

THE CEDARGROVE SERIES OF
DISCOURSES, MEMOIRS AND ESSAYS

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ENGINEERING ON A SMALL ISLAND

by Andrew H. Wilson

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Abstract

The island in question is the Isle of Man, which is located around the middle of the Irish Sea and approximately equidistant from the coasts of Scotland, England, Ireland and Wales.

The paper discusses briefly the history and development of the Island and its various connections with industries and engineering. It includes comments on the life of William Kennish, a Manxman of the 19th century and an inventor/engineer of some note, as well as on contemporary engineering and engineering training on the Island. It mentions very briefly the Island's fictional connection with the Island of Sodor.

The paper also includes a much shorter, but similar, account of the history and engineering development of Canada's Prince Edward Island.

About the Series

Principally, the Cedargrove Series is intended to preserve some of the research, writings and oral presentations that the author has completed over the past half-century or so but has not yet published. It is, therefore, a modern-day variant of the privately-published books and pamphlets written by his forebears, such as his paternal grandfather and grandmother, and his grandfather's brother John.

About the Author

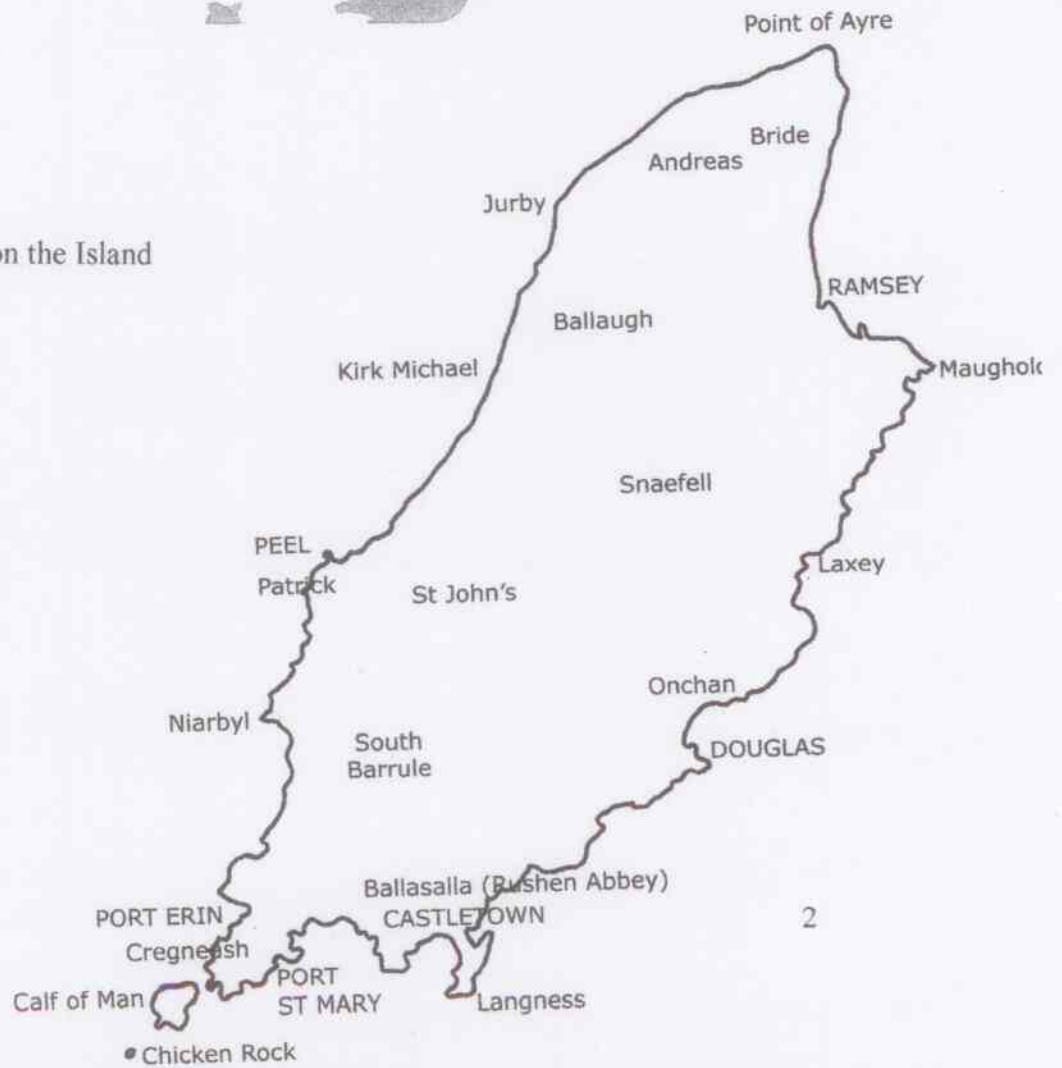
He is a graduate in mechanical engineering and the liberal arts and has held technical, administrative, research and management positions in industry in the United Kingdom and the public service of Canada, from which he retired over 25 years ago.

