EAA NEWS

Electric Auto Association

Vol XV No 1 Walter V. Laski, Editor January 1983

Detroit, the Electric Motor City - coming up.

Drive 100,000 miles, and you will use more than 3,300 gallons of gasoline, 260 quarts of oil and 30 gallons of antifreeze. Detroit Edison's electric cars won't; in fact, the company has saved that much gasoline, oil and antifreeze by driving 100,000 miles in the first year of the company's electric car program. The company has been leasing electrics to Detroit Edison employees for their personal use to demonstrate how electrics fit the transportation needs of the average American family.

Achieving this milestone did take 77,533 kilowatt hours of electricity produced from coal, which translates into 0.78 kilowatt hours per mile or the equivalent of five cents per mile. Data on the operation of electric cars is gathered with the help of the employee drivers who keep daily driving logs. Among the items included in the log are miles driven, the number of stops made and the kilowatt hours consumed.

Detroit Edison also is evaluating how the demand for electricity will be affected by the recharging of batteries. At each employee driver's home, a remote meter reading system is used to record data on the electricity used to recharge the car's batteries. Because most of the recharging is done at night when the use of electricity is at lowest level, existing power plants would be able to produce electricity more efficiently and economically during off-peak hours.

Detroit Edison operates also the world's first Electric Car Service Center, located in downtown Detroit. All routine maintenance on the company's fleet is performed at the Center. Also, bimonthly battery discharge tests are conducted to locate weak batteries, which reduce range and accumulate life cycle data on each battery pack.

The electric car is not seen as a replacement for the ICE car, but rather a companion to the primary car in family use. The electrics would be used for local trips such as commuting to work or shopping or running errands. Detroit Edison believes the "The Future is Electric."

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JOIN EAA FUN CRUISE (see December EAA NEWS). This will be a real fun and leisure Cruise - at special prices for this Cruise - $50 deposit per person is to be paid by January 30, 1983, by check made to: "E.A.A. Special Cruise" and mailed to: The Bensens, 8 San Juan Avenue, Daly City, 94015.

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ELECTRIC CAR SUPPLIES, PARTS, ETC.

Electric Vehicles Inc., Northern California EV Dealership offers Year-End Clearance. Cars: Jet 600 Minivan, new $10,995 - Jet 600 used 2K miles $8,995 - Jet 600 22K miles $5,995 - Jet Electrica (Escort) demo 9K miles $9,995 - Jet Electrica 007 (Omni 024) new demo $5,995 - Honda Civic Automatic, used $5,995. EV Conversion Components: Prestolite MTC 4001 DC Series Motors, new $795 - Transistor Speed Controllers EVI-82 400Amps/up to 110V $695 - Electric Engine™ complete conversion unit $2,200 (EAA members discount). Write to EVI, 2736 Winfield Dr., Mountain View, CA 94940, or call (415) 964-3974.

New Controller Company - PMC and Siskiyou Energy Systems have joined forces to form a new Controller Company, PMC Energy Systems, Inc. in Berkeley, CA. The company plans to manufacture an advanced line of EV Controllers for use in commercial EVs. Controllers will be available to hobbyists via distribution outlets such as Electro Automotive and Flight Systems.

Electro Automotive presents the complete, efficient EV System, consisting of: Willey 9 Controller - The China Motor - Alco Batteries - and all necessary components for a complete conversion. For details call Mike Brown at (408) 438-3606.

Brewer Associates - Exclusive producer of Willey Solid State Controller Kits (to 450 A and 120V), designed for easy assembly and big savings, with top quality components and a manual. We also stock blowers, contactors, meters, testing equipment, fuses, etc. Write or phone for our catalog: 21511 Deerpath Lane, Malibu, CA 90265 - (213) 456-6236.

Wiiley Solid State EV Controllers Model 9, 450A up to 120V. Also available as build-it-yourself kits with construction manual from Brewer Associates. For information on Model 9 write to F.G. Willey, 9722 Lindgren Ave., Sun City, AZ 85373.

FOR SALE

'80 Electric Bradley
Like new - needs Batteries
Asking $5,000/offer
Pat Owens (408) 742-6067

'73 Superbeetle-GE 400 Amp Generator-Ready for Assembly $1,000 (213) 478-1605 eves.

