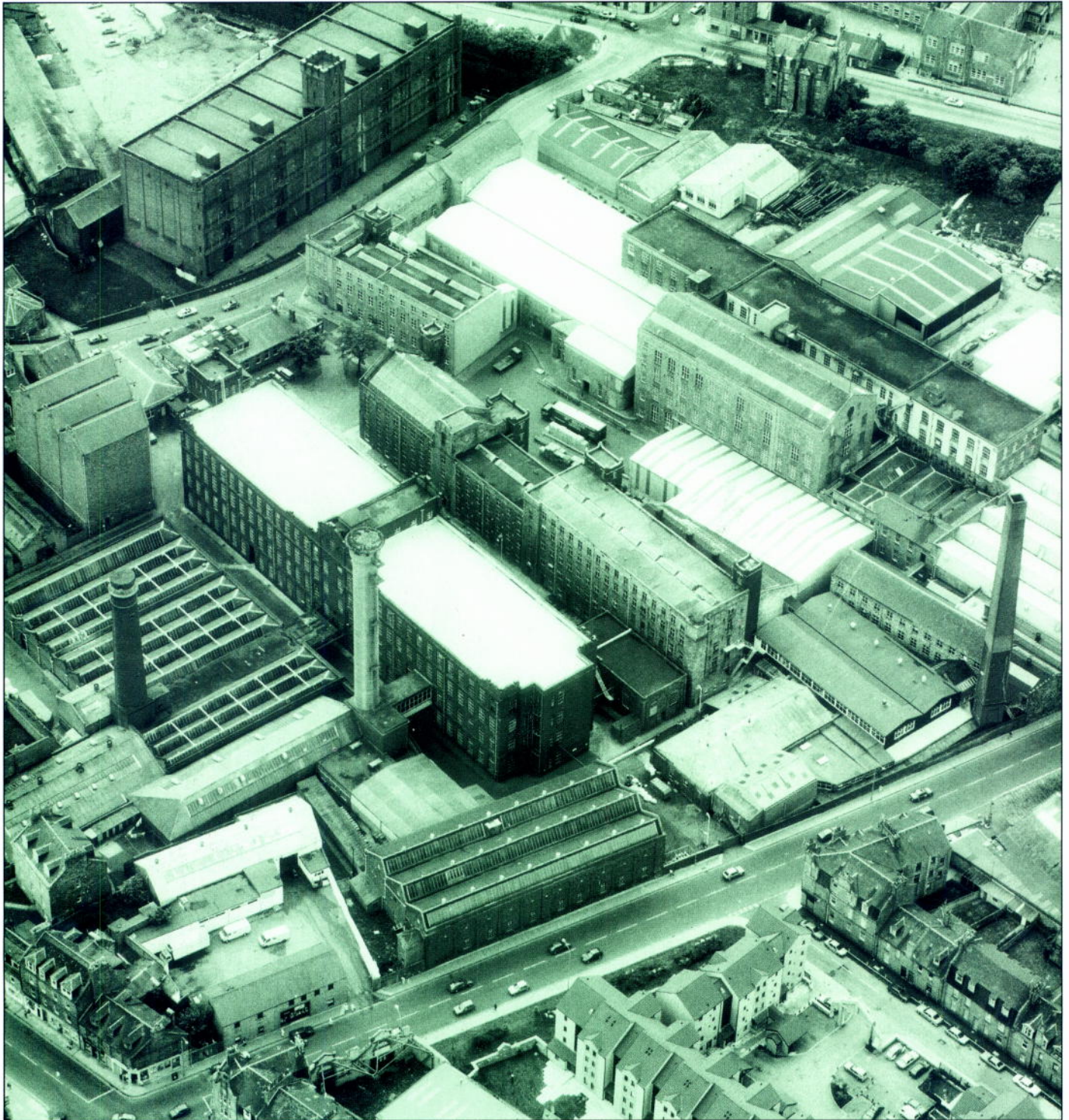


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COVER PICTURE

Aerial View of Broadford Works, Aberdeen, 1989. A remarkable survival with an uncertain future (see page 13)

Photo: Crown Copyright: RCAHMS, B22561

The Solovki Islands

A group of islands in the Russia White Sea may seem an unusual place to find industrial archaeology, but a recent visit to the Solovki Islands provided much of interest. The visit was undertaken with students of industrial history from Wroclaw Polytechnic, Poland, in co-operation with the Solovki Museum, to record some of the industrial sites on the islands, parts of which have been declared a World Heritage Site.

