

JAMES WATT AND THE STEAM ENGINE



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The Aurora Lamp
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James Watt Dinner 2013



The James Watt Dinner was celebrated on Friday 4th October in the Radisson Blu Hotel, Glasgow. Guests enjoyed a superb meal, entertainment provided by singers Christopher Nairn and Alistair Digges and the announcement of this year's inductees into the Hall of Fame.



Tapestry of Scotland (Cover Photo. © Photo courtesy of Alex Hewitt)

The great tapestry of Scotland is a piece of handcrafted work comprising of 159 panels. Each panel has been made in a different area of Scotland and the work depicts Scotland's history both at home and abroad. There are plans for the tapestry to tour around the country, details can be found at www.scotlandstapestry.com. Of particular interest to our members will be the panel depicting James Watt, see front page. This has been produced by the Strathendrick Stitchers group.

Seasons greetings!



Message from the President

I wish you all very best wishes for the festive season and the coming year.

I am delighted about the success of various initiatives and the ongoing positive progress of our many activities that are reported in this Newsletter. Many of our members are now helping us to further our objectives and we are most grateful for their support. If you would like to contribute we would very much like to hear from you.

REPORT BY THE PRESIDENT

Collaboration with other organisations

We have formed closer links with other organisations through collaborative events. This has resulted in joint lectures with WES, IMechE, IChemE, RSE, RGPS as well as holding our established joint lectures with RINA and IMarEST

Vice-President Elect

Council are very pleased to announce that it has been agreed that Karen Dinardo will be expected to succeed Phil Preston as President in 2016.

The 2013 James Smart lecture

On Thursday November 14, I attended a Scottish Policing Conference in Edinburgh. I was there to hear the James Smart Memorial Lecture. James Smart was a nineteenth century Glasgow police chief who had a vision to promote the use of technology in the police service. IESIS is a trustee for the fund that finances the lecture.

The conference was organised by the Scottish Institute for Poling Research (SIPR), a collaborative body supported by all Scottish Universities.

The Scottish Police Force has recently been reorganised as a single authority under the command of a single Chief Constable - Sir Stephen House. He is seeking to not only reorganise the structure to make cost savings but is also seeking to improve the ethos of the service. One direction that is being taken is to improve their use of technology. For example they have a great deal of data but feel that they are not able to use it to use it adequately decisions making. One of the topics at the conference was 'predictive modelling'.

Four IESIS fellows have recently joined council:



Mr Ian Barton

Ian Barton is a director of Barton McHard Ltd, a specialist Civil and Structural Engineering consultancy based in Glasgow Scotland. Ian is a Chartered engineer and graduate of The University of Strathclyde. He started his Structural Engineering career with Sir Robert McAlpine and held a number of posts with structural engineering consultants before establishing Barton McHard in 2005. He is a Certifier of Design under the SER scheme in Scotland, with fund raising, expert appraisal work in Rail infrastructure and is currently part of the Arup infrastructure team in Scotland. Ian has a keen interest in new media projects for local businesses.

Ian is immediate past Chairman of the Institution of Structural Engineers – Scottish Regional Group and President of Southside Speakers in Glasgow.



Ms Karen Dinardo

Karen graduated with BEng Civil Engineering, Glasgow University, in 1987 and commenced her career with Sir Murdoch MacDonald & Partners, Cambridge. She then joined her father to work at Dinardo Partnership in 1988. Projects have included a variety of civil/structural designs including, from 1993 working in Aberdeen, Highlands and Islands, and Moray in the North. Karen achieved Chartered Engineer status in 1992 and 1999 with IStructE and ICE respectively, and CIHT in 1993. She joined IESIS in 2000, and became a Fellow in 2009.

Her current role is as Director of Dinardo Partnership, Consulting Engineers, based in Paisley.

Input with IESIS colleagues is both very interesting and horizon-broadening, in her view. Visiting schools / universities and informing young people on the engineering profession is a keen interest.



Mr George Taylor

George spent 18 years in the Merchant Navy, from Cadet to Chief Engineer. He then worked with Denholm Ship management and Stirling Shipping. He has sailed in most types of vessel from Offshore Supply to Ultra Large Crude Carriers.

He as an Engineering Surveyor with National Vulcan, and went on to work for 14 years in Ship Management with 5 years as Group Technical Director of the David MacBrayne Group.

