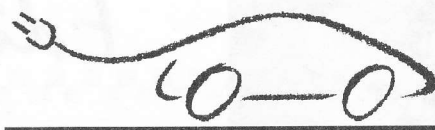


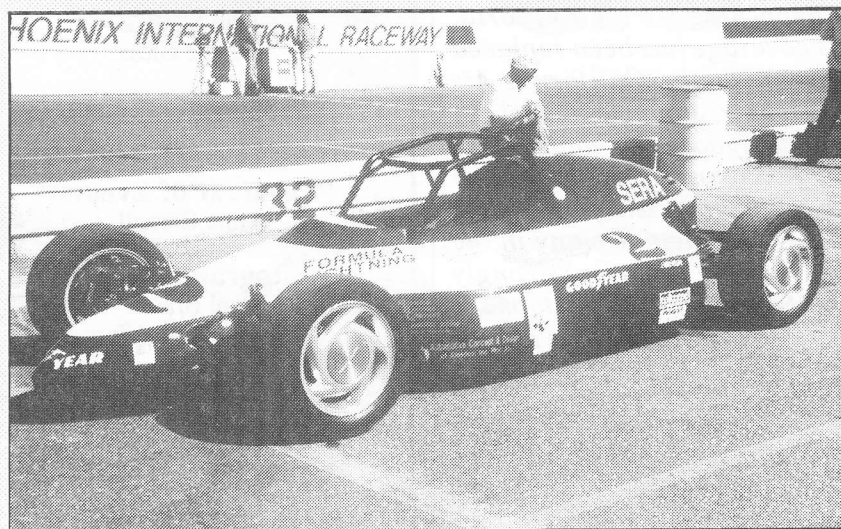
CURRENT EVENTS



January 1994

Promoting the use of electric vehicles since 1967

Vol. 26 No. 1



High-powered lightweight—SERA's Formula

Photo credit: Paul Brasch

ZEV Rules Endangered Detroit and Diesels Storm CARB

By Clare Bell

The Big 3 Detroit automakers, diesel fuel users and the California Republican caucus are pressuring California's Air Resources Board to weaken its ZEV mandate. Electric vehicle supporters will fight equally hard to preserve the integrity of ZEV because it is the primary force creating large-scale demand for commercial EVs.

The CARB rules come up for review in September 1994 and will be facing determined opposition. If the ZEV mandate is defeated or undercut in California, the action will threaten similar mandates in other states that have adopted such regulations.

The auto companies, well aware of the possible falling-domino effect of a CARB reversal and needing to get production plans in place by 1995, are making a last-ditch attempt to get the rules relaxed. Their most recent tactic,

a direct appeal to Governor Pete Wilson, appears to have resulted in the resignation of CARB Chair Jananne Sharpless, a staunch ZEV advocate.

CARB spokesman Bill Sessa believes that EV technology is more advanced than the auto companies want to admit. EV advocates agree, citing, for example, the battery and charger developments presented at this year's WESCON '93. (Current EVentS, Nov/Dec. '93) These technologies are either already in use (the Norvik Minit Charger in Europe) or being field-tested.

And not all auto companies are balking, he says. European manufacturers have asked CARB to uphold the ZEV mandate, since they have already made the investment necessary to meet it. Recent guest editorials by economists in Cali-

Continued on page 4

Super-Efficient Auto

By George Gless

The automotive transportation system of the future must be environmentally sound and safe. It must, in the language of ISTEA, (Intermodal Surface Transportation Efficiency Act of 1991), "reduce energy consumption and air pollution while promoting economic growth."⁽¹⁾

Factors critical to the efficiency of a vehicle are weight, aerodynamic drag, tire losses and motive power—drive-train efficiency.

These factors interact in the following fashion: Reducing weight lessens tire losses and requires less power to overcome inertia during acceleration. A lighter vehicle has fewer friction losses due to tire flex. Reducing aerodynamic drag by improved streamlining and minimizing frontal area also lessens power needed for acceleration and cruising. All the above factors reduce the size and weight of the power plant required.

Reduced weight means that the suspension system may also be redesigned to be simpler and lighter, reducing the vehicle's weight even further. The de-

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Editor's Note

By Clare Bell

Changes at CARB and Supercars

The best-laid plans of mice, men, and newsletter editors often go astray. Or get pre-empted by other more important happenings in the EV world. Some of our planned continued WESCON '93 coverage has been replaced by an in-depth article on the recent upheaval at the California Air Resources Board and the transfer of its pro-EV chair, Jananne Sharpless, to the Energy Commission. In addition, we can't ignore the controversy about Amory Lovins' electric ultralight hybrid "Supercar" concept. The two stories are interrelated by the California 1998 Zero Emission Vehicle mandate. Advocates of the "Supercar" hybrid, who include many in the EV community, feel that ZEV is too rigid. EAA members who feel strongly can use the contact information (provided by Sacramento EVA) to make their views known.

For expertise on the ultralight hybrid, CE has tapped our new Board member, George Gless, who has also written for the Denver Electric Vehicle Council newsletter. I am very pleased to present "Super-Efficient Auto" by Mr. George Gless.

For WESCON aficionados, Stan Skokan, key organizer for the EV Showcase, summarizes the show. We're also doing a centerpage photo spread, CE's first one!

For those who counted on having more detailed technical information, we're including directions on how to get copies of the papers presented at the WESCON EV Technical Session (see below).

