *Current EVents* readers, however, have

already known about them for one or two years.

At a time when 48 and 72 V packs were considered adequate for road vehicles, Paul drove a 120V EV hotrod and badgered CE's readers into increasing system voltages. The result is that 96V is considered minimum for today's EVs and many cars have 108, 120, 144 or higher. In response, the traction battery industry is now introducing a true 12 V deepcycle EV battery.

As owner and driver of VOLTS, he demonstrated what he preached. Lightweight, high voltage and powerful, VOLTS regularly smoked rubber, struck terror into the hearts of EV rally competitors and raised the eyebrows of many a gas buggy driver who saw only the disappearing taillights. EVs didn't DO that. Certainly not in the late 70s and mid-80s.

Paul Brasch has made a tremendous impact on the growing EV industry. We salute him as the 1993 Keith Crock Award recipient, not only for his technical accomplishments, but his tenacity for tackling the hard tasks and getting the job done.

Paul Brasch An Ongoing Appreciation

By Clare Bell and Bruce Brooks

Paul Brasch is stepping away from his previous roles as Board Member and *Current EVents* Editor to put his talent, determination and expertise to work in new areas of the EV field. Paul has literally devoted his whole adult life to promoting EVs. Of the 26 years that EAA has existed, he has been involved for 23. He has served as Silicon Valley's president or other officer so many times that we've lost track.

The new Board of Directors has 9 new Board members representing 9 different chapters. Now the Board reflects EAA's true diversity and can act to serve all EAA members and chapters equally, as Paul wanted. Now hopefully with EAA back on track, he can focus his engineering abilities and his incredible capacity for assimilation and detail on new challenges.

Paul is a networker par excellence, with many contacts in the EV field. His name and his reputation are well-known in the industry. While handling the newsletter, Paul also made his home office a clearinghouse for inquiries and cross-flow of EV information.

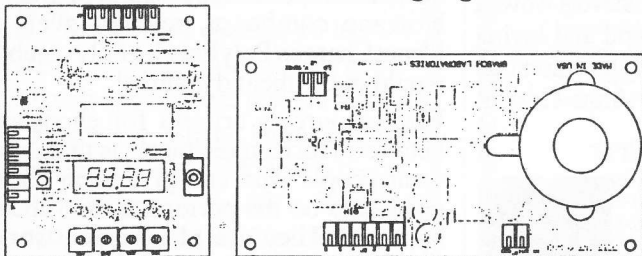
With his insight into EV technology and forceful articles and editorials, Paul re-shaped the Electric Auto Association newsletter, taking it from a hobby club newsletter to a serious EV industry resource. Working single-handedly at first, with ferocious dedication, he got the publication up from a 2-page photocopied summary of news and editorials to an 8-page offset magazine. With John Bronen, he turned it into *Current EVents*. Together with Sue Hollis of PCTEK, Paul gave CE a professional no-nonsense look and solid, yet exciting content.

Under Paul's editorship, CE reached a level of technical excellence and incisive journalism that has brought both praise and controversy. Many individuals have contributed to the making of *Current EVents*, but it would not have existed without its soul, center and driving force, Paul Brasch.

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CE Thanks the Munros

Hal and June Munro have handled the membership rolls for the past 3 year since they took the job over from Clarence Ellers. June also generated labels, sorted, stacked and delivered the newsletter to the post office during the last two years. Both Hal & June have also contributed their talents on last year's Expo/Symposium.

Hal Munro is a member of the Peninsula chapter and has also served in chapter offices. June handles all membership data, which includes new membership, address changes and all renewals. She also provides CE and board members with database reports as needed.

CE would like to give the Munros a hand for their efforts in maintaining and updating the membership database as well as providing accurate and timely mailing labels for the newsletter.

Thanks to the Munros for their tireless efforts to EAA.

—CB

Charge in Palo Alto?

The city of Palo Alto, CA has operated its own electric utility for almost 100 years.

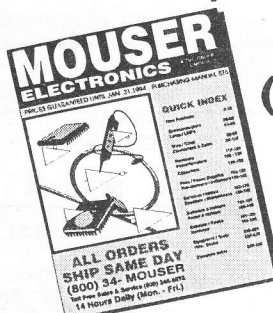
Several years ago, the electric utility owned and operated several EVs. Mike Beanland, the Manager of Electrical Engineering for the utility and an EAA member, wants to determine if there is any interest in EV charging stations being installed in public parking lots. He is considering dedicated sharging stations in "reserved" lots (these spaces are rented) and "pay as you go" charging stations in 2-hour lots. He would like ideas from EAA members on where to place stations, what level of service they should provide and how to bill for the electricity used. If you are interested in providing him your ideas, call him at (415) 329-2365. His fax is (415) 329-2608. Or write:

Mike Beanland, City of Palo Alto, Box 10250
Palo Alto, CA 94303.

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EAA Scoops Press, EV Scoops Cornell

WESCON garnered EAA some good ink, not to mention audio and video tape. During the Media EVent on Tuesday Sept 27, Bob Schneeveis wowed the press with an agile and speedy SnoWhite tearing around and laying rubber in the bus lane in front of Moscone Center. He then piloted the infamous leaning electric wheelbarrow, swooping down upon EV coordinator Anna Cornell and carting her around at dizzying speed while cameras clicked.

Oakland Tribune reporter Keiko Ohnuma went for a quick spin around the Moscone Center blocks in the #13 Bell/Rassmussen 914 Porsche. She was impressed enough that the Trib splashed a picture of the car (in full race dress) on the front of its Thursday Business section. Also included was an inset photo of the well-known gorgeous red Cornell Ghia, displaying "The Future is Electric".



Photo credit: Bob Schneeveis/Scott Cornell
The wheelbarrow that "8" Cornell.

