


The Journal of the Electric Boat Association
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Volume 21 Number 3 Autumn 2008

Electric Boat

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NEWS



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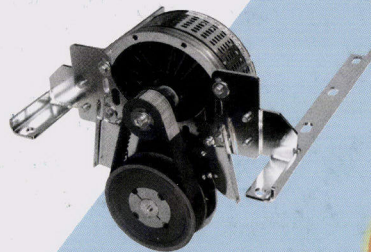
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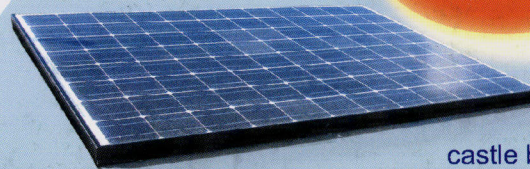
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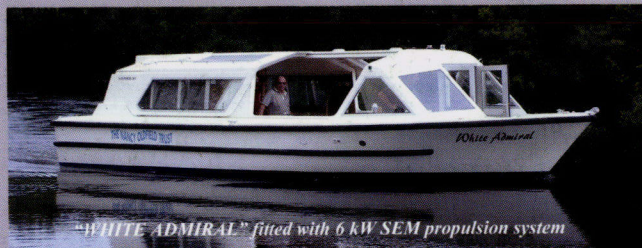
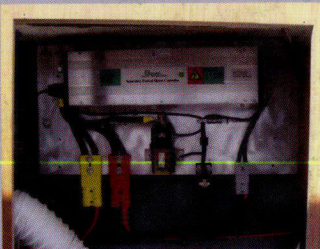
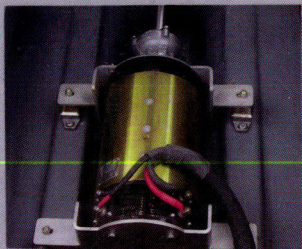
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EBA Calendar

November

26th - 30th EBA interest Sail, Power & Watersports Show
Earl's Court, London

January 2009

9th - 18th EBA interest Collins Stewart
London Boat Show
Excel

17th - 25th EBA interest Dusseldorf Boat Show

February

17th - 22nd EBA interest National Boat, Caravan & Outdoor Show
NEC, Birmingham

May

2nd - 4th EBA represented Lakes Green Boat Gathering
Coniston Water

16th - 17th EBA Event Cruising Weekend

23rd - 25th EBA represented IWA Campaign Festival
Chesterfield Canal

27th - 30th EBA represented Royal Bath and West Show
Shepton Mallet, Somerset

Please note that events and dates may change. For more details of the above, or notice of other events, contact the Secretary or check the websites.



Smart boating dress for the High Sheriff Page 2



...a Sorbian ceremony Page 7



...and the crew of Cymba Page 10

Cover Picture: *Mythical Maid and Hope at Henley*
Photo: Ian Rutter
see report on page 10

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In spite of less than ideal weather conditions, electric boaters have enjoyed events all over the UK during the second half of the summer season. The sun shone for the Thames Traditional Boat Rally and the Steam and Electric Boating Day on the Stour. Intrepid EBA members overcame wind and waves, and serious lack of sun, to make the first solar voyage up the Thames

from Westminster to Lechlade and to take passengers on the first solar sternwheeler in Scotland. The Green Boat Show in Norfolk was once again voted a great success, and there will be a report on this, and the IWA Festival at Wolverhampton, in the next issue.

While boats are laid up over the winter – and there is useful advice on that subject in this issue – the EBA is planning the future development of the Association. With increasing awareness of environmental issues there are many more opportunities to promote our environmentally friendly form of boating and the EBA must position itself to take advantage of them. EBA members will by now have received e-mails and letters outlining the proposals for changes in the Association and the EBA committee is looking forward to getting their views and comments. Offers of help from members with particular expertise will be very welcome.

Secretary: Barbara Pennial

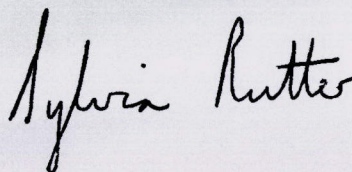
150 Wayside Green, Woodcote, Reading, Berks RG8 0QJ
Tel: 01491 681449 e-mail: secretary@eboat.org.uk

Details of the other EBA Committee Members are on page 20.

Copy Deadlines:

Material to be considered for inclusion in the next edition of Electric Boat News should be sent to the Editor (preferably by email) by the following date:

Spring 1st February



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The Solar Civil Servant

EBA member Mike Manisty is the first person to travel up the Thames from Westminster to Lechlade under solar power. He describes some memorable moments on his epic voyage.

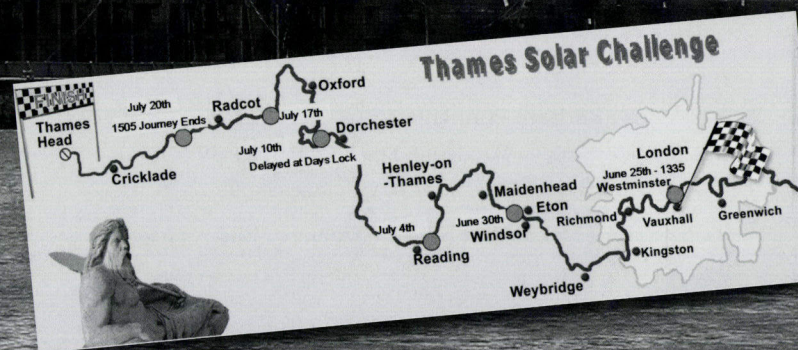
Power old and new

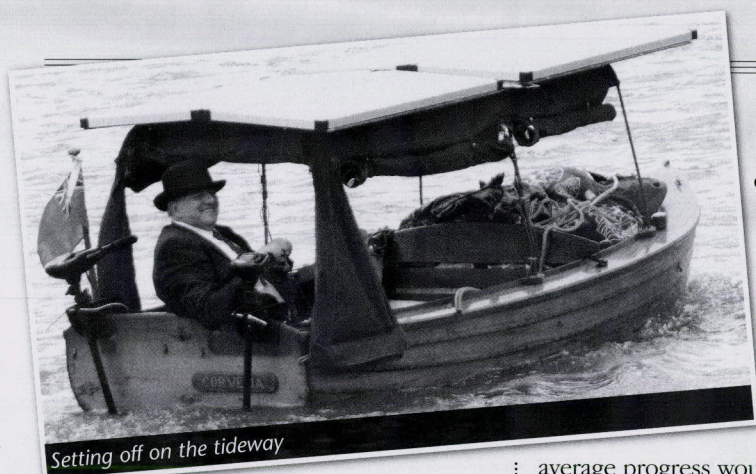
Whenever I mention that I undertook an extended solar boat journey up the Thames this summer, people assume that I must have cheated, since no-one in the UK saw any significant sun after May. Certainly if I had known the long-term forecast I might never have ventured forth on to the tideway at Greenwich on June 24th 2008.

The original inspiration for the 'cruise' came from an article in EB News about the

week that Monte Gisborne spent on Ontario's Trent-Severn Waterway in 2006. I was also impressed by the first Atlantic crossing by *Sun21* in 2007. I had done plenty of barge cruising on the canals in the past and lived for a short period on the Thames at Kew. So a leisurely solar-powered trip from Lechlade to Teddington sounded good, after first investing in a decent boat like Monte's 'Loon'. Two problems arose. Firstly I could not

afford another boat, new or otherwise, and secondly my son Harry was scornful of any downstream passage: "this proves nothing Dad, it will only be worthwhile if you can go upstream". But I did have, languishing in the garden, a 12 ft wooden launch built in 1950 by Hilliards of Southampton. It needed a full scrape and repaint on the underside and it could just accommodate one large gentleman day and night, and solar panels could be fitted to the frame for





Setting off on the tideway

on a sunny day I could maintain my battery charge with four hours of continuous running at four knots. Given that I would have an opposing current of between one and two knots, my

average progress would be about 10 miles per day so 150 miles would take 15 days.

In the event it took 21 days, plus a break of three days at Days Lock due to lock closures caused by heavy rain and strong river flows. In my original plans I had not reckoned with the relentless winds which in the main were against me. In retrospect I believe that the heavy boat with a low freeboard made all the difference in these conditions and that a lighter vessel would have been hard to control. Some days were hard work and a tad dispiriting. But the fact that I was able to make sensible progress against current and wind with meagre hours of direct sunlight proves the concept and basic validity of the design. A slimmer skipper, more efficient motors, a simple means of tilting the panels to face the sun and some decent weather and it would

have been an easy ride! In all a respectable challenge, with many happy moments on my own and meeting up with friends, some on the river and a good few in the pub. Next year the Amazon!

