

James Sprent and the Trigonometrical Survey of Tasmania

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Key Words: Sprent, Van Diemens Land, Tasmania, Hobart, trigonometrical, triangulation, Surveyor-General

SUMMARY:

The British established a settlement in Van Diemens Land (Tasmania) in September 1803. Land was surveyed for sale as the colonial authorities extended the settlement around the colony. By the 1820's there were increasing disputes between landholders partly due to the piecemeal way that land had been measured. A trigonometric survey for the production of a general map of the whole island, with all natural features and artificial boundaries precisely located was considered to be a solution. Field operations began in late 1832 amid scepticism about the survey's practicality. Years of controversy about the survey and the Survey Department followed.

James Sprent arrived to settle in Hobart Town in 1830 and became an Assistant Surveyor in 1833, taking a dominant role in the survey. He laboured under two Surveyors-General who showed limited capacity to meet their responsibilities of office and were subsequently removed. Nevertheless an interim chart had been drafted by 1837 when work was suspended due to severe economic problems. Work was eventually resumed in 1847 and Sprent took up his earlier role. Responsibilities in the Survey Department changed in 1855 when a parliamentary select committee recommended the replacement of military surveyors with civilian surveyors and Sprent was appointed Deputy Surveyor-General. He continued with the trigonometric survey until mid 1857 when he became Surveyor-General.

By the end of 1857 he found himself giving evidence before a select committee inquiring into the state of the trigonometric survey. The inquiry produced no clear recommendation about future field operations however the way was left open for the publication of a general map of the colony. The map was based on the trigonometric survey and published in 1859 just before Sprent retired due to ill health. He died at his home in Hobart on 22 September 1863, aged 55.

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I. SPRENT – SON OF A PUBLISHER

Born in Manchester in 1808, James Sprent was the son of a publisher from Glasgow. After education in local schools he went to Glasgow University (Master of Arts 1825) and St John's College, Cambridge.

When he arrived in Hobart Town in May 1830, Sprent had both an impressive academic record and adequate capital to establish "a public school for young gentlemen".¹ In July 1830 he offered tuition between 7 am and 4 pm daily in "Latin, Arithmetic, Mathematics &c. and French".² In 1832 he began classes for young ladies and adults after school hours and lectured on astronomy at the Mechanics' Institute. He was described as one of the Government House social set.

Early the next year his application for a free land grant was rejected by the Colonial Office. Sprent closed his academy and in August 1833 he was appointed as a temporary assistant surveyor at an annual salary of £200.

2. THE SURVEY DEPARTMENT

George Frankland, who had been an officer with the East India Company, was appointed Surveyor-General in 1827. Governor Arthur did not support the promotion of Assistant Surveyor Thomas Scott and Whitehall had refused to agree with Arthur's recommendation to appoint the Acting Surveyor-General, Edward Dumaresq.

In late 1829 Captain Edward Boyd, Royal Staff Corps, reported himself to Frankland to be ready for duty as Deputy Surveyor-General "principally detained in Hobart Town to superintend details of the Department".³ Two and a half years later Frankland made plans to open a branch office in Launceston to be staffed by Boyd. Boyd protested to Governor Arthur and the disagreement escalated with Boyd asking for a hearing before the Governor in Council. He was criticised for sarcastic remarks about Frankland and given a written command after which he agreed to "make preparations accordingly".⁴

¹ 'Sprent, James (1808 - 1863)', Australian Dictionary of Biography, Online Edition, Copyright 2006, updated continuously, ISSN 1833-7538, published by Australian National University

² Hobart Town Courier, 26 June 1830

³ CSO 1/410/9233/6

⁴ LSD 1/24 pp 33-38

This was the first of many incidents that were to rumble through the Survey Department following Boyd's withdrawal to Launceston. There were complaints about the supply of charts, postage fees, charges for delivery of a theodolite and so it went on. Boyd appeared to do nothing unless directly ordered. After three years in Launceston, Boyd was to be assigned to a District Surveyor's post. Again there were protests after which Frankland took a sympathetic view and Boyd was transferred back to his workplace in Hobart Town.

The trigonometrical survey started in 1832 and by 1834 Frankland had overall superintendence of a dozen surveyors. Most of these were responsible for work in their allotted districts. Surveyor-General Frankland was as capable and effective as any other military-gentleman surveyor from an aristocratic background. While the range of practical surveyors in the field under his orders were of variable background and standard, their work seemed generally adequate for the immediate purpose. By 1837 when Sir John Franklin arrived to be Governor, Van Diemens Land had severe economic problems and the Survey Department underwent review, reorganisation and retrenchments. Sprent and fellow Assistant Surveyor James Calder were the only surveyors retained. Contract surveyors were employed on a casual basis and the trigonometrical survey was suspended.

