

When I read 'Longitude', Dava Sobel's science factual account of the discovery Longitude at sea, I was certain that it could not be made into a film. True, nobody, had asked me to make a film, but if you make films, everything you read becomes a possible project, or in this case an impossible one. The story of 18th Century carpenter John Harrison, who solved the problem of working out where you are at sea, takes place over forty years, although the hero fights a battle against seemingly insuperable odds, he does not win until he is eighty years old and the main tension resides in whether a clock is going one second faster or slower, not exactly Ben Hur. Thus it was with mixed feelings that I attended a meeting at Channel 4 almost exactly a year ago on September 16th to discuss the possibility of such a film. The rights to the book had been bought some time before by Granada Television and Channel 4 saw it as a potential millennial project but had no fixed ideas upon how this should be achieved, and as I walked into the room neither had I.

I did however have a clue. I had swiftly leafed through the book to check on something that had stuck in the back of my mind. Rupert Gould, a naval officer, not from the 18th Century, but the early part of this century, who invalided out of the service at the start of the first world war after a nervous breakdown, had discovered the abandoned Harrison clocks in a cellar at the Royal Observatory at Greenwich. I remembered he had described them resembling something brought up from a wreck deep beneath sea. He appears briefly in the post script to the book as a walk on character, little more than an extra, who having discovered the clocks devoted his life to restoring them. There was something haunting about the image of the damaged man finding the damaged machines and I wanted to know more about him.

There are a small number of authorities on Harrison and pre-eminent among them is the clock-maker and historian Andrew King. Andrew's workshop is in Beckenham, and above it in a couple of cramped rooms he has literally hundreds of books and papers relating to the Harrison story, almost every major investigator into Harrison's history over the past century has in one way or another left his papers to Andrew and here they lie, an informal library under his curatorship.

Here I saw my first copy of 'The Marine Chronometer' written by Gould in the 1920's, and the reason that he had sought out Harrison's clocks in the first place. I had never read a work of horology before and it is a complex technical account of the mechanical evolution of the marine timekeeper. But even though I could not fully understand the technology I recognised in the writing itself a most unusual mind with great feeling, delicacy and skill. I was more and more certain that somehow this was the way to reach Harrison.

A few days later I met the second great Harrisonian scholar, the youthful looking curator of Horology at the Royal Observatory, Jonathan Betts. I was hesitant to discuss my thoughts but I finally said that although I had little evidence to show for it I had a feeling that one of the keys to the Harrison story was Rupert Gould. "You're so right!" said Jonathan, "and I know everything about him, pictures, diary essays. I am preparing his biography". Jonathan directed me to the Caird Library at the bottom of the observatory hill, and there in a cardboard box neatly tied up with ribbon I held in my hand the fading green

notebooks that Gould had kept as he painstakingly restored the Harrison machines to their proper condition. In between the technical drawing and the detailed mechanical descriptions there were the occasional clues to the man: "Suspended work as the children and I have been very busy erecting one of the Underground Toy theatres" or references with his struggles with authority: "pressure to return the clocks...sooner than involve the observatorial authorities in official censure".

The details were small but with Jonathan's invaluable help I began to piece together an extraordinary secret life. A man who after a successful naval career on active service had suffered a nervous breakdown on the first few days of the First World War, he was then assigned a desk job by the Admiralty. In his late twenties while researching his book: 'The Marine Chronometer', he discovered the Harrison machines and requested permission to restore them. Like Harrison himself he had no formal qualification to attempt the work and little to offer except his enthusiasm which was greeted with some suspicion by the then Astronomer Royal: Sir Frank Dyson. However Dyson eventually let him start work on the first machine (now known as H1) and thus Gould began what became his life's work.

In the course of this long obsession he was to lose his family in a very public divorce case, which in turn cost him his job and also the right to work on the clocks. He fought back and managed to get permission to work on the clocks again, this time working in the attic of his mother's house, and earning a little money from publishing pamphlets and lecturing. From this grew a radio career, first on Children's hour where he was known as the 'Stargazer' and then on 'The Brain's Trust', a popular programme where a panel of 'experts' answered the audiences questions. Such was Gould's success that one newspaper report of his death read: "Man who was never wrong – dies" .

