The Synchronomes at the End of the World

Norman Heckenberg and Tony Roberts, Brisbrane, Australia, Part 1

One hundred years ago, on 2nd June, 1906, the Daily Mail newspaper in Brisbane, Australia, carried a short note headed *'Improvement in Electric Clocks. A new invention'.* It continued:

'The Synchronome Co., of Ann-street, have just received a sample from their London works of a new time switch or controller for electric clocks, which is specially suitable for actuating large dials.

For 60 years the science of working electric clocks has been held back by the apparent impossibility of combining a pendulum and a switch without one interfering with the functions of the other, and Mr A G Jackson believes that the Synchronome Co. have at last overcome the difficulty in a manner that will enable them to further popularise electric clocks and found a new industry, his intention being to manufacture entirely in this state, if possible, the whole of the Synchronome electric clocks for Australasia.

The simplicity of this new time controller, which must lead to accuracy, is apparent to even a novice, and appears to be perfection in the working and adjustment of the number of dials in the circuit.'

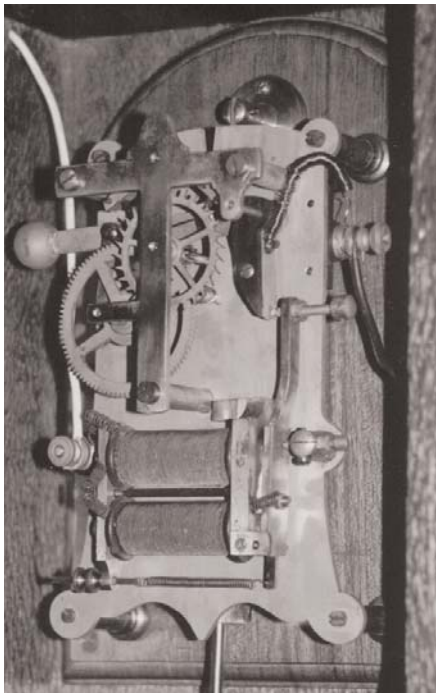

Figure 1: Electrically rewound spring-driven deadbeat escapement controlling pendulum installed in South Brisbane Town Hall in 1904.

This report clearly refers to the new detached gravity-escapement system described in British patent 6066/1905 by Frank Hope-Jones. In this system, a gravity-arm tripped by a countwheel impulses the pendulum directly once every thirty seconds. The new controller replaced Synchronome's earlier electrically rewound spring-driven type which had appeared with either recoil or deadbeat escapements. A number of the earlier type had been imported by Jackson and one is still controlling the four dials in the tower of the old South Brisbane Town Hall over one hundred years later. The movement of this controller is shown in **Figure 1**.

Synchronome Electrical Company

By January 1907 Jackson had at least ten 'new controllers made in shop and out working. ' [1]

In this article we describe a number of these controllers and others made in the next few years and which survive in Queensland. Together with evidence from those records of the Synchronome Electrical Co. of Australasia which survived the Brisbane River flood of 1974, they provide insight into the development of the system in its early days, of which little record survives in the UK.

The Synchronome Electrical Company of Australasia was founded by Alfred George Jackson, who in 1902 acquired rights to the Synchronome name and patents from Hope-Jones for £500. As far as we are aware, Jackson was the only person to have this special relationship with Frank Hope-Jones.

Jackson's son and grandsons followed him to run the company as a family business for 88 years.[2] Although they diversified somewhat, installation and maintenance of Synchronome clock systems, including tower clocks, were the core activities. As well as those relating to his own inventions, Jackson took out several Australian patents to protect the Synchronome system. The first of these (4213/05) names Hope-Jones as the 'actual inventor' and copies the diagrams and most of the text from British patent 6066/1905.

The second, 7881/1907, shows Jackson as the inventor and introduces the idea of impulsing the pendulum via a

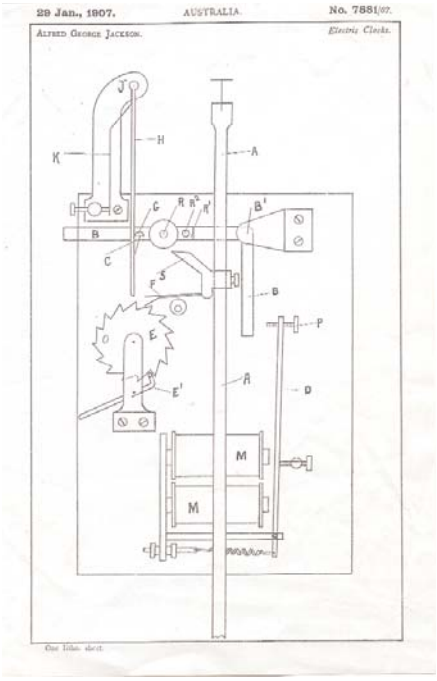

Figure 2: Diagram from Australian Patent 7881/1907.

