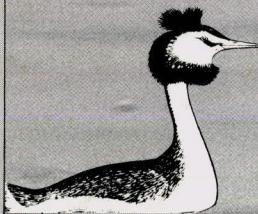
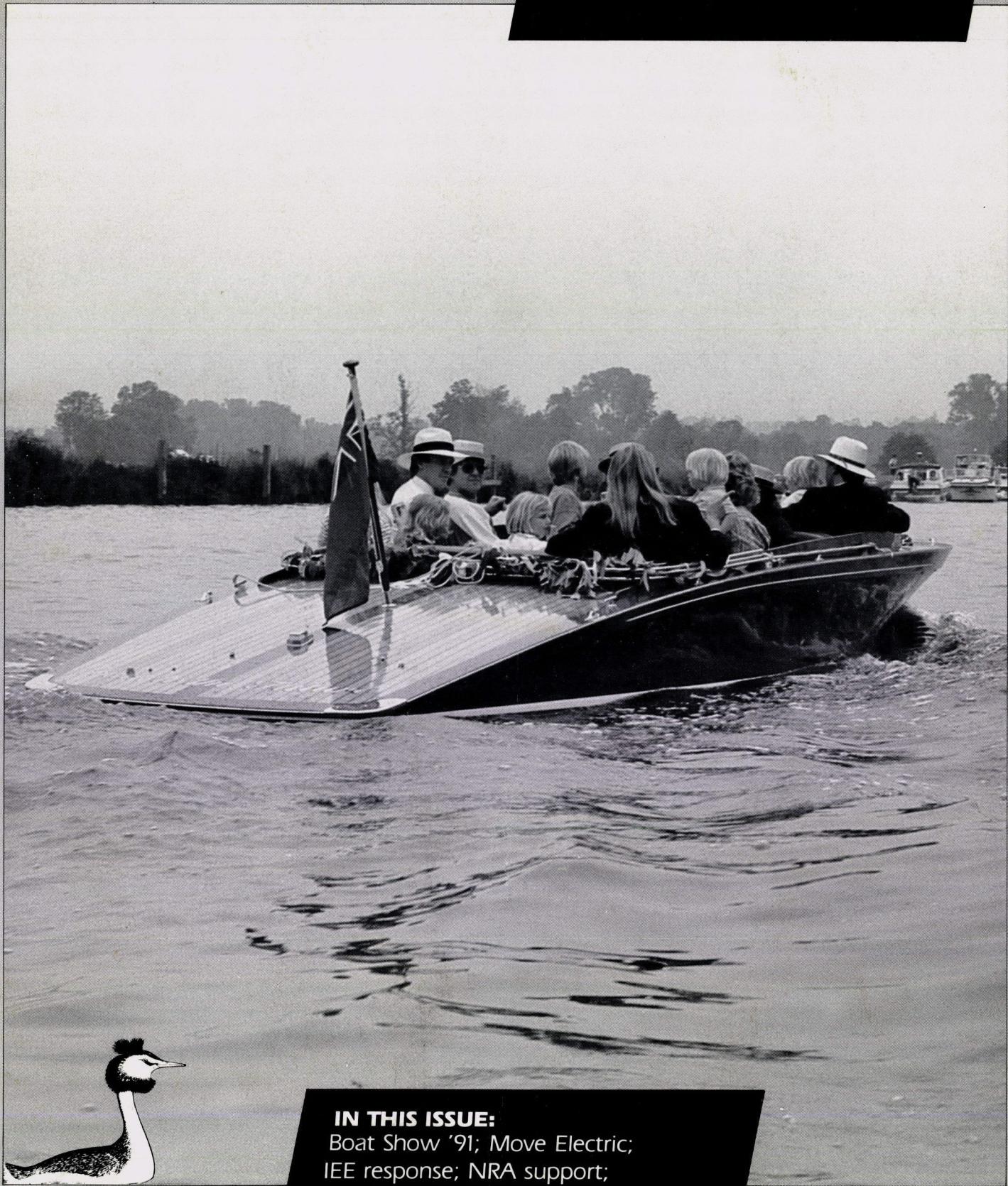


Electric Boat

News

The Journal of the Electric Boat Association
(Affiliated with EVA)

Volume 3 : Number 4 : September 1990



IN THIS ISSUE:

Boat Show '91; Move Electric;
IEE response; NRA support;
Back-To-The-Future;
Castle Narrowboats Progress;
A Duke's Pleasure continued.

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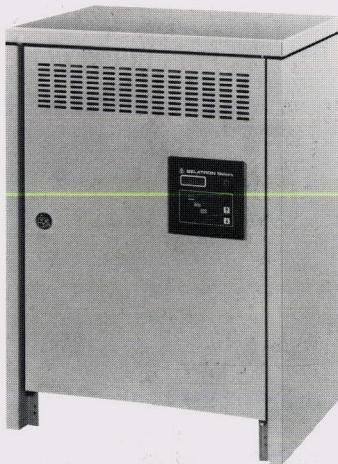
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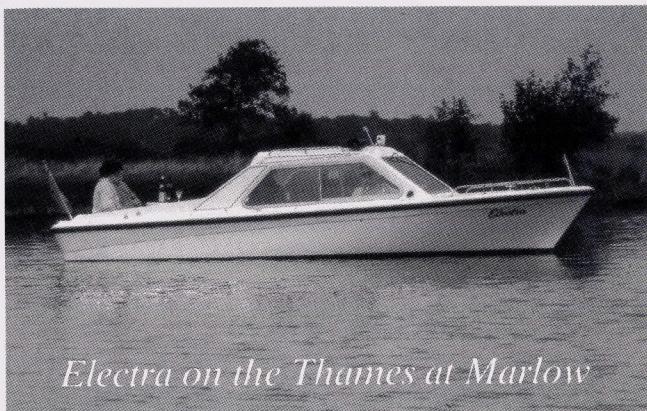


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**LONDON INTERNATIONAL
BOAT SHOW
3 - 13 JANUARY 1991**

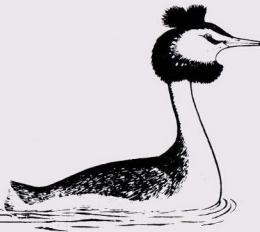
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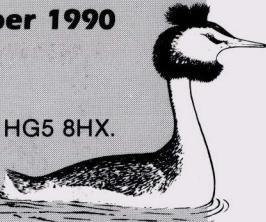
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Chairman/Editor: Kevin Desmond, "Fairfield", 122 Olive Road, London NW2 6UU.

