JULY 2012

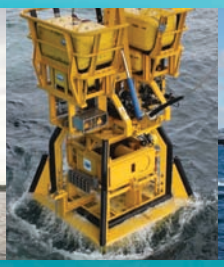
THE BRIDGE

LINKING PAST AND PRESENT WITH THE FUTURE

A production of SOSA,
the School of Ocean Sciences Association

GEMS

Geotechnical, Geophysical, Metocean and Environmental Expertise around the World

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GEMS International Group of Companies

Geotechnical, Geophysical and Metocean Expertise around the World

GEMS Group (Geotechnical Engineering and Marine Surveys) is a multidisciplinary international geotechnical engineering and marine survey group working primarily offshore. Our specialist expertise is the planning and execution of offshore geotechnical site investigations, marine geophysics, hydrography, metocean and environmental studies.

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geotechnical, geophysical and metocean expertise around the world

Editorial

Welcome to the 2012 edition of The Bridge. There is a lot to celebrate this year: a new Editorial Board; a new look for the newsletter; and the relaunching of our careers advisors network under the name of CIMS (details elsewhere on this page).

This issue was made possible due to the generosity of individuals and companies and the time input of our contributors. I am therefore grateful to all of you and my apologies for bombarding you with emails regarding deadlines and technical specs.

I am personally indebted to Dave Roberts and Judy Davies of the School, and the SOSA Committee for either digging out countless pictures for me to choose from or assisting with the collection of information and proof-reading for this issue. New readers of *The Bridge* will find a brief explanation on SOSA and its work elsewhere on this page.

It is always refreshing to receive an email with an idea for an article or some personal news. So next time you have something to share, remember *The Bridge*!

I look forward to hearing from you. In the meantime, enjoy the read!

Your Editor

Contact details:

SOSthebridge@btinternet.com

S O S A

On 9 April 1994 over 80 alumni attended the dinner organised in Bangor by Sinclair Buchan and George Floodgate. The next morning a society was formed with Brian L. Bayne as its first Chairman. Its aim was to foster close links with all those who have passed through the marine science laboratories in Menai Bridge, over the years. The society is currently known as the **School of Ocean Sciences Association** (**SOSA**) and it carries out a number of social and networking activities such as reunion dinners, career fairs; it also maintains **CIMS** (Careers in Marine Science), a database of alumni who act as volunteer career advisors, some offering possibilities for internships.

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http://www.sos.bangor.ac.uk/alumni

http://www.facebook.com/#!/sosbangor

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Contact Dei Huws d.g.huws@bangor.ac.uk

or join the School of Ocean Sciences Alumni LinkedIn group for access to the CIMS database or to join as a member

SOSA

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Cover

Aerial view of the Menai Strait

© 2011 Pixaerial.com

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Dear SOSA Members,

It doesn't seem five minutes since I wrote my inaugural newsletter as the "new" Chairman of SOSA. Yet the records show that I have been "on seat" for approximately two and a half years. Doesn't time fly when you are enjoying yourself?

Despite a lot happening during the period that has elapsed, I start with an apology. Our original intention to produce an annual newsletter has been hampered partly by the voluntary nature of your Committee but largely due to restricted finances. To resolve the former, a small sub-committee - that includes Kevin Deeming, Chris Richardson, and Anna Glüder - was formed as editorial support. On the financial front, we deeply acknowledge the generous and lengthy support of the School of Ocean Sciences, but the reality is that the School can no longer fund the production of *The Bridge*. We have therefore turned to commercial advertising, which I am pleased to say has turned out to be very successful. We are truly indebted to all the sponsors of this issue.

Since the last issue of the newsletter, reunions have been organised in March 2012 at the Sun Tavern in Covent Garden to coincide with *Oceanology International*, and in October 2010 at The Victoria Hotel in Menai Bridge with tours of the School, presentations by SOS staff and a show of *Life at the Labs*, a fascinating and somewhat amusing "non-PC" film shot in the 1960's by the late Barry Paine.

The SOSA has entered the social networking arena with a SOSA group on LinkedIn. Managed by Dei Huws, the group is enjoying an increasing membership with some alumni having volunteered as careers advisors for current students.

Since my last letter, Colin Jago, the former Head of School, has moved on to even greater heights within Bangor University as Head of the College of Natural Sciences. We wish him well in his new role and we welcome his successor, Chris Richardson, an alumnus and a marine biologist specialising in marine molluscs. Since his appointment, Chris has been extremely supportive of SOSA and has been instrumental in several of our initiatives.

I have always believed that the School would benefit from forging wider and closer liaison with the marine science industry in general. Together with Chris Richardson and Kirsty Thomson of the University's Development and Alumni Relations Office, we have recently agreed a portfolio of opportunities through which businesses, individuals, trusts and foundations can support the School. In addition to advertising in The Bridge, donors and sponsors can support undergraduate and postgraduate scholarships, undergraduate summer research placements and an SOS lecture series. The response from commercial organisations to our call has been encouraging to say the least, even at this early stage.

The demand for our skills in marine science is steadily increasing. One cannot but emphasise the significant employment opportunities that exist for marine scientists in the energy sector in particular. Offshore oil and gas exploration continues to be buoyant with increasing interest in higher latitudes and areas of even greater environmental sensitivity. The offshore wind industry is burgeoning: the UK Round 3 mega-wind farm development is now a reality with large areas of seabed being surveyed for the installation of thousands of wind turbines. It is only a matter of time before similar developments follow in wave and tidal power. These activities, when combined with the increased need for offshore power transmission, carbon sequestration and storage in offshore reservoirs, are a continuous source for employment and research opportunities for marine science graduates.

Finally, I would like to close this letter by thanking George Floodgate for having the insight, together with Sinclair Buchan, to set up SOSA and for all the work he has put into the Association from its inception until his retirement from the SOSA committee in 2011. We wish George well whilst knowing he will continue to support SOSA in whichever way he can.

