ORKNEY *International* SCIENCE FESTIVAL

5 – 11 SEP 2019

Foraging for ideas, foraging for wellbeing!

This year the Festival has an added dimension, with many new talks and outings. It's through the development of the first Foraging Fortnight. Orkney is one of five regions across Scotland coming together through the LEADER programme of Scottish and EU funding for rural development.

This has enabled us to provide many new events, including scenic walks and outings, talks with new insights into wild food and our ancestors' diet and new opportunities for today, and some appetising menus past and present.

In addition to the seven days of the programme, there are special events before and after including outings to Hoy, Egilsay/Rousay and Papay – see separate page for details.

Tickets: Tickets for most events are available online at www.oisf.org or Kirkwall tourist office. Booking for some events by phone or email.

Prices: For most events, the admission price is £5 (adults) or £3 (concessions). If you plan to go to a number, a LecturePass can be good value. A ticket price is given for events where a LecturePass does not apply.

Island events: More details locally and on www.oisf,org.

More information: See our online magazine www.frontiersmagazine.org for more about Festival speakers and events as well as science,exploration and Orkney generally.

Contact: We're on 01343 540844, orkneyscience@gmail.com.

Updates: See www.oisf.org and also Facebook and Twitter @ OrkneySciFest.

Disclaimer: The Festival reserves the right to alter, amend or cancel the programme contents at its discretion or as circumstances may necessitate.

Remember the Molecule Hunt round the Kirkwall shops!

There are 20 molecules to find, each connected with the business of the shop or organisation where they're located.

See leaflets in shops and on our website.

More details of island events locally and on www.oisf.org
Contact us on 01343 540844, orkneyscience@gmail.com

Book online and get updates at www.oisf.org

Follow us on Facebook and Twitter @OrkSciFest!

The Scottish Government

Orkney Islands Council

LEADER

Foraging Fortnight

Scotland The Perfect Stage

EventScotland

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Thursday 5 September

11.30 – 12.30 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

OLD WAYS AND NEW JOURNEYS

Zeki Basan, who opens the Festival, grew up in a remote part of the Cairngorms. Depending on the seasons, he is a glacier guide in Iceland and a wilderness instructor in Scotland. He describes the skills of survival used in the past in Scotland and by indigenous peoples today and shows short films of his solo adventures.

2.00 – 3.00 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

THE SHIP COMES HOME

The Norwegian explorer Roald Amundsen's ship Maud, built for polar exploration, was eventually sold and sank in pack ice. But she has now been raised and was last year floated back to the village where it was built. Oceanographer Prof. Peter Wadhams and polar historian Dr Maria Pia Casarini were there to see it and tell the story of Amundsen and his ship.

3.30 – 4.30 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

FORGING ICELAND'S FUTURE

Roger Crofts, a frequent traveller there, looks at the dynamic natural and cultural forces shaping its landscape and people: through ice, water and fire, combined with economic and social changes. The challenges of today include rebalancing the economy and managing excess visitors, exporting green energy and preparing for future eruptions, protecting the environment and stabilising the soil.

Supported by the Royal Scottish Geographical Society

5.00 – 7.15 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

FILM: TOMORROW

A hugely positive, affirming and inspirational film, exploring creative solutions in the fields of food, energy, transport, economics and education. It's also the beginning of a movement seeking to encourage local communities around the world to change the way they live for the sake of our global future. It's being shown to launch a series of screenings of Take One Action films in Orkney. Tickets £6 & £4: book from Pickaquoy, www.pickaquoy.co.uk/book-online, or 01856 879900.

5.15 – 6.15 pm ***Orkney Theatre, KGS, Kirkwall***

FLAVOURS OF THE WILD

Some of the most appetising dishes can come from food we find at our feet, says chef Ben Reade of Edinburgh Food Studio. He's former head of culinary research and development at the Nordic Food Lab established by the founders of Copenhagen's world-renowned Noma restaurant. He describes the possibilities of seaweeds, shellfish and common garden weeds, and fermented foods with simple ingredients transformed by wild microorganisms.

7.30 – 8.30 pm ***Orkney Theatre, KGS, Kirkwall***

POLES APART

Polar bears, king penguins, snowy owls, elephant seals, reindeer.... Stunning photographs in spectacular scenery as author and photographer Michael Leach, who has worked on over 100 TV wildlife programmes around the world, compares the wildlife of the Arctic and Antarctic.

7.30 – 8.30 pm ***Town Hall, Stromness***

ELEMENTS FOR ENERGY

To keep atmospheric CO2 within limits we need many other elements from the 150-year-old Periodic Table – Li batteries, Cu wires, rare earths for magnets, H for fuel with Pt group metal catalysts. Prof. Tom

Stevenson, Jon Clipsham of EMEC and chemist Dr Edvard Kobal look more closely at some fascinating elements.

In association with EMEC and the Slovenian Science Foundation

9.00 – 10.00 pm ***Town Hall, Stromness***

ORKNEY'S RENEWABLES REVOLUTION

Orkney leads the world in wave and tidal energy demonstration, the development of a hydrogen economy, and energy systems integration through the recently launched ReFLEX Orkney project. Hear about the progress being made from Neil Kermode of EMEC, Gareth Davies of Aquatera, and Mark Hamilton of Solo Energy.

In association with EMEC and sponsored by Clark Thomson Insurance

9.00 – 10.00 pm ***Orkney Theatre, KGS, Kirkwall***

Orkney Field Club 60th Anniversary Lecture

SAVING OUR BUMBLEBEES

Many wildflowers would not set seed without them, and they're major crop pollinators, but many bumblebees are in decline. It's part of a pattern for insects, symptomatic of broader environmental damage that threatens our future wellbeing; the fate of humans and insects is inextricably linked. Prof. Dave Goulson of Sussex University discusses the causes of insect declines – and the many things we can do to halt and reverse them.

In association with Orkney Field Club

9 - 11.30 pm ***Meet up at the Festival Club at The Reel***

Friday 6 September

10.00 – 11.00 am ***King Street Halls, Kirkwall***

MAPPING SCOTLAND'S ISLANDS

Scotland's Geographer Royal, Prof. Charles Withers of the University of Edinburgh, tells a richly illustrated story of Scotland's islands in maps, from 16th-century maps that included imaginary islands to modern digital cartography. It is a story in which maps served varied purposes, in which Orkney's islands figure centrally and in which maps became powerful paper landscapes.

