

Electric Auto



Association

NEWS

July 1983

Vol. XV No. 7

DIRECTIONS

IS THERE AN ELECTRIC CAR
IN YOUR FUTURE
By GREG WHITNEY PHOENIX

If you want an electric car, but don't want to spend a large sum of money, convert your own car to electric. Two years ago I converted a 1973 Mazda station wagon. It was difficult because, at the time, I did not have the advantage of being a member of The Electric Auto Assoc. On my own I searched for and studied all the material I could find on electric vehicles and I talked with the few people I could locate who had previous experience with this type of vehicle. Using bits of knowledge gleaned from these sources, I was able to construct a rather primitive electric car. I used this vehicle to commute to work for a year.

To give you some idea of the costs involved in converting my Mazda, I offer the following list:

1972 Mazda wagon	\$ 175
400 amp gen. (motor)	350
3-400 amp contactors-speed control	180
3-400 amp fuses	75
8-6v deep cycle batteries	400
Motor-to-trans adapter	250
48-v bat. charger (comm. unit)	200
12-v bat. charger	30
Misc.	300
	<u>\$1960</u>

Most of the extra cost for converting the VW is in the better control system and the larger battery pack.

You too can drive an unusual, low pollution quiet car that you have built yourself. If you are not already a member of the Electric Auto Association I urge you to join.

All the machine work and welding was done in my home workshop. If you contract this work out, the cost will increase by that amount.

I am planning to build a second EV which, hopefully, will be more useful than the Mazda is with its 45mph, and 15 to 20 mile range. The anticipated costs for this vehicle are as follows:

1966 VW Bug	\$ 300
VW Transaxle (used)	175
400 amp generator (motor)	350
400 amp transistor speed control	750
1-400 amp fuse	25
12-6-v batteries	600
Motor-to-trans adapter	250
72-v bat. charger (homemade)	100
12-v bat. charger	30
Miscellaneous	300
	<u>\$2530</u>

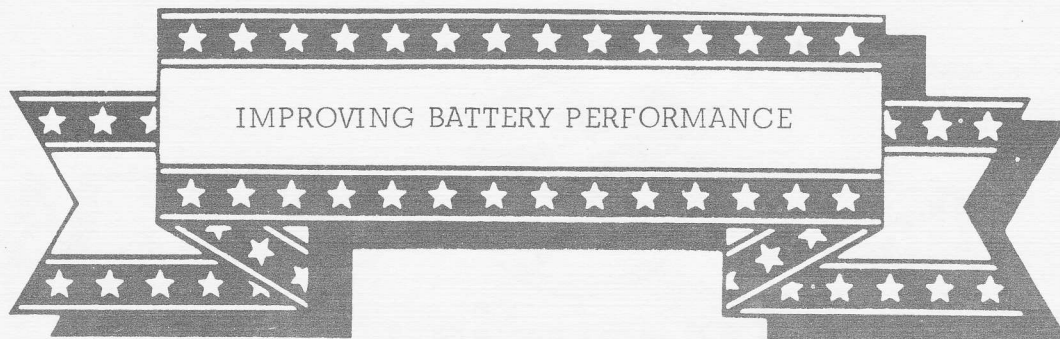
Meetings are at 9:00 A.M. on the fourth Saturday of each month at Lou Grubb Chevrolet, 27th Avenue and West Camelback Road, Phoenix. For more information call Ron Jackson at 969-7258 or me, Greg Whitney at 848-2845.

WE WILL PROMOTE

ALL EVENTS

EAA OR NOT

SEND INFO. AT LEAST 2 MONTHS AHEAD



The Detroit Edison Company, the electric utility in the Motor City, has a fleet of 24 electric cars, each with 18 batteries. They have logged 175000 miles on the fleet in 18 months. Initially, 75% of the batteries failed within the first 5000 miles. Then they developed a three-pronged program for pre-use testing, break-in and capacity testing. The result has been a dramatic 73% reduction in battery failures. The prime priority is reliability.

Pre-use testing consists of discharging each new battery pack as a unit at 75 amps for 60 minutes. This verifies connection integrity and identifies any batteries which are weak initially.

Break-in consists of road testing for about ten cycles, to just 50% discharge (approximately 20 miles), then another discharge test AT 75 amps for 60 minutes followed by another ten cycles. Now the batteries are ready for the real test, the capacity test.

