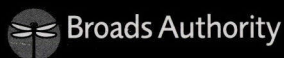


The Journal of the Electric Boat Association  
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Volume 18 Number 4 Winter 2005/2006

# Electric Boat **NEWS**



**New World Speed Record • Norfolk Weekend  
Flower Power • MP Afloat on a Mobiboat**





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# EBA CALENDAR

## April

15th – 17th	EBA represented	Trail Boat Rally Lancaster Canal
24th	EBA Event	Launch Supper Maidenhead Rowing Club

## May

13th – 14th	EBA Event	Cruising weekend on River Great Ouse
13th – 14th	EBA interest	Lowestoft Boat Show
21st	EBA represented	Somerset River Festival Langport

## June

9th – 11th	EBA represented	Beale Park Thames Boat Show Pangbourne
10th – 11th	EBA interest	River Festival, Evesham
17th	EBA Event	AGM, Cookham followed by a Thames Cruise
24th – 25th	EBA represented	WOW 2006 Lake Windermere

## July

9th	EBA represented	Steam and Electric Boat Day Sudbury, Suffolk
15th – 16th	EBA represented	Thames Traditional Boat Rally Henley

## August

25th - 28th	EBA represented	IWA Festival Beale Park, Pangbourne on Thames
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## September

9th	EBA Event	Norfolk Cruise weekend incorporating
10th	EBA represented	Broads Electric Boat Show

## October

16th	EBA Event	Laying Up Supper
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Please note that the pageant 'Time and the Thames' has unfortunately had to be cancelled and that other events and dates may change. For more details of events, contact the Secretary or check the EBA website.

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**Cover Picture:** An Stradag on Coniston

setting a new world water speed record

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The Electric Boat Association is on the Internet.

The World Wide Web Address is: [www.electric-boat-association.org.uk](http://www.electric-boat-association.org.uk)

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**Congratulations to the team behind *An Stradag* who devoted a huge amount of time and effort, not to mention brain-power, to raising the world water speed record for electric boats to a magnificent 68.09 mph. Electric boats have gained new respect among the international racing fraternity and the record has impressed the more ecologically**

**minded with the fact that speed does not have to mean noise and pollution.**

Congratulations also to EBA member Paul Wagstaffe, who has just been awarded the MBE in the New Year's Honours list for services to the inland waterways. A very supportive EBA member, and valuable committee member last year, Paul says he hopes to continue to serve and promote the waterways and the EBA.

On a sad note, the EBA has recently lost two valuable supporters in Dinnie Hawthorne, the wife of our Vice President Edward, and Scott Deverell, who welcomed the EBA to Hartford Marina for electric boat shows and cruises. We will miss them and our sympathies go to their families and friends.

The year ahead will be a busy one for the EBA. Owners of trailable boats will be meeting on the Lancaster Canal over the Easter weekend and both boaters and non-boaters will be at the Launch Supper at Maidenhead. A special attraction this time will be the showing of a DVD about the new world record, so I hope to see a lot of EBA members there as we launch the summer season.

*Sylvia Rutter*

### Editor

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## 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 March



Mobi Page 5



Winsome Page 10



Tulip Page 18



# NEW WORLD SPEED RECORD

**On 1st November 2005 Helen Loney piloted the 15 ft electric hydroplane *An Stradag* to a new world speed record, registered with the international governing body for waterborne sports, the Union International Motonautique. The average speed for the double run was 68.09 mph (109.55 km/h) with the first run clocked at 70.61 mph. Report by the *An Stradag* team.**

*An Stradag* (The Spark), with her original owner the Countess of Arran, set the first world electric water speed record of 50.825 mph in 1989. The boat then became a museum exhibit until in 2005 it was bought by Henry Engelen of Penrith. With encouragement from the founder editor of Electric Boat News, Kevin Desmond, Henry assembled a team to refurbish and re-engineer *An Stradag* with a view to making another attempt on the record. As well as Kevin the team included other people who were involved in the original record attempt: the boat's designer Lorne Campbell, Emrhys Barrell who drove the support boat and the designer of the motors, Cedric Lynch.

On August 8th Henry brought *An Stradag* south to Hambleden where Colin and Lucie Henwood had offered work space in one of their boat sheds. With the speed record attempt scheduled for Records Week on Coniston at the beginning of November there was no time to lose. Cedric Lynch, with Arvind Rabadia of Agni Motors, began the installation of four specially made 25 kW motors running on 144 volts, Chris Pattison started repairs and modifications to the hull and Emrhys Barrell and Ian Rutter of the Thames Electric Launch Company began the work of designing, sourcing, building and installing the electrical systems. CMP offered 40 AGM batteries together with expert advice from Phil Horsley and Paul Bates; Curtis agreed to lend four Mosfet controllers.

Cedric and Arvind began by cutting away the original motor frame so that the new motors could be fitted. Each pair of motors was designed to drive the two original surface running counter-rotating props by chain drive. Cedric made the drive chains by joining up several Honda C90 motorbike chains, which he calculated would give a safety factor of ten times.

Meanwhile Ian was putting in the Curtis 1231C Mosfet controllers. Each motor had its own controller on a heatsink with a specially modified throttle driving all four controllers together. Twelve Exide AS45R spiral-wound 12 volt engine start batteries were installed.



Cedric, with Arvind and Emrhys, preparing to drive and adjust controllers

Instead of the crude 'Go' and 'Stop' buttons from 1989 there was now a foot-operated accelerator pedal and, on the dashboard behind the new curved windscreen, four ammeters, one volt meter and a Garmin Quest GPS donated by Road Pro to measure the speed.

Official record attempts involve two runs with only a 20 minute gap between them. For fast battery charging between runs, Cedric developed a test rig to recharge the boat's batteries with a second pack, a difficult system to control in total safety. He was issued with goggles and made to take the prototype outside for its first trial, which fortunately was a success. On test runs he was able to refine the battery to battery charging system.

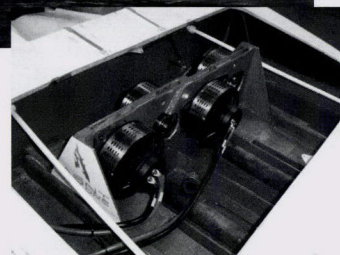
Since *An Stradag* had been out of the water for sixteen years, no-one knew if it would still float. So the first test was to take it to nearby Taplow waterski lake for a trial run. Not only did it float, it rose up on the plane producing a fine rooster tail wake. But since the lake is only a quarter of a mile long, the driver Emrhys had to throttle back urgently as the clubhouse quickly grew dramatically larger. The team also established that the boat had not reached full power as the gearing was too high. Five days later at Taplow, following modifications, the boat was clocked at 55.5 mph, better than its 1989 record.

On 20th October 24 year-old Helen Loney, who was scheduled to drive the boat for the record run, made her first test drive at the half mile long Chase Water near Birmingham. Helen, a chartered surveyor by profession, is a keen powerboat racer with a trophy cupboard to prove it but had never before driven an electric boat. On her first run the GPS clocked *An Stradag* at 62 mph. Lorne Campbell then experimented with adding two 56 lb stage weights in the stern to alter the trim of the boat. On Helen's second run there was a loud bang and all power was lost. It appeared that the altered trim had caused excess water pressure to blow a bearing. *An Stradag* was towed back to Hambleden for repairs.

A vital last test was built in by breaking the journey to the Lake District on October 29th for another run at Chase Water, with *An Stradag* now beautifully painted by Chris Pattison. Ian first had to



Helen's first run at Chase Water



Engine compartment





wield a soldering iron in the car park to install the controllers which Curtis had modified at very short notice. Then Cedric drove *An Stradag* and balanced the four controllers at the same time (in the process managing to drench a family in their boat, who were very nice about it). All seemed well so *An Stradag* was hitched up for the final run to Coniston.

Just before joining the motorway, Ian sensibly stopped in a lay-by to check the borrowed trailer. To his horror he discovered that one of the wheel bearings was red hot and on the point of collapse, which would have resulted in the loss of a wheel, and possibly *An Stradag*, on the M6. Rescued by Green Flag, the boat continued her journey to Coniston on a low loader.