Supported by the Royal Scottish Geographical Society

11.30 am – 12.30 pm ***King Street Halls, Kirkwall***

MURDOCH MACKENZIE'S REMARKABLE MAPS

Numerous shipwrecks in Orkney waters in the 1700s made better maps urgent. Kirkwall Grammar School master Murdoch Mackenzie applied his Edinburgh University mathematical training to a highly detailed survey of land and sea, to produce a radically different level of map, which remained the standard until the modern admiralty chart. Neil Kermode tells the story.

In association with Orkney Heritage Society

11.30 am – 3.30 pm ***From St Peter's Church, Eastside, South Ronaldsay***

WORKSHOP: TANNING FISH SKINS

Wilderness instructor Zeki Basan shows you how to use the tannin from heather, and other natural materials, to turn salmon skins into a soft and strong leather. Outdoor event, numbers limited, booking essential. Hosted by Wheems Organic Farm, South Ronaldsay. £25 price includes farm-fresh lunch. Meet in car park at St Peter's Church by the shore.

The One O'Clock Toast at the Peedie Kirk: mapmaker Murdoch Mackenzie, by Commander Gary Mills RN

1.30 pm at Kirkwall Harbour: unveiling of plaque to Murdoch Mackenzie by Prof. Charles Withers, Geographer Royal of Scotland, and David Reid MBE, master of the Proud Seahorse which provided hydrographic surveying to the Royal Navy for 15 years.

2.00 – 3.00 pm ***King Street Halls, Kirkwall***

ALL WE SURVEY

The work of the great mapmaker Murdoch Mackenzie, says Prof. Tom Stevenson with some practical demonstrations, was the beginning of two and a half centuries of innovation that led to the Decca navigation system and then today to the GPS system accessible through our smartphones wherever we are.

3.30 – 4.30 pm ***King Street Halls, Kirkwall***

FOOTSTEPS ON THE MOON

50 years ago a man set foot on the Moon. How – and why? – did they do it? What were the risks? What did it feel like for these extraordinary space explorers and their support teams? Eric Walker relates the story of the Apollo landings with archive photos, images of the Moon from his home observatory, and 3D-printed models of the lunar surface.

Supported by the Institute of Physics in Scotland

5.15 – 6.15 pm ***King Street Halls, Kirkwall***

STARS FROM THE MOUNTAIN TOPS, INCHES IN THE PYRAMIDS

Scotland's 2nd Astronomer Royal, Charles Piazzi Smyth, born in 1819, pioneered the use of mountain tops to observe the stars in clear air with an expedition to Tenerife. In Egypt he measured the dimensions of the Great Pyramid and its astronomical orientation. Matjaž Vidmar of the Royal Observatory Edinburgh tells his story.

Supported by the Institute of Physics in Scotland

6.30 – 9.30 pm ***Hoy Kirk***

HOY EVENING

Take the 5.45 pm ferry from Stromness to Hoy to travel In the Steps of the Ice Bear with wildlife author and photographer Michael Leach, joined by Scotland's Astronomer Royal, Prof. John C. Brown. There's a light supper to start the evening – and admission free.

Book ferry from Orkney Ferries 01856 872044.

7.30 – 8.30 pm ***Orkney Theatre, KGS, Kirkwall***

JAKE'S MIDNIGHT SCIENCE CLUB

Steve 'Jake' Jacobs, former chief scientist of the Discovery Channel, is back with a family science show for the family, explaining scientific thinking by using common everyday items. "Young scientists and future wizards of all ages are welcome," he says. "Be prepared to be challenged, laugh, be amazed, jump and duck for cover!"

Sponsored by Faraday Studio

9.00 – 10.00 pm ***Orkney Theatre, KGS, Kirkwall***

WHEN SPACE DUST STRIKES

Streams of dust bombard the Earth from space every day – and so violently, says Prof. Arjun Berera of Edinburgh University, that they are capable of dislodging tiny living creatures like bacteria and other organic material floating in Earth's atmosphere and sending them hurtling through space.

9 – 12.00 midnight

Songs & Tunes Night at the Festival Club at The Reel

Saturday 7 September

10.00 am – 4.00 pm ***Kirkwall Grammar School (KGS)***

FAMILY DAY – DON'T MISS IT!

We're in a new venue this year with a wealth of activities for everyone to enjoy. Would you like to control an underwater robot? Or make a map or a rocket, or paper from natural materials? You can find out about seashells and the creatures that live in them, learn about kelvins and candelas or how to make your garden bee-friendly, make a molecule or a geometric lantern. You can find out how to make your own charcoal toothpaste, build a wind turbine or run an electric car. Test your ability with Body Works, and turn old fabrics into new styles in the upcycling workshop. Freshly prepared rolls, ice cream available, £4 & £2 for the day.

Supported by many kind people and lively organisations

10.00 – 11.00 am ***Orkney Theatre, KGS, Kirkwall***

GATEWAY TO SPACE

Rockets from Shetland and Sutherland sites may soon launch small satellites into low-earth orbit. But what of the dream of exploring space, 50 years after Neil Armstrong's walk on the Moon? Matjaž Vidmar of the Royal Observatory Edinburgh describes ideas for stage-post space stations to build a highway to the Moon, Mars and beyond.

Supported by the Institute of Physics in Scotland

10.00 – 11.00 am ***Pier Arts Centre, Stromness***

WOMEN WHO SHAPED A NATION

Astronomers and doctors, writers and film-makers, scientists and marine engineers – all are featured in The New Biographical Dictionary of Scottish Women and also in Quines: Poems in tribute to women of Scotland, a highly acclaimed new book by writer and actor Gerda Stevenson. The Dictionary is introduced by Rose Pipes, one of its editors, and Gerda Stevenson reads from Quines. Tickets £6 & £4.

Sponsored by Loganair

11.30 am – 12.30 pm ***Pier Arts Centre, Stromness***

NEWTON'S LIGHT

Quartz pebbles from the River Ticino, roasted and pulverised into silica, soda made in Syria from seaweed ash to lower the silica's melting temperature, manganese from Piedmont for colourlessness and transparency – Prof. Rebecca Stott of East Anglia University tells the story of the Venetian glass prism used by Sir Isaac Newton to spilt a beam of light into the rainbow colours of the spectrum. Tickets £6 & £4.