As the travelogue is well covered in my blog www.solarthames.blogspot.com, I thought I would just draw out a few special highlights, good and bad.

the canvas cover, and

So *Corvelia* was reborn and the challenge set, formed round my date of retirement from the civil service and a commitment to sponsor a charity that does excellent work with the families of prisoners (www.prisonersfamilies.org.uk).

I made some rough calculations on the output of four decent solar panels with as much area as I could accommodate and decided on as hearty a battery set as I could find. I also decided on a dual 12 volt arrangement with two small electric outboard trolling motors. Basic components, configured for resilience, on a relatively heavy but robust platform; all in all a fair engineering compromise. I reckoned that with both motors running on half power



Cabin interior at night

Worst Moments:

(1) The tideway is a tricky place and I nearly lost the boat and my pride on the first day by stupidly trying to motor up to the departure jetty on my own against a full ebb tide running at least five knots. It was looking good until one outboard on full power jumped off the transom (not properly tested in these conditions) and nearly sank. By the time I had rescued it I was drifting downstream and only just managed to get a rope on to a piece of the jetty and secure myself before my arm disengaged from my shoulder.

I soon forgot these travails as the farewell arrangements took over, including departure in a suit and bowler hat with Alex Allan (Chairman of the Joint Intelligence Committee) blowing the starting horn. I wore the suit all the way to Teddington.

(2) Very strong winds at Putney, gusting up to Force 6. I thought the roof and panels would fly off at the same time as the boat was swamped.

(3) Windsor on a Saturday afternoon – a genuine nightmare of zooming motor boats without a clue, plus trip boats

without a care, and my attempt to avoid it all at full power leaving me with a very depleted battery.

(4) Full blown electric storms near Days Lock. Just the thought of a lightning strike on the panels; plenty of power of course, but

(5) Trying to have a comfortable night at Radcot (last stop before Lechlade) with the wind tearing through the trees and the threat of a branch coming down on the panels at any time.

Best Moments:

(1) Reaching Teddington Lock after six hours from Westminster, just on high tide.

(2) Welcome from Sylvia and Ian Rutter at Cookham after a rare sunny day cruising past Cliveden.

(3) A trip round the millpond at Whitchurch under the control of Carol Boulter, the High Sheriff of Berkshire in full regalia (see picture on the inside front cover).

(4) The view of Lechlade from the last lock.

And this comes with a big thank you to the lock keepers who made the passage through 44 locks a pleasure. Given the potential threat to their future I offer the following rant:

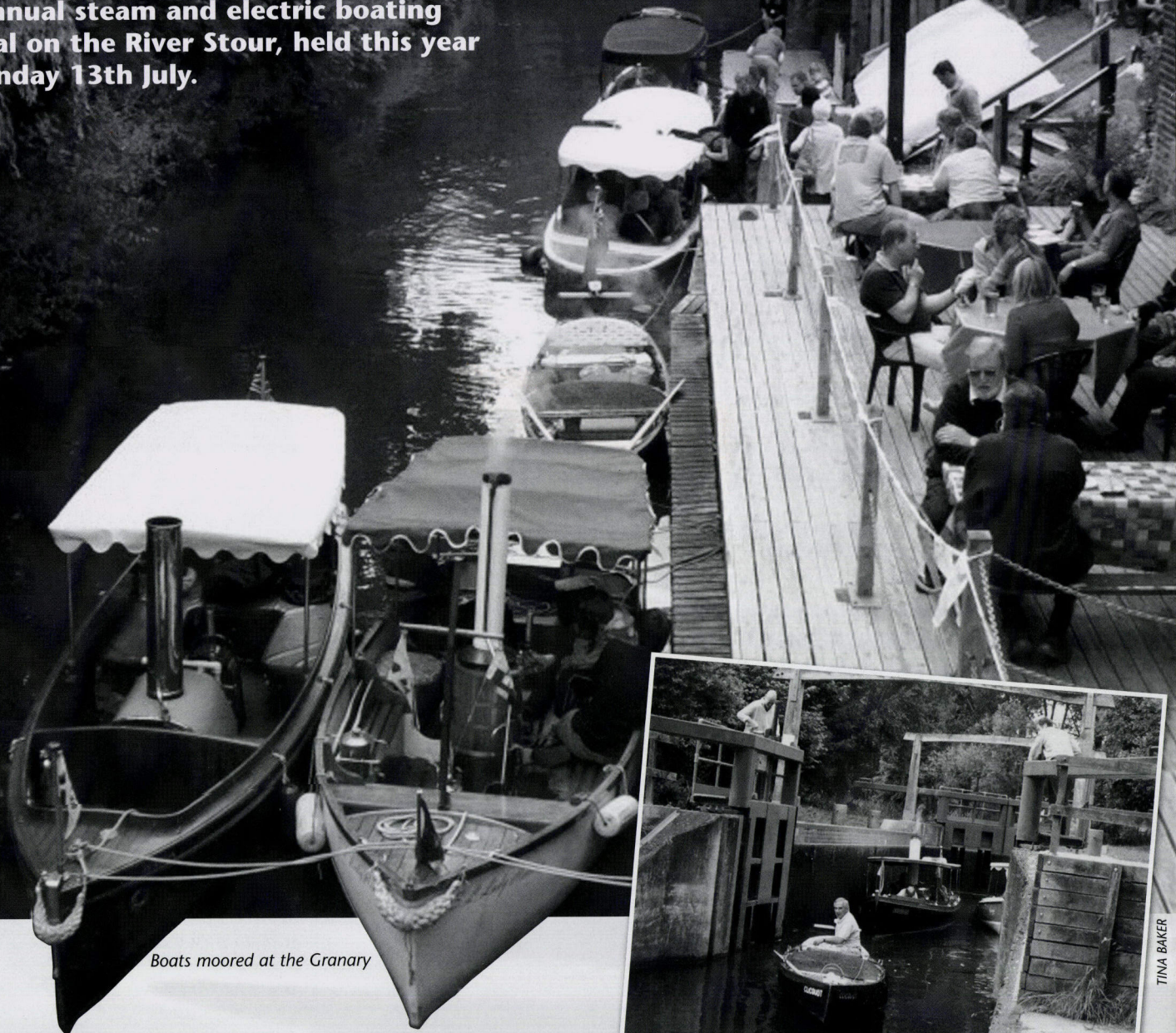
***I must have my say
To the suits in EA
'LOCKEERS MUST STAY.
It's just not OK
To save on pay
And then betray
The safest way
And prevent delay
On a busy day.***

***If you please
We pay the fees
Which you never freeze
So on your knees!!***

And finally a big thank you to all those who sponsored the trip and raised over £4000 for a worthwhile cause.

Steam and Electric on the Stour

EBA Chairman John Hustwick reports on the annual steam and electric boating festival on the River Stour, held this year on Sunday 13th July.



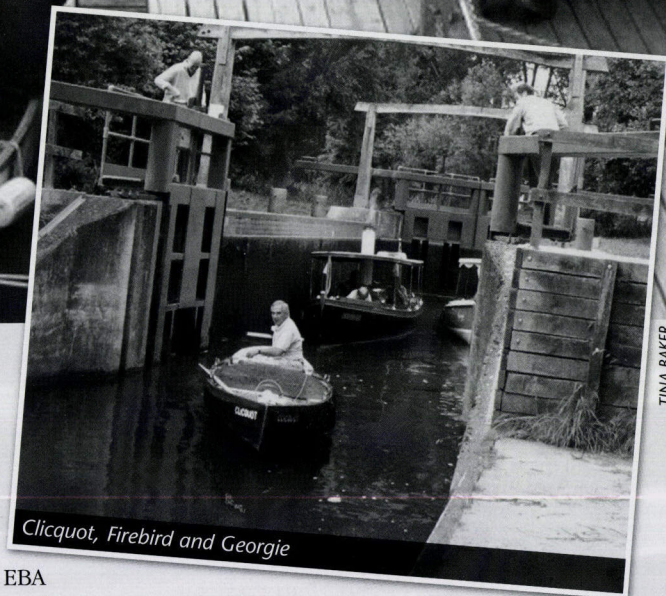
Boats moored at the Granary

As usual, the Granary at Sudbury was the focal point of the festival with attractions on land as well as the water. And the organisers had managed to arrange very good weather too.

