Training for the Future

Professor David K Harrison will begin his presidential office on 30th September 2008. David gained an honours degree in Mechanical Engineering at Victoria University, Manchester and thereafter a Masters degree. He undertook a PhD sponsored by the Simon Group and is currently a Professor of Engineering at Glasgow Caledonian University. David is a Fellow of IESIS and has supported the outgoing President for the last two years in the role of Vice President. He has significant experience in higher educational training on several key topics across a variety of modern engineering disciplines.

I commenced my career in engineering in 1970 at a time, with the benefit of hindsight, was the beginning of the end of a golden era for the British engineering community. This change in the engineering environment was for me first signalled in 1971 with the great British icon of Rolls-Royce falling into financial difficulty. The financial outlook of 1971 was to have a profound effect on many companies in the engineering sector. Most noticeably for me was that my employer, Foden Ltd., having regularly hired forty apprentices each year reduced the 1971 intake to less than twenty. A drop from which, the number would never recover. As is well documented the early 1970’s were a time of some political turbulence with the “3 day week” and then serious inflation limiting the global competitiveness of the British engineering industry. As the decade drew to a close sadly redundancies, company closures and reduction in capacity were common place and it was against this backdrop that the Engineering Industry Training Board (EITB) met its demise.

I have focussed on the EITB as in my opinion it had been a catalyst in providing an environment which led to thousands of young people receiving first class training not only in engineering but also in transferable skills. This body of well grounded individuals were, and continue to be, a major resource upon which engineering employers can call.

From my perspective I look back over the 1980’s and 1990’s as a time when the flow of new people into the engineering disciplines was less than is desirable for the long term health of the industry. The result of the foregoing is that many engineering businesses find that there is a predominance of their engineers who are over 50 years of age and there is now clearly a shortage of younger engineers.

This past gloom has had its effect on the British general public and for at least the past ten years the intake to Universities for engineering courses in total has been rather static due to perceived concerns over the long term stability of the industry which when set against a backdrop of government initiatives to widen participation and increase capacity to allow 50% of school leavers in Scotland to go to University is, quite frankly, disappointing. The truly spectacular growth in student numbers is centred mainly in the disciplines which are collectively known as “Professions Allied to Medicine”.

Alas, the foregoing has had a gloomy retrospection and it is time to note that many companies have emerged from the past 38 years leaner, fitter and more competitive. It is these fine companies who are now facing the challenge presented by the diminished workforce numbers and I am most heartened to see very considerable investment up-and-coming toward training young people and also developing the existing engineering workforce to higher skill levels. As examples of these developments I highlight the Rolls-Royce manufacturing excellence initiative with Cranfield University, a new tailored Masters degree for Doosan Babcock from Strathclyde University, bespoke undergraduate and postgraduate degrees for Shell employees from Robert Gordon University, a significant rise in part time enrolments for BEng degrees from BAE Systems with Glasgow Caledonian University and last but not least the Howden Academy initiative.

Focussing on the last, aware that years of specialist engineering knowledge, experience and expertise was at risk of being lost the company, due to retirements, Howden has taken a fresh approach to sharing knowledge with a new generation of engineers. Howden has partnered with Glasgow Caledonian University to create Howden Academy – an international post-graduate programme based at the university which will deliver specialist operational training in Scotland to hundreds of Howden engineering graduates from 16 countries over the next few years. Designed by Howden engineers the academy will use the teaching expertise and world-class learning facilities at the University to package and deliver job-specific training modules. Company managers predict that the academy will reduce the time taken to turn new graduate engineers into effective employees and will allow them to maximise and share existing company knowledge and expertise with colleagues in countries such as China, Russia, India, South Africa, Germany, France and the USA as well as in the UK.

Bob Cleland, Howden's Chief Executive, said: “We hope that by making this level of investment in our people, we will attract and retain the best engineers from around the world, strengthening our position as a global force in engineering innovation”.

Howden bring engineering graduates from across the world to participate in three-week training sessions at the University, and welcomed its first intake of 50 students on 14 July 2008. Training is delivered using a modular system and the teaching style is interactive and hands-on with classroom tutorials supported by site visits to Howden facilities and installations. Future plans include establishing an interactive online library of quality training material and e-learning modules as part of a wider framework for the ongoing development of Howden engineers. Eventually, all Howden products and engineering job roles will be covered within the academy’s curriculum.

Earlier in the article I referred to a “golden age”, I believe we may well be entering another as the British Engineering Industry finds the confidence to address what has been obvious to my colleagues in the academic world for the past ten or more years – namely a significant shortage of young people wishing to enter our profession. The work and contribution to society of engineers is remarkably invisible to most of the British Public and initiatives and the long term investment that I have highlighted above need to be communicated widely so that more young people are motivated to join our profession and thereby address the skill shortage which many companies are currently experiencing. I take this opportunity to salute the companies and institutions mentioned above and all others similarly engaged in addressing this matter of national concern and I look forward to a prosperous future for all involved.
Our New Vice President, Gordon Masterton

Gordon is Vice President, Environment, in Jacobs, and runs an environmental business unit with some 1300 staff. He is a graduate of Edinburgh University, the Open University and Imperial College, London, and the author of over 40 technical papers on buildings, bridges, tunnels, retaining walls, disaster management, climate change and the history of civil engineering.

He was President of the Institution of Civil Engineers in 2005-06 and in that year promoted the public image of engineering, safety, the value of learning from the past and the mentoring of future leaders. His “President’s Apprentice” initiative, in which Gordon worked with several young graduate engineers through his year in office, has been continued in ICE and adopted by others. He was the first ICE President to use a daily weblog to communicate with members. His appearances in the media during his Presidential year earned him a special award from ICE.

Although Gordon has worked in England on the Kielder Water Scheme, and in Malaysia for two years in the 1990’s, his roots are firmly in Scotland and he maintains his interest in engineering heritage through his role as the only engineering Royal Commissioner on the Ancient and Historical Monuments of Scotland. He is a Fellow of the Royal Academy of Engineering and of the Royal Society of Edinburgh. In 2007 he received an Honorary Doctorate of Technology from Glasgow Caledonian University.

Gordon is looking forward to his closer involvement with IESIS, mindful of its traditions, but is also keen to use the pan-disciplinary membership profile to worthwhile effect. “The issues facing the planet right now place an onus on responsible engineers to effectively and diligently communicate a pragmatic solution-based perspective to ensure that politicians are properly informed for the big decisions they need to make. This is a huge opportunity for engineers, across disciplines, to demonstrate their value to society. IESIS, with its multi-disciplined, pan-engineering membership, is well placed to play a leading role in facilitating and leading, a joined up professional engineering voice for Scotland.”

Reflections on an Anniversary Presidency

by Ernie Chambers

The past two years have been a very humbling experience.

In our series of 150th Anniversary lectures, recognised leaders from a wide range of public sector organisations and companies in Scotland have detailed the extent to which they perceived Engineers have contributed to the growth, development and well-being of Scotland during the past 150 years. It was significant that several of those who provided lectures were not themselves Engineers.

In these lectures, the business leaders highlighted the tremendous achievements of Engineers, each in their particular sector. The sectors covered included manufacturing, shipbuilding, aviation, transport, public health, the environment, ferries, railways and education.

The achievements highlighted have been the more noteworthy due to the extent of resources available to Engineers at the appropriate time.
These lectures have confirmed the views expressed in my Presidential Address at the start of the Anniversary period that “Engineers have played a pivotal role in the development and operation of all aspects of the infrastructure, industry and commerce on which Scottish society in the 21st Century depends.

Without the efforts, skills and ingenuity of Engineers from the many separate disciplines required to undertake the many developments detailed in this Address and sustain living in the 21st Century, the quality and sophistication of life enjoyed by the majority of the population today would not be available.”

Awareness of the contribution made by Engineers during the past 150 years helps put in perspective the personal contribution each of us has made in our working lives.

I hope that those members who were unable to attend the Anniversary lectures will enjoy reading the papers to be presented in the Transactions to be published for the past two sessions in coming months.

Two other pleasing features of the series of Anniversary lectures have been the increasing number of members and guests attending the lectures and the increase in membership applications received during the last session.

During the course of the series of lectures, attendance has grown to such an extent that it was necessary to move from the Trust Hall in the Clydeport Building to the Main Lecture Theatre of the McCance Building of Strathclyde University. Attendance increased from an average of 30 members and guests to an estimated 160 attending Phillip Preston’s lecture on Ferries. The number of guests returning to subsequent lectures was particularly encouraging.

During the session, 31 applications were received for membership of the Institution. It was encouraging that many of these applications came from guests who attended the Anniversary lectures. For the first session for many years, the number of members joining has exceeded the number of members leaving.

Council was very pleased to welcome four of the recently elected Members to serve on Council for the next three sessions. A very warm welcome is extended to Dr Martin MacDonald, Dr Malcolm Reed, Mr Frances Quail and Mr Norman Wardil. I am sure that each will make a significant contribution to the future work of Council and the Institution.

Another aspect of the Institution’s activities to show continuing development during the past two years has been the James Watt Dinner. It was a pleasure to welcome some 340 guests to the JWD Dinner 2007. Guests were royally entertained by two of Scotland’s most eminent after Dinner speakers, Dr Peter Hughes and Professor David Purdie.

There is growing evidence that the Dinner is creating its own particular ambience that is differentiating it positively from other Dinners on the Engineering Institution Dinner circuit. We had in excess of 70 ladies attending this Dinner and as in recent years, particular attention was taken to ensure that our members and guests had ample time to network with colleagues and friends during the Dinner.

I would wish to take this opportunity to record my appreciation of the assistance and support provided to me by Members of the Institution’s Council during my Presidency.

It has been a privilege to serve as President during this Anniversary period. Thank you for the honour.

As part of the Institution’s 150th Anniversary celebrations, during the past year Members have enjoyed visits to Rolls Royce Maintenance Facility at East Kilbride, Blue Productions music studios in Glasgow and the BAE yards at Govan and Scotstoun.

The co-operation of these Companies to accommodate visits by Members is very greatly appreciated.

Some of our new members have asked about visits to other sites, and we are very happy to try to arrange them…..watch this space!!!

BVT Surface Fleet Shipyards at Govan and Scotstoun

Members were privileged to accept an invitation extended by Vic Emery BVT Surface Fleet’s Managing Director on the Clyde to visit the yards at Govan and Scotstoun during his Anniversary lecture on Shipbuilding.

During the tour of the Govan yard, Members observed at close quarters, the complex processes and very sophisticated equipment currently used to build the superstructures of the modern warships. These processes represent another amazing success story for engineering in the west of Scotland. They watched steel cutting and the advanced assembly techniques being used to build Dragon, the fourth Type 45 in a contract for six vessels. Many of these processes had been developed on the Clyde and had greatly reduced the assembly time.

At Scotstoun, Members witnessed the fitting out of the complex control, communication and armament systems so characteristic of 21st century warship and were able to see at fitting out operations underway on Daring and Diamond.
Site Visits continued

Reps Royce

Graeme Waddell, Managing Director of the facility and author of the Anniversary lecture on Aviation, provided Members with a fascinating insight into the development of the facility and the organisational and personnel development which had taken place at the plant during the past ten years. This development had transformed a struggling traditional West of Scotland engineering facility into a world class engine maintenance and repair facility. Without doubt, the enhanced operation of the plant, financial success and dramatic improvements in plant throughput were testament to the success of this development.

