



SUNNYVALE RALLY GETS TANKED!

No, that doesn't mean a beer booth. What it does mean is that the prototype electrically powered armored personnel carrier built for the army by FMC will be a featured exhibit at this year's Sunnyvale rally. This should silence the critics who say that EVs aren't powerful enough! A representative of FMC will also make a presentation about the project at the symposium on Sunday.

The rally committee is also trying to arrange a symposium speaker and exhibit on superconductivity. This exciting new technology got an electric car onto the cover of Time magazine, and could provide the breakthrough needed to make better motors and powered roadways a reality, and bring EVs into the mainstream.

The rally itself will be run very similarly to last year, with a few minor changes. The date is Saturday, September 19th, and the place is, as usual, the parking lot of Control Data Corporation at 215 Moffett Park Drive in Sunnyvale.

From 10:00 until 1:00, will be a static display time. This gives the drivers an opportunity to look over the other cars and talk with other drivers, as well as a chance to visit the other exhibits. This is also the time to take care of last minute rally registrations and brunch tickets. (Of course, it's better not to wait until the last minute.

As last year, the cars will be

required to pass a technical inspection to insure that the car is "street legal". This inspection will be conducted during the static display time.

Vehicles must have:

1. Current California registration
2. Adequate tires and brakes
3. Windscreen and wipers
4. Rear-view mirror
5. Back-up capability
6. Turn signals and brake lights
7. Seatbelts
8. Headlamps
9. A positive power disconnect
10. Fenders & working doors (if these were original equipment)
11. A passenger seat.

(Some items do not apply to two- or three-wheeled vehicles.)

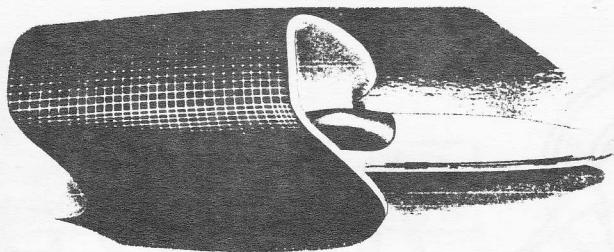
In the interest of maintaining a safe minimum road speed and showing EVs to the public in a favorable light, drivers are requested to maintain a minimum average speed of 20 - 24 mph around the course.

The rally itself will run from 1:00 to 4:30. The long range course has been dropped this year.

The symposium will be held at the Sunnyvale Sheraton on Sunday, September 20, from 9:00 to 12:00, followed immediately by the awards brunch.

To make brunch reservations, call (408) 734-8385 Pat Hardage. For other rally information, call (408) 429-1989 Mike Brown.

DON'T MISS THE SUNNYVALE RALLY!



HAWAIIAN SOLAR CAR ENTERS FIRST SOLAR POWERED RACE

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Paul Mitchell, president of John Paul Mitchell Hair Care Systems, today announced the entry of the MANA LA, a solar racing car, into the World Solar Challenge, the first solar powered (only) race across a continent.

The MANA LA, along with the other 24 international entrants, including General Motors (U.S.), Ford Motors (Australia), The Institute for Automotive design (U.K.), and Hoxan Corporation (Japan), will leave Darwin, Australia, on November 1, 1987, traveling 2000 grueling miles through the barren Australian outback, to Adelaide on the southern coast of the continent. The sole power source for all entrants is the sun.

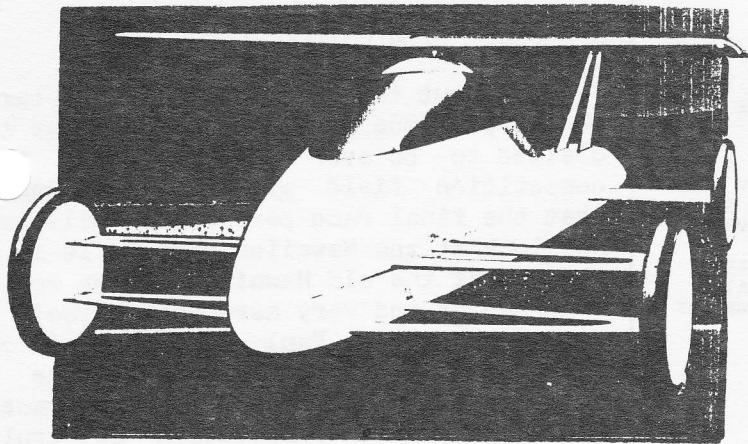
Said Mitchell when announcing the entry of the MANA LA, "We have entered the World Solar Challenge to show the world that technologies exist now, to produce transport systems that are both economically viable to manufacture, and ecologically safe and clean to operate. A brief look at the names of some of the other entrants suggests that we are not alone in this opinion."

