FVEAA NEWSLETTER
September 1984

MEETING NOTICE
The Fox Valley Electric Auto Association will meet on September 21, 1984 at our usual meeting place, the Mid-America Federal Savings Building located at 250 E. Roosevelt Rd. in Wheaton, Illinois. At the last meeting we discussed the kind of cars to buy. This month we will tell you how to prepare the vehicle for conversion. John Emde will be our moderator.
We would like those who are working on cars to submit a short article on what they are doing. Thanks.

FROM THE EDITOR
Your editor is now finishing his second year. This was my first experience in anything like this, and I appreciate your help and patience with me. It has been a very good experience. However, I feel that two years is long enough, and there must be someone else willing and able to take over these duties. I will be glad to help the new editor get started.

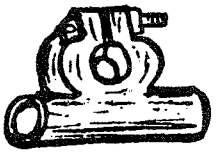
FOR SALE
1975 Fiat 124 four-door - Electric conversion by John Stockberger. It has 12 six-volt batteries - 36 volts. Price - $1800. Call George Snow, 1129 N. Barnard, Naperville, IL. Phone (312) 355-5432.
FOR SALE
I have a 1975 Citi-Car SU-48 with 5148 miles. The batteries and electric contact switches were replaced last year, so I believe it has a lot of use left in it. Plastic side windows are opaque from age, and the body has one crack in the rear fender. Asking $2500. Call Ken Dunn, 5476 S. Woodlawn, Chicago, IL 60625. Phone (312) 241-6616.

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

ITEMS AVAILABLE AT THE CLUB

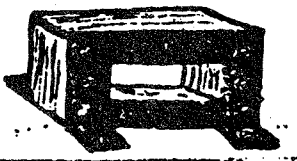
"FOR SALE" "FOR SALE" "FOR SALE" "FOR SALE" "FOR SALE" "FOR SALE"

SOLID BRASS BATTERY CONNECTORS
solder on type fits # OO & OOO
can be used on either pos. or neg. terms.



75 ¢ each

STEEL LAMINATED CHOKE CORE
can be wound with 10 turns of # 00 cable. (approx. 12 ft.)

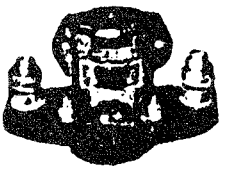


$5.00

BLACK HEAT SHRINK TUBING
use to finish end of battery cables.
shrinks from 3/4" to less than 1/2"
using a gas flame or heat gun.

50 ¢ per foot

200 AMP. RELAY



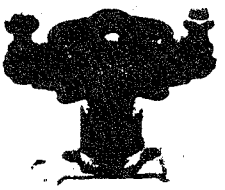
24-28 Volts D.C. U.S.A.F.