Members then witnessed at first hand the results of that development during a brief informative tour of the plant. They were able to observe at close quarter, the Team based organisation completing all aspects of the maintenance and repair of the complex modern aero engines the plant specialises in.

Blue Productions

Alan Scobie, producer at Blue Productions, a music creation and production company nestling in the heart of the west end of Glasgow kindly agreed to receive visits from IESIS members into his world of musical production and engineering creativity. Crawford Gorrie, our past president, was one of several members to visit and comments below....

“I thoroughly enjoyed myself and was amazed with the intricacies of the business. The combination of musical artistry and technical complexity emerging as an expressive output, striving to meet the highest quality is easily on a par, if not better, than some of the more recognised scientific and engineered products and designs that one is more familiar with. We in the simple engineering world should be exposed to more of this in order to give us a much better appreciation of the skills and dedication involved. One of the best ‘technical lectures’ I’ve attended in a long time.’

The James Watt Dinner 2007

The James Watt Dinner 2007, was held on Friday October the 5th in the Glynhill Hotel in Renfrew.

Mr Ernie Chambers, President hosted the evening, which was enjoyed by over 330 members and guests.

The evening contained both the traditional elements, including the toast to the immortal memory of James Watt, and two very fine after-dinner speakers.

Dr Peter Hughes entertained the diners with amusing anecdotes and a comical song, Professor David Purdie continued the laughter with more hilarious tales. Once laughter had died down, the informal part of the evening began:- the ‘networking’ part of the evening is an increasingly popular part of the occasion, where members and guests are able to introduce, meet and catch up with old friends and business colleagues.

The James Watt Dinner 2008

This year’s Dinner promises to be another not-to-be-missed occasion. We have returned to Glasgow city centre, the Dinner will be held on Friday the 3rd of October at the Glasgow Marriott Hotel. We are very pleased to have secured two prestigious speakers for the occasion…..Annabel Goldie and John Htet-Khin.

There are a few tickets left, please contact Laura Clow at the IESIS office if you would like to book a place.
Tuesday 30th September 2008
Presidential Address - Professor David Harrison
at 1745 for 1815 in Clydeport Building, 16 Robertson Street, Glasgow.

Tuesday 4th November 2008
Current Problems in Vehicle Safety – C E Neal-Sturgess
at 1745 for 1815 in Clydeport Building, 16 Robertson Street, Glasgow.

Tuesday 9th December 2008
Joint Meeting with RINA.
QE2 – a complete history – Stephen Payne
Venue and time to be confirmed

Tuesday 8th January 2009
Joint meeting with IMarEST.
‘The Helix Project’ by Crawford MacCalman
At 18.00 for 18.30 in Glasgow College of Nautical Studies

Tuesday 10th February 2009
Past, Present and Future Designs of artificial human joints
- Tony Unsworth
at 1745 for 1815 in Clydeport Building, 16 Robertson Street, Glasgow.

Tuesday 10th March 2009
Macmillan Memorial Lecture
Challenges of Engineering in Space – T Vladimirova
Venue and time to be confirmed

Tuesday 7th April 2009
Annual General Meeting
The Glendoe Hydro-Electric Project – Neil Sandilands and Richard Appleby
Venue and time to be confirmed

The Energy and Environment Working Group - Energy Statement

There is increasing awareness among the general public and especially among the members of the engineering profession that action will have to be taken to deal with the problems and challenges posed by climate change, carbon emissions, and increasing energy supply demands.

IESIS has decided that it can make a useful contribution to the solution of these problems by proffering advice to the relevant Scottish Government ministers and their officials. This will enhance their understanding of the engineering issues which have to be taken into account. Accordingly an Energy Working Group was formed and has been meeting regularly throughout the winter under the chairmanship of Tom Douglas to consider what advice should be given and how it should be delivered.

While potential climate change is important, the Group feels that resource depletion – particularly of oil and gas - is likely to be the most important energy issue. Decline in supply will have a significant negative effect on economies. The Group has drawn up an Energy Strategy Statement which sets out what actions should be taken with respect to resource depletion. To read the Statement see: http://www.iesis.org/energy.

A Joint Energy Group
It became clear that all the other relevant institutions who have a presence in Scotland should become involved, so that the engineering profession could, where possible, speak to Parliament with a single voice.

A meeting with representatives of the following institutions took place on 26 March 2008, attended by representatives from: Scottish Engineering, Institution of Engineering and Technology, Chartered Institute of Building Services Engineers, Institution of Civil Engineers, Institution of Mechanical Engineers, Institute of Energy, IESIS.
The purpose of the meeting was to discuss the potential for collaboration among the professional engineering bodies in energy matters.

**At the meeting it was agreed that:**
- There is a need for collaboration in energy matters. Initiatives by individual institutions should be treated as part of a coordinated strategy.
- That coordination in relation to publicity regarding energy matters would be worthwhile.
- That data to back up statements about energy should be gathered and made available.
- That delegates present would seek agreement from their institution for the proposals listed below.

**It was proposed that:**
1. A ‘Joint Energy Group’ be formed consisting in the first instance of those present at the meeting or other persons as nominated by the relevant institution.
2. That the Group should develop the Energy Strategy Statement prepared by IESIS to become an agreed document.
3. That the Group should coordinate the production of supporting reports and data.
4. That IESIS should provide administrative support for the Group.

**Relationship between the IESIS Energy Strategy Statement and the 2006 White Paper**

The 2006 UK Government White Paper does not identify resource depletion and the consequent potential for economic decline as an issue in energy strategy. The strategies for dealing with climate change and security of supply are generally coincident with those for resource depletion except that in relation to resource depletion:
- The urgency for action, and especially the need for Government to assume a role in controlling energy supply and use, is significantly intensified.
- Increased electricity generating capacity will be needed.
- Alternative sources of fuel e.g. coal, to compensate for oil and gas depletion, tend to be expensive to use cleanly.

**Conclusion**
Due to fuel resource depletion we will soon enter a new era which, in order to avoid economic catastrophe, will need strong ministerial action backed by the necessary engineering solutions. Government and professional engineers will be the main actors in alleviating the effects of resource depletion and other energy issues. Both parties must now take urgent action. It is intended that the Joint Energy Group supported by the IESIS Working Group will be geared to have a direct impact in persuading Government to take a new and more effective role in energy matters.

**Energy Group members**
Tom Douglas - Chairman, Iain MacLeod - Secretary, Blair Armstrong, Ernie Chambers, Alan Young, Bill Ross, Harry Osborn

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**The Energy and Environment Working Group - Energy Statement continued**

The objective of this group is to promote the importance of professional engineering especially to young people about to embark on a career. It is intended that the main vehicles for this promotion will be a website and a brochure/magazine titled ‘The Professional Engineer’. An initial version of the latter has been produced. To view the contents of this (but not the layout) see: http://www.profeng.org.

The project has been sponsored so far by: IESIS, SCOTETA and IStructE. As more sponsors are needed it was decided that it would be best to develop the website so as to demonstrate to sponsors the direction of our efforts. A firm has been commissioned to do this.

The website has to contain good information and to be visually attractive. We need images that will inspirational. Some members of IESIS have been very helpful in this respect but getting suitable images over the range of engineering disciplines is proving to be very difficult. We have been trying to get free copyright on the images but it appears that we will have to pay to use them. It is a Catch 22 situation. We need the website to attract funding but we need funding to pay for the images for the website.

It is hoped that this situation will be soon resolved. Assistance with this project from IESIS members would be greatly appreciated. Please contact the Secretary.
The Membership Drive Working Group have sought to increase membership and awareness of the Institution.

The Group have carried out a series of presentations to students and companies. These were well received, the audiences appreciated hearing about the Institution and the benefits of becoming a member. Posters have been circulated, with flyers, for display in Engineering departments for students, and to organisations.

Last year saw the greatest number of new members for many, many years. This is boosted by the 150th Anniversary celebrations and lecture series being very well attended, by public and existing members.

If you know of any groups who may be interested in hearing about the Institution please contact Laura at secretary@iesis.org, or 0141 248 3721

Advantages of joining IESIS include:-

The opportunity to:
- Convey to the general public, opinion formers, governments and others, the vital importance of Engineers in society and their contribution to wealth creation.
- Create an environment for Engineers and other professionals to express their views on matters of general technological interest.
- Provide opportunities for discussion of common aspects with colleagues in their own and other disciplines.
- Broaden your outlook on multi disciplinary engineering matters.

Benefits include:-
- Regular meetings with fellow members and dissemination of papers and transactions on a wide range of subjects, including non-technical subjects relevant to engineering.
- Networking with fellow members to share experience and provide professional and social advice to those seeking technical solutions – meet and form firm friendships for life.
- The annual James Watt Dinner, one of the most important events in the Scottish engineering calendar, to which guests may be invited.
- The Macmillan Memorial and Marlow Lectures, at which speakers of national standing present informative and sometimes controversial views on matters of current interest.
- Free access – to Glasgow University libraries.

We require existing members and fellows to continue to encourage young people and all colleagues to join and to spread the word in the Community about IESIS, and its role.

Documentation Group

As part of our 150th Anniversary programme, a project has been largely completed by our Documentation Group, under the watchful eye of Arthur Miller, to scan the Institution's Transactions for the past 150 years and convert them into electronic format.

At the start of the project, we had to track down copies of the volumes of the Transactions which were missing from the archives in the Institution's office.

CRISP a specialist scanning company were contracted to complete the scanning of the Transactions. Despite their skills and experience this project has been very challenging.

We now have digital copies of our Transactions. Final quality checks are currently being made to verify that the functionality of the cataloguing and search facilities provided is in accordance with the standards specified. It is hoped that members will be able to access the digitised papers through our website later this year.

We are very pleased with the result of this project – we hope you will be too!
During the past session, progress has been made on the second phase of the development of the Institutions website.

Following the digitising of the Institution’s Transactions as highlighted in the note on the work of the Documentation Group in this Newsletter, this phase of the project will provide members and non-members the opportunity to purchase copies of the papers presented to the Institution during the past 150 years through the website. Members will enjoy preferential rates.

We are also looking into the practicability of providing an online payment system for events such as the James Watt Dinner and membership fees.

A system is also being provided to allow members to check and update their membership details through a password-protected facility. This security will prevent any other member from accessing your personal records. Provision of this facility will require the upgrading of the Institution’s membership database and your co-operation with this exercise will be very greatly appreciated.

Feedback from members on the content and ease of access of the website is always welcome and can be sent to: secretary@iesis.org.

## Scanning our Transactions

Crisp Documents were appointed by IESIS in September 2007 to undertake the electronic conversion of the entire Transactions Archive going back 150 years.

Due to the age and condition of the books it was deemed that colour scanning of the pages was required to retain the authenticity and quality of the books for years to come.

Potential barriers to scanning in hi-resolution colour were file size and the ability to download from the internet.

After some intense research IESIS met Crisp Documents via Crawford Gorrie one of IESIS Council Members and a director of Weir Pumps. Crisp documents were midway through digitising the entire spare parts archive for Weirs.

The requirement for Weirs was the conversion of documents that were over 100 years old. Colour was the prerequisite as the documents had deteriorated to the state that black & white scanning would lose crucial detail.

Weirs had chosen Crisp Documents after searching for a supplier for over 2 years and were chosen based upon the quality of sample work provided and crucially the file size of the PDF.

IESIS requested Crisp Documents to provide a test sample which was hosted on Webspace for IESIS Council members to review.