Many people queued to have a ride on one of the boats running trips along the river and, judging by all the smiling faces, this was once again a great success. At one point there were three 21 ft electric Frolics moored at the Granary at the same time: *Rosette* of the River Stour Trust, *Georgie*, now owned by Tim West but with friends

and previous owners Jeff and Georgina Waterson still much involved, and *Elsie Mary* owned by Jeff Burroughs, EBA member and Treasurer of the River Stour Trust. It shows how popular and successful the Frolic design has been.

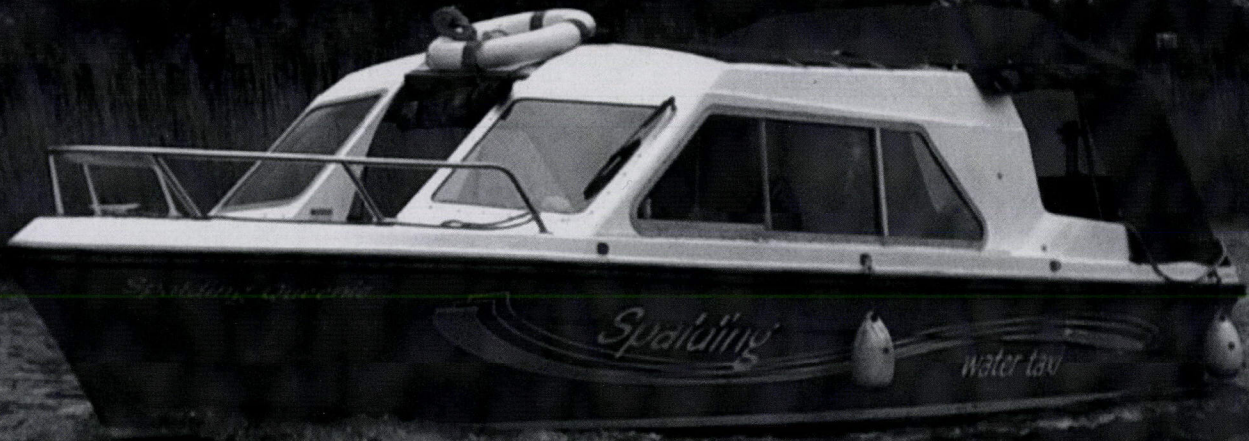
Robert Baker was there with steam launch *Firebird*, but his wife Tina preferred to go electric with her outboard powered Salters skiff *Clicquot*. The other steam boats present were *Lady Heather*, owned by Alan Philpot, and *Haida*, whose owner



Clicquot, Firebird and Georgie

Peter Brennan has recently joined the EBA with plans to have his next boat electric – another convert!

Being without a boat, as my electric launch *Rhapsody* was already in Norfolk for the summer, I would like to thank everyone who gave me rides and made it such a pleasant day out.



Three Years of Flower Power



EBA business members Pb Batteries, Phoenix Fleet and Rupert Latham were all involved in the establishment of a water taxi service on the River Welland in Lincolnshire. David Callis, Operations Director of Powercell, went to try out the service three years after its launch.

With its fleet of Phoenix 21 cruisers operating between Spalding town centre and the Springfields Shopping Centre, this innovative environmentally friendly project just goes from strength to strength.

Launched in 2005, the service was conceived by Broadgate Homes and is run by them along with South Holland District Council and Springfields. Its reputation and passenger numbers continue to grow, and what might first appear to be just an unusual taxi ride, soon turns out to be a very special trip up the Welland and Coronation Channel into the heart of old Spalding.

The four taxi cruisers are named after locally produced flowers: *Spalding Tulip*, *Spalding Queenie*, *Spalding Beauty* and

Spalding Gold. The streamlined Phoenix 21s, which hold 12 passengers plus the 'Captain', look like small cruisers rather than taxis. In fact, listening to the Captain's running commentary on local history and the passing wildlife, the whole experience is that of a gentle cruise, unwinding after the stress of shopping and maybe spending more than anticipated!

My journey started at Springfields, waiting just four minutes to see *Spalding Beauty* glide into view. On sighting the cruiser a ripple of anticipation ran through our group of six expectant passengers, and with our disabled passenger on her way down to the landing quay aboard the lift (all landing and embarkation points, along with the cruiser fleet, are disabled-friendly) we boarded *Beauty* under the watchful

guidance of our smiling Captain.

We soon settled down to what was to be a fascinating and rewarding cruise into the centre of old Spalding, with the added value of getting an insight into the town and area's history, along with watching the plentiful wildlife on the water and river banks.

All this for £2.50 – a bargain at a time when value for money is increasingly difficult to find.

The Phoenix Fleet company, who design and build these unique cruisers, work very closely with the battery suppliers Pb Batteries, part of the Powercell Group. As an employee of Powercell, this was my first experience of the electric boat scene, but what an experience!! One which I will be quick to repeat, and that I would recommend to anyone who would just like to stop and enjoy the world around them, pollution and noise free.

For more information on the Spalding Water Taxi Service see the website www.spaldingwatertaxi.co.uk or telephone 01406 380 532

Mansura Trophy

Entries for the 2008 Mansura Trophy for hybrid or all-electric boats must be submitted to the Royal Thames Yacht Club by 31st March. The perpetual challenge trophy, named after a historic hybrid cabin cruiser, was first presented in February this year by the club's patron the Duke of Edinburgh. Overall winner was the French hybrid catamaran Lagoon 420, with the Sydney Harbour passenger ferry *Solar Sailor* the runner-up. Three EBA members received Mansura medals.

This year the trustees have introduced separate categories for offshore, inland, all-electric, prototype and hydrogen-cell craft and the trophy winner will be selected from among the divisional winners. The competition is open to private or commercial vessels of any nationality with an overall length not exceeding 122 metres (400 ft).

The website www.mansuratrophy.royalthames.co.uk is now up and running after an update and the rules for the competition can be viewed there.



Traditional Boat Survey

The Wooden Boatbuilders Trade Association would like to find out how often people buy traditional-style boats and whether they buy new, second hand – or build their own. And they want to know whether boat shows help people to discover, choose and buy these boats.

EBA members who own, or are interested in, traditional style boats of any type or size are invited to complete an online survey on www.boat-buying.research-study.co.uk. Respondents have the chance to win a beautiful 'Classic Sail 2009' calendar with pictures by Kathy Mansfield.

Solar Power in Somerset

EBA Press and Publicity Officer, Tony Rymell, reports that *Solar Flair III* was a great attraction at the Green Boating Show organised by the Somerset Waterways Development Trust in July. Local councillors, MPs and the MEP offered their support for electric boating on the River Parrett and have agreed to help the Trust to find funding for a solar powered trip boat at Langport.

In August *Solar Flair III* and the Cellcraft boat were on the River Tone in the centre of Taunton, where once again the interest in electric boating, and especially solar power, was considerable. The local MP Jeremy Browne and the prospective Conservative candidate Mark Formosa both ventured on to the water in *Solar Flair III* and the local newspaper featured the boat and her 'green' credentials.

Lakes Green Boat Gathering

The very first Lakes Green Boat Gathering will take place over the early May Bank Holiday, 2nd – 4th May 2009. It will be based on Coniston Water, where there are already three organisations with 'green' water transport. The organisers are offering special facilities to encourage private EBA members to bring their electric boats and there is also the opportunity for business members to take stands or pitches.

For more information about the event and the area contact Geoff Dowker, Manager of the Coniston Tourist Information Centre on 015394 41533.

New Electric Aircraft Carriers

Two new electrically powered aircraft carriers are to be built for the Royal Navy. The 280-metre long 'super carriers' with diesel and gas turbine driven generators will cost around £4 billion and should be operating in six to eight years. The Ministry of Defence says that HMS *Queen Elizabeth* and *Prince of Wales* will be more fuel efficient than older ships and that using electrical transmission will mean that they will only have to run sufficient generating capacity to meet immediate needs. Less fuel will be used overall so the environmental impact will be greatly reduced.

The generators for the ships will be built in Rugby with the two gas turbines built in Bristol. Thales UK will be responsible for procurement, systems design and overall systems integration.



National Parks Week

People were out in their thousands on the Broads to celebrate National Parks Week from 27th July to 3rd August. Boat trips on *Electric Eel* to the hidden dykes opposite How Hill National Nature Reserve and a twilight bat hunting trip on board the solar-powered boat *Ra* on Barton Broad were very popular.

