

FVEAA NEWSLETTER
June 1984

MEETING NOTICE

The Fox Valley Electric Auto Association meets on the third Friday of each month in the lower level of the Mid-America Federal Savings Building which is located at 250 E. Roosevelt Road in Wheaton, Illinois. Our meeting this month will be on June 15 at 7:30 p.m. John Ende will present slide pictures showing how he built his car. We will have electric cars on exhibit in the parking lot at 7:00 p.m.

FOR SALE '64 Renault Dauphine fully-restored car - \$1500 - by Roger Sutfin. Call 858-4788 or 858-2189 and leave message. I would also like to obtain a narrow, 3-wheel electric scooter. Something that could be fixed up would be all right.

FOR SALE '81 Fiat Strada four-door hatchback with sun roof - Lectric Leopard - blue - Model 96A - 3000 miles. Runs perfectly. Cost \$14,000 new - asking \$3400. By John Kennedy. Call 687-6398.

FOR SALE '75 Ford Pinto - two-door - Engine and the exhaust and fuel systems have been removed. Would like to get \$500. By Richard Cole 682-9317 or 665-8045.

TOWING If you have any towing needs call Dana Mock - 312-759-8033.



Fox valley electric auto association inc.
624 Pershing St. Wheaton, Il.
60187

MINUTES OF FVEAA REGULAR MEETING

May 18, 1984

The meeting was called to order by President, Joe Pollard at 8:05 p.m.

Reading of minutes and reading of the treasurer's report was dispensed with in order to give more time to the evening's presentation by Ken Meyers.

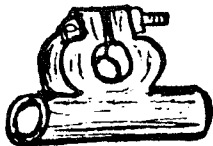
No official business was conducted this evening.

The evening's presentation was given by our club member, Ken Meyers. He presented and discussed two circuits he had developed. The first was a switched capacitor DC-DC converter intended for use as a replacement for an auxiliary battery. Input to the converter is 12 to 24v DC and output is 12-14 VDC at about 10 AMPS. The second circuit was a small motor speed controller. This circuit is intended for electric bicycles and similar small electric vehicles.

The meeting was adjourned at 9:30 p.m.

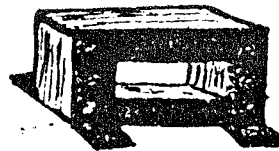
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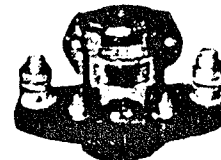
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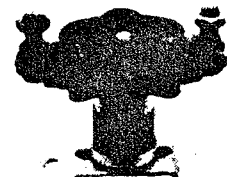
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ITEMS AVAILABLE AT CLUB MEETINGS

Can Backyard Dams Short Circuit Utility?

Not far from a crook in the road at Shutesbury, Massachusetts is a 15-foot high stone dam, a calf who likes to lick camera lenses, and a farmhouse.

The calf's name is Buddy. The farmhouse belongs to the parents of David B. Brown. The dam, formerly the site of a grist mill, has been outfitted with a 4 kilowatt water-turbine intended to meet the Browns' household electricity needs.

It was David who wrote the grant in longhand and provided the "brow sweat" for the project, removing boulders at the base of the dam in order to gain another foot in "head" or height and building a rock foundation for the turbine.

Raymond C. Miller, author of the book *Energy From Brook Motors*, used the Brown site to test a double-feed turbine.

A turbine at its simplest consists of a multi-bladed wheel housed in a single pipe through which water escapes from a dam. The force of the water passing through the turbine turns it at a high speed. This high speed is necessary because, unlike the millwheels of the eighteenth century which performed mechanical work like grinding corn, modern turbines are connected to generators to produce an electric current.

Turbines vary in size, shape and

number, depending on the available "head" of water. A problem arises however, because the availability of water varies seasonally and often hourly. Reduced flow means a drastic dropoff in efficiency.

The "double-feed" is an effort to get around this problem. A second pipe drives a second turbine mounted on the same shaft. Thus either or both turbines

local utility. Nevertheless, he says, it's a joy on those occasions when they've got the television, refrigerator and a couple of lightbulbs on, and their electric meter is still running backwards.

Is it realistic to suppose that a family like the Browns could cut themselves off entirely from the utility?

According to Raymond Miller, the cost isn't prohibitive in the case of an



DAVID BROWN

David Morse

can be engaged at relatively high efficiency depending on the availability of water and also according to the Brown household's need for power.

David reports that although the supply of water is fairly constant to his pond, which is fed by three brooks and five major springs, leaks in the stone dam rob the turbine of some of the available power. He is working to fix them. In the meantime, the Browns still buy most of their electricity from the

existing dam-site: about \$100 per kilowatt of capacity installed. This figure seems low, but using it as a rule of thumb, the approximate \$400 for an installation like the Browns'—discounting labor—would have a fairly short payback period.

