Weaving the Threads of Choral Tradition

The Story of James Watt's Inspiration and its legacy

A celebration in song

from May 1765 to the present day

Presented by IESIS and The Strathchamber Trust

With

Strathclyde University Chamber Choir

and their guests

Selkórinn

spirax sarco

IESIS
A MULTI-DISCIPLINARY ENGINEERING INSTITUTION

Spirax Sarco is proud to be a sponsor of this concert honouring James Watt and his inventiveness that powered the industrial revolution.

Watt realised the importance of latent heat, the 'hidden' heat and power in steam: today that same latent heat thermally powers global process industry and beyond.

For engineers around the world **Spirax Sarco** is synonymous with excellence in steam system engineering. We offer the industry's most extensive range of products and services, coupled with expertise based on over a century of practical application across a variety of industries. In short we create the solutions that set the benchmark for steam-using organisations worldwide, working alongside them to improve productivity, save energy and reduce waste.

It is perhaps a fitting tribute to Watt, that this year we will pilot release to market '**TurboPower**', an innovative micro-steam turbine that enables point-of-use generation of electrical power for steam users.

Weaving the threads of choral tradition

Welcome to our concert, marking the 250th anniversary of James Watt's flash of inspiration on Glasgow Green which triggered the Industrial Revolution and transformed the world.

This celebration owes its genesis to the council of IESIS. Knowing that May 2015 was a significant milestone in the history of both Glasgow and engineering worldwide, they put out a call for fitting ways to mark the occasion. The Strathclyde University Chamber Choir were happy to respond and formulated the outline for the concert. Selkórinn, who are completing a tour of Scotland, were pleased to be able to add a concert date in Glasgow to their itinerary.

The Strathchamber Trust is greatly indebted to our headline sponsor, Spirax Sarco, our organising partner The Institution of Engineers and Shipbuilders in Scotland and our supporters, The Engineering Academy, Heliex Power, Star Refrigeration and Clyde Blowers Capital. We are delighted to welcome our friends from Iceland, Selkórinn, under their conductor Oliver Kentish and we look forward to exchanging traditions with them.

Dr Andy Pearson, The Strathchamber Trust

IESIS is happy to support this event as part of the 250th anniversary celebrations of Watt's transformative improvement to the steam engine. James Watt was interested in music and earned his living at one time by making musical instruments. IESIS has had a long association with James Watt through our annual James Watt Dinner.

IESIS was formed in Glasgow in 1857 with the aim of furthering the cause of engineering. I am proud to say, as the current President, that the Institution is going from strength to strength and is still supporting the engineering profession. We are renowned for the quality and breadth of our lecture programme (iesis.org). In recent years we have been active in encouraging school pupils to choose engineering as a profession (profeng.org), recognising the achievements of engineers (engineeringhalloffame.org) and addressing important issues for engineers (iesisenergy.org). We have also supported several local cultural events such as the Tall Ships, the Titanic Memorial and raising funds for our former headquarters in Elmbank Street. Our organisation is open to members from all branches of engineering and engineering enthusiasts.

Phil Preston, President, Institution of Engineers and Shipbuilders in Scotland

It's been said that the impact of James Watt's genius was to push industrial Britain some 60 years into the future; such was the step change in efficiency of steam power from before to after Watt's invention of the separate steam condenser. This was a time of radical new thinking and, along with contemporaries at the University of Glasgow such as Adam Smith and Joseph Black, Scotland became a power-house, not just of industry but of ideas. Today, as we look to the future, we need to rediscover that enlightenment-era optimism of innovators such as Watt and ensure that our young people are inspired by his lasting impact on both scientific and societal progress. We should remember that while Watt's name is stamped on every light bulb to measure the power delivered, it also serves to remind us of the intellectual light he brought to the world.

Prof Colin McInnes, James Watt Chair of Engineering, Glasgow University

THE James Watt GALA DINNER 2015

Featuring the
Scottish Engineering Hall of Fame
EngineeringHallofFame.org

Celebrating James Watt's idea to develop the steam engine 250 years ago

The Radisson Blu Hotel
Argyle Street, Glasgow

Friday 2nd October 2015
6.15 for 7.00pm

The James Watt Dinner has been hosted by IESIS since the 19th Century.
IESIS is Scotland's only multidisciplinary professional engineering body.
Guests are welcome as a group of friends or family, as a corporate group, or as individuals.

Tickets £52.00 each, include:

Complimentary glass of bubbly on arrival
Four course meal plus coffee
& a wee dram to toast James Watt.

Networking and socialising opportunities
Entertainment – Hall of Fame 2015 announcements
Celebrity guest speaker and more!

IESIS
A MULTI-DISCIPLINARY ENGINEERING INSTITUTION

For further information please contact
IESIS, Clydeport Building, 16 Robertson Street, Glasgow, G2 8DS or secretary@iesis.org
www.iesis.org

CELEBRATING 250 YEARS

Selkórinn: Directed by Oliver Kentish

Soprano:
Anna G. Björnsdóttir
Bergljót B. Guðmundsdóttir
Bryndís Hákonardóttir
Guðrún E. Gunnarsdóttir
Guðrún B. Vilhjálmsdóttir
Helga Gunnlaugsdóttir
Hjördís Inga Ólafsdóttir
Ingibjörg Dalberg
Inga Erlingsdóttir
Margrét Geirsdóttir
Margrét Þormar
Ólína Elín Thoroddsen
Sif Þorsteinsdóttir
Þórunn Ólafsdóttir

Tenor:
Björn Grímsson
Gylfi Árnason
Haraldur Þráinsson
Sigurður J. Grétarsson
Þórir Ingason

Alto:
Anna Karlsdóttir
Bergþóra S. Þorbjarnardóttir
Birna E. Óskarsdóttir
Elísabet Dolinda Ólafsdóttir
Gyða Halldórsdóttir
Gróa Pétursdóttir
Helga Hafsteinsdóttir
Hekla Pálsdóttir
Hróðný Garðarsdóttir
Jóna Borg Jónsdóttir
Margrét Guðnadóttir
Pálína Magnúsdóttir
Sigríður Óskarsdóttir
Steinunn Hannesdóttir

Bass:
Guðjón Reynir Jóhannesson
Héðinn Valdimarsson
Jóhann Thoroddsen
Ludvig Guðmundsson
Sigurður Geirsson
Skúli Þór Magnússon
Örn Ágúst Guðmundsson

Strathclyde University Chamber Choir: Directed by Alan Tavener

Soprano:
Sarah Barnes
Sarah Dalzell
Katy Flynn
Stephanie Frew
Tara Goddard
Lydia Ingram
Viv Miller
Emily Savill
Sheena Shanks
Mariel Wallin

Tenor:
Liam Greenshaw
Matthias Langer
Iain McGinley
William More*
Daniel Oi
Stephen Tagg

(* Associate Conductor)

Alto:
Eilidh Bremner
Frances Brown
Kate Cameron
Helen Deeny
Rachel Hunt
Calum MacLean
Margaret Miller
Sarah Parker
Moira Watkins
Yinyong Zhang

Bass:
Matthew Alexander
James Duddridge
Wolfgang Klein
Boonyakorn Maiklad
Stephen Matheson
Bruce Millar
Andy Pearson
Tom Walkinshaw

OPERATIONAL PRIVATE EQUITY

Clyde Blowers Capital ranks among the world's most successful and innovative industrial investment fund managers and business development companies, creating wealth for all our partners.

Using our tried and tested business models, our people deploy their financial and strategic expertise to transform today's ideas into the market leading companies of tomorrow.

CLYDEBLOWERSCAPITAL

www.clydeblowerscapital.com

Weaving the threads of choral tradition

It is exactly 250 years since a flash of inspiration during a stroll through one of Glasgow's "dear green" parks caused one of the most significant technological leaps of all time. This inspired thought led directly to the step-change improvement in machine efficiency which triggered the mechanisation of manufacturing and created what we now call The Industrial Revolution. The thinker became famous in his own lifetime for his achievement and riches followed, although he was not always happy. His name is still world renowned and is used more often, by all sorts of people in all sorts of circumstances, than any other scientist. That man was, of course, James Watt.

James Watt presents a series of remarkable contradictions in the impressions gained by reading of his life and achievements. He had no formal higher education and was mostly home-schooled, yet he learned from some of the finest scientists of his day and taught them a thing or two too. He was by all accounts a shy man, yet he easily befriended people and built strong, life-long relationships. He was notoriously bad at business yet his technological successes brought him great riches and though he was from a poor background he died a wealthy man. This short note sets his amazing idea in context, exploring the Glasgow of his time, introducing the people he mixed with and places he lived and worked. It also considers the great consequences of his development, including the ways in which city life developed and the traditions created in the ever-growing community.

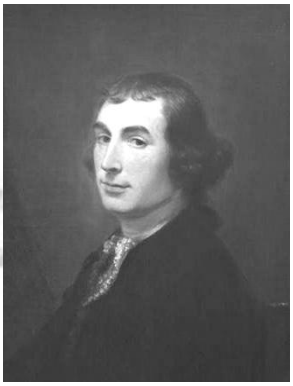
Dramatis Personae

James Watt (1736-1819) was born in Greenock, at that time the largest port on the River Clyde. His grandfather, Thomas Watt, taught mathematics and navigation and served as Baron Bailie of Greenock (the Laird's administrator). He also established a business serving the marine trade; provisioning ships and repairing navigational instruments. Thomas' son, James, took over the firm and prospered, extending his activities to shipowner and trader. However the loss at sea of a valuable ship and cargo together with other business misfortunes swept away the family's financial security when James Junior was only a few years old. He was a sickly child, and several older brothers and sisters died in infancy, so for most of his school-age years he stayed home and was taught reading, writing and arithmetic by his mother and father. When he did attend school he was considered to be somewhat behind the rest of the class and showed little interest in the classical Latin and Greek which they studied. However he had a set of child-sized tools and often worked with his father in the workshop behind their house. His manual dexterity and craftsmanship led one of the workers to comment "Jamie has a fortune at his finger-ends". He developed a keen interest in mathematics, especially geometry, chemistry and natural sciences. When Watt was seventeen his mother died, and as his father's business was still in difficulties it was decided that Jamie should go to Glasgow to live with his mother's relatives and represent his father's business. While in Glasgow he was welcomed to the home of John Anderson, older brother of Jamie's close school friend Andrew Anderson, giving him a chance to study a wide range of topics in John's library.

