June 1988

MEETING NOTICE

The next meeting will be June 17th, at *CRAGIN FEDERAL SAVINGS & LOAN* 333 W. Wesley St. Wheaton, Ill. - Time - 7:30 P.M. sharp. Guests are welcome and need not be members to attend the meeting.

THE PRES SAYS

The last three meetings have been devoted to the FVEAA exhibits of electric cars at last month's Kane County Antique Flea Market and the Argonne Rally. We will spend a little time at the June 17th meeting on a Rally debriefing, recording what can be learned from this recent event.

I would like to propose for a future event that we consider a modest parking lot display of our cars some Saturday at Cragin's Wheaton Bank where they have provided meeting space for the FVEAA. Your thoughts on this idea are solicited.

Several members have mentioned they would like a program on controller upgrading now that they have the Maryjanes but need help to get their system voltage changed. I agree we need to return to some tachnical discussions, starting with this topic at our next meeting.

We also need to discuss the continuing operating problems with the FVEAA Club Car and reach a decision on the future for the vehicle.

If there is time, another rountable discussion about the status of member's cars operating, in construction, or planned to determine who may need assistance, advice, or encouragement.

Bill

F. V. E. A. A.

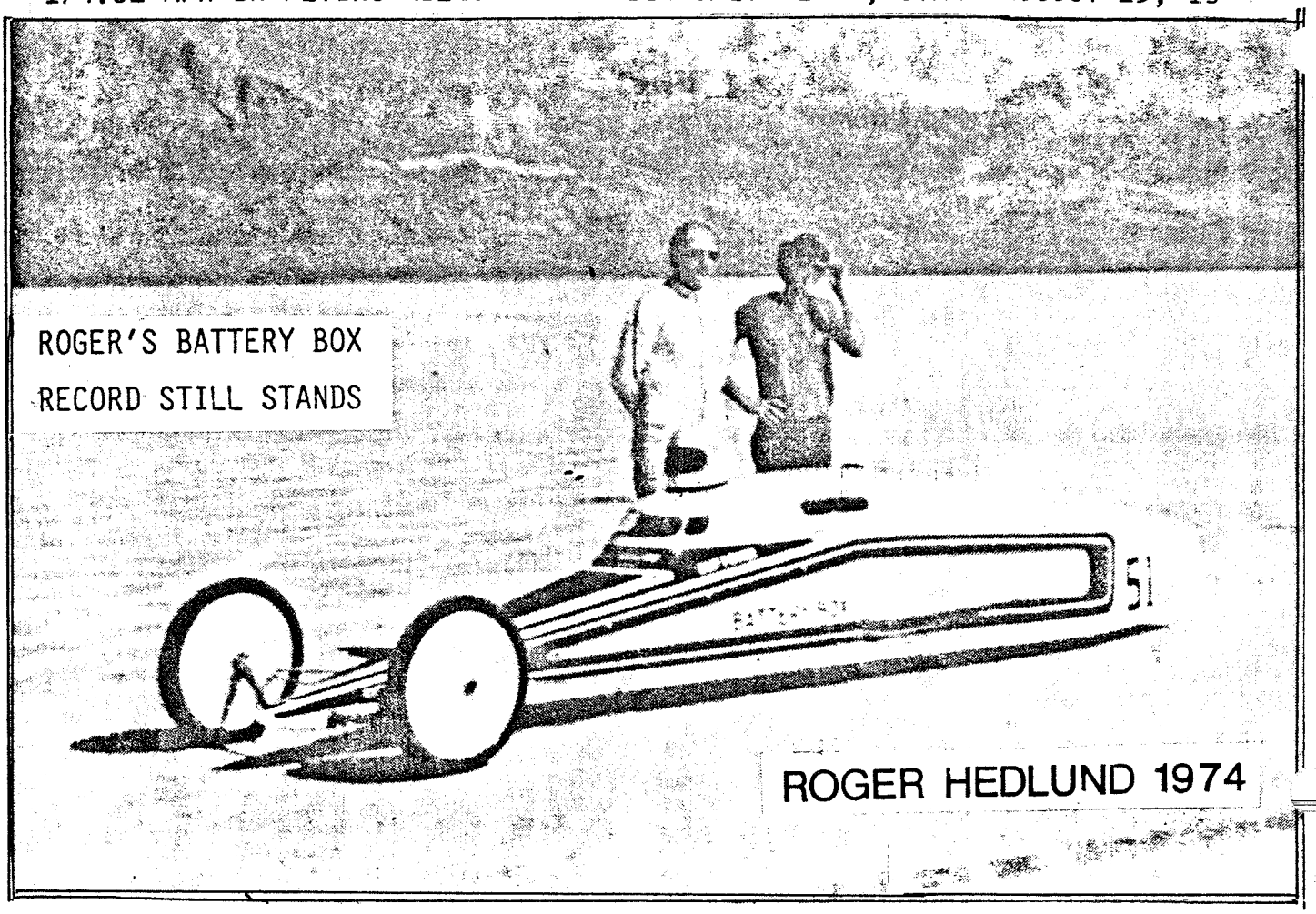
FOX VALLEY ELECTRIC
AUTO ASSOCIATION
624 Pershing St. Wheaton, Il 60187