The capacity test discharges all the batteries at 75 amps until some battery reaches 5.25 volts. If the elapsed time is less than 75% of the battery manufacturer's rating, the weak battery is replaced with one of the same make which has had roughly equivalent use. The pack is then recharged and re tested. At this point the batteries have gone through 20 to 25 cycles and are pretty well broken in but they usually show some increase in capacity in later tests.

Battery manufacturers agree that taking it easy at the start is good in contrast to the earlier industry attitude of "Run 'em all the way down!" So far, Detroit Edison has used Exide, Varta, Douglas and Alco batteries and has made dramatic improvements in reliability with their break-in and capacity testing procedures.

---from "Chopper Noise / Alternate Energy Transportation Newsletter.

FROM THE "OHIO OUTPOST" - Len Fisher,
Dublin, Ohio

"Regarding battery insulation, none of us have found it necessary. I've driven the Subaru in temperatures well below zero. The first time I drove it in sub-0 temperatures, it acted very sluggish for about 2 blocks. Then as current began flowing in the batteries they seemed to warm up and the car picked up speed. (Of course part of the problem might have been that the transmission fluid needed to warm up too.) Anyway my wife and I usually plug in the charger for a few minutes prior to starting out in the Winter. We've done this ever since the first sub-0 run and have never experienced as much as a slow down since. If the car is parked outside the grocery store for an hour or two in the winter, that doesn't seem to be long enough to cool off the batteries because she always starts up just fine after shopping."

EDITORS NOTE: TVA says they have experienced more failures in the cooler locations in their cars

CONTRA COSTA CHAPTER

On Apr. 9 at our regular East Bay meeting, Lou McMillan showed his recently converted VW Squareback with automatic transmission. He went into considerable detail on automatic transmissions, planetary gear sets and showed that they can be used in electric conversions. He left out the hydraulic torque converter and his car performs quite well but he will continue to improve it.

(EDITOR'S NOTE: Recommend contact Lou or others with experience in disabling torque converter portion of automatic transmissions.)

EV Marketplace

SPEED CONTROLLERS (Willey Model 9)
and motor-mounting adapters and
couplings - Call or write:
Bill Palmer (415)948-7677
44 Dior Terrace, Los Altos, CA 94022

'72 TRIUMPH CONVT' 72v, Prestolite
motor, PMC controller, 12/72v Lester
4000 mi. \$2000/BO. Call collect:
Bill Kreipke (916)988-3166

'80 ELECTRIC BRADLEY w/stereo & mags-
needs batteries and rust clean-up.
\$5000/BO. Pat Owens (408)742-6067 or
(408)268-0822 after 6 p.m.

MAZDA RX2 w/Prestolite motor, G-E EV-1B
Contr., Accel. SW., Modules, etc.
14-Trojan J-250W; 6v bat. Steel belted
radials, meters in panel, 2/0 wiring
complete with Lester Mod. 9350 12/84v
charger and tow bar. Exc. cond. Lo Mi.
Can be seen at Steve Kaider's
773 Vista Grande, Los Altos, CA or
call: (415)961-5198. For further
detailed info. call John McCarley
(408)724-2659, 427 Allan Ln.,
Corralitos, CA 95076

XFORMERS 115 or 230 VAC INPUT
12 or 24 VAC @ 30AMP out \$7.50/ea.
Bob (415)593-0824

ADAPTER PLATE, Cast Alum. w/bearings
and rabbets for GE2CM76 and J&H G-29
(&Baldor) Mfg'd by Bill Palmer
(cost \$287.) Sell \$195.
John (916) 756-5311

1982 RENAULT LEOPARD used 350 mi.
\$6,500. cost new \$12,000
Chet Jones (415)939-2067

ELECTRIC ROAD RUNNER 2 pass., 2 speed
Moped 30mph. 25m on charge \$1,000
Ken Ekstrom (209) 733-2763

ELECTRIC SUPERTRIKE 1 pass. 2 speed
15mph 35 m on charge - \$200
Ken Ekstrom (209)733-2763

ELECTRIC MG; CM76 MOTOR CHARGER
\$750 SCR and Misc. parts
(415)658-6586

NOTICE: Please send Roy Paulson any
Data on Handicap Electric Vehicles.
Sna Jose Chapter to Serve Handicap
and Old. 1592 Jacob Ave., San Jose 95118