11.30 am – 12.30 pm ***Orkney Theatre, KGS, Kirkwall***

THE DISTANT EARTH BELOW

Satellite images from space track illegal logging, tackle fuel poverty and map storm progress to improve disaster responses – as Steve Lee, founder and chief executive of the Edinburgh company Stevenson Astrosat, explains and illustrates.

The One O'Clock Toast at the Peedie Kirk today: Peggy Gibson, teacher in North Faray and Kirkwall, by Gary Gibson

1.00 – 4.00 pm ***Broad Street, Kirkwall***

VINTAGE RALLY

Orkney Vintage Club with cars, motorbikes, tractors and stationary engines; plus electric cars, street food from 12 noon, and the Willowburn Valley Stompers at 2 pm.

1.30 – 2.30 pm ***MacGillivray Room, Library, Kirkwall***

SINGALONG WITH MR BOOM

Make sure you come, now's your chance – do the Solar System Dance!

Sponsored by Pentland Ferries

2.00 – 3.00 pm ***Orkney Theatre, KGS, Kirkwall***

AFRICAN LIGHT FOR EINSTEIN'S DAWNING

An expedition to a West African island 100 years ago brought Einstein world fame. Its leader, Arthur Eddington, had followed Einstein's ideas when wartime pressures discouraged others. He used a total solar eclipse to measure the Sun's bending of starlight, confirming Einstein's picture of gravity as a warp of spacetime. Howie Firth tells the story of two remarkable men, with music from the Gulf of Guinea on traditional instruments by David Mbilou.

2.00 – 3.00 pm ***Town Hall, Church Road, Stromness***

THE DAY THE FLEET WENT DOWN

When the German High Seas Fleet was scuttled in Scapa Flow on 21st June 1919, a party of Stromness School pupils, on an end-of-term tour aboard the water boat Flying Kestrel, found themselves witnesses to history as the massive battleships began sinking. The centenary is commemorated by an account of the story, with actual voices and images from archive, and readings by a cast including current Stromness Academy pupils. Tickets £6 & £4.

In association with Stromness Museum and St Magnus International Festival

3.30 – 4.30 pm ***Town Hall, Church Road, Stromness***

DIVING IN THE FLOW

What are some of the highlights of marine life and wrecked ships in Scapa Flow? And most importantly, what do you need to do to take care when you dive down to explore there? Dr Joanne Porter from ICIT and Dr Antony Wilkinson of Orkney Hyperbaric Team describe and advise.

3.30 – 4.30 pm ***Orkney Theatre, KGS, Kirkwall***

WITH QUANTA FROM LIVERPOOL

Dr Jaclyn Bell of Imperial College London describes the excitement of particle physics. The first in her family to go to university, she worked as a waitress and youth worker to pay her fees at Liverpool University. On graduating with 1st Class Honours in Mathematics, she won a John Lennon Memorial Scholarship for her community work and academic achievement. Then came a PhD in theoretical particle physics and the chance to test her skills as an astronaut candidate in BBC TV's Astronauts series.

Sponsored by Loganair

5.30 – 6.30 pm ***Orkney Theatre, KGS, Kirkwall***

THE BIG BEAUTIFUL BUBBLE SHOW

What are soap bubbles made on and how have they influenced scientific research? From tiny bubbles to colourful tubes, Philip Noble will demonstrate some of the amazing properties of the simple soap bubble and encourage everyone to get involved in the journey of discovery. A scientifically trained artist, he has given bubble shows in 20 countries. Something for the whole family.

7.00 – 10.00 pm ***Orphir Community Hall***

FOOD FROM THE NEOLITHIC

Andrew Appleby invites you to join chef Sam Britten with a menu of Orkney fare that's been foraged, fished, hunted and grown. Between

the courses there's some background on Neolithic food and pottery, and ancient music from Kate Fletcher, Corwen Broch and David Griffith. Booking essential: tickets £20 (JRS members £13.75).

In association with the John Rae Society

7.00 – 7.30 pm ***Broad Street, Kirkwall***

KIRKWALL CITY PIPE BAND

with their final parade of the season

7.45 – 9.45 pm ***King Street Halls, Kirkwall***

THE FIRES OF CREATION

The big bang theory of the universe's origin developed when Georges Lemaître, Catholic priest and professor of physics, found a solution of Einstein's general relativity equation. Rev. Dr Gareth Leyshon, priest and former astrophysics researcher, explains. Prof. Wilson Poon of Edinburgh University, condensed matter physicist and theology teacher, takes up the question of science and belief – opposing or complementary?

7.45 – 10.00 pm ***Town Hall, Stromness***

WEST SIDE CINEMA: ICE ON FIRE

Highly acclaimed documentary, co-produced and narrated by Leonardo DiCaprio, going beyond the current climate change narrative to highlight fresh approaches and new solutions, from tidal power to direct air capture of carbon dioxide. Several participants will be present to answer questions afterwards: Prof. Peter Wadhams who in the film highlights Arctic methane dangers from permafrost melt, Neil Kermode of EMEC and a speaker from Orbital Marine Power. Doors open 7.15 pm. Tickets at door £5 & £3 (students and Young Scot).

8.00 – 10.00 pm ***Orkney Theatre, KGS, Kirkwall***

KAKATSITSI IN CONCERT

The master drummers from Ghana are back, with music, songs and dances of sea and forest and daily work, carrying with them the sunshine and sea air from the fishing community of Jamestown, Accra. This time they are joined by ceremony leader, musician and dancer David Mbilou from Gabon for a flavour of west equatorial Africa. Tickets £12 & £10; £5 for under-16s.

Sponsored by Pentland Ferries

8 – 12 midnight ***Meet up at the Festival Club at The Reel***

Sunday 8 September

At 10 am, 12 pm, 2 pm ***From Stromness Museum***

STROMNESS MUSEUM SNORKEL SAFARI

Come along on a one-hour guided snorkel of Stromness's piers to discover life beneath the waves. Inspired by Stromness Museum's summer exhibition 'Living Wrecks: The Marine Life of Scapa Flow'. Suitable for age 10 and above. Supported by divers from Scapa Scuba. £15, with booking essential: contact Scapa Scuba 01856 851218 or at diving@scapascuba.co.uk.