The MANA LA, which means 'power of the sun' in Hawaiian, is the New Age State-of-the-Art creation of Hawaii environmentalist and solar researcher, Jonathan Tennyson and the team of specialists he has gathered about him at his studio and retreat on the slopes of Mauna Kea on the Big Island of Hawaii. The aerodynamic design of the car is sure to make it the most controversial entrant in the Solar Challenge. When asked why this 'Star Wars' design was chosen for the MANA LA, Tennyson replied, "The design was not chosen, but rather evolved from the specific needs of the car itself. We asked ourselves what was needed to minimize drag and weight, while maximizing speed and utilizable solar exposure and this was the design that revealed itself to us."

Construction of the MANA LA should be complete by the end of June, when driver and crew training begins on the dry side of the Big Island, an area which very closely resembles the Australian outback in solar exposure and wind. Simultaneously, filming of the MANA LA will commence by a National Geographic film crew, who plan to feature the MANA LA Team in a special one hour television film documentary on the Solar Challenge.

Press Contact: John Worcester, Team Manager (808) 776-1039 or
Roz Rubenstein, Publicity (707) 823-0503

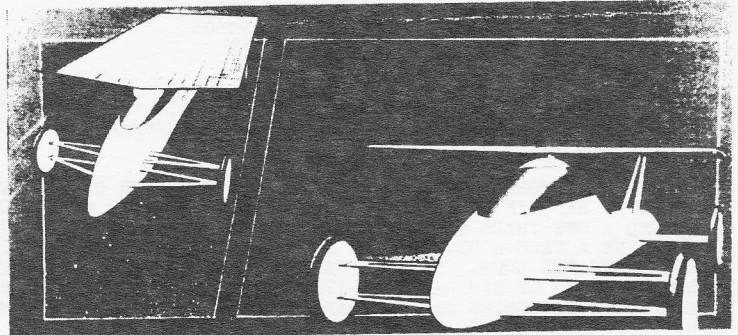
uses
Westach gauges
supplied by Electro Automotive



Ford Australia's 'Model S' solar powered vehicle will compete in the Darwin to Adelaide Pentax World Solar Challenge in November.

FORD has launched a sleek, aerodynamic, sporty looking car which doesn't use petrol. It is the Australian company's entry in the Pentax Solar Challenge, a gruelling race from Darwin to Adelaide, set for November. Called the Model S because it runs on energy from the sun, the car was built by a team of Ford engineers.

Ford says the car is the culmination of seven years research into the use of lightweight materials, low rolling resistance and aerodynamic efficiency. Project engineer Jon Retford leads the Ford team working on the new Falcon's sophisticated electronics. In 1985, Ford and the Ford team produced a lightweight vehicle which took the world fuel economy record to 5107 miles per gallon. The 15 man Ford team now believes it can produce a race-winner due to Ford's Aerospace technology and Electronic Equipment Division.



Ford Model S

The car's aerodynamic body is of monocoque construction and built with Kevlar and carbon fibre materials for strength and lightness. A series of solar cells is mounted on top of the vehicle to collect the sun's rays which are transformed into electrical energy to drive a permanent magnet motor.

The power electronics were developed by a team from Monash University, headed by Dr. Graham Holmes. The solar collection system was developed by Solarex and Ford Aerospace, while the energy collected is stored in batteries developed in US space programs. Australian battery manufacture, Dunlop, provided their advanced lead-acid Pulsar batteries for initial test purposes to support the vehicle's development. The Model S shape was developed through wind tunnel testing at the Royal Melbourne Institute of Technology during the last two years.

The vehicle, driven solely by sunshine, can exceed 100 kph, and while the Model S may not carry more than one person, it could be one of the Ford company's most economical vehicles.

THE SUN, SATURDAY, JULY 25, 1987

from ALTERNATE ENERGY TRANSPORTATION

THE "TOUR DE SOL" SOLAR CAR RALLY took place in Switzerland on six days, June 24-July 4, covering 441 km or about 274 miles, an average of about 45 miles/day. Everything we can tell you about it was laboriously translated from the German magazine report, one word at a time.