roller on the gravity arm and a pallet mounted on the pendulum rod. The application was submitted just four days after Cunynghame and Hope-Jones' British patent application 1945/1907. The basic ideas are the same but the text and diagrams are different, as are many details. Jackson's patent makes no mention of impulsing at the bottom end of the pendulum, concentrating on a scheme akin to Cunynghame and Hope-Jones' patent figure 3 but with the impulse acting to the right rather than the left. **(See Figure 2)** In both cases the count wheel is pushed around anticlockwise as in the earlier schemes.

Synchronome Company of Australasia Ltd

Jackson's system is in fact similar to one described by Hope-Jones in the British Horological Journal in 1906 [3], and is probably based on samples he received from London and his experiments with them. In November 1906 the London firm billed the Synchronome Company of Australasia Ltd for 'One controlling pendulum movement only from Pitkin & Co.' that may be the sample referred to in surviving documents.

We have some hints about Jackson's

experiments in a few surviving copies of letters from Jackson to Hope-Jones[4]. In the one reprinted as Appendix A, Jackson stressed the idea of mounting the impulse roller on a moveable plate to facilitate adjustment and advocated a variation on the countwheel pawl. **(Figure 14 in Appendix A).** The moveable plate appears in a number of controllers we have been able to examine, **(Figure 3)** together with other features not mentioned in the patent: the mounting of the impulse pallet on a pendulum leader rather than directly on the pendulum rod, and the use of a push-button switch in parallel with the 'Synchronome switch' to allow dials to be advanced easily, rather than the N-R-A lever system used in London.

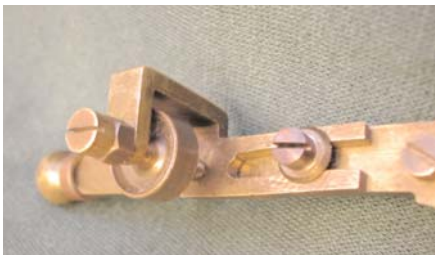

Figure 3: Impulse roller on moveable plate.

Although the provenance of the controllers we discuss here can be confirmed only in a few cases *(Jackson's company never used serial numbers)* we can place them in a sort of evolutionary sequence. We start with two **(Figures 5 and 6)** based on a rectangular brass plate 3/32" (2.4mm) thick, 7" (178mm) high and 5" (127mm) wide, with nicely shaped brass cocks for the gravity arm and countwheel. The solenoid assembly is isolated from the plate with a sheet of insulating material and bushes around the screws, while the gravity arm is grounded to the plate as shown in **Figure 4.**

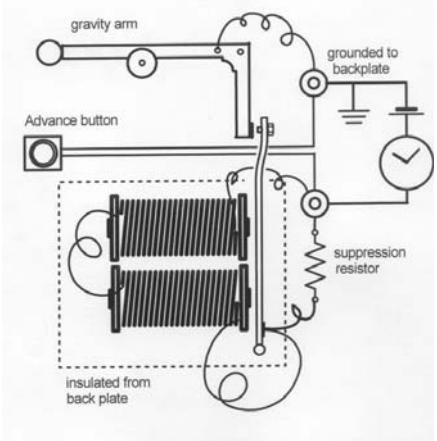

Figure 4: Wiring diagram for new controlling pendulum. The solenoid assembly and armature are insulated from the back plate.

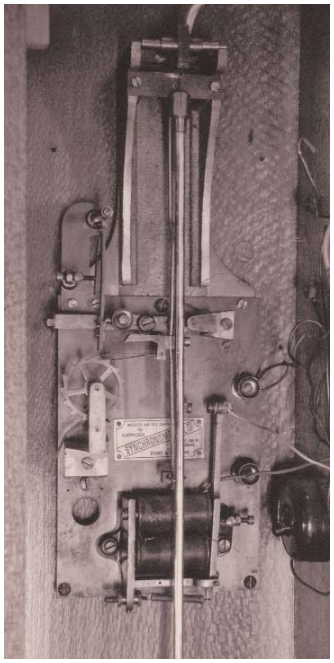

Figure 5: Brass movement in Ipswich Railway Museum. Note pushed countwheel and pendulum crutch.