Squeezes and Bumps

As you may notice, CE is now in a new 16-page monthly format. This is a tighter space to work in and there may be a few bumps in the road as well as a few bumped articles. For our hard-working dedicated contributors, especially those who sweated to make this issue's deadline, please forgive if your piece does not appear this time.

WESCON '93 Technical Papers: How to Get

The complete WESCON technical proceedings are available through Electronic Conventions, 1-800-877-2668, ext. 250, ask for Amy. It includes all the technical papers given at the '93 conference. There were some presentations on rechargeable battery technology that were not part of the EV Technical Session (i.e. laptop batteries). The publication is a big blue paperbound book, price \$40 (not including tax and shipping).

You can also get copies of papers through IEEE. Call 1-800-678-IEEE, which is the Service Center in New Jersey. Ask for IEEE Catalog # 93-RC-0500-9. In N.J. you can speak to Bill Hagen, 908-562-3966. I don't know what the charge is for this service, or whether you have to be an IEEE member. Check it out!

(IEEE is the Institute of Electrical and Electronic Engineers, sponsor of WESCON.) —CB

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Article Submissions

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.

Advertisements

If you would like to submit an ad, refer to Advertising Rate Sheet on page 21. For additional information, contact Susan Hollis at (408) 374-8605.

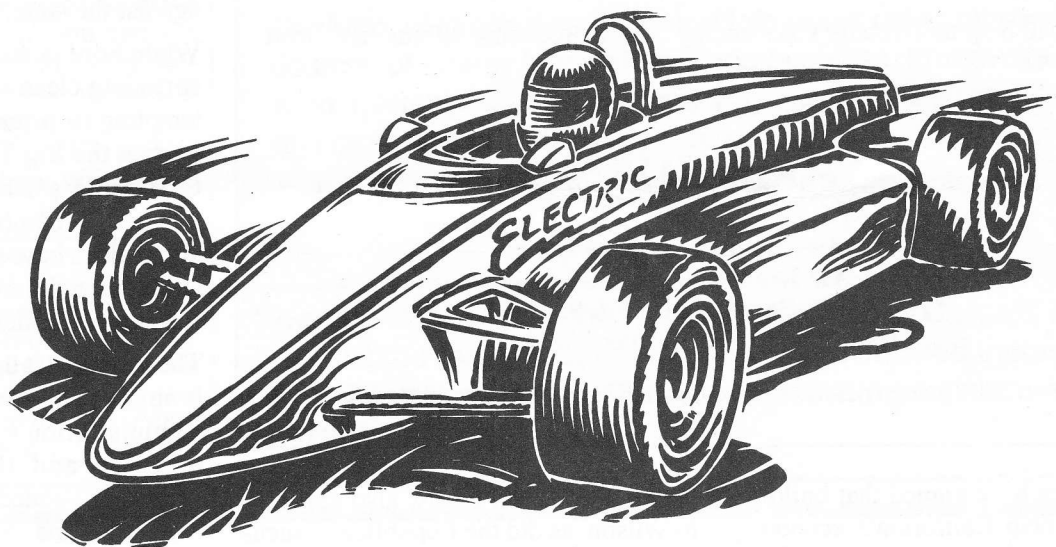
Membership & Address Changes

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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case breakthroughs in electric vehicle technology that are taking place globally. Fast speeds, long ranges, record breaking battery change-outs, recharging stations and safety standards are among the highlights.

Call the Solar & Electric Racing Association (SERA) at 602-953-6672 for tickets.

Prices range from \$5 to \$10.



ZEV Rules

Continued from page 1

Letter-writing info and tips:

Be polite, concise, and not over-zealous or antagonistic. Keep your letter less than two pages. Give clear reasons and examples to say why EVs are necessary for California. Some little-known arguments are:

1. EVs will strengthen CA's economy, by converting defense and aerospace industries.
2. EVs will help to diversify CA's energy base by reducing oil imports. Send letters to:

The Honorable Pete Wilson, Governor
1st Floor, Capitol Building
Sacramento, CA 95814
916/445-2864, fax 916/445-4633

Dr. James Boyd, Executive Officer
Air Resources Board
2020 L St. Sacramento, CA 95814
916/455-4383 (ask for fax # too)

Adapted from "EV Update", December '93, p. 2. Thanks to Sacramento EVA.

fornia papers have argued that building ZEVs will help California's economy, not harm it. Others have pointed out that sticking to the mandate will promote competitiveness in a fast-changing global automotive market.

European and Japanese auto manufacturers are also keenly aware of the advances made by small American and Canadian development companies. And the companies themselves, if rebuffed by Detroit, appear likely to turn to those hands from overseas for markets and funding.

The growing assault on the ZEV rules gained momentum in October, when the American Auto Manufacturers Association, the automotive lobbying group, considered a proposal to "seek relief" from CA's ZEV requirements. Ford Executive Allan Gilmour sent Governor Wilson a letter claiming that lack of advanced battery technology, a short timetable and costs added up to insurmountable difficulty in putting electrics on the market.

Diesel-fuel users, claiming that reformulated fuel damages O-ring seals in fuel

pumps and is too costly, also appealed to Wilson, as did the Republican caucus of the California Assembly. Both groups feel that CARB's policies are too restrictive and hostile to business.

Wilson responded to the diesel-fuel complaints by forming an advisory committee. He recently received the results, along with Ford's letter, and it was shortly afterwards that Sharpless announced her resignation from CARB and

The chance that the rules will be changed is stronger than ever due to the Clinton administration's "clean car" 80 mpg initiative and the ultra-light hybrid "supercar" proposal.

her appointment to the California Energy Commission.