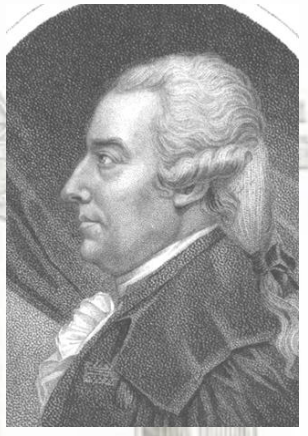
After a year as salesman and general manager for his father Watt decided to learn a trade and worked for a year with an "optician" in Glasgow, a handyman who repaired spectacles, violins, fishing tackle (and anything else that came his way). However he was ambitious and wanted to develop his skills, so in June 1755 he arranged to travel to London, looking for a post as an apprentice to an instrument maker. He was given letters of introduction by Professor Robert Dick who held the chair of Natural Philosophy at Glasgow, and this secured a place in London with Mr Morgan, a mathematical instrument maker of great repute. However Watt's health remained weak, he was troubled through the winter of 1755-56 with severe coughs and rheumatic pains and in August 1756 he returned to Glasgow after just one year's training. He was unable to set himself up in business within the city because he was not suitably qualified as he had not completed a seven year apprenticeship. However Professor Dick arranged a post for him within the University courts repairing mathematical, scientific and navigational instruments and provided a small workshop which enabled him to start work; he was thus of the City of Glasgow, but not in the City of Glasgow so not under the jurisdiction of the Trades House. Over the next few years his reputation as a skilful craftsman grew and he befriended many of the teaching staff at the University, undertaking a wide range of commissions for them. This also gave him access to the foremost thinking in the fields of chemistry, mathematics, philosophy and mechanics. These set the scene for his first introduction to steam power and the subsequent development which secured his place in history and made his fortune.

William Cullen (1710-1790) from Hamilton trained as a doctor in Edinburgh and London, and was personal physician to the Duke of Hamilton. When the Duke died in 1743 the Cullen family moved to Glasgow where he set up a medical practice and also gave extramural lectures at the university in chemistry, botany and medicine. He was a gifted and popular teacher with an easy style and in 1747 on his recommendation the University created a department of Chemistry (the first such faculty in the world) and appointed him Professor, equipping a laboratory using the sum of £30 diverted from the salary of the Professor of Oriental Languages who was travelling overseas at the time. Cullen remained as Professor of Chemistry at Glasgow until 1755 when he transferred to Edinburgh University to create the same post. It is worth noting that at this time there were only seven universities in the United Kingdom and five of them were in Scotland. Cullen laid the foundations for Watt's idea.

Joseph Black (1728-1799), a pupil of Cullen, succeeded him as Professor of Chemistry in 1756. Like Cullen he trained as a doctor, first at Glasgow (1746 to 1750) then at Edinburgh (1750 to 1754). He was first to formulate the idea of latent heat, in about 1760, and often worked with Watt, sharing ideas and comparing thoughts on various topics. In 1762 he commissioned Watt to build a pipe organ for him although Watt had never undertaken such a commission before and, by his own admission had a "tin ear". As well as discovering latent heat, Black is credited with describing sensible heat and discovering carbon dioxide and magnesium. Black built on Cullen's foundations to create the structure within which Watt established himself.

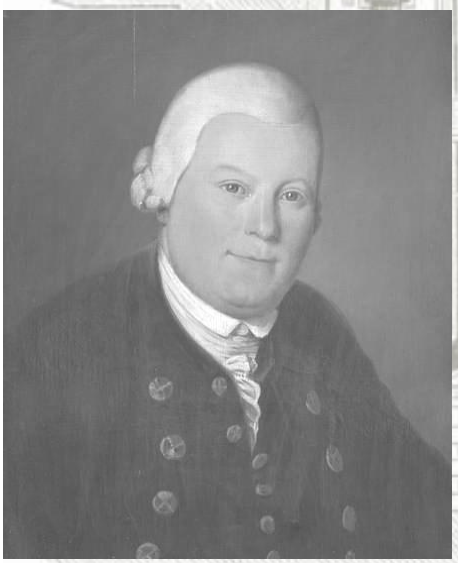


Robert Dick (1722-1757) became Professor of Natural Philosophy at Glasgow University in 1751, taking over the post from his father (also Robert Dick) who had been the first incumbent when the chair was created in 1721. Robert Junior was an early supporter of James Watt, providing him with occasional work during his initial spell in Glasgow and furnishing him with the letters of introduction which secured his apprenticeship in London in 1755. He died at the age of 35, just one year after Watt had returned to Glasgow, having been Professor for only six years. Dick set young Watt on his career trajectory to the places where he was best-placed to flourish.



John Robison (1739-1805) met Watt in 1758 when he entered the instrument shop in the University to enquire about the goods on display. Robison was three years younger than Watt and had graduated from Glasgow in 1756, aged seventeen. In his own words "*I had the vanity to think myself a pretty good proficient in my favourite study (mathematical and mechanical philosophy) and was rather mortified at finding Mr Watt so much my superior. But his own high relish for those things made him pleased with the chat of any person who had the same tastes with himself; or his innate complaisance made him indulge my curiosity, and even encourage my endeavours to form a more intimate acquaintance with him. I lounged much about him and, I doubt not, was frequently teasing him. Thus our acquaintance began*." Watt was twenty two at this time, Robison was nineteen. Robison left Glasgow not long after this to serve as midshipman in the Royal Navy, then represented the Board of Longitude, testing John Harrison's chronometer on a voyage to Jamaica. He returned to Glasgow in 1762 to work with Professor Black and in 1766 succeeded him as Professor of Chemistry when Black transferred to Edinburgh. Robison was appointed secretary of the Royal Society of Edinburgh when it was founded in 1783 and contributed extensively to the third edition of the Encyclopaedia Britannica in 1797, including articles on Steam and Steam Engines. Robison was the first person to introduce Watt to the concept of steam power in a conversation about motorised transport while hanging around the university workshop in the summer of 1759.

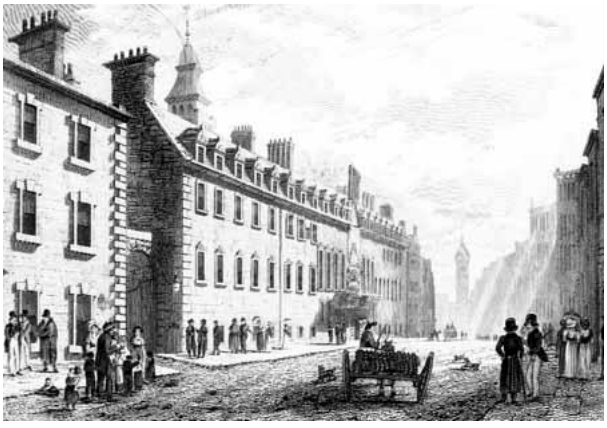
John Anderson (1726 – 1796) succeeded Robert Dick Jr as Professor of Natural Philosophy in 1757, having been appointed three years earlier as Professor of Oriental Languages (the chair whose vacancy six years before had funded William Cullen's chemistry laboratory). John and his brother Andrew were born and brought up in Rosneath, west of Helensburgh, where their father was the parish minister. He graduated from Glasgow University in 1744 and served as an officer in the Hanoverian army, stationed at Stirling Castle, during the Jacobite rebellion in 1745. Anderson was a lively, energetic teacher, nicknamed "Jolly Jack Phosphorus" by his students on account of his rather wild chemistry demonstrations. He was however a feisty individual who quarrelled with many of his colleagues. Anderson observed Watt's interest in steam and arranged for him to repair the university's Newcomen model in 1762.



Watt's Single-Acting Pumping-Engine for Mines.

Setting the scene

Glasgow in 1765 was firmly established as a trading centre combining local cottage-industries such as weaving, linen bleaching and ale brewing with transatlantic trade with "the colonies" – principally tobacco from Virginia. The city was funded by taxes on ale and tobacco, although in those days the Clyde at Glasgow was wide and shallow, and in 1668 the city fathers had leased land to the east of Greenock to serve as their shipping hub. This became known as Port Glasgow, and housed the main customs house for the Clyde, ensuring that revenue from the growing tobacco trade was collected by Glasgow, not by other communities. The city had been founded by royal charter in 1173, but for centuries was not much more than a village: in 1400 the population was about 1,500 centred on the Cathedral and the adjacent Bishop's Castle. In 1451 the University was founded, originally within the Cathedral grounds, and the city population started to grow, reaching about 3,000 by the year 1500. At this time the University had about 120 students and was the second in Scotland after St Andrews which had been founded in 1410. The University undoubtedly attracted additional citizens, not only as staff and students, but also in trades which served the town and the surrounding district. In 1563 the University relocated to land to the east of High Street gifted by Mary Queen of Scots (the site is on the north side of the University of Strathclyde's Andrew Ure Hall of Residence). Growth of the city was slow, with a doubling of population each century, so that by 1680 the citizens numbered about 12,000 including 450 registered traders. Over the next fifty years growth started to accelerate with the introduction of more manufacturing including pottery, sugar, beer and linen. Tennant's Wellpark brewery, in the lee of the Cathedral, opened in 1745 and John Smith's bookshop followed in 1751. By mid-century the university had 13 professors, including the first chair of Natural Philosophy in the world (1721) and the first chair of Chemistry (1747). Glasgow had become a world-renowned academic centre for the sciences.