On Wednesday KQED-TV 9 interviewed Anna, who corralled the EAA chapter and race cars for WESCON as well as getting her own Buzz Bunny II (CMEHOP2) completed and on the road for the show. They interviewed other EV exhibitors and filmed cars. KQED Radio (NPR) also had some soundbites. KGO Radio talk show host Jim Webber interviewed Stan Skokan and other EAA members in his 6:50AM Wednesday commute-hour timeslot. Other coverage appeared in the Contra Costa and Tri-Valley Herald newspapers.

A more subtle, but perhaps more powerful indication that major movers and shakers are taking real notice of EAA is that we did not go to the show, asking to exhibit our cars. This time, they came to us.

—CB



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Wescon Continued from page 5

gies if equipped with any one of these new developments. A MinutCharger/Horizon combo or perhaps even a MinutCharger/PolyPlus Li-Poly combo would make them dynamite!

Electrosources' criteria for choosing beta-test Horizon recipients is that they want people who can give them back good data on the performance of their batteries. They are planning to work mostly with utilities, large companies and fleets, but Bill Craven said that they would not exclude individuals, especially those who can keep good logbooks.

More Wescon next issue, including detailed reports on the EV Showcase, Technical Session, Media EVent and EV Panel.—CB

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Your source for converting scooters, mini-bikes, and go-carts to electric, also **ELECTRATHON** racer components and information.

RUSSCO New 144V Heater

Russco Electro-Mechanical Engineering of self-contained hydronic electric ve heaters rated at 1.5 KW and 2 KW in 96-120 volt applications just introduced a heater for higher voltage EV's. Rated at 2 KW, the Model H-20-144 is for higher voltage EV's. Rated at 2 KW, the Model H-20-144 is suitable for systems of 120-144 volts.

Units are available from stock. For further information, contact Russco Electro-Mechanical Engineering, P.O. Box 3761, Santa Rosa, CA, 95402 or call (707) 542-4151.

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- Coolant temp. rise, H-15, 1/2°F/sec
- Air temp. rise, H-15, 70°F
- Size 4" D x 8 1/2" H x 16" L
- Weight - 6 1/4 lb

Model H-15
\$345

CALL or WRITE FOR DETAILS

SAFETY FEATURES

- Double fused
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Model H-20
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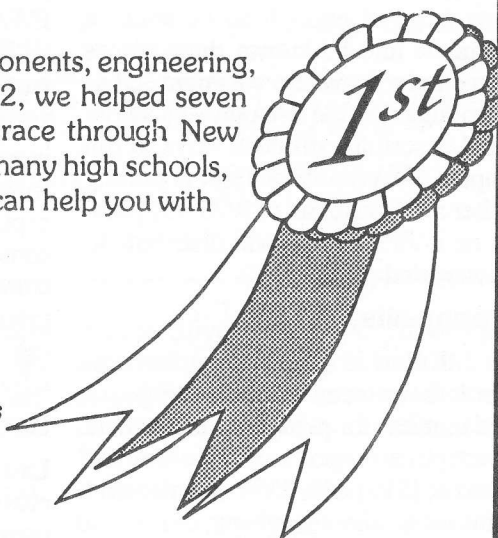
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Chapters

Continued from page 7

Other meetings covered mechanical battery research, battery safety, Pacific Gas & Electric's Clean Air program, and the XA-100 Hybrid EV project. At one meeting, East Bay member Scott Cornell related his experience as a participant

matched ARPA's funding to create an \$8M budget for the 2-year project.

Initial projects include supplying a Southern Indiana military research center with 14 electric Chevy S-10 pickups and a hybrid shuttlebus. Two such

S-10 pickups, Escorts and Geo Metros. Their address (hopefully, they'll correct me if I'm wrong) is P.O. Box 1025 Monroe, NC 28111, (704) 283-1025. Members of the North Carolina chapter have been awarded a contract to convert a Ford Escort station wagon for the Governor of South Carolina. For their September meeting, they toured a local college that has received Federal funds to offer a two-year EV technician training program.

Albuquerque NM

Dale Riddle reports that the newly-formed Albuquerque chapter will plan a membership drive. Seven members attended an organizational meeting; four have EVs. Dale and Gary Henry took their EVs to a "Cruise Night" at a local drive-in, and were kept very busy answering questions.

Las Cruces NM

Guy Floyd, where are you? My attempts to reach you by mail and phone were unsuccessful, and Directory Assistance told me you have an unlisted number! Give us a ring sometime and let us know how you're doing!

Nevada

The Nevada chapter has 50 members and meets in Las Vegas, often in conjunction with IEEE meetings. Gail Lucas drives a Citicar and other members own a Bradley, a Maserati clone, a Fiero and an Electromotors Datsun car and truck.

Ohio

Pete Gall says he hasn't gotten many phone calls from potential members because his phone number in the EAA Chapter Listing in the Sept-Oct CE was incorrect. Sorry about that, Pete! The correct number is 513-683-3122.

Members of the North Carolina Chapter have been awarded a contract to convert a Ford Escort for the Governor of South Carolina.

at the APS race in Phoenix. Scott and Preston will represent EAA in an Electrathon Vehicle Builders workshop in October in Santa Rosa, CA. We'll look forward to hearing their report!

Incidentally, Preston thinks Current Events is good enough to be sold on newsstands and he knows three places in his community where we might sell it! He also suggests that EAA publish a brief manual describing efficient ways to run a chapter. He says his chapter is putting together a 12-page (as of 9/23/93) pamphlet on EVs that they will distribute to any interested parties.

Indianapolis, IN

Peter J. Kuhns is organizing a newsletter for Indiana members and setting up a phone number for prospective members and corporate sponsors. He can be reached at (317) 253-6575. He also sent the following announcement:

Indianapolis was chosen in August as headquarters for ELECTRICORE, a new electric car research group.

The Advanced Research Projects Agency (ARPA), the former hi-tech funding arm of the Department of Defense awarded \$4M to ELECTRICORE in June. The state of Indiana committed \$250K. Other states and over a dozen companies

shuttlebuses will also be deployed in Indianapolis and Chattanooga, Tennessee.