Best wishes,

Mick

Chairman - SOSA

Give the opportunity to students to discover what makes great marine science by joining the SOS Summer Training Bursaries scheme as a benefactor; or support the School of Ocean Sciences in some other initiatives. To discuss your requirements and wishes, contact:

Mick mick@mickcook.com

Chris c.a.richardson@bangor.ac.uk

or **Kirsty k.l.thomson@bangor.ac.uk**

The Simpson Number

Special contributions in Physical Sciences are sometimes marked by the naming of a non-dimensional quantity after the individual responsible for the scientific advance involved. John Simpson, Professor in Physical Oceanography in the School of Ocean Sciences, has recently been honoured in this way by a series of papers in the Journal of Physical Oceanography which recognise the "Simpson Number" as a key control on the transport of freshwater through estuaries and into the ocean. The Simpson number was a nice surprise and quite different from the Simpson-Hunter parameter which has been around for a while and which John assumed was to be his only legacy in the name-game! The number is denoted by *Si*, a notation which is analogous to the Richardson number (*Ri*) to which it is related. Its naming was the result of an initiative at a Gordon Conference by a group of estuary physics scientists including Mark Stacey (Berkeley, Cal.) and Hans Burchard (Warnemünde, Germany) both of whom have now published papers explaining the significance of Si. Formally the Simpson number represents the ratio of the steady baroclinic and barotropic pressure gradients in an estuary or a ROFI (Region of Freshwater Influence), although it was originally defined in terms of the production of stratification by tidal straining in competition with tidal stirring. It is now recognised as the key parameter controlling exchange flows in estuaries with important implications for the movements of sediments and pollutants in estuaries and the attendant theory and models have replaced the previous paradigm of estuarine circulation, that stood unchallenged since 1965.

John remains a seagoing oceanographer with a broad range of interests in the physical processes that control the environment in shelf seas and estuaries and their impact on biological and sediment processes in the water column. In particular, he has contributed to the study of the interaction between buoyancy input and tidal stirring and the resulting tidal mixing fronts; and the effects of freshwater input to estuaries and shelf seas. He is currently involved with his research group in making innovative measurements of turbulent processes and using the results to test hypotheses and models of vertical mixing in the shelf seas. He is also trying to apply understanding acquired in the European shelf seas, to other shelf seas around the world.

© 2011 Darren Bull, CNN

Victoria Hill (BSc 1998 MarBiol/PhysOcean) writes:*

From the Ice to the Stage

I never expected to see someone portray me on stage. After all, I am not famous. However, here I find myself on a Saturday morning, watching a research trip unfold before my eyes. It is more than a little surreal. The objective is to educate elementary school children and their parents about the potential impacts of climate change. But let's backtrack six months.

March 12, 2011: my first night of forty-six on the Arctic ice pack, sleeping in an unheated tent at an average night time temperature of -40°C. Not an easy task. You have to remove your outer clothes in record time, slip into the four layer sleeping bag, along with two prized hot water bottles, then tighten various cords and zippers until there is only a narrow breathing hole. Definitely not for the claustrophobic!

I do not consider myself to be an explorer, always competing with the cat for the warmest spot at home. So why am I at the Catlin ice base (www.catlinarcticsurvey.com) on a frozen ocean? The answer is curiosity. My first Arctic field trip in 2004 left me with the burning need to address some of the questions about Arctic processes. Satellite observations show a consistent decline in the summertime sea ice extent since the late 1970s with a rapid descent in the last few decades. At the end of summer 2010, the sea ice covered only 4.60 million km^2, the third lowest extent since records began in 1979. Less than 15% of all the sea ice in the Arctic is more than five years old compared with 50% to 60% in the 1980s. The sea ice acts as an insulating barrier between the atmosphere and the ocean by reflecting sunlight. With less sea ice, the sun's energy warms the surface water causing heating and more sea ice melt. My focus is on why the sea ice is melting faster than predicted. My previous observations in the Chukchi Sea, and other investigations across the Arctic Ocean, show that material produced from the degradation of plant matter is present in high quantities during the springtime, a sort of oceanic tea. This "tea" can dominate the absorption of solar energy. Up to 80% of this energy is trapped in the top few meters of the water column, where it is in contact with the floating sea ice. Having collected numerous sea ice cores and water samples, I had to identify the ultimate source of this material, the amount of sunlight it absorbs and how long it stays in the water column. Perhaps the data collected here will tell us more about the light absorbing compounds present in the early spring and when this information is passed on to the Arctic modellers, they may be able to calculate the contribution of this "tea" to the overall heating budget and sea ice melt.

© 2011 Victoria Hill

Patrick Bell as Tuk and Ailish Riggs Dermody as Victoria Hill in the ODU stage production "Tuk in the Arctic"

Living on the Arctic ice cap was a great experience and generated lots of data. But what good is this information unless it is passed on to those with a say in public policy like my neighbours and the community? With this in mind, I collaborated with fellow scientists, educators and artists within Old Dominion University (ODU). *Science Alliance Live* was born (www.sciencealliancelive.org) aiming to connect scientific research to local communities through the arts. The incredibly talented Jennifer Alonzo (Communication and Theatre Arts, ODU), turned my descriptions of research and life at the camp into *Tuk in the Arctic*, an amazing play about climate change in the Arctic: Tuk, a Canadian Inuit dog (based on the real Tuk at camp) protects me from polar bears and comforts me when I am homesick. In return I teach Tuk how to collect samples. He learns that studying sea ice in the Arctic can help children in Hampton Roads, Virginia prepare for sea level rise.

So, now we have come full circle as I sit in the audience and watch someone portray my Arctic life. Hopefully, this collaborative effort will inspire these children to pursue science, or at least to promote a better understanding of climate change complexities.

* *Victoria Hill, Assistant Research Professor, Dpt of Ocean, Earth and Atmospheric Sciences, Old Dominion University, Norfolk, USA*

Behind the lens and under the waves: a storytelling success

Earth In Focus is a team of four practising ecologists (Richard Shucksmith, Matt Doggett, Adam Seward and George Stoyle) who use photography to tell ecological and scientific stories, their images being used in conservation and education and their articles being published worldwide. The founders of the project, Richard (2004 BSc (Hons), Applied Marine Biology) and Matt (2007 PhD, Marine Biology) met at Bangor and have been friends ever since. Over the past five years, all four have either won or been placed highly in national and international photography competitions. In 2011 the team celebrated their highest achievement yet with Richard Shucksmith being named as the Overall Winner of the British Wildlife Photography Awards.