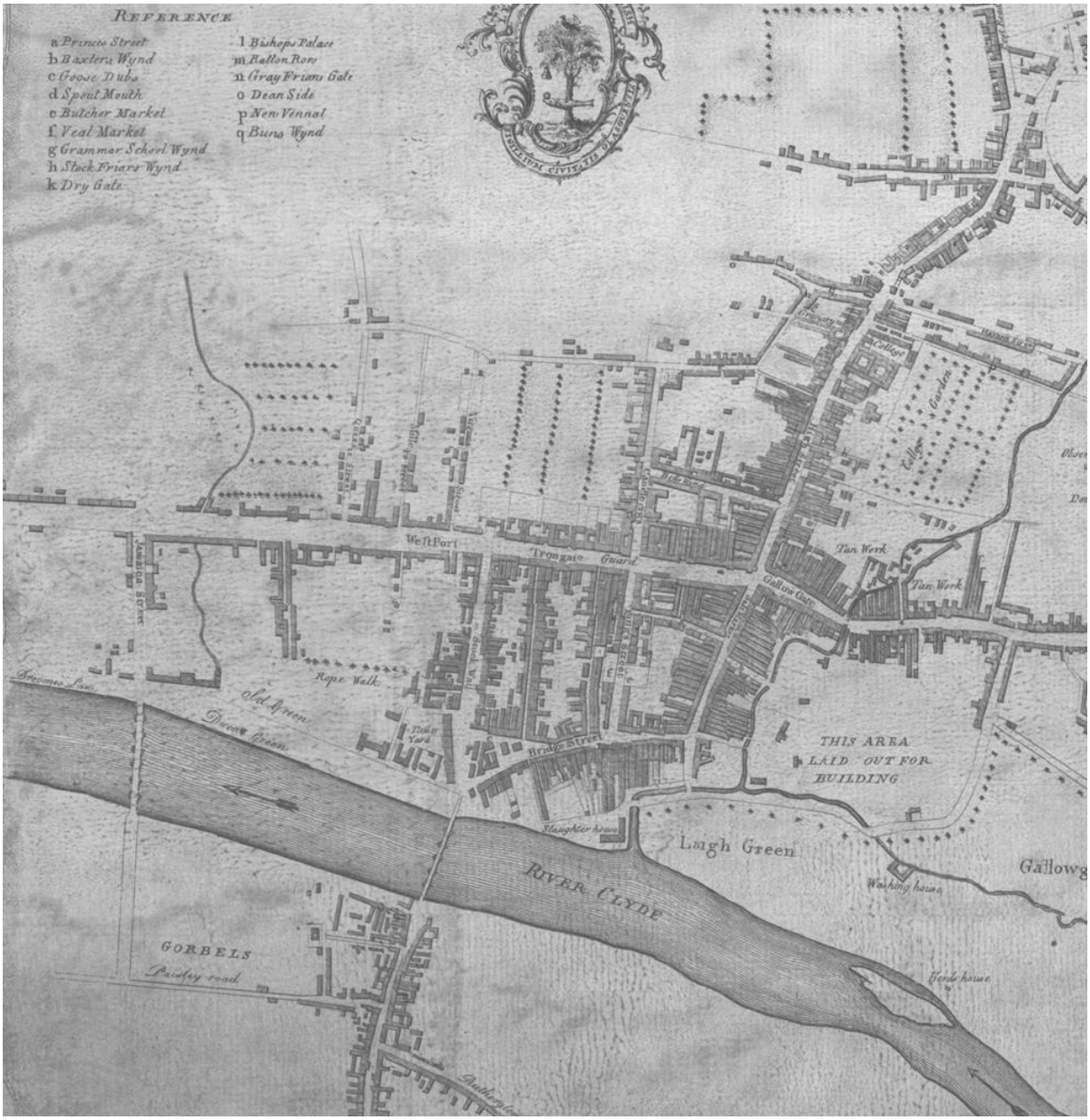


The city's heart had drifted from the Cathedral down towards the river and was now centred on the Tron steeple at the junction of Trongate, High Street, Gallowgate and the Saltmarket. The University premises on High Street comprised two quadrangles with a high clock tower between them and a chapel to the south,

which formerly had been a Dominican Friary. The four spokes leading from the Tron Steeple led as far as Jamaica Street to the west, the Cathedral to the north and site of Barrowlands to the east, but the streets were only paved for a few hundred metres from the cross, so were extremely muddy most of the time. Much of the land to the north of these main streets was not yet developed, or was the estates of the richer citizens. The University buildings were described in John Slezer's gazetteer Theatrum Scotiae in 1693 by Robert Sibbald, who wrote "*the chief Ornament of the City is the College which was founded by King James the II. Pope Nicholas the V granting an Indulgence, and confirming it by his Bull to have the Rights and Liberties of a College, where general Learning should be taught. It was erected by the great Labour and Expences of that Reverend Prelate William Turnbull Archbishop of Glasgow."* Sibbald went on to say *"The Words of the Bull for the founding of it, are, That general Study should flourish in the same, as well in Theology, and the Canon and Civil Law, as in all other Arts and Faculties; and that the Masters and Teachers there should enjoy all and sundry the Privileges, Liberties, Honours, Immunities and Exemptions which have been granted by the Apostolick See, or others, any other way, to the Masters, Teachers, or Students of our College at Bononia. The Fabrick of the College is remarkable, consisting of divers Courts. The fore-part of it towards the City is of an excellent Structure being of hewen Stone. The Precincts of the College are enlarged by some Acres of Ground, purchased by some Money granted to it of late by the King and Estates of the Kingdom. It is separated from the rest of the Town by an exceeding high Wall.*"

Glasgow University on High Street - Image from Theatrum Scotiae by John Slezer

The layout of the town is shown in George Cameron's map of Lanarkshire which dates from about 1750. Since 1680 the population had again doubled, reaching about 24,000 by 1750. This was the town in which young Jamie Watt arrived in 1754 seeking work as an apprentice instrument-maker.



Glasgow City Centre in about 1750

The germ of an idea

Watt had been established in Glasgow for about four years when his chance encounter with John Robison in the instrument-making workshop in the University's inner quadrangle set him thinking about steam power. Robison raised the idea of steam powered vehicles and Watt confessed that he knew little about the subject and had not been involved in any projects. Watt made some rudimentary models to test the idea, but the results were not encouraging and shortly afterwards when Robison left Glasgow to enlist in the Royal Navy as a midshipman, sailing for Quebec, the subject was shelved. The idea of steam power played on Watt's mind, and he continued experimenting, building a model of Papin's "digester" in 1761. At about this time he learned through Professor Anderson that the University owned a working model of a Newcomen engine but

it had been sent to London for repair. Anderson arranged for the model to be returned to Glasgow so Watt could test it, but it was found, even when operating as well as possible, that the engine was so inefficient that it barely developed enough power to keep itself moving. The boiler was apparently large enough and everything was running as smoothly as possible, but there was just not enough power to overcome the friction of the workings. He searched for reasons for this in various texts, including French and Italian as well as English, but no explanation could be found. He then started experimenting with the amount of heat needed to heat water or cool steam and observed a large discrepancy between the amount of water that could be heated to boiling point versus the amount of steam required to provide the heat. He discussed this with Professor Black in the summer of 1764 and Black explained his theory of Latent Heat, developed just a few years earlier, which confirmed in Watt's mind the immense power available through steam. Further experiment followed as time permitted, fitted around the day to day demands of a growing business. He realised that the main waste of energy in the Newcomen engine was the continual cooling and reheating of the metal that formed the main cylinder and he measured that 80% of the steam fed to the engine was used in this heating process leaving barely 20% to do useful work. This presented him with a conundrum. The cylinder needed to be cooled to about 40°C to remove the used steam, but at the same time it should be kept above 100°C to avoid condensing the freshly-injected steam. His method of solving this puzzle is described in his own words as follows:

"I had gone to take a walk on a fine Sabbath afternoon, early in 1765. I had entered the green by the gate at the foot of Charlotte Street and had passed the old washing house. I was thinking upon the engine at the time, and had gone as far as the herd's house, when the idea came into my mind that as steam was an elastic body it would rush into a vacuum, and if a communication were made between the cylinder and an exhausted vessel it would rush into it, and might there be condensed without cooling the cylinder. I then saw that I must get rid of the condensed steam and injection-water if I used a jet as in Newcomen's engine. Two ways of doing this occurred to me. First the water might be run off by a descending pipe, if an offset could be got at the depth of thirty-five or thirty-six feet, and any air might be extracted by a small pump. The second was to make the pump large enough to extract both water and air. I had not walked farther than the old golf-house when the whole thing was arranged in my mind."

Glasgow Green is still there, as is Charlotte Street, but the washing house, the herd's house and the golf-house are all long gone. Samuel Smiles suggests that the site of the golf-house was close to the Glasgow Humane Society House, which is no more than a four minute walk from the herd's house as shown on the map of 1750 on the preceding page (close to the present-day Nelson Monument). There is a commemorative boulder inscribed in Watt's memory near the Nelson monument. Why not take a stroll from the boulder to the Humane Society House to see how long it takes you, and who knows what might come to mind.

In fact, in May 1765, Jamie Watt had been learning about steam power for six years and experimenting for four of these. It took a further four years to get a patent granted on the idea, and another twenty years after that to begin to make any profit from the commercialisation of steam power. This was all-told thirty years of sweat and tears, frustration, honest toil and double-crossing, legal challenges, financial crashes and industrial espionage. Ultimately perseverance paid off and when Watt retired in 1800 he was rich and world-famous.

Watt on…

Business: *"I have been cheated by undertakers and was unlucky enough to know it"*

Business finance: *"I would rather face a loaded cannon than settle an account or make a bargain."*

Debt: *"I thank God that I now have reason to believe that I can never, while I have health, be at any loss to pay what I owe, and to live at least in a decent manner; more, I do not violently desire."*

Development: *"The public only look at my success, and not at the intermediate failures and uncouth constructions which have served me as so many steps to climb to the top of the ladder"*

Early designs: *"My whole thoughts are bent on this machine. I can think of nothing else."*

Glasgow weather: *"100 people I see just now, running by wet to the skin, no doubt cursing god in their hearts. I believe the drops are an inch in diameter."*

Health: *"I am monstrously plagued with headaches, and not a little with unprofitable business."*

Machine design: *"It is a great thing to know what to do without."*

Parliament: *"I think I shall not long to have anything to do with the House of Commons again. I never saw so many wrong-headed people on all sides gathered together."*

Scotland: *"there are too many beggars in this country, which I am afraid is going to the devil altogether. Provisions continue excessively dear and laws are made to keep them so."*

The cost of research: *"Although I am out of pocket a much greater sum on these experiments than my proportion of the profits of the engine, I do not look upon that money as the price of my share, but as money spent on my education."*

West Highland weather: *"An incessant rain kept me for three days as wet as water could make me; I could hardly preserve my journal book."*

Further reading:

*"**Lives of Boulton and Watt**",* Samuel Smiles, Nonsuch Publishing ISBN 978-1-84588-371-3

"***James Watt – Making the World Anew***", Ben Russell, Reaktion Books ISBN 978-1-78023-375-8

"***James Watt***", Andrew Carnegie, http://www.gutenberg.org/ebooks/26131

"***Orpheus with his lute***", H.S. Roberton and K Roberton, Pergamon Press ISBN 978-0-08010-709-7

"***New Music in Iceland***", Göran Bergendal, Iceland Music Information Centre ISBN 9979-9063-1-6

Choral tradition in Glasgow

The industrialisation of Glasgow triggered a population explosion, growing from 24,000 in 1750 to 77,000 in 1801 and 762,000 by 1901. This rapid growth brought an influx of cultures; from the surrounding countryside, from the Highlands, from Ireland and from further afield.