$15.00
ONLY A FEW LEFT

-ALSO-
SOME HEAVY BATT. CABLE
+ FREE TUBING

NEW ITEM
LIMITED SUPPLY

400 AMP. RELAY



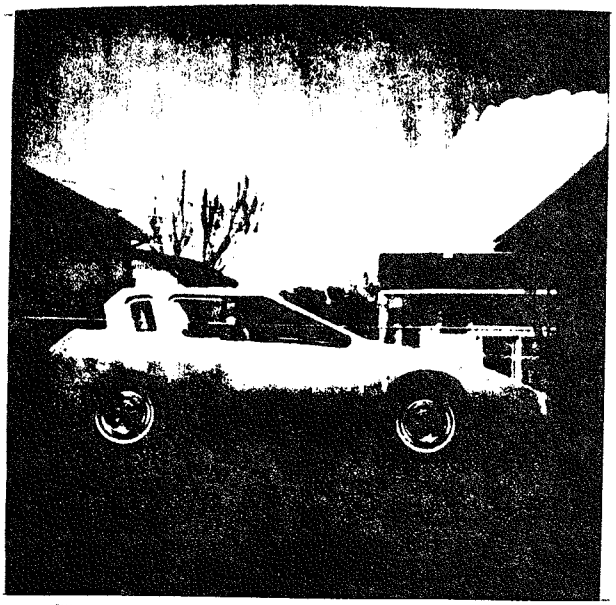
$45.00

12 V COIL

Single
Overall Dimensions
5¼"L., 2½"W.
Shipping Weight

ITEMS AVAILABLE AT CLUB MEETINGS

FOR SALE



MECHANICS ILLUS. Electric Car

Restored 7 beefed-up '71 Volkswagon frame
New front axle assembly (retorqued to designer's specs.)
Rebuilt rear assembly (retorqued to designer's specs.)
New brake shoes rebuilt wheels 7 master cylinders
New tires mounted on 1½ offset wheels adapted to VW drums
All battery racks professionally welded and mounted
Body foam covered with 10-oz. plus 6 oz. fiberglass cloth
No electrical units
Stopped building due to retirement. Must sell to best offer
John Woodville 11711 S. Carolyn Ln.
Alsip, IL Phone (312) 385-2993

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I.

THE WORLD NEEDS ELECTRICALLY POWERED VEHICLES
(And the sooner, the better)

WHY, AN ELECTRIC CAR?

Gasoline powered vehicles have been an integral part of our life-style for nearly a century. Tested under every conceiveable conditions, upon countless millions of miles; has uncovered whatever shortcomings were present. Mechanical minds, the universe over, contributed their ideas; and with technological progress through the years, the end product became a life necessity. Yet, we hear predictions of innovations, yet to come, that fairly blow the mind.

As acceptance of this mode of travel spread throughout the world's populace; the need for its petral expanded tremendously. The search for new sources of Crude Oil intensified; spreading explorations to distant, remote areas. Refinement processes escalated, too. Chemists were added as research began concentrating upon the residuals derived from gasoline refinement. With the new discoveries, a whole world of new products is appearing. Their demand is already challenging the energy product for priority in the marketplace. Combined, on a world-wide level; the daily siphoned quota of oil being removed from this planet's total sources, must certainly hasten the day when NO More will be available.

There is no denying that Crude Oil (fossil fuels) has proven itself to be one, if not THE, MOST PRECIOUS resource this planet offers mankind. Considering the vast amount already drawn; it is truly amazing that much oil is still available. But, since our volume of demand, daily, is beyond our wildest conceptions, would you allow me to briefly touch on some factors that affect my concern?

To begin, we must project our numerical estimates upon a global level. Let's start by counting vehicles transversing the land mass: Those personally owned; (?) Public passenger transport; don't forget to add rail travel, too (?); Freight carriers, both rail and commercial trucking (?); The business deliveries and service vehicles (?). Remember; this is a world-wide estimate.

Now, with those figures totaled, let's take to the air: Many nations support freight and passenger airlines with flights that inter-connect to key cities all over the globe. Many flights compete and overlap with others. How many barrels of oil does all this activity demand? Then there are political and military flights, not to be ignored. And there are helicopter patrols and private planes in use, too. Now, your total figures should be beyond most computers!

At sea: There is a tremendous number of sea-going vessels of every size and description using diesel oil. Let's not ignore the extensive fleets of battle wagons most nations deploy. (land-locked nations as Switzerland can be excluded) You should have a mind boggling figure by now! ! !

Let us consider Heating Oils: - Much of the world is touched by inclement weather; some areas moreso than others. Private homes must be heated. How many did you say? Every type of business seeking to attract customers feels they must maintain a comfortable climate within the store (?); hotels; motels; and apartment houses use heat extensively (?); And: Office buildings and shopping complexes too (?). Many Utility companies require oil to operate electric generators for emergency and supplementary service; so we are told.

M. Solen
9/30/83

Thanks for listening.
Morris Solen

Morris Solen - Northbay chap.
75 Fremont Dr.
Sonoma, Ca. 95476

II.