EV advocates and environmentalists feel that this resignation may be the beginning of a "shakeout" of CARB officials who disagree with the Wilson administration. It appears to be consistent with

a general plan to weaken the tough CARB stand and make the rules more "business-friendly." Wilson's move did not please the Federal Environmental Protection Agency, who stated that California's failure to overhaul its smog-check program would result in sanctions against the state.

While Ford is striking at the root of the spreading clean-air mandate, GM is attempting to prune its branches. GM is leading the Big Three in a fight to stop California's ZEV rules from being adopted in 12 northeastern states. The automakers have already sued New York and Massachusetts — the New York case is now under appeal.

The chance that the rules will be changed is stronger than ever due to the Clinton administration's "clean car" 80 mpg initiative and the ultralight hybrid "supercar" concept being promoted by Amory Lovins. Some EV advocates see these ideas as a step in the right direction and want to encourage them as well as promoting pure electric. This is especially true of the ultralight carbon-fiber chassis described in the "supercar" proposal.

Others in the EV community feel that the hybrid and the 80 mpg effort are distracting people from efforts on pure

electric and that they are reviving the old and unproductive hybrid vs. pure electric controversy. ZEV supporters fear that these proposals are really just a smokescreen to mask Detroit's assault on CARB's ZEV mandate.

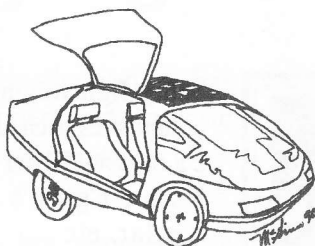
Continued on page 5

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The Sacramento Electric Vehicle Association is making the preservation of ZEV its primary focus for 1994. Sacramento is proposing a letter-writing campaign and an "EV drive and lobby" action in which members drive EVs to the Capitol and speak with legislators.

All EAA members are urged to make their views known to Wilson and the Legislature. Those who agree with Sacramento might want to join in the EV "drive-in" protest. Whether or not you agree specifically with the ZEV regulations, take action to show Wilson that EVs are practical and viable now.

Sources: Judy Tachibana, article in *Sacramento Bee*, 11/18/93, December issue of "EV Update", *Sacramento Electric Vehicle Association* newsletter. For excellent detail on the New York case, see "Second Circuit Case has Extreme Implications for Electric," by Perry Goldscheim in "EV Update".



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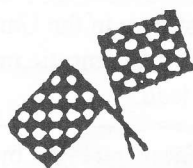


Due to the new monthly 16-page format of *Current Events*, some of the feature columns have been omitted in this issue. Look for your favorite columns returning in next month's *Current Events*.

Calling All Cars... Alternative Energy Racers: Enter Your Vehicle In The Rally

SunDay Challenge '94

Saturday, March 26 & Sunday, March 27, 1994



**For more information, contact:
Florida Solar Energy Center
SunDay Challenge Race Committee
300 State Road 401
Cape Canaveral, FL 32920**



Spectators Welcome at the Electric, Solar & Clean Fuel Vehicle Rally

Super-Efficient Auto

Continued from page 1

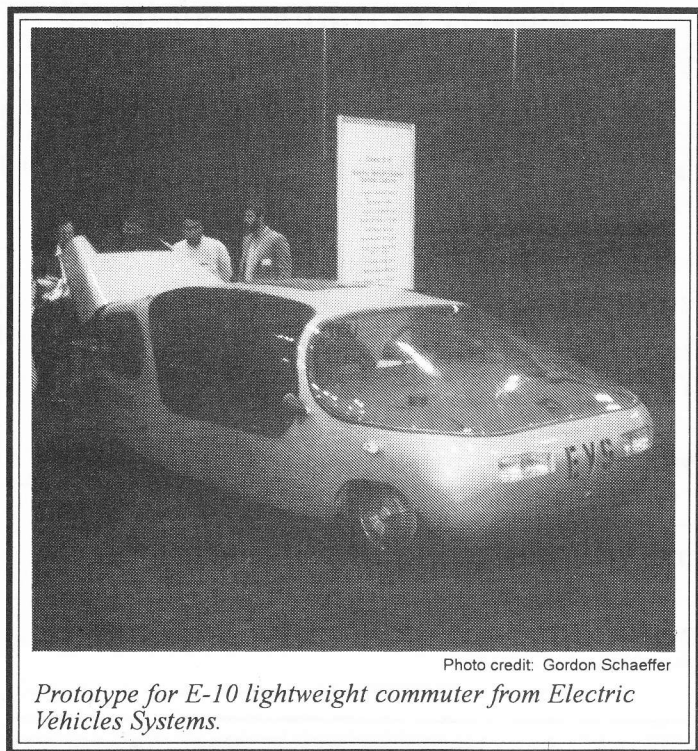


Photo credit: Gordon Schaeffer

Prototype for E-10 lightweight commuter from Electric Vehicles Systems.

sign of a vehicle thus involves an iterative process in order to arrive at an optimum.

Auto manufacturers are certainly aware of how this iterative lightening process influences efficiency. A casual perusal of the literature will reveal efforts at downsizing, use of lightweight materials such as plastics and aluminum and efforts to increase powerplant efficiency. However, these have been incremental steps that tend to protect auto manufacturer's investments.

Factors such as air pollution, the cost of imported oil, a need to conserve materials and the threat of global warming create a sense of urgency and call for a dramatic speedup in the process.