Although Indiana is famous for automobile developments honed by Indianapolis 500 racing, EV research has been neglected. Will this new consortium affect EAA members? Not at first. ELECTRICORE's impact at the consumer level will not be felt for some time. EAA-Indiana will track how this money is spent and what technology emerges from it. Perhaps new inventions or concepts will benefit EAA members. With some work, budding inventors and small companies may be able to get research grants. Certainly the hoopla surrounding ELECTRICORE will encourage EAA.

Southeastern EVA NC

Lawson Huntley says the newly-formed chapter in North Carolina has been featured in local papers. They have 10-15 active members out of 40 total, which includes two women. Five have EVs, two of which were built in the past eight months. They include two Chevy S-10 trucks, a Nissan, a Honda and a Citicar. Lawson owns a business called Bearskin Technology Group, which decided in 1990 to switch from chrome-plating solar panels to researching and developing EVs. The company sells converted Chevy

Continued on page 13

Chapters

Continued from page 12

Utah

The Utah chapter is small, with only six active members. They work mostly on Electrathon vehicles and Harry Van Soolen wants to have a solar and Electric Lightning class entry in the next APS race. He says he is helping BAT Technology ship electric VW Beetles to Mexico. He also mentioned that the mayor of Salt Lake City drives an EV.

Virginia

Jim Robb reports that the Central Virginia chapter is still forming, but he has been very active all by himself! He and a co-worker at the Science Museum of Virginia designed and built a 1.5 kW photovoltaic charging station at the Museum which charges the converted Ford Escort station wagon used as a staff car. Jim also uses a converted VW Beetle to commute back and forth to work. He and the cars have been featured twice this year in the Richmond Times-Dispatch. He also exhibited the Escort in the Washington DC Cherry Blossom Parade, two Earth Day celebrations, and the Virginia State Fair. Attendance at these affairs ranged from 20,000 to 400,000. On the way to the Cherry Blossom Parade, he stopped at high schools and colleges to recharge and show the car to interested students and faculty. He has even showed the Escort to 25 legislators in the Virginia General Assembly. The Richmond Chapter may have a bright future, since the local utility, Virginia Power, has five EVs. In addition, the state of Virginia offers a 10% state income tax deduction for EVs that qualify for the Federal deduction. Jim says the Virginia DMV will offer "Clean Fuel Vehicle" license plates to qualified EVs beginning in January 1994. He estimates there are 12 EVs in the Richmond area in varying degrees of completion. Hopefully, the owners will join him in the first chapter meeting slated to take place in October.

Seattle WA

Ray Nadreau says some of the 100 members of the Seattle EVA travel 100 miles to attend meetings. They became interested in converting Porsche 914s after reading about Ron Rasmussen's car in CE. One member's Porsche 914 was stolen—perhaps an unfortunate indication that EVs are slowly gaining acceptance in communities! The car was recovered but was damaged beyond repair. Some members converted a 914 for a woman who was so sensitive to gasoline fumes she was unable to drive. SEVA members have discovered that they can extend their range by heating the batteries during recharging.

Olympic Peninsula WA

NOPEC has 30 members and 12 EVs on the road, including Jet Escorts, pickups and a Jet Omni. Burton Gabriel says he is going to Nepal to convert an EV

from Goodyear and special brushes from Morganite in NC. He expects to do "some impressive times at the strip."

Member Dave Cloud has been converting cars for two years. He has converted a Fiat X-19 and several Porsche 914s (what is the fascination with these Porsches?). The Fiat is very light once stripped and gains only 50 lbs after the conversion. Its light weight gives it a 50 mile range on 12v deep cycle batteries. He can convert the 914s quickly because he uses a template to create some of the components. He is helped by Olaf Sundin, who handles the business end of conversions. Dave and his wife hold the record for Electrathons. They are planning a contest with Tri-muturs, which are street-legal Electrathon vehicles built with motorcycle parts.

NOPEC members are also involved in electric boat races. Members came in three of the top six places in a boat mara-

Virginia DMV will offer "Clean Fuel Vehicle" license plates to qualified EVs beginning in January 1994.

for the Nepalese government and teach the skills to six Nepalese mechanics. He will be converting Tempos, which are made by a company called Vickrams and used widely in China. Burton exhibited at a car show at the Seattle King Dome.

Students at Port Townsend High School assisted NOPEC members in converting the Mazda RX7 Roderick Irwin drove to first place in the Electric Stock C feature at Phoenix. Roderick is preparing the RX7 for drag racing. He says he's dumping 300 volts directly into the 9" Advanced D.C. motor via Kilovac contactors. He also uses a drag race clutch and pressure plate from Racing Beat of Anaheim, CA, new drag slicks

thon on Silver Lake, WA. The day after that race, member Michael Bittman placed first in a six-hour solar boat marathon. Member Miguel Denker placed fourth. Roderick reports that Burton set a new American Power Boat Association record in July. Upon his return from Nepal, Burton hopes to beat the world speed record for an electric boat, which currently stands at 50.825 mph. The chapter has been featured in Sea Magazine, Soundings and Home Power Magazine.

Continued on page 14

Letters to the Editor

Followup on "DMV Alert"

Dear Ms. Bell:

I am writing in response to your "DMV Alert" article in the Sept/Oct 1993 newsletter. You mentioned that EV Owners need to be made aware of the rules in the California Vehicle Code that may affect them, especially where vehicle weight is a factor. Enclosed please find a copy of the relevant sections of the Vehicle Code.

Apparently a pickup truck is considered a "commercial vehicle because it is "designed...primarily for the transportation of property." As you can see, there is a substantial jump in fees for "commercial" vehicles that weigh over 6,000 lbs. However, as an Opinion of the Attorney General (note 7) suggests, EV owners may argue that an otherwise "commercial" vehicle is exempt if used solely for private transportation. Considering the general popularity of pickups as private vehicles, this is a good argument. The DMV may not agree easily, though, because of the loss of revenue.

I hope you find the above information helpful. Goldschein and Gomez is a new EAA member and an EAA of Sacramento member since April.