The roar of petrol engines greeted the team early in the morning of 30th October at Coniston, where they joined Henry, Chris and Helen Loney and Kevin, just arrived from France. The tent provided by Henry offered good shelter against the autumnal Lake District weather. *An Stradag* and Emrhys Barrell's electric Mobiboat, which was to be used for the recharging, created a great deal of bemused interest among the assembled 'petrol heads'.

The next day water conditions were too rough for *An Stradag* but Helen went out in her 16 ft Yamaha outboard-engined Phantom *Tempo* to familiarise herself with the measured distance and at 54.78 mph clocked up her first speed record in the Clubman 1500cc Monohull class. (Later in the week she increased this to 57 mph.)

The morning of Tuesday 1st November dawned much brighter and calmer. Emrhys drove the Mobiboat with the recharge battery pack on board to its position at the south end of the lake. Helen's husband Chris towed *An Stradag* to the start of the course. At 8.50, with a perfect rooster tail, *An Stradag* accelerated over the course, clocking 70.61 mph (113.6 km/h) with the on-board GPS peaking at 71.8 mph (115.5 km/h). On board the Mobiboat, with scarcely time to congratulate Helen (who admitted afterwards she was giddy with excitement) Cedric and Arvind began the recharging with the special battery pack while Ian counted down the time. At just two minutes inside the 20 minutes allowed, they told Helen to go, which she did

at such speed that ('with great skill' she said) she managed to soak them all. The return run was made at 9.08 am at a speed of 65.561 mph (105.5 km/h). The average speed of 68.09 mph (109.55 km/h) was a new international record.

During Records Week 16 national records were established but only one world record: that of *An Stradag*. The time achieved was also the highest increase in a record during the week. And to crown it all the talented *An Stradag* team, including John Hustwick and Paul and Pat Wagstaffe, managed to win the pub general knowledge quiz! At the awards ceremony, in addition to a salver for the highest increase in a record, Helen was presented with a trophy for the 'Fastest Lady of the Week' and the team received the St. John Ambulance Concours d'Elegance for the Best Pit and Neatest Area.

Each competitor in Records Week was presented with one of the batteries from *An Stradag*, normally used to start car and boat engines. This was a much appreciated

'freebie' and Coniston will not forget *An Stradag* for a long time.

The team all feel that, given more time and resources, as well as better weather, *An Stradag* could go even faster. The other participants in Records Week could hardly believe this was the first time they had attempted the full distance. There are also gains from the project which could filter down to electric boating generally. It has raised the profile of electric boats and excited both the speed boat fraternity and those who want their waterways reserved for non-polluting vessels. A great deal has been learned about boat design, motors, batteries and electrical systems which could influence further developments and Cedric's revolutionary charging system during the 20 minute turnaround could have major implications for hire fleets requiring fast recharges.

A lasting memory for all the team is how well everyone worked together with the huge range of skills dovetailing perfectly to achieve the final result.

More information and pictures are on the EBA's website and on the site designed by Chris Loney: [www.electricrecordteam.com](http://www.electricrecordteam.com). A DVD about *An Stradag*'s world record will be shown at the EBA Launch Supper on 24th April and *An Stradag* will be on display at the Easter Trail Boat Festival on the Lancaster Canal.



Recharging



Launching at Coniston



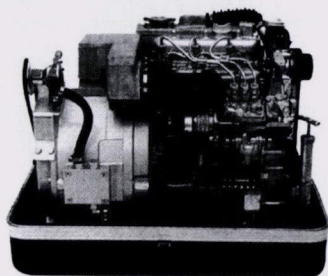
The winning team: Kevin, Henry, Cedric, Chris Loney, Arvind, Ian, Emrhys and Helen





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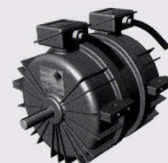


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# BORIS BACKS THE MOBIBOAT

**On 14th October Boris Johnson, MP for Henley, officially launched an electric boat designed for use by disabled people. After the launching ceremony both disabled and able bodied guests had a chance to try out the Mobiboat and various other electric boats for themselves. Words by Sylvia Rutter with pictures by Ian Rutter.**

In a witty speech, made close to Trafalgar Day, Mr. Johnson referred to Britain's famous disabled sailor Nelson, who he felt would certainly have qualified for incapacity benefit under modern-day rules. More seriously, he suggested that the mobility element of incapacity benefit could probably be used towards the purchase of a boat adapted for wheelchair users. Having declared the Mobiboat officially launched, he helped 95-year old Tomi Coburn on board in her wheelchair and they set off downstream, with Tomi at the helm.

The 16 ft 6 in. polyethelene-hulled Mobiboat, powered by an electric outboard, was developed by the Thames Electric Launch Company with help from British Waterways and the Environment Agency. With a beam of 6 ft 6 in, it can take up to eight passengers and is suitable for canals, rivers or lakes, and even sheltered estuaries. It can be towed behind a car and is easy to launch. The hinged ramp at the bow allows wheelchair access from the shore and the specially positioned steering console means that the boat can be driven from a wheelchair, which Tomi ably proved.

Tomi didn't have the Mobiboat (or Boris Johnson) all to herself as other wheelchair users were queuing up for rides. Graham Kay of Henley Access also went for a trial run and Dr. Mike Bruton, former Mayor of Windsor and Maidenhead representing the Disabled Ramblers, enjoyed his cruising so much he was quite



*Tomi Coburn with Boris Johnson*

reluctant to return to shore. Meanwhile Mr. Johnson joined Chris Tassell in his elegant slipper launch *Sunpenny* for a different experience of electric boating and other visitors tried out a variety of electric boats, including the Thames Electric Interboats 16 and 19, and the 12 ft Dragonfly skiff.



*Mike Bruton tries out the Mobiboat*



*Boris Johnson with Chris Tassell on Sunpenny*



## SOLAR FROLIC

EBA business members Creative Marine have been given a grant of £7,000 from the Broads Authority's Sustainable Development Fund to test solar panels on an electric launch. They are fitting nine sets of 12 volt panels on the roof of a Frolic 21 with a 1.5kW DC motor and will be carrying out 120 hours of trials from January to September. Testing will involve monitoring light levels, tides, boat speed and power output.

Managing Director Simon Read said he always felt that the Frolic range of boats with their large canopies would be ideal for solar power. It was just a question of how much use you could get from the panels during a reasonable summer, especially since the experts reckoned that light levels on a sunny day in Norfolk were almost the same as in the Mediterranean. The batteries would collect solar energy when the boat was not in use and, in good weather, the boat should be able to run on solar power alone.

**For more information contact Creative Marine on 01263 570100 or see [www.creativemarine.co.uk](http://www.creativemarine.co.uk).**



*Simon Read and Roy Lawson working on the new Frolic 21*

## IWA TAKES OVER THE CHELMER AND BLACKWATER

On 14th November the Inland Waterways Association, through its subsidiary company 'Essex Waterways Ltd', took over the management of the Chelmer & Blackwater Navigation. The Navigation Company had been in administration since August 2003 after running into financial difficulties. The IWA has taken on responsibilities for licensing boats to use the navigation as well as for moorings, operating the sea lock at Heybridge and looking after the willow trees along the navigation, which provide a source of income through timber sales for cricket bats.

The IWA intends to run the navigation for public benefit and to undertake restoration and development. Many duties will be carried out by volunteers and some of the work will be done by local IWA members and Waterway Recovery Group work parties.

## ELECTRIC FERRY IN PARIS



*The Zero de Conduite*

On a visit to Paris, Australian EBA member Charles Fitzhardinge had a brief ride on an electric ferry taking cinema goers between two theatres on either side of the Bassin St. Martin. The *Zero de Conduite* is a 15-20 seat catamaran about nine metres long and apparently driven by two motors, each rated at 2.4 kW. To Charles' surprise, the motors were left running while the boat was docked (he assumed the driver must have converted incompletely from diesel) and it was the propeller wash unaccompanied by noise which attracted his attention as he walked past.

## BOAT SAFETY SCHEME ON THE BROADS

The Broads Authority will be introducing the Boat Safety Scheme from April 2007. Boats with engines and/or cooking, heating, lighting, refrigerating and other domestic appliances will have to pass an examination before they are allowed to navigate the Broads. The scheme will not apply to open boats propelled solely by outboard motors.