Remember the flight of the Voyager? Dick and Jeannie Rutan flew an airplane around the world on one tank of fuel. How was such a feat accomplished? A careful design was of course necessary, but the mission's success depended on

ever, a plastic body when properly designed and built is stronger and safer than present day auto bodies. If further proof of safety is needed, it should be noted that many a race car driver in a carbon-fiber chassis has walked away from a 200 mph crash.

Construction using composites has a reputation for being expensive, particularly when carbon-fiber is the main ingredient. In building of vehicles, however, offsetting factors narrow the gap. Molds for composite parts are much less expensive than dies for stamping parts. Fewer pieces are needed, as the number of parts that make up a plastic composite car body is far lower than the number needed in a metal body. Molded plastic composite body parts need less finishing and fit tightly together, creating a slippery, drag-reducing car exterior.

Volume production techniques will no doubt bring costs down. There is also the possibility of using some type of tax

using lightweight composites such as carbon-fiber, Fiberglass, Kevlar, etc.

Such aircraft-related construction techniques, when applied to the building of automobiles, will result in the needed breakthrough in automotive technology.

Riding in an automobile with a plastic body may not seem as safe as being surrounded by steel or even aluminum. How-

incentives to encourage the purchase of more fuel-efficient cars.

For the most fuel-efficient vehicle, the power plant must be chosen accordingly. At present, an electric drive is the natural choice. Some⁽²⁾ argue that the limited range imposed by today's available batteries calls for a hybrid approach. However, battery technology is making real progress in combination with the idea of convenient fast-charging stations that can provide substantial additional range during a brief stop.

Having designed the car in such a way to minimize losses due to vehicle motion, even more efficient operation would occur if energy expended in braking could be recovered. This can be done with electric drive by utilizing regenerative braking.

Who is going to build these super-efficient automobiles? Consulier Automotive of Riviera Beach, FL, is building full-size vans that weigh less when loaded than standard vans when empty. A group at General Motors designed and built the Ultralite (concept car) in one hundred days. It carries 4 passengers, weighs 1400 lb. and gets 81 miles per gallon on the highway. The advantages of using composites for auto construction are being investigated by auto makers and others around the world. It is just a matter of time before composite-bodied vehicles are put on the market in quantity. The technical knowhow and the need exist here in the United States. It is time that the domestic manufacturers took the lead.

(1) From opening remarks by Associate Deputy Secretary Michael Huerta, Proceedings of the Sustainable Transportation and S/EV Symposium, 21-23 October, 1993, Boston, MA.

(2) "FREE WHEELING", Rocky Mountain Institute Newsletter, Summer 1993, Vol. IX No. 2, pages 1,6.

Board Highlights

The new Board has met twice since the election. It has inventoried the skills, concerns and interests of all members, set up basic business policy, discussed programs and set up program committees.

Business policy

Long distance business will be done by fax, supplemented by conference calling with absent members. Some Board meetings will be held outside California, in conjunction with major EV events in members' home cities. Phoenix Chapter will host the EAA Board for the March '94 meeting during the APS 500. EAA's business address will continue to be the Munros, as listed on the back of CE.

EAA Program Committees

Activities: Cornell (chair), H. Bell

Awards: Gless (chair), H. Bell

Chapter Relations: H. Bell (chair), Hemstreet

Finance: Slominski (chair), C. Bell, Hemstreet, Skokan

Info and Clearinghouse: Hemstreet (chair), Batson, Koch

Membership Records: Brooks (chair) Cornell

Newsletter Management: C. Bell (chair), Brooks, Cornell, Gless, Skokan

New Membership: Cornell (chair), Koch

Speaker's Bureau: Lough (chair), H. Bell, Gless, Skokan, Batson

Actions

Existing committees were redefined, renamed or combined. Amendments to existing By-Laws may be required in order to allow organizational or membership changes, such as multiple levels of membership. Drafts for such amendments have been submitted and will be considered at the Jan. '94 meeting.

The Board reviewed 1993 financial records and adopted a 1994 budget. It also decided to pay off the remaining chapter rebates owed from 1992. The chapter rebate system will be re-examined and either replaced or improved. Copies of portions of Robert's Rules of Order were distributed to members.

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WESCON—a great oppo

n the words of the organizers, exhibitors and participants, EV programs at WESCON '93 were a success. What started as a modest "would you help us" turned out to be a win-win event for all. EAA was offered a great opportunity to join the IEEE/WESCON '93 exhibit in Moscone Center. It involved some effort to pull the pieces and diverse interests together, but the overall experience was rewarding. I hope we can continue this tradition and make the next WESCON into an even larger event. Being associated with such a credible organization as IEEE made all the difference. They provided the carpeted space in Moscone Center. Many thanks!

We had Silicon Valley Chapter rallies for years, yet we never got as much exposure as we did at WESCON '93. The exhibit was visited by 35,000 people, mostly electronics industry professionals. It presented business opportunities for many electronic component exhibitors, who saw new markets for their products. Visiting electronic industry professionals saw possibilities for future job opportunities. It gave hope to the general public of a major urban area that one day they will be able to breathe clean air in the city.

We had four EV programs at WESCON; the technical presentations, the panels and the Showcase. In addition, a news media event presented a day before the show opening, demonstrated a variety of EVs for TV cameras and reporters. Interviews with media continued during the show and were broadcast throughout the week.