Funded by Museums Galleries Scotland

10.00 am – 2.00 pm ***From Kirkyard car park, Warebeth, Stromness***

SHORE AND SEAWEED WORKSHOPS

Come out to the West Shore for four family-friendly activities. Learn to identify seaweeds and make your own seaweed artwork. Forage for pigments and mark-making materials – and for seaweeds and plants, and build a beach fire to cook a foraged lunch. Search for fire flints and clays, and make your own Orkney shell farm game. Hosted by Katherine Diaper, Rebecca Marr and Fiona Sanderson. A visit afterwards to see the special collections in Stromness Museum is included. Tickets £6 & £4. Numbers limited, booking essential: phone Stromness Museum, 01856 850025. Weather check the night before: phone Fiona Sanderson, 01856 850427.

11.15 am – 12.30 pm ***St Magnus Cathedral, Kirkwall***

SCIENCE FESTIVAL SERVICE

conducted by Revd Fraser Macnaughton, and St Magnus Cathedral Choir. Guest Preacher: Revd Dr Gareth Leyshon, missionary priest from South Wales with a doctorate in astrophysics.

12.00 – 1.00 pm ***Stromness Museum pier***

MEET THE MARINE CREATURES

Divers will bring a range of marine life up to the pier to let visitors call by to get a closer look. Everything will then be returned to its habitat. Free drop-in event, no bookings needed. All children must be accompanied by an adult.

Funded by Museums Galleries Scotland

The One O'Clock Toast at the Peedie Kirk today: Henry Halcro Johnston, Orkney naturalist and Scotland rugby player, by Jamie Halcro Johnston

2.00 – 3.00 pm ***Orkney Theatre, KGS, Kirkwall***

A WORLD FROM DRAGONS

When Assiepattle killed the Stoor Worm, he didn't only win the hand of the king's daughter; he also expressed a deep insight about the nature of the universe. Tom Muir tells the old Sanday story, Dr Ragnhild Ljosland shows the Norse connection, Howie Firth explores the physics of dead dragons, and Orkney Children's Theatre Club bring it all to unforgettable life. No dragons will be harmed in the performance.

Sponsored by the Orkney Creamery – Orkney Ice Cream

2.00 – 3.00 pm ***Orphir Community Hall***

SEARCHING FOR FRANKLIN

Now that the wrecks of Sir John Franklin's ships Erebus and Terror have been found in Arctic waters, we can for the first time ask the question: how accurate were the various suggestions for where to seek them? Some of them, says polar historian Dr Maria Pia Casarini, were distinctly wrong; while others were surprisingly right.

In association with the John Rae Society

3.30 – 4.30 pm ***Orphir Community Hall***

LIVING OFF THE LAND

Birch-flavoured breadsticks with pine-shoot dipping sauce, salt-marinated char with mountain sorrel sauce, and chocolate pralines with brandy-pickled rowan berries…. Eva Gunnare lives in Jokkmokk in Swedish Lapland, foraging in summer for Arctic herbs and berries in the mountains and forests around, and blending traditional recipes with modern creations – with some tasters for you to try.

In association with the John Rae Society

3.30 – 4.30 pm ***Orkney Theatre, KGS, Kirkwall***

BRIDGING THE GAP BETWEEN SCIENCE AND LIFE

Science has succeeded remarkably in discovering the nature of the building blocks of living systems – molecules and atoms, protons and electrons – but what can it say about life itself? Surprisingly little so far, says Prof. Ron Cottam of the Free University of Brussels in Belgium – but as he explains in a new book, a starting-point can be the study of complex systems, and particularly the hierarchy inherent in life.

5.15 – 6.15 pm ***Orkney Theatre, KGS, Kirkwall***

THE ICE AND THE ISLANDS

A new look at the deep past of the western and northern isles – the disintegration of the ice, the growth of a western forest and its survival through a 1500-year return to cold and the creation of islands by the rising ocean. Where did the plants and animals come from? Steve Webster from the Western Isles examines new evidence and suggests fresh possibilities.

5.30 – 6.30 pm ***From Northlight, Graham Place, Stromness***

STONE FRINGE SOUNDWALK

Listen to the sounds of Stromness – the wind, the gulls, the sea … Come on a guided soundwalk exploring the town through links to the Stone Fringe Sound exhibition in Northlight Gallery. Pay what you feel (it could be £5/2.50 if you like). Book in advance: the route can be tailored to suit access requirements. Book through http://avbees.com/stone-fringe-soundwalk or 01856 851 743.

6.00 – 7.15 pm ***Skaill House, Sandwick***

Dr John Cumming Memorial Lecture

THE MAN WHO READ THE ORKNEY ROCKS

Born in Kirkwall 150 years ago this year, Sir John S. Flett became director of the Geological Survey of Great Britain. Dr John Flett Brown tells the story of the man and his work, which included much study of the igneous rocks of Orkney and the Old Red Sandstone. Followed by an Orkney afternoon tea. Tickets £10.

With the support of the Cuminga Trust

8.00 – 9.30 pm ***St Magnus Cathedral, Kirkwall***

THE ROAD AND THE SONG AND THE STARS

"The open road till softly calls, like a nearly forgotten song of childhood," wrote astronomer Carl Sagan of the dream of exploring space. The Mayfield Singers and Paisley Abbey organist George McPhee mark the Apollo 11 anniversary with a musical journey to other lands and worlds, with readings by Gerda Stevenson.

Sponsored by Loganair

9 – 11 pm ***Meet up at the Festival Club at The Reel***

Monday 9 September

9.30 am – 12.30 pm ***From Tomb of the Eagles, South Ronaldsay***

OUTING: FORAGING ON THE EAGLES' PATH

Join wilderness instructor Zeki Basan on a foraging walk where Orkney people gathered plants for food 5000 years ago. Outdoor event, numbers limited, booking essential. £20 price includes visit to the Tomb of the Eagles and Bronze Age burnt mound. Meet in car park at visitor centre.