CON'T:

Are you still with me? ? ? Now, Let's peek into the Residual Products Field.: - I don't believe there is any way for even a remote estimate of the scope of Industrial Chemicals derived from Crude Oil. We can only touch on some of the more obvious products that come to mind. Medicine (would you believe Aspirin for one?); pesticides; fertilizers; paints; caulking compounds; tires; many forms of moldings and seals; adhesives; synthetic fibers (a tremendous array); plastics; lubricants; polishes; waxes; and asphalts: (largely for Roofing and Road Surfacings) That's for starters: - There's a wide field of plastics used in housing construction and yet a wider use as appliance materials and other sundry objects.
ALL OF THESE DERIVED FROM OIL! !!

Fantastic, as it may be; have you any notion of your TOTAL? It's way beyond my comprehension! * * * But this is all a DAILY BASE FIGURE! If we can; let's MULTIPLY this by 365 days. And Multiply it again by: choose your number of years - 20? 50? 100? Haven't we ALREADY DRAINED A SUBTERRANIAN OCEAN?

We are indeed fortunate that our planet IS NOT, in total, one solid mass of OIL. For IF IT WERE, we would be able to foresee that eventually it would be reduced to a mere wisp of smoke and a cloud of gases. Since it is NOT so, as there is much of the planet that isn't Oil; we automatically become the TRUSTEES of this ever increasingly precious resource in our tenured life-time. Certainly, future generations will hold us accountable. How dare we expend it so extravagantly; how dare we shirk our responsibilities so casually?

With the need to move about freely, and independently, so much a part of life itself; the following questions demand our sober, thoughtful consideration: - -

(1.) Must we wait until the last drop of oil is squeezed from this ball of mud before we seriously consider developing alternate energy forms so that we may extend our OIL RESERVES? Whatever arguments to the contrary, the foregoing appraisals leaves no doubt that there must be a limit of global oil sources.

(2.) Can we truly expect today's well entrenched energy purveyors to lead us away from this imminent morass? Possibly, in the energy field; but will fall far short finding substitutes for many of the residual chemicals.

(3.) Are we being wise to reject all efforts of Electric Vehicle Development that falls short, in comparison, to our present means of travel? Shouldn't we recognize the advent of a new era; one that closely parallels the introduction of the Horseless Carriage which, in time, has grown to be the fine product before us today?

This Old Man has harboured the foregoing conclusions for one l o n g time; but it wasn't until I set this all on paper, that I truly grasped the enormity of the context. The time has come that we all become aware and face up to its reality!

M. Solen 9/30/83

for valley electric auto association inc.
624 Pershing St. Wheaton, Il.
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Proposed by-laws for ratification in July, 1982

ARTICLE I: OFFICERS AND BOARD OF DIRECTORS

A. OFFICERS There shall be five officers of the Corporation- President, Vice President, Secretary, Treasurer, and Property Custodian. Their duties shall be those normally performed by those officers and as outlined in these By-Laws.

B. BOARD OF DIRECTORS The five officers of the Corporation and one additional elected Director shall comprise the Board of Directors. The President of the Corporation shall also be the Chairman of the Board. The Board of Directors shall meet as necessary to transact any and all business that comes before it as set forth by these By-Laws and amendments thereto.

C. ELECTION PROCESS The four officers and additional board member shall be duly elected by a majority vote of the members present at the annual meeting and shall serve a term of one year from the date of election or until their successors are elected.

D. VACANCIES Vacancies in elective offices shall be filled by a majority vote of the Board of Directors for the interim between the time the action is taken and the next annual meeting, at which time the offices shall be filled as specified in Paragraph C, above.

E. REMOVAL FROM OFFICE A proposal for removal from office of any officer of the Corporation shall be discussed at the meeting such proposal is made, but action can not take place until the next regular meeting. A two-thirds affirmative vote of the membership present shall be required to remove an officer from office.

ARTICLE II: COMMITTEES

A. STANDING COMMITTEES This organization shall have the following standing committees:

1. LIBRARY COMMITTEE This committee shall be composed of three appointed members, one of whom shall be appointed as chairman. It shall be the duty of this committee to keep a file of all articles and literature relative to electric vehicle construction and maintain an index of material available to the membership.