He is currently Director & Owner of GAT Marine Ltd: Marine Engineering Services and is also Operations Director of the paddle ship. PS Waverley

He has a First Class, Chief Engineer's Certificate of Competency: Steam & Motor and a BSc (Open University).



Mr David Westmore

David Westmore graduated from Newcastle University with an honours degree in Naval Architecture and Shipbuilding. He began his career as a naval architect in London with the marine consultancy Sir J.H. Biles & Co. Ltd, this also included a period of secondment to Seadrec Ltd in Paisley. Seadrec specialise in the design of dredge and associated ship construction.

In 1983 he moved to London to take up a directorship with Clark & Standfield, a marine consultancy, before moving back to Seadrec in 1989 as Managing Director; a position he continues to hold. He is also a Director of Seadrec Ltd and Alluvial Dredges Ltd utilising his experience of dredgers. He is a Chartered Engineer and Member of the RINA.

IESIS has greatly increased its use of digital media to communicate with members and the wider public via two main streams, social media and the web.

Social Media

IESIS uses both Facebook and Twitter, These are two-way media, allowing members to interact with their Institution and enabling IESIS to track various sources of useful news and information on a regular basis. In turn, any information of use or interest to members can be quickly redistributed. The administration of these media is by volunteers and additional support from members on this or identifying useful information is always welcome.

Current Projects and Proposed Developments

Some members have suggested another popular application, LinkedIn, as a place where IESIS should have an online presence. LinkedIn is used by professionals to post their profiles and to exchange information as individuals or within specific interest groups. LinkedIn could provide a useful way for members scattered over a wide geographical area to share views and contribute to the development of the Institution. A trial account will be set up towards the end of the year with a small group of members and volunteers are welcome.

Other applications being reviewed are Flickr and Picasa, which are online photo archives, where we could store pictures of IESIS events and other images of interest to members and those who want to know more about what we do. Over time, open video archives like YouTube and Vimeo could be used to host recordings of our lectures and similar events and make these available for members unable to attend events. IESIS has started recording some of its events and links to the recordings will be made available. Recordings may also provide valuable Continuing Professional Development opportunities for early- and mid-career engineers and help IESIS in its efforts to grow its membership.

The Web

IESIS Websites

An important move to a common ‘look and feel’ across the IESIS websites was completed this year. This started last year with a refreshed appearance for the IESIS and Scottish Engineering Hall of Fame websites. This has been extended to the Institution’s Energy and Professional Engineering websites and the newly-launched ‘Centre for Professional Engineering Competence’ website. Visitors to the IESIS web pages, whether first-time or regular users, can now see direct links to the four sub-sites on the homepage. This integration of all of our websites will make it easier for members and the wider public to have easy access to all of the important information about IESIS.

Members may already be aware of the project to digitise all of the IESIS transactions and make these available to members. A prototype website for this information is being assessed at the moment and it is intended to make this available in 2014.

Wikipedia

Finally, there is the external page about IESIS on the web-based encyclopaedia, Wikipedia. This can be edited freely and as IESIS develops its activities, the information in the Wiki page can be updated regularly. This makes it a valuable resource for members and the public.

Interact with IESIS

The various ways in which you can learn about and interact with the Institution are listed below and members and friends of IESIS are encouraged to try them:

Twitter - @iesis1857

Facebook - HYPERLINK “<http://www.facebook.com/IESIS1857>” www.facebook.com/IESIS1857

Institution Website - <http://www.iesis.org/>

Scottish Engineering Hall of Fame: <http://www.engineeringhalloffame.org/>

The Professional Engineer - <http://www.profeng.org/>

IESIS Energy - <http://www.iesisenergy.org/>

Centre for Professional Engineering Competence - <http://www.profeng.org/cpec/>

Wikipedia - http://en.wikipedia.org/wiki/Institution_of_Engineers_and_Shipbuilders_in_Scotland

The Energy Strategy Group continues to promote the principle that planning for energy in general, and for the Electricity System in particular, should be based on sound engineering principles. The need for this is becoming increasingly evident from the degree to which Government interventions are affecting the electricity market. Renewables are subsidised via Renewable Obligation Certificates. The recent deal to provide a new nuclear power station in England guarantees prices to the developer. As the proportion of intermittent renewables in the Electricity System increases energy companies are going to find that the cost to them of supplying energy from coal and gas will rise because they will be used for backup and balancing. They will also need to be given price guarantees or subsidy. The market for electricity generation will then not exist and all responsibility for setting the price of electricity will rest with the Government.