Boat owners will have to pay authorised independent examiners to check their boats and issue certificates. The Authority is encouraging boat owners to get their certificates in good time as boats may require work to reach the required standards and examiners may not be able to cope with a last minute rush.

Hire boats over 30 square metres and private motor boats of 21 square metres and above will have to comply by 1st April 2007. Hire





craft and private motor craft of 11 square metres and above must comply by April 1st 2008 and all remaining private motor craft and sailing craft will need certificates by April 1st 2009.

**Lists of examiners are available from the Broads Authority's office on 01603 610734, the BSS office on 01923 201278 and the BSS website [www.boatsafetyscheme.com/searchforanexaminer](http://www.boatsafetyscheme.com/searchforanexaminer). The BSS office can help with advice and information on [bss.enquiries@boatsafetyscheme.com](mailto:bss.enquiries@boatsafetyscheme.com) or on the above number.**

## REDUCED FEES IN HOLLAND

Dutch EBA member Hans Asyee is delighted to report that at last the local authorities in the Reeuwijk area of Holland have agreed to reduce the annual fees for electric boats to two thirds of those for motorboats. The lower fees will also apply to sailing boats.

Hans says his earliest (and fruitless) attempts to secure this reduction go back to 1975 but with the help of the EBA and its Dutch counterpart the Stichting Electrisc Varen the breakthrough has finally been achieved.

## 25,000 PASSENGERS ON ELECTRIC CATAMARAN



*Miss Elizabeth at Trentham Gardens*

The 40 seater electric catamaran ferry *Miss Elizabeth* carried 25,000 paying passengers across the one mile lake at Trentham Gardens, Stoke on Trent over the 2005 season. At an adult fare of £2, and fuel costs of just half a penny per passenger, the

ferry has demonstrated its ability to pay its way. Passengers appreciate the quietness of electric power which allows them to enjoy the lake's wildlife undisturbed.

New EBA business member, Ecocats, who designed and built the ferry, are now building two new patrol boats for the Port of London Authority. The low-wash launches, which will operate on the Thames between Putney and Teddington, are a development of the Ecocat 28 ft catamaran and are due to enter service in September 2006. Power will come from two 36 horsepower Yanmar Diesel outboard motors but the boats will have solar panels for recharging batteries and navigation equipment.

**For more information on Ecocats visit [www.ecocats.com](http://www.ecocats.com) or contact Henry Mayhew on 020 7362 5089, e-mail [henry.mayhew@ecocats.com](mailto:henry.mayhew@ecocats.com).**

## WINDERMERE LICENCE FEES

The Lake District National Park Authority has changed its system of charging for powered craft to use Lake Windermere. Following the introduction of the speed limit, charges will no longer be based on horsepower but on boats' length. In 2006 registration will cost £6.50 a metre, rising to £9 in 2007 and £11.50 in 2008.

All charges are for a year, regardless of how often a boat is used on the lake. This hits trailable boats, which may only visit Windermere for a few days, very hard. Following protests by boat owners and boating organisations, the Authority is considering introducing a short term licence for events such as rallies and will discuss this at a meeting in February.

## ELECTRIC BOATS IN CHINA

Solarboat Pty of Sydney, Australia are planning to launch their range of electric boats at the China International Boat Show in Shanghai from 6th to 9th April. Last September they showed three American built Duffy boats, for which they are the Asian agents, for the first time in China at the World Lake Tourism Forum. This was held at Chun'An on the shores of lake Qian Dao Hu, south west of Shanghai. The photograph shows the Duffy 16 and the Duffy 21 Solar on display at the Forum, which drew several hundred participants from all around the world.

Solarboat Pty expect to begin building solar-electric boats in China this year in a joint venture with two Chinese partners. Managing Director Charles Fitzhardinge will report on the electric boat scene in China later in the year.



*Duffy 16 and Duffy 21 Solar in China*



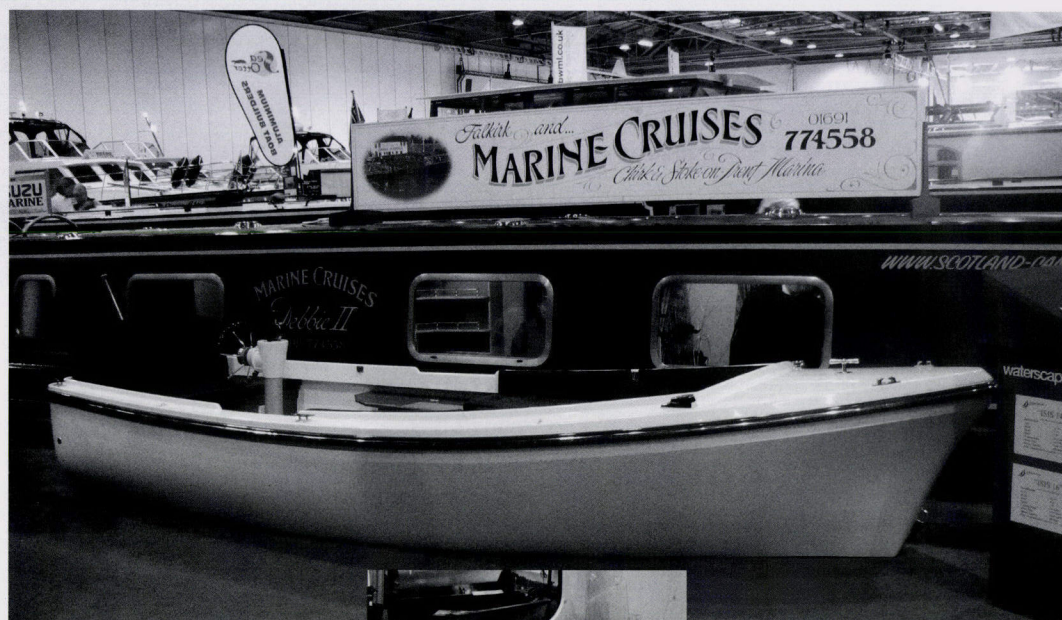
# THE LONDON BOAT SHOW

**Among the ocean-going superyachts at the London Boat Show, held from 6th – 15th January at ExCel in Docklands, were a number of exhibits of interest to electric boat enthusiasts. Report by Sylvia Rutter with pictures by Ian Rutter.**

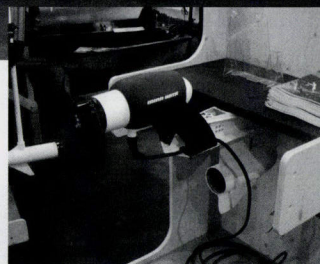
Prominently displayed in the Inland Waterways area was the Isis 16 from Bossoms with a new Vetus 2.2kW electric motor. The Isis 14 and 16 launches have low-maintenance GRP hulls, available in a range of colours, and individually tailored hand-crafted interiors. They are supplied with a set of cushions and a choice of brass, chrome or stainless steel deck fittings. They have a hydraulic steering system mounted on a pedestal and a stainless steel, mahogany-trimmed steering wheel. With a beam of 6 ft 6 in. the Isis 16 can carry eight passengers plus a driver. Its maximum speed is 5.5 knots.

Robin Richardson of the Phoenix Fleet had a picture of the electric Phoenix 21 on display, although the boat on the stand was a diesel version. The Phoenix 21 can seat 12 in comfort and the hull was designed specifically for electric power. The company are building an electric Phoenix 21 for the Abingdon Boat Centre, which will be on hire for Easter.

Salters were showing the popular glass fibre Mystic cabin launch, which they say is ideal for both the hire trade and for private use. With a low wash hull, the boat has a sunroof as standard and windows made from toughened glass in anodised frames. The cockpit, with upholstered all-round seating, can accommodate up to eight passengers. As well as the electric inboard version, the Mystic can now also be supplied in a version which takes a conventional outboard.



Isis 16



New Minn Kota outboard

Salters also had information about the Topic 13, an open glass fibre runabout with a 1kW inboard Lynch permanent magnet motor. The Topic has been specially built for hire use on boating pools and inland waterways. Salters have five Topics for hire by the hour,

half or full day, and say that in the summer they are very popular.