He became actively interested in the history of engineering on his appointment to chair the first history committee of the Canadian Society for Mechanical Engineering in 1975 and served both CSME and the Engineering Institute of Canada in this capacity for varying periods of time until 2003. He has researched, written and edited historical material for both organizations, as well as the Canadian Society for Senior Engineers. He is also a past president of CSME and EIC.



The Island in the Irish Sea

The Main Places on the Island



Introduction

The small island is the Isle of Man. It sits in the middle of the Irish Sea. If, on a sunny day, you climb to the top of its highest hill - Snaefell, 2000 feet above sea level - and look to the north you will see Scotland's Mull of Galloway. If you turn to the east you will see England's Lancashire coast. If you then turn to the south, and the day is clear enough, you may see the north of Anglesey in Wales. And if you turn west you will see Ireland's Mountains of Mourne.

As is my custom, this paper has its basis in the history of engineering and brings the Island's story up to contemporary times. However, there will be more photographs and maps than usual! It is a somewhat lengthened version of a talk I gave to the Ottawa Chapter of the Canadian Society for Senior Engineers in October 2013.

As a project, it began at Christmas 2012 when my daughter and Isle of Man resident, Ellen Paul, gave me a copy of Robert W. Stimpson's book *William Kennish: Manninagh Dooie - True Manxman*, the biography of the Manx inventor and poet who served with distinction as a chief carpenter in the Royal Navy and later as a self-employed engineer with headquarters in New York. Of English origin, Bob Stimpson is a long-time Man resident, a professional engineer and an amateur historian.

I had read the non-poetic parts of this book before the New Year, with enthusiasm. Having visited the Island several times already, having seen the Laxey wheel and other examples of Manx engineering that have been preserved, and having realized that many engineering companies had set up shop on the Island in the postwar years, I decided to put together a project on the history of engineering on the Island, interwoven with some of the Island's geography and political history. Both my daughter and Bob Stimpson helped me with it, providing material that I would otherwise have been unable to include. As noted, I gave a talk on it late last year, which generated an encouraging response.

The thought had already struck me that the Isle of Man project would benefit from comparison with engineering experience on a comparable Canadian island. The most suitable one appeared to be Prince Edward Island which, although considerably larger than Man, has gone through somewhat similar development. For this, I was helped by the Association of Professional Engineers of PEI and by earlier personal contact with the Island.

The Island and its History....

The Isle of Man appeared out of the ocean as the ice sheet retreated northwards at the end of the last Ice Age. Much earlier, it had been attached to the rest of Europe. Over the most recent centuries, it has been known by such other names as Ellan Vannin (in Manx Gaelic), Mann, with two n's, Mannin and Mona's Isle. Speaking of language, Manx was the Island's *lingua franca* until relatively recently. It is one of a group of three Goidelic languages, the other two being

Scottish and Irish Gaelic.