People tend to have misgivings about a government body having the responsibility for planning the Electricity System. Fortunately such reservations are largely misplaced. Many public bodies, especially in the area of infrastructure provision, perform well, sometimes very well. Scottish Water, for example, is a fully accountable public body that functions well in comparison with similar but private bodies in England and Wales. The 1926 UK Electricity Act created a government body that very successfully created the National Grid and planned the provision of generation plant. The strategy for success is to appoint competent staff and give them a brief that allows them to get on with the job of planning a system that will be fit for purpose. Such a body needs to be multidisciplinary but needs engineers at its core. Our website (www.iesisenergy.org) explains the engineering principles that should be used. These are also discussed on our CPEC website (www.profeng.org/cpec/features).

Profeng

The Prof Eng Group has had a successful year, holding two excellent lectures for young people: Frazer Mackay in Edinburgh in September and Ed McCann in Glasgow in November. Together these two lectures attracted around 280 young people from schools across Scotland. The group has also become more involved with Primary Engineer and is looking at ways to support Primary Engineer's activities in schools. The Profeng group would be delighted to hear from any member who is, or is thinking about becoming, a STEM Ambassador (www.stemscotland.com). Improvements are being made to the website (www.profeng.org) and the group would be grateful for any contributions of images or information for it. The next major initiative for the group is to establish a programme for engineers to gain cpd recognition through Public Engagement.

Dick Philbrick

We are very pleased that Dick Philbrick Managing Director of Clansman Dynamics has become of Fellow of IESIS. Clansman make special equipment for foundries - such as robot lifting equipment, manipulators, grinders, etc. Dick was a co-founder of the firm in 1994. In 2009 he passed ownership of Clansman to the employees. This made a marked difference to productivity and has helped them to better achieve their fundamental objective - to produce robust and reliable equipment.

Clansman export 95% of their products and have won several awards for outstanding achievements in engineering.



Membership Drive

Jim McCafferty has recently taken over the membership committee following the sad loss of Alex Tait. Jim and the committee are reviewing the membership numbers and profile. An early action from the committee is to ask existing members to invite someone they know to join the institution. Please consider asking work colleagues, friends and family, as appropriate.

Centre for Professional Engineering Competence

We launched a webpage for this on our profeng.org website in September -see: www.profeng.org/cpec/

This now has three sections:

Courses

This links to information about a set of workshops that we have organised on Engineering Forms of Contract. See under News in this document

IESIS Model of Professional Engineering Competence

This represents work in progress to seek to define the essence of engineering competence. The potential uses of such a statement include:

- To help to explain to non-engineers how it is that engineers achieve successful outcomes in their work.
- To provide information to help engineers who seek to improve their own competence and the competence of those whose work they direct.
- To provide information to teachers of engineering who seek to lay a foundation for engineering competence in their students.

It is proposed to link this page to further information about competence and how to develop it.

Primary Engineer

This links to information for members about support for Primary Engineer. Our relationship with Primary Engineer is developing well.

IESIS Digital Library

Work on this is now moving on faster. We have adopted Omeka which is a free, open source content management system for online digital collections that is well suited to our needs. The plan is to have 3 'collections':

- IESIS Transactions (Papers) This will make available individual papers from the Transactions dating back to 1857. There is quite a bit of work to be done to assemble the metadata (i.e. information about the papers such as the title, author name and an abstract.) We would be very pleased to receive offers of support for this work. We would give people the files of papers for a few volumes so that they can produce the metadata. Such purposeful delving into our historical past could be an interesting activity.
- IESIS Transactions (Volumes) The Volumes contain information that will not be in the papers - such as: lists of members, names of members of council and officers, notification of medal winners, statements of accounts, etc. Such information may be used for historical and genealogical research.
- IESIS Documents This will link to papers that will not be (or have not yet been) published in the Transactions. videos of lectures etc.

Please contact Laura (tel 0141 248 3721, secretary@iesis.org) if you would like to help with this project.

We expect the complete Transactions Volumes collection to be available early in the New Year. The other two volumes will be populated as the work on the metadata progresses.