The EV Showcase presented ten EVs from seven commercial producers, including one from a major Detroit automaker (the Ford Ecostar van). Nine commuter cars from four Bay Area EAA Chapters represented individual conversions. EV entry into performance motorsport was announced with eight exciting race cars from four racing teams. The star there was Eyeball

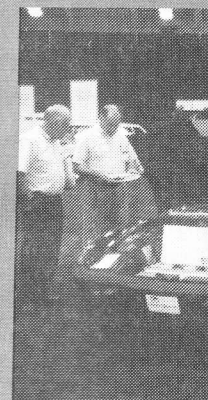
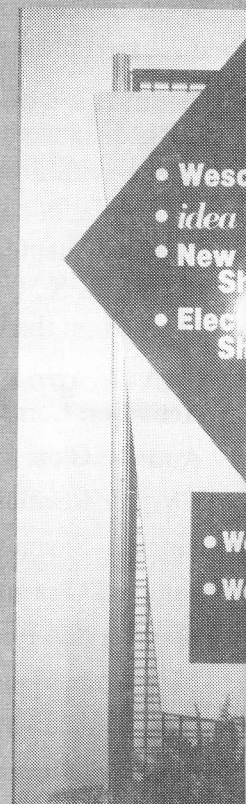
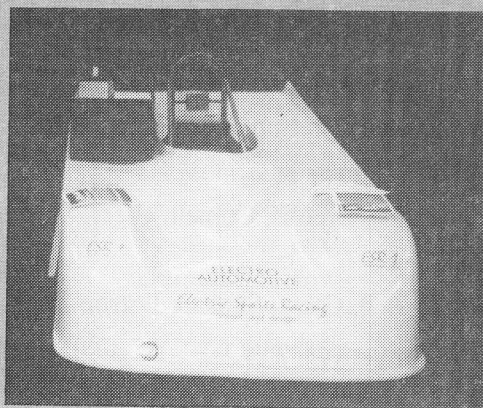
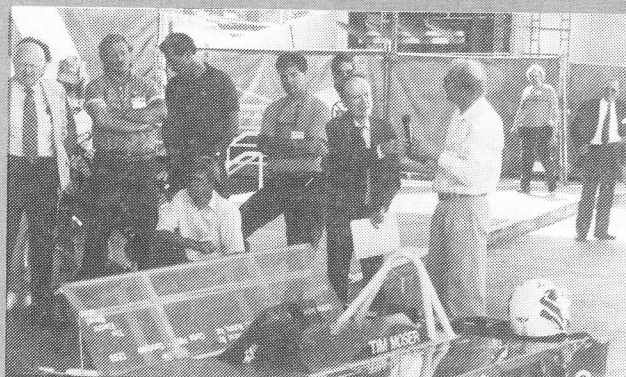


PHOTO 1 Pointing to the right direction for EVs.

PHOTO 2 Electric Sports Racing and Electro Automotive's "E" class SCCA challenger.

PHOTO 3 Red 914 Porsche at Moscone Center — #13 opens up hood and minds.

PHOTO 4 Passer-by peeks into classic EAA conversion. (Bill Williams 1975 Honda)