A new Minn Kota electric outboard motor was being shown by Johnson Outdoors Watercraft. The 12 volt thruster motor can either be used as an outboard or permanently installed by bolting it to the boat's hull.

Fischer Panda were very busy answering questions about their marine generators and their new Whisperprop hybrid diesel electric system, which has been installed in a new high-tech ferry at Canary Wharf.

EBA members Nauticalia were attracting a lot of visitors to their range of traditional nautical products and useful gadgets and Navigators & General, who operate the EBA insurance scheme, were on hand to deal with insurance quotes and queries.

At a well-attended press conference the Environment Agency launched their Waterway Plans for the rivers Thames, Medway and Great Ouse. Actor David Suchet, who has a Dutch barge on the Thames, described being on the water as a trigger for relaxation in a fast world. He said that he was very proud to be Chairman of the River Thames Alliance to raise the profile of the river and outlined proposals to improve basic facilities, such as electric points.

The waterway plans have been developed as part of the navigation strategy 'Your Rivers for Life' which sets out how the EA will restore, conserve and develop its rivers over the next 20 years. Plans for the rivers Wye, Nene, Ancholme, Glen/Welland and Stour are nearing the final stages of development.



David Suchet with Julia Simpson, EA Head of Recreation and Navigation and Eileen McKeever, Thames Waterway Manager



## DINNIE HAWTHORNE MBE

It was with great sadness that we learned of the death of Dinnie Hawthorne, one of the EBA's founder members. She died peacefully at home on 14th November at the age of 84. All her friends in the association will miss her enthusiastic contribution to EBA events on land and on the water.



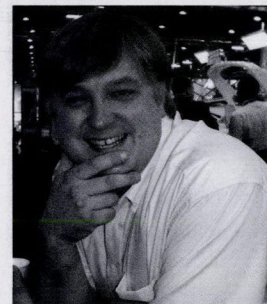
It is thanks to Dinnie's young collie dog that she first became interested in electric boating. Although he loved boats, the noise of the petrol engine hurt his sensitive ears so much that he would howl in great distress. Having tried and failed to cure the dog, Dinnie and her husband Edward realised they would have to change the engine. Back in the 1960s the choice was limited, but they began with a small 24-volt Evinrude outboard motor. Although the dog greatly approved, this was too underpowered for Dinnie's heavy broad-beamed 'shopping boat', which had to be replaced by a more suitable lightweight open day boat. Over the years they progressed through a number of motors and boats, all with the advantages of silent electric power. It was always a pleasure to meet them on the Thames in *Mystère* or *Ample*, in which they took part in many electric boat parades, or to see them in their beautiful garden at Waters Edge. Over the years the riverside garden was the scene of many EBA gatherings, most recently in a delightful finale to our BGM in June.

In the 1997 New Year's Honours Dinnie was awarded the MBE for services to the community, particularly the elderly of Bourne End.

Referring to this at her funeral, the vicar specifically mentioned a recent garden party at Waters Edge where the elderly guests had much enjoyed trips on the first solar powered boat to cross the Channel. He went on to talk of Dinnie's great love of the river and her successful efforts to ensure access for everyone to the riverside.

We will miss Dinnie's charm, her lively conversation and her laughter which could brighten up the day. We send our deepest sympathies to Edward and their two sons.

## SCOTT DEVERELL



Scott, the Manager of Hartford Marina, made the EBA very welcome to his beloved River Great Ouse. He and Bill Caldwell always went out of their way to look after their boating customers and joined in, heartily, with any event from a Try a Boat to an EBA event or cruise, although Scott once booked the EBA into a Radio Cambridgeshire quiz and then went on holiday. The quiz team (who won) felt this was a good example of his wicked sense of humour.

Scott also played a major role as Inland Vice Chairman of TYHA, the National Marina Operators Association, and was active within local trade and navigation working groups. He fought his illness bravely and with dignity but died on December 12th at the age of only 36. His wife Amanda, with their young daughter and son, led an uplifting Service of Tribute at Houghton Church, right alongside the lock on the River Ouse visited regularly on the EBA cruises. Over 200 people filled every available space within the packed church.

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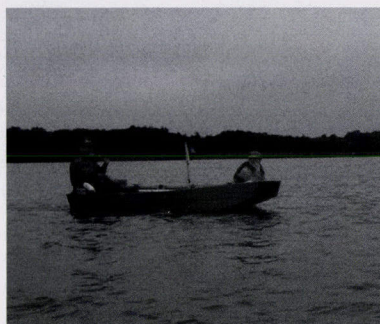
# THE NORFOLK WEEKEND

**Once again EBA members and friends assembled in Norfolk for the popular September cruising weekend incorporating the Broads Electric Boat Show. Barbara Penniall describes the events and Peter Howe reports on the boat show. Photographs are by Barbara Penniall.**

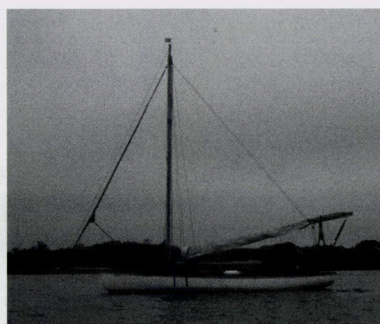
Nearing the end of a glorious and busy summer, EBA members set off to Norfolk to come together for the traditional cruise weekend, combining it with support for the Broads Electric Boat Show. Gathering at John Williams' boatyard in Stalham, a flotilla set off to enjoy a relaxing afternoon. Boats taking part were Judy and Rod Birks' *Winsome*, Tony Fogarty's *Moonglow*, John Hustwick's *Rhapsody*, David Williams' *Terrapin*, Creative Marine's new Frolic 21, Cedric Lynch's solar canoe, Peter and Tricia Kimber's *Ruby* skiff and Roger Woodhouse's fold up boat.

As always, members were welcome to join us without a boat and space was made to accommodate everyone who wanted to come. The weather remained dry and warm, although overcast, and a very pleasant afternoon ensued cruising to and across Barton Broad and back via Barton Turf. We attracted the usual attention from passing boaters as we moved smoothly and silently through the waters.

Returning to the boatyard, we had been invited by the trustees of the adjacent Museum of the Broads to use their premises for an informal buffet supper. A short talk about the Museum and its work started the evening, and members were invited to stroll around the exhibits, which proved a very interesting focal point for the occasion.



Mr. and Mrs. Roger Woodhouse  
in the foldup boat



Derek and Jenny Smith in *Teal*

The informal set up and relaxed atmosphere of the evening allowed members and guests to mingle easily and some lively conversations ensued – not always about boating!

A big thank you must be extended to John and Sandy Williams for providing their usual hospitality at the boatyard with mooring and charging facilities, as well as making arrangements with the Museum and the catering suppliers.

Next morning, everybody gathered bright and early for the cruise down to South Walsham to join the Broads Electric Boat Show. We were joined on the cruise by the Watsons in *Georgie* and Derek and Jenny Smith in *Teal*. Waiting for us at South Walsham were EBA members David Williams in *Terrapin* and Anne and Fraser Brown in *Silver Sail*. Other electric boats on the waterfront included *Waitati*, *George Thetford*, *White Admiral*, *Charles Collier*, *Sigridur*, *Slipways Lady*, an inflatable and a skiff, both with electric outboards. Our convoy joined the others to form an impressive variety of 18 electric craft on display.

It was a most enjoyable weekend with some members travelling long distances to join us. In particular we were very pleased to welcome Jim and Judy Andrews and Gordon and Margaret Hall from the Lake District.



At the buffet supper



Rod and Judy Birks in *Winsome*





## THE BROADS ELECTRIC BOAT SHOW 2005

### Report by Peter Howe

A damp and misty day did not deter people from coming to South Walsham Broad on Sunday 11th September to see the largest variety of electric boats ever gathered in one place on the Broads. South Walsham Broad is the now well-established venue for the annual Broads Electric Boat Show.