SCOTTISH ENGINEERING HALL OF FAME

The 2013 inductees into the Scottish Engineering Hall of Fame were: Hugh Gill (page 9), William John Macquorn, Sir Robert Alexander Watson-Watt and Sir William Arrol.



William John Macquorn Rankine (1820-1872), engineer, polymath, educator and researcher. Pioneer of thermodynamics.



Sir Robert Alexander Watson-Watt (1892-1973), engineer, inventor and pioneer of RADAR.



Sir William Arrol (1839-1913), engineering entrepreneur, steel bridge builder, designer and manufacturer of cranes, heavy machinery and automobiles, innovator in construction methods.

Suggestions for the next round of inductees would be welcome - see: <http://www.engineeringhalloffame.org/index.html>

Book Review

Anthony Slaven *British Shipbuilding 1500-2010* Review by the President

I have great admiration for the ability of historians to assemble a lot of facts and draw them together to form a coherent narrative. Tony Slaven, IESIS President 2001-2014 and Emeritus Professor of Business History at the University of Glasgow, has done this in his recently published magnum opus *British Shipbuilding 1500-2010*. At the launch of the book in October Tony admitted that the book had been long in coming. The wait has been worthwhile.

The reasons for the rise and fall of British shipbuilding over the past 600 years are important today. Tony explains how shipbuilders in the 19th century were serial entrepreneurs. They quickly embraced new technology moving from wooden hulls to iron hulls to steel hulls; from sail to single, double and triple expansion steam, to steam turbines, to diesel. They took commercial risks; they led the world.

I had the impression that the pivot period for decline of this industry in the UK was the First World War. There was a decline after that but this was rescued by the pressing need for ships during the Second World War. It is clear from Tony's book that just after the Second World War British shipbuilding was still a major world player. However the titles of the later chapters summarises the sorry tale - Chapter 5 War and recovery 1939 - 1958, Chapter 6 Deterioration 1958-63, Chapter 7 Intervention 1964-1977, Chapter 8 End game 1978-2010.

Tony is very even-handed in his analysis about reasons for the decline. Global competition ramped up, labour costs were higher here than abroad, there were faults on both sides in the relationship between management and the unions, strategic planning errors were made, the Government had a poor to non-existent strategy for nationalisation in 1977, global changes in the shipping market occurred.

It is clear that there is much that we can learn from the history of British Shipbuilding. Tony Slaven's book is a 'must be read' for those who want to see a future for British Shipbuilding in particular and for British manufacturing in general. I suspect that Marshall Meek's memoir mentioned in his obituary on page 10 of this newsletter is also in this category.

Slaven *A British Shipbuilding, 1599-2010*, Crucible Books, 2013, ISBN 078-1-905472-16-1



Honorary Fellows

IESIS Council have awarded Honorary Fellowship to recent inductees into the Scottish Engineering Hall of Fame: Douglas Anderson and Hugh Gill. Certificates were presented at the James Watt Dinner in September.

Hugh Gill, Douglas Anderson and Gordon Masterton at the James Watt Dinner



Sir Robert Easton Award

The institution has inaugurated a new award, the Sir Robert Easton Award. This award recognises outstanding service to the institution. The first recipients, William S Ross and Harry D Osborn, were presented with their awards before the lecture on 1 October. The citations for Harry and Bill cover their long service on council, contributions to meetings and other activities of the Institution. Sir Robert Easton was Chairman of Yarrows Shipbuilders and a prominent Scottish industrialist.

He was President of IESIS 1997-99. The presentation was made by Murray Easton, son of Sir Robert who is also a prominent shipbuilding manager.

Glasgow Caledonian University Awards

On 13th November Karen Dinardo presented IESIS awards to three outstanding students at Glasgow Caledonian University:



Mr Fraser Wilson receiving his award for Best Student (Final Year) B Eng (Hons) in Mechanical & Power Plant Systems Engineering. Fraser is now working for an Engineering Consultancy Firm, Parsons Brinckerhoff in Manchester where he is currently Mechanical Electrical Graduate Engineer in the Railway sector.



Mr Chris Holland receiving his award for Best Student (Final Year) BEng(Hons) in Electrical Power Engineering and currently works for Amey within Major Projects as an assistant project manager. This role covers all aspects of engineering (civil, mechanical and electrical) as well as financial management.