The winning image of Pelagia noctiluca at Sula Sgeir, Scotland
© 2011 Richard Shucksmith

photography but the fun and the experiences along the way, about which many people can only dream, have more than compensated for the difficulties encountered. Richard recalls fondly the time when he found himself face to face with an otter he was stalking while hidden with his camera behind a rocky ridge. Having groomed itself on the seaweed, the otter started walking along the rocky ridge and disappeared from Richard's view before it reappeared in front of his face. Richard remembers the wave of excited panic as there was no more than four inches between them, their eyes locked on to each other before the otter disappeared into the sea. Or the encounter with a big seal in a local harbour when in his eagerness to get in the water, Richard left his fins on the boat. On his back

© 2011 Matt Doggett

A Baillon's wrasse (Symphodus bailloni) guarding its nest inside the proposed Poole Rocks Marine Conservation Zone, Dorset

The snakelocks anemone shrimp (Periclimenes sagittifer) amongst the tentacles of Anemonia viridis
© 2011 Matt Doggett

© 2011 Richard Shucksmith

Guillet's goby, Shetland Isles

and with feet out of the water while Rachel, his wife and dive buddy, put the fins on, he felt something clamping itself on to the back of his head, his diver's hood being pulled by the mouth of a huge grey seal.

Richard advocates that taking pictures is not all about winning competitions and experiences, but what really matters is what you do with those images and how they are used to tell a story in an easily accessible way without any scientific jargon. However, he believes that having a strong science background is paramount in getting you the 'winning shot' that tells a more powerful story, as it allows for a deeper understanding of the subject matter, their behaviour, ecology and environment.

Getting known and promoting the aims of *Earth in Focus* has not been an easy task in this age of digital

Then it is the thrill of the first time discoveries, like the finding of Guillet's Goby (*Lebetus guilleti*), the smallest marine fish in Europe and the most northerly record, that Rachel spotted during one of their dives. The Guillet's Goby got such media cover that it has now been spotted elsewhere around the UK coast. Or Matt's discovery of the *Southern Shrimp* or snakelocks anemone shrimp (*Periclimenes sagittifer*), in the murky water beneath Swanage Pier (Dorset) in October 2007, together with diving buddy, Polly Whyte. The blue, white and pink, spotty and striped shrimp is more often

(cont. on p9)

(cont. from p8)

associated with the warmer waters of the Mediterranean. The initial find was reported in the Porcupine Marine Natural History Society newsletter, yet the biggest impact of such

© 2011 Matt Doggett

Matt Doggett and Richard Shucksmith (left to right)

undisputed evidence of the existence of the 20mm long shrimp was to add the delightful creature to the list of organisms of the annual Seasearch surveys* to monitor their range and habitat preferences along the Dorset and Devon coasts.

Earth in Focus is always evolving and looking for new and exciting ways to tell stories using a wide variety of multi-media applications. The internet provides a plethora of exciting opportunities to disseminate and communicate ideas and stories – the only limitation being our imagination. Matt adds: "It doesn't matter where you live, there is always a story happening somewhere nearby. Getting to know your local patch above or below the waves can prove very insightful with respect to the daily trials and tribulations of nature and what is being done to protect and enhance the environment on your doorstep. And please do not forget: always consider the welfare of your subjects!"

* Seasearch project aims to map out the marine life in the near-shore zone of Britain and Ireland and it is carried out by volunteer sports divers.

Investing Now for Later Success

Introduced by Chris Richardson and supported by the generosity of a number of donors, a new scheme, the SOS Summer Training Bursaries, aims to improve the competitiveness of SOS students at times of fierce competition for graduate jobs. From the application to the actual work, the scheme mimics a standard employment process including interviews for those short-listed.

An investment early in a young scientist's career can sow the seeds for greater success later: a summer placement in 1974 while Chris was in the second year of the MarBiol/Zoo BSc degree was just the start. His work with the late Professor D.J.Crisp, FRS, CBE, on barnacle shell plates resulted in a published paper in 1975, followed by a PhD (under Crisp and Dr Norman Runham), several postdoctoral positions and a lectureship with subsequent promotions to his current position as Head of School.

The successful applicants to the current scheme will discover what it is really like working as marine science researchers alongside academic staff during the summer of their second year, or third year for those following the "M" degree*.

*'M' degree: a 4-year undergraduate degree with the 4th year spent largely on project work

2012 Recipients

Bangor Mussel Producers' Bursary
***Vicki Greenhalgh**; MarBiol*

Deeming Bursary
***Katie Sambrook**; MMarBiol*[1]
Claudia Tanneberger; MarBiol

Experimental benthic ecology Bursary
***Aleksandar Gakovic**; MarBiol*

Gavin Winsborrow Memorial Bursary
***Geoffrey Richards**; MOceanSciences*

Leslie Cooper Memorial Bursary
***Stephen Balestrini**; MMarBiol*
Elisha Slater; MMarBiol

Palaeoceanography bursary
***Elliott Pedley**; GeolOcean*

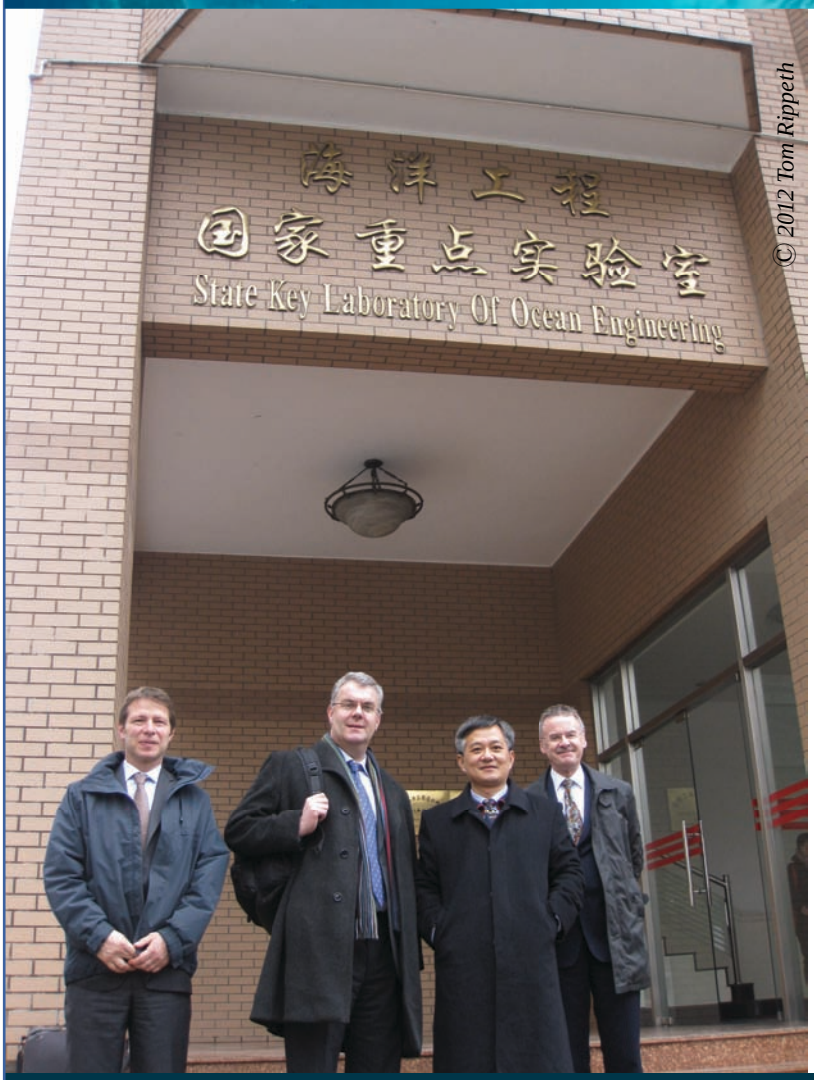
Scleroclimatology bursary
***Zara Turtle**; MarChem*