10.00 – 11.30 am ***King Street Halls, Kirkwall***

SWEDISH FOOD FROM THE WILD

Chef and food writer Wendy Barrie, leader of Slow Food Scotland's Ark of Taste, is joined by baker Karin Jonsson and Stronsay forager Marion Miller to look at ways in which food from the wild can be used in Swedish style to enrich your baking.

10.00 – 11.00 am ***Phoenix Cinema, Pickaquoy, Kirkwall***

AGEING WELL

Different people seem to age at different rates. Can we find a biological age that gives a truer picture of our body's age than just the number of years we've lived through? Edinburgh University research student Erin Macdonald-Dunlop describes her work in seeking a kind of inner age that can give added insights to health.

11.30 am – 12.30 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

HEALTH IN SCOTLAND: DISEASES PAST, PRESENT AND FUTURE

Scottish healthcare services have made great advances in the prevention and treatment of disease. But which improvements have saved the most lives, and which ones are needed in the future? University of Edinburgh postgraduate student Paul Timmers explores the health records of almost 2 million Scots to give the answers.

The One O'Clock Toast at the Peedie Kirk today: Orkney Field Club, by Harvey Johnston

2.00 – 3.00 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

HOW BIG ARE YOUR GENES?

Our weight has direct effects on our health and risk of disease. However, people of the same size can have different tendencies to heart disease or diabetes, due to the way fat is distributed on their bodies. Edinburgh University research student Katherine Kentistou reports on her work on the genetics of body composition.

2.00 – 3.00 pm ***King Street Halls, Kirkwall***

LIGHT IN THE ISLES

A Sanday sunrise, a Westray sunset, a starry North Ronaldsay night – Dr Tom Rendall with beautiful images from island photographers showing the quality of light throughout Orkney, and readings by invited guests.

Sponsored by Orkney Car Hire – James D Peace & Co

3.30 – 4.30 pm ***King Street Halls, Kirkwall***

MYSTERIOUS MATERIALS, CURIOUS CURES

Traditional remedies used some unusual ingredients. Alongside many plants now considered weeds, medicines might include ox gall or badger fat, marble, lead or urine … How do they stand up to scientific scrutiny? Ethnobotanical researcher Anna Canning looks at old treatments and new insights – and why we should keep an open mind.

3.30 – 4.30 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

GREENER FERRIES

Ageing ships, high fuel use, rising costs of subsidies and ferry replacements … Prof. Alf Baird, a member of the Scottish Transport Ministers Ferry Industry Advisory Group, analyses the economics of the present pattern and argues that there is a way forward – changing to a lower-cost, lower-carbon design across all the Scottish services, in an integrated approach involving Scottish shipyards.

5.15 – 6.15 pm ***King Street Halls, Kirkwall***

SEAWEED – THE MISSING INGREDIENT

Seaweed, a familiar source of nutrition in the past, is having a revival. Simon Ranger of the Seagreens Trust has been to the fore in production, research and market application for the past 20 years. He has developed a small, pioneering consortium spanning the Nordic region and the British Isles, and seaweed ingredients in foods ranging from soups and snacks to sauces and supplements. Could this be a new Orkney industry?

7.00 – 9.00 pm ***The Reel, Kirkwall***

A MENU MADE BY MICROBES

Creamy miso and mushroom soup, Orkney roast beef with kimchi, vegetable masala dosa with peach chutney … all of these involve foods developed by microbes, as microbiologist Prof. Joanna Verran explains with the help of chef Freddie Pretorius. Inveralmond master brewer Ken Duncan introduces a range of beers from Perth and Orkney. Join them for a fascinating meal! Doors open 6.45 pm. Tickets £25.

Supported by the Society for Applied Microbiology and the IBD

7.30 – 8.30 pm ***Orkney Theatre, KGS, Kirkwall***

REACTING IN THE ATMOSPHERE

Our atmosphere is a turmoil of chemical activity, says Prof. Dudley Shallcross of Bristol University. Some of the most powerful agents of change are molecules so short-lived that they have only been discovered in recent years. Formed when gases from plants react with ozone, they attack nitrogen and sulphur pollutants and turn them into fine aerosols which screen against the sun. What might this mean for atmospheric pollution and for climate change?

9.00 – 10.00 pm ***Orkney Theatre, KGS, Kirkwall***

OOR BIG BRAW COSMOS

Stars and planets, people and poems come together in a sparkling collaborative new book and talk between the 10th Astronomer Royal for Scotland, Prof. John C. Brown of Glasgow University, and Rab Wilson, Scriever in Residence at Burns Birthplace Museum, Alloway. There are images of misty nebulas and blazing supernovas, stories of Scottish astronomers like Mary Somerville and Williamina Fleming, and poems – from Ayont the Sun to The Star o' Hope.

Sponsored by Loganair

9 – 11 pm ***Meet up at the Festival Club at The Reel***

Tuesday 10 September

9.30 am – 12.30 pm ***Highland Park Distillery, Kirkwall***

Miniature Whisky School:
YEAST FOR BREWING AND DISTILLING

Among the industry's key workers are the microscopic single-celled fungal organisms which make the alcohol. Microbiologist Prof. Joanna Verran explains their life and habits, distillery manager Marie Stanton describes their use, and industry expert Dr Tim Dolan looks at their distilling history. Over-18s only, booking essential. Tickets £15.

Organised by the IBD

10.00 am – 12.00 pm ***King Street Halls, Kirkwall***

WORKSHOP: PAPERMAKING FROM NATURAL MATERIALS

Join artists Lin Chau and Shanshan Jiang for papermaking using garden plants and common weeds. An introductory hands-on workshop exploring ways of producing paper using natural resources around us, with all material provided. You can also feel free to bring along some small decorative items – such as stamps, strings, images or text – to create layering effects and individual style; and to be as creative as you like! Tickets £6 & £4.

10.00 – 11.00 am ***Phoenix Cinema, Pickaquoy, Kirkwall***

DARWIN'S ENIGMAS

Darwin's theory of evolution resolved a myriad of problems but, as Prof. Jon Side explains, there were still difficulties that he was unable to answer satisfactorily – such as the increasing complexity in some evolutionary forms. Can some of these questions be resolved today?