FIRST CLASS

ADDRESS CORRECTION
REQUESTED

WORLDS FASTEST ELECTRIC VEHICLE

174.92 MPH IN FLYING MILE: BONNEVILLE SALT FLATS, UTAH--AUGUST 23, 1974



BATTERIES- SEARS DIEHARD, SIZE 22, 71-AHR.,12V.

BATTERIES; 28 DIEHARD 12 VOLT. FULL POWER 200 VOLTS @ 700 AMPS.

MOTOR-GE BY 401
120 VOLTS, 20 HP

VEHICLE WT.--700 LBS.
BATTERY WT.-1120 LBS.
TOTAL-------1820 LBS.

MOTOR DC SERIES WOUND, 25 HP CONT. RATING, PEAKE POWER=200 HP

NOW PART OF HARRAH'S COLLECTION

CHAIN DRIVE-MOTOR TO JACKSHAFT
JACKSHAFT TO EACH REAR WHEEL

ELECTRIC VEHICLES INVADE 'MOTOR CITY'

Back in the early 1900s, automobiles powered by electricity were far more attractive than gas-powered ones. Gasoline was expensive, in short supply, and engines had to be started by hand cranking. Electricity was clean, cheap, and readily available. But in today's society of convenience, the notion of a vehicle that has to be plugged in every day or so for recharging seems silly. That may be changing.

In February, a conference entitled "Electric Vehicle Commercialization: Benefits and Opportunities" was held in Long Beach, California. Sponsored by the Electric Power Research Institute (EPRI), the Electric Vehicle Development Corporation, Southern California Edison, and the Los Angeles Department of Water and Power, the conference addressed commercial applications for electric vehicle (EV) technology. The main attraction was the unveiling of a prototype of the "G-Van," General Motors' latest EV.

"Achieving full-scale design and manufacturing of an EV at mass-production levels is a difficult process," says Product Development Engineer Mike Lechner, who attended the event. "GM's prototype is a major step ahead of EVs we are using now."

Since 1985, PNM has had three Griffon electric vans in the motor pool, manufactured by GM's British subsidiary Bedford Commercial Vehicles. Like the Griffon, the new vehicle is built on a standard frame and body that would normally be equipped to run on gasoline or diesel fuel. But the G-Van will be the first full-scale production line of EVs manufactured in the U.S.