The start of the second world war was to bring on another nervous collapse and in an extraordinary sequence of events Gould, in an effort to escape the War, borrowed a car, drove west out of London until he ran out of petrol, then abandoned the car in the middle of the street and was finally picked up by the police still running. He was admitted to hospital where he met and fell in love with a nurse, Grace Ingram, who literally took him home with her. After the war in 1944 he was made a Curator of the Maritime Museum at Greenwich, a position he had long hoped for, three years later he was awarded the Gold medal of the Royal Horological Society, he died a year later in 1948.

In this strange and moving life I found strong parallels with Harrison's own, the struggle against authority, the personal obsession over ruling all other demands, the lack of formal qualification, and over all this the struggle between the perfect order of the mechanics of clockwork and the opposing disorder and insanity, even madness. His breakdowns on the eve of two world wars seemed to make him into a kind of emotion seismograph of our century.

If Gould was the key there were other characters who pushed themselves into the story. One of the most remarkable of these was a man called John Campbell. Again he has always occupied a small place on the footnotes of the Harrison story as he was known both to Harrison and his rival, the Astronomer Neville Maskelyne, who was trying to solve the Longitude mystery by the

alternative lunar method. Harrison had also called on John Campbell to testify on his behalf before the notorious Board of Longitude who were to oppose Harrison's claims for so long. However as I looked at different references, a most complex character emerged. He was born in 1720 in Scotland and, as a boy, was apprenticed to the Master of a cutter out of Argyll. When he was just fourteen years old his ship was boarded by a Royal Naval recruiting party and the entire crew, with the exception of the Master and Campbell (because of his youth), were press ganged. Among the men was a newly wed friend of Campbell who was very distressed at being so soon parted from his wife. Campbell persuaded the Officer in charge to substitute him for his friend and was accepted then and there into the navy.

Unlike the army the navy did not require an officer to buy his commission, thus there are examples of men who rose through the ranks through merit alone, John Campbell was such a man and he ended his illustrious career as Governor of Newfoundland. More interesting to me, however, was the fact that he had served as a midshipman in 1740 on HMS Centurion and had circumnavigated the globe with Lord Anson. This celebrated voyage was also the occasion of one of the more terrible examples that demonstrate the cost of Longitude ignorance. While attempting to rendezvous with his fleet off Juan Fernandez Anson, because of a Longitude error, mistook the Mountains of Chile for the island itself and turned East instead of West. With his crew already dying of scurvy the mistake was to cost hundreds of lives as he struggled to find his true position in a vast featureless ocean. It seemed to me impossible that involvement in this 'Longitude tragedy' had not fired the young Campbell to pursue the two architects of the Longitude solution Harrison and Maskelyne. What made the connection more potent was that three years before in 1737, Harrison himself had travelled on the Centurion when he undertook the first sea trial of his first marine clock (Called H1 by Gould). Some of the men who died of Scurvy three years later with Anson had therefore witnessed the testing of the very machine that was to lead to the solution of the problem that was to destroy them. Campbell seemed to demand admittance to the structure of the film.

This voyage of Harrison on the Centurion, a six day journey to Lisbon, was itself one of the great mysteries of the Harrison story. Harrison kept no diary and wrote few letters and although I gained access to a remarkable document called 'The Harrison Journal' which recounts in great detail the events of Harrison's later life starting from 1761, there is very little information on his early life and in particular the building and testing of his first Marine timepiece H1. One of the few written sources however were the various ships logs for the sea journeys undertaken in the testing of the clocks. Extraordinarily every single log of every Royal Naval Voyage undertaken since 1730 is stored and catalogued and available for inspection. These logs give a daily account of the weather, distance travelled, latitude, and longitude estimates and any unusual events (punishments for example) noted by the Captain. I say every log, but in fact, as has been pointed out by all Harrison's biographers, the log of Captain Proctor on the Centurion for this particular journey did not exist. Captain Proctor had died some time after the Centurion's arrival in Lisbon, and Harrison had returned to England on a different ship and there was speculation that perhaps the log had never been kept (very unusual) or possibly lost with the Captain's other effects. The events of this trial were therefore surrounded in mystery.