Nearly 7000 people called in to Whitlingham Country Park's visitor centre, including Prime Minister Gordon Brown with his wife Sarah and Waterways Minister Jonathan Shaw, who tried out a canoe along with Broads Authority Chief Executive John Packman.

The Broads Authority's Fun in the Broads events are listed in its free visitor magazine *Broadcaster*, which is available from information centres or at www.broads-authority.gov.uk



Jonathan Shaw and John Packman on Whitlingham Broad

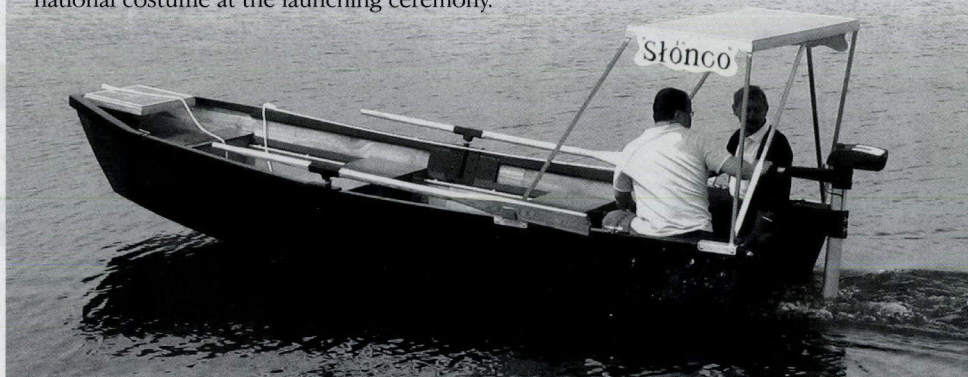
Parliamentary Support for Inland Waterways

22 MPs attended an Adjournment Debate on 28th October and 18 spoke in support of the waterways. Charlotte Atkins, Inland Waterways Association Parliamentarian of the Year who had called the debate, raised the issue of reduced funding by central government for British Waterways and the Environment Agency and emphasised how restoring waterways can lead to real opportunities for development. MPs supported these views with examples from their own constituencies of waterways contributing to regeneration and tourism. New Waterways Minister Huw Irranca-Davies assured MPs that he had noted their concerns and recognised the contribution made by the waterways to economic, social and health benefits as well as to social inclusion, heritage conservation, regeneration and the environment.

Sorbian Solar Boat

A new solar boat was launched at the end of May on Lake Geierswalde in eastern Germany. EBA member Jürgen Rosemund was involved in the project, which was both an environmental initiative and a means of providing work for disadvantaged young people in the area. The boat is 4.8 metres long with 1.5 square metres of photovoltaic cells and a 400W Torqeedo motor. Its name *Slonco* is the Sorbian word for 'sun'.

The Sorbians are a Slav people who migrated to land west of the River Oder in the 8th Century and have kept many of their traditions and customs, along with the Sorbian language. The picture on the inside front cover shows two young Sorbian girls in their national costume at the launching ceremony.



New Website for Wildlife

Kevin Desmond, founder Editor of EB News, has set up a new website to encourage communities to save endangered plants, birds and animals. Kevin says that over 16,000 species risk extinction within the next twenty years if nothing is done to protect them and this includes the waterside wildlife we so often appreciate when out in our silent electric boats. The website www.eve-urgent.org explains how cities, towns and villages can adopt a threatened species to protect it and its habitat before it is too late. The site already has several examples of successful practical initiatives from groups of people in South America, Africa and the USA.



A New Era in Solar Boating

New EBA member Rolf Schmidt describes the world's first solar-powered stern wheeler, appropriately named the *New Era*.

Someone once called my boat a 'floating combine harvester', but of course beauty is in the eye of the beholder. The *New Era* is a solar-powered boat with an overall length of 7.5 metres, uniquely driven by paddlewheels. She plies the Beaulieu Firth in the Highlands of Scotland as a pleasure craft, and takes up to eight passengers on eco-friendly boat trips on the nearby Caledonian Canal.

The Beaulieu Firth is a tidal estuary in a part of the world known for its stormy and unpredictable weather. It is also an area of spectacular natural beauty, home to dolphins, seals, otters, and a variety of other wildlife. It goes without saying that a boat entering such an area should have a degree of seaworthiness, while it should also be as environmentally friendly as possible.

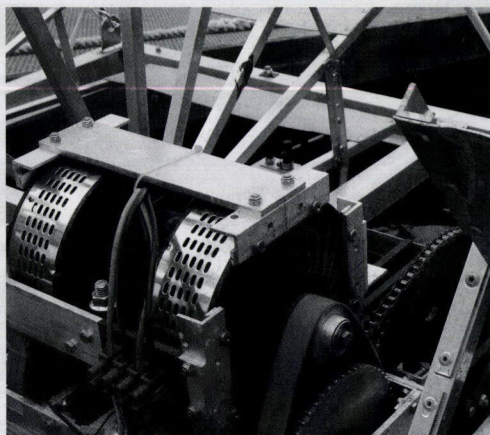
The inner part of the Firth is uncharted and has few man-made landing stages. To facilitate landing on the stony beaches, the *New Era* was designed like a landing-craft with a bow ramp. The same ramp gives easy access for disabled passengers when lowered on to a slipway.

The *New Era* was based on an existing design for an open workboat with a double-skinned, welded aluminium hull. This was scaled up in size with the addition of a deck house, lockers and solar

panels. Boat builder Seastrike in Walsall did an excellent job and completed the work in about three months. The *New Era* then made the long journey north by road, and was launched in Inverness in the summer of 2003.

One last snag (pun intended) was the weed. The shallow parts of the Firth are infested with weed that winds itself around the propeller of any unsuspecting boat and renders it powerless.

In truth I had already contemplated the unthinkable in 21st Century boat design when the *New Era* was still on the drawing board. Nevertheless I started out conventionally by fitting two Yamaha 600



Motors and drive mechanism

Watt electric outboards with 'weed free' propellers. However the first trials proved that Beaulieu Firth weed is more tenacious than the people of Yamaha ever imagined: there was no getting through it with those electric outboards!

This is where Plan B came in. A height-adjustable frame was attached to the stern, supporting two paddlewheels and an electric drive unit in the centre. Apart from solving the weed problem once and for all, the paddlewheels are an indulgence on my part. I have been attracted by paddlewheel boats from an early age, in particular sternwheelers. Little did I know that I would have my own sternwheeler one day.

Paddlewheels are surprisingly efficient when propelling a small boat at relatively low speed. And if I want to demonstrate that solar energy can do real work, what better way than to kick up some foam with those big churning wheels?

A great advantage of stern-mounted paddlewheels is that they are protected from floating debris by the hull of the boat. And because the two wheels are controlled independently, the *New Era* has a manoeuvrability that her steam-powered forbears on the Mississippi never had. She will happily turn around on the spot with the paddlewheels counter-rotating.

Having experience with photovoltaics

through my electronics business, I designed a solar-power system with enough capacity for 15 to 20 one-hour trips per week in summer, at a speed of three to four miles per hour. I also fitted an 8 HP petrol outboard which gives the *New Era* a maximum speed of seven miles per hour.

Speed control of the electric motors is done in three steps via relays and resistors. The whole system is balanced, so that when the motors are switched directly to the batteries they draw about 380 Watts at a cruising speed of three miles per hour. This is roughly the same amount of power as the solar panels supply under good conditions in the summer.

The highest speed setting is called 'warp drive' by the crew: an auxiliary battery is switched in series with the main batteries, and the motors draw about 1080 Watts in total. This enables the *New Era* to cut an impressive wake at a blistering four miles per hour. Battery capacity is 5000 Watt-hours.

The paddlewheels were initially driven by two 600 Watt Heinzmann electric scooter motors, but these were prone to overheating and sudden failure – presumably because I ran them at near-maximum power for too long without the cooling breeze they would have had on a scooter. I tried to remedy this by force-cooling the motors with electric fans, and this seemed to do the trick for a while.

Then one event finally sealed it. Near the

end of my first-ever trip with passengers on the Firth on a hot summer day, the port-side motor suddenly destroyed itself with the most awful grinding noise and clouds of acrid smoke. More noise and fumes then followed, as I had no option but to fire up the petrol outboard to get us all home. Fitting the much heavier L.E.M. motors was a big job which involved re-building the entire drive unit, but the effort was well worth it.