Refresh your tidal knowledge!

Tom Rippeth will attempt to explain why there are 2 tides a day on the BBC Coast Programme this summer. Contrary to recent exam question answers, it is neither because the moon orbits the Earth twice a day, nor because one tide is due to the moon and one due to the Sun! One tide is due to the tidal bulge induced directly below the moon due to the moon's gravitational attraction, whilst the second occurs directly opposite due to the moon's gravitational pull being weakest here, with the second bulge occurring because of the centrifugal force which arises because of Earth-Moon rotation about each other.

© 2012 Tom Rippeth

Tom Rippeth and Nick Crane of BBC Coast



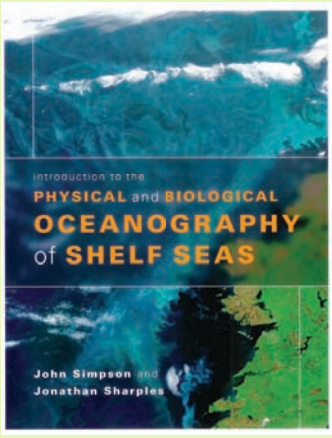
SOS looks East

In February 2012, a delegation from the School of Ocean Sciences visited China to explore the possibilities for research and teaching collaborations with leading Chinese Universities. Colin Jago, Lewis Levay and Tom Rippeth visited Shanghai's East China Normal University, Jiag Tong University, the new Shanghai Ocean University campus at Pudong, Hohai University in Nanjing and the Ocean University of China in Qingdoa. The visit is part of the Bangor University Internationalisation Strategy that already saw the official opening of the Bangor University office in Beijing in 2011 and the signing of a Memorandum of Understanding between Chinese Services Centre for Scholarly Exchange (CSCSE) and Bangor University. China forms a key part of Bangor's strategy to recruit 20% of its students from overseas*.

*Bangor is a member of the Wales International Consortium (WIC), formed in 2003 by all the higher education institutions in Wales to promote Wales in the international market, as a desirable study partner and destination. Co-funded by the Higher Education Funding Council for Wales and supported by the Welsh Government, the WIC works collaboratively with member institutions and with partners of both national and international reputation and profile to complement the marketing and recruitment activities of member institutions.

Lewis Levay, Tom Rippeth, Professor John Shi and Colin Jago at Jiag Tong University ((left to right)

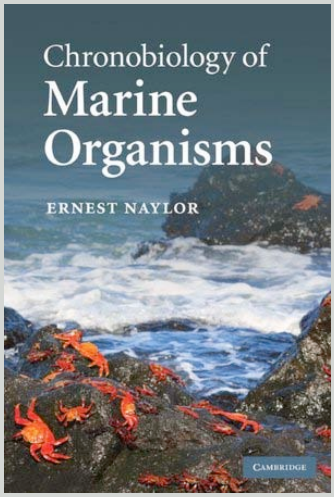
Bookshelf



Introduction to the Physical and Biological Oceanography (2012, CUP)

John Simpson and **Jonathan Sharples** bring together the fundamental physics and biology of the coastal ocean and demonstrate the range of physical controls on primary biological production and shelf sea ecosystems. John was Head of the SOS and SOSA President. He was awarded the Nansen Medal for distinguished research in oceanography and the Challenger Medal for exceptional contribution to marine science. Jonathan Sharples, a Bangor postgraduate student (MSc PhysOcean 1988, PhD PhysOcean 1991) is now Professor at Liverpool University.

Chronobiology of Marine Organisms (2010, CUP)



This book by **Ernest Naylor** is a comprehensive account of the biological rhythms and clocks developed by marine creatures to anticipate favourable phases of tidal, daily, lunar and seasonal events in the sea with impact on the ecology, behaviour and physiology of marine plants and animals. Ernest is professor emeritus at the SOS and he was Lloyd Roberts Professor of Marine Zoology, Head of School of Ocean Sciences and President of SOSA. He was appointed OBE in 1998.

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delivering services and solutions to all energy sectors

"The offshore energy industry is currently at a very interesting point with high oil prices supporting a high level of demand (domestically and internationally). Ongoing wind farm developments and in particular the Crown Estate Round 3, promise however to have a substantial impact on the offshore industry as a whole with enormous construction challenges in the next 10 to 15 years. The future in this particular sector is currently very bright. Demand for graduates with the right skills will therefore continue to grow."

Phil Edwards,

Head of S&G & Global Business Lead

*Founded in 2005, **Senergy Survey and GeoEngineering (S&G)**, provides consulting services to the oil and gas and renewable sectors throughout the life cycle of energy development projects: from evaluation of the opportunity, its associated risks, challenges and outputs, through to full delivery and operation. Activities include route and site survey project management services, geophysical and geotechnical consulting, hydrographic survey QA/QC and advanced Geographic Information System (GIS) services. Our business is currently heavily involved with oil and gas projects and with Renewable (Rounds 1, 2 and 3), Infrastructure (various Interconnector Cables) and Carbon Capture and Storage projects.*

Senergy employees are typically graduates who gained on and offshore experience by working for site investigation or subsea contractors before moving into consulting roles. However, we are actively encouraging and recruiting post graduates to support our expansion and growth plans. Senergy S&G employs currently a number of Bangor graduates.