Perry Goldschein, Goldschein and Gomez, Alternative Energy Consultants, 221 G Street, Davis, CA 95616, Tel./ Fax 916/753-8057

Exerpts from Vehicle Code

260 Commercial vehicle

(a) A "commercial vehicle" is a vehicle of a type required to be registered under this code used or maintained for the transportation of persons for hire, compensation or profit, or designed, used or maintained primarily for the transportation of property.

(b) passenger vehicles which are not used for the transportation of persons for hire, compensation or profit and housecars are not commercial vehicles.

9400 Weight Fees, Note 7

A vehicle subject to registration and designed to transport property is exempt from additional weight fees, only if it is used exclusively for the transportation of passengers and such items of personality that are normally incidental to the transportation of passengers. 27 Ops. Attny.Gen. 156.

9400 Weight fees

In addition to any other registration fee, there shall be paid the fees set forth in this section for the registration of commercial vehicles...

(a) For any electric vehicle designed, used of maintained as described in this section, (i.e. commercial or pickup with camper attached, see below —CB) fees shall be paid for registration according to the following schedule:

Unladen Wt	Fees* (as of 7/1/94)
Less than 6000 lbs	\$87
6,000 - >10,000	266
10,000 or more	358

*(Note: Fees less 6/6/93-7/1/94)

9400 Note on Campers

Whenever a camper is temporarily attached to a motor vehicle designed to transport property, the motor vehicle shall be subject to the fees imposed by this section. The camper shall be deemed to be a load, and fees imposed by this section upon the motor vehicle shall be based upon the unladen weight of the motor vehicle, exclusive of the camper.

9400 Sect. 6 Cargo of exempt vehicles

Items of property such as motorcycles, outboard motors, boats, etc., may not be carried in vehicles designed to transport property which had been exempted from the weight fees imposed by this section.

Chapters

Continued from page 13

Affiliated EV Organizations

Denver EV Council (CO)

DEVC puts out a 2-page newsletter jam-packed with technical and EVent info. Newsletter contributor Tim Cutforth attended the Aug. 28 race preparation seminar for APS S/E 500 '94 given by Solar and Electric Racing Association in Phoenix. The Bob Bondurant race driving course on Aug 27 got rained on all day, according to Carl Cutforth, but was probably still invaluable. Did anyone else take the Bondurant course and if so, can they do a report for CE?

DEVC member John Devitt attended the 105th Battery Council International and reports that GM Manager for EVs Kenneth Baker took a drive in the Impact EV at their Phoenix proving grounds. Baker got stopped by a safety monitor, "who was delighted to find that she had just pulled over her first EV to complain about speed."

At the conference, GM announced improvements to the Impact. Impact 4 will have a single 102 KW (136 hp) Delco-Remy motor on the front axle, replacing the motors in each wheel. The battery will be a Delco-Remy recombinant lead acid with a cost reduction of 37% and a weight reduction of 10%. 26 of these 12 volt units comprise the 495 kg pack, storing 17.5 kWhr (up from 13 kWhr). This gives over 100 miles usable normal driving capability. The drivetrain and Delco-Hughes inverter are down in number of parts, weight and cost.

The most-quotable Mr. Baker got off another one at the conference, including his comparison of three viable zero-emission vehicles; the horse, the bicycle and rollerblades. DEVC adds that "We're not so sure about the horse."

DEVC president is Carl Lawrence, (303) 444-0569. DEVC hosts the annual Pike's Peak Challenge.

Continued on page 20

Continued on page 20

Election Results

EAA held its 1993 Annual Members Meeting at the San Francisco WESCON, Thursday Sept 30, 1993. The meeting began at 4:00 in Rm. 220, Moscone Center South. As per the Board's decision at the previous meeting, the number of seats was expanded to eleven. Two Board members, Lee and Stan, had not served full terms and did not need to run this year, so there were 9 positions to be filled. Final business was taken care of by the outgoing Board. Retiring Board Chair Bill Palmer was recognized for his service to EAA and the Board, as was former Current Events Editor and Communications Committee Chair Paul Brasch.

All proxies were brought to the meeting in sealed envelopes and tallied by Election Committee members Gordon Schaeffer and Peter Barnes. In-person votes were folded over and sealed before collection. Results were announced by the Election Committee. The number of members voting met the 5% California legal requirement for non-profits. It was up from the last election, but still low.

When the results were complete, the newly elected Directors met in closed session with outgoing Chair Bill Palmer to choose officers and begin transferring responsibility to the new Board. Stan Skokan was requested to act as Chair until one of the new members felt experienced enough to volunteer for the position. He agreed to serve until then.

Next Board Meeting

The next Board of Directors meeting will be held on Sat. Oct. 30 at 1020 Parkwood Way (Stan Skokan's condo) in Redwood City, CA. We urge all newly elected non-local members of the Board to attend in person if at all possible. If the problem is travel expenses, call and discuss it. This first meeting will be to get acquainted and share thoughts about where EAA should be going. We do not expect to be transacting any heavy-duty Board business (unless an urgent need arises). We

will have a phone line so that absent directors can participate by teleconferencing. Call Stan at (415) 366-0643 or fax at (415) 366-0137.

The next task is to tackle the long-term logistical challenge of getting everyone together for meetings, either in-person or by electronic presence. Ideas that have been suggested include setting up special inexpensive radio-telephone links between cities (Scott Cornell may be able to help us out.) or using one of the various computer services or BBs plus Internet to have on-line interchanges.

Since many Board members routinely attend the large EEvents, one way to minimize travel expenses would be to have certain monthly meetings in the cities where the shows are happening. For instance, the Board could meet in Phoenix AZ on a March date roughly coinciding with the APS Solar and Electric 500, in Seattle in November on a date close to the King Dome Auto Show, in Denver for the Pike's Peak Challenge, in Boston in October for NESEA's S/EV Conference, etc. The downside is that the meeting dates would have to be irregular and some of these shows happen in back-to-back months.

