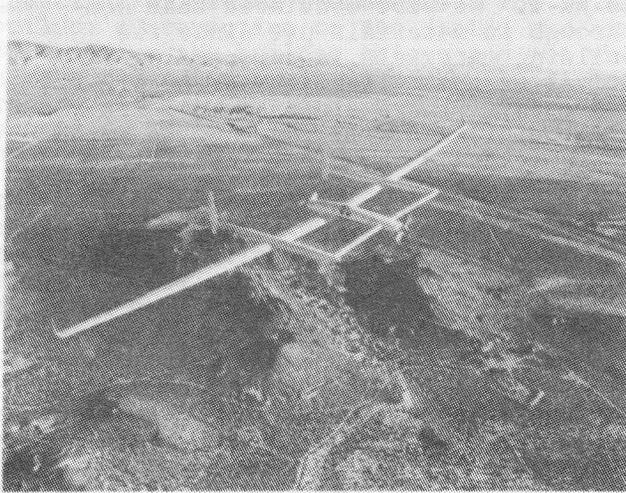




# EAA SALUTES EAA



*Many of us grow up with dreams we never realize.  
 We just don't take time to live them — or we let others discourage us.  
 We listen to the chorus of "Why bother?" or "What will you gain from it?"  
 and never experience the joys of achieving goals we set for ourselves.  
 Everyone should have a dream — and strive to reach it.  
 Dreams can be big or small. It doesn't matter.  
 What matters is: that a dream come true can change a person in some  
 wonderful yet indefinable way.  
 And sometimes the best part is that one dream will lead to another, and  
 another, until finally there is an endless cycle, a limitless horizon as vast as  
 the sky itself.*

Adapted by George A. Rutan from the book *Alone Against the Atlantic* by Gerry Spiess. Dedicated to Dick Rutan, Jeana Yeager and the Voyager

EAA, the Electric Auto Association congratulates the EAA, Experimental Aircraft Association, for providing the environment of competition and inspiration which leads to such accomplishments as the flight of Voyager. Burt Rutan won an award at the 1972 EAA Convention and Fly-In Oshkosh, for his composite airplane called the VariViggen. He made a tremendous contribution to the development of

composite building by his relentless drive to educate builders in "how to do it". By his step-by-step detailed plans, the many lectures and building seminars he conducted, he sent forth a contingent of disciples qualified to work with composites and spread the word. His introduction of specially woven uni- and bi-directional glass cloths made the process easier and resulted in a much stronger structure.



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 EV-RELATED ASSOCIATIONS, CLUBS, SOCIETIES, etc.  
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**MARCH**

# COMPOSITE MATERIALS

The flight of the Voyager proved the reliability and toughness of composite construction. Thousands of vehicles of all types; boats, cars, trailers almost anything with wheels have been built of fiberglass.

Dr. Michael Seal and his students at the Vehicle Research Institute, University of Western Washington in Bellingham have been developing light weight aluminum based cars for many years. Last year they established a record of 106 MPG in the Three Flags Econo Rally which finished at EXPO Vancouver. At the same show they introduced

the first production proto-type COMPLETELY COMPOSITE full size sports car.

Weight has always been a major concern for EV builders, now we can use light weight composites for frame and body as well as other structural members and battery boxes. We have all seen battery boxes that weigh more than the car.

Fiberglass and composites also make very good insulation. A well insulated battery box with a water bed heater thrown in (\$15) would be of some advantage to all you snow bunnies with electrics.

## Robert Samuelson Economic perspective

### How U.S. can curb oil vulnerability

**H**AVING DIED in 1986, will OPEC be reborn in 1987?

The best guesses about whether its current campaign to raise oil prices from \$14 to \$18 a barrel will succeed are hopelessly hedged — and understandably so. Handicapping oil prices has been a graveyard for oil experts' reputations. In the early 1970s, few foresaw a price explosion. By decade's end, most believed prices would rise endlessly. Only a minority predicted the collapse that occurred in 1986. This miserable record has inspired humility.

But uncertainty shouldn't obscure the realities of U.S. involvement with world oil. We remain dependent on imported oil, whose supply is unavoidably insecure. As long as the Persian Gulf contains two-thirds of the non-communist world's oil reserves, oil's flow remains vulnerable to political events over which we have little control. Our interest lies in defusing this ongoing danger. It promises to be as great in 1997 as in 1987.