On 30 December 1838, aged 38, Surveyor-General Frankland died after a brief illness. Deputy Surveyor-General Boyd was duly appointed Acting Surveyor-General. Newly arrived Governor Franklin condoned this arrangement until complaints began to emerge.

The work of contract surveyors led Sprent and Calder to complain to the Colonial Secretary about irregularities in the 'Contract System' under which contract surveyors were employed for only one project at a time. They questioned the qualifications and capabilities of those being employed for this work. In their letter of 16 June 1840, it was suggested that all surveyors should be tested by practical examination on two or three plots. This was the first evidence of their interest in professional training and standards, which they both sought to improve throughout their careers.

Boyd refused to forward their complaint because he could not forward a "letter which was not addressed to himself".⁵ Sprent and Calder demanded the return of the letter and sent it directly to Governor Franklin. Boyd dismissed the complaints that: unauthorised surveyors were employed; that surveyors were engaged without examination; that certain "persons of defective repute"⁵ were employed; and that unauthorised surveyors had operated under an authorised surveyor's signature. He claimed that "everything is quite correct"⁵ however Franklin ordered an inquiry. Sprent, Calder, Boyd and authorised surveyor Sharland provided evidence for the inquiry that concluded that everything was "quite correct".⁵ Executive Council then

⁵ CSO 5/247/6447, p133ff

considered the inquiry's report and subsequently Boyd was advised that Governor Franklin had "found it impossible to continue you in the office of Surveyor-General".⁵

Boyd returned to England in 1841, leaving Sprent and Calder as the only salaried professional staff of the Department. Neither of them was asked to take charge. In July that year Captain Robert Power arrived in Hobart Town to take up the post of Surveyor-General.

By July 1842, Surveyor-General Power and Calder were engaged in a significant disagreement about the investigation of a property survey. The matter was referred to the Colonial Secretary and both parties were rebuked for their actions. This was the start of a prickly relationship between these two men.

The Department then consisted of Surveyor-General Power, Deputy Surveyor-General Hugh Cotton, whose duties appear to be not clearly defined, Sprent, Calder and six draftsmen and clerks headed by a chief clerk. Contract surveyors carried out most of the field work on a casual but generally continual basis.

Power had other staff problems in that year, losing three key office staff. He took the dubious decision to appoint his son as a junior clerk. In September 1843 new regulations for occupation of Crown land on annual leasehold tenure created a significant administrative load on the Department and a high demand for surveys and drafting. Calder is reported to have been dissatisfied with this new tenure system. Once again, friction between Calder and Power emerged resulting in further referrals to the Governor. Franklin found fault with both officers.

A contract surveyor Nathaniel Kentish also felt aggrieved by Power's cool official reaction to his achievements in the exploratory survey of the northwest quarter of the island to establish viable access to Van Diemens Company land. He was frustrated in his efforts to obtain recognition for his thirty-three hard months of perseverance and privation. In 1845, he wrote a satirical ballad deriding Power's contribution known as: "Power's the Explorer of all Davey Street".⁶

In 1847 Lieutenant-Governor Denison conducted a review of the Survey Department's management, which found Robert Power to be an officer and a gentleman whose "courtesy was universally admitted"⁷ but whose capacity to meet the responsibilities of his office were shrouded in uncertainty. There were disturbing reports of friction with surveying officers, slack discipline, poor control over contract surveyors and the trigonometrical survey being left in limbo. Denison supported its resumption.

⁶ Backsight, A History of Surveying in Colonial Tasmania, Jones Alan, 1989, pp 127,128

⁷ Obituary of Power. 17 Feb 1869, Mercury

The fermenting discontent in the office boiled over in a “disgraceful”⁸ incident of drunkenness, foul language and assault. Power’s son was accused of making a “death threat”⁸ against another clerk following an extended lunchtime celebration by Power’s son and the office messenger. In another incident the same clerk’s timebook entry was maliciously altered by others. The clerk’s complaints to Power led to further insults from the Surveyor-General. The victim then appealed directly to Lieutenant-Governor Denison and the office messenger was dismissed.