***Phil Edwards**, (BSc MarPhys 1988) worked with GSI and as a NERC research assistant based on the Isle of Man before joining Gardline in 1992 as an offshore geophysicist and party chief primarily in SE Asia, eventually becoming Marketing Manager. In 2008 he joined S&G as Commercial Director. In 2010 Phil became Head of S&G and Global Business Lead.*

***Jim Pyrah**, (BSc GeolOcean 1992, PhD EngGeophys 1996), spent a brief period as a post-doc and worked in a ski resort in France for a season before he went to work for an offshore site survey contractor in 1998. Having held a number of technical and commercial roles, both on and offshore with home locations including Bath, Aberdeen and Newcastle, Jim joined a subsea construction company based in Darlington in 2006. In 2010 he joined Senergy. Based in NE England, Jim is now Manager - Subsea Geotechnics.*

***Michael Cousins**, (BSc GeolOcean 2001) worked for Thales GeoSolutions as a Trainee Geophysicist before joining Fugro Survey in 2004. He progressed to Senior Geophysical Project Manager working offshore and onshore in Aberdeen. In 2009 he joined the Senergy team in Alford. Michael is now Project Manager - Geoscience.*

***Stuart Walley** (BSc GeolOcean 1992) works for a different part of the Group in Dubai.*

John Holmyard recalls:

Money for Old Rope?

Like every undergraduate, I often stopped and wondered what on earth I was going to do with my degree once all the essays and exams were over. Becoming a mussel farmer is something I would never have guessed: such a thing barely existed at the time.

In 1985 I left Bangor with a BSc in MarBiol/PhysOcean to work on Civil Engineering research projects at Imperial College, London. In 1988 I picked up a newspaper article about a couple who had started a farm growing mussels on ropes in a loch in Scotland. After I visited them, I contacted Andy Beaumont at Menai Bridge to pick his brains on mussels. Three months later I had left my job and sold my London house to become the proud lease holder of a Crown Estate mussel farm on Loch Etive on the west coast of Scotland.

In those early days of rope grown mussel farming there were no experts, no bespoke equipment, no well defined markets and very few regulations. We were all trying out different techniques and different gear. Gradually the industry started to come together. Scottish production grew from a few hundred tonnes in the late 1980s to a few thousand by the late 1990s. In 2003 my own business expanded from one to four farms, being the biggest in Scotland with a production of around 350 tonnes a year.

Competition was strong: the growth in Scotland was paralleled by the development of the much larger Menai Strait mussel fishery and by the Irish rope mussel industry. If we were to remain competitive, we had to expand substantially and reduce our production costs, as much larger farms would allow for a greater level of mechanisation. It would not be easy to find a big enough site in the lochs of Scotland. Production had to move offshore.

(cont. p13)

Architect's impression of how the new building will appear on the Menai Bridge site

The Sustainable Expansion of the Applied Coastal and Marine Sectors (**SEACAMS**) project is a £25.2m collaboration between Bangor, Swansea and Aberystwyth Universities with £12.6m being secured from the European Regional Development Fund through the Welsh European Funding Office. It provides Welsh coastal and marine enterprises with access to expertise and facilities to support research and innovation, new processes and technologies encouraging growth and creation of new jobs. SEACAMS (www.seacams.ac.uk) is run by the Centre for Applied Marine Sciences (CAMS), part of the School of Ocean Sciences in Menai Bridge. It has brought 17 new staff into the School across all disciplines. It will be housed in a purpose built Innovation Centre that will provide staff offices, new laboratories, exhibition and conference facilities and hot desking for businesses to collaborate on R&D projects. The new building will replace the original white house 'Westbury Mount'.

(cont. from p12)

So I travelled to New Zealand, France, China, Canada and Ireland researching their techniques. I came up with a design suitable for UK waters and the prevailing market: single backbone semi-submerged headlines with continuous looped grow-out rope, a New Zealand technology. The headlines would be floated with tall narrow vertical floats and with seabed helical screws for moorings. Lyme Bay off the South Devon coast ticked all the boxes for the ideal location.

Mussel Farm, Loch Etive, Scotland

In addition to a lease from the owner of the seabed (usually the Crown Estate), marine farms in the UK need to have a licence under Section 34 of the Coastal Protection Act 1949 to enable them to deposit equipment on the seabed. The large scale of our farm at 15.4 km² and the location 3-6 miles offshore made an otherwise straightforward application a tortuous process lasting over 3 years during which we had to answer questions such as "what are you going to feed the mussels on" and "what if they escape"!

With all the necessary permissions now in place, we have embarked in building what will be the UK's largest marine farm with an estimated annual production of 5-10,000 tonnes of mussels. Offshore Shellfish was born.

Throughout my 24 years in the mussel farming business I frequently come across other Menai Bridge alumni. If any of today's students are considering aquaculture for a career it is worth pondering that the demand for seafood is increasing, our ability to catch it is decreasing, and the price of importing it is going up. Therefore if we want to eat it into the future, we are going to have to grow it, and growing it is something that should be done by well-educated professionals.

For any interested investors in Offshore Shellfish:

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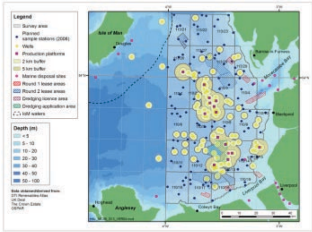


50 years old and stronger than ever

Celebrating its 50th year, the MSc Physical Oceanography is the only course recognised on the NERC impact data base for meeting a skills need in the UK for modellers and numerate environmental scientists. These skills are in short supply and at the top of the list of 15 critical skills described in the Postgraduate & Professional Skills Needs Review*. The course boasts a significant number of alumni that hold senior positions in academia and industry, including a member of the Intergovernmental Panel on Climate Change.