Mike Clarke

The Solovki Islands are probably best known as the site of the first Russia Gulag, prisoners being processed here in the 1920s and '30s. However, the most impressive building on the islands is the monastery. Monks have lived here since the fifteenth century, and construction of their monastery started in the following century. Improvement continued until the start of the twentieth century, only ceasing when Communism took control in Russia.

The monastery had many small-scale industries. A canal system, linking lakes on the island, was developed for drinking water, agricultural purposes and to supply a water mill within the monastery. The canals are of two types, used either simply for water movement or for transport as well. The former are usually up to 0.5 metre wide, while the latter are over 1.5 metres wide. The earliest canals were probably too small for navigation, but boats and rafts could have been used on the lakes.

Steam boats were in use by the early twentieth century after the canals had been enlarged and extended to supply a hydro-electric power station, possibly the first in Russia. Dams were built to raise the levels in the several lakes, and a ridge of high ground was cut through by a new canal. In places, rock had to be excavated to a depth of around 10 metres. Wharves for loading timber and stone were also constructed.

The system was still being extended at the time of the Communist takeover, when work ceased and the full potential of the water supply system was probably never realised. The system's original function - a drinking water supply - remained intact, but the developments associated with the hydro-electric scheme fell into disuse. Over the last ten years or so, several of the canals have been restored by voluntary workers, and the whole of the navigable system can be used by small boats. A boat-hire base has been established and two wooden piers erected for use by boaters to the north and west of the system.

The hydro-electric station opened in about 1908. Because its water supply was restricted, steam powered generators were installed around 1920, these being taken from a Russian naval vessel which had been captured during the war with Japan and subsequently returned. The plant was extended a second time, but was eventually replaced by diesel generators, and diesel power still provides the island with its electricity.

The islands relied heavily on shipping, and an interesting dry dock was constructed in 1799-1801 to the south of the monastery. It was used for boat building and repair, as well as for storing boats during the winter to prevent damaged by ice. It was unusual in that it did not use tidal variations to create a difference in water level within the dock, nor was water pumped out of the dock. Instead, the water level in the dry dock was raised by water supplied from the nearby Saint Lake, whose level was some 8 metres above that of the White Sea.

The dry dock had a wet dock area which always contained water and a slipway area alongside whose level was just above the White Sea's highest tides. The dock operated as follows. First the gates were opened and a boat would sail into a wet dock area. The gates were closed and the dock was filled with water from the Saint Lake. When the water was high enough, the water feed was stopped and the boat was moved sideways over the slipway area where, on the original dock, there were three rows of wooden or stone keel blocks on which boats could sit. The boat was held

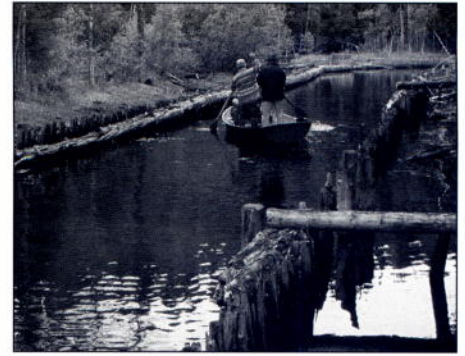


The water mill inside the monastery walls, Solovki Islands

Photo: Mike Clarke



The hydro-electric station remains with the dry dock beyond, seen from the monastery fortifications. The roof on the left is the grain store
 Photo: Mike Clarke