The Lieutenant-Governor’s attention was drawn to the way that surveys of land were being conducted and on 14 November 1849, he called for the appointment of a board of inquiry *chaired by Power* to recommend changes.

The board’s report adversely criticised the system for processing and plotting local surveys and the inaccuracies of those surveys. It slated the conduct of the Department stating “Its operations fall very far short of what might fairly be considered it should effect under proper direction, control and regulation”.⁹

Denison was astonished that Power had supported these findings and further investigation of the Department continued for over four years. It later emerged that Power had signed the report without reading it. During this time Power stayed at his post. A compromise was devised whereby Deputy Surveyor-General Cotton took responsibility for practically all “scientific” operations. Soon afterwards Sprent took full responsibility for the trigonometrical survey. Power only retained administrative charge of the Department and carried on accepting this diminished responsibility and reduced salary until his retirement in 1857.

In 1855, a Legislative Council select committee inquired into the continuation of military staff in the Survey Department and recommended that those staff should march out by the end of the year. Cotton was moved along to become a police magistrate and Sprent was made Deputy Surveyor-General. Power remained Surveyor-General as if nothing had happened until Sprent could be freed from field commitments to take over.

In mid 1857 Sprent finally finished his field tasks and exchanged his bush gear for the attire of a city gentleman. Power had retired and Sprent was now Surveyor-General.

Sprent published his ‘Map of Tasmania and Adjacent Islands’ and the first supplies of the printed map “pre-eminent for beauty of engraving and execution of colouring”¹⁰ reached Hobart in June 1859. It is a splendid memorial of an exceptional surveying career spanning over a quarter of a century.

⁸ LSD 1/66/166, 506ff

⁹ Legislative Council Votes, Proceedings & Papers 1852, First Session, Paper No 41

¹⁰ Backsight, A History of Surveying in Colonial Tasmania, Jones Alan, 1989, p 158

Sprent had joined the Department as an Assistant Surveyor specifically for the trigonometrical survey. He retired as Surveyor-General because of ill health in the same month that his map was published.

3. THE TRIANGULATION

Acting Surveyor-General Dumaresq and Surveyor-General Frankland had both been aware of the Great Trigonometrical Survey of India. While Dumaresq expressed doubts about the practicability of such a survey in Tasmania, Frankland and Governor Arthur supported the idea.

In late 1832 Assistant Surveyor Clint started to establish a base line near Hobart. After almost a year, Frankland noted that Clint had done “little more than select and clear a base”.¹¹ A track about four miles long had been cleared and hundreds of timber trestles had been made and transported to the site for supporting the measuring chain. The mark at the southern end of the base can still be located.

For “attainments of a high order”¹² in the academic field, Sprent was appointed in 1833 to work on the trigonometrical survey. The practical execution of the trigonometrical survey depended heavily on his services. The base was “measured on tressels with great care, with Troughton’s Patent Chain of one hundred feet in length at a temperature of 54° Fah, and the usual reductions were made.”¹³ Some fifty station points were selected, cleared and marked in high country across the island over the eastern settled areas from South Cape to Norfolk Plains, southwest of Launceston. ‘Objects’ were formed at each remote station of the survey by erecting tripods of poles or massive cairns of loose stone, or by leaving a single tree trunk on the hill top visible from as far away as thirty miles.

By 1837, when Franklin ordered suspension of the work due to Van Diemens Land’s severe economic problems, an interim chart had been drafted. This was based on observations made from some forty stations, taken and recorded by Sprent and Calder. Calder had served in the Survey Department for some time before Sprent’s appointment, but Sprent appears to have taken the major role in the trigonometrical survey.

These two surveyors used the logical perfection of mathematics to position the natural rugged grandeur of the island over a long period and each respected the other for his professionalism. When the trigonometrical survey was suspended no practical progress could be made with the integration of earlier boundary surveys, though Sprent suggested in a report in 1847 that the chart produced was likely to be at variance with original patchwork. So the field books containing masses of

¹¹ CSO 1/611/13593: Corr File (R. Clint)

¹² 'Sprent, James (1808 - 1863)', Australian Dictionary of Biography, Online Edition, Copyright 2006, updated continuously, ISSN 1833-7538, published by Australian National University

¹³ Legislative Council Votes, Proceedings & Papers Vol 1, 1852, Paper 52

observations, reductions and calculations were set aside. Station points were abandoned to be blasted by gales and swept by bushfires.