NEW MEXICO

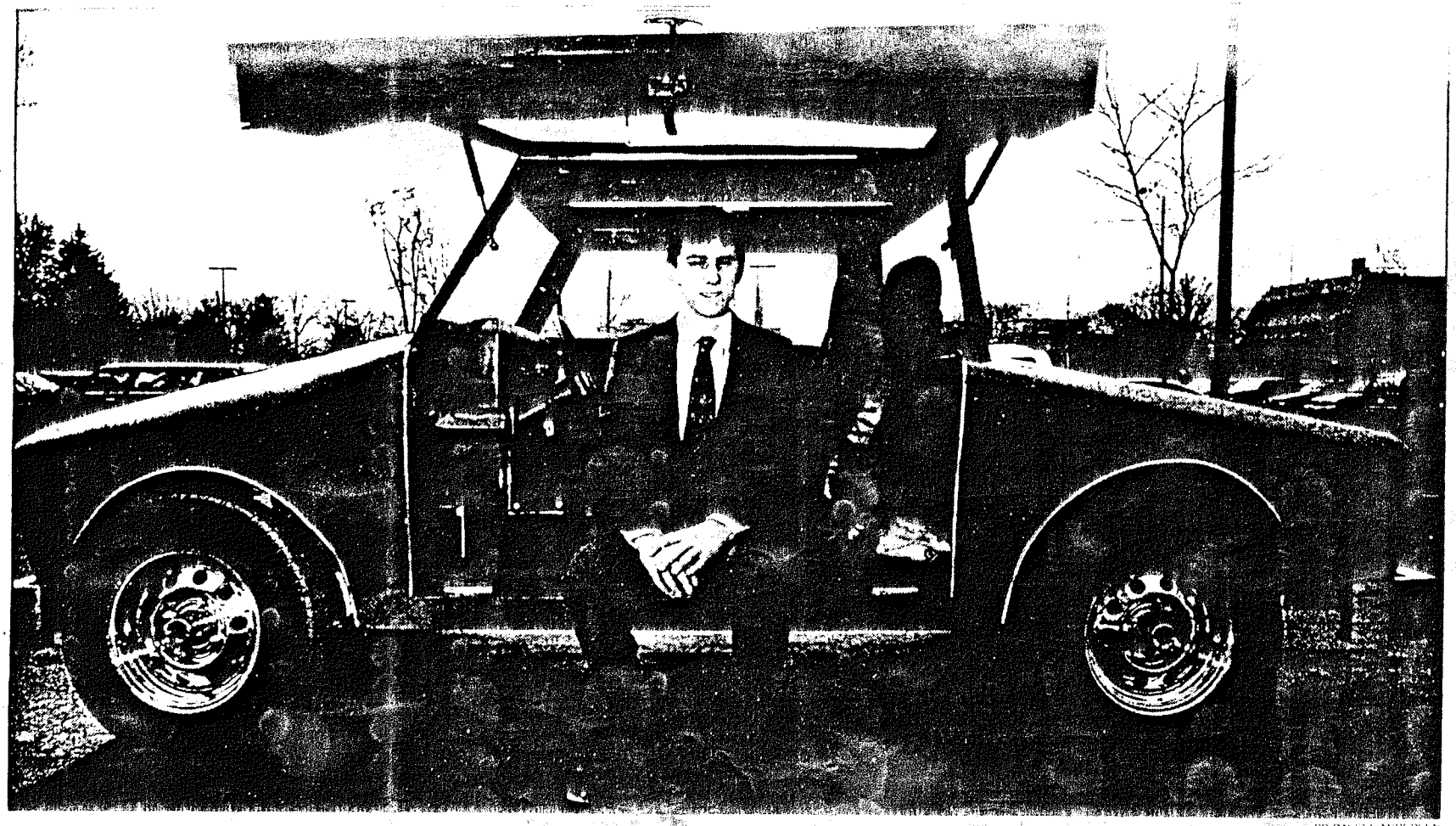
ELECTRIC VEHICLE USERS GROUP

Lechner

Lechner has been closely involved with EPRI since 1976, beginning with the Solar Heating and Cooling Working Group, later as a loaned executive during 1980 and 1981, then as a member of the Energy Utilization and Conservation Task Force, and (in 1985) chairman of the Industrial Applications Program Committee. During this time he also served as a member of the PEAC planning group, and now he is serving on the EMU Division Committee. His interest in power electronics began in the early 1980s when he heard EPRI Program Manager Ralph Ferraro discuss the potential value to the utility industry of new PE applications, such as adjustable-speed drives, and the role of PE in electrotechnologies, such as induction heating and melting, plasma processing, dielectric heating, and electrochemical processing.

In 1986, GM was forced to shut down its Bedford operation due to overcapacity in commercial vehicle production and a downturn in the European economy. At that time, GM decided to accelerate plans to transfer the technology to its facilities in Detroit. Over the next five years GM plans to scale-up production to 10,000 EVs a year--beginning with 10 in 1988, 100 by mid-1989, and into continuous production soon after. The estimated cost for the first models may run up to $24,000 each, but lower prices are expected as production volume increases.