There were well over a dozen electric boats in evidence including four converted under the Go Electric! grant scheme – three day boats and a Kingston Faringdon yacht – and a newly converted Powell's 34' traditional cruiser, the petrol engine of which had been on its last legs. Other regular visitors included *Silver Sail* – the original electric narrow boat, John Hustwick in *Rhapsody*, *George Thetford* from Camelot Craft and *White Admiral* from the Nancy Oldfield Trust. It had been hoped that the wherry, *White Moth*, now running silently under electric power when the wind fails, could take part but she was busy on charter elsewhere.

Solar panels are becoming more common as back-up for battery charging and several examples were in evidence. David Williams' *Terrapin*, a 24' launch, is well known, as is Cedric Lynch's canoe, and Tony Fogarty's *Moonglow*, which sports two panels and a wind turbine. Such developments continue to demonstrate the value of electrically powered propulsion systems in reducing carbon dioxide emissions.

Amongst trade members, Gordon Hall of Coniston Launch Hire came all the way from the Lakes to give information and



Broads Electric Boat Show

to show pictures of his passenger launches which have been recently restored and converted with solar panels, diesel generators and Solomon brushless engines. Rupert Latham and Robert Paul were kept busy answering enquiries about conversions and electric outboards, and French Marine had their small Vetus motor on display.

The show was a combined effort by the Broads Society and the Electric Boat Association, a chance to show off electric boats and meet up again. Several EBA members had trailed their boats up for the occasion, having met on the previous day for an EBA meeting and cruise at the Broads Museum at Stalham.

As always we are indebted to John and Pat Atkins for the use of their beautiful mooring on the Broad and their unfailing hard work and generosity in allowing us to use their site.

Thanks must also go to all those others behind the scenes in the EBA and Broads Society for their work ensuring another successful event. Finally, mention must be made of the grant contributions by LEADER+ and the Sustainable Development Fund which, as well as funding Go Electric!, allowed the provision of the toilets and marquee.



The Show from the river



# NOTICEBOARD



## WELCOME TO NEW MEMBERS

Private Members	Location	Boat where notified
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Robert J Shepherd	Twickenham, London	Barn Owl
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Mike Sammons	Droitwich, Worcs	King Fisher
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John Worley	Havant, Hants	
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Sue Davies	Henley-on-Thames, Oxon	
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Fred Multon	Rumbling Bridge, Kinross	
-------------	--------------------------	--

Dave Suttle	Bath	Viking Warrior
-------------	------	----------------

Peter Willingham	Bourne End, Bucks	
------------------	-------------------	--

Nigel Tomkins	Shepperton, Middx	The Ockwell Wraith
---------------	-------------------	--------------------

Christopher Stanforth	Witney, Oxon	
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David De Burton	Reading, Berks	Paul Anthony
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Keith Webster	Poringland, Norfolk	Golden Dawn
---------------	---------------------	-------------

Beverley Jackson	Bourne End, Bucks	The Cyril
------------------	-------------------	-----------

Mike Hornby	Milnthorpe, Cumbria	
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### Business Members

Tamarack Lake	Ontario, Canada.
---------------	------------------

Electric Boat Company

Tamarack produce a solar assisted 8-seater electric pontoon boat and are distributors for Briggs and Stratton motors.

Ecocats	Torpoint, Cornwall
---------	--------------------

Ecocats is a specialist builder of environmentally friendly boats



## EBA DIRECTORY AND PRODUCT GUIDE

The latest edition of the EBA Directory and Product Guide is enclosed for members with this magazine. If you have any corrections or additions please send them to EBA Secretary, Barbara Penniall. Barbara is also preparing an e-mail list to circulate the regular mailshots and would therefore be very grateful if particular attention could be paid to e-mail addresses in the Directory. If there are any revisions, or e-mail addresses to be added, please send them to Barbara on [eboat@mail.com](mailto:eboat@mail.com). This will eventually save time, printing and postage costs.



## NEW EBA TREASURER

The Committee has co-opted Dot Knox as the new EBA Treasurer and look forward to welcoming her to the January committee meeting, at which she will present the annual budget.



## EVESHAM RIVER FESTIVAL

We would like to support this event but the EBA stand is already committed to the Beale Park Boat Show on June 10th and 11th. If any Midland members could attend, ideally with a boat, and take EBA literature, could they please contact Barbara.



## REQUEST FROM CANADA

A Canadian boatbuilder has asked the EBA whether any member would be interested in a business venture to distribute his solar powered boats in the UK. Please contact Barbara for more information.



### Information sheets from the Electric Boat Association

1. **PRODUCT GUIDE & EBA BUSINESS MEMBERS**  
(free upon request)

2. **SOLAR PHOTOVOLTAICS** by Paul Lynn

3. **ELECTRIFYING YOUR BOAT** by Hawthorne & Wagstaffe

4. **HULL DESIGN FOR ELECTRIC BOATS**  
by Andrew N Wolstenholme

5. **LEAD ACID BATTERIES – OPERATION & MAINTENANCE**  
by CMP Batteries

6. **HIGH SPEED ELECTRIC BOATS** by Lorne Campbell

7. **HYBRID POWER** by John Hustwick

8. **TRAILERS AND TRAILING** by Paul Lynn

9. **FITTING OUT AND LAYING UP YOUR BOAT** by John Hustwick and Ian Rutter

From: EBA Secretary, Barbara Penniall  
Free to members Nos. 2-9  
Non-members @ £1.50 per copy



# TECHNICAL REPORT

## ELECTRIC POINTS: 'WHAT IS A SOLAR BOAT?'

**In the seventh of a series of short articles on technical aspects of electric boating, EBA Technical Officer Paul Lynn discusses solar-powered boats and proposes a new measure of performance, the *Solar Boat Index (SBI)*.**

An eye-catching new craft, furnished with solar photovoltaic (PV) modules, arrives at an electric boat rally. Onlookers naturally assume she is 'solar-powered'. But what exactly does this mean, and how might we quantify the performance of a boat that uses sunlight for propulsion?

There is no easy answer. The viability of solar propulsion depends on the amount of PV carried, the motor power needed to achieve cruising speed, the intended pattern of use and – of course – the amount of local sunshine. In this article I should like to examine these factors and propose a quantitative measure, the *Solar Boat Index (SBI)*, to indicate the comparative performance of a wide variety of craft.

The nub of my proposal is that any boat which, on average, derives 1 hour per day, or 7 hours per week, of summer cruising from its PV modules deserves the accolade 'solar-powered'.

Most users confine their boating to weekends, and 7 hours of weekend cruising is widely regarded as a reasonable amount for an electric leisure craft, whether solar or not. And I shall show that the criterion is met,

in English summer conditions, provided the boat's peak PV power is at least equal to one third of the power required by its propulsion motor at normal cruising speed. This, in turn, will lead to a definition of the *Solar Boat Index*.

To illustrate the argument, let's consider a boat having 0.5kW peak of PV modules, mounted horizontally, and a propulsion motor that requires 1.5kW to drive the boat at normal cruising speed. According to the above proposal, this boat will just meet the criterion of being 'solar-powered'.

How much energy do the modules produce? Using arguments similar to those in EBA Information Sheet No.2 on Solar Photovoltaics, in the summer months May to August in England, 0.5kW of PV may be expected to deliver an average of about 1.5 kWh per day of usable stored energy to the boat's batteries. And since the motor needs 1.5 kW at normal cruising speed, this solar input will clearly allow an average 1 hour cruising per day, or 7 hours at the weekend, assuming adequate battery storage.

But what is 'normal' speed? I should like to suggest 5 mph (8 kph), the speed limit on the River Thames, for boats based on rivers and lakes; and 4 mph (6.4 kph), the speed limit on the English canals, for barges and other canal boats. Most people would probably agree that these are realistic, and enjoyable, speeds at which to travel.

I now propose the following Solar Boat Index (SBI):

$$SBI = 3 (P_{pv})/(P_m)$$

where  $P_{pv}$  is the peak power in watts supplied by the PV panels, and  $P_m$  is the motor input power required to give a cruising speed of 5 mph (8 kph) on rivers and lakes, or 4 mph (6.4 kph) on canals. I have included the factor 3 in the definition so that a boat giving an average 7 hours of weekend cruising in England, which is just 'solar-powered', achieves an SBI of unity (1.0). This is easy to explain, discuss and remember.