Mr Vittorio Orsi won the prize for Best Student (Final Year) B Eng (Hons) in Mechanical-Electronic Systems Engineering. Vittorio is currently working as a KTP Associate with Glasgow Caledonian University and ScotRail: Utilizing Reliability Centred Maintenance to determine a new maintenance strategy for passenger doors on the 158 fleet to improve train availability and performance.

All of our prizewinners are either currently members or are progressing membership with IESIS.

Forthcoming events

Course on Engineering Form of Contracts

IESIS is offering a series of early evening workshops on Engineering Forms of Contract starting on Monday 13 January 2013. A flier for this is enclosed with this Newsletter. Please pass this on to interested parties.

Forthcoming lectures

Tuesday 21st January 2014 - Joint meeting with IMarEST,

'Does confidential reporting reduce failures? Learning from experiences in structural, aircraft and maritime engineering'

Speakers – Alistair Soane (CROSS), Ian Dugmore (CHIRP), Venue - Strathclyde University –McCance Building, Room 301, G1 1XQ 6.00 for 6.30pm

Tuesday 11th February 2014 Joint meeting with IChemE and IMechE

'Nuclear generation and the implications of Fukushima'

Speaker – Ian Cathro, Venue Strathclyde University, McCance Building, Lecture Theatre 1, G1 1XQ ,5.45 for 6.30pm

Tuesday 11th March 2014

'Guid gear comes in sma" bulk! - Nanotechnology in engineering'

Speakers – Deepak Uttamchandani
Venue Strathclyde University, McCance Building, Lecture Theatre 1, G1 1XQ ,5.45 for 6.30pm

Tuesday 1st 2014 – AGM plus Members' meeting,

Details tbc

James Watt Dinner 2014

Save the date The Radisson Blu, Glasgow, has been booked for 2014, the dinner will be held on Friday 3rd October. We have booked a humorous after-dinner speaker for our evening's entertainment.

On the Horizon

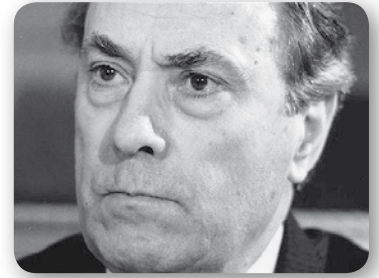
The institution has started planning for 2014/2015 and 2015/2016. During those years we hope to recognize the 250th anniversary of James Watt's inspirational idea and have met with other interested parties to see if there is any common ground. We are also hoping to mark the anniversary of the sinking of the Lusitania.

It is early days for these plans and we will keep you informed of progress.

Obituaries

Marshall Meek

"Marshall Meek, who has died aged 88, was one of Britain's leading naval architects during the final flowering of the British shipowning and merchant shipbuilding industries, and a percipient chronicler of their collapse." (Statement from the obituary column in The Telegraph 29 September 2013)



Marshall Meek joined IESIS in 1948 and was one therefore of our longest serving members. He was a native of Fife and studied Naval Architecture, graduating from Glasgow University in 1946. In 1953 he joined the Blue Funnel Line as a naval architect becoming Chief Architect in 1961. At Blue Funnel he was an innovative designer working at the sharp edge of the development of container ships. In 1979 he became Technical Director of British Shipbuilders and in 1984 Managing Director of the research body - the National Maritime Institute. He served with distinction in that role till 1986 latterly becoming Vice-Chairman but his efforts to help British shipbuilders to innovate could not stem their decline. He published a memoir in 2003 *There Go the Ships* (not in print). He greeted me warmly as IESIS President when I attended the RINA dinner in London earlier this year. "Marshall was always a gentleman and led by example. always taking a great interest in the men who ran the ships. He will be sorely missed by his many ex colleagues from Ocean and associated companies." (Quote from PONL Heritage website) Marshall Meek Born 22 April 1925, died 7 August 2013.

Alex Tait

Alex Tait was a member of IESIS Council 2009-2012. He was a structural engineer mostly in consultancy. He qualified 'the hard way' going to classes 5 nights a week to gain an HNC. This tight combination of academic learning and practical experience was a very good basis for his long service in structural engineering.

