YOUR VIRTUAL DISCOVERY VISIT –
TO THE DEFENCE HERITAGE STORIES OF ROTTNEST ISLAND

The Virtual Visit series was initiated during the COVID-19 pandemic when Rottnest Island was closed to the public due to social distancing restrictions and periods of use for quarantine from March to June 2020.The intent was to maintain a connection to the Island by exploring stories of interest and offering links for self discovery.

Now that the Island is once again open to visitors and guiding services are being gradually re-established, these Virtual Visits have been retained as part of an archival record for future

HELIOGRAPH SERVICES

A heliograph is a solar telegraph system. It signals (usually Morse code) by flashing sunlight reflected by a mirror. Prior to about 1880, communication with the mainland from Rottnest was primarily with semaphore flags and flares. A manned lookout at Bathurst Point included a signalling station which relayed shipping information between Wadjemup Lighthouse at the centre of the island and Arthur Head at Fremantle. A heliograph was installed in 1879 at Signal Hill, the small rise overlooking the main settlement in Thomson Bay. Henri Courderot in addition to his saltworks duties was the heliograph operator and was paid to operate the service once a day, weather permitting.

HISTORICAL INFORMATION

In spite of its relatively simple concept, the heliograph in its modern form dates only to 1869. Sir Henry Christopher Mance, (6 September 1840 – 21 April 1926) was a British electrical engineer .He received a knighthood for developing the heliograph. Sir Henry joined the Persian Gulf Telegraph Department in 1863, and was employed on the laying of the first Persian Gulf submarine communications cable. An inventive man, he was responsible for a number of important developments in the field of cable laying, testing and usage.

In 1869 he invented the heliograph, a wireless solar telegraph that signals by flashes of sunlight using Morse code reflected by a mirror. The flashes were produced by momentarily pivoting the mirror. Frustrated by Government lack of interest, he sent a number of his instruments to Lord Roberts for use during the second Afghan War, where the practical value of the invention was realised. It was subsequently adopted by military services worldwide and was still being used in World War II.

The Mance Heliograph was operated easily by one man, and since it weighed about seven pounds, the operator could readily carry the device and its tripod. The British Army tested the heliograph in India at a range of 35 miles with favourable results. The usefulness of heliographs was limited to daytimes with strong sunlight, but they were the most powerful type of visual signalling device known. In pre-radio times heliography was often the only means of communication that could span ranges of as much as 100 miles with a lightweight portable instrument.

There were many heliograph types. Most heliographs were variants of the British Army Mance Mark V version. It used a mirror with a small un-silvered spot in the centre. The sender aligned the heliograph to the target by looking at the reflected target in the mirror and moving their head until the target was hidden by the unsilvered spot. Keeping their head still, they then adjusted the aiming rod so its cross wires bisected the target. They then turned up the sighting vane, which covered the cross wires with a diagram of a cross, and aligned the mirror with the tangent and elevation screws so the small shadow that was the reflection of the unsilvered spot hole was on the cross target. This indicated that the sunbeam was pointing at the target.

The flashes were produced by a keying mechanism that tilted the mirror up a few degrees at the push of a lever at the back of the instrument. If the sun was in front of the sender, its rays were reflected directly from this mirror to the receiving station. If the sun was behind the sender, the sighting rod was replaced by a second mirror, to capture the sunlight from the main mirror and reflect it to the receiving station

1. Leather carrying case.
2. Heliograph.
3. Tool to maintain the instrument.
4. Sighting rod.
5. Spares wallet and spare parts
6. Spare mirrors in tin.
7. Reflex mirror.
8. Extender arm.

A single circuit submarine communications cable was laid from Cottesloe in 1900, after which the heliograph service was discontinued. This was replaced with a larger cable in 1935. *Refer to Virtual Visit 6*

An interesting article on the way heliographs worked can be viewed at:
http://www.modulatedlight.org/Modulated_Light_DX/Heliograph.html
https://trove.nla.gov.au/newspaper/article/65934755
https://trove.nla.gov.au/newspaper/article/23830622