11.30 am – 12.30 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

John D. Mackay Memorial Lecture
DARWIN'S GHOSTS

Prof. Rebecca Stott of East Anglia University crosses centuries and continents to show how the idea of evolution surfaced in various forms at various times – from ancient Greece to 18th-century France. "These mavericks and heretics put their lives on the line. Finally, they are getting the credit they deserve."--The Independent on Sunday.

11.30 am – 3.30 pm ***From Finstown Car Park***

OUTING: FORAGING THE OLD ROAD

Join ethnobotanical researcher Anna Canning and Orkney wildlife guide Megan Taylor to walk along part of the St Magnus Way and look for wild plants and learn about their traditional uses for sustenance and health. Walk includes hillside, woods and lochside. Outdoor event, numbers limited, booking essential. £25 price includes picnic lunch of local fare. Meet in Finstown car park.

One O'Clock Toast at the Peedie Kirk: The Groundwater family: William, Rector of Stromness Academy, his wife Rosetta, Provost of the town; and their son Bill, Surgeon at the Balfour, by Billy and Jack Groundwater

2.00 – 3.30 pm ***MacGillivray Room, Orkney Library, Kirkwall***

THE BAD BUGS BOOK CLUB

Influenza to leprosy, zombie apocalypse to potato blight – join Joanna Verran, Professor of Microbiology at Manchester Metropolitan University, to discuss five novels where infectious disease forms part of the plot. The authors range from Margaret Atwood to Louise Welsh. Tickets £6 & £4. Numbers limited: booking essential.

Supported by the Society for Applied Microbiology

2.00 – 3.00 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

KELVINS AND KILOGRAMS, AMPERES AND MOLES

How do we set the standard units to measure by? Prof. Graham Machin of the National Physical Laboratory tells the story of the evolution of the international system of units in use today – and how a major change is taking place this year. He will show examples of measuring equipment and describe developments in areas like temperature measurement – from the monitoring of nuclear waste to global warming.

2.00 – 3.00 pm ***King Street Halls, Kirkwall***

BORROWDALE, BLENCATHRA, THEN ON TO BEDA FELL

Elizabeth Woodcock describes the landscape of the Cumbrian Lakeland Fells, including ravens, woodcocks, temperate rainforests, sphagnum mosses and the carnivorous sundew.

3.30 – 4.30 pm ***Phoenix Cinema, Pickaquoy, Kirkwall***

TRACKS IN THE CLOUDS

CTR Wilson's invention of the cloud chamber made the subatomic world visible by displaying particle tracks of condensation. Dr Alec MacKinnon of Glasgow University tells the story of the first Scottish Nobel Prize winner, born 150 years ago, and how his particular mix of interests remains topical in current research on cosmic radiation and climate.

Supported by the Institute of Physics in Scotland

3.30 – 4.30 pm ***King Street Halls, Kirkwall***

TRAVELS ON THE SILK ROADS

A journey on the Silk Roads which have long connected East and West and continue today to carry people trade, culture, scientific knowledge and much more, with scenes ranging from golden minarets to flower-clad hills. Ian Cumming tells the story, and Ian Carse describes the land and people of Turkmenistan.

5.15 – 6.15 pm ***King Street Halls, Kirkwall***

The Grimond Lecture

THE POWER TO CHANGE THE WORLD

Prof. Iain MacLeod of Strathclyde University describes how James Watt, who died 200 years ago, used the values of the Enlightenment to harness energy, leading to dramatic changes worldwide. Can those same Enlightenment values, he asks, help us tackle major energy risks and provide a way ahead to a new and beneficial era of energy use?

Supported by IESIS, a Scottish engineering institution

7.30 – 9.00 pm ***The Old Library, Kirkwall***

GIN'S BOTANICAL FLAVOURS

Gin's flavour has a botanical origin: today's ingredients range from meadowsweet and dandelions to nettle root and cherry bark, sometimes cultivated, sometimes foraged. Master gin distiller Lesley Gracie of Hendrick's Gin and William Grant & Sons explains the process. With tutored tasting with locally produced gins. Over-18s only, numbers limited booking essential. Tickets £10.

Organised by the Institute of Brewing and Distilling

7.30 – 8.30 pm ***Orkney Theatre, KGS, Kirkwall***

Eoin F. Scott Memorial Lecture

IN THE FOOTSTEPS OF THE SNOW LEOPARD

Snow-topped mountains, wooded valleys, and hills with irises and tulips – scenes of Central Asia and its plants are shown by John Mitchell, alpine supervisor at the Royal Botanic Garden of Edinburgh, describing his travels through Afghanistan, Tajikistan, Uzbekistan and Kyrgyzstan.

9.00 – 10.00 pm ***Orkney Theatre, KGS, Kirkwall***

ALONG THE TIDE-MARK GATHERING DRIFT

A beaver-chewed timber from North America, a sea heart from the rainforests of the southern Caribbean. A skate's egg case, a lump of paraffin wax, and a lobster creel tag from Newfoundland. Martin Gray, who runs the Orkney Beachcombing page, describes the wealth of treasures that wash up on an Orkney shore and the searching and foraging quest that has taken Orcadians to the shore since Neolithic times and before.

9 – 11 pm ***Meet up at the Festival Club at The Reel***

Wednesday 11 September

10.00 am, 11.00 am,
2.00 pm, 3.00 pm ***St Magnus Cathedral, Kirkwall***

TOURS: CATHEDRAL GRAFFITI

Masons' marks and devotional pecking, 19th-century names and sailors in Scapa Flow – come on a 50-minute guided tour of the ground floor and parts of upper levels not normally seen on tours, and see for yourself. Age 12 and over. Tickets £6. Numbers limited, booking essential: phone Cathedral on 01856 874894, or email cathedral@orkney.gov.uk, or call in person.

10.00 – 11.00 am ***King Street Halls, Kirkwall***

DEEP DIGITALITY

Digital technologies like the PC, the internet and the mobile phone present huge opportunities for Orkney communities in business and education and family contact. Could artificial intelligence or robotics have similar potential, even to reverse the concept of remoteness that developed out of the Industrial Revolution? And if so, asks Prof. Alan Dix of Swansea University, how can we make the most of it?