Membership Secretary/Treasurer: Fraser Brown, c/o The Mouse Hole, Abbey Road, Knaresborough HG5 8HX.



Cover Photograph: Back-To-The-Future with a full complement of passengers on board enjoying the Wargrave Rally.

BOAT SHOW '91

We have received welcome news that the theme for the 1991 Earls Court Boat Show is to be an Inland Waterways impression, complete with lock, lock-keeper's cottage, weir, bit of canal etc. During the Show, it is hoped that a 21ft Frolic should silently give rides to visitors, around two islands, strategically placed at the Earls Court pool. With An Stradag on the pool at the 1990 Show, this is the second time an electric boat has been one of the main attractions.



An artist impression of the main theme at Earls Court.

Welcome to New EBA Members

(Since June)

Hans Asyee (Reeuwyk, NETHERLANDS); Charles Beddingfield (Wirral, MERSEYSIDE); P.R.Brind (Tiverton, DEVON); J.B.Cady (Hampton-in-Arden, WEST MIDLANDS); Geoff Callow (Langport, SOMERSET); E.J.C.Chapman (South Brent, DEVON); R.T.Harris (Wilmslow, CHESHIRE); John Kapp (Hove, SUSSEX); Graham Nash (Cookham, BERKS); John Shoebridge (Dora Creek, New South Wales, AUSTRALIA)

Any existing members wishing to renew their annual subscription (£14.38 pa.) or able to persuade anyone else to join our crusade, should make their cheques payable to "The Electric Boat Association" and send them off to our Membership Secretary/Treasurer, Fraser Brown, C/o THE MOUSE HOLE, ABBEY ROAD, KNARESBOROUGH HG5 8HX.



Produced by Caversham Lithographic Studios,
16a Bridge Street, Caversham, Reading, Berkshire RG4 8AA.
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COMPARING NOTES



In our last issue, we mentioned the possibility of an "All Electric Transport Show" as one of the first positive spin-offs from the EBA's affiliation with the EVA. Re-titled "MOVE ELECTRIC 91" this exhibition and conference has now definitely been scheduled for 15/16 May next year, to take place at Trentham Gardens and Leisure Complex, near Stoke-on-Trent. For our purposes, Trentham Gardens includes a lake - normally used by waterskiers.

EBA member, John Gardner of Benning (UK) and currently EVA Chairman explains:

"The format and stature of this event departs radically from EVA exhibitions of the past. As the 'voice' of the electric vehicle industry we feel that an enhanced image is necessary to bring home to the public, users in industry and government that modern electric

vehicles are both environmentally friendly and economic to use.

"The EVA, as experts in the field, will organise the **MOVE ELECTRIC 91** Conference. The Trinity Group, who have been independently voted 'Exhibition Organiser of the Year' for the last two years, will arrange our exhibition, which will be a showplace of Britain's worldbeating EV technology.

"The conference will provide an unrivalled opportunity for designers, manufacturers, users, transport planners and others to hear reports on the latest developments, innovative designs and trends in battery electric vehicles.

"Informative papers will be given by international experts on battery power sources, vehicle design, vehicle and battery

electronics. Trends and prospects in the expanding and changing market for EV's will be featured. The increasing use of electric boats on inland waterways for business and pleasure will also be highlighted. Much of the equipment on display will give live demonstrations."

Whilst there have to-date been two Battery Electric Boat Conferences (Stratford-on-Avon 1981 and Stoke Bruerne 1985), undeniably, **MOVE ELECTRIC 91** provides a golden opportunity for our trade members to compare notes with manufacturers of land-based EV's and for them in turn to realise the marine potential of their particular bit of kit.

(Watch this space!)



RESPONSE

In the June issue of the **Institute of Electrical Engineers Review**, an article appeared, entitled:

"Electric Boats. whence and whereto now?". Its concluding paragraph reads:

"Given the right funding, the Electric Boat Association is now ready to repeat such a development programme (referring to Lady Arran's An Stradag record-breaking boat), but for a more practical and useful type of motorboat. It therefore invites electrical engineers to address themselves to that challenge."

To date, the EBA has received **eighteen** replies to this challenge. They have come from as far afield as Munich, Mombasa, Quebec, South Africa, and Tel Aviv. In terms of academic and industrial response, encouraged letters arrived from the Universities of Swansea, Liverpool, Newcastle-upon-Tyne, the Open University and from two companies whose not inconsiderable Research and Development facilities have formerly enabled them to deal with the demanding requirements of Defence contracts in the marine field.

As these new contacts bear fruit, they will be reported in this journal.



PRO ELECTRICS

In April this year, at a meeting of the Committee of Riverside Parishes (Thames), Dinnie Hawthorne, also an EBA member, made the following proposal to Mr A. Birtles, the National Rivers Authority Fisheries, Recreation and Conservation Manager that:

"One way of preserving the river bank would be to encourage the use of more electrically propelled boats by halving their Licence Fees. I pointed out that the damage which could be inflicted by an electrically propelled craft was negligible to that caused by most other boats. The response to my proposal was that the suggestion would be considered."

On 10th July, at a meeting of the NRA Regional Rivers Advisory Committee, the following proposal was tabled: "The introduction of reduced charges for electrically propelled vessels."

We await developments.....

BETA

- some facts about Chloride's innovative sodium/sulfur battery:

Energy Density: 130 watt-hours/Kg - more than three times that of the best lead acid batteries

Power Density: 188 w/Kg- twice that of standard lead acid traction batteries.

Average Cell Life: 890 cycles/ can be discharged much more complete without risk of damage. Has shown evidence of much longer lifetimes.

Battery Capacity: 300 Ah

Number of Cells: 2880

Normal Battery Voltage: 206V

Minimal Voltage at 60kW: 135V

Electrical capacity: 50 kWh

Maximum Power (20 secs): 60kW

Continuous Power (40 mins): 35kW

Dimensions: 1520mmX 1065mm x 460mm

Current Manufacturers:

Asea Brown Boveri, Heidelberg, West Germany; Chloride Silent Power Ltd, Runcorn, Cheshire.