Crisp then undertook the work which tested the company as some of the Drawings contained within the books were of extreme sizes and delicate composition. The work was completed in 7 months.

The outcome is that IESIS now have a complete digital archive preserved for future generations in a format that is guaranteed for the next 150 years.

Crisp Documents invented vPDF file compression in 2005 which won the best Digital Media Software Solution Award 2008. vPDF is only a few years old but already it is being used worldwide by organisations such as Mitsubishi Motors in Thailand to compress 9 million scanned images, AMEC and various US University Book Stores. vPDF has attracted the attentions of many significant software companies such as Cannon, Kodak and Microsoft

### What is vPDF?

vPDF is a unique compression technique which can compress and Web Enable (i.e. instant opening; no waiting for download) any file type, but is especially powerful for high resolution colour scanned images. vPDF turns any file into a super compressed PDF file; 10 x smaller than a Standard Adobe PDF.

vPDF technology is leading the way in enabling high quality colour documents to be transmitted and viewed instantly across the Internet on ANY mobile device such as PCs, MACs and PDAs.

### How?

vPDF uses it’s unique process to compress and Web Enable (i.e. fast/instant web viewing no matter what size the file is) any file type. It is especially suited for compression of scanned paper documents and can compress a TIFF or PDF down to 50Kb per page for a 300dpi colour scanned image with text searchable OCR content and with **no visual loss of quality**.

A Standard PDF of a scanned image would be almost 10 times the size vPDF can achieve. A TIFF file would be 100's of times larger than the vPDF file.

**Crucially** the vPDF file is still a PDF file.....but a lot smaller in file size and faster to open than a standard PDF.....**BUT**... the vPDF file can still be **viewed by any free PDF viewer such as Adobe Reader**.

The vPDF can be treated and edited EXACTLY like a normal PDF with products such as Adobe Acrobat.

So vPDF files can be used, viewed and are instantly accessible by anyone, anywhere around the world right now without the need to install any new software.
Mr Ken Fulford
Ken is a graduate of Glasgow University in Naval Architecture. After completing his studies he joined Ferguson Brothers (Port Glasgow) Limited, specialist small shipbuilders where, after working up through the Design Office, he became the Company Naval Architect designing a wide variety of small ships – dredgers, research vessels, offshore supply vessels and trawlers, etc. He left Port Glasgow to become Naval Architect to An Bord Lascaigh Mhara in Dublin company concerned with wooden and steel fishing vessels – until the boat yards were privatised. He then spent ten years with British Shipbuilders Headquarters Conceptual Design as small ship specialist then BSETS and MDC. With the demise of British Shipbuilders, he returned to Port Glasgow and the renamed Ferguson Shipbuilders as Naval Architect designing a wide variety of small ships working up through the Design Office, he became the Company Naval Architect and later Naval Architect/Technical Director supervising the construction of more dredgers, research vessels, offshore supply and passenger ferries. Ken is a Chartered Engineer and Fellow of RINA.

Dr Martin Macdonald
Martin served his apprenticeship in mechanical engineering with Smith Mirrlees in Tradeston, Glasgow from 1979 to 1983, specialising on centre lathe turning and horizontal boring machines, manufacturing components for sugar machinery. He then moved to the drawing office working on the design of sugar machinery. In 1985 he commenced employment as a Weapons Systems Design Engineer with the Ministry Of Defence at RNAD Coulport and remained there for 3 years. In 1988 he started his academic career as a Lecturer in Mechanical Engineering at Motherwell College, teaching a variety of subjects up to HND level. In 1992, he moved to Glasgow Caledonian University where he is still working today. He has been employed as a Lecturer, Senior Lecturer and as Head of Division over the 16 years, teaching and researching in the area of mechanical engineering.

During his 29-year career, he studied on a part-time basis and gained the following qualifications: ONC (Springburn College of Engineering), HNC (Glasgow College of Technology), BSc (Glasgow College of Technology), MSc (University of Strathclyde) and PhD (Glasgow Caledonian University), as well as a Teaching Qualification from Jordanhill College. He is also a Fellow of the IMechE and serves as the vice-Chair of the Glasgow Area Committee, and is also the Honorary Treasurer.

Mr Philip Preston
Philip studied civil engineering at Paisley College of Technology. He completed the practical industrial experience element of the course with Crouch & Hogg; on site at Hunterston Ore Terminal and within the maritime design section in the Glasgow office. On graduating Philip returned to Crouch & Hogg and worked on a variety of design projects mainly related to pier works associated with passenger ferry services around the west coast mainland and islands of Scotland. He also gained experience in the shipyards on the lower Clyde and with general ports projects in Mallaig and on the Tyne. Philip achieved chartered status with ICE in 1984. In 1987 he opened a regional office in Oban for Crouch & Hogg from where he served a variety of clients including Caledonian MacBrayne Ltd, Mallaig Harbour Authority, HIDB as well as a number of private clients. In 1993 he moved to Caledonian MacBrayne Ltd to manage their ports and harbours. He joined the Board of CalMac in 2004 as Operations Director and also sits on the Board of the holding company, David MacBrayne Ltd. Philip was a member of the Board of Mallaig Harbour Authority from 1998 until 2008 and also serves on the Board and Management Committee of Port Skills and Safety. Philip joined IESIS in 1994 and became a member of Council in 1998.

Mr Francis Quail
Francis graduated with a BEng (Hons) in Mechanical Engineering from Strathclyde University and has worked in the Aerospace Industry for the last 18 years.

Francis has worked throughout Europe for Rolls-Royce, Airbus Industries, BMW/ Rolls-Royce, Aer Lingus and Honeywell. He returned to the UK in 2007 as a Company Director with an Engineering Consultancy to develop a research programme at Strathclyde University in advanced turbomachinery fluid system design.

Francis became a Chartered Mechanical Engineer with the Institution of Mechanical Engineers in 1995 and a Fellow of the Institution of Mechanical Engineers in 2006.

He is also member of the Incorporation of Hammermen, a member of the Institution of Engineers of Ireland, a member of the European Federation of National Engineering Associations, a Liveryman of the Worshipful Company of Engineers, a member of the International Association of Engineers and a Fellow of the Institution of Engineers and Shipbuilders in Scotland.

Francis has a Masters degree in Mechanical Engineering from Strathclyde University and is currently completing his PhD in Mechanical Engineering.

Mr Norman Wardil
Norman is an experienced Marine Engineer, he started his career as an Apprentice with BP in the early sixties (possibly one of the best training schemes of it’s time) when he left he was sailing as Chief Engineer. A short period was spent in Combustion Engineering learning about flames before he returned to the Marine environment as a Superintendent. Now retired he is actively involved with the re-construction of the Maid of the Loch.

Dr Malcolm Reed OBE
Malcolm a graduate and post graduate of Oxford University and a Fellow of the Chartered Institute of Logistics and Transport, the Royal Society of Arts, and the Institute of Highways and Transportation. He was previously a member of the Advisory Committee of the Rail Safety & Standards Board, and of the Editorial Council of Public Transport International, the UITP journal, and was recently appointed as a member of the Advisory Panel of the Railway Heritage Trust. From July 2002 to December 2005 he undertook a part-time secondment to the Scottish Executive as rail adviser, leading the joint SE/SPTE refranchising team and advising on other rail transport issues.
Experiences in China

by Scott Hutchison

In last year’s newsletter I explained that I was undertaking a design engineering placement in the city of Changzhou in Jiangsu province China through the IAESTE scheme. My first account recorded the cultural shock that I was experiencing. Indeed it was a continual learning process both personally and professionally and the thirteen weeks have proven to be incredibly valuable to me during my fifth year at Strathclyde University.

On a professional level this was the first time that I had worked as a design engineer. I went in with few expectations or predetermined ideas, I felt it was important to be open minded. This was valuable as the methods of working and running engineering projects were very different to what I had expected. The whole company was working towards designing a new office and all the furniture in it. My main project during the period was to design a new desk which would be suitable for the new facility. This was a small project but gave me an excellent opportunity to bring a lot of the skills I had learned during my studies. It also developed soft skills that are necessary for engineers today. Skills such as team work; I had to work with architects and other designers who were designing other pieces of furniture to ensure they would all fit together and create the desired environment. Communication; this was challenging as the team was made of 7 different nationalities, from Greek and German to American and Chinese. The common language was English, however on many occasions discussions broke down and communication had to change to non verbal methods such as sketching.

It was an excellent opportunity to develop my skills before returning to complete my studies. It was the first time I developed an engineering design folio single handed. I was responsible for all the design decisions without any academic support. I also had to structure the project to meet the deadline. This was the first time I had done this on my own.

Through this placement I gained a lot of personal development and built my confidence to levels that could not have been achieved had I done a UK placement. IAESTE offered me the chance to be immersed in a completely alien culture and not only survive but also start living. The exchange program only works through the support of Scottish companies offering placements to incoming trainees. I have spent the last year promoting the scheme to other engineers so that they can benefit from international technical experience. I hope this has given some insight into my time in China, I would like to thank IESIS for their support with my placement.

The Institution is always happy to support young engineers, this year the Institution funded two prizes at Glasgow Caledonian’s Annual Prize-giving ceremony. David Westmore was delighted to present Mr Callum Kerr with The Institution of Engineers and Shipbuilders in Scotland Award for Best Student - Final Year studying for BEng(Hons) in Electrical Power Engineering.

The Institution also awarded Mr Scott Clark with The Institution of Engineers and Shipbuilders in Scotland Award for Best Student - Final Year studying BEng(Hons) in Mechanical-Electronic Systems Engineering.

(Scott was unable to attend the Awards Event as he had just started a new job in England)
By Alf Young

(First Featured in ‘225 Years of the Glasgow Herald’ published on 15 March 2008)

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The Glasgow Herald’s first centenary was celebrated at a lavish ten-course dinner in the city’s St Andrew’s Halls on January 27 1882. For some unexplained reason the paper’s then proprietors chose to hold their banquet one year early. However no expense was spared in entertaining the 230 gentlemen present.

This after all was late Victorian Glasgow, a proud and confident civic state, industrial powerhouse and lynchpin of the empire. If Glasgow and The Herald couldn’t throw a memorable party who could?

The toast to agriculture and commerce was delivered by Sir William Collins. His family publishing business, started in 1819, already enjoyed great renown as a printer of bibles, destined for every corner of the Christian world. It was the commercial embodiment of the city’s motto: Let Glasgow Flourish by the Preaching of the Word.

However Glasgow’s economy in 1882 was passing through what Sir William described as “a very trying period”. He bemoaned the fact that every year “opened up greater facilities for the in bringing of food from the most distant regions”, a development which, exacerbated by a series of poor harvests locally, was making life difficult for landowners and farmers like him.

Collins hoped earnestly for the early arrival of “a lengthy period of moderate prosperity” and then explained his caution. “I say moderate because I believe all periods of abnormal prosperity must be followed by a reaction. And I further believe that such a period as we experienced in the first half of the last decade was not altogether good, either for the capitalist or the artisan.

“In the one it induced a spirit of speculation; in the other it created a feeling that tomorrow would be as today, and much more abundant, and discouraged the thrift which provides for a rainy day.”

In so many ways our Glasgow and our world are utterly transformed from that of which Collins was speaking. Unpick his concerns, however. He was feeling the force of what we now call globalisation on food production. He was warning of the dangers of what Sir Alan Greenspan has taught us to call “irrational exuberance”, resulting in speculative investment bubbles. And he was bemoaning upwardly mobile society’s excessive dependency on credit.