2. PUBLIC RELATIONS COMMITTEE This committee shall be composed of the Secretary and two appointed members. The Secretary shall serve as chairman. The committee shall publicize the meetings, programs, public exhibits and other work of the Corporation to help keep the members and the public aware of Corporation activities. One appointed member of this committee shall serve as Association Historian.

B. SPECIAL COMMITTEES The President shall appoint special committees and their chairmen as needs arise.

C. COMMITTEE VACANCIES Vacancies on committees (except for the Chairman of the Public Relations Committee) shall be filled immediately by presidential appointment.

ARTICLE III: MEETINGS

A. ANNUAL MEETING The annual meeting shall be held on the third Friday of September.

B. REGULAR MEETINGS Regular meetings shall be held on the third Friday of each month unless changed by the Board of Directors.

C. SPECIAL MEETINGS Special meetings may be called by the Board of Directors as necessary. In addition, any five members may request a special meeting which the President shall call as soon thereafter as possible.

D. NOTIFICATION All current members shall be notified by mail of each Annual, Regular and Special Meeting by the Secretary at least one week prior to the meeting.

ARTICLE IV: MEETING PROCEDURE AND QUORUM

A. PROCEDURE Standard parliamentary procedure shall be the normal authority for action by the Association except in those cases covered specifically by these By-Laws.

B. QUORUM

1. ANNUAL MEETING AND REGULAR MEETINGS All matters shall be decided by a majority of those members present and voting except for any matter for which a different requirement is specifically set forth in these articles.

2. SPECIAL MEETING A quorum for a special meeting shall be fifty percent of the full membership of the Corporation.

ARTICLE V: MEMBERSHIP

A. DUES Dues shall be $15.00 per year payable at the regular November meeting. New members joining after November shall pay $1.25 for each month remaining before the following November.

B. MEMBERSHIP-IN-GOOD-STANDING A member shall be in good standing if his dues have been paid for the current year. Members in good standing shall have voting rights at the annual meeting and at all other meetings.

C. FORFEITURE OF MEMBERSHIP A member may be dropped from membership if:

1. A written resignation is submitted.

2. He fails to abide by the Articles of Incorporation, By-Laws (including amendments thereto) or the policies of the Corporation. Such a case is to be judged by the Board of Directors and is subject to a majority vote of the membership at the next regular meeting if the member in question so requests.

3. Annual dues are not current. The Board of Directors may defer dropping a member for non-payment of dues if it so elects.

ARTICLE VI: CORPORATION PROPERTY AND FUNDS

A. OFFICIAL BOOKS The official books of the Corporation, including the official copy of the Articles of Incorporation and By-Laws as amended, minutes and other similar records, shall be maintained by the Secretary.

B. FUNDS All funds in excess of $ 50.00 shall be kept by the Treasurer in a bank account. Signatures authorizing the withdrawal of funds shall be those of President or Vice-President and the Treasurer.

C. OTHER PROPERTY All other property shall be under the control and responsibility of the Property Custodian. The Property Custodian shall keep control and cost data on all Corporation owned equipment in a permanently bound book provided by the Corporation for that purpose. Such equipment shall be loaned to and used by Corporation members only, and only for stated periods of time. A member borrowing equipment shall sign for it in the record book. Members shall be required to return equipment to the Property Custodian at the time specified, and shall not lend it to other members for non-members. It shall be be the responsibility of the Property Custodian to keep the equipment in good working condition, requesting any assistance needed from Corporation members. Where amounts greater than $10.00 are required to repair equipment, authorization must be secured from the Board of Directors.

ARTICLE VII: AMENDMENTS TO THE BY-LAWS

Amendments to these By-Laws may be proposed and discussed at any regular meeting. Proposed amendments may not be voted upon until the next regular meeting. Prior to the next regular meeting, the secretary shall notify the entire membership of the proposed amendment along with the notification of that meeting.

Adoption of an amendment shall require a two-thirds affirmative vote of the entire membership. Members may vote on an amendment to the By-Laws by proxy.