*Led by NERC, the review was published in October 2010 by the Environment Research Funders Forum - now merged with Living With Environmental Change. The review identified a total of 224 skills needed by businesses, government and academics to enable better knowledge and understanding of environmental issues. According to a recent CBI (Confederation of British Industry) report, a shortage in these skills, is likely to hamper economic growth.

A million pound hat-trick

In 2011 over £1 million has been awarded by the NERC to Tom Rippeth, John Simpson and NERC Research Fellows Mattias Green and Yueng-Djern Lenn, to cover research activities of three consortia on key weather and climate processes over the next 4 years: **OSMOSIS** (Ocean surface mixing, Ocean-submesoscale Interaction Study), **TEA-COSI** (The environment of the Arctic: Climate, Ocean and Sea Ice); and **FASTNEt** (Fluxes across the sloping topography of the NE Atlantic).

OSMOSIS, worth nearly £4 million, is led by meteorologists from Reading University and includes oceanographers from the National Oceanography Centre and the Oxford University. It aims to identify, quantify and parameterise the processes which determine the depth of the surface mixed layer of the ocean which exchanges heat and

(cont. on p15)

(cont. from p14)

momentum (through the winds) with the atmosphere*.

TEA-COSI sees the return of the Bangor team to the Arctic Ocean after the 2007 and 2008 visits, to survey the Beauford Gyre region of the Arctic Ocean as part of an international team of scientists aboard the Canadian icebreaker *Louis S St-Laurent*. The Arctic Ocean is being hit particularly hard by climate change, with record declines in summer sea ice coverage blamed for recent cold winters over NW Europe.

FASTNEt, led by the Scottish Association for Marine Science, focuses on the processes which drive exchanges of matter and energy across the continental shelf break to the west of the UK.

Tom Rippeth

*The ocean absorbs approximately 90% of the sun's heat which is either released into the atmosphere providing the energy to drive the weather, or mixed downwards warming the deeper waters. Predicting the fate of this heat is key to predicting the weather, and future global temperature rises.

OSMOSIS members aboard Prince Madog

ALIVE & KICKING

Best wishes on retirement to **Brian Barnett** (BSc Zoo/MarZoo 1971, PhD MarBiol 1979), from the Environment Agency (Lincoln area) and to **Fazal Quraishi** (PhD MarBiol 1964), from the Muscat Technical College.
Congratulations to **John Debenham** (BSc MarBiol 1986) and his wife, Renata, on the birth of their daughter, Sarah, in October 2011.
Andrew Griffiths (BSc MarBiol, 2006), is at the RMA Sandhurst, hoping to get a commission with the Royal Engineers.

Greetings from Spain

Dave Jones, retired SOS staff and Dave Vousden, Honorary Research Fellow (left to right)

Pens, best bitter and networking

In March 2012 a bus full of SOS students invaded the venue at *Oceanology International*, the global forum where industry, academia and government interact. Funded by *Oceanology* and organised by Anna Glüder of the *Endeavour Society*, the trip offered the students the ideal opportunity to get a sense of the sheer scale of the offshore industry and a general appreciation of all the potential opportunities in 'ocean sciences'. Some, however, came away with more concrete outcomes, as in the case of one Masters student who concentrated on harvesting free pens with a final score: 35 all from different organisations! Inspiring was also a miniature ROV with a little camera in a tank and a joystick that visitors could play around with: 'ROV pilot' appears now to be a good career option! Coinciding with *Oceanology International*, an alumni reunion also took place in the Sun Tavern, Covent Garden, organised by Gay Mitchelson-Jacob, Kevin Deeming and Mick Cook of the SOSA Committee.

Tony Lewis and John Simpson investigating the turbulence associated with a pint of best bitter (left to right)

Jo Lestor, Paul Taylor and Dave Sinclair (left to right)

IN MEMORIAM

WILLIAM HALCROW

William Halcrow was born and brought up in the west of Scotland. He was known for his kind heart, deep thought and dry sense of humour. In 1970 he left Bangor with an MSc in algology and joined the Clyde River Purification Board (CRPB). For a time he worked at Imperial College, London on trace metal distribution in sediments, and then returned to CRPB in 1972. He soon moved to set up a multidisciplinary tidal waters unit in the Forth River Purification Board (FRPB) to tackle marine pollution. The marine work of FRPB in the 70s and 80s set the standard for the rest of the UK. Willie also worked for Welsh Water before returning to Scotland in 1985 as director of FRPB. He served in numerous UK groups concerned with marine pollution. An early mover in seeking ways to reduce diffuse pollution sources, Willie was widely influential through his abundant interactions with industrialists, board members and senior civil servants. It was his political influence that resulted in the adoption of several key ideas in the 1995 Environment Act which established the Scottish Environmental Protection Agency (SEPA). In 1995 he was appointed Director of the East Region of the new SEPA and worked with a small group that prepared the agency for business in 1996. He was awarded an Honorary Doctorate of Science by Napier University in 2001. Willie made an enormous contribution to the quality of Britain's coastal waters over the past 40 years. He was an innovator and instrumental in setting up the successful Scottish and Northern Ireland Forum for Environmental Research (SNIFER). When SEPA was restructured in 2000, he became director of Operators for the whole country before retiring in 2003 to set up an environmental consultancy partnership. It was his ideas for environmental quality standards, classification schemes, environmental objectives, whole effluent testing and monitoring schemes that helped lead to these themes being formalised in EU directives.

Many marine scientists and managers across the UK and beyond owe their careers to Willie who is still remembered for his unconventional interviewing style. Willie suffered a stroke while shovelling snow in December 2010 and just as he was showing signs of recovery, he suffered a fatal heart attack on 20 January 2011.

edited from the obituary appearing in heraldscotland, 4 March 2011

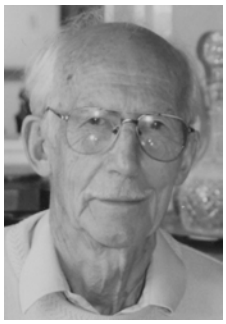
MICHAEL PATRICK KING

© SOS

Michael King came to Menai Bridge in 1989 and graduated with a BSc in Marine Biology and Dynamical Oceanography in 1992. He worked as a fisheries observer for a while before returning to Bangor to take an MSc in Marine Environmental Protection which he completed in 1999. He remained in the Bangor area, living in a Snowdonia village but, sadly, his health began to decline. He retained an active interest in science and in 2007 enrolled as a part time student on the MSc course in Applied Physical Oceanography despite his illness. Michael completed his MSc just before he passed away in January 2012. A long standing friend of the School, he is part of a very small group of students who have Masters degrees in both biological and physical marine science. The School gratefully acknowledges Michael's donation of his textbooks.