Interest is spreading beyond the innovative G-Vans. Lechner and the newly established New Mexico Electric Vehicle Users Group are currently assisting Albuquerque's Manzano High School in converting a 1983 Ford Escort to an EV as part of the school's automotive arts program. He hopes to extend this program to other area public schools.



Matthew T. Tipple sits in the solar car he made by hand.

PD DAVID E. ANDERSEN

Student's sun-powered car wows science fair

By WILLIAM F. MILLER
STAFF WRITER

The full-sized apple-red car, powered by 1,800 solar cells, was easily the show stopper yesterday at the Northeastern Ohio Science and Engineering fair at Baldwin-Wallace College.

Whether Solarex, the nearly all-aluminum car that runs on the sun's rays, will win one of the two grand prizes will not be known until final judging tomorrow.

"That is a long time to wait, isn't it?" said Matthew T. Tipple, 17, the Keystone High School senior from La Grange, O., who built the car.

Because the car was to large to through the doors, the tall, reed-thin Tipple had to show a panel of judges his science project outside the recreational building where 400 students, in seventh through 12th grades, had their projects.

"I think the car is fantastic," said Carole A. Allore, a Cleveland school teacher and judge who also is a resident scholar with Cleveland Electric Illuminating Co. this year.

Tipple, who in two previous science fairs when he was a sophomore and junior designed toy-sized solar cars, decided this year to produce a full-sized vehicle. Last year, he won first place for engineering design in state competition for his model car.

The hand-made vehicle started with a transmission, front struts, a transaxle and steering wheel salvaged from a 1968 Volkswagen. He then handbuilt its suspension system and body, including the gull-wing doors.

The electrical power comes from solar cells. They charge nine 12-volt batteries in the front of the car and four in the trunk. A five-horsepower electric motor in the trunk turns the wheels.

Tipple said the car would travel at 45 mph tops. At night or on cloudy days, he said the car could go about 120 miles on battery power.

To help finance the project, he lined up 14 sponsors, including a few family members in the construction business. He assembled the car in a barn workshop on his family's property.

He estimated the car cost $15,000, of which $3,000 was his money. His schoolteacher mother, Marilyn, said her son sold personal possessions to help raise money.

"I built my car because I believe we need to clear up our environment, and I wanted to do something about it. I worked on it seven days a week after school since November and seldom took a break," he said.

He even built the trailer to transport the car to the fair.

Because he just finished it and has not applied for license plates or insurance, the car has only been test driven on a 300-foot long driveway on his family's 13-acre property.

Not surprisingly, Tipple said he planned to be an engineer and design cars for the Ford Motor Co., his favorite car producer. But to get there, he will enroll at the General Motors Institute in Flint, Mich., this fall.

The two top winners of the fair in Berea will compete at the International Science and Engineering Fair in Knoxville, Tenn., May 8-14, where scholarships and other prizes await the winner.

THE IMPORTANCE OF THERMAL MANAGEMENT OF EV BATTERIES

(Figs. 4,5,15 & 19 are reproduced from "Methods to Improve Electric Vehicle Performance at Low Temperture, Based on an Analysis of Battery Test", by Dieter K. Nowak, EVC Expo 1983)