ELECTRO AUTOMOTIVE

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

* * * * *

'69Toyota, GE2CM77 Motor, Heavy
Duty Cutler Hammer relays, 2
speed 36 Volt, System, (12 Bat.)
Pervision for 16 Batteries if
desired. Regenerative braking. Bat.
in front and under hood. 48Volt
ferro resonant charger (on board).
Price \$750.
Robert Baxter 201-741-4530

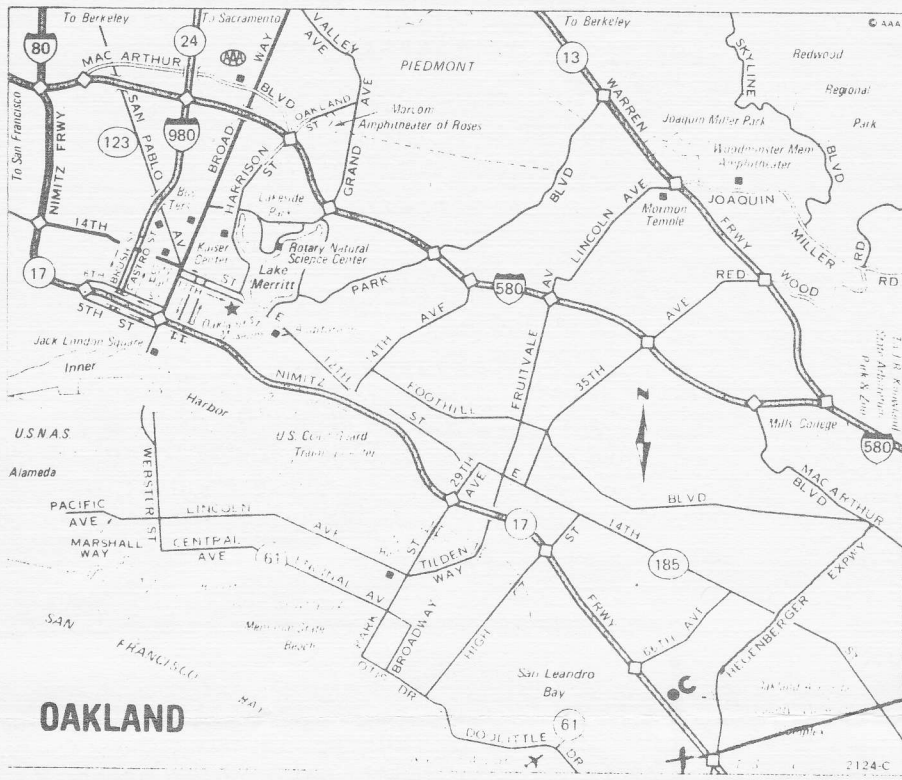
SAVE MONEY ON ALCO BATTERIES
Now forming a quantity purchase group.
Contact Don Newell 8030 La Crosse Dr.
Morgan Hill, Ca. 95037 - 408-178-2055

ADS must be received with payment by the 10th. of the month, for the following month's
issue. AD rate is min. 1 to 5 lines \$5.00, 1/4 Pg. \$15.00, full Pg. \$50.00, full Pg.
2 sides \$80.00. Wanted, Trade, For Sale, etc. Mail to EAA 1249 Lane St. Belmont, CA.
94002

1983

ELECTRIC VEHICLE *Rally*

AUGUST 13



EASTBAY CHAPTER RALLY will be held on August 13th at the Hyatt, in Oakland, Rally will start at 9:30 a.m. and will run for 5 hours. Get your cars ready Awards will be handed out at the September 3 meeting. Call Chuck after 6 p.m. (415) 431-8179 for more information



SWAP MEET SELL BUY TRADE

LAWRENCE SQUARE SHOPPING CENTER
EL CAMINO & LAWRENCE

\$10 MIN DONATION TO RALLY FUND
SELLERS RESERVE SPACE NOW
296-8532

HP

Second Annual Electric Vehicle Show & Demonstration

Hosted By: the Baltimore Electric Auto Association and
the Electric Auto Association of Greater Washington

*Come and See the Latest in Electric Vehicles
and Alternate Sources of Energy.*

Displays on: Electric Motors
 Batteries
 Conversion of Sunlight to Energy
 Propane Powered Vehicle

Many electric vehicles will be open for your inspection.