ARTICLE VIII: DISSOLUTION

In the event of dissolution of the Corporation, all donated property and funds shall be returned to the donators. All assets shall be sold and the resulting funds along with any other funds the Corporation has shall be used to pay any liabilities the Corporation may have accrued. Any residue shall be divided among the members-in-good-standing.

In hopes of encouraging others to do the same, I plan to write a blurb each month about my experiences building electric cars. If each of you contributes to this effort it will give our club an increasing source of practical information which others can readily put into practice.

My projects this past month included installing delayed windshield wipers. I have about 4 units available gratis on a first come first served basis. Secondly, I installed an automatic headlight cutoff delay which was on sale for $2.00 at a local hardware store. The third project is on-going and somewhat more involved. As you remember we talked about digital readout devices for displaying current, voltage, temperature etc. There are kits available which utilize L.E.D. indicators. I constructed two of these and they performed nicely in my shop, but when subjected to the ambient light outdoors in the car, they were impossible to read.

I had not considered LCD readouts because the one on my watch is sometimes unreadable, however, at the FVRRL Hamfest, I saw a nice large LCD readout (about one inch high) which displayed beautifully in the sunlight.

In the meantime I constructed a p.c. board to utilize incandescent displays and am now waiting for delivery of the devices. I will be happy to provide details if anyone is interested. The nice bright green displays used in Cadillac computer displays are apparently made in Japan, but I've been unable to locate a source.

My final project was to place in operation an off-board battery charger purchased at a hamfest for $25.00. It is a Lambda Electronics Model LYS-D-28-OV nominally 48v.± 5% at 15 amps max. regulated. The charging rate is tapered which may require modification to speed up the charging, but for the present it is satisfactory with the adjustable voltage set at a max. of about 52v. Incidentally, an additional diode is required on the output to prevent reverse current flow under some conditions. Also an off-on switch and ammeters should be provided.

- Dana Mock

Vol XIV No 2 Walter V. Laski, Editor February 1982

Using Electrics in Winter.

Owners of electric cars living in cold climate regions should be prepared to overcome the effects of cold weather in winter - low temperatures reduce the capacity of the batteries, down to about 50% at 0° F, so energy requirements per mile rise every time available supply is reduced.

The first step to prevent this effect is to insulate your batteries by using one inch of styrofoam, protected on the outside with thin aluminum sheeting, formed into a box. In order to keep batteries' temperature at above 20°, it is necessary to heat them by using carbonized, conductive cloth heaters, which will produce heat over the whole bottom surface of the batteries. A protective fiberglass sheet over the top of the batteries will also help to keep the heat in. A thermostat on the underside would also be helpful to keep the temperature range of 80° - 120°. The heater will consume about 350W or about 4 Kwh in twelve hours. Battery heating is essential if daily trips exceed ten miles, however, high capacity batteries would be required to stand the 50% drop, if heating is not applied.

A car heater will also be necessary for passenger comfort and window defrosting. There are gasoline heaters available for that purpose, although they are not ideal for this application since their heat output is not adjustable. A 110V electric heater can be used for pre-heating the passenger compartment for short range trips. Future improvements are necessary in this area of passenger comfort and there is no doubt that the solution will be available in the very near future. (See December '81 EAA NEWS.)

THE NAVY SEEMS TO HAVE BOUGHT UP the Jet Industries inventory. At the SAE Conference in Detroit Dr.Richard A.Roberts, Manager of the Alternative

Energy programs of the Naval Weapons Center(Hq in China Lake,CA), reported that he had bought c.60 Jet Escorts from DOE (You may recall that Jet was in hock to DOE for almost $2.5MM) and this would bring the Navy's EV total up to 165 vehicles, making the USN the third largest EV fleet, exceeded only by USPS and GTE . Rich says EV's make a lot of sense on naval bases where round-trip distances are relatively short and speeds moderate. The navy fleet already included 45 Jet 600 vans, 11 Jet Dodge vans, 7 EVA Fairmonts, some SCT Rabbits, LMI Datsun's and a quantity of Taylor-Dunn flat bed (electric) trucks. The EV's are at bases all around the country, such as the naval base at New London, the San Francisco Bay Area and even Pearl Harbor. Roberts said a questionaire to 65 naval bases indicated a potential market for up to 750 more EV's.