A further advantage is that a boat's SBI value equals the expected number of cruising hours per day provided by its PV modules. For example, a boat with  $SBI = 2$  gives an average 2 hours per day of solar cruising at 'normal' speed.

Let's take some more examples of solar boats, this time real-life ones. My own catamaran *Solar Flair*, which completed the first solar voyage along the non-tidal Thames in 2003, has four 75W PV panels, giving  $P_{pv} = 0.3kW$ , and needs about 0.55kW of motor

power to travel at 5 mph (8kph) in calm water. Her SBI is therefore equal to  $3 \times 0.3/0.55 = 1.64$  (which, I note with relief, is comfortably above unity). The catamaran *Collinda*, in which Malcolm Moss made the first solar voyage across the English Channel in 1997, has a more impressive SBI of 2.8 making her well and truly 'solar-powered'. And Cedric Lynch's canoe, often seen running at unlikely speeds in weak sunlight, manages an SBI of 4.3. This one will be hard to beat!

We should also consider the local climate. Data for England should also apply reasonably well to countries such as Germany, Holland, and the northern half of France. A boat based in the south of France might get an additional 30% from its PV panels in summer, and one based in Spain or Australia perhaps 50% more. Such variations, as well as different patterns of use in different climates, should be taken into account when interpreting SBI values.

Finally, a few words of caution. An SBI value can only be an approximate indicator of performance because of the uncertainties surrounding the solar climate and a boat's pattern of use. I therefore recommend that SBIs should only be quoted to 2 significant figure accuracy. And we should avoid saying that a boat based in England and having an SBI of, say, 0.80 is definitely 'not solar-powered', or that one with an SBI of 1.2 'definitely is'. A little flexibility is required. With such provisos I launch the SBI upon uncharted, but hopefully unruffled, waters.



*Solar Flair on the Thames*



# ANNUAL REPORT

## A Summary of the Activities of the Electric Boat Association during 2005.

2005 has been an interesting, busy and fruitful year for the promotion of electric boating, culminating in the setting of the new world water speed record which is reported in detail elsewhere in the magazine.

A greater public awareness of environmental issues this year has resulted in a sharp increase in technical enquiries and applications for membership of the EBA. Concern over climate change, decreasing supplies of fossil fuels and recent price rises indicate a growing interest in alternative technologies and an even busier future for the Association. We know electric boats have been around for about 125 years, but it appears the rest of the world is just waking up to the fact that they exist!

## SHOWS



Thames Electric at the 2005 London Boat Show

2005 saw the second London Boat Show at ExCel, and EBA Business Members exhibiting were Fischer Panda, Hartford Marina, Nauticalia, Phoenix Fleet, Salters and Thames Electric. Navigators & General were offering their discounted policy for electric boats and the Broads Authority, British Waterways and the Environment Agency were represented at the Show.

Early May again saw us at the Lowestoft Boat Show, formerly known as the East Anglian Boat Show. Go Electric!, the grant scheme organised by EBA members Tony Fogarty and Peter Howe for conversion of boats on the Norfolk Broads, again attracted publicity and interest from visitors to the Show.

Also in May, the EBA were able to take the stand to the River Festival at Bridgwater in Somerset. Business Members Water Roo Electric Products were on the water, together with Tony Rymell in *Somerset Dream*. Paul Lynn, our Technical Officer, also helped to man the stand and answer enquiries. We were delighted to support this Show, as this was the third of a series of events in the Parrett Catchment Area, but the dates of previous shows had clashed with other EBA commitments.



Bridgwater River Festival

The Beale Park Thames Boat Show in June has now become the most popular show appropriate to electric boating. Business Members were well represented by Bossoms, CMP, Creative Marine, Hambleden Sales and Charter, Henwood & Dean, Rupert Latham, Openworld Yachts, Pb Batteries, Silent Explorer, Squadron Batteries and Thames Electric. There was a lot of interest in electric boats generally and the literature on the EBA stand. We dealt with numerous technical enquiries and several new members were welcomed to the Association.

The EBA was represented at the July Steam and Electric Festival on the River Stour at Sudbury, Suffolk, offering boat trips in a variety of electric craft, including Silent Explorer's electric canoe, Thames Electric's Mobiboat and John Hustwick's *Rhapsody*.

Another favourite, the Thames Traditional Boat Rally took place in July and Peter Freebody, Henwood & Dean, Hambleden Sales & Charter, Rupert Latham and Openworld Yachts were exhibiting. Once again the EBA stand was there to support our Business Members and promote electric boating.

In September the second Broads Electric Boat Show, organised by the Broads Society and supported by the EBA, took place at John and Pat Atkins' property at South Walsham Broad. The event attracted 18 electrically powered boats of all descriptions including sailing boats with auxiliary motors, solar powered craft, a narrowboat, various open launches, and cruisers converted to electric power under the Go Electric! grant scheme.

## SOCIAL GATHERINGS AND EVENTS

The traditional Launch Supper held at the Maidenhead Rowing Club in April heralded the start of the social season and was well supported by members and guests who were looking forward to an enjoyable boating season.

This year saw our first two-day social cruising event which took place over a weekend in mid May on the River Great Ouse. Les and Elaine Fidler had kindly offered their marina facilities at Earith in





Ouse Cruise

Cambridgeshire and joined us on the water on both days in their solar powered cruiser, *Whispers*. A total of seven craft spent the weekend in good company and glorious weather, including a relaxing meal at the Pike and Eel on the Saturday night.

The excellent weather continued into June, when we held our final BGM (in future there will be an AGM, offering members greater opportunity for involvement in running the Association). A new trophy recognising a significant contribution to solar boating, together with a bursary, had been kindly donated by Malcolm Moss in memory of his late wife Julia. The trophy, designed and built by Ian Rutter and pictured in the Winter 2004/5 EB News, was presented to Les and Elaine Fidler. The business of the morning was followed by a riverside picnic and a relaxing cruise on the Thames from the Cookham Reach Sailing Club.

In September a new venue and format was tried for the social cruise



Malcolm and Simon Moss with Les and Elaine Fidler and the solar trophy

in Norfolk, which preceded the cruise to the Broads Electric Boat Show. A number of boats with members and guests joined together for an afternoon cruise, followed by a buffet dinner at the Museum of the Broads in Stalham, where the Trustees of the Museum allowed a private viewing and gave a brief talk on its history. It was a real pleasure to see so many members enjoying the informality of the occasion.

The Laying Up Supper was held in October at the Maidenhead Rowing Club. Once again, this was a well attended event and completed the busy social calendar of events for 2005.

## MEMBERSHIP

This year has seen the number of private members joining the Association increasing by more than 50% over last year's figure and several companies have also asked to join the EBA as Business Members.

## COMMITTEE MATTERS

Malcolm Moss was invited to become the Association's President and formally took office at the BGM in June, when Aitken Clark stood down. The Association is delighted to welcome Malcolm who is already proving to be very proactive.

The Executive Committee has met six times this year to attend to the day to day running of the Association. Revised Articles of Association were submitted to the membership in time for the Biennial General Meeting in June. Revisions included calling an Annual General Meeting in future in order to offer members more opportunity to contribute to the policy making of the EBA.

Executive Committee Members have attended the Parliamentary Waterways Group when the discussions appeared relevant to electric boating. Our new President has tabled a topic for future discussion, and has already attended a PWG meeting.

The EBA has been involved in the Environment Agency's Thames Waterway Consultation Plan and has attended meetings and provided an input to the final proposed Plan. Representation to government has been made on environmental issues when it was felt appropriate and in the best interests of EBA members.

Following the reduction in the speed limit on Lake Windermere and the opportunity to encourage lower powered craft, we attended a meeting with the Lake District National Park Authority to discuss ways to promote electric boating in their area. Initial feedback from these consultations has been very positive and we hope this will develop further, with the possibility of a jointly organised event to be held during the coming months. This will be in addition to the IWA Trailboat Rally on the Lancaster Canal over Easter, at which the EBA will be in attendance.

I am very grateful for all the support members have given us over the past year, but it is unfair that we rely so heavily on the same few individuals to be always available to run the EBA. We are now being requested to take on more and more commitments for both shows and social events, which is very important for the future promotion of electric boating throughout the country. However, this means it is fast becoming a major team effort and it is imperative that we have willing volunteers to lend support and help spread the load more evenly. Don't think you need to be a technical expert to help as there are many ways in which you can provide support.