However, as long as the Browns remain hooked into the grid, they are stuck with the monthly service charge. And ironically they have to pay for electricity to "excite" their generator—which by law cannot be of the self-exciting type, lest they electrocute some hapless worker during an outage. So the payback is stretched further.

The choice is either to stay on the grid and watch the meter go backwards sometimes but not get paid for it, or get off the grid and take your chances on being without electricity during a dry season.

Now suppose you have excess capacity, which by law you are entitled to sell to your local utility and which they, by new federal law, are required to buy at the going rate. To do this you need to invest in a special Gemini control, presumably to keep from electrocuting the same hapless worker, and this will set you back a cool \$1,000 per installed kilowatt of capacity.

So if you're the owner of a small dam the size of David Brown's, you could cut yourself off from the grid—but it may be at the expense of *Saturday Night Live*.

NOTE: The backyard dam described on this page is on the farm where I grew up. The mill actually was a saw mill with a saw that went up and down instead of around.

The pond is where I learned to swim and skate, and where my brothers and I caught fish. We had hopes of doing what the Brown's did, but we moved to other places instead.

EDITOR

ENERGY OUTLOOK

Report Details EV Success *United Kingdom is world leader*

The successful application of new-generation high-performance electric vehicles for commercial fleet use is detailed in a report published by the Electric Vehicle Association and the Southern Electricity Board.

Recently announced manufacturing developments have confirmed the United Kingdom's world leadership in this field. These developments were strongly supported by the pioneering operating experience gained by the electricity supply industry, and Southern Electricity in particular, with the encouragement of the Electric Vehicle Association.

The report notes that, even accepting the fact that projections favor electricity against oil as the cheaper fuel, the latest electric vehicles can be purchased for little more than their petrol or diesel equivalents. Whether the batteries are bought outright or through leasing, the whole-life calculations result in no additional cost to the user, having regard to the lower maintenance and operating costs.

In an introduction to the report, Mr. John Wedgwood, Chairman of Southern Electricity Board and President of the Electric Vehicle Association, says that the development work has been an acclaimed success. He writes:

"The result today is that commercial operators can buy a highly refined and reliable range of traffic-compatible vehicles, not only from the traditional builders of electric models, but also from the big British names in mass-produced commercial vehicles.

"Electricity is uniquely placed to make the most of our primary fuel options. For commercial transport operators, battery electrics can provide the answer now."

The report draws attention to the longer vehicle life being attained with electric vehicles. Bodywork and accessories like compressors, vacuum pumps and even small components such as light bulbs seem to give less trouble—probably because of the lack of engine vibration. The document notes that neither excise duty, operators' license cost nor MOT tests are applicable to this type of vehicle.

The report identifies the five types of decision-makers who are likely to be consulted in any organization. John Wedgwood admits that it was not only his decision as Chairman of Southern Electric-

ity which ensured success. It needed the agreement and active support of a whole team. This included:

- The Board Secretary responsible for overall direction of Board transport policy.
- The Transport Manager who was the key professional in managing the fleet.
- The District Managers who controlled the use of electric vehicles in daily operations, and
- The Southern Electricity employees whose driving skills made the best use of electric vehicle performance.

From their carefully documented project work, Southern Electricity concluded that the cost of electricity is only two-thirds the cost of diesel fuel per mile. Maintenance costs for electrics are about 25% lower, thus making good the higher initial costs.

The report emphasises that Southern Electricity, the Electric Vehicle Association, the Electricity Council and other Electricity Boards will be pleased to share development and operating information and experience with prospective users.

John Wedgwood continues his advocacy of electric vehicles from his position as President of the Electric Vehicle Association. He hopes that the booklet will inspire others to follow the Southern Electricity lead and promises help to anyone needing further advice.

Readers can obtain information or free copies of the report from Southern Electricity House, Littlewick Green, Maidenhead, Berks, SL6 3QB or the Electric Vehicle Association, 13 Golden Square, Piccadilly, London W1R3AG.

Chloride develops rechargeable Standby Power Batteries

Chloride Power Storage—part of the international Chloride Group—today announced the introduction of a range of rechargeable "solid state" standby power batteries which open up exciting new design opportunities for the electronics industry.