Invention: Early 1960's, Joseph T Kummer, research scientist, with Neil Weber, glass expert, both at the Ford Motor Company in Detroit. The problem: Finding membrane that would pass the sodium ions while blocking electrons, forcing them onto the external circuit. The membrane also had to resist the highly corrosive molten sodium and sulfur (since the battery would only operate with the electrode reactants in a liquid state). The solution was a beta-alumina ceramic electrolyte - glass doped with sodium aluminate.

Operation: Because the cells operate at 350 degrees C, the battery is contained in a thermally insulated box when fitted to a vehicle. Heat is generated within the cells during charge and discharge and maximum heat generation occurs when peak power is supplied to the vehicle motor during acceleration from a standing start. This internal heat energy offsets the slow natural cooling of the battery, so that it will remain at the required operating temperature for some days, even when not in use. Electric heaters built into the battery box bring

the battery to working temperature during recharging.

Vehicle Research Projects:

ABB has assembled 17 vehicles (Volkswagen, Jetta, BMW3s, Mercedes-Benz 190's) all powered by sodium/sulfur batteries and giving a 175 km range/top speed 115 km/h)

Chloride Silent Power Ltd's new BETA manufacturing plant at Clifton is supplying a series of Intermediate batteries to between 10-20 Bedford and Sherpa vans for an extended series of road tests around the UK in early 1991. These batteries together with conversion kit, costing £20,000, preclude any low budget testing.

Boating Prospects: Theoretically, the BETA battery should give an electrically-propelled commercial narrowboat, twice the cruising range. Being a fully sealed hygienic box, it will no longer need ventilation. Obviously, until the age-old law of Supply&Demand comes into effect - the sodium/sulfur battery will remain beyond the pockets of the EBA. But, coupled to more efficient motors, controllers, chargers and hull shapes, it does offer a realistic contribution towards longer-range cruising.

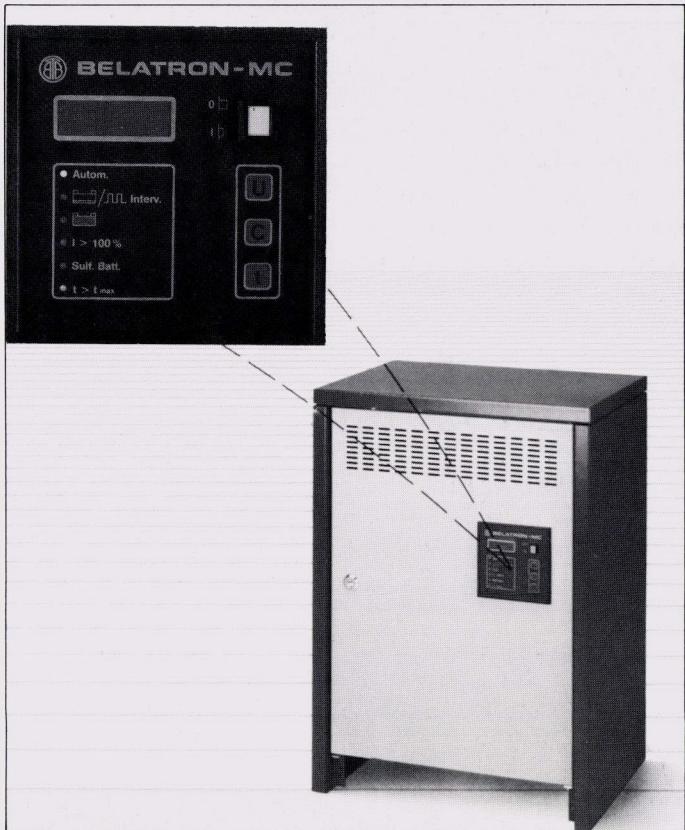
FOR SALE



Wire Weed, a very pretty 18ft steel-hulled electric dayboat which can comfortably seat eight people. Built in 1988 and regularly used for two years, sixty times a year, on the Grand Union Canal between Weedon and Gayton. The floors and locker tops are all diamond pattern Wisafloor requiring no maintenance, the locker top being teak edged, the seat cushions and side curtains are all as new. The sale includes a fully automatic R&D battery charger and leads. The asking price is £6,850 VAT inclusive. The owners will deliver her anywhere within the UK free of charge, assuming that the purchaser could arrange a crane to unload her as their trailer is not a submersible one. Any offers to Mr N.T. Clarke (Tel 0327 40739).

BELATRON—MC:

"The Intelligent Charging System"



The more accurately and precisely a traction battery is charged, the greater the efficiency, energy utilisation and service life. The BELATRON-MC charging system was developed by Benning in Bocholt, West Germany in order to achieve maximum readiness for operation and utilisation of traction batteries. The use of a magnetic constant voltage regulator enables the following distinct advantages:

- 1) By using a unique transformer to eliminate the harmful effects of mains voltage fluctuation during re-charging, the Belatron-MC **increases the life expectancy of traction batteries**, and in turn the performance of the electric vehicle/boat they are powering.
- 2) Through a unity power factor, the amount of Amps which the Belatron-MC will consume, will be 25-30% less electricity than any other charger on the UK market. This also means that **you can charge a bigger battery from a domestic 13-amp socket**. Because the charger consumes 30% less current, then it is possible to have a 40% larger charger working from the same electricity supply, enabling larger

batteries to be charged without the need for providing special high current supplies.

3) The Belatron-MC also deals very well with batteries in various degrees of discharge and will reliably charge batteries which are for example, only 30% discharged, whereas many chargers will cause serious over-charging under these circumstances.

(For a brochure and prices, contact Benning UK, 256 Field End Road, Eastcote, Ruislip, MIDDLESEX HA4 9UW. Tel: 081 868 1389)

WINDERMERE

Two "renegade" electric boats took part in The First British Classic Motorboat Rally, held on Lake Windermere during the weekend of 4/5th August and both of them won prizes.

Mr R.C Whitter and his guests, very elegantly attired, won the Best Costume prize, whilst lunching on board Little Gypsy, a 25ft former police inspection launch built in 1919 for work on the Norfolk Broads. Electrification (by STAELCO) took place last winter, with a 3kW Nelco unit and Little Gypsy now contributes to making the River Dee in Cheshire, a slightly quieter waterway.



