

THE CAPTAIN'S CHRONOMETERS

*Two chronometers the Captain had,
One by Arnold that ran like mad,
And one by Kendal in a walnut case,
Poor devoted creature with a hang dog face.
Arnold always hurried with a crazed click-click
Dancing over Greewich like a lunatic,
Kendal panted faithfully his watch-dog beat,
Climbing out of Yesterday with sticky little feet.
Arnold choked with appetite to wolf up time,
Madly round the numerals his hands would climb,
His cogs rushed over and his wheels ran miles,
Dragging Captain Cook to the Sandwich Isles.
But Kendal dawdled in the tombstone past,
With a sentimental prejudice to going fast '
And he thought very often of a haberdasher's door,
And a yellow-haired boy who would knock no more.
All through the night-time, clock talked to clock,
In the Captain's cabin, tock-tock-tock,
One ticked fast and one ticked slow,
And time went over them a hundred years ago.*

Forty years ago, most Australian school students had more than a passing familiarity with this poem by Kenneth Slessor. The syncopated piece was published in 1931 as part III of 'Five visions of Captain Cook'. It became a song 'Two chronometers the Captain had', with music by Lindsay Aked

Many school children could recite the poem by heart and did so frequently at the eisteddfods.. But how many were taught the story of the chronometers.

To begin with, to which of Cook's voyages does the poem relate?

Lieutenant James Cook RN made three voyages of discovery – on the Endeavour 1768-71, on the Resolution in company with the Adventure 1772-75, and on the Resolution in company with the Discovery 1776-78.

On the first voyage Cook did not carry a chronometer. He relied on the traditional method of westing and on the method of lunars in coastal waters. In 1768, the world's only practical chronometer was Harrison's H4, a large watch with a verge escapement, train remontoire and temperature compensation. But in 1768 H4 was dismantled and in the hands of Larcum Kendall.

Kendall was a clockmaker of considerable standing. He had been apprenticed to John Jeffreys who made for Harrison the watch that led to H4, and in 1765 he was appointed to the panel of the Board of Longitude to which Harrison explained H4. He subsequently contracted with the Board to make a duplicate of H4 for the price of £450. He received personal instruction from Harrison and began work in mid 1767. Two years later the chronometer was complete and by January 1770 it had been adjusted and handed over to the Board. Rupert Gould, author of the standard work on the topic *The Marine Chronometer, Its History and Development.*, dubbed this clock K1. It is a very close copy of H4 and the craftsmanship surpasses that of H4. After a satisfactory trial at Greenwich, K1 was sent to sea with Captain Cook in HMS Resolution in 1772. This voyage was a very severe trial. Yet so well did K1 perform, and so accurate was its going throughout the three years of the voyage, that Cook had nothing but praise for it.

Indeed, Cook was so pleased with K1 that he took it with him aboard Resolution on his voyage of 1776-78. It performed to expectations until it was stopped by dirt lodging in the teeth of the seconds wheel. This was remedied by a sailor who had been an apprentice watchmaker. However it stopped again a few days later with a broken balance spring. The sailor made a new balance spring but did not successfully repair the chronometer. It was subsequently used by Vancouver in his survey of the NW coast of America.

Kendall believed that Harrison's H4 design was unnecessarily elaborate and costly. He made a further two chronometers to his own design. These were K2 completed in 1772 and K3 completed in 1774. K3 was a large watch with an unusual verge escapement. K3 has two coaxial crown wheels the teeth of which engage with a single ruby pallet. The train remontoire was omitted. Harrison's maintaining power was fitted as was a compensation curb that improved upon Harrison's design. Its performance was not the equal of K1.

K3 was carried aboard HMS Discovery on Cook's third voyage. It was subsequently used by both Vancouver and Flinders.

H4, H5, K1, K2 and K3 each took between two and three years to build. John Arnold's workmen could build hundreds of satisfactory chronometers in a year. Arnold was fifteen years younger than Kendall. At the age of 28 he manufactured and presented to King George III a watch, half an inch in diameter, mounted in a signet ring. It was a half-quarter repeater! Six years later, in 1770 he completed his first marine chronometer.

On the suggestion of the Board of Longitude, Arnold made a second chronometer of the same pattern, completing it in November 1771, and a third shortly thereafter. Arnold numbered these chronometers No1, No2 and No3. The new feature of these chronometers was Arnold's pivoted detent escapement.

On Cook's second voyage, No3 was carried aboard Cook's ship Resolution and No1 and No2 were carried aboard the accompanying ship Adventure. Their performance was uniformly bad. No2 ran wildly from the beginning and stopped before Adventure reached the Cape of Good Hope. No1 also stopped at the Cape, but this was due to rough handling. After being restarted it ran for the remainder of the voyage but its fluctuations in rate were very large. The maintaining gear on No3 jammed and it stopped.

In view of the failure of these chronometers, and the response of the Board, Arnold set about doing better and was later to achieve sensational results. But not until 1779.

Slessor, we can see, has exercised considerable poetic licence. The voyage on which Cook's ship carried both a Kendall and an Arnold was the second voyage. Slessor's version of their performance is wide of the mark, and he cannot spell Kendall. What is more, Cook did not go to the Sandwich Islands (Hawaii) on his second voyage. He did not discover the Islands until January 1778 during his third voyage. But never mind, it's a poem.

With acknowledgements to Rupert Gould