THE WAY WE SEE IT, THE JET Industries indebtedness to the DOE (from that loan guaranty a couple of years ago) is pretty well cleaned up. The way we heard it from somebody in the know, "the Jet situation has been resolved." Meanwhile, back at the ranch, W.L.Bales shows up on the back cover of the February issue of Advanced Vehicle News, *Rog Porter's new name for* Electric Vehicle News. *The Bales advert is for propane-powered 600 vans under the trade-name "BIC," which stands for Bales International Corp.*

MISCELLANY: An agreement between Jefferson County Schools (Jeffco) and Colorado State University (CSU) provides for Jeffco to loan CSU one of their six Ford Escorts which had been converted to electric by Jet Industries. *Siskiyou Energy Systems (SES) and PMC Electric Vehicle Components have joined forces under the name PMC Energy Systems,Inc., we learned from Ric Barline, Exec.VP of the new orgn., which is introducing some new solid state, high frequency controllers for voltages of 100 and 120.* Battery Council International (BCI), which is holding its convention April 10-13 in Las Vegas, announces that the 1983 BCI Battery Replacement Data Book will soon be available. One copy is $3.25 to non-members.*The Electric Vehicle Council (EVC) announced it has received 75 technical submissions for presentation at the conference and exposition, EV EXPO '83 which will convene from October 4-6 at the Hyatt-Regency Dearborn (MI).* A short course in the electro-chemical engineering of batteries will be held at the Marriott Hotel in Berkely,CA June 20-24,1983. *The New 1983 SAE Publications Catalog contains information on over 400 books,reports,standards,etc. The 72-page catalog is available free of charge from SAE Customer Service Dept., 400 Commonwealth Drive, Warrendale,PA 15096. The 1983 SAE Handbook is also available now, in 4 vols.(Members $65.,non-members $125.).* Lawrence Livermore Labs(LLL) has given a 2-year contract to the Univ.of Wisconsin to double the MPG on a 1980 Pontiac by converting it to a flywheel hybrid. We wonder if LLL has heard about the ETV-2 at JPL ?

Nickel-iron battery powers French car

Paris—As the small hatchback zips through the streets of Paris, the only thing about it likely to catch anyone's attention is what is missing—the noise and exhaust fumes. The car is the electrically powered Peugeot 205 Electric, developed by the French automobile manufacturer Peugeot S.A. Though it can't claim the performance of a gas-powered automobile, its acceleration, speed, and range are impressive for one that runs on electricity.

The 205 Electric has a top speed of over 60 mph and can accelerate from a standing start to 35 mph in 11.6 s. Its operating range is about 100 miles in normal city driving or at a steady 45 mph; at 27 mph, the range rises to about 140 miles. Unlike earlier electric cars, whose trunk space was loaded with batteries, the car's trunk can hold luggage. Its twelve 6-V batteries and power plant—a dc motor with a nominal power of 8 kW and a maximum power of 17.5 kW—nestle together under the hood.

According to company officials, the key breakthrough behind the 205 Electric is an advance in battery technology—the fruit of a research program carried out by Peugeot and the Société des Accumulateurs Fixes et de Traction (SAFT), a subsidiary of the Compagnie Générale d'Electricité that specializes in the manufacture of batteries and related products.

Though few details on the batteries have been made available, they are realized in a nickel and iron technology with cells that are not completely isolated like those of standard batteries. A convenience is that the cells can be filled in a single operation from a common opening.