There were several classes in the rally, and Kategorie I looks like the prestige class to win. First in this class was Axel Krause, whose "Solaris" (No.12) finished in 8 hrs 9 mins, an average of 33.6 mph. The array measured 4.35m by 1.65m or 7.18 sq.m., about 77 sq.ft. As a point of comparison, the maximum size for the Solar Challenge in Australia this fall is 4m by 2m or 8m² or 86 sq ft. The vehicle that crossed Australia in 1983 had a 90 sq ft array. The motor for the Solaris 12 is about 5HP, the system voltage 60. The average speed was stated to be 50 km/h, top speed 80 km/h; so the average speed in the rally of 54 km/h was pretty good. The car weighs 250 kg (550 lbs).

WE WERE MOST SURPRISED BY THE NUMBER of entrants in all the classes combined, namely 113 (27 in Kategorie I). In last month's AET we listed the entrants so far in the Australian event coming up in November, namely 26, and even that seems like a lot. Imagine over 100 "Solarmobiles" tooling around the Alps! And all different. If we come up with any information on this rally written in English, we'll be glad to bring our readers further info. Meanwhile, we congratulate the promoters of the Tour de Sol on an outstanding event!

TEST REPORT ON ALCO 2200 SPECIAL DESIGN ELECTRIC VEHICLE BATTERIES
(EFFORT PAID FOR BY T.F.C.E.V. AS AN INTERNAL RESEARCH PROJECT)

TESTING WAS PERFORMED ON TEST STATION "C" USING OUR CALIBRATED E.V. TEST CYCLE WHICH HAS SIX LEVELS OF DISCHARGE DURING A ONE MINUTE CYCLE THAT SIMULATES A ONE-THIRD MILE ACCELERATION, CRUISE, AND STOP. THE AVERAGE DRAW IS ONE AMPERE-HOUR, AND THE EQUIVALENT SPEED IS 1/3 MILE/MIN. OR TWENTY MILES PER HOUR. THE NUMBER OF CYCLES COMPLETED BEFORE FALLING BELOW 80% DEPTH OF DISCHARGE DIVIDED BY THREE IS THE EQUIVALENT DAILY MILEAGE. THE BATTERIES ARE DISCHARGED, COOLED, AND CHARGED ONCE PER DAY USING FERRO-RESONANT CHARGERS.

THE FOLLOWING RESULTS WERE OBTAINED:

TEST PERIOD: 15 NOV 84 TO 03 MAR 87

CYCLES COMPLETED: 103,238

MILES EQUIVALENT: 34,412

AMPERE HOURS IN: 100,805

AMPERE HOURS OUT: 89,477

WATER CONSUMED: ONE GALLON/MONTH FOR 28 MONTHS

MAX. DAY'S MILEAGE: 46.33 @ 86 DEG F IN SEP 85

MIN. DAY'S MILEAGE: 34.33 @ 58 DEG F IN JAN 85

LAST DAY'S MILEAGE: 35.00 @ 63 DEG F IN MAR 87

ENERGY CONSUMED: 8350 KWH (EST)

INDIVIDUAL BATTERIES ARE AVAILABLE FOR AUTOPSY BY INTERESTED PARTIES.

Erwin A. Ulbrich Jr.

ERWIN A. ULBRICH, JR.
CA. REG. PROF. ELEC. ENGR. NO. 08776

EDITORIAL

How about those fantastic solar cars on the previous pages? The Ford car is claimed to do over 60 mph. With the competition field growing, who knows what the final race performance will be? And look at the Hawaiian entry. It is a shape that the old Hawaiian kings would be proud of and very aerodynamic too! I understand that Paul MacCready (of Gossamer Condor, Albatros, etc. fame) is also designing a car for the race. The aerodynamic competition is truly world class and incredible!

It will be interesting to find out what new motor, controller, and energy system management methods are used by each entrant. These could be of direct benefit to us. After all what is a solar car but an electric auto that doesn't have to plug in to recharge? The efforts put forth in this race may very well advance the state of the art of auto construction.

This first ever 'cross a continent' solar car race seems to be capturing the imagination of technologists the world over. It may well spawn a new generation of engineers, technicians and students who believe in electric transportation and want to 'make happen'.

These solar cars are specialty vehicles and are not yet practical for everyday use but our vehicles are practical and in everyday use. What we need is a 'cross continent' competition that can capture the imagination like the Australia race. It should have a monetary incentive for a certain level of accomplishment. Like the Kraemer Prize was for man powered flight. This would prove the electric cars practical worth to the public and prize money would bring publicity to

(cont. last pg.)

10A Wednesday, August 19, 1987 ■ San Jose Mercury News • • • •

Reusable superconductor

Material reportedly stable after heating, cooling

WASHINGTON (AP) — Scientists announced Tuesday that they have developed a superconducting material that remains stable at relatively high temperatures despite repeated use, a characteristic not seen in other similar materials.