Urba Town Car Plans
Baldor Mtr. w/bottom mount
(2) Adaptor Plates for VW
Call Jeff (408) 624-1861

Willey #8 Controller Kit
All parts new - $395
2CM-76 New Surplus - $200
New Cast Adapter Plate-$195
(2) Lester-matic Chargers
36V-25A w/timers,meters,etc.
$75/ea. Call John Eberle
(916) 756-5311 eves.

FOR SALE

Fiat 600 - Solid State Controller-J&H G-29 Motor - 10 Batts. - Asking $1,300
N.Rogers (408) 426-5975

'72 LUV Pick-up,Willey #8 Controller-Baldor 72V Motor 12 Exide Batts. - Lester 72V Charger - All new Components
Asking $5,000/offer
Del Tollenaar (602) 895-1664

Lester Dual 84/12V Charger - $295. H.Wheelwright, 4036 N.900,Ogden, UT 84404
Call (801) 782-5792 eves.

VW Dune Buggy-Second Place in Rally - $4,000
(415) 431-8179 after 6 p.m.

FOR SALE

12 Trojan Batts. J-244 & T-135 used, Excellent Condition - only $350
(408) 867-5930

VW Clutch Adapter - $200
J&H G-23 Mot/Gen. - $250
J.Moellenberg(314)576-4769

'67 Sunbeam Alpine + 2CM76 SpareMotor-400ASpeed Contr. $1,200/offer - L.Forman (408) 274-7775

'73 Datsun Pickup EV-72V Baldor Motor-PMC Controls $3,000. (916) 549-3832

H-M Freeway EV - like new
Asking $4,000/offer
N.McWhinney(408)377-6414

ATTENTION ALL ADVERTISERS! Beginning January '83, all advertising in the EAA NEWS must be prepaid as follows: 3-4 line AD under ELECTRIC CARS, PARTS, ETC. will be $10 per month, 3-4 line AD under FOR SALE will be $5 per month, and 3-4 line AD under NEW MANUALS will be $10 per month. Mail check to EAA NEWS, 1674 Merrill Dr. #12, San Jose, CA 95124.

THE CARE AND FEEDING OF THE LEAD-ACID BATTERY

During charge, a lead-acid cell will rise to over 2.5 volts. A new cell will reach 2.6 volts. After charging has ceased, a reversal sets in and the electrodes start reverting to their original state. This process stabilizes at 2.1 volts. Under a 75 amp load, a freshly charged golf cart battery will drop to 2.0 volts. It is considered discharged when it can no longer produce 5.25 volts at 75 amps. A fully discharged battery will read 5.75 volts with no load.

During charge, the battery starts gassing at 2.3 volts and continues to gas during the remainder of the charge. The gassing mixes the electrolyte, so a hydrometer reading is meaningless until some gassing has occurred. When the battery reaches it's maximum voltage (2.5-2.6 volts) an additional 2-3 hours of charging is required to assure equalization of the cells. All cells are equal, but some are more equal than others. Undercharging is far more dangerous than overcharging. A weak cell that is not forced up will start sulfating and will rapidly be destroyed. A very weak cell can often be recovered by applying a 4-6 amp charge for a few days. It may take a week.

Hydrometer readings should be 1.250-1.280, with no more than .030 difference in the three cells of a battery. Hydrometer readings are normally taken after a charge, with the battery temperature at about 80 degrees, so we are not really concerned with exotic temperature compensated hydrometers. The level of the water will affect the reading. A full cell will read 1.250, while one that is ½ inch low will read 1.280. A freshly filled battery will require at least an hour of gassing before a reading can be taken. There is no way that pure water at 1.000 is going to sink into acid at 1.280. One could possibly turn the battery upside down and accomplish this, but it seems a bit easier to simply turn on the charger.

Individual cells which use no water during a service period should be regarded with suspicion. This usually indicates low terminal voltage and lack of gassing. Add water only after charging, when the electrolyte is fully expanded. Filling a discharged battery will usually result in overflowing during charge.