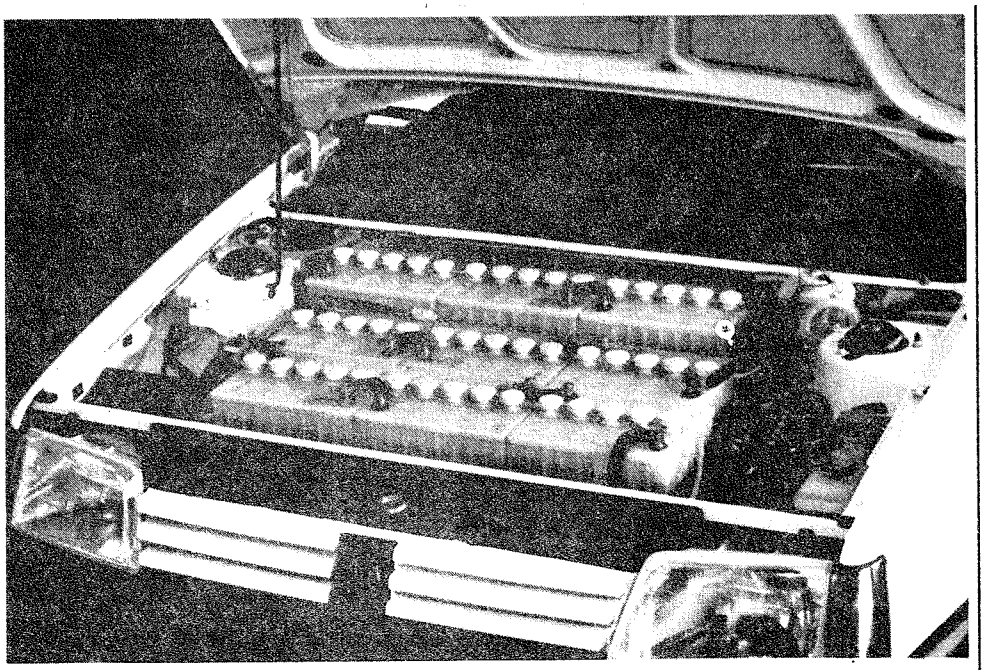
The 6-V batteries have twice the energy capacity of standard batteries with an identical weight and volume. What's more, they have an exceptional life expectancy of about 125,000 miles and can go through at least 1,500 recharge cycles.

Under the hood. The only place the 205 Electric does not look like a standard automobile is in the engine well. Two current choppers control the motor: a main chopper with asymmetrical thyristors that operate at the bottom third of the motor's power range and a transistorized excitation chopper that controls the motor at medium and high power ranges. The motor itself connects to the front wheels through a reduction gear.

The electronic control system makes a transmission unnecessary. The choppers constantly monitor energy flow. Releasing the accelerator breaks the flow and puts the motor into a generator mode so that its energy is diverted to charge the battery. To put the car in reverse drive, the driver uses a switch on the 205 Electric's dashboard.

Despite its list of advantages, the 205 Electric has some standard electric-vehicle drawbacks. Recharge time, for example, can be as long as 10 h, and the batteries are very expensive to make—about $2,500, with no reason to believe that full production would decrease that figure significantly, as much of the cost is a function of expensive materials. If the car were to be manufactured in the same volume as internal-combustion-engine vehicles, it would be no more expensive, but because of the restrictions of an electric vehicle, that market just doesn't exist. Peugeot sees, at least in the beginning, the public service as the main market for the cars.

In Europe, other electric-car schemes are continuing. Regie Renault is working on large electric vehicles for industrial applications, and Volkswagen has a project to make an electric Golf (called the Rabbit in the U.S.). The British government has a plan to promote electric vehicles, and Clive Sinclair will soon be unveiling his much-talked-about entry into the market. The Swiss company Brown Boveri Corp. has just begun its own project. In the U.S., interest has slacked off a bit since the Carter administration heavily supported electric vehicle research. Ford Motor Co., however, is continuing its project aimed at developing an electric car with alternating current power plant. —Robert T. Gallagher



Well-packed. The nickel and iron batteries in this Peugeot 205 Electric pack twice the energy of ordinary batteries of identical weight. The body is the firm's standard 205 and the range nearly 100 miles.