As an experiment to find out whether a solar boat could attract fare-paying passengers, and also as an endurance test for the boat, I put the *New Era* into revenue-earning service for the first time in July and August 2008. I chose a scenic section of the Caledonian Canal on the outskirts of Inverness, as trips on the canal are less weather-dependent than on the Firth and allow a regular schedule to be maintained.

Unfortunately the weather was not on the side of solar-powered transport this summer: a poor July was followed by the wettest August in nearly a hundred years, with twice the average rainfall and half the average amount of sunshine.

My memories are of steering an empty boat along a deserted canal in near-apocalyptic darkness on Sunday afternoon; steaming mug of coffee in the shelter of the wheelhouse; rain hammering down on the solar panels; condensation on the windows. Violent squalls made it tricky to

bring the light and flat-bottomed *New Era* alongside the landing stage, while dog walkers in shiny waterproofs would shout helpful advice like: "You'd go faster if you put a sail on it!" or "Canye no make one tha' runs on rain?"

But each time when the weather relented for just a day or so, and some passengers began to turn up at last, it was an immensely positive experience to share something really good and special with other people. Without exception, those who made the trip were impressed and now see solar energy in a whole new light.

A note of caution though. It is true that my passengers became enthusiastic about solar-electric boating. However, that was when they were on board and experiencing the delights of it first-hand. I found no evidence of solar-electric propulsion giving me a marketing advantage over other boat trips in this area, although it may well be different in other parts of the U.K.

On the other hand, rising diesel and petrol prices do give electric boats an increasing competitive advantage anywhere.

On the technical side, the *New Era* has performed flawlessly. Even this summer's elusive sunshine provided enough power to run a fairly intensive schedule, which validates the design and gives confidence for the future. More information can be found on the website

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Sunshine at Henley

Last year the Henley Traditional Boat Rally had to be abandoned on the second day as the site was about to flood. To the great relief of the organisers and many participants, this year's event took place over a (mainly) sunny weekend and the River Thames stayed within its banks. Report by Sylvia Rutter with pictures from Ian Rutter.



Cymba

Some beautiful electric boats were on display at Henley along with the traditional punts, skiffs, steam launches and Dunkirk Little Ships. The Simonds Trophy for the best electrically powered craft in the show, based on smooth running and overall appearance, was awarded to the Canadian canoe *Cymba*. Presenting the trophy, the rally President Stuart Wilkinson praised the crew's splendid Edwardian boating costumes (shown on the inside front cover) although owner Guy Ferguson revealed that he was wearing

the only Edwardian outfit he'd been able to find in the hire shop. *Cymba* was built in 1908 by Bonds of Maidenhead and, with her former owner Jack Henley, was also the winner of the EBA's Emsworth Trophy in 1994.

Last year's winner of the Simonds, 1932 cabin launch *Arabella* owned by EBA member Robin Witter, had travelled to Henley from her home in Cheshire and was looking very elegant out on the river, as was the 2003 winner, the 1902 gentleman's launch *Humble* with her owner EBA member Victoria Fash.

The beautifully varnished open launch *Polly*, built in 1998 by EBA business member Henwood & Dean, which won the trophy in 2005, was also on the water.

Electric canoes were well represented at the show, with two built by EBA business member Peter Freebody: *Stepping Stones* and *Hope*, which is owned by EBA members John and Liz Bland. Fans of Paul Daniels' magic programmes were delighted

to spot his 1930s canoe *The Lovely Debbie McGee*, with Paul and his wife – the lovely Debbie McGee – on board.

As well as the canoes, Peter Freebody also had the electric launch *Tadpole* on his stand. *Tadpole*, pictured in Freebody's advertisement on page 17, is based on an 1884 design by Horshams of Maidenhead. The original 'Tadpole' arrived at Freebody's boatyard in a very sorry state complete with her 1884 electric motor, which has now been installed in the 'new' *Tadpole* built in 1994 of teak on oak with teak decks and furnishings.

The oldest electric launch at the show (pictured on the front cover with owners EBA members Peter and Liza Sutcliffe) was *Mythical Maid*, built in 1901 by Sam Saunders of Goring, who patented the very light but strong construction method using three layers of mahogany stitched together with copper wire. After operating as a steam launch for many years, *Mythical Maid* was converted to electric power in 2006 with a 2.5 kW 48 volt DC motor powered by Elecsol batteries.

Another Sam Saunders launch on display, although a much more modern one, was *Drifting By*, which is based on a 'Patricia'



Arabella



Joanna (with electric boats La Petite Souris and Solaris in the background)

travelled to Henley from their home at Bourne End with their electric cabin launch *Sbiel Water*, built by David Graham in 1995. At over 38 ft long the boat makes a comfortable base for the weekend when moored alongside other traditional boats at Fawley Meadow.

From the same stretch of river was the last day launch built by Andrews of Bourne End in 1965 and now owned by EBA member Walter Goldsmith. *Joanna* was converted to electric power by EBA business member Rupert Latham and is now based at Phyllis Court on the outskirts of Henley. Originally named 'Starlight', *Joanna* cost £1,925 when first on the market in 1966.

A lot of EBA members – including three who joined the association at the show – visited the EBA stand to talk to Chairman John Hustwick and Secretary Barbara Penniall and collect copies of the summer EB News 'hot off the press'. Barbara and John were also kept very busy providing information and passing on enquiries to business members, including Gillian Nahum of Hambleden Sales & Charter, who had a number of boats on display,

hull. The original *Patricia*, built by Saunders in 1902, was sacrificed to make a plug for a GRP mould. EBA business members Bossoms use this to build 30 ft launches with fibreglass hulls, including *Drifting By* which is owned by EBA member Dave Sweeney.

EBA members Terence and Ann Casey



Hope and The Lovely Debbie McGee

and Kernowrat who were selling batteries, motors and boating accessories. While Jim and Elaine Avery dealt with customers on the Kernowrat stand their well behaved dog Tasha took advantage of one of the folding chairs on display to curl up for a snooze in the sun. Although one well-dressed fellow canine named Huckleberry took first prize in the costume competition, Tasha remained very laid back about her own place in the spotlight.

Next year's Thames Traditional Boat Rally will be held on the 18th and 19th July and the cut-off date for boat entries is 1st June. **For more information see the website www.tradboatrally.com**



Huckleberry dressed up ...



... but Tasha was very laid back



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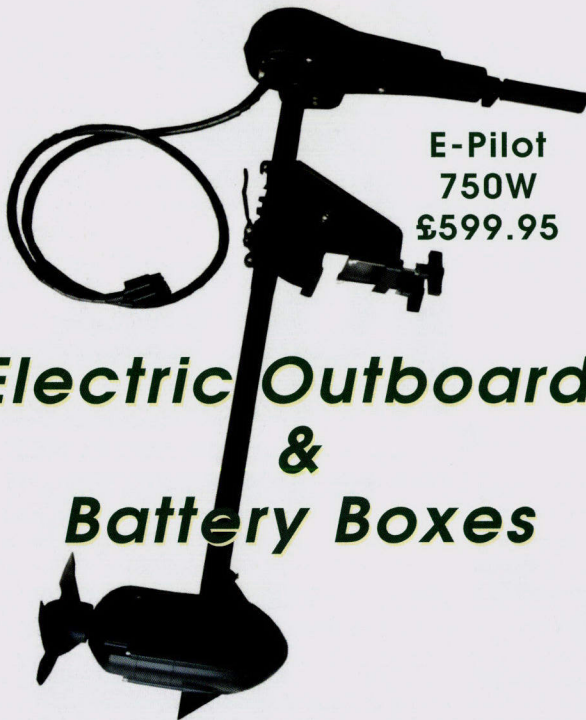
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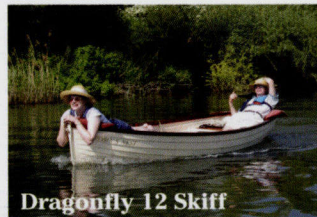
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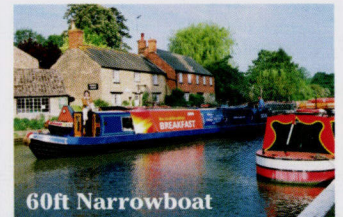
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Letters

Dear Sylvia,

In his technical report on propellers (EBN Vol. 21, No. 2, Summer 2008) Paul Lynn has delightfully described propeller parameters without resorting to incomprehensible equations or jargon. He is right to stress the importance of minimising, or rather optimising, slip by choosing the right propeller diameter. For the comparatively slow boats we are usually concerned with, the propeller should generally be as large as practical constraints allow. Years ago I made a two-bladed propeller for human powered boats with 0.5 m diameter and 0.66 m pitch. This is described and illustrated at www.umwelteinsatz.ch/IBS/propsim.pdf.