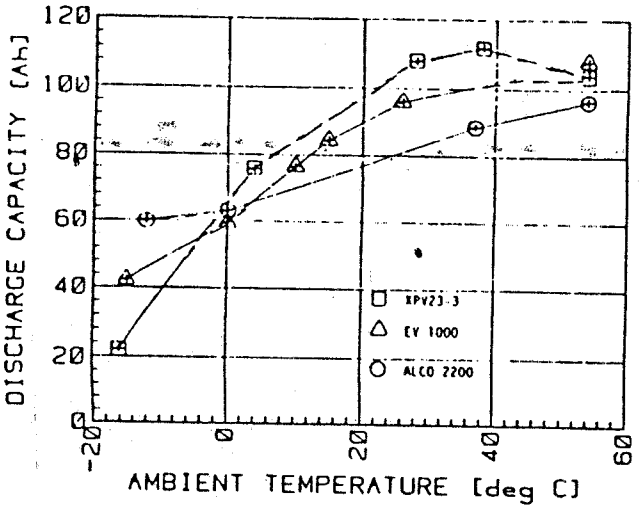


Fig.4 Discharge capacity as a function of ambient temperature

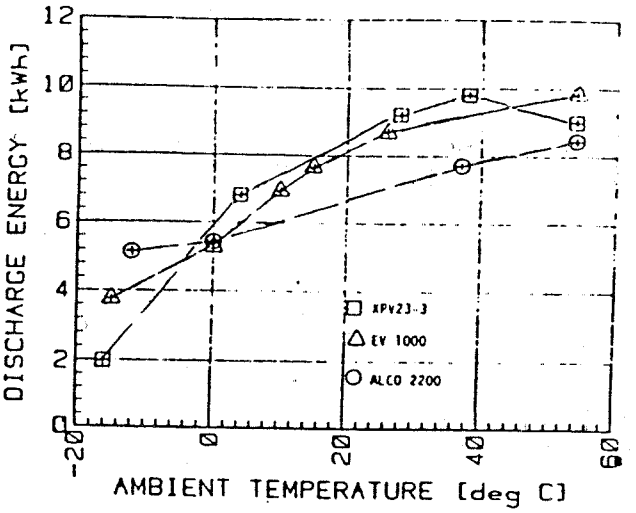


Fig.5 Discharge energy as a function of ambient temperature

Heating while charging helps to prrevent chronic undercharging of weak cells.

Thermostats with remote sensors are available for control of temperture.

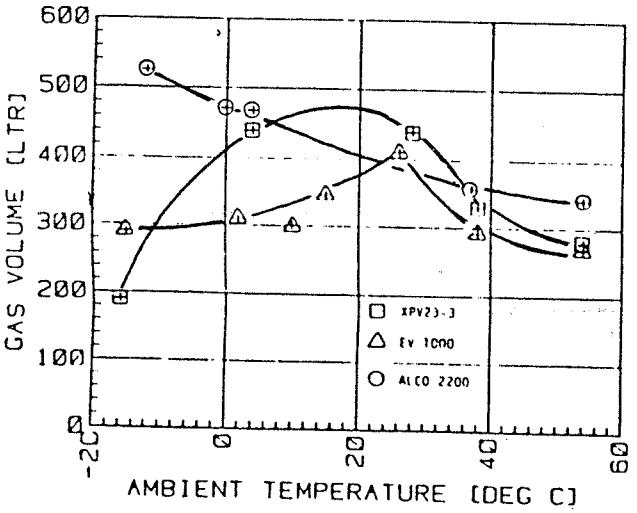


Fig.15 Gas volume developed during charging at different temperatures

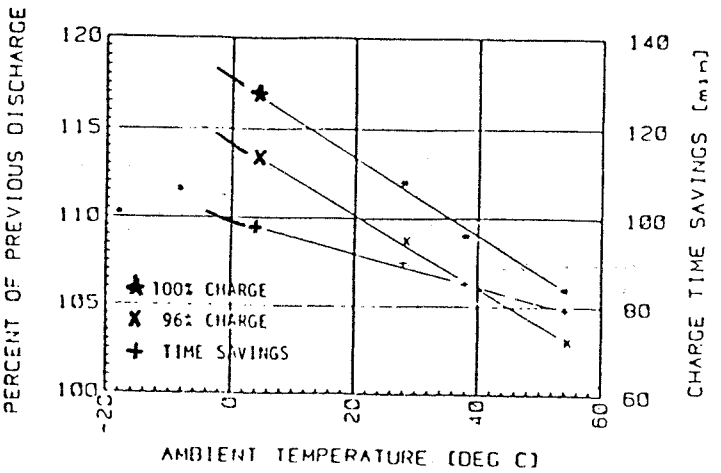
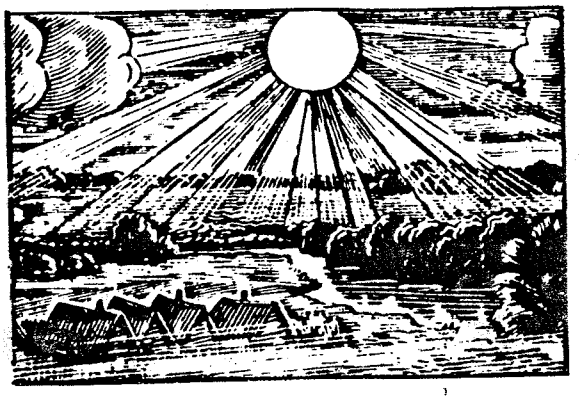


Fig.19 Percent of charge of the 100% discharged battery that needs to be fed back to charge the battery 100% and 96% and time savings associated with the 96% charge.