Well, here we are again. Reincarnated today, Collins would marvel at mobile telephony; the worldwide web and cheap mass air travel. But he would feel quite at home. I suspect, with our fears about jobs and economic power migrating to India and China, about the spectre of recession, the global credit crunch, even the Northern Rock fiasco.

After all 19th century banks went bust too, including some in Glasgow As the Spanish/ American philosopher George Santayana put it: “Those who cannot remember the past are condemned to repeat it.” However, as we celebrate The Herald’s 225th anniversary and look to its future mid that of the city that has given it so much to write about for so long, let us also remember that, while unimaginable change may lie ahead, some challenges will remain resolutely familiar to those who walked these streets before us.

All crystal balls end up looking decidedly cloudy. So let me restrict myself to a few generalizations about the future. The long historical shift from Glasgow earning its way in the world from the production and export of heavy capital goods to prospering from its promotion of place and provision of tradeable services, so ably chronicled elsewhere by Tom Devine, is largely irreversible.

I don’t discount the possibility that, if general prosperity levels continue to rise, some new bespoke manufacturing capacity may emerge locally to satisfy increasingly sophisticated consumer demands. That evolving trend is already evident in sectors as diverse as micro-renewable systems, luxury chocolate confectionary and custom-built furniture.

But in many ways the bigger challenge is Glasgow’s lingering, collective ache for what has been lost; that sense that the city and its people mattered more when they made things – great big things like cargo and passenger ships and railway engines. Even today’s prosperous white-collar Glaswegians can come over all dewy-eyed at the thought of long-lost industries in which their fathers and grandfathers ground out a living.

Santayana was right. We must never turn our backs on our past. But if we keep on nursing that ache for how things used to be, we will never summon up the strength to surmount the challenges we may face tomorrow.

The vitality of Glasgow’s new economy, we are told, hinges on ensuring the city remains a must-experience destination, while staying focused on the creation of more high-value service industries, in areas such as tertiary education, finance, technology and the creative industries.

However, in the decades ahead, that post-industrial destiny may confront some formidable obstacles. Accelerating climate change may eventually force governments to curb the growth of mass travel. One day it may even dawn on people that ever-greater consumption is no guarantee of personal happiness or a sense of well-being. Either of these outcomes could render today’s strategy for Glasgow and its economy largely redundant.

Is there a Plan B? I’m not sure I’ve heard anyone, even the most committed Greens, articulate fully what it might look like. And even as we wrestle with these alternative futures, another legacy of the past even Sir William Collins would recognize still confronts us.

Glasgow, as Tom Devine has reminded us, remains a tale of two cities.

The cosmopolitan, commercial core and leafy, prosperous suburbs still sit side-by-side with areas of appalling deprivation. Nearly 100,000 working age Glaswegians, out of a total population of some 600,000, do not work. In some parts of the city average life expectancy is over 80. In others it is less than 60. The stinking slums that Edwin Muir wrote about in the 1930s may have gone, but the gulf in life chances remains.

Glasgow’s broken society is mirrored in the experience of many other cities. But that is no excuse. If we can’t fix some of the most glaring inequalities, I’m not sure we are equipped to make Glasgow and its venerable institutions flourish, whatever the rest of the 21st century might throw at us.
The Future of the Royal Navy – The Future Aircraft Carriers

In recent years, significant contracts have been awarded to industry to design, build and integrate some of the most complex ships to ever enter service for the Royal Navy. A precedent was set with the Type 45 Destroyer programme, a contract to deliver a fleet of six ships; the most advanced of their type in the world, which are currently underway and the first of which is due to be handed over to the Royal Navy in December 2008.

The Type 45 programme gave industry the opportunity to join together in a closer partnership to design and manufacture the ships. Specifically, the build of the fleet was shared between BAE Systems Surface Fleet Solutions and VT Shipbuilding, with the mast and bow sections being built by VT in Portsmouth and rest of these substantial vessels being built by BAE Systems on the Clyde in Glasgow. This core partnership laid the path for closer working relationships across the industry, and in line with the Defence Industrial Strategy, both of these businesses have now formed a joint venture, BVT Surface Fleet in order to consolidate the industry and seal the deal for what will become the flagships of the Royal Navy fleet, the Future Aircraft Carriers.

The two Aircraft Carriers, the HMS Queen Elizabeth and HMS Prince of Wales will be the largest ships ever built for the Royal Navy and are due to enter service in 2014 and 2016 respectively. Each of these vessels are expected to have an in service lifespan of up to half a century and will ensure the capability to operate an extremely powerful air power that is intended to be flexible enough to combat any significant future threats.

To enable industry to deliver these 65,000 tonne ships the Aircraft carrier Alliance (ACA) was formed, bringing together the capabilities required and allowing risks and rewards to be shared in a way that encourages ‘best for project’ behaviour. The Alliance is made up of the UK Ministry of Defence, BVT Surface Fleet, Thales UK, BAE Systems and Babcock Marine.

The ships will be built in sections, known as blocks, at various locations around the UK. Once complete, each of the blocks will be transported by sea going barge to the Babcock facility on the east coast of Scotland to be assembled. BVT Surface Fleet is responsible for the largest share of the work, including one of the two mid sections, which will be built in Portsmouth and the largest and most complex section; the stern, which includes all of the propulsion work at the Govan facility in Glasgow. Thales UK is the design lead for the programme, BAE Systems will build one section of each of the ships as well as provide key radar equipment and Babcock will be responsible for building the final block, as well as assembling both of the ships.

The two new Carriers are intended to replace the current Invincible class of aircraft carriers and, together with the aircraft they will operate, represent a step change in the Carrier Strike capability of the UK Armed Forces. They will be capable of operative a variety of aircraft (including Unmanned Aerial Vehicles) and their adaptable design provides a degree of ‘future-proofing’ to ensure that they will be able to operate future generations of aircraft. The HMS Queen Elizabeth and HMS Prince of Wales will, ultimately act as a floating airfield and runway for helicopters and fixed-wing aircraft such as the Joint Strike Fighter. As UK sovereign territory, they will be able to operate aircraft in scenarios where there is no opportunity to base aircraft on land or to gain over flight agreement. As a coercive and strategic presence, they will be able to support a wide range of military operations including conflict prevention, peacekeeping and disaster relief around the world.

As the flagships of the RN fleet, these vessels will be a huge 280 metres long, 70 metres wide and each will weigh the equivalent of 32,500 family cars. They will be fully equipped with state of the art radar capability, including the Long Range Radar, which is the same size as a large mobile home. Once in service, these Carriers will be supported by the Type 45 Destroyers as well as Auxiliary ships which will provide replenishments and stores for longer operations.

The crew (including flight crew) on both HM Queen Elizabeth and Prince of Wales will be only two fifths larger than on the Invincible class despite the ships being three times the size. This 1,450 strong team of personnel will include over sixty catering staff and 11 medical staff to provide sustenance and health care. The crew will also have access to cinema and fitness facilities to offer them activities during their recreational time, something which is vital to the people serving on either vessel as they may be on board for months at a time during operations.

In order to ensure that the crew is fully provided for, there have been several design elements factored into the carriers, such as the capacity for each of the ships to carry around 1,000 tonnes of food and provisions at any one time plus four dedicated galleys and four dining areas where all of the food will be prepared and served to the servicemen and women. There is also the capability for each crew member to have access to the internet and other communication equipment during their time on board so that they can keep in contact with friends and family at home more regularly than may have been possible if they were mainly relying on support ships to deliver letters from loved ones at home in the UK.

Following the signature of the contract for these impressive new ships on July 3rd 2008, plans are proceeding for the first cut of steel on the Clyde in early 2009. These significant events mark the start of one of the most exciting periods in the maritime industry in recent years and the start of this work has ensured that thousands of jobs across the UK will be retained well into the future. BVT Surface Fleet has recently taken on a further 70 new apprentices on the Clyde to cope with the expected workload and the organisation expects to add a further 46 to their apprenticeship scheme in Portsmouth, which will give even more young people the opportunity to learn a trade while working on some of the most prestigious ships in modern history.
Modern Apprenticeships

by Susan Andrews

Scotland has a long history of apprenticeships stretching back to the middle ages. By the late 19th century apprenticeships had spread from trades such as building and printing to the newer industries of engineering and shipbuilding.

Despite the success of apprenticeships in the early 20th century, there were growing concerns regarding the effectiveness of apprentice training by the mid-1960s and there was a decline in apprentice intake, which mirrored the dramatic reduction in the number of those employed, particularly in the metals, metal goods, mechanical engineering and transport equipment sectors. These sectors lost 200,000 employees between 1950 and 2000.

The situation was not helped by the lack of public funding for apprenticeships combined with the rising numbers of young people encouraged into full-time education irrespective of whether such a route was appropriate for them. The result has been that many smaller organisations have taken on no apprentices for 10 years or so.

The Manufacturing/Engineering industry in Scotland provides substantial revenue to the government, over the last ten years the average sales per annum for Engineering exports from Scotland was in excess of £9billion.

Optimism in the industry is confirmed by the Scottish Engineering Quarterly Review, www.scottishengineering.org.uk/engineering.htm which shows 19 consecutive quarters of positive order intake. Against that background in recent years while reviewing their employee age profile, many companies have discovered that they have an ageing workforce and a looming skills gap. Scottish Engineering are seeing a marked increase in the number of small engineering companies looking at taking on an engineering modern apprentice in the next few years.

Another change that has sparked more interest in apprenticeships recently is the promotion of Eng Tech registration by the Engineering Council. Eng Tech registration means employers have the assurance that their employees have had their competence assessed, their credentials verified and their continuing professional development means that they are exposed to new developments in their profession and governed by a professional code of conduct. Most of the professional institutions are currently promoting Eng Tech registration and there is more information available on the Engineering council website at www.engc.org.uk/technicians/.

Research by Scottish Engineering has shown that the cost of training an engineering modern apprentice could be as much as £50,000 - the vast majority of this cost being carried by the employer.

The Engineering MA is made up of 26 weeks of foundation training, an SVQ level 3 qualification, an educational qualification, either NC or HNC and the 5 Core Skills, common to all apprenticeships; Communication, Working with others, Numeracy, Information technology and Problem solving. While the bulk of the expense is taken up with wages, there is also a substantial cost to the employer in the supervision and management of the apprentices. Further costs are incurred through the colleges and/or practical training establishments in providing education and assessments.

The Scottish Government Education and Lifelong Learning Secretary Fiona Hyslop announced some changes to the National Training Programmes in
April 2008, refocusing support in adult MA's to only engineering and construction. However concerns have been repeatedly expressed in Scotland that the level of public funding contribution for apprenticeships continues to lag behind that of the rest of the United Kingdom by approximately £3,800 per modern apprentice. Nine years since the formation of the Scottish Government in Holyrood the matter has yet to be properly addressed.

Engineering companies throughout Scotland have realised the importance of maintaining a continuity of skills over the years, and while the larger internationally known employers such as Rolls-Royce and Scottish Power have taken on significant numbers of apprentices, other smaller organisations are now training apprentices to fill their own needs.

One major contract which will involve BVT Surface Fleet Limited and Babcock Marine at Rosyth is the construction of the next generation of aircraft carriers for the UK Navy. Work has already started to recruit a large number of apprentices in both yards. Over the next five years there will be the need for fresh young engineers in most engineering disciplines.