The new Powerstore batteries use Chloride's recently developed "solid state" technology, known to the battery industry as "RE" (Recombination Electrolyte) and cover a wide range of both standby and primary power application. Because the batteries have no free acid and are totally sealed, there is no risk of corrosion of highly sensitive electronic components from acid spillage or fumes. They are also completely maintenance-free and are, therefore, ideally suited to be fitted as integral components in equipment, for instance as a memory back-up in computers and electronic office equipment. Other uses include fire and security alarm systems; uninterruptible power supplies; emergency lighting systems; electronic test equipment; telecommunications; and on-board marine equipment.

The Powerstore battery uses a unique, highly absorbent, porous separator material made from glass micro fibres. The separator is closely wrapped around the battery plates and takes up within its pores all the liquid electrolyte. Consequently, there is no free

acid above or to the sides of the elements as there is in a conventional battery.

Under normal operating conditions when the battery is approaching a fully charged state, oxygen is first generated at the positive plate but instead of escaping into the atmosphere (as in a conventional battery), it passes through the pores of the special separator to the negative plate, where it reacts to form lead sulphate which in turn is reduced to lead by further charging. As a result, oxygen is chemically recombined and the negative plate never reaches the right potential for hydrogen to be released. Under such conditions, no water is lost and since no free oxygen or hydrogen is produced it has been possible to dispense with the conventional form of venting system. A small safety vent is incorporated as a precaution against overcharging. Consequently Powerstore is a much safer product to handle and use being totally sealed with no free electrolyte to spill. It completely eliminates the chore of topping up with water and since no gas is released the battery is genuinely maintenance-free.

These unique features mean Powerstore batteries can be installed inside the equipment it has to power with no risk of corrosion or other damage due to acid spillage or fumes.

The PE experience

Meanwhile, back in the Northeast snowbelt, Philadelphia Electric Co. (PE), the city's electric utility, has been operating a fleet of EVs for about two years. PE, too, is operating under a cost-sharing program and will run the vehicles through April 1985. No air conditioners here, but an impressive array of EV types nonetheless.

PE's 20-vehicle fleet is a mixed bag of vans, trucks and passenger cars, including 13 converted Volkswagen Rabbits and two converted Volkswagen pick-up trucks, four Volta vans, and one converted Ford Fairmont.

The vehicles are used by a variety of departments, such as:

- *customer service* — meter reading and high-bill investigation.
- *business service* — calling upon large industrial and commercial customers.
- *maps and records* — checking on field dimensions, as poles, transformers, etc., are moved to make sure they are properly recorded on maps.
- *detailers* — who make decisions on where equipment will be installed when

new construction or improvements occur.

• *miscellaneous* — training new drivers for company taxis and for various public relations purposes.

Most of the vehicles are capable of 25 or more miles per charge and some have even been driven up to 40 miles on a single charge. Regarding "fuel" costs, the only available figures to date are on the Rabbits, which consume an average of 0.74 kilowatt hours (KWH) of electricity per mile.

PE is currently developing statistics on the other vehicles as an integral part of its data-sharing program with DOE. While PE's overall experience with the EVs has been positive to date, there were some rocky spots at the outset.

For example, there were some isolated premature battery failures after only 20-40 cycles. However, these were soon corrected. Subsequently, the utility has purchased a battery discharge load test system to test 108-volt and 120-volt battery packs under 75 amp constant current discharge. Also, some of the drivers had difficulty with the "fuel gauge" system in the vehicles. This, too, has been corrected.

Driver education is stressed

To date, about 110 drivers have been trained to operate the EVs, but for expediency, only about 15 drive them regularly. Driver education consisted of a two-phase training program, including classroom lectures describing EVs and their operation, followed by car-side and hands-on instruction. In most cases, follow-up meetings were held with drivers to answer questions and iron out problems.

In what might be termed a mini-experiment, two of the Rabbits are being used for personal driving between the home and office. One vehicle is averaging about 15 miles per daily round-trip, while the other covers 21 miles per day.

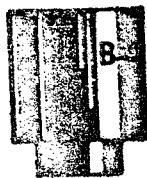
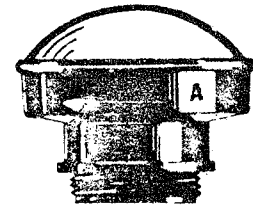
Obviously, federal government funding cutbacks will have an effect. Says a PE spokesperson: "Cutbacks in DOE's support of fleet operators in the test and evaluation program and in technological R & D is very unfortunate because solutions to most of the problems with all of the vehicles in the DOE program are within reach if DOE supports their attainment." □

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Electric Vehicles Get Good Reviews

Electric vehicles with air conditioning? Electric vehicles with the standard shift lever and the clutch pedal still in place (although vestigial organs)? You bet, and holding their own very well down in the Old Pueblo, otherwise known as Tucson, Arizona, smack in the heart of the southwestern sunbelt.