Dave Bowers

ELIS WYN KNIGHT-JONES



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Elis Wyn Knight-Jones was born on 7 March 1916 in Stone, Staffordshire. Wyn obtained a 1st Class Honours in Zoology at Bangor in 1939 and won the Meyrick Research Scholarship to Jesus College, Oxford when war broke out. He joined the Officers Training Corps at Colwyn Bay and served on the front line as a Captain in the Royal Artillery until he was wounded in 1945. After the war, Wyn completed his studies and worked on oysters at the Ministry of Agriculture and Fisheries' shellfish laboratory at Burnham-on-Crouch. He and his colleague coined the term "gregarious settlement" having observed that the larvae of oysters choose to settle near one another. In 1950, Wyn helped to establish the Marine Biology Station at Menai Bridge and became Assistant Director. During this time he contributed in the creation of a fauna list for the Marine Station while his dives in the murky waters of the Menai Strait prompted a series of papers on barnacles and the tubeworm *Spirorbis*. In 1956 Wyn moved to Swansea as the first Head of the newly formed Department of Zoology. He spent the following 25 years teaching, enthusiastically imparting his knowledge to others. He co-wrote 71 papers

IN MEMORIAM

on polychaete tube worms, intertidal fishes, leeches, nanoplankton and endosymbiotic algae. A Linnean Society meeting and Zoological journal publication in his honour celebrated his retirement in 1981 and in May 2004, Wyn was elected a Fellow *Honoraris causa* of the Linnean Society of London. A species, *Spriorbis knightjonesi* and a genus, *Knightjonesia*, are named after him.

Wyn was a much respected character, enthusiastic and excited about his work, patient and gracious advisor, helpful and giving much encouragement. With a twinkle in his eye, a warm smile and a subtle sense of humour, Wyn was the ultimate gentleman with a keen sense of understatement and modesty. He died in February 2012 after suffering from Alzheimer's for the last six years of his life.

edited from a contribution by Ernest Naylor, John Ryland, Gaynor & Rob Oddy

BARRY PAINE

© 1998 ISMP

Barry Ernest Paine was born 20 October 1937 in Wanstead, Essex. After his zoology degree at Bangor, Barry joined the BBC Natural History Unit in 1961. He would work there as a producer/director, writer and narrator for nearly 20 years. Encouraged by John Boorman, then head of films at BBC Bristol, Barry made the move into television and began working on programmes such as *Animal Magic* and *Catch Me a Colobus*. In 1967 Barry became an assistant producer on the series *Life with Desmond Morris*. It was during that time that he interviewed the ethologist Konrad Lorenz in his Seewiesen lab while studying fish, something that Barry considered as one of the privileges of a broadcasting career. In 1966 Barry produced *Killer No 1: The Flea*, the first broadcast work of the renowned Oxford Scientific Films. He successfully took up the challenge presented to the film makers by the microscopic world producing *The Rotten World About Us* in 1978 for the BBC's *The World About Us* - which Barry had joined in 1969. The acclaimed film was an innovative and quirky insight into the secret lives of fungi that deployed time-lapse techniques to brilliant effect. At the request of broadcaster and author Kenneth Allsop, Barry worked on the production of a wildlife programme of New York. Together with his assistant Sheila Fullom, Barry combed the city for wildlife, climbing the then unfinished World Trade Centre and even descending into the sewers. Seemingly permanently on exotic locations such as Seychelles, Borneo, Costa Rica and the Serengeti, Barry became known as "Manuel Dexterity" in the Bristol film unit where he had fed sound effects into live programmes. He was a clapper-loader on Z-Cars and as a cutting-room assistant, he had been known to assemble film negative using a foot joiner. In 1978 Barry and his film crew joined the Royal Geographical Society's expedition to Mount Mulu in Sarawak, Borneo, a weird world of limestone pinnacles and secret rivers. Some of the scientists and naturalists on that expedition went on to form the Rainforest Club, a network of rainforest scientists, of which Barry was a member. The voice of the BBC's *The Natural World*, Barry worked on more than 200 programmes of the BBC's Natural History Unit and on almost 50 independent programmes. He was also a consummate performer as many have witnessed in his powerful performance as Judge Brack in Ibsen's *Hedda Gabler* for Bristol Studio Theatre. He lived in the Somerset village of Blagdon, where he recorded audio books of local interest. In 2000 he scripted two major projects on evolution and diversity: *Our Dynamic Earth* and *Wildwalk*. Barry died 10 October 2011, after suffering a stroke aged 73.

from a collection of obituaries

GERAINT WILLIAMS

© 1998 ISMP

Geraint Williams acted as technician for Earth Sciences, Marine Geotechnics and Geological Oceanography for many years. A "larger than life" character with a lively personality, a ready wit and easy-going conversations, he was a pleasant and cheering company both in the laboratory and in the field. He will be fondly remembered running around on his orange moped in the early 1980's helping students in distress. On one occasion he took a student out of an Earth Sciences practical and to the hospital, sure of the student's swollen arm being broken. He returned to the practical, then to reappear at the hospital to check up on the student's condition: the doctors had proved him right. On his retirement in 2003, Geraint set up a flourishing B&B business together with his wife, Emely. He passed away at the age of 64 in December 2010.