Opportunity for EV promotion

Stan Skokan

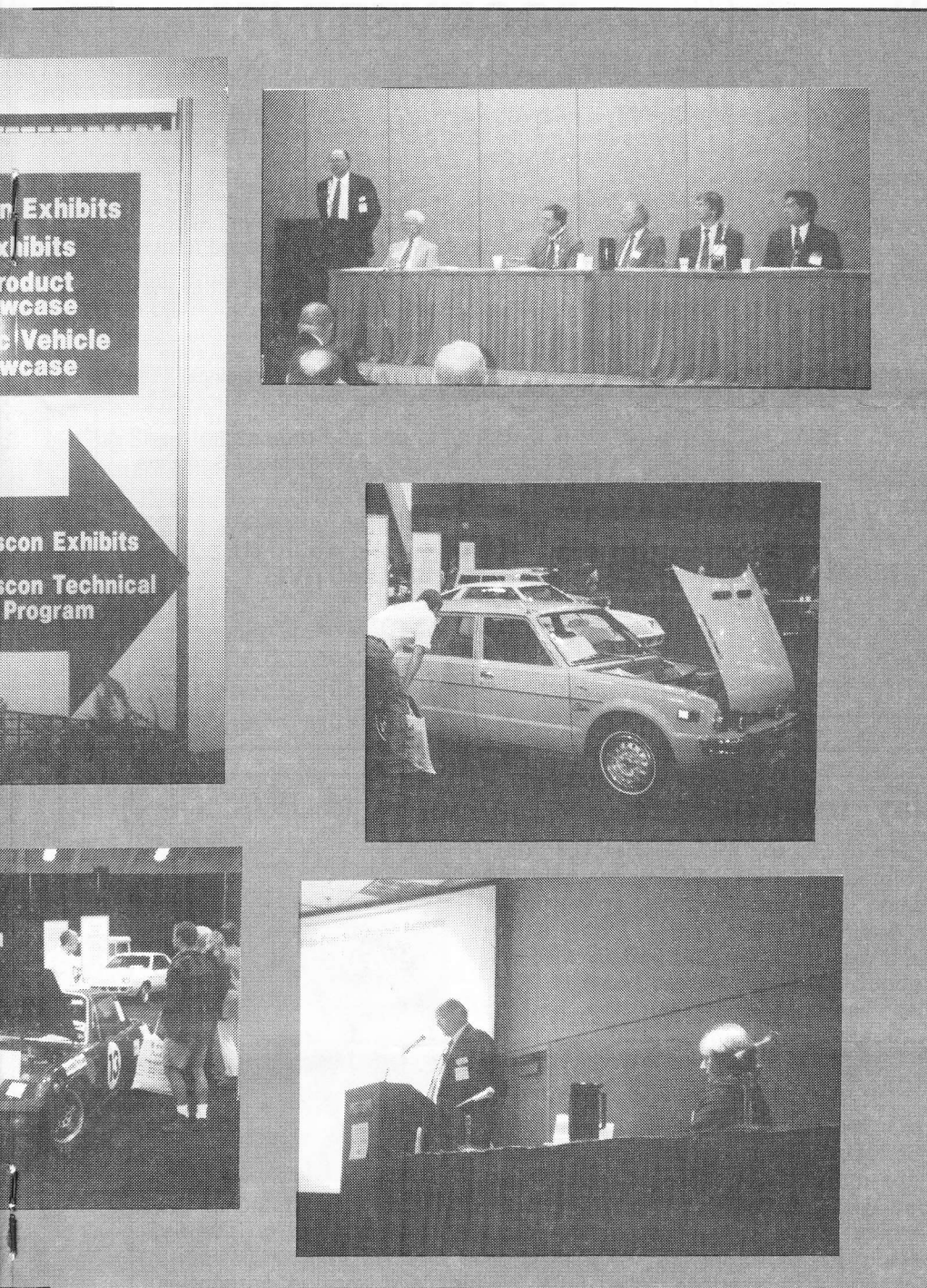


PHOTO 5 Paul Brasch interviews Bob Schneeveis during WESCON media Event.

PHOTO 6 Stan Skokan introduces Steve Visco in EV Technical Session.

PHOTO 7 EV Panel (left to right) Bill Palmer, EAA, Steve Post, Curtis-PMC, Scott Cornell, EAA

PHOTO 8 Palmer presents Paul Brasch with Keith Crock Award.

Engineering's 180 mph land-speed record vehicle.

The technical program presented four battery-related papers. Out of 28 technical sessions, only five had standing room only attendance. Our session was one of the five. The average attendance for a technical paper session was 65 people. We had over 220 attendees. It is a great advancement over our tradition of EV Symposiums of the past.

A two-hour videotape of the EV Technical Session papers is available for EAA internal use, to show at chapter meetings. Contact Bob Wheeler at (415) 368-2491 for a loan copy.

The Discussion panel attracted a full room of participants. One of them mentioned that "I have never experienced a group of so many miles of EV experience before." Even though the panel never had a chance to rehearse, the panelists presented a convincing case for EVs and played well together. At the end we even had an Annual Meeting of the EAA membership and elected a new Board of Directors.

Last year we had a late start in organizing Wescon EV events. WESCON '94 is in Anaheim on Sept. 27 - 29, 1994. This time it is an opportunity for the Southern California Chapters to outdo WESCON '93. Start early figuring out which vehicles to display, what materials to present at the EAA booth, what technical papers to present and what to discuss at panels.

If you are an EAA member or EV industry professional interested in participating at WESCON '94, contact Irv Weiss or Ken Koch. Their phone numbers are in the Chapter listing and Board listing elsewhere in this newsletter.

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Here's a handy way to introduce your friends to EVs.

Just published, the *Buyer's Guide to Electric Vehicles* has the latest on EVs, conversion kits, and related supplies. Priced at only \$6 postpaid, this high-quality publication is an excellent tool to introduce your friends and relatives to the world of silent power. Carry a few copies with you in your EV to hand out to interested people who ask you what driving electric is all about. Its glossy cover has full-color photos inside and out — it has better quality than the hot-rod magazines and superior content (but no nearly-nude women on the front).

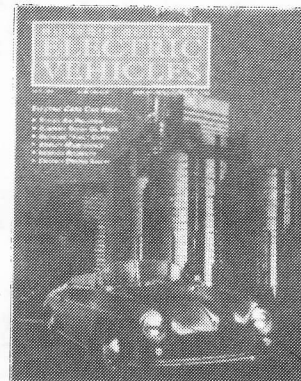
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An ever-popular title is *Electric Vehicle Structures & Components*, which includes comprehensive descriptions of batteries under development, including pros and cons of the materials in terms of their impact on the natural environment. Loaded with information, this book costs a mere \$10 postpaid in the U.S. (add \$2 to Canada, \$4 overseas). And, if you need more complete information on the EV industry worldwide, including research groups, order our *1993 Worldwide Electric Vehicle Directory* for \$14. With over 200 businesses and organizations listed, the product and service categories include:

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- Motors
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News in Brief . . .

Compiled from the Environmental Information Network by Ruth M. Shipley

HBTI Battery Factory Starts in Jan. '94

Electrosources, Inc. (Austin, TX) the developer and patent holder of Horizon battery technology, announced the groundbreaking for a plant in San Marcos, TX to build high-performance, low-cost batteries specifically for electric vehicles. The plant will begin limited-rate production of Horizon batteries in January 1994.

The San Marcos factory is operated by Horizon Battery Technologies, Inc. (HBTI), owned equally by Electrosources and BDM Technologies, Inc. (McLean, VA) which specializes in high technology manufacturing solutions.

During ceremonies at the HBTI facility, Ruth MacDougall of the Sacramento Municipal Utilities District said the new factory will help automakers meet EV production deadlines. "When this factory is completed, the Horizon battery technology will be the only practical battery technology positioned to support production capability for 1994 volume field testing," said MacDougall.

According to HBTI President Dr. Robert Kline, "Next year HBTI is projected to produce about 20,000 battery modules for sale to EV testing programs around the world."