The Aquatic Treasure Hunt was won by local resident Jim Andrews in Hummingbird, a 21ft Frolic, regularly cruised up and down England's largest natural lake. Indeed on the Monday after the Rally, Hummingbird was being demonstrated to officials from the environment-conscious Lake District Planning Authority. **Watch this space!**

FROM STRENGTH TO STRENGTH



The "Ohmega"

We recently received a letter from David Tolliday, current proprietor of **Castle Narrowboats** at Gilwern, GWENT:

"I purchased the business in 1986 having inherited Harlech Castle and Raglan Castle plus two canal re-charging points (one at Llangynidr, the other at Brecon). Since then I have increased the electric boat fleet by a further two, ie Brecon Castle in 1988 and Beaumaris Castle this year. Our latest arrival is a 45ft, 40-seater electric tripboat, Ohmega, which went into operation on 16th August. I have also increased, entirely I might add at my own expense and effort, the number of charging points ie now located in addition to the above at Pontymoil junction (southern end of navigation), Llanfoiste and and Talybont.

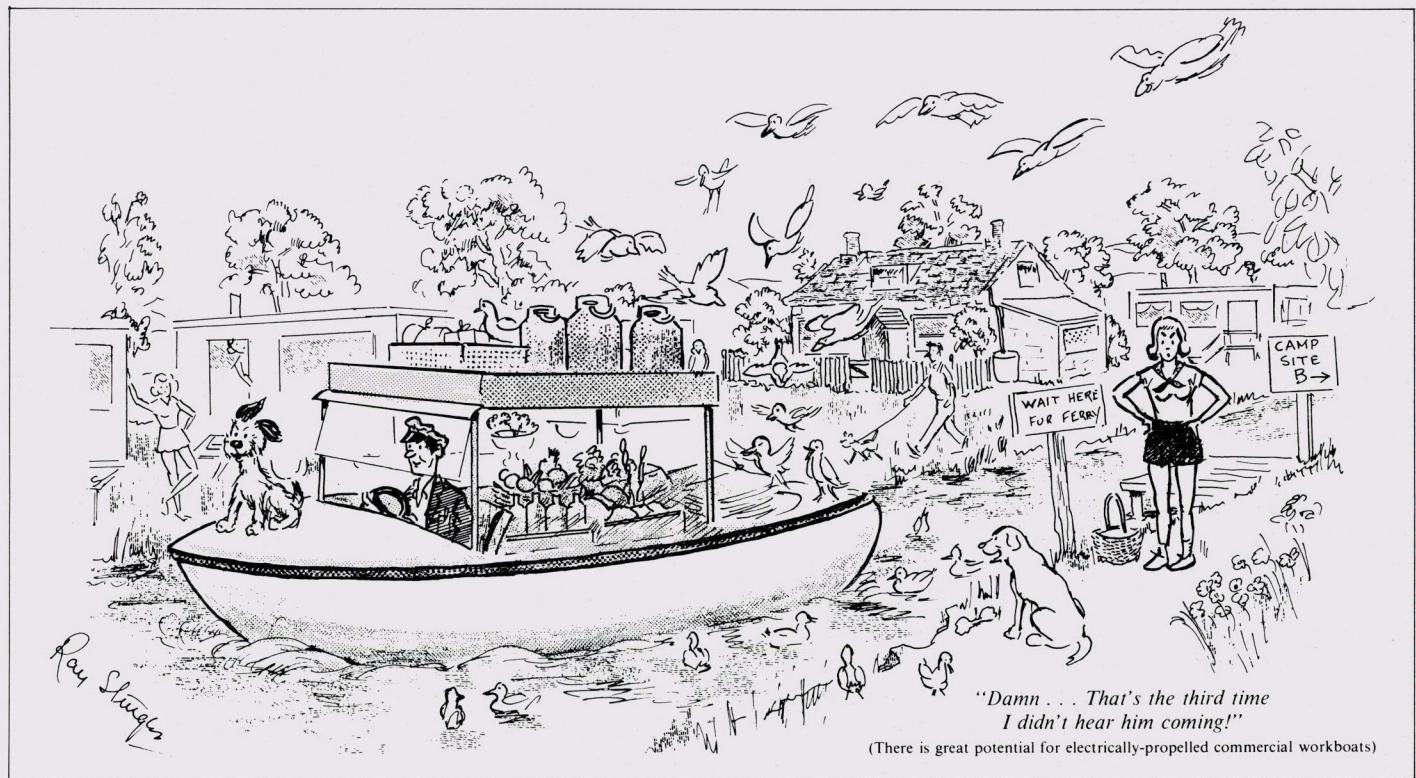
The electric boats have obviously been very successful and seem especially suited for our very sensitive environment.

I am slowly modernising the older control systems from microswitched/relay operated to fully linear transistorised or SCR controlled systems, these giving a fully variable throttle in both forward and reverse. The new systems are being designed to operate in the by-pass condition for normal running, giving speeds of between 2-4 mph depending on prevailing conditions. The advantage of this is that the controller is then effectively switched off, thus remaining cool. I am also considering using a BOOST speed selection whilst in full speed, hopefully this will get boats out of dangerous situations etc.

Motors seem to be running at between 3-5 hp depending on prop/gear ratios and obviously boat size. Ohmega's motor is of course a fair bit larger.

It is perhaps worth mentioning that we are less than one hour's travel west of the Severn Bridge so hope to attract some trip boat business from as far afield as Bristol and other towns along the M4. All the Very Best. David Tolliday."

(We wish Castle Narrowboats every success with all future projects)



The Spice of Life . . .



Third Wargrave Rally—Picnic at Hambledon





Dinnie Hawthorne with the Wargrave Trophy.



Perhaps the most encouraging aspect of the 3rd Wargrave Electric Boat Rally, held on a hazy 16th June, was the noticeably wider range of craft (19) which assembled: One dory, two slipper sterns, several "Lathams", two dinghies, one punt, two canoes (one solar-powered) and last but never least a legendary narrowboat!

Silently cruising in either from above Marlow Lock or from below Marsh Lock, they tied up beside Don and Rene Hookins' "Ferry Cottage" at Hambledon. As in former years, each and every boat was florally decked out with an equally wide variety of blooms in the hopes of winning the Crystal Decanter. The award went to Dinnie Hawthorne of Cookham whose 12-year-old Dynia was halo-ed with a most fetching evergreen arch.