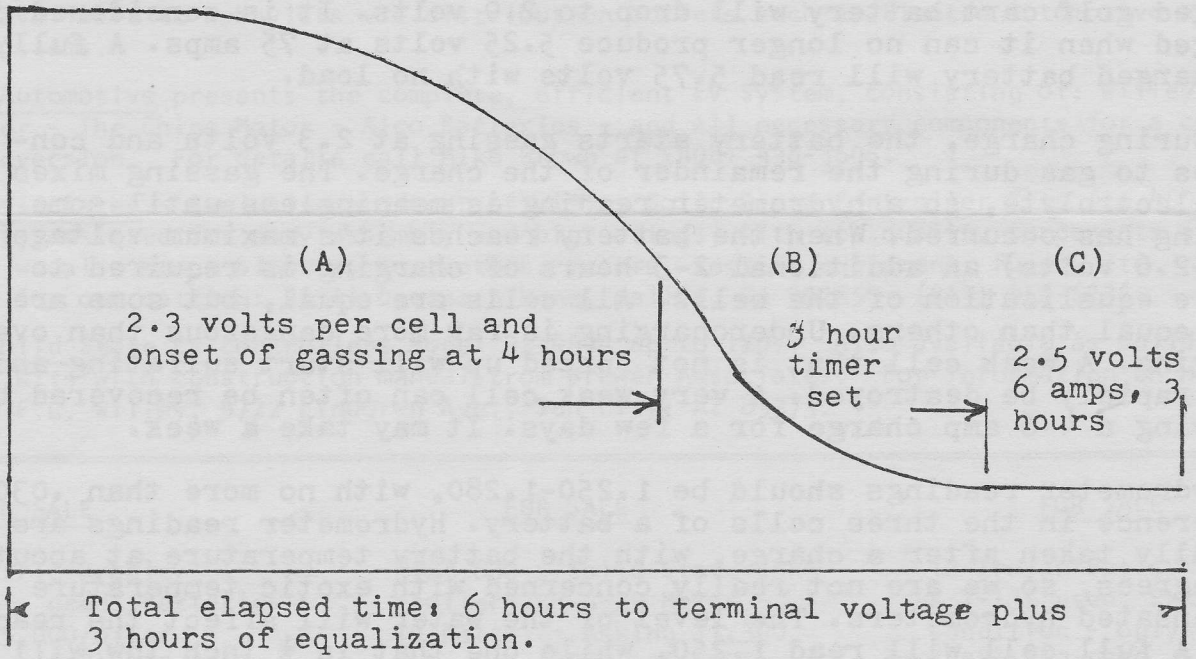
Testing for weak batteries: Discharge the pack until an obvious drop in performance occurs. Before the batteries have a chance to recover, check the voltage of each battery, preferrably with a digital meter that can show tenths of a volt. A discharged pack will read about 5.75 volts per battery. A weak battery will usually read lower than the rest. 4.75 - 5.50 volts indicates trouble.

Any abrupt change in the operating range of the vehicle is a sure sign of a bad cell. It is advisable to test the range of the vehicle at least once a month. The batteries require a periodic deep discharge in order to maintain their flexibility. If you don't use it, you may lose it.

BATTERY CHARGING

This is the approximate charging curve of the Lestermatic charger.
Input voltage: 220-240 Volts A.C.
Battery discharged 80%; 220 Ampere-hour battery.
Initial charge rate: 25-30 Amps. Finish rate: 6 Amps.
Total charge time for automatic cut-off: 9 hours.

25- 30 amps. initial charge rate.



The time between point A and point C will vary with depth of discharge. C will always be three hours. With deeper discharge cycles, (over 50%) it is wise to allow the full cycle. For shallower cycles such as 25%, terminating the charge at point C is more logical since most of the energy consumed during this equalization is wasted. A full equalization cycle once a week should be sufficient under these conditions.

When adding water, halt the charge at point C, add the water, then complete the 3 hour cycle in order to mix the water with the rest of the electrolyte.

Area B represents a time span of two hours when gassing is starting to occur. During this time the electrolyte receives most of the necessary mixing. The final 3 hours serves to boost the weaker cells up to parity with their brethern.

With an input voltage of 110-120 volts, the initial charge will be approximately 15 amps. The total charge time for an 80% charge cycle will be about 15 hours.

H.I.M.