Edited version of a 3 pg. artical by Jon Gabel, East Bay Chap.

Solving the next energy crisis: It's done with mirrors



By Ray Moseley
Chicago Tribune

REHOVOT, Israel—It's easy enough to collect solar energy in a desert. But how do you get it from there to cities where it is needed?

Professor Israel Dostrovsky, one of Israel's leading energy experts, is looking for an answer to that question, one he hopes will give Israel a head start on the rest of the world when the next energy crisis occurs.

He hopes to find out how to convert solar energy to chemical form so it can be stored and transported over thousands of miles. He has had some success in laboratory experiments, and now he is starting to experiment outside the lab with an elaborate array of giant mirrors and other equipment on the grounds of the Weizmann Institute of Science in Rehovot.

Rehovot, about 15 miles southeast of Tel Aviv, is a long way from the desert but gets enough sunlight to enable Dostrovsky to conduct his experiments. If they succeed, solar-energy collectors could be built in the Negev Desert in southern Israel to supply energy to industry in all parts of the country.

His technique involves passing a mixture of methane gas and steam through a reactor containing a suitable catalyst heated to about 1,800 degrees Fahrenheit. The components react to produce a gas consisting of three parts hydrogen to one part carbon monoxide.

This mixture, called synthesis gas, fueled the gas lamps of Europe at the turn of the century, before the age of electricity.

The problem he is trying to solve is how to use solar energy to produce the heat needed for the reaction. The synthesis gas then would be transported by pipeline from a production unit in the Negev to factories, much as water is distributed today. The heat from the burning of synthesis gas produced by converting solar energy to gas would be used to replace oil and coal.

Israel is among the world leaders in energy research because its own energy resources are scarce and it is barred from the purchase of Arab oil and gas.

Already Israel uses about half a million solar-energy collectors on roofs of houses, more than any other nation, to provide hot water. This accounts for about 2 percent of its energy consumption. The goal is 20 percent.

"Our program differs from what others are doing in energy research," said Dostrovsky, a former president of the Weizmann Institute and the first director general of the Israel Atomic Energy Commission.

"Ninety percent of energy research is directed to producing electricity, but in most nations electricity accounts only for about one – third of energy use. Even if you solved all your electricity needs, you would still be left with the problem of the other two – thirds, which is entirely fossil-based.

"I expect that in the mid – 1990s we will face another energy crisis, and we should be ahead of other nations that then will be starting up. The U.S. is still doing more in energy research than everyone else in the world put together, but the Reagan administration has turned the taps down on this effort. The U.S. was doing a lot more 10 years ago."

The concept of transporting heat produced in high – temperature reactors through what is known as a chemical heat pipe was developed in West Germany. Weizmann researchers are trying to find out how to apply this concept to the transport of solar energy.

On the grounds of the institute they have built a "solar furnace" that is capable of collecting more than 20 kilowatts of solar energy from a single large, flat mirror and concentrating it at an intensity of more than 10,000 suns to achieve extremely high temperatures.

But there are limits on how much they can learn from this experiment. So nearby they are building a $12 million facility in which 64 computer – controlled mirrors with curved surfaces will collect sunlight and concentrate it in any of four experimental stations located at various heights on a 178 – foot – high tower.

This will be able to deliver 3,000 kilowatts of energy at any intensity of several thousand times the power of the sun.

High earth mounds were built around the facility as protection. "Concentrated sunlight is dangerous," Dostrovsky said. "One of these mirrors can blind you; a couple of them can cook you."

He said a facility large enough to generate solar energy for industrial purposes would require about 7,000 mirrors.

The Weizmann scientists also are investigating the possibility of using lasers to convert sunlight to energy without photochemical reactions.

Dostrovsky said the chemical-conversion technique relies on existing technology, and he predicted that it could become operational within about 10 years. But he said that the laser technique is "the next generation" and that there are many hurdles to overcome before it can be used.