Following a varied display of picnic lunches, there was a champagne raffle in aid of the Hookins' chosen charity, the British Heart Foundation - £100 to a good cause. A bouquet to hostess Rene completing prize-giving, our little flotilla slipped moorings to silently cruise down for a "solidarity" parade along the Henley Rowing Course, before dispersal.

One must report that, despite exhortations from rally organiser Ken Barge, once again we were unable to retain a tight formation. Indeed the sleek slipper stern, Back To The Future received a distinct warning from a river policeman to lower its speed!

Perhaps next year, we should endeavour to stay aquatically closer together. After all, our control systems for such choreography are far more sensitive than those of a petrol-engined boat. Maybe somebody could come up with a way to show off our boats from every angle. Any ideas? Please contact the Editor.



ELECTRIC BOAT SURVEY

(Provisional—July 1990)

NAME OF BOAT	TYPE OF BOAT	LOA	COMMENTS
An Stradag	hydroplane	15ft	Holder of World Electric Water Speed Record at 50.8 mph. Owner-driver Countess of Arran
BacktotheFuture	slipper-stern	26.6ft	Towing Tank-redesigned glass-fibre hull, timber decked. 6 knots+ from 3kW motor
Diana E Banks	fantail launch	30ft	First of a series built and sold by Electric Launch Company (ELCO) of New York State, USA.
Beatrice	butty	70ft	Fitted out with milk-float motor/batteries
Beaumaris Castle narrowboat (1990)	narrowboat	45ft	One of a four-boat holiday hirefleet operated by Castle Narrowboats on the Mon & Brec Canal in Wales. Their first holiday hireboat, Harlech Castle, went into service in 1984.
Beazie	canoe	25ft	Formerly belonging to actress Beatrice Lillie. Currently under restoration.
Bittel	tugboat	ft	For use through the Dudley Canal Tunnel; diesel/electric hybrid.
Britannia	cabin dayboat	33ft	Built by Freebody of Hurley for American customer. Twin-screw/dual drive: 2.6 kW
Commodore Twenty	dayboat	20ft	Built in numbers by Beckmann of Rhode Island, New York State, USA.
Daybreak I & II	narrowboat	30ft	Steel-hulled, in service on Leeds-Liverpool.
Daycruiser	daycruiser	32ft	In regular use on the Shropshire Union.
Deutschland	ferryboat	60ft	Machsee, Hannover, Germany. 126 passengers 14.7 kW.
The Don	open-cruiser	14ft	Extensively cruised by Commander C.F. Rawnsley along the South Coast.
Duffy	dayboat	20ft	Manufactured by Duffield Marine, Newport Beach California, USA.
Electra of Emsworth	canal cruiser	23ft	In 1978 made 600-mile cruise around the Inland Waterways.
Electric Eel	tripboat	21ft	Commissioned by the Broads Authority for the How Hill Nature Trail, Ludham, Norfolk. Demonstrated to both HRH The Prince of Wales & the Prime Minister.
Electricity	canoe	24ft	Built by Freebody's of Hurley.
Electrolyte	dayboat	23ft	Built by Elliott Bay Steam Launch Co., Portland, Oregon, USA.
Emma (1986)	waterbus	31ft	Four years reliable tourist service at Wigan Pier. 30 passengers; 4 kW motor.
Enfy	shuttleboat	55ft	In service on Neath & Tennant Canal, West Glamorgan. 2 X 6kW motors.
Fair Rosamund	tripboat	21ft	In regular service on Blenheim Palace Lake, Woodstock, UK
Forward (1987)	inspection launch	40ft	In regular use at Birmingham International Conventions Centre. 3 kW motor.
Frolic 21	dayboat	21ft	Over 100 built and sold by Steam & Electric Launch Company of Ludham, Norfolk. Exported to France, Germany, Holland, Sweden, Norway, Japan and USA. In 1987, Frolic '908' ran for 110 miles without recharging. 1.5 kW motor.
Gena (1903)	canoe	25.5ft	Still cruises with original open-coil/metal armature type motor.
Humble (1901)	tripboat	55ft	Originally electric, then 90hp diesel, now electric again with 3kW motor
Hummingbird	dayboat	21ft	First electric inboard to return to the English Lake District in sixty years.

NAME OF BOAT	TYPE OF BOAT	LOA	COMMENTS
Isgolden	punt	17ft	The Bath & Dundas Canal Co Ltd's hireboat for use on the Kennet & Avon Canal
Little Dundas	Microplus cabin cruiser	15ft	For hire on Kennet and Avon Canal. Accumot
Little Gypsy (1919)	cabin launch	25ft	Former police inspection launch, recently converted to 3kW motor. Used on River Dee at Chester.
Mildred Stocks	catamaran	22ft	Frequent cruises for the handicapped along the Basingstoke Canal.
Mystic	cabin dayboat	19.5ft	Steam & Electric Launch Company's modern version. Also 1.4 kW motor
Netta (1986)	waterbus	39ft	Four years reliable tourist service at Wigan Pier. 40 passengers; 5kW motor.
Newport Packet	dayboat	18ft	Built in numbers by W. Schoch of Santa Ana, California, USA.
Ohmega	tripboat	ft	40 seater, built by Castle Narrowboats for use on the Mon & Brec Canal, Gilwern.
Olive (1909)	Norfolk wherry	56ft	Uses 3kW motor as auxiliary.
Patricia (1983)	dayboat	32ft	Has cruised offshore from Chichester to the Isle of Wight and return. Inspired by HRH The Duke of Edinburgh. 1.5 kW. motor
Pilgrim (1947)	daycruiser	30ft	Currently out of commission after 26,000 trips up and down the River Wey, Surrey.
Raybuck	dayboat	12ft	On show at National Motorboat Museum, Basildon
Roath's Pride	tripboat	32ft	In regular use on Roath Park Lake, Cardiff
Silver Sail (1982)	narrowboat	27ft	With owner-driver Lord St. Davids and wife at helm, has completed 365 days total cruising, covering 3,500 miles/1,560 lock gates.
Stenson Bubble	narrowboat	65ft	Trent and Mersey Canal, in its ninth year of service for 65 passengers - 11 hp motor.
Titus	tripboat	52.5ft	For Black Forest tourist trips 100 passengers; 12 kW.
Vaporetto E.1	waterbus	75ft	On trial along the Venice canals. 200 passengers.
Voltaire	punt	24ft	same type used for patrol work along the River Cam.
Wagtail V	dayboat	31ft	Built by Steam & Electric Launch Company for Paul Wagstaffe, Chief Executive, British Marine Industries Federation. 3kW motor.
Water Moccassin	canoe	24ft	capable of 120-mile cruise. 1.3 kW motor
Wheelyboat (1986)	aluminium fishing dory	16ft	Developed for Handicapped Anglers' Trust. Still in use on the Darwell Reservoir, East Sussex. 28 similar craft, outboard-engined, in operation in Northern Ireland (2), Wales 5 Scotland (4) and the remainder in England.
Whisper	slipper stern	15.5ft	Created by Conrad Natzio of Riveningham.
Whisper	open dayboat	16ft	In regular service on Grand Western Canal, Devon. 12/24 volt MinnKota outboard.
Wire Weed	steel dayboat	18ft	Two years regular hire-operation on 11-mile stretch of Grand Union Canal at Northants.
Yamato I	ship	100ft	Prototype for Superconductive Electromagnetic propulsion system developed by Japanese Consortium.