The story of choral singing in Glasgow is firmly linked to the stories of Hugh Roberton and the Orpheus choir. In their heyday the singers of the Orpheus choir were world renowned. They performed regularly on BBC radio, sang numerous sellout concerts all round the United Kingdom, and on many overseas tours, and tickets for their annual Glasgow concerts were so much sought-after that concert-goers were advised in the concert programme to write to the choir secretary to have their names entered into the ballot for next year's tickets.

The origins of the Orpheus choir are humble. Toynbee House, a working men's club based in Cathedral Court at number 25 Rottenrow (now the James Young Hall of Residence), was founded by Glasgow University in 1886 to address the social problems of the East End of Glasgow. It was a self-governing body with a variety of clubs and societies, including a choir of mixed voices. In 1901 the choir were looking for a conductor and appointed Hugh Roberton to the post. Roberton was 27 years old and had worked as an undertaker in the family firm of Funeral Directors in Govan. He was a keen, self-taught, amateur musician who had led a number of church choirs on the south side of the city but this was his first attempt at choral singing of this type. From their simple beginnings the Orpheus Choir grew in confidence, in competence and in reputation. At their first major concert, a working men's benefit in Glasgow's East End in 1903 they sang Pearsall's arrangement "O who will o'er the downs so free", known as Hickenstirn's Song, and featured in tonight's concert programme, to great acclaim. By 1906 they had outgrown the Toynbee and moved across the street to the Collins Institute, now the site of the University of Strathclyde's Murray Hall of Residence. This is when the name "The Orpheus Choir" was adopted.

The Orpheus Choir was disbanded in 1951 when Sir Hugh retired. By then the choir had appeared in concerts all over the word, had made numerous recordings and broadcasts, had been banned by the BBC on account of its conductor's pacifist views and had provided music for several movies, including Powell and Pressburger's 1946 romantic comedy "*I know where I'm going*". Orpheans, deprived of their choral fix, formed the Phoenix Choir, which continues on in similar style to this day.

In 1980 Alan Tavener formed the Strathclyde University Chamber Choir shortly after his appointment as Director of Music at the University of Strathclyde. At that time there were few opportunities to perform or hear choral chamber music in the West of Scotland and the choir quickly built a wide ranging repertoire of sacred and secular music spanning eight hundred years. The choir has recorded and broadcast live for BBC Radio 2, 3 and 4 and has toured overseas, in recent years as far afield as Russia, Israel, Germany and Spain. After 35 years the choir is still attracting talented young students to join with longer-term members who are staff, alumni and friends of the university. The Easter cathedral trip is a highlight of each year, and recent hosts have included York Minster, Durham, Lincoln and Liverpool. In 2010 members of the choir formed The Strathchamber Trust, a charity registered in Scotland to administer the business affairs of the choir, following Alan's departure from the University. The trust is entirely self-funding and depends on concert revenue, donations and sponsorship.

Programme

Hallelujah	G.F Handel	Combined choirs
Ísland, farsælda frón	Ancient Icel. quint song	Selkórinn
Sofðu, unga ástín mín	arr. Jón Ásgeirsson	Selkórinn
Krummi krunkar	arr. Jón Ásgeirsson	Selkórinn
There was a lad	J McIntosh	Strathclyde
The Dark Island	I MacLachlan	Strathclyde
The Gaelic Dances	J N McConnochie	Strathclyde
Krummi svaf	arr. Jón Ásgeirsson	Selkórinn
Vögguvísur	arr. Jón Ásgeirsson	Selkórinn
Hickenstirn's song	R Pearsall	Strathclyde
The Blue Bird	C Stanford	Strathclyde
Nú vil ég enn	arr. Hafliði Hallgrímsson	Selkórinn
Maríukvæði	Atli Heimir Sveinsson	Selkórinn
Litla kvæðið	Páll Ísólfsson	Selkórinn

Interval

Ye banks and braes	Trad arr J Macintosh	Combined choirs
Beatus Vir	O Kentish	Strathclyde
Ave Regina	P Stopford	Strathclyde
Smávinir fagrir	Jón Nordal	Selkórinn
Á Sprengisandi	Sigvaldi Kaldalóns	Selkórinn
Heyr, himna smiður	Þorkell Sigurbjörnsson	Combined choirs
Ubi caritas	O Gjeilo	Strathclyde
The Gallant Weaver	J Macmillan	Strathclyde
Hark the echo falling	O di Lasso	Combined choirs
Ó Guð vors lands	S Sveinbjörnsson	Selkórinn
Dashing White Sergeant	Bishop/Roberton	Strathclyde

Choral tradition in Reykjavik

Iceland has a long tradition of story-telling, most famously through the Norse Sagas, but these were not sung as songs, but rather intoned in what one rather unimpressed visitor described as "*never-ending monotony*". Folk songs were generally unison or sung as solos, with the exception of the tvísöngur (two-part songs), described as "*more or less homophonic motion of perfect parallel fifths, with parts crossing*." Iceland adopted Christianity by act of parliament in 1000 AD and church music before the reformation was influenced by Irish monks and other missionaries but after 1550, when the Lutheran church became established, musical contact with the rest of the world was reduced. Several Passion chorales were published by Hallgrímur Pétursson (1614 – 1674) a priest, poet and champion of the Icelandic language in this time of Danish colonialism and these melodies influenced much of Icelandic church music for the next 200 years. Until the late 19th century there was very little instrumental music. It is said that a newspaper report after a rare concert by a wind ensemble led by the composer Helgi Helgason noted that the musicians had "*sung into their instruments*" and that this, while amusing and interesting, "*had no future in the country*." However this marked the start of the development of modern Icelandic music. In 1874 when the Danish king granted constitutional rights to the Icelanders, exactly one thousand years after the start of the colonisation of Iceland, the occasion was commemorated by the setting of a poem, "Ó, guð vors lands!" , by Mattías Jochumsson to music by Sveinbjörn Sveinbjörnsson, to create what became Iceland's national anthem. Sveinbjörnsson is widely regarded as Iceland's first modern composer although he trained in Copenhagen and Leipzig before settling in Edinburgh. He returned to Iceland frequently for concert tours and was a strong influence in inspiring and encouraging other national composers including Páll Ísólfsson, Jón Þorleifsson (Jón Leifs) and Sigurður Þórðarson.

Selkórinn, was originally founded as a women's choir in 1968 and in 1976, the choir was expanded to include men as well. As a mixed choir, Selkórinn has been in operation continuously since that time; for most of those years under the direction of Jón Karl Einarsson, who has taken the choir on a number of tours abroad, most notably St. Petersburg in Russia and Portugal. The choir has performed many of the major works of the choral repertoire; Handel's Messiah, Dvorák's Mass in D-Major and Mozart's Requiem, to name but three and also a vast selection of Icelandic choral music, as well as music from around the world. The annual Spring and Christmas concerts are events which are eagerly anticipated by both the choir and the public. The choir's accompanist is Dagný Björgvinsdóttir and vocal coach is Signý Sæmundsdóttir. Oliver Kentish has been their music director since the autumn of 2012. He began his formal musical studies on the cello, aged twelve and later at the Royal Academy of Music, London. He moved to Iceland in 1977 to play with the Iceland Symphony Orchestra and has lived there ever since. Oliver is an active composer, with well over 200 works in the Iceland Music Information Centre's catalogue and he has been performed widely in Europe, the Scandinavian countries, the USA and Russia. Oliver is the musical director of Iceland's only amateur symphony orchestra, "Sinfóníuhljómsveit áhugamanna"

What better way to start a celebration than with the **Hallelujah Chorus***?*
First performed in Dublin in 1742 Handel's oratorio Messiah was slow to catch on, particularly in London, where it was thought to be "too exalted a subject to be performed in a theatre". Over the next fifteen years it became established all over the world and would be well-known by Watt in Glasgow.

Hallelujah! Hallelujah! Hallelujah!
For the Lord God Omnipotent reigneth.
Hallelujah! Hallelujah! Hallelujah! Hallelujah!

The kingdom of this world is become
The kingdom of our Lord,
And of His Christ, and of His Christ;
And He shall reign for ever and ever,

King of kings, and Lord of lords,
And Lord of lords,

And He shall reign forever and ever,
King of kings, forever and ever,
And Lord of lords,

Hallelujah! Hallelujah!

Ísland, farsælda frón (Iceland land of good fortune) *This romantic verse, a poem by Jónas Hallgrímsson, describes Iceland and its magnificent nature. It nostalgically recalls the times of real heroes from the Sagas. The tune is an ancient quint song, particular to Iceland, where the voices, a fifth apart, cross over in the middle.*

.

Ísland, farsælda frón
og hagsælda hrímhvíta móðir,
hvar er þín fornalda frægð,
frelsið og manndáðin best?

Landið er fagurt og frítt
og fannhvítir jöklanna tindar,
himinninn heiður og blár,
hafið er skínandi bjart.

Iceland, land of good fortune
and snow-white mother of prosperity.
Where is you splendid renown,
freedom and manhood of old?

The land is goodly and fair
and snow-white the glaciers' peaks.
The sky is blue and serene
the ocean resplendently bright.

Sofðu unga ástin mín (Sleep now softly)*, arranged by Jón Ásgeirsson (b.1928), is from Jóhann Sigurjónsson's play about Iceland's famous outlaw, Fjalla-Eyvindur and his wife, Halla, who lived in Iceland's highlands in the late 18th century. Halla sang this song to her baby before she threw it into a waterfall so she could follow her husband on his run from the authorities.*
It's a lullaby about death and horror and the tragic sadness of the world and the people that inhabit it - paradoxically, this lullaby is sung to almost every Icelandic child!

.

Sofðu unga ástin mín,
úti regnið grætur.
Mamma geymir gullin þín,
gamla leggi og völuskrín.
Við skulum ekki vaka um dimmar nætur.

Sleep now softly, little love,
outside rain is falling.
Mother guards your treasure-trove,
hoard of bones and chest for stones.
We shall not stay awake through dark nights.

Það er margt sem myrkrið veit,
minn er hugur þungur,
oft er svarta sandinn leit
svíða grænan engireit;
í jöklinum hljóða daðadjúpar sprungur.

Many secrets darkness keeps,
my mind is dark and heavy.
Many times I've black sand seen
scorch the grass of meadows green.
Deep in the ice the fissures groan.

Sofðu lengi, sofðu rótt,
seint mun best að vakna.
Mæðan kenna mun þér fljótt
meðan hallar degi skjótt,
að mennirnir elska, missa, gráta' og sakna.