The U.S. strategic petroleum reserve is one logical response, but the current target of 750 million barrels (two-thirds achieved) is far too low. What's also needed is an oil tax of, say, 20 to 25 cents a gallon to spur oil conservation. The tax could be introduced over three years to mute the inflationary impact; the revenues could be used to cut the

budget deficit or other taxes. The main purpose would be to promote long-term investments in everything from home insulation to energy-efficient planes.

OPEC's latest gambit doesn't yet make it an effective cartel, which controls prices by controlling supply. The Organization of Petroleum Exporting Countries has never done that for a sustained period. Its quotas have been routinely violated, and OPEC hasn't prevented new oil supplies — induced by higher prices — from coming to market. Since 1979, production in non-OPEC developing countries has jumped nearly 50 percent.

But OPEC represents enough of world oil supply to influence prices. In the 1970s, its power rose with world oil demand and Mideast political instability, which frightened oil buyers into thinking supplies would become even tighter. It's no accident that OPEC's big price increases coincided with the Yom Kippur War in 1975 and the shah of Iran's ouster in 1979.

OPEC is now trying to reassert its power in a less-favorable climate. After a chaotic year — characterized by a breakdown of production quotas — OPEC has adopted new, lower quotas and higher prices. The strategy might work. Estimates for the first quarter of 1987 show greater oil demand than supply, creating upward price pressures, according to Philip Verleger Jr. of the Institute for International Economics.

Normally, oil companies and consumers would meet the gap between supply and demand by drawing down inventories in storage tanks. Verleger doubts the inventory reductions will be great enough to force OPEC to discount its prices. Demand will still exist for everything it produces. But can OPEC restrain output?

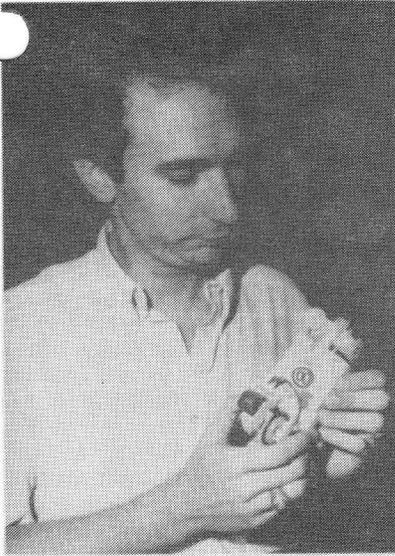
Even if the OPEC agreement holds a few months, Verleger thinks it will collapse by midyear. Demand will drop after the winter heating season, he predicts, and Iraq (which refuses to abide by the quotas) will raise exports through a new Turkish pipeline. OPEC's history warrants this skepticism. Cheating on quotas was rampant in the early 1980s. Only Saudi Arabia's production cutbacks — offsetting others' overproduction — held up prices. When the Saudis abandoned this role in late 1985, prices tumbled.

But OPEC's recent performance has been more impressive. Since late summer, it has prevented oil prices from dropping, as they threatened to do, below \$10 a barrel. New quotas, though violated, have been partially effective. Other OPEC members, chastened by the oil price collapse, are more pliant to Saudi demands for production discipline. And now Saudi Arabia may adhere to its own quota. King Fahd clearly wants higher prices.

It's often urged that we promote domestic production by putting a tariff on imported oil. By raising the price of foreign oil, a tariff would increase prices to domestic producers and make new exploration more profitable. The problem with a tariff is that, by depleting U.S. reserves now, it would make us more vulnerable later. The better approach is to dampen consumption with a sales tax on oil and to be able to offset emergency oil cutoffs from the strategic reserve. We cannot control OPEC, but we can make it tougher for OPEC to control us.

*Robert Samuelson's economic column appears every other Sunday.*

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Grand Prix course posed engineering challenge to mini car designers. Designer Eric Ostendorff of Mattel shows top prize winner. *Design News photos.*

**ENGINEERING NEWS**

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FANTASTIC!!

Grand Prix participants designed miniature cars to compete on the grueling course. To qualify, the cars had to actually travel vertically and *upside down* on portions of the steel track. Qualifying cars could not measure more than six- by three-inches and could not use remote control devices.