The City of Tucson is one of the last demonstration site operators chosen to participate in the federally-supported Electric & Hybrid Vehicle Demonstration Program. The city was awarded a grant to run well into 1986. The way Tucson's Operations Department people describe their experiences thus far with EVs, one gets the feeling that

ence" would be all thumbs up.

"All I really did," she says, "is what any conscientious planner starting from ground-zero would do: first analyze the duty cycles of our existing internal combustion vehicles, then learn as much about competitive electric vehicles as possible, and finally determine precisely where and how we could best utilize battery-powered cars and trucks in our everyday operations."

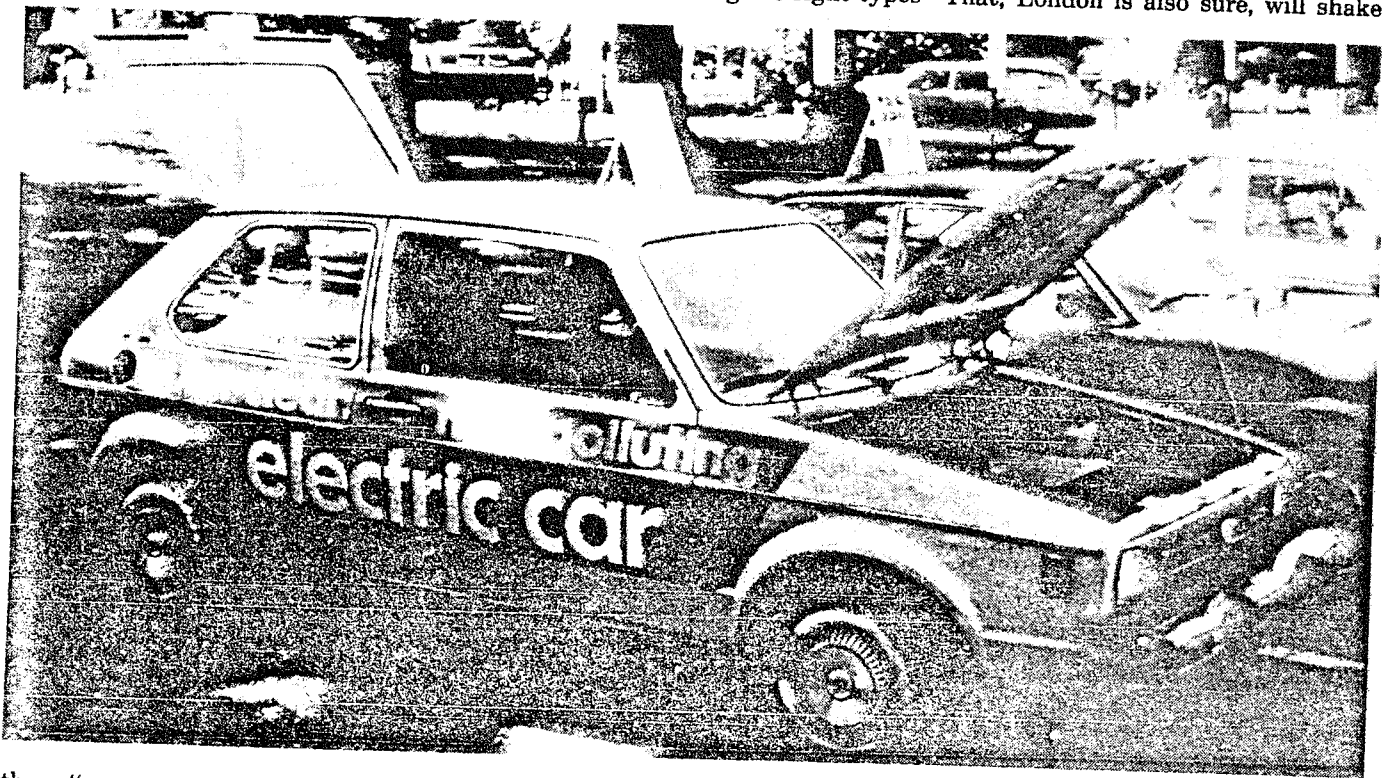
Her research found that EVs could be used for everyday administrative and field operations to perform a wide range of duties from parks service maintenance to personnel shuttle services.

Next came choosing the right types

for the sedans. Certain design features were specified by the City Operations Department — such as air conditioners in each vehicle to combat Tucson's sustained 100-degree F heat during the summer months, and the physical remains of the shift lever and the clutch pedal — just to make drivers feel that the EVs are really no different than conventional vehicles.

Stanley London, Supervisor of the Operations Department Fleet Services Division, is already sure that EV maintenance costs are far below those of ICs.