Apart from this specific project, there will also be places each year for craft apprentices and technicians across the many engineering disciplines which will include mechanical engineering, control engineering, electrical engineering, marine engineering and construction.

Every employer wants to know they are developing capable, motivated people, and with the Modern Apprenticeship framework you have the added benefit of high quality training to industry-recognised standards. The framework also offers training that is flexible. The actual training programme should be adaptable enough to meet your company's specific requirements.

The benefits of Modern Apprenticeships to the employer are a more responsive, motivated workforce with transferable skills and a culture of self-learning. National standards and qualifications will also serve to increase customer confidence, while hands-on training and development will impact favourably on productivity.

Scottish Engineering supports the latest stated aims of our politicians to encourage more youngsters into modern apprenticeships. We would also remind them of the importance of ensuring that appropriate funding is in place combined with fewer restrictions in relation to the age of potential trainees.

**A Training Scheme for Seafarers**

Banff and Buchan College is delighted to report that they have recently received approval to offer merchant navy Deck Cadet training courses. To offer the Deck Cadet courses, the college had to satisfy two bodies, the Maritime and Coastguard Agency and the Merchant Navy Training Board that they had appropriate staffing and resources in place to effectively deliver their prescribed content. The first course intake is scheduled for August 2008.

These courses have been developed in response to a well documented global shortage of qualified seafarers. Consequently, there are considerable opportunities for school leavers to become fully qualified Master Mariners, and hence become captains of their own vessels by their mid to late twenties. The programme will also be open to students of all ages. The courses comprise of a number of periods of attendance at college, interspersed with periods at sea undergoing a structured training programme over a four year period to qualify as a fully certificated Officer of the Watch. Further periods at sea and college lead to Class 2 (First Mates) then Class 1 (Master Mariner) Deck Officer Certification.

The College has been working on the development of the courses with a number of Aberdeen based shipping companies and it is hoped that a formal partnership will be signed with these companies shortly to offer employed status to trainees. In effect, the companies and college intend to target local school leavers with appropriate Standard Grades and Highers, to provide high quality, well paid local employment. Development of the programme will provide the chance for young people to go to sea in a professional capacity despite the reduction in the numbers of boats in the local fishing fleets. The College has already been delivering nautical studies to pupils in two local schools at Buckie and Banff during the current year.
It is hoped to offer an extension of this course to other schools to help prepare young people should they wish to participate in the deck cadet programme on leaving school.

Bob Sinclair, Principal of the College and himself a qualified Master Mariner says “This course is about offering real training opportunities and real jobs for the young people of the north-east. The global shortage of trained mariners means that these programmes will offer great career opportunities with a fantastic salary, along with tours of one-on, one-off after completion of training for young people. In addition, following a career at sea there are further opportunities for a career ashore as harbour masters and pilots, in marine insurance, and as maritime lecturers, all professions which traditionally relied on seafarers but which are all now facing staff shortages due to the lack of training in recent years. I would encourage any young person, male or female, who doesn’t mind hard work and is looking for a challenging yet rewarding career to get in touch with our Admissions Team. Development of the programmes followed an approach from local shipping companies after hearing of the issues surrounding our fishing vessel courses last year. I would like to thank John Bryce, the Managing Director of Ocean Mainport and also North Star Shipping, Vroon Offshore Services and Nomis Shipping for their encouragement and support in the development of this course”.

Further information on the new Deck Cadet course can be obtained by contacting the Admissions Team on 01346 586100.

Ship Management in Glasgow ? – Yes it’s true!

by Douglas Lang

The “gallus” names of yesteryear that are the folklore of the Clyde are probably still better known and fondly remembered but the expertise that created the legends still exists in the vibrant ship management community that is one of Glasgow’s best kept secrets.

In his President’s address to the Scottish Shipping Benevolent Association Dinner in 2004, Bruce Lucas presented some interesting statistics regarding ship management in Glasgow. The total number of ships controlled was 530, totalling some 43 million deadweight tonnes and requiring the employment of 20,000 seafarers and close to 1000 shore staff. In addition, there are the supporting services and local representatives required by this cluster. Whilst it is difficult to place the Glasgow community in a world context as in most other locations owner/operators cohabit alongside 3rd party managers to a far greater extent and make it impossible to compare like for like; the above numbers are impressive by any measure. In the intervening years the figures have probably grown by 15 to 20%.

It is difficult to know if ship managers, have chosen to operate discretely, away from public awareness or whether, like so much of shipping, they are simply anonymous to the public at large. However, collectively they have a story to tell and as individual companies they are a very positive legacy of Clydeside.

There is a strongly held belief amongst the local ship management companies that Glasgow is in fact the cradle of modern ship management. But just which of the companies it was is hotly disputed. Suffice it to say the contenders for the title no longer exist. They have been joint-ventured, absorbed or morphed into a new identity.

A strong contender for the crown is Denholm Ship Management, their claim goes back to the mid-Fifties when Erling Naess delivered a vessel to Denholm for management. The punitive costs of operating ships in Norway at that time convinced Naess that it made commercial sense. Out of the Denholm stable other managers emerged: Swedish Caledonian, later Northern Marine, was established by Stena and the Stena King and Queen transferred from Denholm. Seascot was established by Alan Stewart after many years at sea and on shore with Denholm.

Erling Naess is also behind another stalwart of the Glasgow scene. Naess established a company in London that eventually became Anglo Nordic with its operational centre in Glasgow. Upon the sale of Anglo Nordic, Norbulk was founded. The name a tribute to a Naess vessel called “MV Norbulk”.

Nearly fifty years on the original companies are becoming part of the folklore while the vibrancy of the ship management sector continues to grow strongly. Today’s companies are part of multinational groups: Anglo-Eastern, ASP, Norbulk, Northern Marine, and V-Ships. World-wide players delivering quality services to rival the very best of the owner/operators. The stigma of ship management has all but disappeared and it is becoming more difficult for all but the largest operators to compete with the cost-effective service delivery of managers.

While the ship management scene in Glasgow remains strong it faces many challenges going forward: some from the world market and some from local demographics. Globally the axis
for shipping has tilted East and consequently the demand for services has followed. The importance of the Glasgow based offices in setting policy and direction has diminished but they are sustained by the large volume of ships in the market and the fact that the competence and expertise required is still available. The local difficulties relate to an ageing workforce and a decline in national recruits. The hue of the modern ship management office is multinational and multicultural. This closely reflects the onboard demographics.

The fact that current forecasts suggest a net increase in ship numbers by some 2000 vessels offers exciting opportunities. Provided Glasgow managers continue to receive a share of the vessels, the future is bright. At the same time more avenues require to be explored to introduce new people to the industry. Resources from abroad have shown themselves to be mobile and competition for them will become greater. The delighted of sunnier, tax-free climes could prove irresistible. Therefore all the Glasgow managers face the same dilemma: where is the next generation of superintendents coming from? Internal training and development perhaps!

Until recently little time or effort has been expended on training and development. The “Route 1” to becoming a superintendent was to come ashore as a Chief Engineer with your Company, “Route 2” was to come ashore from another company. After that our collective imaginations went blank. Today there are some positive initiatives being developed. Alternative routes are being explored and so far are showing promise. Post graduate courses in ship management have started however in order to attract sufficient numbers we will have to shake off our cloak of invisibility and actively market ourselves. Another option is to attract young officers who have qualified and for whatever reason decided that seafaring is not for them. Offering a structured training can help fill the gaps in their knowledge that they otherwise would have acquired if they had continued at sea.

When outsiders occasionally get to glimpse the world of ship management very few remain unimpressed. It is the insiders who have become dulled to the range and diversity of skills that are brought to the business daily and are reticent to discuss it outside their own circles. This must change. The ship management players in Glasgow have a fantastic story to tell. It is difficult to think of another local industry that offers so much opportunity and diversity. Nobody will beat a path to our door if they can't find it!

Our continued success depends on the names of the ship managers becoming “household” in just the same way that the other creators of Clydeside legends were. Then the new talent will find us.

The Delta Anchor

by Gordon Lyall

There is always a better mouse trap

Simpson-Lawrence Ltd, Glasgow had been selling and manufacturing, in their factory in Hillington, a number of different types of small craft anchors the most notable being the CQR. The original CQR was designed by Prof. G. I. Taylor of Cambridge University in the late 1930s as a result of his extensive experience as a cruising yachtsman using a traditional Fisherman’s type of anchor of enormous weight which proved most awkward to handle on his yacht ‘Frolic’. An agricultural plough turns soil over so G.I. figured that a symmetrical double plough would penetrate better and dig deeper into the seabed than his existing anchor and this proved to be the case. The CQR anchor produced by S-L differed slightly from the original design but worked essentially in the same manner and had become the de facto anchor of choice of long distance cruising yachtsmen.

The Technical and Development of S-L were asked to undertake a study to determine if there was a better anchor. The starting point was to examine "the competition" which was extensive as every blacksmith and engineering shop world wide considered that an anchor was merely an ad hoc fabrication. The notable exceptions were Danforth, an American Company and a newcomer called Bruce. The Danforth had been developed by another yachtsman, Bob Ogg, in the early 1940’s and was essentially a light weight version of the almost standard pattern of ships pattern anchor except that there was a stock along the hinge axis.

The Bruce anchor was developed in the 1970’s and in versions weighing tonnes became popular with the North Sea oil industry. The small craft sizes allowed a neat stowage on the bow, particularly of power boats.
In passing it is interesting to note that every landing craft on D Day was fitted with a Danforth anchor and that the Mulberry Harbour floating roadways used CQR anchors (although called “Kite” at the time) to keep them in position. So the inventions of two yachtsmen greatly assisted in the technical success of the operation.

To identify the strengths and weaknesses of each type, tests were carried out on a variety of sea beds which led to the conclusion that no one type was superior in all locations. This had been generally recognised by yachtsmen as frequently more than one type of anchor was carried to be deployed to suit the particular seabed. However, it became clear that each had their own merits and each had their own disadvantage.

The CQR has a medium high holding power and set readily and could normally reset when there was a change of wind or wave direction. Unfortunately, if it did not set exactly square due bad hinge alignment, it is possible to drag it through the seabed in a long helix which brings the tip out of the bottom. In most cases it would immediately reset if there had not been an accumulation of weed in the throat.

The Danforth has a higher holding power but is intolerant of wind and wave direction change so much so the better quality ones have a high tensile steel forged shank to minimise shank bending due such direction change which leads to a pull across the line of the anchor. Additionally, it was found that this type of tumbling fluke anchor ALWAYS turned over when dragged due to uneven loading of one blade or the other. Once turned over this type has difficulty in resetting as the points of the two flukes are pointing upwards rather than downwards. This phenomenon had been observed with ships' pattern stockless anchors in the late 19th century the solution being to specify heavier anchor cables and this became enshrined in the Anchor and Cable Chains Act of 1897, which, except for metrication, is essentially the same today.

The Bruce anchor has a lower holding power than either the CQR or the Danforth but can remain embedded with change of direction of pull. It has a major drawback in that boulders can become lodged in its throat and thereafter ceases to be an effective anchor at all.

Other aspects of anchors were consider such as the ability to launch from the bow without lifting and also the ability to be deployed when engine and or sails have failed. All vessels turn side on to wind and wave when drifting.