(EDITOR'S NOTE: We apologise for any omissions in this Survey and therefore welcome any entries and additions which may make it more complete. With members' help, we are hoping to keep it going in the years to come.)

ELECTRIC BOAT SURVEY

Name of Boat

Type of Boat

Length (feet)

Date Electrified

Comments (25 words)

Please return Form (or photocopy) to:

Kevin Desmond, "Fairfield", 122 Olive Road, London NW2 6UU.

BACK-TO-THE-FUTURE



The ghosts of John and Ned Andrews of Maidenhead must be turning, albeit happily, in their graves. A concern called **Classic Marine Technology**, again of Maidenhead, has brought the legendary slipper stern launch into a new era.

Two years ago, property developer Chris Dowling acquired a traditional, petrol-engined 20ft slipper stern launch. Disenchanted by maintenance problems and with the old engine continually conking out, Dowling and his partner, Brynn Thomas decided to "clean up" the slipper stern launch.

Through a mutual colleague in the building trade they were put in touch with naval architect John Sharp of Chichester. Given Dowling's requirement for lower powered electric propulsion and minimum wake, Sharp recommended radical re-design of the underwater section. In November last year, a scale model was built and tank-tested down at the Wolfson Unit for Marine Technology and Industrial Aerodynamics at Southampton University: a research centre internationally famous for its accomplishments with 12 metre racing yachts.

The resulting design cut the original straight rake of the hull at the stem back by 20 degrees, with more flaring-in amidships and with a semi-concave rather than flat bottom. To these modifications, Edward Dridge, boatbuilder of Emsworth, built a

hull 26'6" LOA, 22ft LWaterline, 6.7" Beam and a draft of just 1.4". This was moulded in grp, 4.5 oz on topsides and 9 oz on bottom. The extensive use of highly varnished solid timbers such as spuce, mahogany and pine for hull sides and linings, beams and upper decks, could then give the Henley Slipper Launch its authentic 1920's elegance.

Working with STAELCO, a 2kW 48 volt Nelco motor was coupled to sixteen 6-volt Oldham-Crompton batteries, fitted under the 12mm plywood sole in a lined and covered lockable box. At a convenient distance was located the RD automatic 220/250 volt traction charger.

The Henley Slipper Launch prototype, called Back To The Future was launched into Chichester Harbour this April and at a speed of over 6 knots, proved remarkably seaworthy. It was then re-launched into the Upper Thames at Cookham and, following some minor trimming modifications, has been unveiled to a delighted boating public, albeit aghast at its elite price tag of £24,000.

The time cannot be that far off when the new design is scaled up and with perhaps a 5Kw or 7.5 Kw electric motor, we behold an Electric Greyhound! Messrs Dowling and Thomas, together with partners Dridge and Terkelson of CMT Ltd, are to be congratulated for bringing a much loved design into our Silent Age.

THE ELECTRIC BOAT ASSOCIATION

SUBSCRIPTION FORM

Please enter my subscription to the Electric Boat Association
for one year as a:-

Private Member (£14.38 pa)

Trade Member (£170.00 pa)

Cheques made payable to:

“The Electric Boat Association”

BLOCK CAPITALS PLEASE

Name

Company (if applicable)

.....

Address

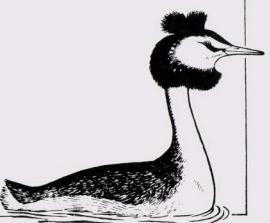
.....