Sponsored by the Orkney Creamery – Orkney Ice Cream

11.30 am – 12.30 pm ***King Street Halls, Kirkwall***

PUT AWAY THE PIE CHARTS

… and the bar charts and the graphs and the pencils and rulers, says Dr Finn MacLeod, whose company name, Beautiful Data, summarises its approach: to display massive amounts of data from millions of sources in innovative, elegant and enjoyable ways.

Sponsored by e-availability

11.30 am – 3.30 pm ***Car Park***

OUTING: FORAGING BY THE FLOW

Join ethnobotanical researcher Anna Canning and Orkney wildlife guide Megan Taylor to walk along a further part of the St Magnus Way and look for wild plants and learn about their traditional uses for sustenance and health. Walk across the sand of Waulkmill Bay and through the RSPB's Hobbister bird reserve. Outdoor event, numbers limited, booking essential. £25 price includes picnic lunch of local fare. Meet in Waulkmill car park.

The One O'Clock Toast at the Peedie Kirk today: Vikingways and the 1960s pioneers of the Faroe Airways link, by Moya McDonald

1.00 – 5.00 pm ***From Palace Road, Kirkwall***

BUS TOUR: DISTILLING – THE THEORY AND PRACTICE

Join experts from Scapa and Highland Park for special tours of both. Advance booking essential: over-18s only. Tickets £10.

Organised by the IBD and sponsored by the two distilleries

2.00 – 3.00 pm ***King Street Halls, Kirkwall***

THE PHYSICS OF FUDGE MAKING

It's all about crystals, says Prof. Wilson Poon of Edinburgh University, they have to be the right size and the physics of crystallization leads into fascinating areas. On the way there he looks at the cultural history of sugar, and the development of confectionery, and then explains how every step in making really appetising fudge involves getting the crystals right. You can confirm this directly with samples of Orkney Fudge kindly provided by Argo's Bakery.

Supported by the Institute of Physics in Scotland

2.00 – 3.30 pm ***MacGillivray Room, Orkney Library, Kirkwall***

CREATIVITY AND WELLBEING

Join a relaxed talk and discussion with neuroscience and arts educator Lewis Hou (Science Ceilidh) on the research around the links between creativity and wellbeing. Followed by a free workshop from 3.30-4.30 about getting involved in celebrating culture – science and arts, heritage and technology – in Orkney with Fun Palaces. Numbers limited, booking essential for the initial talk, with tickets £6 & £4.

3.30 – 4.30 pm ***King Street Halls, Kirkwall***

WINTER SUN AND SUMMER FLOWERS

Deerness and Stenness schoolmaster Magnus Spence, who died 100 years ago, studied Orkney's environment and weather, and, as

Patricia Long outlines, took a pioneering step in archaeoastronomy with his study of Maeshowe and the winter solstice. John Crossley describes his work on plants that led to the book Flora Orcadensis.

In association with Orkney Field Club

5.15 – 6.15 pm ***King Street Halls, Kirkwall***

SPEEDING THROUGH THE HYPERLOOP

Imagine cruising at aircraft speeds in a pod hovering through a tube from Edinburgh to London – in just 45 minutes. A new concept, the Hyperloop, can make this a reality and an award-winning team of over 200 students at Edinburgh University is one of the global teams at the forefront of its development– as several of its members explain.

Sponsored by Sutherland's Pharmacy

7.30 – 9.00 pm ***The Old Library, Kirkwall***

ORKNEY STILLS AND STORIES

PhD researcher Julie Cassidy of The Institute for Northern Studies, UHI describes her studies of the early days of Highland Park. Master distiller Alan Winchester tells the story of Scapa. Tickets £6 (IBD members free). Over-18s only.

Organised by the Institute of Brewing and Distilling

7.30 – 8.30 pm ***Orkney Theatre, KGS, Kirkwall***

EATEN

A visually arresting and humorous show for children, opening its Scottish tour, inviting them (and parents too) to the fascinating world of food chains and digestion. Developed by award-winning designer and performer Mamoru Iriguchi, a trained zoologist, it features Lionel McLion and the human he swallowed who's alive and well in his stomach … and now wants to say hello.

Presented by Independent Arts Projects with support from Creative Scotland

8.00 pm – 12.00 midnight ***Peedie Kirk Hall, Kirkwall***

THE HIGHLAND PARK CEILIDH

with Dave & Co, and Lewis Hou's fiddle and dance steps, for would-be and why-not dancers of all ages. Tickets (with light supper) £10.

Sponsored by Highland Park

SPECIAL FOOD EVENTS DURING FESTIVAL

Daily, from Fri 6 to Wed 11. Lunches in the Peedie Kirk Hall.

An opportunity to enjoy a wide range of Orkney fare for £10. from 12.30 pm, with 5-minute Toast to a notable Orcadian at 1 pm.

Exhibitions

ORKNEY'S NATURAL HERITAGE

Photographs from Orkney Camera Club

Flora and fauna, land, sea and air

Orkney Library & Archive, Kirkwall *Daily except Sun*

MURDOCH MACKENZIE'S MAPS

The 18th-century Orcadian who revolutionised mapmaking

Orkney Library & Archive, Kirkwall *Daily except Sun, Wed*

STONE FRINGE SOUND

Sound art inspired by the piers of Stromness, by sound artist and audio researcher Amy Beeston.

Northlight Gallery, Stromness *Mon-Sat, 11-5*

NORTHLIGHT GALLERY

Stone Fringe Sound by Amy Beeston

1-10 September *Daily, 12-5*

STROMNESS MUSEUM

Scapa 100 – Salvaging our Heritage

Living Wrecks – The Marine Life of Scapa Flow

Mon-Sun, 10-5

ORKNEY MUSEUM

1919 – The Scuttling of the German Fleet

Mon-Sat, 10.30-5

PIER ARTS CENTRE

Four exhibitions, including a celebration of 40 years of the Pier, and also Margaret Gardiner – A Life of Giving

Tues-Sat, 10.30-5

THE OLD LIBRARY

Exhibition by sculptor John Cumming

ORKNEY WIRELESS MUSEUM

Kiln Corner, Kirkwall *Mon-Sat 10-4.30, Sun 2.30-4.30*

Special Foraging Fortnight events before and after

Sunday 1 September: Outing to Hoy

Join local wildlife guide Megan Taylor for a leisurely walk amongst superb scenery and wildlife, starting with the ferry crossing from Stromness. The outing includes a visit to Eaglewatch to see how the resident family of White Tailed Eagles are getting on. Walking boots and suitable clothing are recommended. Booking essential: contact wildorkneywalks@outlook.com.