The Horizon battery has a projected lifespan of approximately 80,000 miles, can be recharged to full capacity in half an hour and 50% capacity in 8 minutes.

For more information, contact Audrey Dearing at 512/445-6606.

(ELECTROSOURCE RELEASE: 10/14)

Paris to Become International EV Showcase

Jaques Chirac, mayor of Paris, promises that the French capital will be an "inter-

national showcase" for electric vehicles. He plans to offer a persuasive incentive — free parking on Paris streets. Electricite de France (EdF) will develop use of EVs in Paris. By 1996, says Chirac, the majority of the municipal vehicles in the French capital will be electric.

Five Parisian parking garages will house 25 charging stations by the end of the year to be operated by EdF, who claims that 10% of its Paris vehicles will also be electric. Montpellier and Marseilles have joined Paris in offering electric vehicle incentives.

(EUROPEAN ENERGY REPORT: 11/2)

A Flywheel-Powered Car?

American Flywheel Systems (Seattle, Wash.) received a patent this Sept. for its self-centering low-friction flywheel bearing. The new design keeps the wheel from contacting the shaft by spinning in a vacuum and using magnets. The company has hired TDM International Inc. (Troy, Mich.) to design and build the first U.S. flywheel-powered car.

The high cost of high-strength lightweight composites used in flywheel manufacturing has held up development, but today, according to Ed Zorzi, American Flywheel's engineering vice president, such composites can now be bought for \$10/lb., in contrast to a 1973 price of

\$4,600/lb. for similar but lesser quality materials.

The proposed car will probably use 20 flywheels mounted in a canister about 9" in diameter and 7" high. TDM developed the units with Honeywell, who has manufactured gyroscopes in flywheels for satellites. Twenty canisters at 600 lbs. total could store 43.6 kWhr as compared to GM's 870 lb. lead acid battery pack that stores 16.8 kWh. Zorzi expects the car to go 400 miles on one full charge.

Both Ed Furia, president of American Flywheel, and Bill Coppola, head of vehicle development sales for TDM, agree that the major carmakers need to be con-

Continued on page 12

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Calendar of Events

- Jan. 8-6 Greater Los Angeles Auto Show. Electric Vehicle Association of Southern California will have a display booth. Los Angeles Convention Center. Call Mitch Boretz, 909/949-0338 for more information.
- Jan. 11-12 Fifth Annual Conference on New Fuels and Vehicles for Cleaner Air. The Crescent Hotel, Phoenix, Arizona. For more information, call (800) 424-9068 or (703) 892-8505.
- Feb. 13-17 Applied Power Electronics Conference, Includes EV components. Disney's Contemp, Resrt, Orlando, FL. (407) 824-3869. Fax: (407) 824-3738.
- Mar. 17-20 1994 APS Electric 500 at Phoenix International Raceway, Phoenix, AZ. Electric stock A and B, high school entries, Formula Lightning, College Hybrids, ultralights and others. (See May/June issue of Current Events for '93 race coverage). Contact Solar and Electric Racing Association (SERA). The '94 rulebook is out now! Tel. (602) 953-6672. Fax. (602) 953-7733.
- March 26-27 SunDay Challenge '94, Florida, Alternative Energy Vehicle Rally from Universal Studios to Cocoa Beach. Florida Solar Energy Center in conjunction with IEEE Southcon 94. Contact Bill Young (407) 783-0300, ext 137. Fax: (407) 783-2571. See ad in this issue of CE.
- Apr. 11-13 Renew '94. Sheraton Stamford Hotel, Stamford, CT. A two day conference on the benefits of renewable energy to the economy and environment. Sponsored by U.S. Dept of Energy, Northeast Utilities and Niagra Mohawk Power Co. For information, contact NESEA, (413) 774-6051.
- April 8-10 4th Los Angeles Eco Expo, Los Angeles, CA. For information on show or exhibiting, call 818-906-2700.
- April 15-17 Alternative Road Rally Edison Grand Prix, Race on the 16th. In L.A. area. Will be at Disneyland, then to the Queen Mary. Call Chris Martin (213) 465-4488.
- April 17 Friends of the Anzar Hills is hosting a fundraising event and would like to have 10 EVs display there. South of San Jose, in Aromas, CA. Contact Heny Gonzales (408) 944-0800.
- Early May Lightings race at Richmond International Raceway, Richmond, Virginia. High school competition. SERA has not set the exact date yet, but stay tuned. Solar and Electric Racing Association (SERA) tel. (602) 953-6672. Fax (602) 953-7733.
- May 21-28 1994 American Tour do 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.
- May-June The Eyes of the Classics, held at the FORD estate. Classes of Antique, Indy cars, et. Would like to invite 15 electric cars of show quality. For information, call Steve Pasteiner (313) 852-2900.
- Aug 7-21 Ener-Run III. - This 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.
- Dec. 1-7 EVS-12 1994 at the Disneyland Hotel and Convention Center, Anaheim, CA. Includes an Electric Vehicle parade, press events, expo and conference. Display space, \$25/sq. ft indoors, \$12/sq. ft outdoors. Contact SHO, 167 South San Antonio Road, Suite 10, Los Altos, CA 94022. Tel. (415)-949-2050.


EIN

Continued from page 11

vinced. "We intend to educate them," said Furia, "and bring them to a comfort level where they can use [the technology] in their vehicles." Furia's company received a \$2 million grant from the Department of Defense's Advance Research Projects Agency and the Sacramento Utility District, but he said he had found "tremendous institutional inertia" in Detroit.