Before joining IESIS Alex was very active in the Institution of Structural Engineers over a period of 35 years. He served two periods as Scottish Branch Chairman and was a Member of Council of that Institution for several years. He was a man who sought to return with interest what he had gained from his experiences of life. For example he played the accordion with a small musical group that entertained for charities.

He died in July 2013 from a painful illness that he suffered with courage and without losing his sense of humour. At the time of his death he was the Chairman of the Membership Group of IESIS in which role, prior the onset of his illness, he was taking active steps to increase the number of people who applied. It is unfortunate for IESIS that we were only able to benefit from a few short years of his energy for institutional affairs. Alexander Nimmo Tait, born 14 June 1943, died 24th July 2013.



This article records the memories of two Fellows, Harry Jackson and Harry Osborn, whose fathers were involved in the operation of the factory in the 1930's and 1940's. They discovered their mutual connection with the factory by chance at an IESIS meeting.

Harry Osborn's Recollections

The name Aurora may have been adopted by my father because he often invited the family outside on a winter's evening to watch the aurora borealis display over the Kilpatrick hills.

It was in the 1930's that my father, an electrical engineer, set up the Aurora Lamp Factory in a former boatyard in Old Kilpatrick that had been making lifeboats and petrol engines. I lived in the house in the works. At the time I played with other pals in the closed down Napier & Miller Shipyard on the other side of Ferry Road. I recall the times we spent trying to match ships half models to make a complete boat. We never succeeded in nailing two together to look like a proper boat. I often wish I had one of those half models today.

My father was involved in setting up the factory with the necessary lamp making machinery and equipment that required glass blowing and glass stems and other parts to make an electric lamp. The photograph shows women using crochet hooks on the wires embedded in the glass stems to thread on to the tungsten filaments that provided the light.

To finish the bulbs, air had to be evacuated and replaced with argon gas, with the bayonet cap and the electrical connections completed.

My father claimed that the Aurora lamps that he made in the factory would last for 15 years. This was because of the quality of the filaments used. The filaments were also costly which led to the eventual demise of Aurora as other competitors produced cheaper lamps - that only lasted months. I recall that the Aurora lamps in our house lasted many years.

At the time radio sets were very rare and listening to the BBC was only by crystal sets using ear phones. As youngsters we spent some of our time making our own crystal sets. The small black shiny crystals required were expensive and were outwith the economics of pocket money. The alternative was iron pyrites (fools gold) which could be found in slate from Ballachulish. Loads of this slate were off loaded from puffers at Bowling Harbour. We boys would hunt through these slates to find the little golden cubes, to be eventually tickled by the cat's whisker in the crystal set.

Harry Jackson's Recollections

My father James Jackson was involved at the start of the factory in 1932 as the accountant to the company becoming a Director in 1939 and finally was the Managing Director from 1946 onwards.

The site occupied at Old Kilpatrick by Aurora lamps was approximately 8 acres. This was between the River Clyde and the Forth and Clyde Canal and was accessed from the Erskine Ferry Road from Dumbarton Road via a wooden bascule bridge over the canal. The wooden bridge was later replaced by a swing bridge built by Arrol in the early 1930's

The Aurora works commenced production in 1932 and was the first factory in Scotland to produce Electric Lamps. Trade Depression and Unemployment were at their height and Aurora Lamps were among the first to introduce a new light engineering industry to this area.

During the war Army camps in Scotland and AA Gun Sites used over a million Aurora Lamps (15 watts to 100 watts) and over 35000 special lamps to withstand severe shocks which were fitted to Rocket ships and Landing Craft. Over 60 Aerodromes were lit by Aurora Lamps and 100 watt to 500 watt bulbs were produced for this purpose.

Royal Ordnance factories used up to 100,000 lamps per annum as well as many of the shipyards, steelworks, munitions works, ship and government departments.

In March 1941 the factory was bombed by enemy action with major destruction but 7 months later it managed to achieve 80% of full production.

In peacetime over 15 million lamps were produced

I have 6 lamps in my possession wrapped in their original packaging showing 'Made in Scotland' and the lion emblem. I picked one at random and tried it out in my lounge. It worked perfectly – how is that for quality!

In 1945 Aurora Lamps became associated with Johnson and Phillips Ltd, the well known Electrical Engineers and Manufacturers of Cables, Transformers, Switchgear etc ensuring a further extension of the activities Aurora Lamps.