Through one summer, London has found that the air conditioners do not appreciably cut down on the vehicles' usable range. And, the few miles that may be lost are made up for by the comfort factor. Another comforting factor is that Tucson's Operations Department pays only about 5.5¢ per kilowatt hour (KWH) for electricity — roughly half the national average. That, London is also sure, will shake



these "new generation" runabouts are destined to become permanent parts of the city's vehicle fleet.

How to make a perfect match

Donna C. J. Witschi, the on-site EV Project Manager for the municipal department, receives most of the credit from her peers for having the foresight to precisely match existing duty cycles with EV capabilities — long before the vehicles were actually purchased — to assure that Tucson's "Electric Experi-

ence" would be all thumbs up. A prime consideration was to find a vehicle supplier in the southwest. Result: Tucson purchased 10 EVs from a Las Vegas manufacturer — six Datsun sedans and four Datsun pick-up trucks — converted assembly-line IC vehicles — and conducted a comprehensive driver-maintenance personnel training program.

Each of the sedans and the pick-ups carry 18 6-volt lead acid batteries (both front and rear mounted); chargers are on-board the trucks and off-mounted

out to very economical fuel costs over time.

From the city's administrative vantage point, Donald W. Richards, Deputy Director of Operations and the one who first decided to have the "Electric Experience," already refers to it as a "very positive" experience. So much so, in fact, that he and his people regularly put on EV seminars for other interested parties, disseminate literature on EVs, and encourage local automobile dealers and car buffs to seriously consider EVs as alternatives to ICs.

THE WALL STREET JOURNAL

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Con Artist's Fraud Case Reveals Flaws in Witness Protection Plan

By STANLEY PENN

Staff Reporter of THE WALL STREET JOURNAL

Electric Car Co. of America seemed to have found the answer to its management problems in February 1981 when it hired a new chief executive, Frederix P. DeVeau.

Mr. DeVeau, a former marketing executive with Budd Co.'s railway division, was articulate and persuasive. "He had pretty impressive credentials," recalls a shareholder of the San Antonio, Texas, concern, which was struggling to make battery-powered vehicles. "He knew about electric cars."

What he really knew about, though, was swindling. In the 1970s, Mr. DeVeau collected commissions from businesses for loans he promised to arrange but never did. He was even indicted in connection with a bogus scheme to upgrade an airplane operated by the late Elvis Presley. In September 1980, he finished serving a 38-month sentence for fraud and racketeering. And because his testimony had helped convict half a dozen other criminals, he was placed in the federal Witness Security Program, given a new identity and put under the close supervision of federal marshals.

As a result, the marshals were well aware that Mr. DeVeau had taken control of Electric Car just five months after leaving prison. But neither they, nor Mr. DeVeau, informed the Securities and Exchange Commission—or Electric Car's 13,800 shareholders—of Mr. DeVeau's criminal background. And thus began a case that became an uncommonly vivid example of problems in the witness protection program.

Diverting \$1 Million

In April 1982—seven months after a federal judge and government officials talked inconclusively about revealing Mr. DeVeau's criminal record—the convicted felon won the top job and a controlling interest in a second troubled company, Jet Industries Inc. of Austin, Texas. By the time his scheme collapsed, he had diverted more than \$1 million of Jet's assets to his own use, according to a federal indictment.

Today, Mr. DeVeau is back in jail, appealing his 20-year sentence for fraud and other crimes involving Jet. He was removed from his positions at both Jet and Electric Car following an SEC civil suit that charged him, among other things, with failing to disclose his criminal record to the SEC when he assumed the top job at each company.

But the case is far from over, as far as Jet is concerned. In a state court in Austin, the company has sued Mr. DeVeau and others for \$6 million in actual and punitive damages, charging they misappropriated \$1.5 million of Jet assets. And in federal court in San Antonio, Jet is suing the U.S. government for nearly \$1.5 million, claiming the government was negligent in permitting Mr. DeVeau to assume a controlling interest in the company and not disclosing his true identity. The government denies any responsibility for Mr. DeVeau's actions.

But the government's handling of Mr. DeVeau's case, starting with his assumption of the top job and a 23.8% share of Electric Car's stock, raises serious questions about the priorities of the witness protection program. "His past crime was a white-collar crime involving financing," says Rudy A. Garza, who was a federal marshal in San Antonio when Mr. DeVeau won control of the company. "Here's a public company, and here we are hiding his background, giving him a fictitious name, barring anybody from checking into his background."