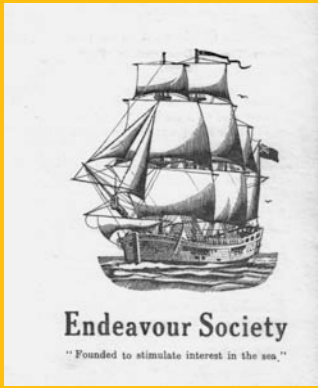
Sinclair Buchan & Ioanna Psalti

The Endeavour Society reports

The 2011 Endeavour Society (left to right): 1st row: Franziska Palm; 2nd row: Em Cunningham, Amanda Kuepfer, Marta Sostres, Mellis Goulton, Eleanor Hammacott; 3rd row: Sam Trewin, Becka Tincello, Lucy Green, Anna Glüder, Elisha Slater, Hana Cox, David Jones, Ben Strachan; 4th row: Caroline Gittins, Rebekah Newstead, Billy Rowell, Gemma Rayner, Amy Omission, Katherine Wilkinson, Elysia Ward; 5th row: Penelope Neeve, Ben Honey, Robert Fairweather; 6th row: Steven Newstead, John Braddick, Leo Johnson, Matthew McDiarmid

In 2011 65 students joined the Endeavour Society, starting the year with a highly competitive and fun crabbing competition, and keeping up the pace with activities ranging from academic talks to field trips. Weekly talks on all aspects of ocean science were delivered by guest speakers from the wider scientific community and the School's staff, giving the students a glimpse of developments in the world of marine science and what their lecturers are up to when they were not marking students' essays. Guest speakers included Professor Geoff Boxhall, FRS, Natural History Museum; Richard Pierce, Sharks Conservation Society; Carly Daniels, National Lobster Hatchery and Dr Stephanie Wilson, from the USA. A field trip on the geological origin of Menai Strait with Professor James Scourse included travelling the length of the Menai Strait up to Newborough Beach.

(cont. on p19)



www.endeavoursociety.org.uk

Named: *after Captain James Cook's ship.*

Objective: *to "stimulate interest in the science of the sea in all its aspects"*

Biographical: *established over a cup of coffee by John Gray, a postgraduate student, in 1965; folded in 2000; resurrected in 2001 by Ray Seed and the SOSA*

(cont. from p18)

A talk on sea grass ecology by Dr Richard Unsworth, was followed by a trip to the sea grass meadow at Nefyn on the Llyn Peninsula with Professor Chris Richardson and his wife, Carole. Bumping into NaturCymru resulted in a short youtube video on this Endeavour visit! The skill of marine mammal watching was mastered under the patient instruction of Em Cunningham while spotting porpoises at Point Llynas. And of course, the year would not have been complete without a highly energetic debate on marine renewables between (cont. from p18)

Drs Dave Bowers, Alan Davies and Simon Neill. And not to forget the social side of things with beach clean socials, shore surveys, geo cashing; and, naturally, the good old pub sessions and film nights. On that note a big 'thank you' goes to the Auckland Arms for their regular supply of free pizza and for accommodating our guest speakers.

In summary – it was another active and educational year! The committee has enjoyed continuing the long standing work of the society and look forward to doing so again next year.

Anna Glüder

And the winners are ...

Congratulations for their "Student led Teaching Awards" in May 2012 to: **Paul Kennedy** for the *Support Staff Member of the Year Award*; **Andy Davies** for his nomination for the *Thesis/Dissertation supervisor of the Year Award* and **Eilir Morgan** for *The Promotion of Welsh-Medium Education Award*.

Andy Davies and Paul Kennedy (left to right)

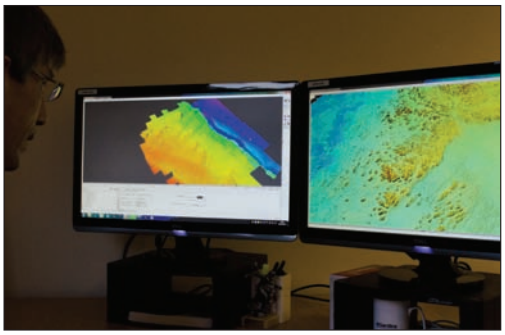
Reporting on the academic years 2009-2010 & 2010-2011

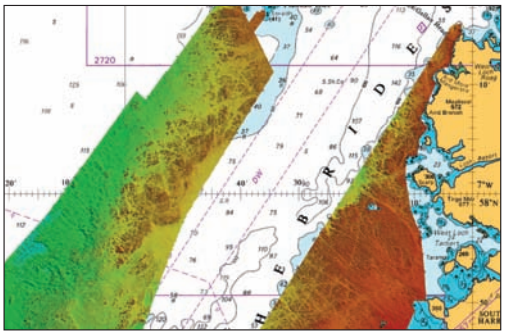
Prizes & Awards	2010	2011
Final Year Darbyshire Prize	**Emyr Martyn Roberts**, BSc OceanSci	**Nora Jacobi**, BSc MarEnvSci
Postgraduate Darbyshire Prize	**Sophie Ward**, MSc ApplPhysOcean	**Medina Ishmael**, MSc ApplMar Geosci
Gavin Borthwick Memorial Prize[1]	**Rebekah Everett**	**Claudia Tanneberger**
Ray Delahunty Memorial Prize[2]	**Ilka Illers**	**Jan-Michael Hess**
Jeremy Jones Memorial Prize[3]	**Sven Laming**	**Julia Pantin**
Gavin Winsborrow Memorial Prize[4]	**Alexandra Deamer-John** BSc MarBiol/Ocean	**Sophie Noon** (MOcean)
Fishmongers' Award	**Christie Lee Fendell** (MSc MarBiol)	**Tom Anderson** (MSc Marine Biology)
The IMarEST Annual Prize[5]	**Emyr Martyn Roberts**	**Frances Burrows**

In addition: *IMarEST Wales Branch Young Marine Scientist of the Year 2010/11:* **Phillip Hollyman** (M.MarBiol); Best UK Master's thesis 2011 - British Sedimentological Research Group **Jane Grant** (MSc ApplMarGeosci); **IMarEST Wales Branch 2010 Commendation Certificate Will Brocas; IMarEST Wales Branch 2010 Marine Scientist Achievement Award**[6] **Holly Parry.** In 2010 **Emyr Martyn Roberts** (BSc OceanSci) was one of the recipients of the University's Dr John Robert Jones Prize (Bangor's most coveted annual award for a student whose academic performance is judged as particularly meritorious in that year). This was the third year in succession in which this prize has been conferred on an SOS student.

1. Most promising first-year mature student in MarBiol; 2. Best 1st-year student in JH MarBiol/PhysOcean - in memory of a former SOS student; 3. Best MSc in MarBiol; 4. Most enthusiastic, helpful and selfless finalist, chosen by both staff and students - in memory of a former SOS student; 5. Best performance in an IMarEST accredited degree; 6. Awarded to a graduate who has had to overcome some significant hardship or difficulty in order to achieve what they have achieve.

Gardline





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