At its best operating point it is about 85% efficient with a slip of around 3%, according to the simulation programme PropSim; this is also described in my link and I'm happy to send the programme to interested people by e-mail. A version of the programme is available at www.umwelteinsatz.ch/IBS/PropSim.exe.

This prop also turned out to be very useful for solar powered craft; all the many solar boats of Matthias Wegman (described in earlier issues of EB News) as well as my own use this same prop quite successfully. I also made slightly enlarged versions and a smaller one with much the same basic geometry but with narrower blades for racing craft. Narrow blades usually give a higher peak efficiency but this can fall rapidly away from the best point of operation. Traditional wider blades have a more even efficiency curve with less of a peaky maximum. But it is mainly the diameter that counts: large slow props are particularly impressive when going slowly – very little power is needed – but also when a large thrust is required, e.g. towing or heading into a strong wind.

Best regards,
Theo Schmidt
Steffisburg, Switzerland

Dear Sylvia,

I visited my daughter who lives in Montreal last year and took a tour of the old harbour on an electric boat. This was a former lifeboat equipped with a 48 volt electric motor and was in immaculate condition (see picture). I thought that this might be of interest for Electric Boat News – further details are available on www.zeropollution.ca.

Best wishes,
Tony Leigh
Bourne End, Bucks.

Hello John!,

Sorry I have not been in touch with you sooner to let you know how I got on with tackling noise/vibration problems in my canoe. Keeping in mind your helpful suggestions, I decided to re-install the motor and fitted another motor tube and had bushings machined so that now there is no vertical or horizontal movement of the motor tube. Also the prop is further away from the hull. The result is a far quieter operation and I am pleased now. I would like to thank you for your prompt replies to my queries and hope you will accept the enclosed small donation to the EBA.

I thought I would tell you this: I was cruising down my favourite stream 'The Millstream' – quite narrow, plenty of snags, picturesque and rarely used by those noisy gasoline powered boats – and came upon a group of kangaroos dozing in the sun by the water. I don't know who got the greater surprise, myself or the 'roos'. Most of them bounded away but a couple stayed and just watched me drift silently down the river. They were probably wondering how I was able to sneak up on them. It goes to show how quiet the electric boat is.

I saw a bit of Norfolk and the Broads the other day on a programme called 'Great British Journeys' screened on a BBC channel here. The presenter was following in the footsteps of Daniel Defoe and his journey ended in Norfolk. He said that Norfolk missed out on the Industrial Revolution because it had no coal and industry went north. An interesting show!

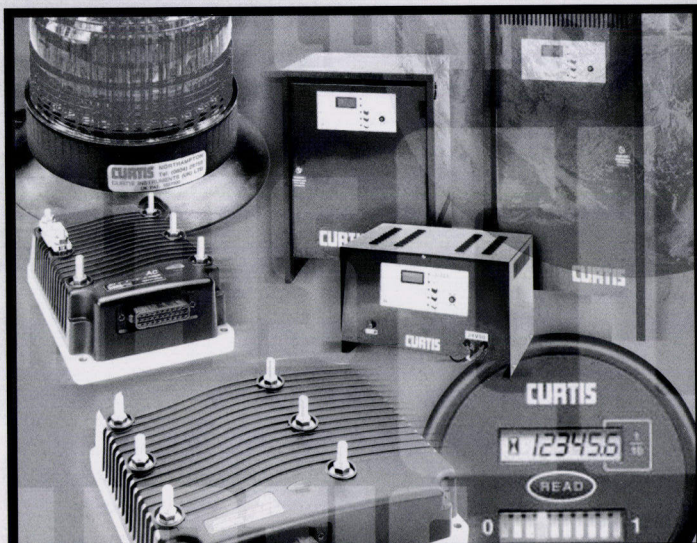
Thanks again for your help, and all the best to you and the EBA.

Regards

Malcolm Warren
Safety Bay, West Australia



Le Petit Navire in Montreal



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Technical Report

ELECTRIC POINTS: 'HULL SPEED'

In the fourteenth of a series of short articles on technical aspects of electric boating, EBA Technical Officer Paul Lynn discusses the practical limits to a boat's speed.

I am sometimes asked to explain what is meant by hull speed, a term perhaps more often quoted than understood. It refers to the speed at which a displacement boat can move through the water without requiring an unreasonable amount of motor power and depends upon waterline length – the longer the boat the higher its hull speed. To understand this we need to review a few basic ideas.

An electric boat's motor and propeller have to overcome the drag on the hull. This is caused by a combination of water friction, turbulence around such items as skeg and rudder, air resistance and wavemaking – the tendency of the hull to generate wash. It is this last component that generally comes to dominate as boat speed rises, giving rise to the notion of hull speed.

You will have noticed that a boat moving at a constant speed through calm water generates a pattern of transverse waves along its waterline from bow to stern, and that this pattern moves forward at the same speed as the boat. Now it is a basic fact of fluid mechanics that the speed of waves in deep water equals about $1.34 \times d^{1/2}$ knots where d is the distance in feet between adjacent crests, also known as the wavelength. It follows that as a boat and its accompanying wave pattern gather speed, the waves must spread out and the number of crests and troughs along its hull must reduce. *This is shown in the figure.*

At a low boat speed v_1 many small waves are seen. At some intermediate speed v_2 there are fewer wavelengths along the waterline. And by the time the boat reaches speed v_3 there is just a bow crest and a stern crest with a trough in between. The wavelength d is now equal to the hull's waterline length and this is known as the hull speed condition. A major effect is that the boat's pitch alters as it tries to 'ride up on its own bow wave'. This generally produces a sharp rise in drag and makes any further increase in speed very expensive in terms of motor power – so much so that hull speed has often been regarded as the practical maximum for a displacement boat.

The wave pattern at hull speed is nicely illustrated in the case of a marine tug. When on duty towing a large ship its speed is normally well below hull speed. But it has such a powerful engine that it can easily reach hull speed when moving on its own from one job to the next, showing very clearly the classic wave pattern of bow-up, stern-down, and plenty of wash.

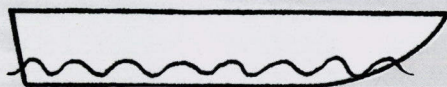
You probably wish to know the hull speed of your own boat. As the above discussion shows, this is given by $s = 1.34 \times d^{1/2}$ knots, where d is the waterline length in feet.

Although the idea of hull speed is certainly valuable when discussing displacement boats, we shouldn't regard it as written in stone. A well-designed electric

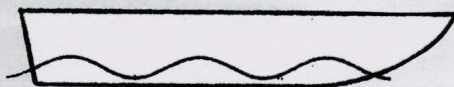
canoe or catamaran can probably exceed its nominal hull speed without much difficulty. A racing shell, moving elegantly through the water with hardly a ripple, certainly can. This is not only due to its fine lines, but also its very light weight, allowing it to sit high in the water and cause minimal disturbance. So although these boats generate the expected wave patterns, the wave heights are too small to offer much resistance to forward motion. The limitation implied by hull speed must, like many other boating concepts, be interpreted with caution.

Another caveat concerns the constant 1.34 that we have used in our calculations. This is the value most often quoted, but slightly different ones are sometimes given. In any case, although the drag of a hull generally starts to increase fairly dramatically at around hull speed, the details depend on the precise shape of the hull and whether or not it is cruising in deep water.