Electric Car continued to struggle under Mr. DeVeau's stewardship. By June 1982, it was inactive. The reason, Mr. DeVeau said in a recent interview, was that "the price of gasoline dropped and the market for electric vehicles evaporated." But a major Electric Car shareholder blames the failure on Mr. DeVeau's decision "to change the design of one of the cars—the height of stupidity."

In assuming control of the company, Mr. DeVeau failed to inform the SEC—in violation of its rules—of his criminal record. And

"That guy is a genius," said a federal judge. "He has taken this conviction and the witness protection program, given himself a new identity, and he's off and running."

Mr. Garza, the former marshal, soon became uneasy, according to testimony elicited at the 1983 trial by Mr. DeVeau's attorney, Joseph Turner.

According to a transcript of that hearing, the judge listened to an account of how Mr. DeVeau had taken over Electric Car, and then said, "Marvelous. That guy is a genius. He has turned the world upside down. He has taken this conviction and the witness protection program, given himself a new identity, and he's off and running."

Mr. DeVeau's attorney told the judge, "We are perfectly willing to tell them (the SEC), but the government has advised us not to tell them." If the SEC were informed, the attorney said, "it will be sent to every broker in the country."

'A Serious Problem'

The judge, urging federal officials to come up with a solution to the dilemma, conceded, "I don't know what the answer is, but I do think there is a serious problem involved." No formal action was taken.

Mr. Garza testified that he asked Howard Safir, assistant director of the marshals service, to remove Mr. DeVeau from his job at Electric Car. But, he testified, Mr. Safir told him there was nothing the agency could do.

Mr. Safir now says he didn't realize at the time that Mr. DeVeau had taken over a public company and wasn't aware of any SEC violations. "We believed DeVeau was owner of his own company," Mr. Safir says.

But at the 1983 trial, the assistant marshal who was supervising Mr. DeVeau testified that the marshals didn't tell Electric Car about Mr. DeVeau's background for fear of blowing his cover. Thomas Draeger, who left the marshals service in 1981, testified that full disclosure wouldn't have been "consistent with maintaining his health and well-being."

In May 1981, Mr. DeVeau was transferred from the care of the marshals service—a unit of the Justice Department—to the federal probation department, an agency of the courts. Roger LeBouef, a probation officer in San Antonio, quickly became troubled by Mr. DeVeau's involvement with Electric Car.

Four months later, in September 1981, the probation officials brought the matter to the attention of federal Judge Robert Sweet in New York, who had presided over Mr. DeVeau's original trial for fraud and racketeering.

CONTINUED
NEXT PAGE

EV Development 'Firsts' Cited at Annual Conference

Seven months later, while still in control of Electric Car, Mr. DeVeau persuaded Jet Industries, another ailing maker of electric vehicles, to hire him as chief executive and sell him a controlling 23% interest in the company. "He was very well prepared when we interviewed him," says Hyman L. Federman, an investment banker who had helped take Jet public in 1981. "He was talking about backlogs, consolidations, bank financing—very impressive—which led me into the damn trap of hiring him."

According to the 1982 federal indictment, Mr. DeVeau also claimed—falsely—that he was an engineer and college graduate and that he had access to "considerable wealth" from a family trust and has successfully owned and operated businesses in the past.

Mr. LeBouef, the probation officer, became suspicious, particularly after questioning Mr. DeVeau about a \$2 million loan to Jet backed by the Energy Department. In May 1982, a month after Mr. DeVeau took over Jet, Mr. LeBouef discussed the matter with Gerald Shur, associate director of the Justice Department's office of enforcement operations. With the Justice Department's approval, Mr. LeBouef contacted the Energy Department, which in turn notified the SEC.

Mr. DeVeau's scheme quickly collapsed. In July 1983, he was convicted of seven counts stemming from charges that he had diverted Jet's assets for his own benefit and plotted to buy Jet stock with borrowed funds and then repay the loans with Jet's assets.

Mr. DeVeau, who is serving his sentence in an undisclosed federal prison, says his troubles began when he heeded the advice of federal marshals and withheld his criminal record from the SEC. "The witness security program has some practicality for a window washer or a forklift operator," he says. "It wasn't designed for a businessman."

But the government says Mr. DeVeau is solely responsible. At the 1983 trial, federal prosecutor Breckinridge Willcox told the jury, "The activities of Fred DeVeau for the last 10 years amply indicate that he is a tried and true con artist who is incorrigible." Mr. DeVeau, he said, "took full advantage of the witness protection program for his own selfish and frankly criminal aims."

The electric company that has logged more than 250,000 miles on its fleet of electric cars, Detroit Edison, has made a significant contribution to the development of electrics. This was evident as the International Electric Vehicle Council Conference, held this week in Dearborn, MI, highlighted the major progress made in the electric vehicle industry.