See the latest in parts and conversion kits.

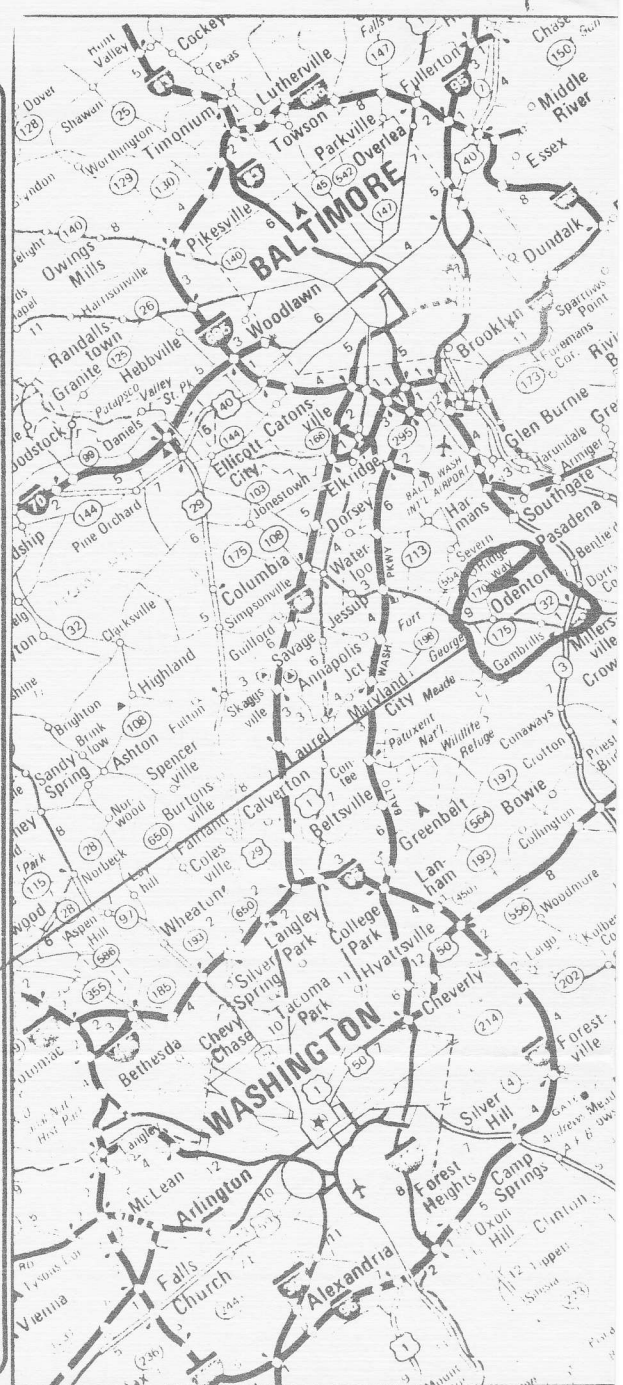
July 23rd & 24th

BALTIMORE ELECTRIC CAR & SUPPLY CO.

8236-R Telegraph Road (Route 170)
Odenton, Maryland 21113

301-827-6006

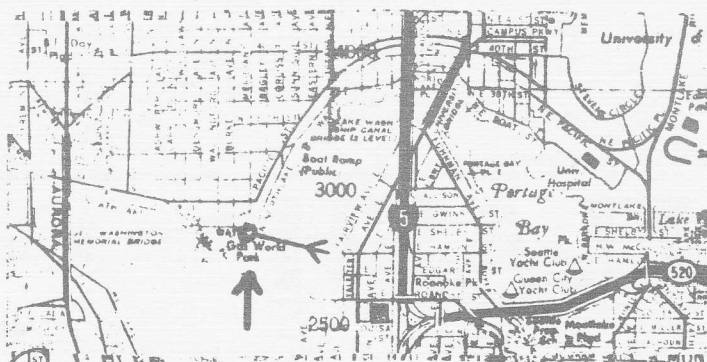
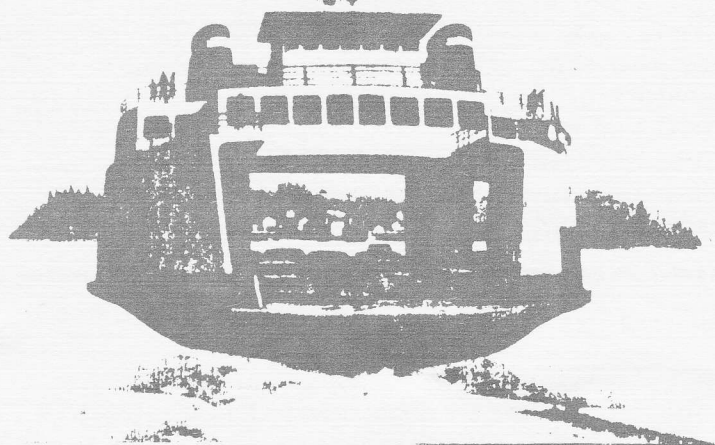
Across from the Super 170 Drive In. 2 Miles North of Odenton.
5 Miles South of BWI Airport