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Signature

Please send this form (or photocopy) to:-

**Membership Secretary/Treasurer: Mr. Fraser Brown
c/o The Mouse Hole, Abbey Road,
Knaresborough HG5 8HX.**



Dudley Canal Tunnel

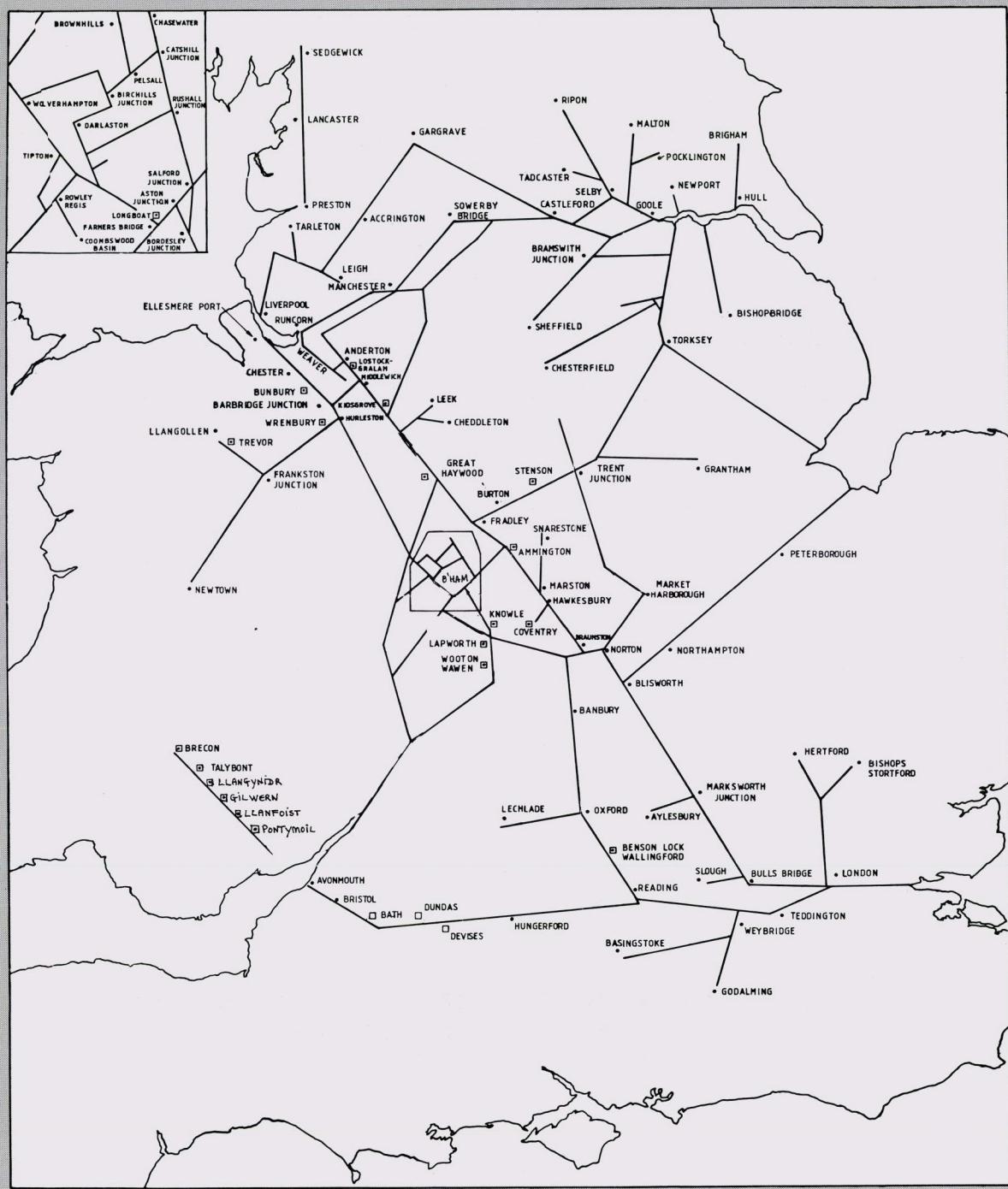
The 'Go Ahead' for a £1 million restoration scheme to reopen the 200-year-old Dudley Canal Tunnel to pleasure boats has been announced by British Waterways. Repair work should be completed by summer 1991. Upon reopening, pleasure boats will once again be able to use the main tunnel between Tipton and Netherton, but they will not be permitted to navigate the tunnel using their own internal combustion engines due to the danger of fumes

as there is only one air shaft. Dudley Canal Trust will be able to run extended trips through the main tunnel and also operate during the evenings with their **electrically operated boats**. These are **Electra** (electrified 1976) and **George** (1980).

It is intended to provide a "Tunnel Tug" service using British Waterways historic motor tug **Bittel**, which will be converted to **dual diesel/electric propulsion** and be available at certain times to tow pleasure craft through the tunnel.

Electric Boat Charging Points

Daylight Hours Only



Is this still accurate? Please contact Editor if not!

For the Pleasure of a Duke

(continuing the story of the 9th Duke of Bedford's pioneering interest in electric boats):

The following extract is taken from a hitherto unpublished letter, written in long-hand on small notepaper and dated July 4th 1887:

"My dear Duke!
A most delightful cruise - the finest weather and smoothest sea I have ever seen, and with the yacht and Electra all that could be desired.

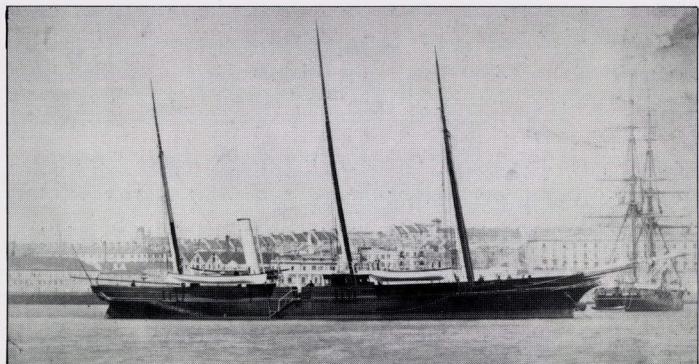
"We left Greenhithe on 1st July (Friday night) directly we got on board at 12.30 and proceeded during a beautiful clear night down the river. July 2nd 8am: First light off the North sea - calm - little swell. The day was enjoyable, warm and calm. 9pm Took pilot on board and entered the canal harbour. July 3rd, 6am Canal pilot came on board but unfortunately only the small lock was used and another steamer had started earlier and so we were detained until 7.30 before entering lock. 11 am: arrived Amsterdam, made fast head and stern to two buoys off Custom House. 11.15: We landed and went by tram to the 'Dam' - saw Palace and guest reception room - then the the Rijke Museum (....) 4pm: Started in Electra - taking Birkett, pilot guide called Mr Mueller and two men for a cruise up the Amstel. As we went through the canals and under the bridges, the astonishment and amusement of the natives were very great. **In no place it is possible to conceive a better opportunity for testing an electric boat. The complete power you have over her enables you to go at a considerable speed without the slightest danger and to glide between the barges with perfect ease and safety.**

"It is difficult to imagine a better way to see Amsterdam and I never enjoyed a trip so much.

"We went up the Amstel River about 4 miles and stopped at a cafe at about 5.30 for coffee.

"In the splendid weather, with a

cloudless sky, nothing could be more glorious and I sincerely wish you had been with us. The speed was well maintained but owing to the shaft being a little tight in the tube, a good deal of heat was generated and we had to stop a little to allow the motor to cool. There is no danger from this heat but it means waste of power and **must** be prevented. If allowed also to go beyond a certain point, it would damage the copper wires - I will give directions that this be attended to by the Electrical Power Storage Co when the Electra goes there tomorrow."