The survey work had, however, included a closely woven secondary triangulation near the mouth of the D'Entrecasteaux Channel. It was in this area that two ships had been wrecked en route to Hobart and only a short distance from their destination. This work was used to form a detailed map of the area.

Lieutenant-Governor Denison arrived in Van Diemens Land in January 1847 and decided early on to re-establish the trigonometrical survey. Surveyor-General Power wrote to the Colonial Secretary in April 1847 that he "was led to believe that a trigonometrical survey of this Island should be effected".¹⁴

Power asked Sprent to report on the survey and forwarded Sprent's report to Denison without comment, relying on his "high opinion"¹³ of Sprent's talents, zeal and industry. Sprent's estimates for the remaining work were quite inadequate: Troughton and Simms 12-inch theodolite (£100); chain (£10); and an overseer and nine men (£25 per year).

Deputy Surveyor-General Hugh Cotton later provided Denison with a detailed appraisal of the triangulation already completed, estimates of the work required to complete the survey and the likely cost. Cotton's meticulous proposal for a four-year program included minutely itemised annual estimates embracing everything from blankets and cooking gear to a purpose-made demountable theodolite. Denison ordered the resumption of the survey.

Sprent and Calder were relieved of other duties and resumed the triangulation. The work continued with the same difficulties of remoteness and poor access to many of the stations. Three years into the recommenced work, Sprent recorded his inability to take angles from the top of Frenchmans Cap by saying "it would be quite impossible to take the instrument upon the Mountain ... I may safely come to the conclusion that angles cannot be taken from this Mountain".¹⁵

In 1853, exploration, examination and observation from high points in the unknown mighty ranges of the far southwest were still to be done. On 11 December 1854 Sprent recorded his astonishing efforts in the vicinity of Port Davey. After five days work at Port Davey establishing two stations, he intended to place another on the De Witt range before going to Bathurst Harbour. He planned to walk first to South West Cape then north to Macquarie Harbour, climbing mountains and taking observations on the way.

¹⁴ Legislative Council Votes, Proceedings & Papers Vol 1, 1852, Paper 52

¹⁵ LSD 1/81/29

During the southwest exploration Sprent was the first westerner to notice an iconic peak that still attracts modern-day explorers. He described it as “the Obelisk”¹⁶ and it later became known as Sprent's Obelisk. However when cutting a track from Hastings to Port Davey via Old River in 1901, Thomas Bather Moore officially named it Federation Peak in honour of the Federation of Australia.

In 1855, Sprent was appointed Deputy Surveyor-General while he was completing observations for the trigonometrical survey. On 11 June 1856, Sprent reported that he was “prepared to lay down the principal trigonometrical Triangulations”¹⁷ necessary to make a map of the colony.

“The number of stations erected was 206, and included all the principal mountain tops in the State, with heights up to 5 000 feet. The work performed by Mr Sprent may be described as stupendous, taking into consideration the rough nature of the country, the difficulties of transport, and the rigours of the climate. The time actually employed on this survey was 14 years, at a cost so far as it proceeded, of upwards of £20 000.”¹⁸

The map would require the drafting and development of the survey into an accurate depiction of the entire colony. However by the end of 1857, a Legislative Council select committee chaired by a former surveyor John Helder Wedge was inquiring into the survey. The committee concluded that while the general map might be completed, further spending could not be recommended. The report was tabled in the Legislative Council on 19 February 1858.

Sprent's ‘Map of Tasmania and Adjacent Islands’ remains a very impressive publication. It is a worthy testimony to the reputation of printer and publisher, to the art of copper plate engravers, and to the long, weary trials and tribulations of all those surveyors, chainmen, track cutters and offsidiers whose work made the map a practical proposition.

It was published in June 1859 just before Sprent retired as Surveyor-General due to ill health. He died at his home in Hobart on 22 September 1863, aged 55.

However, other than providing the basis for the map, the work appeared to be wasted. In 1881 Calder wrote that: “The erection of these shapeless and transitory monuments, with the subsequent angular measurements taken at them ... were ... just as grave a deception as any ever practised...”¹⁹. In 1883 Victorian Assistant Surveyor-General, Alexander Black provided advice on ‘The Survey System of

¹⁶ Doran, Kevin (2004). Federation: Australia's Adventure Peak. Desdichado. pp. 14–16. ISBN 0-9586935-1-X.