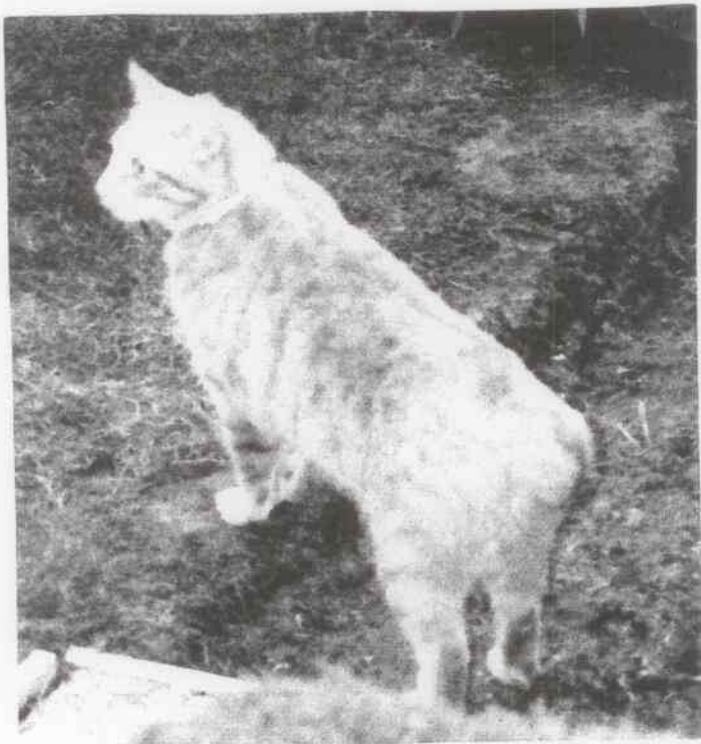
The island is approximately rectangular, but pointed at each end, and lies at a NE-SW angle to the meridian. It is some 32.5 miles long and 13.5 miles wide, with an area of 221 square miles. Off its southern end is a very much smaller island, called the Calf of Man. A ridge of hilly country runs centrally from north to south, roughly parallel to both coasts. Much of the remaining space is quite flat and has been concerned principally with farming. Anyone familiar with the countrysides of the Scottish Lowlands and Borders and the Southeast of England will find much that is similar on the Island, from 'dry-stane-dykes' to raised hedgerows and relatively small rectangular green fields. Much of the coastline is rugged and cliffed.

The average annual rainfall is 40 inches, and the average temperature 47 degrees Fahrenheit. Fogs are common. Indeed, legend has it that they hid the Island from invaders in years long past and acquired the nickname, the 'cloaks of Manannan' - after the mythical sea god. Snowfalls are not common, except sometimes, on the highest hills. However, during late March 2013, the worst snowfall since 1963 hit the centre and west of the Island. Farmers lost over 14,000 cattle and sheep in the 9-to-12-foot drifts.

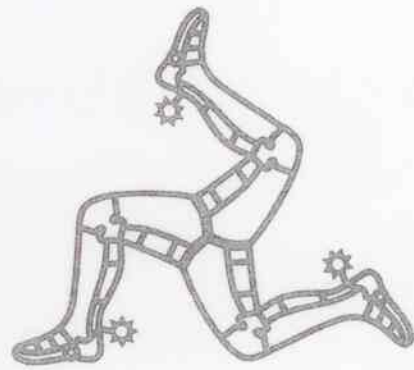
The very first inhabitants of the Isle of Man were nomadic hunter-gatherers. Many thousands of years later the Celts came. The Romans, by the way, took nothing to do with the Island. Scandinavian invaders arrived around 800 A.D., having also invaded the islands off the west coast of Scotland. They were Norsemen, rather than Vikings, and their helmets had no horns. One thing the Norsemen did for the Isle of Man was to establish - in 979 A.D. - a Parliament, known as the Tynwald, which is now the oldest, continuous parliamentary entity in the world. The Norse remained in possession of Mann until the Treaty of Perth in 1266, and after the Battle of Largs, on Scotland's Clyde Coast, when King Alexander III's warriors chased the Norsemen back home. The Scots ruled Mann for about 70 years. Then the English took over and installed a series of noblemen as rulers, notably the Stanleys, later Earls of Derby - the same family whose connection with Canada is now enshrined in a hockey cup. In 1736 the Scots took over again, but sold the Island back to the English in 1765, after which the Kings and Queens of England were the Lords of Mann, ruling again through a series of noble or knighted Governors.

Although never completely independent of British rule after the Norsemen left, the Isle of Man has never been part of the United Kingdom. It is now formally a British Crown Dependency, or British Island (similar to Jersey and Guernsey). It was once notorious for its participation in smuggling. It has also been branded, historically, as one of the world's so-called 'tax havens' but lost that undesirable label recently after establishing a leading role in reciprocal taxation agreements with the U.K., E.U. and U.S.A.. This process has now been followed by other similar jurisdictions.