Do CE's readers have any ideas? Now that we actually have a nationally represented Board, we have to solve this dilemma.

—CB

ANNOUNCEMENT

Anyone who has received a check from EAA, please cash it BEFORE DEC. 1ST. As part of the transition from the old Board to the new, the existing account will be closed and a new one opened. Checks on the existing account become void after December 1st.

Board of Directors (Oct. 1993)

Bob Batson

Electric Vehicles of America, Inc.
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Maynard, MA 01754-0059
(508) 897-6740

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(408) 225-6403

Harold Bell

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Bruce Brooks

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Stan Skokan

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Redwood City, CA 94060
(415) 366-0643

Mike Slominski

(Treasurer)
Mike's Auto Care
951 So. Claremont
San Mateo, CA 94402
(415) 343-8801

EAA Fellow Awards for 1993

by Bob Wing

The '93 EAA Fellow Awards were presented 9/30/93 at the Annual Members Meeting at the San Francisco WESCON, Moscone Center. Recipients are:

John and Lydia Newell, in recognition of co-founding the Electric Auto Association in 1967 and John and Lydia together being Mr. and Mrs EAA by having their home be the communications center for EAA activities. Nominated by Mike Slominski, President, Peninsula Chapter.

William W. Palmer, in recognition of co-founding the EAA in 1967 and in participating in many EAA activities since then. Nominated by Bob Wing, a Director of the EAA Board.

Robert Batson, in recognition as founder of the New England Chapter of the EAA and for his contributions in bringing the benefits of EVs before the public, government agencies and private industry. Nominated by Steve McCrea, President, South Florida Chapter

Tony de Bellis, in recognition of his accomplishments in the development of EV controllers, EV heaters, battery chargers and in chapter leadership. Nominated by Preston McCoy, President, North Bay Chapter.

Kenneth W. Koch, in recognition of his pioneering efforts in informing the public of the benefits of EVs and in supplying instructions and conversion kits to get EVs on the road. Nominated by Irv Wiess, founder of Los Angeles EAA

Ed Rannberg, in recognition as an EV pioneer and the range of EV experiments his imagination has been applied to. Nominated by Irv Wiess, Founder of Los Angeles EAA

Bob Wheeler, in recognition of his unique services to the Electric Auto Association in recording on videotape chapter meetings and rallies. Nominated by John Newell, a Director of the EAA Board.

Frank G Willey, in recognition of his invention of the first commercial transistorized solid state controller for EVs and as a veteran of electric propulsion. Nominated by Robert E. May of the Phoenix EAA Chapter

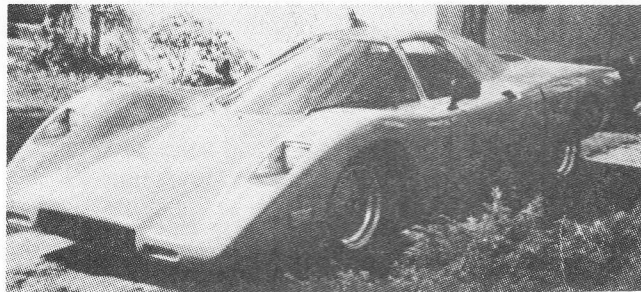
The Fellow Award is to honor those who have made outstanding contributions to the purpose and goals of the EAA.

Congratulations to each of the 1993 EAA Fellows.



Photo credit: Bob Wing

Walter Laski (left) receiving Founder's Award from John Newell at 1982 Annual EAA Meeting.



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News in Brief . . .

Low Cost Curbside Charging Unit for EVs

EHV Corporation of Kansas has developed a commercial curbside charging system at a cost of just \$1980. Most current systems cost approximately \$150,000. Debit cards and change can be used in the system, which looks like a parking meter. The equipment can record information on recharging costs and the number of discharges and recharges.

The company is targeting its sales to utilities, cities, and facilities management at malls, stadiums, and high schools. Already, 40 units have been sold and 10,000 orders could be met each year. James Hague of EHV said the company is planning to offer a charging unit suitable for homes that will cost less than \$200 by this October.

CLEAN FUELS JOURNAL: JULY 1993)

Solectria Shatters Distance Records—1993 Tour de Sol

Solectria Force GT went 180 miles on a single battery charge — 80% farther than last year — to win the American Commuter Category of the 1993 American Tour de Sol. The event took place from May 23-29 and went from Boston, MA to Burlington, VT.

In addition, the Massachusetts Institute of Technology Solar EV Club's Aztec, a prototype lightweight EV, set a new efficiency record of 42 watt hours/mile during the competition.

Advances in EV technology have meant that more and more vehicles are able to average 100 miles or more on a single charge, according to Tour de Sol director Nancy Hazard of NESEA.

"It is clear that electric vehicles are making giant strides each year," she said.

"The American Tour de Sol results are the proof of that."

(ELECTRIC VEHICLE NEWS: June 1993, p.4,5)

Potomac Utility Offers EVs Special Installation, Rate

Residential customers of the Potomac Electric Power Company (PEPCO) in the District of Columbia and Maryland may have a very good deal — if they own an EV.

PEPCO will install a dedicated recharging circuit complete with its own meter. The EV owner must agree to use the dedi-

cated line strictly for charging the EV, allow PEPCO to collect data on power usage and power quality impacts and agree to answer survey questions. After using 400 kilowatt hours a month, the customer will be given a special rate of .623 cents per kilowatt hour for 200 hours. The summer rate for residential customers is 6.723 cents per kilowatt hour, and the winter rate, from November to May is 3.848 cents.

PEPCO has said it will limit the deal to the first 50 residential customers who apply.