As the calendar shows, I am looking at what is likely to be an exceptionally busy 2006. The dates we have at the moment only show a programme of events for which we already have firm commitments and others will be included as the year progresses. However, I am sure I shall enjoy the challenge and, as always, meeting with friendly and enthusiastic members.

**JOHN HUSTWICK**

Chairman



# LETTERS

## From EBA President, Malcolm Moss

With the end of the Oil Age in sight, and the start of the Electric Age looming, it is important to acknowledge the work EBA members are doing to promote sustainable transport.

The consumption of fossil fuels has undoubtedly created a change in our climate that may have terrible repercussions, but the change in peoples' attitude to consumption of fossil fuels will come when some people do not have petrol to get to work. This time is nearer than many think and, when it comes, the use of fossil fuels for leisure activities will be socially unacceptable. Paul Roberts in his book 'The End of Oil' postulates that we are past peak oil production whilst the major oil companies, who seem to want to encourage oil consumption, suggest we have 30 years of oil availability. What is certain is that the demand for oil is very close to the potential supply and hurricanes, terrorists and political events will create more price spikes and shortages. The most alarming point is that there are unlikely to be any more major oil finds and 'safe' fields, such as the North Sea, are in decline with the Forties field, once producing over 400,000 barrels of oil per day, now struggling to produce 35,000 bpd. We are becoming more dependent on the unstable areas of the Middle East and Russia.

We must all try to cut demand and encourage production of renewable energy, much of which will be delivered in the form of electricity. This is where EBA members are playing such an important part. It takes time to develop and make acceptable electric traction systems which only in mass production will give favourable economics. It takes pioneers such as Creative Marine and The Broads Authority to test solar boats, which are truly sustainable, and these results will extend the knowledge about sustainable transport far beyond leisure boats even to replacements for our cars. In using electric boats we are all easing the path towards sustainability.

Time is short. In 2003 Simon Moss, then aged 13, stunned an Indian audience with the statement "When I am old the Oil Age will have passed." We must prepare ourselves for 'The Electrical Age' and my personal thanks goes to all business members and users of electric boats for doing something for the environment our children will inherit.

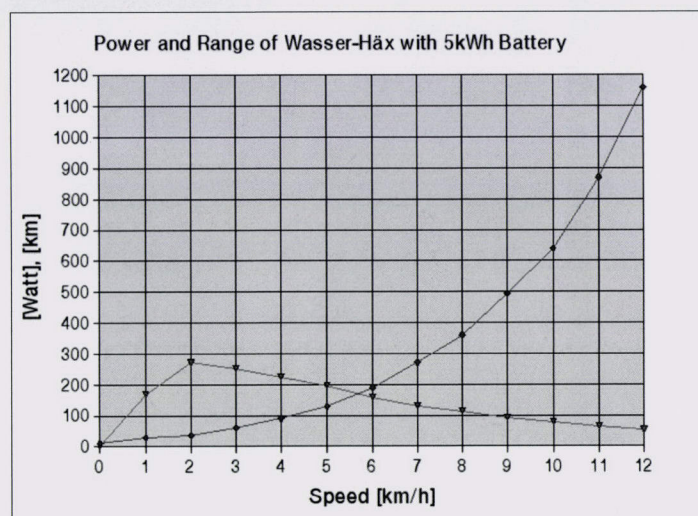
## From Theo Schmidt, Steffisburg, Switzerland

Dear Sylvia and Paul

I like Paul Lynn's 'hare and tortoise' analogy of electric boat range. However I question the value of  $n = 2.0$  in the equation 'Power = Constant times Speed to the power of  $n$ '. This has to be exactly 3.0 for the units to match in the final equation and this value should also approximately apply for displacement hulls without significant wave-making. In this case, the range is theoretically inversely proportional to the square of the speed. At half the speed, the range is quadrupled.

Now, in practice, motors – and similarly propellers – used at a small fraction of their rated power do not run at optimum efficiency, so the range does not extend infinitely by going ever more slowly, except of course with solar cells which at some speed can supply all of the motive power and thus an infinite range. There will thus always be a range maximum at some slow speed. It would be useful if EBA News published graphs of real data rather than trying to arrive at a simple equation with constant value for  $n$ . I attach an example for Matthias Wegmann's Wasser-Häx, a 7m trimaran sleeping four, based on a rowing shell (see [www.solartis.fr/menu/fr\\_historique.htm](http://www.solartis.fr/menu/fr_historique.htm)).

This shows consumed electric power measured at the battery versus speed. I encourage EBA members to do such plots themselves, provided they can simultaneously measure boat speed, battery current and voltage. It would be a worthwhile EBA project to assemble such plots from members' boats.



From such data it is easy to plot also the theoretical range at each speed, using the nominal battery capacity, as in the attached example, where a clear peak is seen at 2 km/h (about 1.1 kts). In reality ranges will be smaller, especially at high speeds with lead batteries, because both voltage and available capacity will be smaller than the nominal values.

Best wishes

Theo

## Reply from Paul Lynn:

Theo Schmidt's comments on my article 'The Hare and the Tortoise' are appreciated. Actually my initial assumption was also that the value of  $n$  would be close to 3, but some careful speed-power measurements on Solar Flair suggested  $n=2.2$  and this was backed up by data I obtained for several other boats which gave  $n$  between about 2.2 and 2.5. Wishing to keep my article as accessible as possible, I decided to use  $n=2$ , which was probably a bit oversimplified.

The interesting graph for Wasser-Häx also suggests a value for  $n$  of about 2.2 between 5 and 10 kph (about 3 to 6 mph) which is probably the speed range of most interest to EBA members when considering reducing speed to increase range.

When Theo says that the value of  $n$  'has to be exactly 3.0 for the units to match in the final equation' I assume this is based on a simple theoretical model. But the actual speed-power relationship is complicated by practical effects such as efficiency variations in motor and propeller, which affect measured values of  $n$ . I prefer to think of this relationship as a curve drawn on a piece of graph paper, to which we are trying to fit an equation – regardless of exactly what the curve represents.

Perhaps we can settle for values of  $n$  in the range 2 to 3, and in many cases closer to 2? And as far as EBA members are concerned, the penalties for being a Hare rather than a Tortoise are likely to be even more serious than my article suggested!



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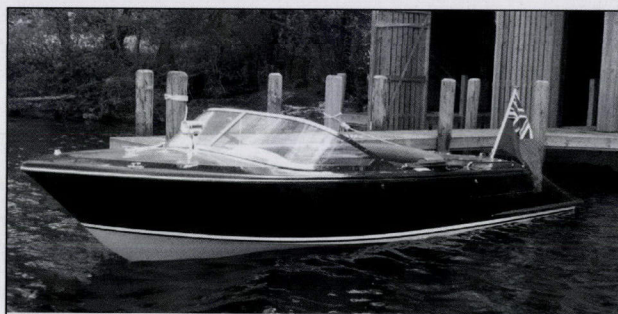


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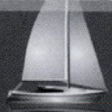


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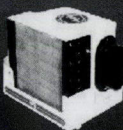
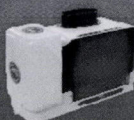
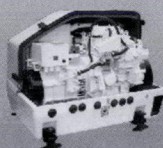
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# FLOWER POWER

**The electric water taxi service on the river Welland in Lincolnshire, which began on July 22nd, has been far more successful than the most optimistic projections, carrying over 10,000 passengers in its first two months of operation. EBA business members Phoenix, Rupert Latham and Pb Batteries have all been involved in the project. Here Vic Scott of Pb describes experiencing the service for himself.**



*Spalding Tulip*

I don't get out of the office much now, and the nearest I get to electric boats is reading about them in EB News or listening to one of our engineer's accounts of battery installations. Way back in the 80's I fitted electric boat batteries myself, but in those days, when there were fewer electric boats, much of my time was spent in large warehouses and workshops installing batteries in electrical equipment. The scenery in such places never compares with the locations for marine fittings which are usually near or on a river. So when David Millin, my co-director at Pb Batteries, suggested a trip out to the market town of Spalding in Lincolnshire, an important centre of the bulb and flower industry and famous for its annual Flower Parade, I didn't need a lot of persuading.