"Enthusiasm, acceptance, performance and efficiency have been high in our ongoing electric car demonstration program," said Philip J. Lenihan, Detroit Edison vice-president for marketing and customer relations. "The technical knowledge gained at our electric car service center and passed on to others in the field has been invaluable."

The utility has been successfully operating a fleet of 24 electric cars in a demon-

stration program funded in part by the U.S. Department of Energy (DOE) since 1981. The electric cars are driven daily by employees and their families to demonstrate how well electrics fit the urban transportation needs of the typical family.

At the conference the company displayed and reported on many electric vehicle "firsts" including a credit-card-operated "Park-n-Charge" meter that looks like an automatic teller and is designed to be used in public parking areas. Also presented were details of the first battery monitoring program resulting in increased reliability and dependability for electric vehicles.

In another first, Detroit Edison has signed a new contract with the DOE to conduct extensive electric vehicle component evaluation, according to Lenihan.

The company's evaluation will mark the first on-the-road testing, outside a laboratory setting, for many vehicle components.

Over the next year Detroit Edison will evaluate nickel-zinc batteries, state-of-the-art lead-acid batteries and a new electric battery monitoring system.

"The new DOE agreement gives Detroit Edison the opportunity to acquire on-the-road experience with highly advanced battery systems and components, beyond the experience gained as a result of the company's ongoing electric car demonstration program," Lenihan said. "This contract is another important step in developing the electric vehicle industry and bringing electrics closer to mass-production."

Under the new agreement, Detroit Edison is operating two electric cars fitted with nickel-zinc battery packs from the Delco-Remy Division of General Motors Corp.

In a separate demonstration, Detroit Edison also installed state-of-the-art lead-acid battery packs from Johnson Controls' Globe Battery Division in two of its electric cars.

In addition to testing batteries, Detroit Edison will examine a thermal-management system designed to keep battery packs at a uniform temperature in both hot and cold weather. The system was installed in the two Detroit Edison electric cars equipped with Globe batteries. Keeping the temperature constant, near 90 degrees Fahrenheit, will help extend the

ENERGY OUTLOOK

batteries' range in cold weather.

Detroit Edison also is evaluating a new electric car battery-monitoring system from Alber Engineering, Inc. This system will identify and locate weak or defective batteries *while the vehicle is being driven* and may help prevent premature battery damage or failure.

All testing and maintenance on the electric cars will be performed at the company's Electric Car Service Center. The center, a first-of-its-kind facility, is dedicated to servicing the company's fleet of electric cars. Results from the projects will be given to the DOE.

Detroit Edison's efforts are enhanced by the recent formation of the Electric Vehicle Development Corporation (EVDC). Detroit Edison is a founding member of EVDC, the first organized effort by electric utilities to encourage the rapid development of electric vehicles, according to Lenihan.

"The purpose of EVDC is to direct a unified national effort to help put electric vehicles into commercial use where the mass-produced electric vehicle has a cost advantage for fleet operations," Lenihan said.

EVDC will complement the research and development activities of DOE, the Electric Power Research Institute and individual manufacturers by planning and organizing large-scale joint vehicle purchases and demonstration projects.

EVDC activities already underway include the completion of a national electric vehicle introduction strategy and business plan, specifications for an initial electric vehicle fleet and a detailed market analysis. The founders hope to initiate broad electric vehicle introduction within the next five years.

LiSO₂ Battery Military Applications

The Advanced Battery Systems Division of SAFT America Inc., a leading manufacturer of energy systems for the defense industry, is producing a new Lithium-Sulfur Dioxide Battery for use in military battery packs.

The LiSO₂ couple is a reliable electrochemical power source used for defense communication systems, according to Bob Calvert, director of marketing. The battery is a spiral construction of cylindrical cells.

The Lithium-Sulfur Dioxide Battery is a high-energy primary battery system with a service life of more than four times that of conventional batteries, Calvert said. It is capable of performance over a broad temperature range and has an exceptional

shelf life of up to 10 years.

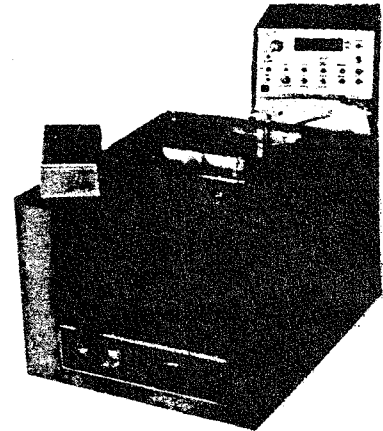
SAFT's Advanced Battery Systems Division specializes in design, development and production of thermal batteries for the defense industry. The company recently expanded its thermal battery line and diversified into lithium-sulfur dioxide, lithium-thionyl chloride and silver-zinc primary batteries, and produces lithium-manganese dioxide, lithium-copper oxide and lithium-silver chromate.