SEATTLE Electric Car Rally JULY 31

SEATTLE CHAPTER

Northlake Way and Maridian. For
details call STEVEN LOUGH (206) 325-2600



MOTORS SERIES OR SHUNT ?

By IVAN MARTS

During my five years of membership in the E.A.A., I have heard no end of lectures on the superiority of the shunt or compound motor as opposed to the series. Most of the proponents of the shunt tend to dismiss the series as unworthy of any consideration. Since my six years of extensive usage of electric vehicles has been accomplished with series motors, I feel qualified to offer a case for the defense.

First it is worthwhile to note that 95% of the electric vehicles that have been produced in the U.S. are equipped with series motors. The reason is basically one of economics and availability. Well designed and rugged series motors are in quantity production for the fork lift industry which happen to have the proper rating and are in the proper horsepower class, and are available at a reasonable price. Additional windings involved in the compound motor adds to the expense of the motor and quite often results in a motor which is not as rugged as the series. Also, an extra control circuit is needed thus adding to the cost of the controller.

The series motor has been used for heavy traction purposes for nearly a hundred years, and is still the standard for railroads and heavy construction equipment. There is a trend away from them in light rail vehicles, since the advent of SCR controller circuits with field forcing. The Muni Metro street-

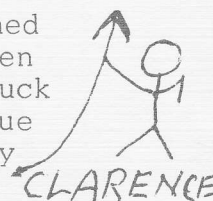
cars recently put into operation in San Francisco are using shunt wound motors with field forcing. The armature current is controlled up to 15mph and field weakening is used above that speed. Dynamic braking is used down to a complete stop.

The series motor has two drawbacks. It must be loaded at all times during operation or it will continue to accelerate until it destroys itself. Therefore the armature must be capable of some safe overspeed with reason, and the operator must practice a little common sense. Since the field cannot be weakened, the torque of the series can only be increased by increasing the voltage, or the speed of the motor must decrease in order to reduce the CEMF.

However, during acceleration, which occurs frequently in automotive use, the series motor produces the highest torque per ampere of current drawn of any motor available. Under highly loaded conditions it is the most efficient.

In closing, let me toss a few barbs. Many people who use aircraft motors in their vehicles seem to find it provident to keep a spare motor around. The most common problem seems to be burned out field circuits. Has anyone heard of a Presto-lite motor burning out a field circuit, or breaking an armature shaft? The defense rests it's case.

Ivan has probably driven more miles per volt than all the rest of us combined. However I cannot let barbs at aircraft generators go by. My experience has been that they are almost indestructible and I will but my SHUNT WOUND driven truck against any EV for climbing. While it is true a series motor delivers more torque per amp at high loads we(I hope) do not drive in this condition, except for very short periods. I have never seen an air craft generator field burned open and I sold over 300.



FLASH

VICTOR WOUK

HAS AGREED TO BE THE KEY SPEAKER AT OUR SYMPOSIUM

Dr. Wouk is recognized as a world leader in high power DC controllers. Dr. Wouk designed and built the HENNY KILOWATT which was the beginning of the new EV age.



Electric Auto Association

EAST BAY CHAPTER.

Dear John,

I hope the legislative action described in the last EAA News results in more than just another government office and more gov't employees. Maybe I'm too pessimistic, but politics being what it is----

1151 Shattuck Av.
Berkeley CA 94707

3 Jun '83

HOWEVER, with that "ice breaker" perhaps now is the time to start action by petitions such as the "resolution" that I have enclosed. I suggest that each Chapter sign up a copy and mail it to their Congressmen and Legislators, and that individual copies sent out with the EAA News for those members too busy to attend chapter meetings, to sign and mail on their own.