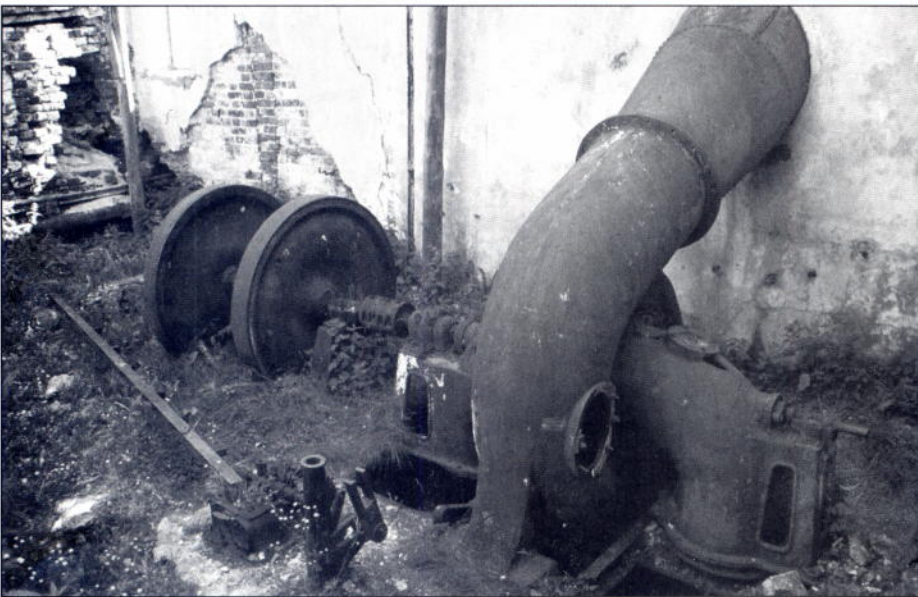
Canal K10 lies in a deep cutting. It was built c1908 to extend the water supply for the hydro-electric station by creating a route to the large lakes to the north of the island
 Photo: Mike Clarke

over a row of blocks and the water drained from the dock. This left the boat standing on the keel blocks, allowing it to be stored or repaired.

In 1843-46, the dry dock was reconstructed and the entrance completely rebuilt. The dock was extended, probably to accommodate steam powered boats, and the new area allowed longer vessels to use the dry dock. Further alterations were made in 1880-1 when the mitre gates were replaced, the depth of water in the wet dock increased to 1.2 metres and the total height of the dock walls increased to 6.5 metres. In 1908-13 there was further reconstruction, probably because of the construction of the hydro-electric station next to the dry dock. The gates were repaired in the 1920s, and other work was undertaken in the 1930s. Since 1947, the dock has not been filled with water for use by large boats, and it remains as a harbour for small boats. During the winter, these are pulled out by hand onto the slipway area for storage.

There are many other industrial sites on the islands, often related to forestry or fishing, though amongst other works there were a brickyard, a railway, a seaplane hangar and an early electric telegraph office. Some of the Gulag buildings also survive.

About 800 people live on the islands, and part of the monastery has reverted to its original purpose. Increasing numbers of tourists are visiting the islands, as well as many pilgrims to the Orthodox monastery and other religious sites around the islands. This is putting considerable pressure upon the island's infrastructure, particularly as the tourist season only lasts about four months. For about six months the islands are isolated when the White Sea freezes, and the only outside contact is by the twice weekly flight to Archangel, though the airfield is being extended to allow larger aircraft, capable of flying to Moscow, to reach the island. The Solovki Museum has the unenviable task of trying to control development of the islands. World Heritage status was given because of the sustainable way the monks had created a good living environment just 100 miles south of the Arctic Circle, and many of the islands' current population also live there because of its isolation. How can these demands be reconciled? Although the islands have particular problems, it is a question whose answer is still being sought by those involved with conservation of industrial sites.



Remains of the water turbine which drove the hydro-electric station

Photo: Mike Clarke



Kiln for producing turpentine, Solovki Islands

Photo: Mike Clarke