Sleep now softly, sleep so long,
late is best to waken.
Troubles soon will teach you so,
while each day will quickly go,
people will love, lose, weep and mourn.

Krummavísa (Song of the Raven) *is arranged by Jón Ásgeirsson, who has been described as "a kind of Icelandic Bartòk" due to his extensive use of folk themes in his compositions. A raven invites his mate to a feast on the moor....*

.

Krummi krunkar úti,
kallar á nafna sinn:
"Ég fann höfuð af hrúti,
hrygg og gæruskinn.
Komdu nú og kroppaðu með mér,
krummi nafni minn."

The raven croaks outside,
calling to his mate:
"I found a ram's head,
backbone and lambskin.
Come and peck with me,
my namesake!"

There was a lad *is a lively, autobiographical, tongue-in-cheek telling of Robert Burns life story. This setting of the traditional tune Dainty Davie is by John McIntosh from 1995 and is a firm favourite of the chamber choir*

There was a lad was born in Kyle,
But whatna day o' whatna style,
I doubt it's hardly worth the while
Tae be sae nice wi' Robin

Robin was a rovin' boy,
Rantin', rovin', rantin', rovin'
Robin was a rovin' boy
Rantin', rovin' Robin.

Our monarch's hindmost year but ane*
Was five and twenty days begun**
'Twas then a blast o' Januar wind
Blew hansel in on Robin.

He'll hae misfortunes great and sma'
But ay a heart aboon them a'
He'll be a credit tae us a'
We'll a' be proud o' Robin

But sure as three times three is nine
I see by ilka score and line
This chap will dearly like our kin'
So leeze me on thee, Robin

** A reference to George II who died in 1760*
*** Hence to Burns' birthday, 25 January, 1759*

The Dark Island *is often thought to be an old, traditional song but in fact was composed by Iain MacLachlan as the theme for a BBC drama in 1962.*

Away to the west's where I'm longing to be,
Where the beauties of heaven unfold by the sea,
Where the sweet purple heather blooms fragrant and free,
On a hilltop high above the Dark Island.

Oh, isle of my childhood, I'm dreaming of thee,
As the steamer leaves Oban and passes Tiree,
Soon I'll capture the magic that lingers for me,
When I'm back once more upon the Dark Island.

So gentle the sea breeze that ripples the bay,
Where the stream joins the ocean, and young children play;
On the strand of pure silver, I'll welcome each day,
And I'll roam for ever more the Dark Island.

True gem of the Hebrides, bathed in the light
Of the midsummer dawning that follows the night
How I yearn for the cries of the seagulls in flight.
As they circle high above the Dark Island

The Gaelic dances*, arranged by J Norman McConnachie, feature in the classic romantic comedy from 1946,* ***I know where I'm going****, set on Mull and featuring singers from the Orpheus Choir.*

Ùbhi àbhi, ùbhi àbhi, air do shlàinte Mhàiri 'n Dotair,
Ùbhi àbhi, ùbhi àbhi, siud ort fhèin a Mhàiri.

Dannsadh air na staidhrichean, aig banais rìomhach Màiri 'n Dotair;
Dannsadh air na staidhrichean aig banais rìomhach Màiri.

Bidh an t-òr a' gliongartaich aig banais rìomhach Màiri 'n Dotair;
Bidh an t-òr a' gliongartaich aig banais rìomhach Màiri.

Good health, good luck to you, Mairi, the doctor's daughter. Go on and enjoy yourself, Mairi.

Dancing on the stairs at Mairi the doctor's daughter's lovely wedding.
Dancing on the stairs at Mairi's lovely wedding

The gold will be clinking at Mairi the doctor's daughter's lovely wedding.
The gold will be clinking at Mairi's lovely wedding

Mac a' Phì cnag-shùileach, Ceann Loch a' Feòrain,
Mac a' Phì cnag-shùileach, Ceann Loch a' Feòrain,
Mac a' Phì cnag-shùileach, Ceann Loch a' Feòrain,
Goididh e na gobhair a th' air teadhair air a' mhòintich.

Stad a' Mhàiri bhanarach gus an gabh mi an t-òran,
Stad a' Mhàiri bhanarach gus an gabh mi an t-òran,
Stad a' Mhàiri bhanarach gus an gabh mi an t-òran,
Chan fhaod mi, chan fhaod mi 's na laoigh a' dol don eòrna.

Squint eyed MacPhee from the head of Loch Feorainn,
Squint eyed MacPhee from the head of Loch Feorainn,
Squint eyed MacPhee from the head of Loch Feorainn,
Stealing the goats that are tethered on the moor.

Stop my maiden Mairi until I sing the song,
Stop my maiden Mairi until I sing the song,
Stop my maiden Mairi until I sing the song,
I can't, I can't, because the calves are in the barley field.

Krummi svaf (A Raven Slept) *is another song arranged by Jón Ásgeirsson about ravens, but this time there is nothing to eat in the cold winter weather.*

Krummi svaf í Klettagjá,
kaldri vetrarnóttu á
verður margt að meini.
Fyrr en dagur fagur rann,
freðið nefið dregur hann
undan stórum steini.

Allt er frosið úti gor,
ekkert fæst við ströndu mor
svengd er metti mína.
Ef að húsum heim ég fer
heimafrakkur bannar mér
seppi' úr sorp' að tína.

Öll er þakin ísi jörð,
ekki séð á holtabörð
fleygir fuglar geta.
En þó leiti út um mó,
auða hvergi lítur tó;
hvað á hrafn að éta.

A raven slept in a rocky cleft
on a winter's night so cold
feeling sorry for himself.
Before the beautiful day was over,
he, with his frozen beak,
looks out from under a large rock.

All outside is frozen, cold;
not a morsel on the shore.
Hunger gnaws my belly.
When I go to the houses,
boldly, a dog forbids me
to pick through the rubbish.

All the earth is covered in ice,
nothing on the flat heath
that the birds can see.
And even if I search in the marshes
there is nothing in the tufts of grass.
What shall a raven eat?

Vögguvísur (Lullaby) *is a gentle, simple lullaby based on a folk verse.*

Besta góða barnið mitt,
berðu þig að sofna,
fyrst að unga fjörið þitt
farið er að dofna.
Ró, ró ró.

Vaki englar vöggu hjá,
varni skaðanum kalda,
breiði Jesús barnið á
blessun þúsund falda.

Farðu´að sofa fyrir mig,
fyrst þú mátt og getur.
Ég skal breiða ofan á þig,
ofboðlítið betur.

Kristur minn, ég kalla´á þig,
komdu´að rúmi mínu,
gáttu inn og geymdu mig,
Guð í skauti þínu.

My sweet and lovely baby
it is time for sleep
now that your
energy is spent.
lulla-lulla-lay.

May angels wake by your crib
protecting you from danger
May the Lord Jesu spread
a thousand blessings upon your head.

Try to sleep now,
as you may and must.
I will draw the covers up,
just a little better.

Lord Jesus I ask of you
come you to this cradle,
watch over and keep me
Lord, in your arms.

Hickenstirn's Song *was the first concert piece performed by the Toynbee House Musical Association (later the Orpheus Choir) at a worker's benefit in the East End of Glasgow in 1903. It tells of the elopement of a "knight who lived by pillage" with his true love, his neighbour's daughter.*

O who will o'er the downs so free,
O who will with me ride,
O who will up and follow me,
To win a blooming bride?

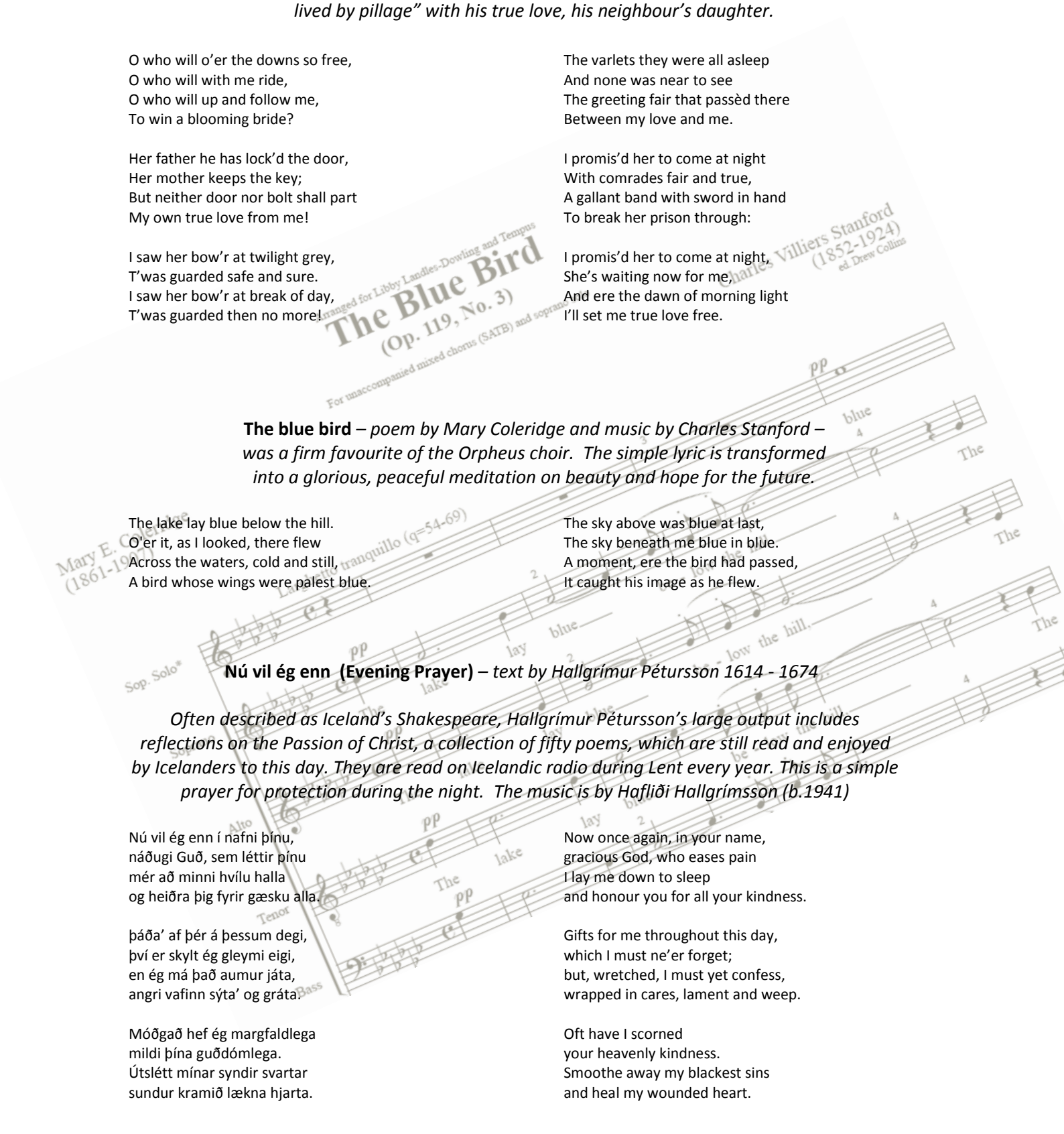
Her father he has lock'd the door,
Her mother keeps the key;
But neither door nor bolt shall part
My own true love from me!