While doing this, if a zerox copy of each signed petition is sent to your office, they could be assembled and forwarded to such a congressman or Assemblyman as Bill Leonard or others, Maybe Pete Wilson?, who might be willing to "start the ball rolling". That person would have to have some idea of how many persons are interested accross the country, or in the State, as well as some additional information such as performance figures, rally results, etc.

Perhaps the wording could be improved, it shouldn't be any longer. Maybe you can discuss the idea with others, and improve the methods Ive outlined also.

yours truly

David R. Cole
David R. Cole.

RESOLUTION.

WHEREAS Today's Electric cars (converted from I C engine cars) or designed from the ground up, (the Silver Volt etc.) are capable of traveling far enough to satisfy most day to day needs for a second car, and/or most requirements for commuting to work, and,

WHEREAS these Electric Cars will perform these services daily with an overnight recharge each day by plugging-in to the local electric Utility service, and,

WHEREAS these Electric cars operate noiselessly and do not polute the air, using non-peak energy from existing energy sources and facilities, automatically the most economical energy available in each area, including hydro-electric, solar, wind power and geothermal steam, and,

WHEREAS Tax reductions have spurred the development and use of Solar heating, Wind energy, Home insulation and other petroleum saveing technologies,

NOW THEREFOR BE IT RESOLVED, that State and Federal tax laws be revised or ammended to authorize similar tax reductions or exemptions for each builder or purchaser of a street-legal Electric car.

_____ signature _____	_____ name printed _____	_____ address. _____
_____	_____	_____
_____	_____	_____

BIG SAVINGS***NOTICE TO ALL CAR OWNERS!!

Last year an EAA member, Zdenek (Stan) Skokan, initiated a crusade for lower electrical rates for users of electric cars. It took some doings on his part to get the action thru Pacific Gas and Electric to California Public Utility Commission and back but he succeeded. A special rate is now in existence and EAA Club members can take advantage of it. This rate will cut Stan's cost per mile by almost 50%. Like cutting his kwh rate from 10.213¢ to 5.436¢. Stan's two cars average 600 miles each per month and cost him 2.5¢ per mile. This is comparable to 40 miles per gal. of \$1 gasoline. Now you California drivers are averaging only 16 miles per gal. Congratulations on your pollution-free riding, Stan, at these reduced costs.

Call your local PG&E office, with your account number available, if you wish to sign up for these experimental "Residential Time-Of-Use Rates". Don't delay, first come are first served with this wonderful program.

If you live outside PG&E area, why not ask your utility for similar service?

SAVED & SAVEING BY THE ELECTRIC

Bill Williams and his family of four lost the services of their I C car for two weeks. A motor overhaul job was required. He reports that they did nicely with his electric car as their sole method of transportation. Bill also says his new "off-peak electric power meter" will save him hundreds of dollars. Have you contacted your local power company about off-peak rates yet?

FIELD TRIP; MAE BENSON PENN. CHAP. Is organizing a battery factory trip for AUG. Call Mae at 415-992-5453

PICNIC; Penn. Chap. annual picnic will be at Coyote Pt. Park July 9Th.

#9 FOR JOHN WASYLINA

At the June 11th. EV EXPO IN HAYWARD John exhibited his latest handiwork his 9th. conversion. John Newell reports it to be A WONDER OF SIMPLICITY AND PERFORMANCE. John W. is one of our most talented members. The car was built for Carl Schaeffer of Castro Valley

★★

THIS MONTH

BALTIMORE/EVA_- DC

EV SHOW & DEMO CALL 301-827-6006

23 24

EVENT

SEATTLE RALLY CALL STEVEN LOUGH 206-325 2600

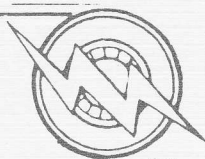
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EDITORS: - Walter Laski - John Newell - Bill Palmer - Paul Brasch - COMPILED AND PUBLISHED By Clarence Ellers. SEND IN YOUR PERSONAL AND CLUB NEWS AND COMING EVENTS. ARTICLES _ COMMENTS etc. all correspondence to address below.

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Auto

Association



NEWS

JULY 1983

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