The tests showed that few anchors were able to continue downwards when drifting even at a modest 2 to 3 knots. The tumbling fluke types display superb “water skiing” characteristics and the CQR tends to spiral through the water. The Bruce tends to paravane at a certain depth but could go deeper if the amount of chain paid out was increased at a rate faster than drift.

So the specification was established. The new anchor had to be, above all, versatile to suit seabeds of sand, mud, shingle, rock and weed. It had to be self launching and would incorporate the “plough” action of the CQR, have as high holding power as possible, have the one piece simplicity of the Bruce and be able to remain in the seabed with wind and tide change.

A programme of trial and development began with high hopes of using strain gauges to determine holding power. It was discovered too much time was being spent trying to keep the electronics working so simple spring balances were then used. However, a system of 5 mercury tilt switches built in to the underside of the test anchors gave a visual indication of the vertical attitude of the anchor in the seabed. Beach tests using a sledge device, operated by an electric winch, simulated various angles of pull relative to the seabed on the test anchors.

Prototype anchors were tested in “cruising” conditions over a period of years and they were also load tested at the National Engineering Laboratory to check that the strength requirements of the Classification Societies were met. When satisfied with the general performance application was made for British, European and United States Patents which were finally granted. A size range was chosen from the R10 series of preferred numbers which enables a logical progression as demand dictates.

The name Delta was chosen and the product introduced at the London Boat Show 1989. Over 300,000 Delta anchors of various sizes have been sold since then which indicates a considerable market acceptance. Independent testing and user experience confirms that the original specification and execution were correct. It is also gratifying to note that The Royal National Lifeboat Institution have, after extensive testing, adopted the Delta anchor as standard on their entire fleet.

Question is “Is there a more versatile and effective small craft anchor than the Delta?”
by Douglas Hoad

In my role as Clydeport’s Hydrographic & Dredging Manager I’m often asked the question “Do you still dredge the Clyde ?”.

Following the departure of the bucket dredger, grab dredger and hoppers in the early 1990’s with their familiar sights, sounds and year round presence, you could be mistaken for thinking that dredging is no longer carried out on the Clyde.

However, at the ports of Glasgow and Greenock routine Maintenance Dredging is still required to maintain depths in the Common Navigable Channels, Docks and Riverside Berths to allow for the safety of navigation for shipping using these facilities.

The dredging involves the removal and disposal of up to an annual average siltation total of approximately 278,000 m³ in situ (approximately 368,223 Tonnes).

The method of disposal for the dredged material is to sea at the existing licensed disposal site 1.6 nautical miles North of Cloch Point, or if a beneficial use for the material can be found, then to use in a construction project.

Areas to the East of Clydebank are subject to the majority of the siltation and as a result require more frequent dredging than areas to the West of Clydebank.

The River Channel from Clydebank to Greenock is largely self-scouring with isolated areas requiring periodic dredging as part of a longer term maintenance dredging programme.

The annual average of siltation is made up from approximately 75 % “silts” and 24 % “sands”, and results from natural erosion of the hinterland, which is carried into the common Navigable Channel, Docks and Riverside Berths by the River Clyde and its tributaries. Wave and tidal action puts materials into suspension and thereafter is accumulated in certain parts of the lower river.

Dredging works are carried out by Dredging Contractors to a programme determined by Clydeport. This programme takes account of current and future commercial needs and associated dredging requirements. Dredging is carried out by a combination of Trailer Suction Hopper Dredger, Cutter suction dredger, Grab Hopper Dredger and Back-hoe dredger as appropriate.

Clydeport currently use Westminster Dredging as their main dredging contractor.

Dredging is normally carried out in one annual maintenance campaign lasting approximately 4 weeks with the dredger operating on a 24/7 basis.

This years maintenance dredging campaign was carried out in April by the Trailer Suction Hopper Dredger (TSHD) ‘WD Medway II’

Areas included in this years maintenance campaign were King George V Dock, Rothesay Dock and Newshot Bend river channel.

During the dredging works frequent update surveys are required to direct the dredger, monitor progress and calculate volumes removed. Survey support is carried out by Clydeport’s own survey department using hired multibeam equipment mobilised onboard.

Growing environmental pressures on dredging require seeking alternatives to sea disposal for dredged material wherever possible.

The silts in the upper half of the river unfortunately have little or no beneficial uses, however the sandy materials in the lower half of the river do have potential for beneficial use.

Making beneficial use of dredged material is not something new on the Clyde. A topsoil project for Glasgow Garden Festival in 1988 produced 242,000 m³ of topsoil from dredged material between 1986 to 1992.

In 2006, 94,000 tonnes of suitable dredged material (sands) from the Bowling Bend river channel was used for part of the infilling of Yorkhill Basin as part of the Glasgow Harbour Project.
When is an Engineer not an Engineer? - when he (or she) is a diver

For me it all began at a distillery.

The outfall at Laphroaig, which should have been secured to the seabed, was snaking about on the surface, and a properly engineered solution was called for.

This was in 1985, in the early days of the Diving at Work Regulations, and, straight out of commercial diving training at Fort Bovisland, using SCUBA and rope signals, two Engineers and a diving veteran went to investigate the mysterious and unwelcome levitation.

The reason was simple, concrete anchor blocks with cast in steel bolts and keepers….. and brass nuts. In some cases only the brass nuts and concrete remained.

25 years of diving inspections later, for the most part on some of the murkiest, coldest and least enticing harbour bottoms, mobilising our diving inspection team has become a rather more organised and regulated business – minimum 4 man team; qualification, medical and first aid certificates; full face mask, hard wired communications and bale-out cylinder for both diver and stand-by; dive permits; risk assessments and method statements; equipment tests; shelves of records and certificates.

It seems a bit over the top when you write it all down, but these measures have surely helped us keep over a thousand dives free from incident, and stay on good terms with the Health and Safety Executive.

But not everything had changed over that same 25 years. When we arrived at Laphroaig Distillery and met the staff we were Chartered Engineers. Once they had seen us in diving suits, that was it. From that moment we were divers. And it has been like that with Clients ever since. No amount of board room meetings, heavyweight contract management, design triumphs, engineering-till-you-drop, over decades seem to matter. One dip in a dive suit and you are a diver thereafter.

Clydeport itself comprises of four port facilities, Glasgow, Greenock, Hunterston and Ardrossan and handles more than 16 million tonnes of cargo a year.

Diving Experiences

by John Porteous

When is an Engineer not an Engineer? - when he (or she) is a diver

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And the splendid irony of this peculiar and frustrating demotion is that many other employers (Harbour Boards, Councils and private businesses alike) seem to think that if they need a structural inspection underwater what they need is a diver – any diver. Just hire in a diving company and you’ll be fine!

We have spent most of our 25 years of diving operations trying to convince clients that if they want concrete poured or heavy weights lifted or holes drilled underwater a diving company is just the thing – five weeks training and anyone can do it; but if they want a structural inspection underwater what they need is a Chartered Engineer (typically ten years training and five years experience) who can also dive.

If you want your house surveyed do you employ a diver? Of course not, so why does reason take a holiday when it comes to underwater structures? In the 1990s we went to London to meet Railtrack’s chief Executive, who was about to allow his local office to appoint a team of working divers, with no Engineer in sight, to the structural inspection of the caissons and river bed supporting the Forth Rail Bridge. This iconic structure, we argued, required the highest level of professional inspection, and to impose no higher qualification on the inspector than underwater competence, and no structural qualification at all, was no less than an insult to a national monument – two national monuments really if you can apply the description to the mighty Institution of Civil Engineers.

So how did we arrive at this peculiar state of affairs, where otherwise responsible, well informed people cannot recognise the need for properly qualified professionals? I think it must have some connection to the unprotected status of the title Engineer and the confusion that surrounds the word for a large percentage of the public.

Ask the man in the street how a lawyer, an accountant or architect spends his or her day and, apart from the occasional jaundiced, cynical wise cracks you’ll get a consistent picture.

Engineers in the public mind are not so easily defined – when they are not fixing Hoovers, gas cookers or washing machines, they can be found under the bonnets of cars, greasing cables on lifts, or climbing telegraph poles. I have even seen a van proudly announcing its occupants as ‘Rubber Engineers’. What any of these occupations have in common with what we think of as Engineers can be safely defined as NOT A LOT.

So what makes a diving Engineer a better inspector than other divers?

When inspecting a structure underwater, an Engineer takes a knowledge and experience of structural form, distribution of loadings, the consequences of redundancy, the properties of a diverse range of materials, and the effects of various agencies of degradation. The Engineer goes way beyond merely reporting what is visible and can, for example, decide that a structure that looks as though it is about to collapse is in fact, quite serviceable. Conversely it may be established that a structure that appears adequate might be on the point of failure.

And, of course, the Engineer’s report is covered by the full protection of Professional Indemnity insurance.

But Engineers can go a lot further, into areas that might even lead the casual observer to assume a degree of derangement.

I’m talking knicker elastic, strimmer wire, hairy concrete and other materials not commonly associated with sober Engineering design and construction.

Knicker elastic (bought in bulk from bemused milliners) has been found to have excellent damping properties on a plumb bob underwater, when deployed in the correct arrangement and strength (I sense a technical paper in the making)

Strimmer wire is neutrally buoyant, and when tensioned underwater between fixed points has no vertical sag due to gravity.

I remember well a diving operation, setting out caisson gate rails to an accuracy of ±1mm with a taut strimmer wire line and a bespoke measuring tool. Watching the line and waiting for the vibrations caused by my approach to damp down. Instead of decreasing they increased, the line dancing around by 50 to 100mm in a random pattern. Muttering impatiently, and following the line along its length, I found a tightrope-walking lobster, clearly enjoying his new game. Further along, another two were engaged in the same nonsense. Throughout the job, we had to clear the line of capering crustaceans at the start of each dive to get on with the job unmolested.

Hairy concrete is a solution that has evolved for pouring underwater concrete on a slope (at slipways or haunching for example). Concrete designed for underwater use, and containing a waterproofing additive, cannot be vibrated and must be self-compacting and self-leveling. With careful addition of polypropylene fibres, at the right time and in the right dose, the same material can be persuaded to hold a slope.

The fibres at the surface often work loose at one end after the concrete has set, leaving the finish best described as hirsute.

So welcome to the world of the diving Engineer, where roles are confused and nothing is quite what it seems.

Most of our time is spent on murky harbour beds, struggling to see further than a foot.

But, on occasions when the water is gin-clear, the sunlight shafts down, illuminating profuse and colourful marine life, the dry suit is not leaking yet, and you can see the structure you are there to inspect from end to end……it’s usually the day you forget the camera.

I’m off to price a job for another distillery – some habits die hard.
It is a pleasure to be asked to contribute to for your newsletter.

I have lived in Scotland since 1995 when I came to study Naval Architecture, at the tender age of 57. You may wonder why I have an interest in aircraft; that goes back to my father who worked as an airframe inspector with Blackburn Aircraft at their factory in East Yorkshire, during the second world war.

In 1996, during the University vacation, I gained some work with Fergusons Shipbuilders, Port Glasgow. I had previously served an apprenticeship as a ship draughtsman at Richard Dunston Ltd (Thorne and Hessle) Yorkshire, in the Design Dept. along with, I’m pleased to say, some good Scottish designers.

To return to my subject “Seaplanes”, that is standard airplanes with floats added. I would describe them as nippy and versatile; they certainly did not have the comfort and style of the early flying boats. Rather, Scotland had experience of many Sunderlands and many American flying boats, and apart from “The Galley” in them, they were built for war more than comfort.