I saw her bow'r at twilight grey,
T'was guarded safe and sure.
I saw her bow'r at break of day,
T'was guarded then no more!

The varlets they were all asleep
And none was near to see
The greeting fair that passèd there
Between my love and me.

I promis'd her to come at night
With comrades fair and true,
A gallant band with sword in hand
To break her prison through:

I promis'd her to come at night,
She's waiting now for me,
And ere the dawn of morning light
I'll set me true love free.



The blue bird – *poem by Mary Coleridge and music by Charles Stanford – was a firm favourite of the Orpheus choir. The simple lyric is transformed into a glorious, peaceful meditation on beauty and hope for the future.*

The lake lay blue below the hill.
O'er it, as I looked, there flew
Across the waters, cold and still,
A bird whose wings were palest blue.

The sky above was blue at last,
The sky beneath me blue in blue.
A moment, ere the bird had passed,
It caught his image as he flew.

Nú vil ég enn (Evening Prayer) – *text by Hallgrímur Pétursson 1614 - 1674*

Often described as Iceland's Shakespeare, Hallgrímur Pétursson's large output includes reflections on the Passion of Christ, a collection of fifty poems, which are still read and enjoyed by Icelanders to this day. They are read on Icelandic radio during Lent every year. This is a simple prayer for protection during the night. The music is by Hafliði Hallgrímsson (b.1941)

Nú vil ég enn í nafni þínu,
náðugi Guð, sem léttir pínu
mér að minni hvílu halla
og heiðra þig fyrir gæsku alla.

þáða' af þér á þessum degi,
því er skylt ég gleymi eigi,
en ég má það aumur játa,
angri vafinn sýta' og gráta.

Móðgað hef ég margfaldlega
mildi þína guðdómlega.
Útslétt mínar syndir svartar
sundur kramið lækna hjarta.

Now once again, in your name,
gracious God, who eases pain
I lay me down to sleep
and honour you for all your kindness.

Gifts for me throughout this day,
which I must ne'er forget;
but, wretched, I must yet confess,
wrapped in cares, lament and weep.

Oft have I scorned
your heavenly kindness.
Smoothe away my blackest sins
and heal my wounded heart.

Maríukvæði (A Prayer to Mary) *This hymn to Mary was found in the papers of Halldór Kiljan Laxness (1902 - 1998) after his death and is thought to have been written while Laxness, as a young man, lived in a Catholic monastery. Marian verses have been popular in Iceland since before the Reformation and this setting is by Atli Heimir Sveinsson (b.1938).*

Hjálpa þú mér helg og væn,
himnamóðirin bjarta:
legðu mína bljúgu bæn
barninu þínu að hjarta.
Þá munu ávallt grösin græn
í garðinum skarta,
í garðinum mínum skarta.

Bænheit rödd mín biður þín,
blessuð meðal fljóða;
vertu æ uns ævin dvín
inntak minna ljóða;
móðir guðs sé móðir mín
og móðir þjóða,
móðir allra þjóða.

Kenn mér að fara í för þín ein,
fram að himnaborðum,
leiddu þennan litla svein,
líkt og son þinn forðum.
Líkt og Krists sé heyrn mín hrein
að hlýða orðum,
hlýða þínum orðum.

Help me, O holy and dear
heavenly mother so bright,
place my humble prayer
to thy child's heart.
Then green grasses will ever more
adorn the garden,
adorn this my garden.

My voice is burning in prayer,
among women blessed thou art;
until life wanes - be ever
my poetry's inspiration;
God's mother is my mother
and mother of nations,
mother of all nations.

Teach me to follow thy way
towards the heavenly table,
lead forth so this little boy
like thy son before.
As pure as Christ so may I hear
words to obey,
thy words to obey.

Litla kvæðið um lítil hjónin (Little Gunna and Little Jón) – *Almost a nonsense rhyme (reminiscent of the Gaelic dances in this respect), this piece by Páll Ísólfsson (1893 - 1974) is the story of a little couple, who in the end, regret their lack of children.*

Við lítinn vog, í litlum bæ er lítið hús.
Í leyni inní lágum vegg er lítil mús.
Um litlar stofur læðast hægt
og lítil hjón,
því lágvaxin er litla Gunna og litli Jón.

Þau eiga lágt og lítið borð og lítinn disk.
og litla skeið og lítinn hníf og lítinn fisk
og lítið kaffi og lítið brauð og lítil grjón. -
því lítið borða litla Gunna og litli Jón,

Þau höfðu lengi litla von um lítil börn
sem léku sér með lítil skip við litla tjörn,
en loksins sveik sú litla von þau litlu flón,
og lítið elskar litla Gunna hann litla Jón.

By a little cove in a little town is a little house
and hidden in a little wall is a little mouse
in the little parlour creeping about.
And in that house are the little couple
Little Gunna and little Jón.

They have a low and little table a little dish
and little knife and little fork and a little fish.
And little coffee, and little bread and little grain,
because they eat so little,
the little couple Gunna and Jón.

Long had they a little hope for little children, who would play
with a little ship in a little pond.
But in the end their little hopes were dashed,
the silly little noodles.
And little Gunna only loves little Jón –
a little.

Ye banks and braes, *a Burns text which is a favourite of the chamber choir but new to Selkórinn, is arranged here by C Hunter.*

Ye banks and braes o' bonnie Doon,
How can ye bloom sae fresh and fair?
How can ye chant ye little birds,
And I sae weary, fu' o' care.

Thou'lt brak my heart thou warbling bird
That wantons thro' the flow'rin' thorn
Thou minds me o' depairted joys,
Depairted, never tae return.

Aft hae I stray'd by bonnie Doon
Tae see the rose and woodbine twine,
And ilka bird sang o' its love,
And fondly sae did I o' mine.

Wi' lichtsome heart I pu'd a rose
Fu' sweet upon its thorny tree
And my fause lover stole my rose
But ah, he left the thorn wi' me.

This arrangement of **Beatus Vir** *with texts from Psalm 143 and Psalm 34 is an original composition by Selkórinn's conductor, Oliver Kentish (b.1954).*

Domine, exaudi orationem meam
Exaudi me in tua justitia.

Expandi manus meus ad te
Anima mea sicut terra sine acqua tibi

Beatus vir qui sperat in eo. Amen

Lord, hear my prayer
Hear me in your righteousness.

I hold out my hand to you
My soul is as earth without water to you,

Blessed is the man that trusts in him. Amen

Philip Stopford's **Ave Regina Caelorum** *is a fine example of modern choral invention, combining an ancient text with a simple but compelling harmony.*

Ave, Regina Caelorum,
Ave, Domina Angelorum:
Salve, radix, salve, porta
Ex qua mundo lux est orta:
Gaude, Virgo gloriosa,
Super omnes speciosa,
Vale, o valde decora,
Et pro nobis Christum exora

Hail, Queen of the skies,
Hail, Mistress of the angels,
Greetings, root, greetings, gate
From whom the light of the world is born.
Rejoice, glorious Virgin,
Beautiful beyond all others,
Farewell, beautiful maiden,
Pray for us to Christ.

Smávinir fagrir (Beautiful tiny friends) *from a poem by Jónas Hallgrímsson (1807 - 1845)*
A gentle pastorale by Jón Nordal (b.1926), expressing the poet's love of his homeland, this is one of Iceland's most-loved songs.

Smávinir fagrir, foldarskart,
fífill í haga, rauð og blá
brekkusóley, við mættum margt
muna hvort öðru að segja frá.

Faðir og vinur alls sem er,
annastu þennan græna reit.
Blessaðu, faðir, blómin hér,
blessaðu þau í hverri sveit.
Vesalings sóley, sérðu mig?
Sofðu nú vært og byrgðu þig.
Hægur er dúr á daggarnótt.
Dreymi þig ljósið, sofðu rótt!