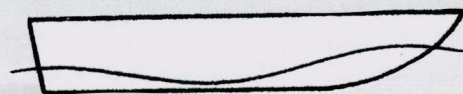
Footnote: Hull speed and related topics are covered more fully in the EBA's Information Sheet no.4 by Andrew Wolstenbolme entitled 'Hull Design for Electric Boats', to which I am indebted for some of the points discussed in this article.



v_1



v_2



v_3

A few typical values (with metric equivalents) are as follows:

Waterline length (d)	Hull Speed (s)
12 ft = 3.7 m	4.6 knots = 5.3 mph = 8.6 kph
20 ft = 6.1 m	6.0 knots = 6.9 mph = 11.1 kph
30 ft = 9.1m	7.3 knots = 8.4 mph = 13.6 kph

Noticeboard

Welcome to New Members

Private Members	Location	Boat where notified
Dr. Robert Bishop	Bicester, Oxon	
Andrew Bond	Maidstone, Kent	Electric Excalibur, auxiliary yacht
Peter Bowles	Bourne End, Bucks.	Sheerline 740
Martin Brown	Ealing, London	
Martin Brown	Wellingore, Lincoln	Dunrockin, Freeman 26
Mike Butler	Bewdley, Worcs.	
Antonya Cooper	Abingdon, Oxon	Anetalia, Deltic 21
T Cotton	Prestwood, Bucks	
Brian and Margaret Couser	Marlborough, Wilts	Iris, Frolic 18
Aiden Darcy	Solihull, West Midlands	Warde Aldham, narrow boat
Andy Devenport	Edinburgh	Mon Amie II 25 ft cabin cruiser
James Drennan	Kidderminster	Waterloo Riverette
Mike Dolan	Cambridge	
Gareth Evans	Exeter, Devon	(boat under construction)
David Glasspole	Maidenhead, Berks.	
Brian Lake	Ashill, Norfolk	Patience, 25 ft Freeman
Andrew Mayo	Stratford-on-Avon Warwicks.	
Christopher McCall	Moulsford, Oxon	Nefertari - Frolic 21
Ben McGarry	Lytham, Lancs.	Electric Freedom, folding dinghy with outboard
Brian Moore	Southampton	Camerander, 12 ft clinker dinghy
David and Penny Newman	Sunbury-on-Thames	Babbler, 4m 1940's classic launch
Alan Nightingale	Sharnbrook, Beds.	Dearest, John Williams Regatta saloon launch
Nick Osborn	Skipton, North Yorks.	Irene, steam and electric launch
Ulick Palmer	Limogne-en-Quercy, France	
David Sanford	Potter Heigham Norfolk	Lucy, Jack Powles 16 ft launch (1948)
David Skinner	Barton Turf, Norfolk	Pootle, 17 ft electric launch
John Skinner	Sete, France	
Paul Waters	Gt Yarmouth, Norfolk	Muddy Waters, Broads Cruiser

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EBA Website in 30 Languages

The EBA website www.electric-boats.org.uk is now available in over 30 languages, including French, German, Dutch and Russian. Visitors to the site can choose their preferred language from the 'Google Translate' box on the menu. And the link from the EBA website to the French electric boat association website now automatically translates pages into English.

Solar Boat Donation

The EBA is very grateful to Technical Officer Paul Lynn who has donated his solar boat, *Solar Flair II*, to the Association. The boat will be used mainly as an educational tool at shows where it always attracts a lot of interest, particularly from young people (as can be seen from the front cover of the last EB News).

EBA Directory

The Directory of EBA Members will not be published and sent out automatically in 2009. Members who would like an up to date copy should contact EBA Secretary Barbara Penniall for the Directory of Private Members and the Product Guide, which gives details for business members of the association.

Moorings

Following a meeting with the River Thames Alliance Moorings Group, at which Ian and Sylvia Rutter represented the EBA, the Environment Agency and local authorities are working together to improve the availability of 24-hour moorings. The EA has installed new signs at three of its mooring sites to discourage boats from overstaying and is increasing its patrols to ensure that boaters move on, keeping moorings available for visitors.

Green Awards

The magazine Practical Boat Owner has launched 'Green Awards' to encourage environmentally friendly boating. There are four categories of awards: for marine products, boats and boatbuilders, service companies and individual or group campaigns. Selected entries will be featured in the magazine. Details are on the website www.pbo.co.uk and the closing date is 31st March 2009.

Laying Up Supper

EBA members and friends enjoyed an excellent meal and some lively conversation at the Laying Up Supper in Maidenhead on 13th October. Peter and Hilary Fletcher were presented with the Emsworth Trophy for *Eglantine's* long voyage on the Wey and Thames in 2007 and Press and Publicity Officer Tony Rymell was awarded the Julia Moss Trophy for his work in promoting solar powered boating.



BARBARA PENNIALL

Peter and Hilary Fletcher with the Emsworth Trophy



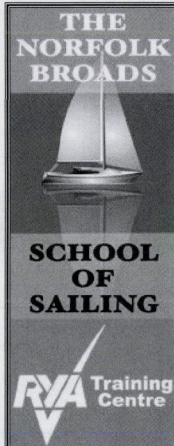
Malcom Moss presenting the Julia Moss trophy to Tony Rymell

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'Hello Jim,

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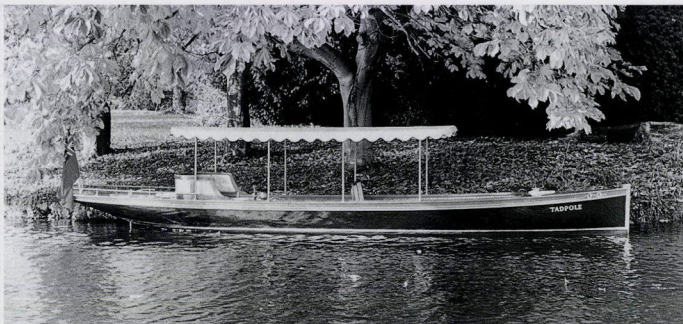
This morning I was out on the water at 8.15am, my first trip on my own. Again there was quite a wind once out on the water but the extra power got me out beyond our bit of the creek without problems and then I was able to reduce to 'Jim speed' and just potter around, drifting into the side in the sunshine and tying up to a tree whilst I enjoyed coffee and toast, read for a while and observed the bird-life. Crept very close to two cormorants before they realised I was there, also lots of egrets, a heron and several greenshank. It was a very pleasant trip. Thank you very much for all your efforts, it has made all the difference and now I can do what I had hoped.' Copyright Rev. M Johnson 2008

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Just untie and unwind

Look after your Batteries

While electric boats are laid up over the winter it's important not to neglect their batteries. EBA business member Pb Batteries offers some useful advice.

Winter as we all know is a bad time for batteries. We feel the cold and so do they. To help you to minimise the 'winter lay up effect' and to make sure that you start 2009 with a fully charged and maximum capacity battery, we have set out below a few suggestions which should help. Although we know most of you will already be fully aware of how to winter your batteries, it just might be a gentle reminder.

Watering your Battery

With motive power batteries correct watering is critical, and if not carried out correctly can dramatically shorten the batteries' life.

1. Always water the battery AFTER charging, NEVER prior to charging.
2. Make sure the levels are just above the top of the plate separators, which you can see by looking into the battery. Never overfill, or let the levels drop below the top of the separators.
3. Always use deionised battery water, never tap water as it contains active minerals which can react in the battery and again shorten its life.

Getting the levels correct in any battery can be difficult, so if possible make sure you fit a single point watering system to the battery. These are inexpensive and ensure that you water to the correct level every time, and of course if access to the battery is difficult, all you have to do is make one connection and press a button.

Charging/Discharging your Battery

To obtain and maintain your batteries' maximum capacity it is critical to get the total package correct.

1. Make sure that you have the correct size charger for your battery. The charger should be able to recharge your battery from 80% depth of discharge in 8 to 14 hrs.
2. If you have yet to size and purchase your battery/charger package, give consideration to a high frequency charger, some of which draw 25% less from the mains and have a precise recharge profile tailored to your battery.