In the early days, in the 1930’s, Greenock had a Flying Boat Pier, from where people could fly direct to the new Municipal Sea Plane Dock in Belfast, near the present Belfast City airport.

The fear of war brought more seaplanes activity the Clyde. The Aircraft, Marine Experimental Establishment (AMEE) was at Felixstowe, Suffolk, but because the base was in range of German enemy aircraft, it was decided to move AMEE to Rhu Hangers, near Helensburgh on the Clyde. Interestingly the prototype Catalinas PBY later utilised by Coastal Command, was shipped up to Rhu for assessment. Unfortunately on its first flight this prototype aircraft crashed and sunk off Dumbarton.

On a more successful note, Blackburn Aircraft also established a factory at Dumbarton which not only produced 240 Sunderland Flying Boats but many other notable aircraft including Swordfish, Botha and a number of experimental planes. Floats were fitted and tested to the Blackburn Roc, without much success. Not all Blackburn designed and built aircraft were great, but one that was, was the Buccaneer, but that was another era. Later the Blackburn Factory went on to build pre-fabs and boats, boat-trailers etc, and recently the factory was dismantled to make way for a new housing estate.

One notable thing for me is that on the board of directors of this factory was one of the Denny brothers, not surprising, I bet they owned the land on which the place was built, and certainly they were building aircraft themselves even in the First World War. Before we leave Dumbarton we can mention that the Spitfire was here for a time having floats attached and tested by the local AMEE. This again was not deemed to be good enough for general use, but the Seafire was developed from the Spitfire as I’m sure most of you will know. A Heinkel floatplane that had been ‘stolen’ from the Germans was also tested locally and even used by the RAF with our markings on it. Shame!

A point in passing, how many were aware that a Dornier floatplane, again an enemy plane was parked in Scottish Aviations maintenance sheds at Greenock, and during the blitz was never damaged, however two brand new Catalinas were destroyed.

Well how do we get from all this to The Flying Boat Project, and what is the FBP?

Short Brothers at Rochester Kent designed at the same time as the Sunderland, the Empire Class C and the Empire Class G (Class meant names beginning with C or G) i.e. Caledonia, Clyde, Cameronian and the Gees! Golden Hind, Golden Horn etc. The C class of flying boats were S23 and the G S26. Golden Hind was taken from BOAC and used by the RAF, and was maintained at Greenock during the war, before BOAC had a chance to use it in the mail and passenger role for which it was designed. Because of this, we at Greenock have established the Flying Boat Project and plan to build a full scale model of the Caledonia. It will be made primarily from wood but will have metal cladding. It could turn out to be perhaps the largest “flat pack” model kit ever made. Watch this space!! Size S23 114ft wingspan, S26 134ft wingspan.

And while we are recreating the past, the future of the seaplanes in Scotland has been given a boost by Loch Lomond Seaplanes, flying between Glasgow and Loch Lomond, giving breathtaking views to those lucky enough to fly with them.
In August 2005 the company opened a small Engineering office in Glasgow with capacity for 30 people. The primary reason for opening the office was to support Wood Group Engineering (NS) existing contracts and the ever increasing needs of their customers in a buoyant global market. It was also felt at that time that a Glasgow Office may offer an opportunity to attract both experienced people working in the Oil and Gas sector and new people into the business.

Initially a small pilot scheme was introduced with several key individuals being transferred from Aberdeen to Glasgow to set up the base organisation. Two contacts requested support from the Glasgow Office, Sigma 3 and Gas Plant Systems. Within the first three months it was apparent that in order to meet the demands of WGE (NS) existing customers and grow the business a larger office would be required moving forward.

2006
At the start of 2006 the core team of 30 people moved into its second office in the City. Thomson Pavilion had a capacity for approx 200 people. As the oil price increased and the demand by our Clients intensified additional work was released to Glasgow from Aberdeen. The organisation grew from 30 to 160 people over the year. In addition to Sigma 3 and Gas Plant Systems, Talisman, TOTAL and bp transferred engineering scopes of work from Aberdeen to Glasgow. Typically the type of work was offshore modifications and Capex projects.

During the year Middle East, Europe, North Africa (MEENA) set up a partnership with JBEC in Moscow. The Moscow management team requested assistance from Glasgow and a business relationship emerged from that request. During the year Glasgow carried out 4 Conceptual/Front End Engineering Designs for TNK-bp in Moscow. Later in the year a similar arrangement with MEENA in Algeria was realised.

By mid year there was a recognition that the Glasgow Office was in a position to attract experienced and new resources into the business and therefore a decision was taken to move to a new custom built office which could accommodate 350+ people. In December 06 the office relocated to its third office in the City, at the Nova Park site.

2007
With the move to Nova Park the resource and business plan was to increase capacity from 150 to upwards of 350 people whilst at the same time delivering on existing business and attracting new business.

- New work was realised through one of our major Clients. A major FEED for bp Aurora was awarded along with two major contracts for Algeria
- Towards the end of the year the office was requested by Production and Facilities in Trinidad to support their operation.

The year ended by meeting all commercial and business targets with an organisational structure of 320 people supporting WGE (NS) and MEENA.

2008
The commercial business targets for 2008 have been set at 15% greater than 2007 both in sales and resources.

The Glasgow office has seen a step change in 2008 on how it interfaces with the main contracts in Aberdeen and supports Production and Facilities overseas. The changes have come about through Glasgow’s ability to demonstrate to customers that it has the resource capability to deliver results.

The types of changes are as follows:
- Full asset support of North Sea clients from the Glasgow Office
- Major Capex Project issued to Glasgow from both North Sea and overseas customers.
- TOTAL awarded 2 major projects to Glasgow
- Glasgow office now supports the Business Development Group in attracting new business.
- Glasgow Office now supporting WG on a Global scale

Today Glasgow forms an Integral part of the company’s future long term business plans.

Scotland’s Museum of Industrial Life

Summerlee, Scotland’s Museum of Industrial Life, in Coatbridge, Lanarkshire, is a VisitScotland ‘4 Star’ visitor attraction and ‘Best Working Attraction’ award-winner.

Summerlee, Scotland’s Museum of Industrial Life, in Coatbridge, Lanarkshire, is a VisitScotland ‘4 Star’ visitor attraction and ‘Best Working Attraction’ award-winner.

The museum closed in 2006 for a two-year £10m redevelopment to its main exhibition hall, a project supported by £4.8 million from the Heritage Lottery Fund. Carillion plc were the main contractors for the redevelopment of the exhibition hall and Beck Interiors for the fit-out of the displays.
The site is expected to re-open in the autumn of 2008.

Summerlee's 22 acres are based around the site of the 19th Century Summerlee Ironworks, a fore-runner in the use of the innovative hot-blast iron smelting process that led Coatbridge to fame and fortune as Scotland’s ‘Iron Burgh’.

The works closed in the 1930s and the buildings were demolished. The site was then used for light industry until the early 1980s. Prior to the opening of the park in 1987, the site of the original ironworks was excavated and it can now be viewed from a special walkway.

Other main features of Summerlee are:

- An electric tramway, offering rides on modern and Edwardian open-topped trams. A modest ticket price gives all-day rides.

- A huge under-cover exhibition hall, the subject of the recent Heritage Lottery Fund award. The new hall will have stunning interactive exhibits, ‘hands on’ science experiments for children and working machinery to view, including the huge winding engine from the nearby Cardowan Colliery.

- Re-created addit mine and miners cottages. Guides take small groups down the mine, entered by a sloping track rather than a shaft. The mine shows miners’ cramped underground working conditions and the cottages show the domestic side of their families lives from the 1850s to the 1960s.

- Playpark for tots to teens. Segregated play areas allow fun for all ages on slides, swings, scramble nets and a rope slide.

There is a seasonal programme of special events. For further information call Duncan Cameron on 0141 304 1831 camerond@northlan.gov.uk

Summerlee is open seven days a week (closed 25 & 26 Dec and 1 & 2 Jan). Opening hours: 10am to 5pm. Close at 4pm Nov to March.

A note on the history of the site.

Why is Coatbridge so important in the development of Scotland’s industrial heritage? And why is the site of the former Summerlee Ironworks, around which the current museum is based, a scheduled ancient monument?

Towards the end of the 1820s a revolution in iron-smelting began when James Beaumont Neilson developed his ‘hot blast’ process. This cut the cost of making iron, and made more and better iron in a given time. The raw materials available in the Coatbridge area - splint coal and blackband ironstone - were ideal for the new process. This gave a competitive advantage over other iron-producing areas. Taking advantage of these natural resources, Summerlee was set up in 1835 as a partnership between James Neilson’s elder brother John, his son Walter, and three cousins.

The works were the focal point, into which came coal, limestone and ironstone in vast quantities, producing some 145,000 tonnes of iron per annum at its peak. Some was exported for working up into iron products abroad. However, most was used in the west of Scotland to produce such things as ships, locomotives, architectural ironwork, prefabricated iron buildings, and machinery of all kinds. Because scrap iron is constantly being recycled, iron made at Summerlee will certainly still be in the world’s stock of iron and steel, and still being used for new products.

The works closed down in 1926, during the miners’ and general strikes of that year. They did not re-open, and were demolished in the late 1930s. After the war, the site was re-developed as a crane factory for Hydrocon Ltd. When that concern abandoned the buildings in the early 1980s, the Scottish Development Agency and Monklands District Council decided to develop Summerlee as an industrial heritage museum.
The McLean Museum and Art Gallery is one of the best municipal museums in Scotland. The Museum has served as the main museum in the Inverclyde area since it opened in 1876 and has many wonderful collections for the visitor to discover and explore. These include the James Watt Collection, the Ship and Engineering Models Collection and the Inverclyde Shipbuilding and Ship Repair Collection. The museum also has displays on local history, natural history and an excellent fine art collection. There are regularly changing temporary exhibitions and an attractive shop.

**The James Watt Collection**

James Watt is the most famous person to have been born in the Inverclyde area. His discoveries and inventions helped to make Britain the world’s first industrial power. This collection contains items that are personally linked with him.

It includes plans and letters written by James Watt, tools and items used by him and images of him in the form of paintings, sculpture, prints and books.

**Ship and Engineering Models Collection**

The Ship and Engineering Models collection contains models from the early nineteenth century onwards. They are predominantly builder’s models of vessels built by local shipyards with engine models made by local marine engineering companies. There are also engineering models relating to the sugar processing industry and other businesses.

It includes models of Comet, the first commercial steamship in Europe, models of important vessels built by Caird & Co. such as the Windsor Castle (the first steel ship to sail to India) and the Mona’s Isle and vessels built by Scott’s, Lithgow’s and other Inverclyde yards. The collection also includes Napoleonic Prisoner of War models in bone and a variety of ship models from non European cultures.

The engineering models are also of significance and include a trunk engine made by Caird & Co. around 1860 in addition to a working model of a compound surface condensing steam engine made by John Gray, an apprentice of John Napier in 1838.

**Inverclyde Shipbuilding and Ship Repair Collection**

The Inverclyde Shipbuilding and Ship Repair collection is of enormous significance for the Inverclyde area, for these industries were not only of local importance, they had at various times, national and international significance. In many ways these industries were the forces that defined the Inverclyde area in the later nineteenth and early twentieth centuries, creating much of what is now perceived as local tradition and heritage.

As the predominant employer in the area for a century and a half these industries influenced several generations of local people in wide variety of fields beyond employment such as politics, education and social development. The story of the rise and fall of these industries is at the core of local history.