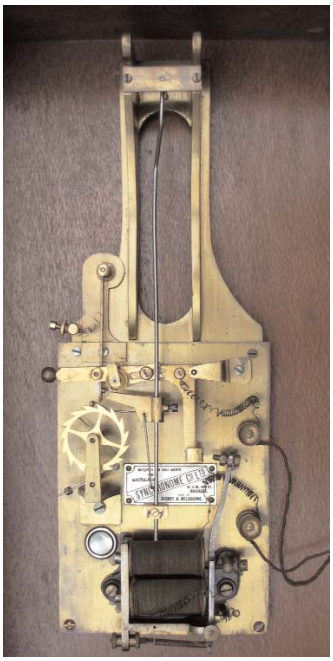

Figure 6: Brass movement with pulled countwheel and pendulum crutch. Total height 350 mm. Private collection.

All this looks very similar to that shown in an article in the June 1909 Horological Journal[5] describing the Synchronome installation at The Children's Infirmary at Carshalton, Surrey **(Figure 7).** But there are differences. Apart from the pushbutton set just below the countwheel, and the adjustable mounting plate for the roller, the support for the gravity arm catch is much more substantial, perhaps because of the damage sustained by the sample ***(see Appendix A)***. Another important difference is that the impulse pallet is mounted on a pendulum crutch, which seems a common feature in the early Brisbane-made controllers. But perhaps the most interesting difference between the Brisbane and London controllers at this time is that Jackson used a pendulum support which was connected directly to the plate carrying the rest of the mechanism instead of independently to the case. The result was an integrated unit 350 mm in height, which with the pendulum crutch, maintained all the critical adjustments even during transport.

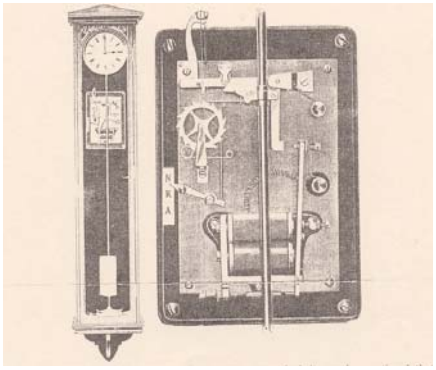

Figure 7: From Horological Journal, June 1909 (from an offprint in company files).

The support is a brass casting that has been machined differently in the two cases shown. Once again, Jackson's letter to Hope-Jones laments the latter's failure to send him a pendulum mount with the sample, forcing him to make up something. Perhaps connecting the pendulum support to the plate was an innovation on Jackson's part, born out of this necessity.

The major difference between the two controllers shown in **Figures 5 and 6** is that the one in **5** has a countwheel which rotates counterclockwise, pushed by a pawl pivoted on the impulse pallet.

Queensland Railway Museum

This controller is in the collection of the Queensland Railway Museum and is most likely the one installed in the Ipswich Railway Workshops on 8 January 1908, replacing the earlier 'old type' controller installed on 2 January 1907. This system was maintained by the Railway Watchmaker and so was probably not subject to the interchanges and upgrades common in systems under Synchronome maintenance contracts. The letter reprinted in **Appendix B** shows that in May 1908 Jackson still preferred the pushed countwheel, although he was experimenting with the pulled one. He also seems to be referring to his pendulum support bracket, although unfortunately we have no record of 'Photograph Sept'. This controller is in a locally made case of

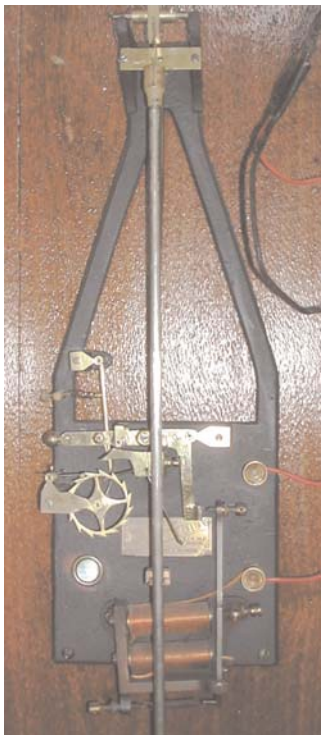

Figure 8: Movement with cast brass backplate and pendulum crutch. Total height 415 mm. Private collection.