Harrison had returned from the test and some months later demonstrated his machine to the adjudicating Board of Longitude. They were presented with a certificate from the ship's master on the return journey on HMS Orford who said that the clock had performed spectacularly, and that Harrison had correctly predicted the ship's landfall after a thirty day voyage some sixty miles West of where the ship's Captain and crew believed the fleet to be. However in the face of this account Harrison instead of claiming the prize or asking for a further test as might have been expected, asked only for money to continue building a second machine. The causes of his dissatisfaction were not clear and the lack of Proctor's log or any further account from Harrison himself seemed to be a brick wall to further investigation.

Captains logs of the period are stored at the Office of Public Records near Kew, but the Captain's was not the only log, the ship's Master who was in charge of navigation kept a separate log. The Master of the Centurion, John Sprake, made no mention of Harrison in his log, but with the help of the distinguished documentarian Alan Ereira, I was able to understand something of the extraordinary events of the voyage. It was fast and uncomfortable, on one particular day Sprake records the distance travelled as 200 miles. There was also a heavy swell going the same way they were, and the ship would be yawing, rolling and pitching, a three-dimensional fairground roll that dramatically tests the human stomach let alone clockwork. We already knew from a surviving letter of Proctor's that Harrison had been very seasick on the voyage, the reason for this now seemed clear. However there was still no indication of what had happened to the clock.

I learnt however, that in addition to the Master, the ship's Lieutenants, who might number three or four, also kept separate logs as part of their training. These are stored in the Caird Library where I had read Gould's notebooks and I looked through them hoping to find a clue as to what happened on the voyage. The logs are kept in bound volumes of crumbling leather catalogued under the name of the ship. Thus turning these pages, gives powerful visual evidence of their history, scrawly handwriting in stormy weather, waterlogged pages, torn, crossed out and occasionally missing. In fact Centurion Lieutenants Bertie and Draper appeared to have copied the master's log in most respects however as I turned the pages I came across another log, stuffed in between the pages. Hardly able to believe what I was seeing I saw in ornate handwriting the name: Captain Geo. Proctor. Mis filed somehow amongst the papers of his Lieutenants was the missing log of Captain Proctor. Although there were few people I could share this news with, I felt for a heartbeat what Carter must have felt as the tomb door swung open for the first time.

The museum photocopier was not working so I carefully copied out the entries and as I did so realised that although there was no direct mention of Harrison there was one anomaly. Proctor appeared to give two different Longitude readings for each day and they did not seem to relate to each other. I immediately sent a copy of these findings to Alan Ereira and after looking at them he plotted the two courses suggested by the different figures. After careful examination he said that he was certain that one of the figures was Proctor's own Longitude reckoning, taken by a calculation of the ship's speed (a knotted rope thrown overboard and the 'knots' counted), set against knowledge of the current, wind speed etc, as was usual at the time, and that the second figure

represented a calculation made by observation of the clock. On its brief voyage the Centurion had twice taken a visual observation, from the Lizard on the Cornish Coast as it set out, and from Cape Finnestaire as they sighted Spain. Thus for the first time it was possible to chart the course that the clock and Harrison saw, the course that the Captain believed and on two occasions to have a fairly accurate idea of where the ship actually was.

The events that this and other logs revealed about that first voyage to Lisbon became the story of the first half of the film: Longitude. Twisted into the story was the young John Campbell and Rupert Gould. The first draft of the script was presented to Channel Four twelve weeks after that first meeting on December 18th 1998 and we were in pre-production six weeks later at the beginning of January. Filming began in April with Michael Gambon playing John Harrison, Jeremy Irons, Rupert Gould, and as John Campbell Andrew Scott. There are over a hundred other speaking parts and the cast list reads like an Equity general meeting and you can see for the first time the true story of John Harrison and his clocks on Channel 4 on.....