Physicists at the University of Maryland in College Park said their material consistently conducts electricity without resistance at temperatures of minus 9 degrees Fahrenheit.

Measurements indicate that the new compound is a stable superconductor at a temperature 2½ times higher than that previously reported by researchers at other institutions.

Drs. Jeffrey Lynn, Rolfe Glover III, and Satindar Bhagat said other scientists have reported finding materials that appeared to be superconductors at even higher heat levels, some approaching room

temperature. But these other compounds are less stable and lose their ability to channel electricity without loss of energy after being heated or cooled a few times, they said.

"Our material is similar to other high-temperature materials, but ours happens to be more stable," Lynn said in a telephone interview. "We can cycle superconductivity on and off many times and get the same consistent measurements."

The ability to transmit electricity without a loss of energy to resistance has received renewed interest in the last year from scientists and business people. Superconductivity could lead one day to better computers, magnetically levitated trains and more efficient generation and transmission of electrical power.

Materials must be chilled before becoming superconductors, and un-

til recently they had to be made colder than 400 degrees below zero Fahrenheit. This required using expensive and hard-to-handle coolants such as liquid helium.

In the past year, however, researchers worldwide began reporting superconductivity in a new class of materials at much warmer temperatures, allowing cooling with much cheaper refrigerants such as liquid nitrogen.

Research also points to the possibility of one day developing superconductors that work at room temperature, researchers say.

The new superconducting materials mostly are compounds of copper, barium, oxygen and yttrium or similar rare elements.

The Maryland researchers said their material, which they first fabricated five weeks ago, is made of yttrium, strontium, barium and copper oxide.

the event.

This is the concept that Wally Rippel of has proposed. You may remember the Great Electric Car Challenge between MIT and Cal Tech. It took place in 1970 or 71. Each university built a car and attempted to be the first to drive it to the other university. Wally was involved in setting that up. He believes that it is high time to have a new challenge under new terms. But this time it should be open to anyone and a fat cash prize would make it worth the

effort. It should be set up to show the practicality of today's electrics in a 'cross continent' travel situation.

No date has been set yet as it is only in the conceptual stage. But Wally is very interested in input from the EAA membership. Think about it. I will go into more proposed details next month.

I think that these two events will do more for the promotion of electrics than has happened since the '73 gas lines!! Lets CHARGE ahead. --Paul Brasch

EV Marketplace

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PROJECT X

We have started a fund with \$1000 to design a STATE OF THE ART HYBRID VEHICLE as an EAA project. We will need a minimum of \$10,000 for this project anyone wishing to contribute please send check to EAA PROJECT X, Lee Hemstreet 787 Florales Dr. Palo Alto, CA 94306.

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NEW VIDIO TAPE AVAILABLE

Running With The Sun:
The Stanford Solar Car Project
VHS tape

LOAN ONLY: Dr. John Reuyl
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ADS must be received with payment by the 10th of the month, for the following month's issue. AD rate is min. 1 to 5 lines \$5.00, 1/4 Pg. \$15.00, 1/2 Pg. \$25.00, full Pg. \$50.00, full Pg. 2 sides \$100.00. For Sale, Wanted, Trade, etc. Mail to EAA 1249 Lane St. Belmont, CA 94002.

CALENDAR

Sept. 16: 7:30pm.m - Melbourne
 ROBIN LISNER--An introduction to Solid
 State Control, Engineering Lecture Theatre
 E5 Monash University.

SUNNYVALE RALLY

Sept. 19-20 Sunnyvale Rally & Symposium,
 Call Mike or Shari (408)429-6717.

Call Pat Hardage for BRUNCH reservations
 408-734-8385

Sept. 28-29 IEEE Automotive Electronics
 Conf., London, England.

Oct. 17, 8:00 AM 'til ?? Ontario near the
 old Ontario Motor Speedway. Rally
 Headquarters are on Milliken Ave. between
 San Bernardino St. and 6th st..

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For information on forming a chapter in your
 area write Electric Auto Association, 1249
 Lane St. Belmont, CA 94002. For a sample copy
 of the newsletter send SAE #10 envelope.
 PHONE (415)591-6698

EDITORS: -Clarence Ellers John Newell - Bill Palmer - Paul Brasch - COMPILED AND
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 EVENTS. ARTICLES-Comments etc. all correspondence to address below

Electric
 Auto



NEWS

Association

SEPT, 1987

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