Figure 9: Movement with iron backplate. Pendulum removed to show crutch clearly. Total height 455mm. Private collection.

'silky oak' *(Grevillea robusta)* but its original dial is missing.

The controller shown in **Figure 6** has a pulled countwheel and retains its switch with attractive mother-of-pearl pushbutton. It is in a private collection and its original date and place of installation are unknown, yet it is sufficiently similar that it must date from soon after that in figure 5. Mounted on the case door is a 7" engraved silvered dial, an item mentioned in bills from London of 1 October 1909 and 18 July 1910 so the clock may date from about that time.

Synchronome in London

The slave mechanism is of conventional design, marked *'ENGLISH MADE'* and *'patented'.* Jackson seems to have sourced slave movements from T. Baeuerle and Soehne, St. Georgen im Schwarzwald, and Japy Freres & Cie, London, as well as directly from Synchronome in London.

A further step in the evolution is shown in **Figure 8**. Here a mechanism rather similar to that shown in **Figure 6** is mounted on a solid cast frame (total height 414 mm) incorporating posts which allow the complicated cocks to be replaced by simple plates. Although when painted black this looks similar to the later standard model, this frame is in fact a brass casting.

The solenoid assembly is slightly different and more nearly matches that shown in **Figure 5** with a different placement of the mounting screws. We have seen several examples like this with the solenoid assembly extending below the bottom edge of the baseplate. The magnets probably came from Everett, Edgcumbe and Co.Ltd. The case is silky oak with a 7" silvered engraved dial. The slave movement driving the dial has an unusual sprung pallet mechanism.

The final step in this sequence is evident in a second controller in the Railway Museum collection and another similar one in a private collection **(Figure 9).** The frame is now cast iron and larger with a Y-shaped strengthener which may also have made casting easier. The gravity arm catch is now mounted together with the countwheel assembly and the roller mount has been simplified.

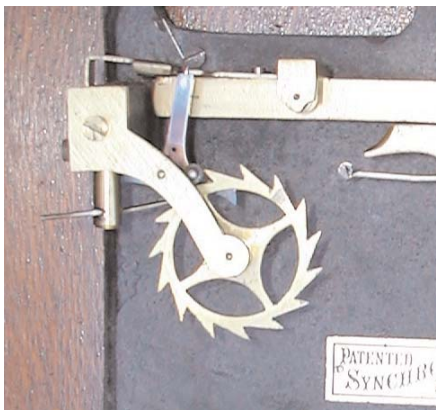

Figure 10: Gravity arm catch of clock in Figure 9.

The gravity arm catch is also quite different with a three armed steel trigger acting from below. A closeup of this sort of catch is shown in **Figure 10**.

Synchronome Brisbane Patented

We also see a change in the silvered brass labels. The larger older one, (probably obtained from the Endolithic Man'f'g Coy Ltd in 1905) was marked *'PATENTEES AND SOLE AGENTS FOR AUSTRALASIA/ SYNCHRONOME CO. LTD./ 65 TO 69, ANN ST., BRISBANE/ AND AT SYDNEY AND MELBOURNE'.* The company stayed at the Ann Street address until 1927 but we have not been able to trace the Sydney or Melbourne branches. The smaller label appearing in **Figure 9** which became the standard, was simply marked 'Synchronome Brisbane Patented'. **Figures 11 and 12** show ¾ second masters which clearly date from the same period. Both have survived a good deal of tampering and await sympathetic restoration, but many original details are clear, and the distinct differences presumably reflect the large amount of experimentation in design going on at that time. As with the one second controllers shown in **Figures 8 and 9** we see a transition from suspended gravity arm catch and push button advance to a catch pivoted below the arm and no advance mechanism.

Part Two of The Synchronomes at the End of the World will be published in November's Journal.

Notes and references:

1. 'Synchronome Goods and Details notebook' p32. Two 'samples from London', plus six 'first pattern' and five 'second pattern' are listed. This notebook has been transcribed by R. H. Miles.

2. G. Bianchi, J. Gardner, N. Heckenberg, A. Roberts, and J. Woolrych, "Synchronome Brisbane 1903-1991", NAWCC Chapter 104, 1998.

3. F. Hope-Jones, Horological Journal, January 1906, 67.

4. Some of the letters and other documents can be found at http://www.physics.uq.edu.au/physics_museum/synchronome/Synchronome.html

5. Horological Journal, June 1909 (from offprint headed 'Time distribution on a large scale' found in company files)