The current population of the island is around 85,000, of whom 26,000 live in Douglas, the current capital and seat of the Government, the Legislative Council and the House of Keys, with another 9,000 in the Village of Onchan, on the coast immediately to its north. Many of the others live in the towns of Ramsey in the north, Peel in the west, and Castletown, the former capital, in



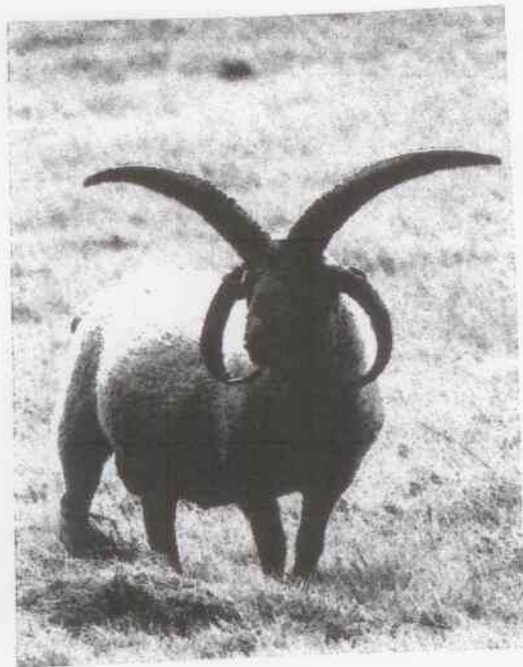
Manx cat



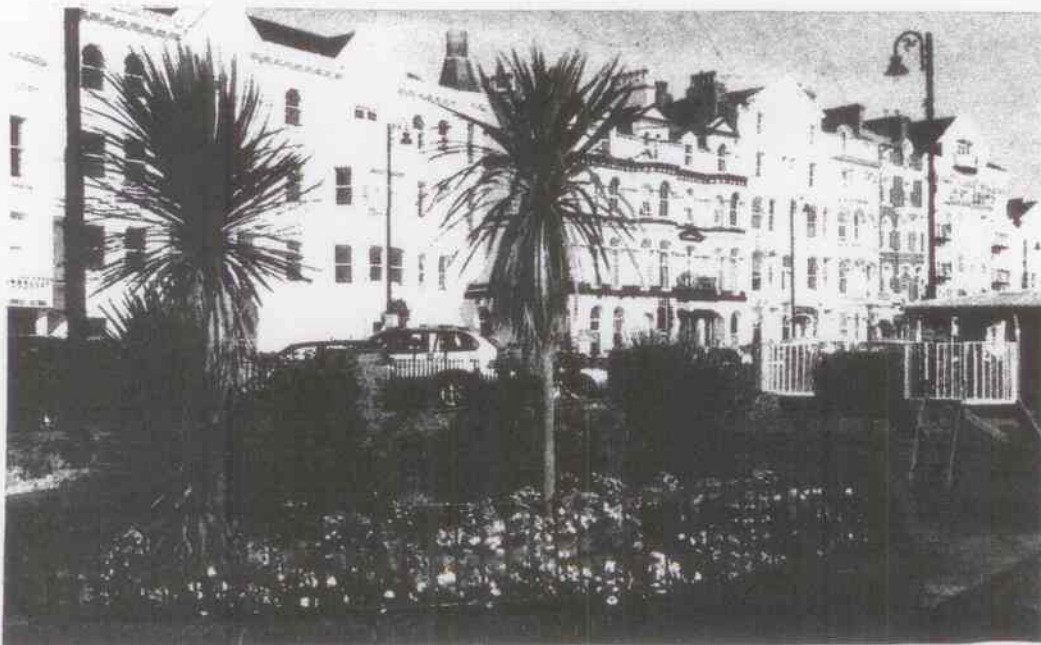
Triskelion



TT Races



Loaghtan sheep



Promenade, Douglas

the south. Nowadays, the Isle of Man is famous for at least three things: the motorcycle races that are held annually; its three-legged emblem (triskelion), the origin of which is uncertain; and its tail-less cats, which apparently are not really Manx. The Loaghtan sheep native to the Island have four horns, and are considered a breed 'at risk' today, with fewer than 1500 remaining.

The Isle of Man's early industries were concerned with the land and the sea and using their products for survival. Aided by the Gulf Stream, the fertile soil of Mann has been extensively cultivated through farming - both crops and animals - since the days of the Celts. Their early tools were primitive, both home-made and acquired.

The Island has always been self-sufficient in food. Fish, especially herring, have been historically important for local consumption and for trade. Islanders preserved large quantities each year by salting them. However, for a very long time, the head of a Manx family could not always support it by farming alone and had to have a second job, at sea, in a town trade, or abroad. Water power has enabled the Island to develop industrially and as a habitation. Along the way, Manxmen developed their own method of holding down the thatch of their cottage roofs during windy storms.