(ELECTRIC VEHICLE NEWS: JUNE 1993)

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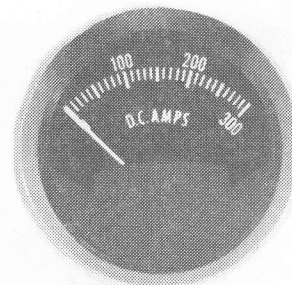
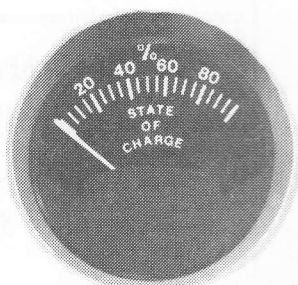
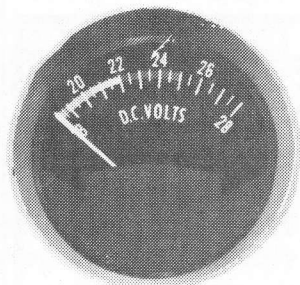
EAA Reprints Available

- ☐ **Discovered: The Perfect EV Battery** (\$2.00)
Facts about the battery that will change the world.
- ☐ **Flywheel Energy Storage** — Dr Richard Post (\$5.00)
Dr. Post updates 1970's thinking and finds a viable solution.
- ☐ **Team Tucson Land Speed Record Plans** — Chuck Lemme (\$5.00)
Includes many power and aerodynamic formulas. A wealth of technical considerations.
- ☐ **EAA XA-100 Hybrid** (Includes all tables) (\$5.00)
Report on the EAA's Hybrid Vehicle Project (all 3 chapters).
- ☐ **Current Events** (September/October 1993) (\$3.00)
- ☐ **Current Events** (July/August 1993) (\$3.00)
- ☐ **Current Events** (May/June 1993) (\$3.00)
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Calendar of Events

- Oct 15-17** Formula Lightnings race at Mesa Marin Raceway at Bakersfield, CA. This is a support race to the NASCAR Winston West 300. Contact Solar and Electric Racing Association (SERA), Tel. (602)-953-6672 Fax. (602)-953-7733.
- Oct. 16** City of Everett Neighborhood Fair. All day display Event in Everett, WA. To display cars or help with a booth, call Olaf Sundin at Seattle Electric Vehicle Association (SEVA), (206) 747-0059. Charging at or close to event can be arranged.
- Oct. 21-23** Sustainable Transportation S/EV 93. NESEA will host the Symposium and Trade Show at the World Trade Center in Boston, MA. This is the one that the Big Three bring cars to! Contact NESEA for more information, (413) 774-6051.
- Oct. 24-28** Power Conversion/Intelligent Motion and Power Quality '93 conference in Irvine, CA. This conference takes a SYSTEM view of EVs, from the utility generator through the charger and battery to the speed controller and motor. Contact John Mungenast at (805) 650-7070 or fax at (805) 650-7054.
- Oct. 30** Terminating Tailpipe Toxins: The Electric Car Solution. EV conference at University of Washington, Seattle, WA. This conference will review EV history, market needs, technology, governmental role and place in the overall transportation system. Contact Polly Dyer or Ellen Briggs (206) 543-1812.
- Nov. 3-7** Seattle International Auto Show and Electric Car Exhibit at the Kingdome, Seattle, WA. Charging at or close to the event can be arranged. For information call Steve Lough at EcoMotion, (206) 524-1351.
- Nov. 7-15** World Solar Challenge 1993 will run in Australia from Darwin to Adelaide. No contact info yet

1994

- March 17-20** APS Solar and Electric 500 at Phoenix International Raceway, Phoenix, AZ. This is the one where the electric Lola broke 100 mph. Formula Lightning, Stocks, High School Division, Solar and others. (See May-June issue of CE for '93 race coverage.) Contact Solar and Electric Racing Association, Tel. (602)-953-6672, fax 953-7733
- April 8-10** 4th Los Angeles Eco Expo, Los Angeles, CA - For information on show or exhibiting, call 818-906-2700 •
- Early May** Lightnings race at Richmond International Raceway, Richmond, VA. High School competition. SERA has not set the exact date yet, but stay tuned. Solar and Electric Racing Association, Tel. (602)-953-6672, fax (602) 953-7733.
- May 21-28** American Tour de Sol - This classic Event will start in New York City and run to Philadelphia, PA. For more information, contact Nancy Hazard, NESEA, 23 Ames ST. Greenfield, MA 31301, Tel. 413-774-6051.
- Early July** Formula Lightning support race to IndyCar Cleveland Grand Prix. Burke Lakefront Airport, Cleveland, OH. Date not set, contact Solar and Electric Racing Association for details. Tel (602) 953-6672, fax (602) 953-7733
- Aug 7-21** Ener-Run III - Rally for alternate-fuel vehicles begins in Hardy, Arkansas, goes through Missouri, Iowa, Wisconsin, Illinois, Michigan, Ohio, Pennsylvania, Indiana, Kentucky, Tennessee, Georgia, Louisiana, and finally (gasp) ends up full circle back in Hardy, Arkansas. Maybe the Clintons should enter a car. For more information, contact Ener-Run, Inc. P.O. Box 665, Hardy, AR 72542, Tel. 501-856-3877

Thanks to SERA, SEVA, NESEA for calendar items. Please send Calendar information for CE to Anna, our Event co-ordinator at (510) 685-7580. Also, if you want electric cars for a show, or are willing to exhibit cars for show, do it through Anna, since things get confusing if more than one person gets in the loop.

Chapters

Continued from page 14

Vancouver Electric Vehicle Association (VEVA)

This Canadian EV group is also very active. One member recently put a newly converted pickup truck on the road. VEVA members are also excited over the Ballard Power Systems/ SAIC Canada Fuel-Cell-powered bus. This vehicle, now being tested by British Columbia Transit, is powered by Ballard's Proton Exchange Membrane (PEM) fuel cells.

Send contributions to:

Ruth M. Shipley 102 Brighton Rd. #3
Pacifica CA 94044 (415) 359-1541
CompuServe 73043,60

Articles submitted by Ruth Shipley with
additions by Clare Bell—CB

Letters

Continued from page 14

My thanks to Perry Goldschein for helping EV owners and advocates become aware of these recent additions to the Vehicle Code.