I had first heard about the Spalding water taxi project earlier in the year when Phoenix Fleet of Potter Heigham ordered batteries and chargers to power their four Phoenix 21 boats operating the service from Spalding Town Centre to the Springfields Shopping Centre and Gardens. The project is being run by Broadgate Homes, Springfields Shopping Outlet and South Holland District Council.

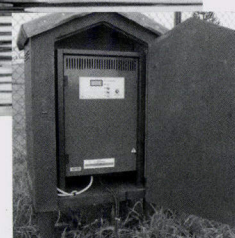
On July 26th Dave and I met Simon Clarke, the man in charge of water taxi operations, at the offices of Broadgate Homes on the outskirts of Spalding. It was Simon's father David Clarke, a Scottish plumber who established the building company over 30 years ago, who decided there was a need for water borne public transport in Spalding. Simon explained that the family have interests in salmon fishing and river bank conservation on the River Tay in Scotland, so a building company's interest in improving the use of the waterways is not as unusual as one might at first think.

We followed Simon to the Welland Yacht Club where the Water Taxi Company have their moorings. Two of the four Phoenix 21 cruisers

were there when we arrived, the other two being at work in Spalding. The berth here has a security fence, inside which are four large blue boxes with sloping felt roofs. These structures house the battery chargers, and keep them away from the elements. The chargers are of the large casing type, necessary for the eighty amp output required to charge the two dozen two volt 600 ampere hour cells that power each of the craft.

Simon quickly opened up *Spalding Tulip*. All four cruisers are named after locally produced flowers, the other three being *Spalding Queenie*, *Spalding Beauty* and *Spalding Gold*. With the cover down I could see the interior of the boat, which was larger than I expected, especially as the floor space was uninterrupted from the pilot's position through to the rear of the stern well. The emerald green seating cushions, which match the roof and well covers, are arranged around the outside, with a space on the port side for a wheel-chair lift. The steps down into the boat are on either side amidships to the rear of the cabin roof, and there is a sturdy handrail for passengers to hold. The overall finish of the deck and interior is white, and the hull is dark green. The company logo of three wavy lines of red blue and gold with the words 'Spalding Water Taxi' is centrally positioned on both flanks of the hull.

With Simon at the helm we set off silently up river. Then, as we approached a road bridge, the boat made a noise for the first time as Simon engaged full reverse to bring it to a standstill. He had spotted some fishermen near the bridge and one of the lines was directly in our path. The fisherman quickly moved his rod across and out of our way, and with nods, smiles and waves on both sides, we were under way again. Simon explained that at first the fishing fraternity had been a bit



*Box for battery chargers*





way of the water taxi project, but were now accepting their presence, as the salutations appeared to confirm.

Very soon we were approaching the junction of the southern end of the Coronation Channel and the River Welland. Just as we were about to turn under the bridge carrying the Cowbit Road, *Spalding Gold* came out of the channel turning towards Spalding Town Centre and I got my first view of a working water taxi full of passengers. The Coronation Channel is a flood relief channel which passes to the east of Spalding town centre. General navigation is prohibited but the water taxis have special permission from the Environment Agency to use the channel, provided they don't stop or allow people on to the banks, and maintain a speed limit of 5 mph as opposed to 7 mph on the main river. We travelled a little way up the channel gazing at the grassy banks and weeping willows which must teem with wildlife in the absence of roads and much habitation.

All too soon we were turning around (coming about?) to return to the mooring at the yacht club, prior to driving into town to see the pick up point there. The only incident on the return journey was another stop for a fisherman's line in our path. As we slowed we saw a large pike being landed. The fishing on the River Welland in Spalding town centre is free although the fishing rights on the Coronation Channel belong to Worksop Angling Club. The area has a reputation for its fishing, particularly for bream, roach, zander, rudd and pike.

Back at the moorings, we found that Rupert Latham had called in. Rupert was responsible for the fitting of everything electrical on the boats, with the exception of our batteries. I learned that the electronic control systems are modular, that is black boxes with multi pin plug connectors that can be changed very quickly if faults develop. It appeared very reminiscent of aircraft technology to me, and a far cry from the crude by comparison contactor and resistor bank systems I was familiar with on electric milk floats back in the 70's.

In Spalding town centre, where we resisted the temptation to visit the Lincolnshire Poacher public house on the waterfront, there was only a brief wait before *Spalding Tulip* glided into view under High Bridge and manoeuvred effortlessly and silently into place alongside the landing stage. In the group of people queuing behind the safety barrier there seemed to be an air of expectancy more in keeping with



Boarding in Spalding town centre

a fairground ride than perhaps a bus queue. Embarkation was very orderly, and the water taxi was soon on its way back under the bridge. It seemed to be full with its maximum load of twelve passengers.

Our five minute car journey to Springfield's Shopping Centre and Gardens on the edge of town takes about half an hour by water taxi, albeit travelling partly in the opposite direction on the River Welland and then skirting around the town on the Coronation Channel. At Springfield a high bank hides the river from view, and a new metal footbridge gives access over the bank to the landing stage. Disabled access is fully catered for by wheelchair slopes and an electric platform lift which is permanently manned. A small queue was forming as we arrived and a water taxi could be seen in the distance. As *Spalding Gold* made her silent approach to the berth, a lady with a walking stick used the stair lift platform on her way to join the boat. I made my own way down to the landing stage to take a couple of photos, and I noticed that the people disembarking were smiling and thanking the pilot for their trip. There are ten pilots altogether, both full and part-time, and all of them had to complete a training course to pilot passenger craft. They were also trained to provide a running commentary on the local history and wildlife.

All too soon it was time to thank Simon for his hospitality and bid him farewell. Battery business of a different kind beckoned and there was no time to look around the Springfield Centre which, as well as a shopping complex, has themed gardens and walks, some designed by the likes of Kim Wilde and Chris Beardshaw of Chelsea Flower Show fame. Dave drove out of the car park and headed south away from the Fens back to the hustle and bustle of the motorway. I had enjoyed my brief sortie into the quiet world of electric boats, and I am determined to find the time to repeat the experience. You certainly get a different perspective on towns and countryside from a position afloat on a river, and I think I would have enjoyed one of the commentaries that the pilots deliver at Spalding. From now on, when I see marine propulsion battery orders being processed by our company, I will be envious of the pleasure someone is about to derive from what I normally think of as a totally industrial commodity.



Disabled lift at Springfield

**The water taxi service in Spalding is due to start again at Easter.**



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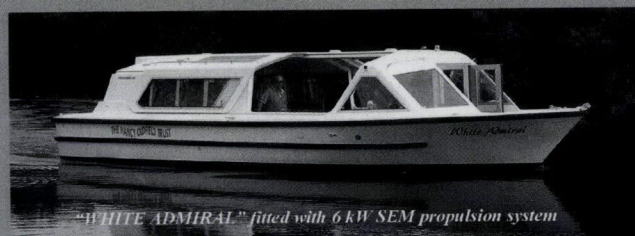
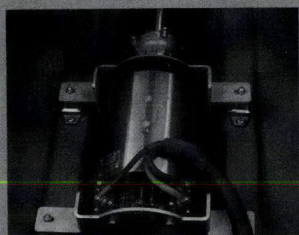
*Rupert Latham*

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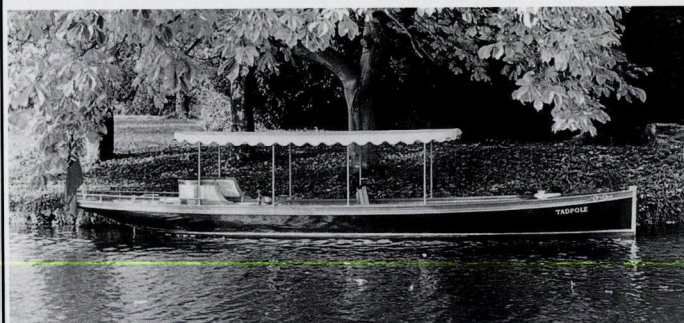
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