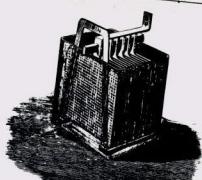


S.Y. Northumbria—Electra in the davits.

Before continuing with this 103-year-old account, I should explain that the author was the 4th Lord Sudeley, close friend of the Duke of Bedford and a keen scientist. Northumbria, the Duke's yacht with which Sudeley had cruised to Holland, and to which Electra was the innovative tender, was fitted with electric lighting:

"I find that the voltmeter and ammeter both require regulating and I have suggested to Mr Birkett to send them both to the Storage Co with Electra, to be calibrated. The accumulators work very well and are in capital order. So strong are they that I found they gain too much power for the electric lights. The effect was that the light was too brilliant and actually painful. We tried experiments and found that with 4 cells cut out, the light was so much pleasanter and the use much more economical.

"Electra is a great success and it is difficult to make many



ELECTRICAL POWER STORAGE COMPANY,
4, GREAT WINCHESTER STREET, LONDON, E.C.
Price List of E. P. S. Accumulators.
(CONTINUED.)

HANGING TYPE CELLS.									
No. of Plates	Material	Size	Charging Rate	Discharging Amps.	Useful Capacity	Approximate Ampere-Hours	External Dimensions	Weight	Price
11 H	Glass	15 x 20	1 to 22	250	5	114	124	16	91
13 H	Glass	15 x 20	1 to 22	250	6	114	124	16	91
13 R	Glass	15 x 20	1 to 22	250	6	114	124	16	91
15 H	Tank	20 .. 25	.. 30	250	8	114	124	16	91
15 R	Tank	20 .. 25	.. 30	250	8	114	124	16	91
23 H	Tank	32 .. 37	.. 39	345	8	114	124	16	130
23 R	Tank	32 .. 37	.. 39	345	8	114	124	16	130
31 H	Glass	44 .. 48	.. 50	530	12	114	124	17	183
31 R	Glass	44 .. 48	.. 50	530	12	114	124	17	183
31 H	Tank	44 .. 48	.. 50	530	12	114	124	17	183
31 R	Tank	44 .. 48	.. 50	530	12	114	124	17	183
31 H	Glass	44 .. 48	.. 50	700	154	114	124	17	248
31 R	Glass	44 .. 48	.. 50	700	154	114	124	17	248
REGULATOR CELLS.									
11 R	Glass	15 .. 20	.. 22	185	1	114	124	18	65
13 R	Glass	15 .. 20	.. 22	185	1	114	124	18	65
13 R	Tank	20 .. 25	.. 30	250	6	114	124	18	65
23 R	Glass	32 .. 37	.. 39	345	8	114	124	18	98
23 R	Tank	32 .. 37	.. 39	345	8	114	124	18	98
31 R	Glass	44 .. 48	.. 50	530	12	114	124	18	150
31 R	Tank	44 .. 48	.. 50	530	12	114	124	18	150

The hanging type of cell has been designed to meet a widely expressed desire that the positive plates should be readily accessible. It will be seen by the engraving that, by disconnecting one terminal, all the positives can be removed from the cell; and as the connection of the electrical circuit is at the top, the negatives at the bottom of the plates, the removal of the positives is not a serious matter.

The regulator cells are similar in construction to the L type, but the plates contain a larger proportion of lead compound, and are used in installations where the engine is itself capable of supplying the lights after the engine is stopped, both to absorb the excess of current as the lamps are turned off, and also to supply a portion of the lights after the engine is stopped.

suggestions for improvement. A small pump must be fitted however, as was always intended so that in a wash of sea, she might be kept clear of water - this can be done very easily at Southampton and I think for the safety of the boat ought to be fitted. Captain Collins quite agrees with me in this. For foreign waters a small flag staff and Ensign ought to be fitted to the boat. We were unable to show our nationality - unfortunately not having the Ensign. In hot weather an awning would be a luxury. At some future date, if Electra was used constantly it would be a great advantage to have a larger dynamo fitted to the Northumbria as it takes 3 times as long to charge as it does to discharge. Mr Birkett has overcome the difficult very cleverly to some extent by charging half at a time, so far as power is concerned. The motor in Electra is not a very well made instrument and some of the heat and vibration is due to this cause.

"To return to our trip up the Amstel, as we came back down the Amstel, I took the Electra close to the Dutch training ship and turned her in a very short space to the astonishment of the officers on board.

"We got back by 7.45 and at once made a start down the Canal. At 11.30 we got into the Lock and here the stupid pilot got a little too close and slightly damaged the projection where the main shroud dead eyes are.

"Captain Collins says that a shipwright will put right in a couple of hours.

"Locks are nasty things for ships -

"At 12 we were clear of land and at noon we were close over to the English Coast in calm water and beautiful weather.

"I cannot tell you how delightful the cruise in the Electra at Amsterdam has been. There is no place where you can enjoy her so much and I strongly advise your going over there soon and trying on the Amstel. Our party consisted of Eva, Miss Maria Broadwick, my brother Hubert and nephew Henry.

"I think you had better take into Your Grace's serious consideration taking a cruise into the Mediterranean this winter starting in September and of course your humble servant to go with you! It would be a most delightful cruise, you would be away from all cold English fogs, which do you harm in winter, no heart troubles in the sunny south - delightful idea. Please forgive a long yarn and only read as it seems fit to you.

Yours most gratefully,
Sudeley

7pm: Just arrived at Southend where we anchor for the night and go on to Greenhithe early tomorrow....."

In 1887, canals and rivers were almost exclusively used by commercial traffic. There were exceptions to this. Lord Clarence Paget had taken his steam yacht up the Canal du Midi - for pleasure; similarly a Captain Moens had cruised his steam yacht Ytene. To take an electric launch along either the Upper Thames - or along the Amstel, was totally unprecedented.

With no further archives unearthed at Woburn, and with no yachting or boating magazines in existence in 1887, there was perhaps only one other source to find out about this small but highly significant pleasure cruiseWould the descendants of Lord Sudeley who wrote the account, also have an archive in their keeping?

The present Lord Sudeley, himself a formidable family historian, has been most helpful in providing the complimentary jigsaw pieces to this unique picture.

(to be continued)