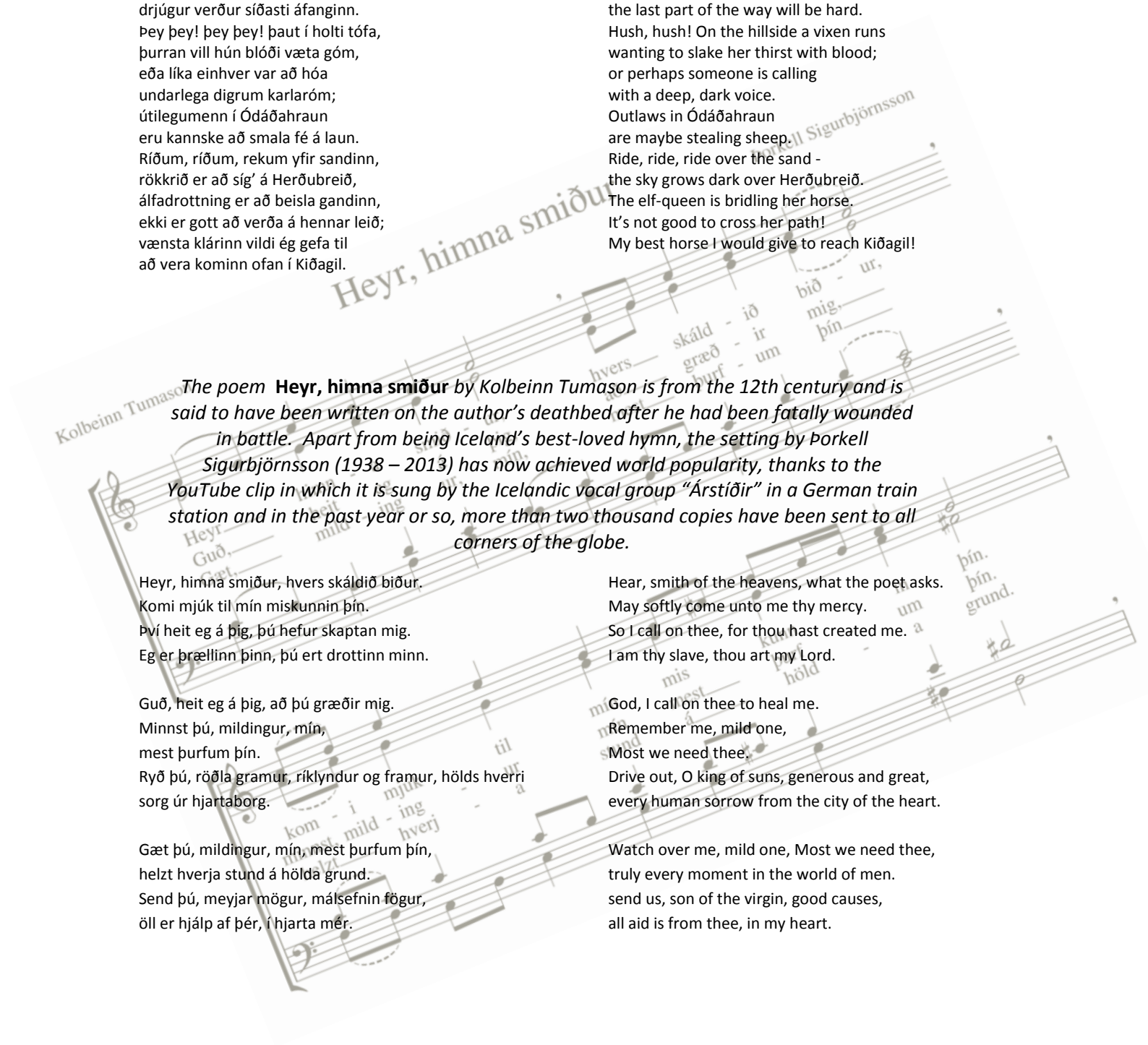
Beautiful tiny friends, ornaments of the earth
dandelions in the field, red and blue
buttercups, we should remember things
to tell each other.

Father and friend of all that is,
care for this verdant spot.
Bless, Father, these flowers,
bless them in ev'ry place.
Poor buttercup, do you see me?
Sleep peacefully and cover yourself,
slow comes the rest in the dewy night,
dream of the light, sleep tight!

Á Sprengisandi (Ride, ride!) *poem by Grímur Thomsen (1820 - 1896)*
A rollicking tune from Sigvaldi Kaldalóns (1881 – 1946) telling of the ride across the highlands and the dangers that could be encountered there, from elven queens to sheep-rustlers.

Ríðum, ríðum og rekum yfir sandinn,
rennur sól á bak við Arnarfell,
hér á reiki er margur óhreinn andinn,
úr því fer að skyggja á jökulsvell;
Drottinn leiði drösulinn minn,
drjúgur verður síðasti áfanginn.
Þey þey! þey þey! þaut í holti tófa,
þurran vill hún blóði væta góm,
eða líka einhver var að hóa
undarlega digrum karlaróm;
útilegumenn í Ódáðahraun
eru kannske að smala fé á laun.
Ríðum, ríðum, rekum yfir sandinn,
rökkrið er að síg' á Herðubreið,
álfadrottning er að beisla gandinn,
ekki er gott að verða á hennar leið;
vænsta klárinn vildi ég gefa til
að vera kominn ofan í Kiðagil.

Ride, ride, ride over the sand -
the sun is setting behind Arnarfell.
Hereabout are many evil spirits
and the twilight deepens on the ice.
Lord, guide my old mare,
the last part of the way will be hard.
Hush, hush! On the hillside a vixen runs
wanting to slake her thirst with blood;
or perhaps someone is calling
with a deep, dark voice.
Outlaws in Ódáðahraun
are maybe stealing sheep.
Ride, ride, ride over the sand -
the sky grows dark over Herðubreið.
The elf-queen is bridling her horse.
It's not good to cross her path!
My best horse I would give to reach Kiðagil!



The poem **Heyr, himna smiður** *by Kolbeinn Tumason is from the 12th century and is said to have been written on the author's deathbed after he had been fatally wounded in battle. Apart from being Iceland's best-loved hymn, the setting by Þorkell Sigurbjörnsson (1938 – 2013) has now achieved world popularity, thanks to the YouTube clip in which it is sung by the Icelandic vocal group "Árstíðir" in a German train station and in the past year or so, more than two thousand copies have been sent to all corners of the globe.*

Heyr, himna smiður, hvers skáldið biður.
Komi mjúk til mín miskunnin þín.
Því heit eg á þig, þú hefur skaptan mig.
Eg er þrællinn þinn, þú ert drottinn minn.

Guð, heit eg á þig, að þú græðir mig.
Minnst þú, mildingur, mín,
mest þurfum þín.
Ryð þú, röðla gramur, ríklyndur og framur, hölds hverri
sorg úr hjartaborg.

Gæt þú, mildingur, mín, mest þurfum þín,
helzt hverja stund á hölda grund.
Send þú, meyjar mögur, málsefnin fögur,
öll er hjálp af þér, í hjarta mér.

Hear, smith of the heavens, what the poet asks.
May softly come unto me thy mercy.
So I call on thee, for thou hast created me.
I am thy slave, thou art my Lord.

God, I call on thee to heal me.
Remember me, mild one,
Most we need thee.
Drive out, O king of suns, generous and great,
every human sorrow from the city of the heart.

Watch over me, mild one, Most we need thee,
truly every moment in the world of men.
send us, son of the virgin, good causes,
all aid is from thee, in my heart.

Ubi caritas et amor *is a modern setting by Ola Gjeilo of a traditional text. Gjeilo was born near Oslo in 1978 and studied at the Norwegian Academy of Music, the RCM, London and the Juilliard School in New York City where he now lives and works, most recently in collaboration with Morten Lauridsen*

Ubi caritas et amor, Deus ibi est.
Congregavit nos in unum Christi amor.
Exsultemus, et in ipso jucundemur.
Timeamus, et amemus Deum vivum.
Et ex corde diligamus nos sincero.

Where charity and love are, God is there.
Christ's love has gathered us into one.
Let us rejoice and be pleased in Him.
Let us fear, and let us love the living God.
And let us love with a sincere heart.

The gallant weaver by Robert Burns was set to music by James Macmillan in 1997 to mark the centenary of Paisley University's George St building. The words are particularly suited to the theme and location of our celebration. By 1900 the weaving industry had made Paisley world famous, and the threadmaking company J&P Coats was the third largest business in the world.

Where Cart rins rowin to the sea,
By mony a flower and spreading tree,
There lives a lad, the lad for me,
He is a gallant Weaver.

Oh I had wooers aught or nine,
They gied me rings and ribbans fine;
And I was fear'd my heart wad tine
And I gied it to the Weaver.

My daddie sign'd my tocher-band
To gie the lad that has the land,
But to my heart I'll add my hand
And give it to the Weaver.

While birds rejoice in leafy bowers,
While bees delight in opening flowers,
While corn grows green in simmer showers,
I love my gallant Weaver.

Hark, hark the echo falling, *described by Hugh Roberton as "a playful fancy, or conceit which has managed, by virtue of its attractiveness to weather the storms of time", was recorded by the Orpheus Choir in the English translation of Orlando di Lasso's original Italian version. The lyrics, sung tonight in English, are a fitting way to move towards the end of our celebration as we bid farewell.*

Hark, hark, the echo falling,
Far over there replying.
Ha ha ha ha ha, it joins the laughter.
Sing like a fair one. Where are you?
We would be sad to leave you.
Warble a ditty. Why sir? Ask you why?
Why not, pray? Because we wish it.

Why will you not? Why will you not please us?
Silence now, pray! Hold your peace!
What now, sir? No one will hear.
Adieu then! Farewell good echo,
Farewell good echo.
We must leave you. Stop now! Stop now!
Hold, enough sir! Farewell

The Icelandic national anthem **Ó, guð vors lands!** *was written by Edinburgh-based Sveinbjörn Sveinbjörnsson (1847 – 1927) in 1874. The hymn lyric, by the prodigious writer and priest, Matthías Jochumsson, was chosen to be Iceland's national anthem after independence in 1944.*

Ó, guð vors lands! Ó, lands vors guð!
Vér lofum þitt heilaga, heilaga nafn!
Úr sólkerfum himnanna hnýta þér krans
þínir herskarar, tímanna safn.
Fyrir þér er einn dagur sem þúsund ár,
og þúsund ár dagur, ei meir;
eitt eilífðar smáblóm með titrandi tár,
sem tilbiður guð sinn og deyr.
Íslands þúsund ár,
Íslands þúsund ár!
eitt eilífðar smáblóm með titrandi tár,
sem tilbiður guð sinn og deyr.

Oh, God of our country! Oh, our country's God!
We worship Thy name in its wonder sublime.
The suns of the heavens are set in Thy crown
By Thy legions, the ages of time!
With Thee is each day as a thousand years,
Each thousand of years, but a day,
Eternity's flow'r, with its homage of tears,
That reverently passes away.
Iceland's thousand years,
Iceland's thousand years!
Eternity's flow'r, with its homage of tears,
That reverently passes away.

The Dashing White Sergeant *is a familiar tune to all Scots and is said to be the inspiration for "I wish I was in Dixie" - the unofficial anthem of the rebel South. The music was composed by Henry Bishop (1786 – 1855) This arrangement and these lyrics (with minor amendments!) were written by Sir Hugh Roberton for the Orpheus Choir.*

Now the fiddler's ready let us all begin.
So step it out and step it in,
To the merry music of the violin
We'll dance the hours away.

Katy and Eilidh and Tara and Phil,
Calum and Stephen and Karen and Will,
Dance! Dance! Dance! Dance!
Dance away the hours together.

Dance till dawn be in the sky.
What care you and what care I?
Hearts a-beating, spirits high
We'll dance, dance dance!

Now the fiddler's ready let us all begin.
So step it out and step it in,
To the merry music of the violin
We'll dance the hours away.

Liam and Sarah and Rachel and Stef
Alan and Iain and Matthew and Viv.
Dance! Dance! Dance! Dance!
Dance away the hours together.

Dance till dawn be in the sky.
What care you and what care I?
Hearts a-beating, spirits high
We'll dance, dance dance!

University of Strathclyde Glasgow

the ENGINEERING ACADEMY

The Engineering Academy is a pioneering programme that provides students with an alternative route into university and employment. It is a collaboration between the University of Strathclyde, partner colleges and industry which will deliver a pathway to a range of engineering degrees in the University's leading Faculty of Engineering.