¹⁷ LSD 1/81/417

¹⁸ Centenary of Tas Supplement pg 8 Article on Municipal Government Mercury 12/9/1903

¹⁹ The Mercury, 27 Oct. 1881

Tasmania' and he recommended that Sprent's triangulation should be checked and revived. However this recommendation was not adopted.

4. OTHER NOTABLE WORK

In 1834, Sprent was invited to report on a future water supply for Hobart Town that was to be developed on the slopes of Mount Wellington. His concise and clear report includes a description of the pinnacle's topography noting that it "makes it a natural receptacle for a huge quantity of water".²⁰ He considered the possibility of augmenting the Hobart Town Rivulet with diversions from two other streams but found that "with proper treatment the present sources will adequately supply Hobart Town were it ten or even twenty times greater than it is at present".¹⁶

He was also called on to report on water sources and conservation in the Midlands country adjoining the Macquarie River in 1841. This took him into the mountains again to trace the headwater streams of the Macquarie. Although it was never implemented, he designed a scheme involving four dams under sluice gate control.

His meticulous mapping of lands granted to the Van Diemens Land Company was yet another substantial achievement. The observation, measurement and charting of 350,000 acres of rugged forest land crossed by tortuous river courses was a massive surveying task. The work was completed in 1842 and, according to Sprent, with even greater accuracy than the wider trigonometrical survey.

Sprent is also highly regarded for his large-scale survey of Hobart Town. He produced a set of over seventy street plans in minute detail down to individual buildings. These records are known as Sprent's Book and the plans are still referred to today for the redefinition of original land grants. It was most recently used as part of the Colonial inquiry into the Myer store fire in Hobart.

In 1855 he was also asked to do the reconnaissance and survey of a practicable route for a proposed steam powered locomotive railway between Hobart and Launceston. Sprent conducted a survey and reported on two alternative routes and was asked to further investigate a route from Launceston to Westbury. This railway project occupied him until the end of 1856.

5. CONNECTIONS

When appointed as Surveyor-General in 2003, I was pleased to find that the historical items in my office included James Sprent's eight inch Troughton and Simms theodolite. Observations were made with this instrument at sixty-five secondary stations to an accuracy of 10 seconds of arc. A twelve inch theodolite was used for

²⁰ CSO I/776/16566

observations at the sixty-eight main stations. The cross hairs for the graticule of the telescope are strands of spider web which were painstakingly selected in the field and mounted.

I had been aware of Sprent through my exploration of Tasmania's peaks well before I'd thought of being a surveyor. More experienced walkers told me stories about Sprent and his cairn construction in these remote places so long ago. I first visited Mount La Perouse over forty years ago. The enormity of the cairn in such a remote place (still two days walk from the nearest road) impressed me and I was surprised to keep finding these at the tops of mountains that are still very remote and seldom visited.

In researching this paper, I also stumbled across Sprent's wife's full name. She was Susannah Hassall Oakes. Hassall is a family name for my wife's forebears. I wondered about the connection and later established that Sprent's wife was a sister-in-law of one of my wife's ancestors.

It was also surprising to discover that James and Susannah were in fact married at St John's Church at Parramatta in New South Wales on 2 March 1837 not far from Old Government House.

Susannah was the fifth daughter of Francis Oakes. Francis is buried in St John's cemetery where the first Surveyor-General of New South Wales Augustus Alt is also buried. To add to this connection, Susannah Sprent was buried at Cornelian Bay Cemetery in Hobart on 12 January 1907 not far from one of my convict ancestors.

6. CONCLUSIONS

While I started this research with an appreciation of the contribution of James Sprent towards the development of Tasmania, I now find the accounts of his achievements almost overwhelming to contemplate. My respect is heightened by my close knowledge of the country that he had to access and the difficulties of reaching those places on foot even today with the benefit of modern equipment and an extensive network of roads that weren't available to Sprent.

Add to this Sprent's vision in trying to establish a well-coordinated integrated survey system linking topographic features and manmade boundaries and his determined efforts to reach that goal in an environment of dubious governance and administration.

Of the trigonometrical survey, Deputy Surveyor-General Cotton stated in an address to the Royal Society: "The observations have been in the hands of one single individual, Mr James Sprent, whose untiring perseverance and patient endurance has

enabled him single handed to effect what in other colonies would have been shared by many equally qualified for the work”.²¹

Sprent’s achievements from both a personal and professional level are indeed remarkable.

²¹ H C Cotton’s paper given to the Royal Society of Tasmania in 1854, Published by Tasmanian Government Printer, 1912

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