Lithium batteries are the power source for today's electronics and for the future, SAFT executives believe. Primary cells and batteries using the lithium anode combine energy densities up to 1,000 watt-hours per cubic decimeter with shelf/active lives of up to 10 years or more.

The Advanced Battery Systems Division is located in Cockeysville, MD, about 15 miles north of Baltimore. The new 34,000-sq.-ft. facility is completely equipped for electrochemical battery research, development, testing and production. Specialized analytical, environmental and inspection test equipment provides quality control and product performance in military specifications.

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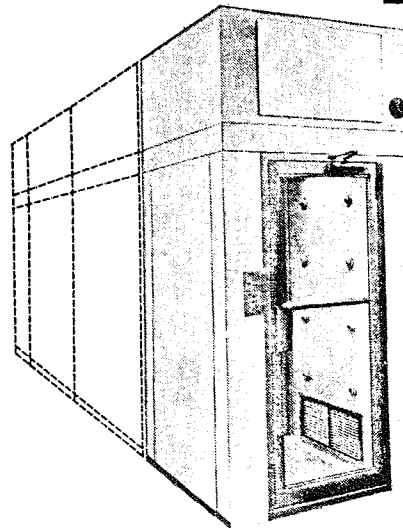
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Electric car may run on sea water

By HARIHAR KRISHNAN

Accent on living



So long as there is seawater, George Thiess figures his prototype electric car will never run out of fuel. Thiess invented the digital watch before going into automobile technology.

charges last up to 10 hours.

"We have solved that through electrolene, and by replacing the battery's magnesium rod every 400 to 500 miles," Thiess says. "The electrolene is pumped into the gasoline tank. Replacing the magnesium rod is as easy as filling your radiator or adding oil. No, don't talk of oil. There will be no motor oil of any kind in our car, perhaps some grease for the transmission.

"You can convert any automobile plant into an electric car plant without much trouble," says Thiess, who is using a Mercedes-Benz. "You don't even have to make drastic changes in battery production. It will even cost less to operate an electric car because our electrolene uses ordinary chemicals I can't reveal what they are."

The project, which Thiess says takes advantage of the abundant supply of electricity, is under contract with the U.S. Department of Energy. Thiess says his company has been asked by the department to collect data on the car and its feasibility for commercial production.

The inventors say a cubic mile of sea water converted into magnesium will power every new car built in the country in 1982 for a full year. That translates into 72 billion miles of driving on "a drop of ocean," they say.

Magnesium is the seventh most abundant element on earth.

"If Henry Ford and other car pioneers could do it over again and they had today's technology, they wouldn't use the combustion engine," says Hooker, a former Mercedes car dealer and banker. "We're on the edge of a real technological breakthrough."

"At the present time, something like 95 percent of all electricity generated in the United States is through nonpetroleum sources whereas transportation is 65 percent petroleum-based," Thiess said. "The latter figure is climbing at a rapid rate.

"We are becoming more and more petroleum-dependent for transportation and less and less petroleum-dependent for electricity. So the key

RICHARDSON (UPI) — As long as there is sea water, George Thiess figures his prototype electric car never will run out of fuel.

Thiess is so convinced about the success of his invention that the word petroleum has become anathema to him.

"I don't think OPEC will even speak to me," the engineer from St. Louis said.

In a small office/warehouse, Thiess and Jack Hooker, his partner in the Electric Motor Cars venture, are working on their invention.

They say they are close to testing an electric car that will operate on magnesium made from processed sea water. The magnesium will charge a regular battery using a patented chemical solution called electrolene, Thiess says.

The magnesium-powered battery will eliminate the limited range problem plaguing the current line of electric cars, he says. Today's batteries won't take a car more than 40 to 50 miles without a recharge. The

is making transportation electricity-dependent. The electric car is the car of the future. It is that simple."

Thiess, who said he invented the digital watch before going into car technology, says magnesium and zinc pack more energy per pound than any other metal.

"But magnesium is easier and cheaper to produce than aluminum or zinc or iron," Thiess said. "Any chemist will tell you that. With constant improvements being made on batteries, the use of magnesium will become even more attractive."

Thiess thinks his electric car has the best potential for success in countries where gasoline is selling for \$4 to \$5 a gallon.

"We have received many inquiries. I have already had visits from parties in Singapore and India and some European countries."

Besides the cost advantage, Thiess says a magnesium-operated electric car also is pollution-free. He said magnesium was the safest element on earth.