The first year of the Engineering Academy is taken as an enhanced HNC programme with practical skills units at one of the partner colleges. Those students who achieve the required performance are guaranteed transfer to the 2nd year of one of the undergraduate degree programmes offered within the Engineering Academy by the following Faculty of Engineering departments:

- Chemical & Process Engineering
- Civil & Environmental Engineering
- Design, Manufacture & Engineering Management
- Electronic & Electrical Engineering
- Mechanical & Aerospace Engineering
- Naval Architecture, Ocean and Marine Engineering

Students will benefit from industry-funded scholarships and paid summer placements during the course of their undergraduate programme. This will offer them specific mentoring and professional development with the sponsoring company, as well as enhanced future employment prospects.

The University of Strathclyde The Home of the Technology and Innovation Centre

The University of Strathclyde is a leading international technological university which is recognised for strong research links with business and industry, commitment to enterprise and skills development, and knowledge sharing with the private and public sectors. This vision is realised through the £89m Technology and Innovation Centre, which is transforming the way academics, industry and the business community work together to solve global challenges in four main research areas: health; energy; manufacturing and future cities.

Strathclyde is investing £350m in its campus to provide first-class learning and research facilities. Along with the Technology and Innovation Centre, major investments include the £36m Strathclyde Institute of Pharmacy and Biomedical Sciences; the Advanced Forming Research Centre, which has doubled in size and which supports manufacturing for the aerospace, energy, marine and automobile industries; and the £12.5m Power Network Demonstration Centre, which accelerates the adoption of new, smart technologies.

An Award Winning Institution

The University also has an extensive record of success in awards made by Times Higher Education, winning in four consecutive years: Knowledge Exchange/Transfer Initiative of the Year (2014); Entrepreneurial University of the Year (2013); UK University of the Year (2012) and Research Project of the Year (2011).

The University is making significant progress in its research quality, recognised in the recent Research Excellence Framework (REF) – the Government-led benchmarking exercise. Strathclyde is now among the 20 top research-intensive universities in the UK, seven of the eight Engineering departments are ranked in the top 10 in the UK and the Physics Department beat competition from Oxford and Cambridge to be ranked number one in the UK.

Collaborative Industry Focussed Research Centres

Further evidence of Strathclyde's research excellence in the field is its leading role in the National Physical Laboratory (NPL), the UK's leader in measurement science. In collaboration with the Department of Business, Innovation and Skills and the University of Surrey, Strathclyde will set the future strategic direction of NPL and will help align the laboratory's work within the needs of business and industry.

The Weir Advanced Research Centre at Strathclyde is recognised as the Weir Group's main research and development centre, supporting global operations in more than 70 countries with 14,000 employees. WARC will become an integral part of the Technology and Innovation Centre – epitomising the ethos of collaboration between academia and industry to innovate together.

WARC is the result of a long-standing partnership with the Weir Group, with investment supporting PhD studentships, underscoring the commitment to education and advanced engineering skills in the UK. There is transfer of advanced research outcomes and staff skills from Strathclyde into industry design and manufacture. In return, Strathclyde staff gain invaluable insight into industry best practice.

The Faculty of Engineering

The Faculty of Engineering at Strathclyde is one of the largest, best-equipped engineering faculties in the UK and the largest in Scotland. It is home to more than 5,000 students from over 90 countries. It hosts the largest university electrical power engineering and energy research grouping in Europe. Together with industry, the University is developing solutions to global energy challenges, from advanced renewable energy technologies, through smart grids to leading-edge design for marine and aerospace electrical networks.

Knowledge Transfer Partnerships and Centres for Doctoral Training

The University of Strathclyde and specifically the Faculty of Engineering actively participate in Innovate UK's Knowledge Transfer Partnership Programme and are consistently in the UK Top 3 performers. KTPs allow the academic community to work directly with companies in a collaborative manner. The KTP programme is now in its 40th year and is the premier knowledge exchange mechanism for companies to work with the University.

The Faculty is also leading in training the next generation of researchers and is engaged in eleven multi-million pound EPSRC-funded Doctoral Training Centres in Wind Energy, Medical Devices, Advanced Forming and Manufacture, Systems Engineering, Nuclear Engineering, Optics and Photonics, Offshore Renewable Energy and Continuous Manufacture and Crystallisation. Growth in its postgraduate research student community is a key strategic priority for the Faculty with more than £5 million directed towards supporting our postgraduate research students annually.

The Engineering Academy

In November 2013, Cabinet Secretary for Education and Lifelong Learning Michael Russell officially launched the Engineering Academy at the University of Strathclyde. The Engineering Academy is a collaboration between the University of Strathclyde, partner further education colleges and industry which will deliver an alternative route to a range of engineering degrees in the University's Faculty of Engineering.

The Engineering Skills Academy will also be available to industry partners who would like to broaden the skills and training of their employees and this forms part of the Faculty of Engineering's strategy to build engagement with SMEs. This SME engagement will not only provide access to training facilities but will also offer access to state-of-the-art facilities and equipment as well as consultancy and knowledge exchange (KE) support from the Faculty's Academic, Research and KE staff.

The Engineering Academy is a pioneering programme that provides students with an alternative route into university and employment. It is a collaboration between the University of Strathclyde, partner colleges and industry which will deliver a pathway to a range of engineering degrees in the University's leading Faculty of Engineering. The first year of the Engineering Academy is taken as an enhanced HNC programme with practical skills units at one of the partner colleges. Those students who achieve the required performance are guaranteed transfer to the 2nd year of one of the undergraduate degree programmes offered within the Engineering Academy by the Faculty of Engineering.

Students will benefit from industry-funded scholarships and paid summer placements during the course of their undergraduate programme. This will offer them specific mentoring and professional development with the sponsoring company, as well as a source of income during their degree course.

HELIE POWER

Happy to support The Strathclyde University Chamber Choir & Selkorinn as they celebrate the 250th anniversary of James Watt's steam engine achievements!

Achieving energy efficiency with innovation.

www.heliexpower.com

Heliex Screw Expander Systems allow clients to harness waste heat from industrial processes to generate electricity, which can be used on site or sold back to the grid.

Applications include cogeneration, biomass and waste heat recovery in a variety of industries including food and drink, petrochemical, waste incineration, cement, glass, agriculture and many more.

- Generate clean electricity from wet steam – efficiently!
- Reduce your carbon footprint and qualify for financial incentives
- Tap into unexploited potential for energy savings

WASTE HEAT TO POWER

www.heliexpower.com

Our experience in Refrigeration is impressively wide.

STAR REFRIGERATION

Pioneers of natural refrigeration technology since 1970.

Where innovation happens naturally

Our expertise in thermal technology includes:

- Industrial scale refrigeration and chillers
- Heat pumps, heat networks and heat recovery
- Power generation from waste heat and pressure

www.star-ref.com | star@star-ref.com | +44 141 638 7916

Professor William John Macquorn Rankine

Professor William J.M. Rankine, who gave his name to the steam power cycle and the imperial unit of absolute temperature, was a founding member and the first President of the Institution of Engineers and Shipbuilders. He was professor of Civil Engineering at Glasgow University from 1855 until his death in 1872 and was also a keen amateur musician and lyricist. Here are two of his poems, taken from the anthology "Songs and Fables", published in 1874 as a memorial to this "excellent man and admirable Professor".

The Mathematician in love

A MATHEMATICIAN fell madly in love
With a lady, young, handsome, and charming:
By angles and ratios harmonic he strove
Her curves and proportions all faultless to prove.
As he scrawled hieroglyphics alarming.

He measured with care, from the ends of a base,
The arcs which her features subtended:
Then he framed transcendental equations, to trace
The flowing outlines of her figure and face,
And thought the result very splendid.

He studied (since music has charms for the fair)
The theory of fiddles and whistles, —
Then composed, by acoustic equations, an air,
Which, when 'twas performed, made the lady's long hair
Stand on end, like a porcupine's bristles.

The lady loved dancing: — he therefore applied,
To the polka and waltz, an equation;
But when to rotate on his axis he tried,
His center of gravity swayed to one side,
And he fell, by the earth's gravitation.

No doubts of the fate of his suit made him pause,
For he proved, to his own satisfaction,
That the fair one returned his affection; — "because,
"As every one knows, by mechanical laws,
"Re-action is equal to action."

"Let x denote beauty, — y, manners well-bred, —
"z, fortune, — (this last is essential), —
"Let L stand for love" — our philosopher said, —
"Then L is a function of x, y, and z,
"Of the kind which is known as potential."

"Now integrate L with respect to dt,
"(t standing for time and persuasion);
"Then, between proper limits, 'tis easy to see,
"The definite integral Marriage must be: —
"(A very concise demonstration)."

Said he — "If the wandering course of the moon
"By algebra can be predicted,
"The female affections must yield to it soon" —
— But the lady ran off with a dashing dragoon,
And left him amazed and afflicted.

The Engine-driver to his Engine

Put forth your force my iron horse, with limbs that never tire!
The best of oil shall feed your joints, and the best of coal your fire,
So off we tear from Euston Square, to beat the swift south wind,
As we rattle along the North West Rail, with the express train behind.

Dash along, crash along, sixty miles an hour!
Right through old England flee!
For I am bound to see my love,
Far away in the North Countrie.

Like a train of ghosts the telegraph posts go wildly trooping by,
While one by one the milestones run and off behind us fly.
Like foaming wine it fires my blood to see your lightning speed,
Arabia's race ne'er matched your pace my gallant steam-borne steed.

Wheel along, squeal along, sixty miles an hour!
Right through old England flee!
For I am bound to see my love
Far away in the North Countrie.

My blessing on old George Stephenson! Let his fame for ever last,
For he was the man that found the plan to make you run so fast.
His arm was strong, his head was long, he knew not guile nor fear;
When I think of him it makes me proud that I am an engineer!

Tear along, flare along, sixty miles an hour!
Right through old England flee!
For I am bound to see my love
Far away in the North Countrie.

Now Thames and Kent are far behind and evening's shades are come,
Before my eyes the brown hills rise that guard my true love's home.
Even now she stands, my own dear lass, beside the cottage door,
And she listens for the whistle shrill and the blast pipes rattling roar.

Roll along, bowl along, sixty miles an hour!
Right through old England flee!
For I am bound to see my love
Far away in the North Countrie.

The Strathchamber Trust is a charity, registered in Scotland, number SCO43275

In association with

IESIS

A MULTI-DISCIPLINARY ENGINEERING INSTITUTION