Whether you are leaving your boat in the water over winter or taking it into dry-dock, battery care and maintenance is basically the same:

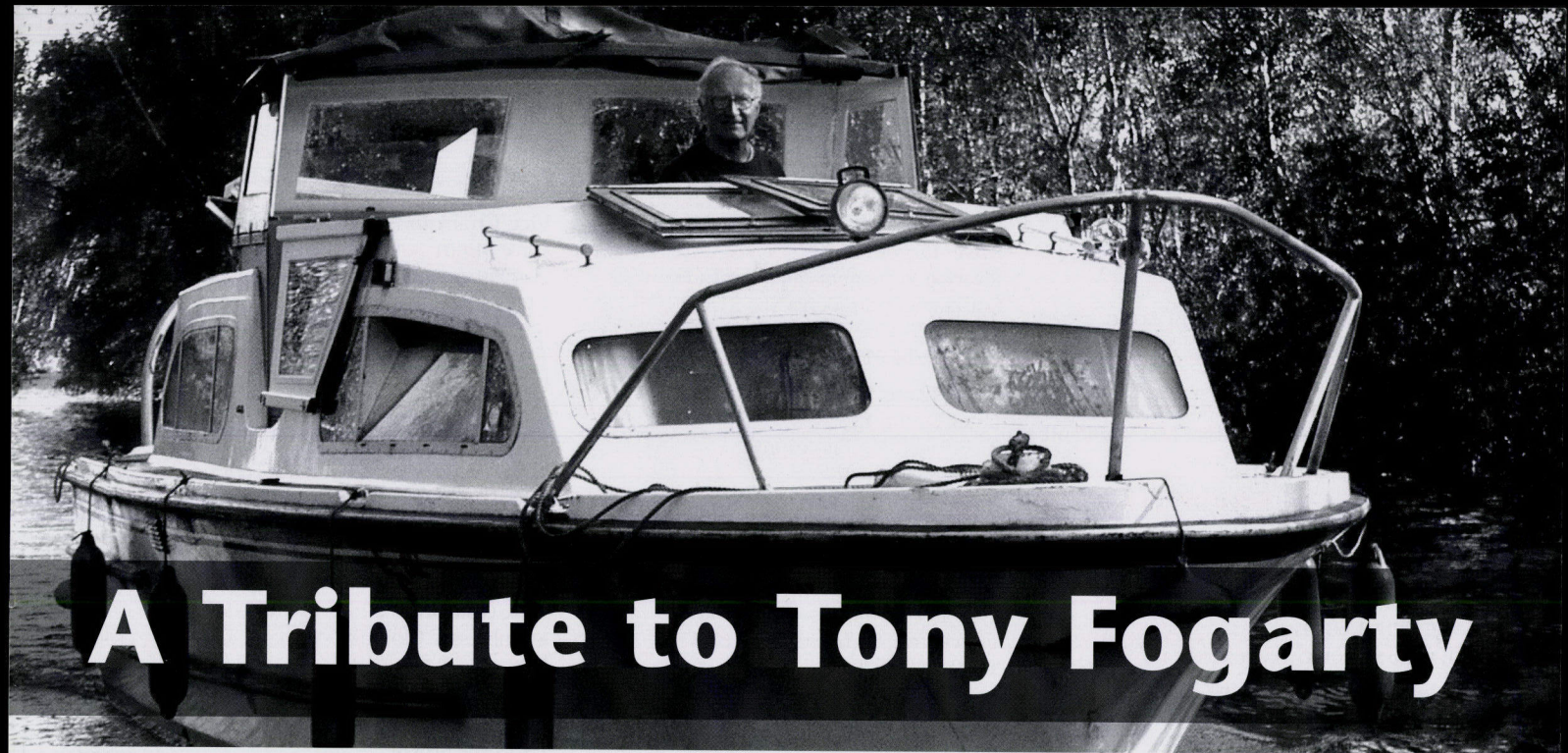
1. Connect your battery to your chosen charger, and make sure that the battery gets a full recharge.
2. Water the battery to the correct level, leave for one month and give the battery another full charge.
3. The battery should then be fully charged every two months. If possible, it is better to run the motor prior to each recharge and reduce the battery capacity to approx 50%.
4. When launching for the 2009 season, with the boat in the water discharge the battery to approx 50% and recharge two or three times prior to full use.

General

Your battery is an expensive package so deserves to be looked after. With a little care and attention it should give you many years of trouble free boating (a minimum of 5 years).

When you go electric you reduce your carbon footprint, but remember you are buying your fuel for the next few years up front, so you do need to look after the battery and charger with the same attention you give to your boat.

If you have any questions, or would like advice, please contact the Pb Batteries/Powercell help line on 0845 058 1388



A Tribute to Tony Fogarty

Tony on his boat Moonglow

EBA members and friends who have many happy memories of days spent in the company of Tony Fogarty were shocked to learn of his sudden death in July. Peter Howe pays tribute to a very supportive member of the Association.

Tony Fogarty, member of the Electric Boat Association and a Life Member of the Broads Society, was born in Norwich. Tony's Irish father was a GP and Tony always took pride in his Irish ancestry and eventually followed his father into medicine. Tony was educated at Ampleforth College in Yorkshire, where he discovered a love of maths and science, passions that stayed with him throughout his life. At the age of 18 he gained a place at Cambridge University to study engineering, but National Service intervened. During his year of army life, Tony decided that he would prefer a career where he could give practical help to his fellow human beings. He enrolled in the medical school of Trinity College Dublin, and qualified in 1965. A series of hospital house jobs around the country followed, and Tony eventually decided to enter general practice.

After some years as a GP in a busy inner city practice in Oxford, Tony became jaded. He left his job and set up a bookshop in the Devon town of Honiton, a great opportunity to immerse himself in the world of books and literature, another of his lifelong passions.

After 18 months Tony sold his business, Fogarty's Books (still a going concern in Honiton) and suitably refreshed, returned to medicine. He practised as a GP in Northampton and London before leaving urban life to work in a Suffolk village and finally move to Norwich. Tony always loved

medicine, and felt he'd made the perfect choice of occupation. He enjoyed the intellectual challenge of diagnosis, but more than that he loved the contact with patients and staff. Wherever he worked he inspired fun, laughter and affection, from the Russian patient who taught him to Cossack dance around the consulting room, to the elderly lady who knitted him fingerless mittens to keep his hands warm on winter boating excursions.

As a father and grandfather Tony loved what he referred to as 'the mess of family life', with its comings and goings, noise and laughter. His offspring filled Tony with pride and delight. He followed the exploits of his adult children with great interest, and was a warm, loving and involved father to the youngest two children he had with his second wife Elizabeth, whom he met in London in 1985.

No description of Tony could end without mentioning some of his greatest passions. He loved water and boats, and after the family's move to Norfolk became fascinated by the prospect of using silent electric motors to power boats on the Broads. He successfully converted his boat *Moonglow* to electricity, and latterly ran it from solar power alone. The family remember that on sunny days he would say: "Look at all those lovely amps streaming down!"

I got to know Tony just over five years ago when he developed the idea of the Go

Electric scheme, offering grants to encourage more people to convert their boats to electric propulsion. Working together we won funding from the Sustainable Development Fund and the LEADER+ fund and the scheme was instrumental in enabling the conversion of nearly 20 boats. We also developed the Broads Society's 'Silent Sensation' event into the Broads Green Boat Show, to enable a wider demonstration of eco-friendly boating. Both these initiatives have been tremendously influential in encouraging a more responsible attitude to boating on the Broads.

Tony was also intrigued by electric cars, and with Tim Birt was building a prototype that had only recently taken to the road for the first time. It is a great sadness that the project was never completed but, as Tony was working on the project on the very day he suddenly and unexpectedly collapsed and died, it was a fitting end to his full and interesting life.

In recent years Tony rediscovered his passion for physics, maths and engineering, and was studying these subjects with the Open University, leaving a trail of papers smothered with long and illegible calculations around the house.

The abiding impression of Tony is of a happy and fulfilled man, much loved by his family and friends, and by all those whose path he crossed. Everyone warmed spontaneously to his charm. He was actively engaged in all his various projects right up until the last day of his life. I will miss his enthusiastic and infectious approach to life, and especially his dedication to the promotion of electric propulsion. The world is a poorer place without him.

Electric Boat Association



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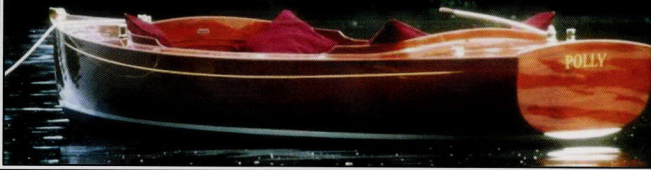
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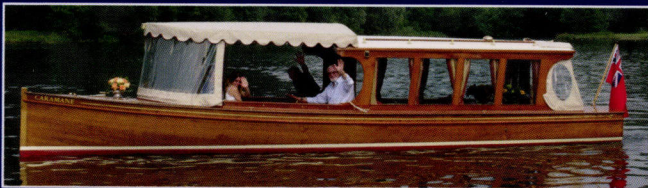
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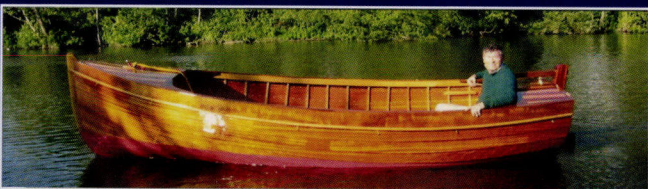
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