Coppola believes the cars will be in the \$20,000-\$25,000 range with flywheel energy systems that are expected to last 10 years.

(THE ENERGY REPORT: 11/15)



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Chapter News

San Diego CA

At the chapter's October meeting, Bob Thompson of Sunstrand Corp. updated members on the status of small gas turbine engines, which could be used in hybrid vehicles. These engines are so light that a prototype weighing only 28 pounds can generate 100 hp at 112,000 rpm. Unfortunately, the engines cost \$50,000-\$60,000. Don Eskridge demonstrated his electrolyte level alert sensor on one of the EVs present. Bill Lucas has finished converting a 1986 Ford Escort hatchback, Jeremy Phillips has finished his VW pickup and Ron Larrea has finished Bob Chow's 1971 Opel GT.

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FOR SALE: New Kennedy adaptor plate, with lightened flywheel and new clutch kit. Fits VW Beetle and big Advanced D.C. motor. \$600/obo. Call 503-488-3134.

FOR SALE: 1983 Jet Industries orig. pick-up EV, 16K mi., new motor, controller, 20 batteries Very reliable. Must sell. \$6500. Call 415-457-1451.

FOR SALE: Sunbeam Imp, w/48 volt DC Traction Motor. Nice body, needs batteries. \$500. Call 415-388-0838.

TRADE: Bang & Olufsen, 4500 Receiver, w/remote/Beolab 3000 powered panel speakers. Total value \$2,800. Still in boxes. Exchange for electric VW. Call 510-797-5374 after 3pm.

Rates for Want Ads

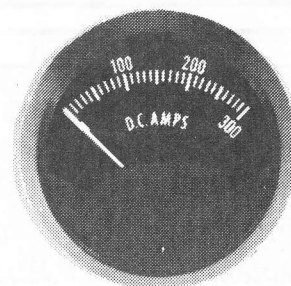
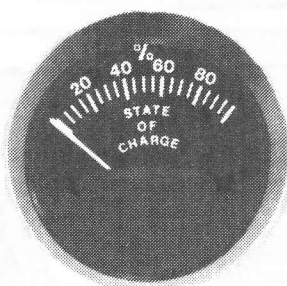
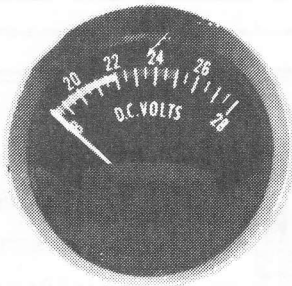
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Want Ads are available to EAA members for the sale of electric vehicles and related products.

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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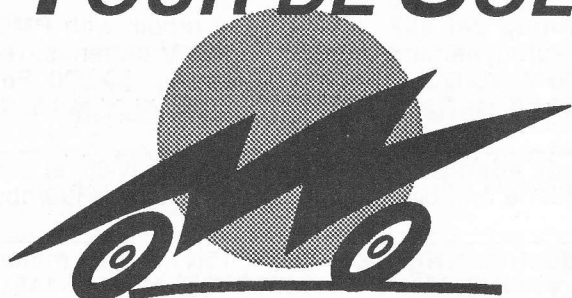
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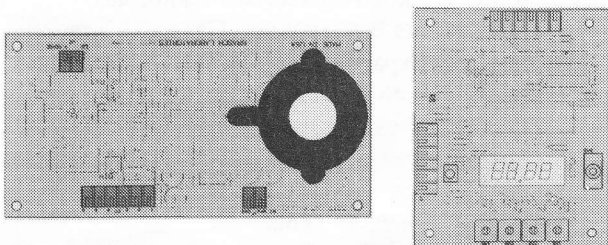
Due to the new monthly 16-page format of
Current Events, some of the feature
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Ooops!

This issue's informal *Ooops* award goes to Tony de Bellis and Russ Kaufman, whose Fellows Award text got tangled.

Thanks for notifying us to correct the goof. The correct text for Mr. de Bellis' Award reads:

Tony de Bellis has been elected Fellow of the EAA, in recognition of his pioneering EV activities in education and experimental design of 2, 3, and 4 wheeled electric vehicles. Nominated by John Newell and Bob Wing, Directors, EAA.

Mr. de Bellis runs Electric Vehicle Systems, Inc. a Danville, CA company that has been doing EV research and development since 1969. EVS's products include the E-10, a lightweight commuter vehicle. They can be reached at 510-837-5345.

The correct text for Mr. Kaufmann reads:

Russell B. Kaufmann has been elected Fellow of the EAA, in recognition of his accomplishments in the development of EV controllers, heaters, battery chargers and in chapter leadership. Nominated by Preston McCoy, President, North Bay Chapter.

Mr. Kaufmann runs Russco Electro-Mechanical Engineering, a pioneering designer/supplier of EV components and a long-time advertiser in CE. He has shared his expertise on EV heaters and other EV issues in CE's.

Russco's products are available for systems of 96-144V. Russco is in Santa Rosa, CA and can be reached at (707) 542-4151.

RUSSCO Offers New 144V Heater

Russco Electro-Mechanical Engineering, a manufacturer of self-contained hydronic electric vehicle heaters, rated at 1.5 KW and 2 KW in 96-120 volt applications, has just introduced a heater for higher voltage EVs. The Model H-20-144 is rated at 2 KW and 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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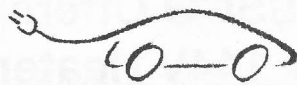
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