Thursday 12 September: Outing to Egilsay and Rousay with Orkney Field Club. Take the early ferry from Tingwall to Egilsay, looking out for wildlife on the crossing, then walk along part of the St Magnus Way to a sandy beach. Then cross to Rousay to explore the gardens, woods and wildlife of Trumland House. Walking will be easy, but walking boots and suitable clothing recommended. Booking essential: contact Megan at t.megan@pobroadband.co.uk.

Saturday 14 September: Foraging workshops on Papay, 10 am – 2 pm. Learn to make halloumi and a simple soft cheese, and experiment with foraged ingredients, especially seaweeds, to add local flavour. Local food stories from Orkney Story Stack at lunchtime.

Bring a notebook, some food to share at lunchtime, and an apron for workshop activity. Day return Loganair flights from Kirkwall 8.30 am, Papay 4.41 pm. Overnight accommodation at Papay Hostel also bookable. NB flights and hostel rooms very limited, as are workshop places, so early booking needed.

Workshop cost £10 (visitors), £5 (Papay residents). Book from fiona.sanderson@mac.com.

Fuller information on island outings on our website www.oisf.org and on Foraging Fortnight website www.foragingfortnight.co.uk.

Weekend afternoons

For weekend visitors, afternoons of stories and tea with beremeal biscuits and scones have been organised by Orkney Folklore and Storytelling Centre in Sandwick.

Dates: Sat 31 Aug and Sun 1 Sept, Sat 15 and Sun 15 September, all at 2.30 pm.

Cost £6. Booking essential: e-mail peatfire@orkneyattractions.com or phone Lynn on 01856 841207.

BOOKING REQUEST FORM

	£ Adult	£ Con.	No. at adult	No. at concess.	Total £	p
Thursday 5 September						
Old Ways and New Journeys	£5	£3				
The Ship Comes Home	£5	£3				
Forging Iceland's Future	£5	£3				
Flavours of the Wild	£5	£3				
Poles Apart	£5	£3				
Elements for Energy	£5	£3				
Orkney's Renewables Revolution	£5	£3				
Saving our Bumblebees	£5	£3				
Friday 6 September						
Mapping Scotland's Islands	£5	£3				
Murdoch Mackenzie's Maps	£5	£3				
Tanning Fish Skins	£25	-				
All We Survey	£5	£3				
Footsteps on the Moon	£5	£3				
Stars, Mountains, Pyramids	£5	£3				
Jake's Midnight Science Club	£5	£3				
When Space Dust Strikes	£5	£3				
Saturday 7 September						
Gateway to Space	£5	£3				
Women who Shaped a Nation	£6	£4				
Newton's Light	£6	£4				
The Distant Earth Below	£5	£3				
Singalong with Mr Boom	£5	£3				
African Light for Einstein	£5	£3				
The Day the Fleet Went Down	£6	£4				
Diving in the Flow	£5	£3				
With Quanta from Liverpool	£5	£3				
The Big Beautiful Bubble Show	£5	£3				
Food from the Neolithic	£20	£13				
The Fires of Creation	£5	£3				
Kakatsitsi in Concer	£12	£10				
(under-16s)	-	£5				
Sunday 8 September						
A World from Dragons	£5	£3				
Searching for Franklin	£5	£3				
Living off the Land	£5	£3				
Bridging Gap, Science and Life	£5	£3				
The Ice and the Islands	£5	£3				
Man Who Read Orkney Rocks	£10	-				
Road and Song and Stars	£5	£3				
Monday 9 September						
Foraging on Eagles' Path	£20	-				
Swedish Food from the Wild	£5	£3				
Ageing Well	£5	£3				
Health in Scotland, Diseases	£5	£3				
How Big are your Genes?	£5	£3				
Light in the Isles	£5	£3				
Mysterious Materials, Cures	£5	£3				
Sub-total from previous page	-	-	-	-		

BOOKING REQUEST FORM

Sub-total from previous page	£ Adult -	£ Con. -	No. at adult -	No. at concess. -	Total £	p
Monday 9 September (ctd)						
Greener Ferries	£5	£3				
Seaweed – Missing Ingredient	£5	£3				
A Menu Made by Microbes	£25	-				
Reacting in the Atmosphere	£5	£3				
Oor Big Braw Cosmos	£5	£3				
Tuesday 10 September						
Miniature Whisky School	£15	-				
Papermaking Workshop	£6	£4				
Darwin's Enigmas	£5	£3				
Darwin's Ghosts	£5	£3				
Foraging the Old Road	£25	-				
The Bad Bugs Book Club	£6	£4				
Kelvins and Kilograms	£5	£3				
Borrowdale, Blencathra	£5	£3				
Travels on the Silk Roads	£5	£3				
Tracks in the Clouds	£5	£3				
The Power to Change the World	£5	£3				
Gin's Botanical Flavour	£10	-				
Footsteps of the Snow Leopard	£5	£3				
Along the Tide-mark	£5	£3				
Wednesday 11 September						
Deep Digitality	£5	£3				
Put Away the Pie Charts	£5	£3				
Foraging by the Flow	£25	-				
Bus Tour – Distilling	£10	-				
Creativity and Wellbeing	£6	£4				
The Physics of Fudge Making	£5	£3				
Winter Sun and Summer Flowers	£5	£3				
Speeding through the Hyperloop	£5	£3				
Orkney Stills and Stories	£6	-				
Eaten	£5	£3				
The Highland Park Ceilidh	£10	-				
LecturePass - all £5/3 events	**£44**	**£36**				

(Please note that admission can only be guaranteed if passholders arrive at least 15 mins before start)

Total ticket sum enclosed

Name

Address

Telephone

Email

Please use **BLOCK CAPITALS**, post with cheque & s.a.e. to **Orkney Science Festival,** 3 Crantit Park, Kirkwall, Orkney KW15 1SJ
Please make cheques payable to **Orkney Science Festival Ltd**