Since Celt and Norseman days, the many sandy strips around Mann's perimeter have allowed for the easy beaching of boats, both fishing as well as warlike. Even the large Norse ones, which they brought with them, could be moved away from the tides using rollers. As an island, of course, Mann could not survive without the building of ships, both at home and abroad.

Early Engineering

During the Middle Ages, in keeping with experience in the British Isles and in other countries in Europe, the largest buildings constructed on the Isle of Man were either castles or churches.

The construction of buildings throughout most of the Island has been largely dependent on local limestone, the exception being in the southwest, around the town of Peel, where the local, softer red sandstone has been used.

St. Patrick's Isle, just offshore from the town of Peel, is the site of Peel Castle. It was originally built of wood by the Norsemen in the 11th century, although stone parts were added later. Rebuilt in the 14th century, it was abandoned in the 18th and never rebuilt again or restored. St. Patrick's Isle was also the first centre of Christianity on Mann. A Catholic monastery had been established there in Celtic times. The original St. German's Cathedral, the seat of the Bishop of Sodor and Man - of which more later - was built within the walls of Peel Castle in the 13th century. It fell into ruin a half-millennium later and was never rebuilt. Nowadays, St. Patrick's Isle is connected to the main Island by a causeway and the ruins of the castle and the church are open in summer as tourist attractions.

The town of Peel itself has also been the long-time capital of the Manx herring fishery and its off-shoot 'kipper' industry.

Bishopscourt was originally built at Kirk Michael, some miles north of Peel, in the 12th century as the official residence of the Bishops of Sodor and Man. It is the only large house on the Island to have been occupied continuously for eight centuries. The original timbered building was rebuilt in 1698 using stone. It was repaired and restored in the 18th century, and maintained as the Bishop's residence until the 20th, when it was sold to private interests.

The construction of the compact but substantial Castle Rushen, on the other side of the Island and in the old Manx capital, Castletown, began around 1250 while the Norsemen were still on the Island. It was extensively repaired and rebuilt a century later by England's Edward III, after Scotland's Robert the Bruce had destroyed it in 1313. Local limestone was used. Unlike the castle at Peel, the one at Castletown has been maintained over the centuries and is now a working museum.

The building of Rushen Abbey at nearby Ballasalla was begun before Castle Rushen, in the 12th century, when it came under the Cistercian Order, and while the Norse still ruled the Island. Originally built of wood, it was later rebuilt with stone. The early Cistercians were farmers but were skilled at draining land and harnessing running water. They also produced wool, and built bridges of stone. The Abbey was restored in 2000.

Harbours, jetties, piers, slips, breakwaters and boathouses were built, beginning in those early years, notably at Castletown, Ronaldsway, Derbyhaven, Douglas, Laxey, Ramsey, Peel, Port St. Mary's and Port Erin, most making use of local materials. Lights and lighthouses were also built. In 1650, for example, a light was erected on the fort at Derbyhaven. It was later replaced by a lighthouse at nearby Langness to better serve the safety of ships entering the neighbouring port of Castletown. In 1816 a seamark tower was built on Douglas Head. It was lit in 1833 and rebuilt in 1892.

It was Scotland's Northern Lighthouse Board, rather than England's Trinity House, that received permission from the British and Manx Governments in 1815 to build lighthouses at Point of Ayre on the Island's northern tip and on the Calf of Man in the south to protect shipping going to, and coming from, the Firth of Clyde. Robert Stevenson designed them in 1818. However, the two on the Calf were later deemed ineffective and were replaced by a new lighthouse built on nearby Chicken Rock in 1875, designed by Stevenson's sons, David and Thomas, the father of author Robert Louis Stevenson. The NLB has retained responsibility for the Manx lights. Mann still has the most densely populated coastline for lighthouses in the world.

In 1832, William Hillary - a recent immigrant to Mann - brought about the building of the Tower of Refuge in Douglas Bay. Designed by John Welch, and built on a reef submerged at spring high tide, the Refuge was intended to warn ships in the Bay of the reef's existence and to provide temporary shelter for any sailors washed overboard or otherwise marooned during a storm. It had a bell to summon help and, for a short time, was kept supplied with fresh food and water. Since it



Tying down a thatched roof



Peel Castle and the original St. German's Cathedral