Goldschein and Gomez is an EV consulting firm providing a full range of services to EV professionals in government, utilities, businesses and non-profit organizations. These include policy and program development, economic and environmental analysis, public education and grant proposals.

It appears that if you have a pickup with a tonneau-type cover on the bed so that you can't haul anything and you don't take it off to carry outboard motors, motorcycles, boats etc, you can register the truck as non-commercial, and thus exempt from weight fees. Or at least you can try that argument with DMV.

Is this a problem in other states? Some EV conversion companies focus heavily on pickup trucks because their heavier suspensions can handle the extra battery weight. Comments?—CB

Member Want Ads

FOR SALE: Award Winning Jet 007. Completely rebuilt with PMC controller, full belly pan, aerodynamic front end, new 6 V batteries, regenerative braking, 120/160 V, DC/DC, many extras ... \$9,800. For video, send \$20 to Tony, 231 Kuss Road, Danville, CA 94526 or call 510-837-5345.

FOR SALE: 1980 Ford (Mazda built), Jet Conversion pick-up. 30 HP G.E. motor, 120 volt system with 20 145 amp/hr. batteries (\$2,000+ worth of body work) Includes canopy. Electric Car, Seattle Co. \$4,500. Call 206-763-2723.

FOR SALE: 1969 Volkswagen, converted to an electric flat bed truck, Kaylor Adapter, 144 V, GE 400 Amp. Motor, Relays, Needs new batteries and Controller to be an effective conversion. \$1,200/b.o. Call 415-665-6220 (Eves. or Weekends).

FOR SALE: Elec. Leopard 1982 Renault Le Car, Deluxe Model, Sun Roof, excellent condition, low miles. Will deliver. \$5,000. Call 206-482-3687.

FOR SALE: Commuter Electric Van, '80, 950 orig. mi. \$5850. Call 305-926-6532.

FOR SALE: Electric Moped, Homebuilt. New 24 V per mag., 3.5 HP motor, new 30A Todd charger on board, new batteries, 30 mph, 40 mi/charge. \$700. Call John at 415-961-6798.

FREE: 1981 Renault LeCar conversion by U.S. Electricar, Runs, but needs some work. Offered to EAA chapter or other non-profit educational organization. Call Will at 415-239-2703 (mornings).

WANTED: Used Electric Roadster, Buggy, or Convertible, 65 mph, 60 mile range, no junk. Robert E. May, 1902 East Karen Drive, Phoenix, AZ 85022-3915.

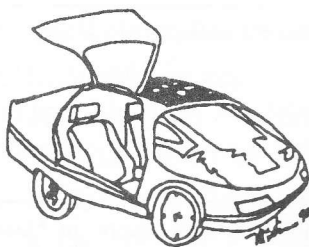
WANTED: Freeway Electric Car, 3-wheel, hard-top, running or restorable. Call Victor, 206-632-2994.

Rates for Want Ads

\$5 for the first 30 words. For each additional word, 25 cents per word.

Want Ads are available to EAA members for the sale of electric vehicles and related products. For display ads for commercial products, please see the Advertising Rates.

Send your want ads to EAA/Want Ads, 18297 Baylor Avenue, Saratoga, CA 95070. The check should be payable to EAA and included with your ad. The EAA is not responsible for the accuracy of ads.



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CURRENT EVENTS is renowned for the latest information on electric transportation. With an ad in **CURRENT EVENTS**, you will reach a target audience of 3,000 members and EV enthusiasts who understand the value and importance of your product.

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		1 issue	3 issues (PREPAID)	6 issues (PREPAID)
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1/4 page	3.65" x 4.75"	\$ 75	\$ 60 ea	\$ 50 ea
1/8 page	2.0" x 3.5"	\$ 60	\$ 40 ea	\$ 40 ea

Ad rates are for black and white copy only. Ads must be submitted camera-ready and to the size listed above. Add \$10 for printing charge for size changes or other special instructions. For each color, please add \$100 per fountain.

Ads prepaid for 3 and 6 issues will be discounted as indicated in the chart above. Full payment for all issues must be received at the initial order. For changes to the ad copy, new camera ready copy must be received before the 1st of each month for the next issue and must be the same size to qualify for the discounted rate.

The deadline for camera-ready copy is due the 1st of the month. The due date for future issues of **Current EVents** is as follows:

January issue	December 1st
February issue	January 1st
March issue	February 1st
April issue	March 1st
May issue	April 1st
June issue	May 1st

Please contact Susan Hollis, Advertising Manager at (408) 374-8605 or by FAX at (408) 374-8750 for additional information or assistance. Camera-ready copy and payment for the ad should be sent to:

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EAA Chapter Listing

Chapter Name	Contact	Phone	Address	Meeting Time	Meeting Location
Phoenix	William Sowle	602-250-2131 602-433-9541	POB 4153, Phoenix, AZ 85067-0153	4th Sat., 9am-noon	Arizona Public Service, 400 N. 5th Street, Phoenix
Desert Chargers	William Hoopes	619-346-4280	72-678 Pitahaya Street, Palm Desert, CA 92260	Saturday	College of the Desert
East Bay	Anna Cornell	510-685-7580	60 Alan Drive, Pleasant Hill, CA 94523-1902	2nd Sat./monthly, 9:30-noon	PG&E Service Center, 4801 Oakport Street, Oakland
Los Angeles	Irv L. Wiess	818-841-5994	2034 N. Brighton "C", Burbank, CA 91504	1st Sat./monthly, 11am-1pm	Pasadena City College, 1507 E. Colorado Blvd, Rm E220, Pasadena
North Bay Electric Vehicle Assoc.	Preston McCoy	415-499-0601	750 Pine Lane, San Rafael, CA 94903	2nd Sat. monthly 9:45 am-noon	PG&E Business Center, 111 Stony Circle, Santa Rosa
Sacramento (EAAS)	Richard Minner	916-545-5524	5201 Dover, Sacramento, CA 95819-3824	4th Saturday, 10am-noon	S.M.U.D. Headquarters, 6201 S Street, between 59th and 65th Avenue
San Jose EAA	Don Gillis	408-225-5446	5820 Herma, San Jose, CA 95123	2nd Sat./monthly, 10am-noon	1592 Jacob, near Meridian, San Jose
Silicon Valley	Stan Skokan	415-366-0643	1020 Parkwood Way, Redwood City, CA 94060	3rd Sat./monthly, 10am-1pm	HP Santa Clara facility, Stevens Creek at Lawrence Expressway, Santa Clara
Peninsula	Mike Slominiski	415-343-8801	951 S. Claremont St, San Mateo, CA 94402	1st Sat./monthly, 10am-noon	San Bruno Public Library, downstairs
San Luis Obispo	James Donnell	805-472-4580	POB 1000, Morrow Bay, CA 93443	Chapter forming	
San Diego Electric Vehicle Assoc. (SDEVA)	Ron Larrea	619-443-3017	9011 East Los Coches Road, Lakeside, CA 92040	1st Tues./monthly, 7pm	Eldyne Corp. 9775 Claremont Mesa Blvd., one block east of I-15
South Florida EVA	Steve McCrea	305-463-0158	1402 East Las Olas Blvd, #904, Ft Lauderdale, FL 33301		
Indianapolis	Peter J. Kuhus	317-253-6575	N. College Avenue., Apt. 101, Indianapolis, IN	Now forming	Contact Timonthy for location
Southeast Maryland	Bob Sheridan	301-863-9042	41 E. Patuxent Beach Road, California, MD 20619	Now forming	
Las Vegas	Gail Lucas	702-736-1910	Desert Research Center, POB 19040, Las Vegas, NV 89132-	3rd Thursday	Corner of Flamingo and Seventh
New England	Bob Batson	508-897-8288 508-897-9393	1 Fletcher Street, Maynard, MA 01754	1st Sat./qtrly, March, June, Sept, & Dec., 1pm	Boston Edison
Tri-State	Kasimir Wysocki	201-342-3684	293 Hudson Street, Hackensack, NJ 07601		
Las Cruces Kar Klub of NM	Dr. Jack Hedger	505-546-0288	POB 1077, Demming, NM 88031-1077		
Southeastern Electric Vehicle Assoc.	Lawson M. Huntley	704-283-1025	POB 1025, Monroe, NC 28111		
Ohio	Pete Gall	513-683-3122	6875 Oakland Rd, Loveland OH 45140-9723	Now forming	
Houston	Ken Bancroft	713-729-8668	4301 Kingfisher Street, Houston, TX 77035		
Austin	Lewis Koiner	512-990-9760	1413 Quail Run Rd. Pflugerville, TX 78660		
Salt Lake City	Harry Van Soolen	801-969-1130	3622 So. 4840 West, West Valley City, UT 84120	Now forming	
Seattle EVA	Ray Nadreau	206-542-5612	19547 23rd NW, Seattle, WA 98177		
North Olympic Peninsula Electric Car Club (NOPEC)	Roderick Irwin	206-385-2969	221 Kennedy Rd. Hadlock, WA 98339		
Central Virginia	Jim Robb	804-367-8907	1620 Grove Street, #1, Richmond, VA 23220	Now forming	Science Museum
Electric Vehicle Assoc. of Greater Washington, DC	David Goldstein	301-213-3990 303-869-4954	9140 Centerway Road, Gaithersburg, MD 20879		
Vancouver Electric Vehicle Assoc. (VEVA)	Axel Gringmuth Bill Glazier	604-087-6188 Fax: 604-253-6411	543 Powell St., Vancouver, BC V6A1GB Canada		

Send corrections to Bob Wing, POB 277, Inverness, CA 94937, or call (415) 669-7402 or FAX: (415) 669-7407.

WANTED: Warm Bodies & Keen Minds for EVs

Current EVents needs one or more of the following:

California State EV Legislation Tracker - CE would like to keep up with pending and passed California legislation that promotes or affects EVs.

Federal EV Legislation Tracker - What is Washington coming up with that helps or hurts EVs? CE's readers want to know.

EV Newshawk - CE would like to set up someone to receive and read various EV publications for distillation down into an EV News column. EAA would pay for subscriptions. That person might also take on the task of selecting stories from the Environmental Information Network Service.

CE Distribution/Marketing Whiz - CE has back issues that we use for promo copies. We want someone to take these and send them, put them in places where they will do the most good. We want to make the general public more aware of CE as a resource.

Short Circuits

EV Watch

The IEEE Spectrum magazine is now running a column called "EV Watch". It is on about page 60 of the magazine. IEEE and Current EVents subscribers, take note.

Kudos

Kudos to Steve Van Ronk, who arranged to get the Chinese delegation to the EV Showcase at WESCON. There was apparently a lot of interest in the electric cars and in Mike McGreen's nicely packaged electric assist bicycle.

Motor Trend Article

The *Motor Trend* October '93 issue ran its first realistic look at EVs. The article was written by R.J. Cogan of Green Car Journal.

EAA Bumper Sticker

Identify your vehicle and help fund the promotion of electric cars. *The Switch is On to Electric Cars* bumper stickers available for \$4.00 donation. For more information, contact Lee Hemstreet at (415) 493-5892.

Promote the EAA and Electric Cars!

We heard suggestions at chapter meetings and other EAA events that we should try to raise the visibility of Electric Vehicles and the EAA within state and local government as well as the schools and universities. Well, here is your chance to do something about it.

Additional copies of CE will be printed for the promotion of EAA and electric cars! These promotional copies will be sent to individuals who will support EVs and the EAA.

We need your help to identify these key contacts within your local communities.

If you know of someone who should receive a promotional copy of CE, please fill out and return the form on this page. We plan to mail two issues to this public official or educator in your area. Requests are limited to one per EAA member or 10 per EAA Chapter. Send to:

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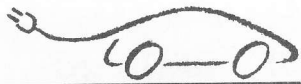
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November/December 1993

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