The collection contains material relating to the shipbuilding and ship repair industries in Inverclyde. It contains tools and equipment specific these industries along with items such as plans, blueprints, promotional material, manuals, photographs of ship construction and launches and books relating to the subject.

The Greenock Art Club annual exhibition will be running from 22 September to 4 October.

See website for further events - www.inverclyde.gov.uk, under ‘tourism and visitor attractions’

McLean Museum, 15 Kelly Street, Greenock, PA16 8JX
Elmbank Crescent

As part of Glasgow’s ‘Doors Open Day’ Scottish Opera will be opening their premises in Elmbank Crescent on Sat 20th September. (See local press for opening times). If you feel like reminiscing or if you have never visited the premises built by The Institution of Engineers and Shipbuilders – why not go along on the 20th?

Following the success of last year’s Doors Open Day, Scottish Opera will be opening their premises in Elmbank Crescent on Sat 20th September. (See local press for opening times)

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The foundation or memorial stone was laid by His Grace the Duke of Argyll on Friday the third of May in 1907. An extract from publication at the time reported “the building will be a fine example of English renaissance and the construction generally will be of a fire-proof character. The cost of the buildings with site, etc., will be between £25,000 and £30,000. Apart from the funds otherwise available, a number of members – partners in well-known engineering and ship-building establishments on the Clyde – at an early stage signified their willingness to contribute substantial sums to the fund for defraying the cost of and thoroughly setting in order the Institution’s handsome premises. Internally these will be arranged on three floors and basement, with lecture halls, ante-rooms, council and committee rooms, library, reading and secretarial rooms, on a scale adequate to demands, and worthy of the institution. The accommodation will partake somewhat of the character of a club where members may meet and confer in a social as well as a business and professional way.”

Radium

by Harry Osborn

The paper presented to the institution in January 1904, by Dr John Macintyre FRSE on “Radium and its Properties” marked the intense period of research that was made in the last decade of the 19th century into atomic theory.

The Curies’ discovery of Radium was one of many in that period. Clerk-Maxwell’s electrical research, Rutherford splitting the atom, Roentgen’s discovery of X-rays, were all to bring many benefits to our society today.

The separation of substances from pitch blend by the Curies produced the material that was radio active and giving off radiation. Other substances were discovered such as uranium and others. Among them was polonium, the radio active material that in recent years killed Litvinenko. In that period other rays were established. Alpha, beta and gamma. The last we use today to x-ray welds in steelwork.

Radiation is a subject that unfortunately the general public does not properly understand. Atomic bombs are immediately quoted. There is a dismal lack of education in the field of radioactive materials. Sieverts, the measurement of radioactivity, are rarely mentioned, usually quoted in milli sieverts (mSv). In 1941 the safe limit for humans was set at 70 mSv, but this was reduced in 1990 to 20mSv for those occupationally exposed and 1mSv for the general population.

It is interesting to note that the abandoned town of Pripyat near Chernobyl recordings of radioactivity in 2001 were 0.9 mSv.

Dr Macintyre in his reply to the vote of thanks predicted that 14 pounds of radium would power a 50,000 horse power engine working for one year. The modern nuclear power station was envisaged. At this time he said he thought it would be rather dangerous to have it in a ship, and advised engineers to concentrate on the economies of coal.

The Prime Minister, over 100 years later, somewhat in desperation, says we must build more nuclear power stations.
by Harry Osborn

In Shore Street in Gourock there is a public house called the Victoria, known locally as The Vic. It was noted for having no optics on the gantry, spirit measures were poured out directly from the bottle, like the saloons in the American Wild West.

The local laird Sir Houston Shaw Stewart of Ardgowan was a regular customer, and as will happen he was caught over the limit and duly lost his driving license for a period. This did not prevent his regular visits to the Vic, as he turned up in a pony and trap, until he got his license back he was a familiar sight in the trap trotting through Kempock Street in Gourock.

The horse has been described in the words of the song “that four legged friend, that faithful four legged friend, who will never let you down”. I recall in my childhood in Old Kilpatrick the horses that served the village. Sandy Bell with his horse drawn milk cart, the lad from Erskine with the ‘soor milk cart’ with its enormous barrel. The carter family, the Logans, Willie and his mate delivered coal from the coal cart, brother Duncan with his beautiful Clydesdales hauling the barges on the Forth and Clyde canal. Mr Wilkinson the local blacksmith, I don’t think he ever made swords, shoed the horses, and fitted new iron tyres to the cart wheels.

It was an unwritten rule that the manure left outside your house was left to the householder. This was collected with a bucket and shovel and used as fertiliser on the back garden to grow the finest leeks and potatoes etc.

At this point I must declare a particular interest in horses, as my family are the owners of four horses. My granddaughter is also taking equine studies at Glasgow University. As acquaintances remark “that’s new a degree in horse dealing” yet it is interesting to note that business in horses in Scotland provides £800 million per annum to the Scottish economy.

Just imagine the paradise to come. Horses could be the answer, to provide a cleaner, greener world with lots of organic leeks and potatoes.

A recent newspaper article compared the costs of running a car for a year against those of keeping a horse:

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With oil at $130 dollars a barrel and fuel prices going up, the day may come sooner than we think when “Old Faithful” will return!!

The 100th James Watt Dinner – 2009

Following on from the successful 150th Anniversary of the Institution we look forward to another memorable occasion, that being the 100th James Watt Dinner which will be celebrated in October 2009.

Our earliest record of the James Watt Dinner can be found in our Transactions Volume 35 (1891-1892):-
A campaign to establish a Scottish Museum of Industry, Science and Technology

The Clyde Heritage Trust has a twofold project: setting up a museum, and saving a listed building of significant industrial heritage importance, which is at immediate risk of demolition for a hotel. Although Glasgow was once the Second City of Empire, and owes its growth and importance to its one time world leading industries, these have largely been forgotten in the post industrial rush to modernise Glasgow and focus on the culture of the fine arts. Much of our proud heritage has already been lost, and the lack of an appropriate museum means that even today what remains of this heritage continues to be lost as commercial and housing developments sweep away the docks, quays and industrial structures along the riverside.

The Museum

We propose a museum to complement existing museums in the Glasgow area, concentrating on Scotland’s rich heritage of industry, engineering and technology, which is currently poorly represented. Museum attendance figures nationally have risen by 37% in the last year, and we believe that such a museum would be very popular. The museum would not be limited to representing Glasgow or Scotland. Summerlee Heritage Park and other organisations have offered exhibits. Our aim would be to restore all exhibits to working condition. We intend to have trained engineers and to operate an apprentice scheme, plus a research and study library.

The Building

The ideal site for the museum is the former Howden’s Engineering Works in Scotland Street, next to the Museum of Education. It is a B-listed building which has lain empty for 17 years, and is the last intact Victorian heavy engineering works in Glasgow if not Scotland. It built engines for many of the great ships of the world, nuclear power station equipment and the drilling machines for the Channel Tunnel. It could be directly linked to the nearby railway, making it possible for steam trains to come directly to the museum, which would be a major tourist attraction.

The Collection

This proposal is the result of rescuing various large unique industrial heritage items, and failing to find a museum in the UK with the space to take them. The Scottish Railway Preservation Society at Bo’ness are keen to have premises in Glasgow, and would bring 5 steam locomotives, with carriages and trucks. Steam power in all forms would be a particular feature of the museum, as would Scottish inventions. The Trust is currently struggling to find storage to preserve items such as one of the earliest electrically driven dockside cranes in the world, together with its electric power supply equipment from Windmillcroft Quay in Glasgow. Other items urgently in need of dry storage include wooden casting patterns from locomotive works, original electrical and lighting equipment from the Plaza Ballroom and other interesting items.

This is Scotland’s first and last chance to conserve and celebrate its’ industrial heritage on the scale it deserves. Let’s not miss it. The Trust is seeking new directors and support to save Howdens.

Contact: Steven Raeside 124 Shawmoss Road Pollokshields Glasgow G41 4AJ
Or Dr Nina Baker nina.baker@strath.ac.uk or Colin Findlay cfindlay@worldonline.co.uk
19th April 1934 – 24 August 2007

Jim Gibb died suddenly last summer, aged 73.

Jim was an actuary and stockbroker who became intimately involved in the running of several major Scottish organisations including The Institution of Engineers and Shipbuilders in Scotland as well as Glasgow University and the Royal Scottish National Orchestra. Jim was a keen sailor and curler. Born in Paisley, he was educated at Paisley Grammar School but suffered severe ill health. This meant that he was often absent. Despite this, he was constantly top of the class and eventually became school dux in 1952. He attended Glasgow University, where he gained an MA in mathematics. He then became a member, and subsequently a fellow, of the Faculty of Actuaries while working at the Scottish Amicable Life Assurance Company in London and Glasgow.

His final move in 1967 was to join Speirs & Jeffrey, the Glasgow stockbrokers, where he became a much-respected partner in 1970 until he retired in 2001.

Jim also found time to use his financial acumen widely, serving for many years on the Glasgow University Finance Committee, the University Business Committee and subsequently on the Court of the University of Glasgow. He was also a board member of the Royal Scottish National Orchestra, a trustee of the Scottish Musician’s Benevolent Fund. He became treasurer of the Institution of Engineers and Shipbuilders in Scotland in 2003.

With his previous health record, Jim was not accepted for national service but was an enthusiastic member of the Royal Naval Reserve. He achieved the rank of lieutenant commander and was subsequently awarded the Reserve Decoration for his dedicated service. He was also an enthusiastic member of the RNVR Club (Scotland) based on the SV Carrick, and was instrumental in setting up that club’s war memorial fund to Scottish officers of the RNVR.

As a trustee, Jim arranged to fund young people on sail training cruises with the Sail Training Association, latterly the Tall Ships Youth Trust. One of his last jobs was to wind up that Trust and to transfer the assets to the care of the Merchants House of Glasgow on the basis that they would continue with the objects of the Trust.

In his twenties, Jim was a skilled hockey player and subsequently a very able curler, winning the Partick Bell trophy twice and the Copeland Cup twice. He was league winner seven times from 1992 to 2004. Also a keen skier, his favourite resort was St Anton, where he was very pleased to be awarded a special gold medal on his 60th birthday, engraved “Herr Jim Gibb, a piste veteran”.

Jim began sailing in the late 1950s and, when in London, crewed regularly at Cowes. When he returned to the Clyde, his early days of racing were spent on the top yachts of the time. Many of the events were long distance and his expert skill in navigation was in great demand. Gibb always had style and, more often than not, he navigated the whole race without ever changing out of his thick pyjamas. He entranced his shipmates with a complicated sleight of hand navigating technique of juggling the accurate taking of a navigation sight with one hand and with his ever-present cheroot in the other.

He became a national judge a number of years ago and, in 2002, an international judge. In his characteristic cheeky manner, he enjoyed telling the story of disqualifying King Juan Carlos of Spain who, he said, “took it rather well”. He had been expecting to fly to Poland to fulfil yet another international jury commitment on the day following his death.

Jim had been a committed member of IESIS and had attended an Executive Committee meeting on the evening before his death. He is fondly remembered within IESIS for his astute handling of the Institution’s finances which had helped to ensure that the Institution established its current sound financial base. His financial acumen, care to detail, warmth and humour have been very greatly missed. The Institution was very fortunate to have benefited from his outstanding talents and qualities.