Engineers exhibited their creativity by submitting cars powered by rubber bands and carbon dioxide cartridges, as well as batteries. Participants included engineers from Grumman Aircraft, Honeywell, and a large contingent from Mattel, Inc. Mattel's representatives swept the top three places.

Paul Hanifan, Features Editor for Great Britain's *Design Engineering Magazine*, conducted the race. The time trials and finals attracted large crowds. "We've run this race in the Birmingham [England] show," says Hanifan. "It's a tremendous draw—a nice break after running from booth to booth."

Winners for fastest total times were: Eric Ostendorff (2.3 seconds flat); Keith Hibley (3.5 sec); and Mike Andrews (3.34 sec). William Siry, of Grumman, took top honor for most original design. The previous speed record of 3.66 seconds was held by English auto maker, the Fraser Crane Co.

\*\*\*\*\*

FOR SALE

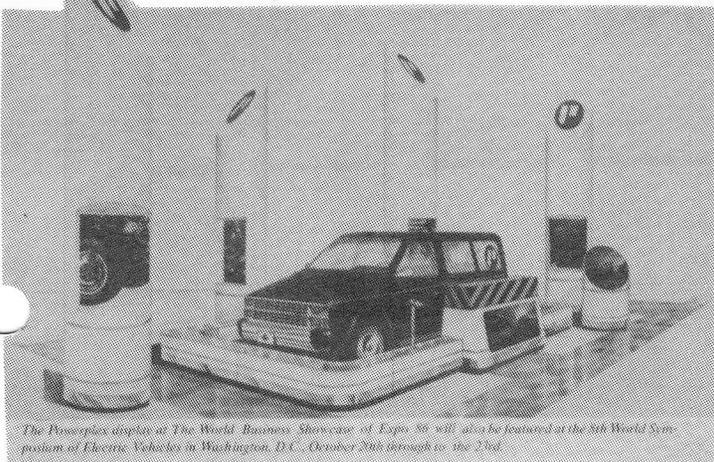
76 AUDI two pasenger 96/12 volts. complete and in running condition. Curtis PMC Controller 4KH. Lester Charger 240V-120V input, 96V-12V output. Pictures on request. \$1200. Box 2032 Carmel CA 93921, (408)624-4563

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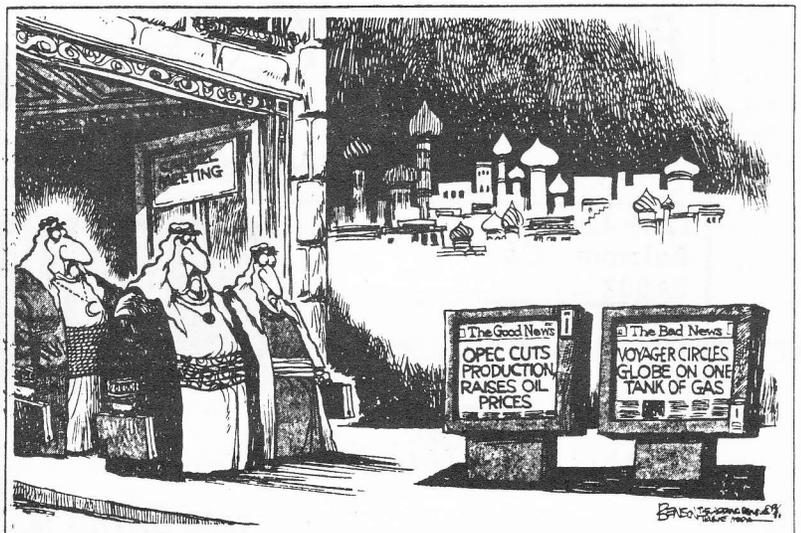
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Powerplex Sodium-Sulphur Van at EXPO

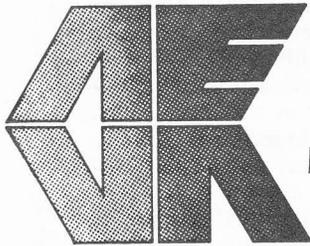


The Powerplex van at The World Business Showcase of Expo '86 will also be featured at the 8th World Symposium of Electric Vehicles in Washington, D.C., October 20th through to the 23rd.



# WHATS HAP'N

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AUG. 22 & 23rd.



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Call the contact person for meeting  
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# NEWS

FEBRUARY 1987

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